

Education & Agriculture

A HISTORY OF THE NEW YORK STATE
COLLEGE OF AGRICULTURE AT
CORNELL UNIVERSITY

by Gould P. Colman

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CORNELL UNIVERSITY

ITHACA, NEW YORK, 1963

xii, 603 p. illus., ports., map. 24 cm.

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First Published 1963

492.165B
X

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Library of Congress Catalog Card Number: 63-17031

PRINTED IN THE UNITED STATES OF AMERICA BY
HARRY HOFFMAN & SONS PRINTING, BUFFALO, NEW YORK

Preface

A RECORD of history provides the chronology of events that lead to the present. As it is reviewed, we recognize our great debt of gratitude to the men and women in the Empire State who through ingenuity, enthusiasm, sacrifice, and accomplishment have brought agriculture forward from colonial times. With the continuous changes and adjustments that have taken place through the years, agriculture today remains a strong, dynamic industry, important in the State's economy.

The College of Agriculture at Cornell University reveals through this history its contributions of nearly a century of continuous service. Ezra Cornell's desire that agriculture be among the significant fields of knowledge in his new university, continues to be recognized. Mr. Cornell envisioned a more efficient agriculture in America, and in addition to the passing of practices from father to son, it was his desire that the college classrooms contribute to agricultural improvement. Today's modern agricultural practices bear little resemblance to those of a century ago. This is in large part a tribute to Ezra Cornell's concept that educators and scientists should serve the interests of agriculture. It is this concept of service which remains our objective today.

Cornell University, as the private land-grant university for New York, has worked in partnership with the State of New York through long years of its history. In 1904, through a legislative act, the College of Agriculture was supported by New York State and has since been a contract college under the administration of Cornell University. This strong relationship has provided the fundamental support for the development of much of the program since that time. Farm organizations and others have been generous in their interest and support of the work of the College. Its efforts to meet the needs of the people in the State has been characteristic of the New York State College of Agriculture from the beginning. This teamwork

PREFACE

between the State and the University has worked for mutual good.

Much has been accomplished in our first century. The College of Agriculture recognizes its broad responsibilities in the fields of teaching, research, extension, and international agricultural development. Today the broadened concept of agriculture to include the commercial farm and the host of allied industries that provide goods and services, gives us an expanding opportunity, as well as responsibility. The great strength that agriculture assumes in national well being is becoming increasingly important in the concept of world peace.

Through a strong program, oriented toward the training of well qualified men and women to work in the broadening fields of biological, social, and physical sciences, and the related technology built upon them, we hope that the College may continue to play an important role in the future developments in agriculture. The breadth of this service reaches all of our citizens. We are a part of the greater effort which characterizes the cooperation among many interested agencies working for the continuing benefit of modern agriculture.



CHARLES E. PALM

Dean

College of Agriculture

Author's Notes and Acknowledgements

"HISTORY is valuable," Liberty Hyde Bailey once declared, "not because it affords us certain isolated or interesting facts, but because it enables us to discover the gradual unfolding of life or ideas, to correlate any movement with the time or epoch in which it occurred, and to forecast something of its future trend or destiny." This statement, which Bailey made at a farmers' institute nearly seventy years ago, can serve to introduce the method of this book. The content of this history is organized chronologically on the assumption that an institution has a life span and that at any moment it can be described (and its vitality measured) in terms of the forces generated within the institution interacting with forces produced within other institutions to which it is related. From this point of view the history of the New York State College of Agriculture at Cornell University is the examination of the interaction of internal and external forces over the series of moments comprising its life span. To use this approach within the pages of a single volume, I have chosen to measure these moments by decades in the belief that this period is sufficiently long to permit recognition of the major elements affecting the development of the College and, at the same time, sufficiently short that the interplay of forces does not defy analysis. The last chapter, where the information is drawn largely from published sources and the life of the College is examined less intensively than for the years preceding, covers two decades.

Many persons merit recognition for their contribution to this book, not the least of whom are Isaac P. Roberts, Liberty Hyde Bailey, and other historic figures whose lives were of such interest and significance as to be worthy of record. To four persons thanks are due for background assistance of considerable importance. First among these is my father, who introduced me to New York agriculture by communicating his affection for the land and its products. To Professor Paul W. Gates I am indebted for many stimulating conversations on the history of agriculture and, along with Richard Bliss and Warren Leonard, for encouragement to try out ideas which seemed to me important. Of those directly responsible for the genesis of this history,

AUTHOR'S NOTES

former Director Lloyd R. Simons stands preeminent; it was he and former Dean William I. Myers who took the initial steps toward securing its preparation. The support of these men and of Dean Charles E. Palm, Dean F. H. Stutz, and Director W. K. Kennedy is much appreciated. Dozens of persons currently or formerly connected with the College have provided information or criticized parts of the manuscript; the aid of A. W. Gibson, L. A. Maynard, T. E. Milliman, W. I. Myers, L. R. Simons, H. C. Thompson, K. L. Turk, and S. W. Warren is especially noteworthy. Thanks are due my wife Cynthia and Professor Gates for reading the entire manuscript at several points during its preparation. Needless to say, many improvements are due to their efforts.

This study is largely based on manuscript records housed in Cornell University's Collection of Regional History and University Archives. To its staff I am indebted for hospitality and assistance freely given.

Acknowledgement is due the Macmillan Company for permission to quote from L. H. Bailey's *The State and the Farmer*.

This history of the New York State College of Agriculture is part of Cornell University's contribution to the observance of the centennial of the Morrill Act. It is not, however, an official history. In accord with Cornell tradition, I have been given a free hand in its preparation. Responsibility for the result is mine alone.

G. P. C.

June 1, 1963
Ithaca, New York

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EDUCATION AND AGRICULTURE

**A History of the New York State College of
Agriculture at Cornell University**

CHAPTER I

Backgrounds, 1850-1867

IN the nearly one hundred years which have elapsed since that June day of 1866 when Ezra Cornell turned a spadeful of earth to mark the location of a classroom building for the university carrying his name, the institution he initiated has developed to bear witness to his foresight. With a fortune garnered from Western Union dividends and an impressive strength of will, this Tompkins County farmer had decided to make his adopted village of Ithaca, then as now distinguished for beauty of location, a center for business and cultural enterprise. Once he set his sights, Cornell was not a man to accept lesser goals, yet even his sizable fortune was insufficient to make Ithaca a commercial entrepôt during a period of economic instability. His support for higher education, however, more in phase with the movement of events, remains his enduring monument. Although success was consequent to drawing on other men for ideas and energy, a large element was of his making. It was his farm, located high on a plateau overlooking Ithaca and Cayuga Lake, that provided the site for the new university. It was his fortune which supported the initial construction. It was the fortunes of his friends, particularly that of Henry W. Sage, which made possible additional construction. It was astute management by Cornell and Sage of New York's share of the Morrill land grant that secured for Cornell University an endowment which proved highly significant in the years before the University built up a substantial body of alumni.

Until shortly before the University was established, Cornell's interest in higher education had centered on the possibility that a college could provide a means for improving New York State agriculture. For at least a quarter of a century he had pursued the vision of agricultural improvement. Yet when the time came to establish his educational institution, circumstances required him to

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combine his ideas with those of other men; and, in the process, agricultural education was reduced from the status of primary objective to a subordinate role in the University curriculum. To the extent that the University was founded by Ezra Cornell it was rooted in New York agriculture, and it is with these roots that this history will begin.

There was much in New York State in the years before the Civil War to excite a person interested in agricultural reform. Farm practices generally left much to be desired, and since farmers were numerically by far the largest occupational group—over 310,000 of 888,680 males enumerated in the census of 1850—there was a great challenge to that small band of reformers who would lead farmers away from the errors of their current practices.* Tillage was primitive by modern standards. Although great improvements had been made in the plow since 1820, the capabilities of the implement were rarely matched by the man who held the handles.¹ Seldom did plowing exceed a depth of six inches, thereby assuring a shallow bed for seeding. The principal implement for fitting the land was the hinged spike-tooth harrow. This implement, it was widely claimed, could be readily cleaned of trash, which suggests the frequency of trash, especially weeds, in the fields at the time. Noteworthy was that hardy perennial, the Canada thistle. Abundant in all parts of the state, it resisted eradication by all means except digging out the roots. Should a farmer go to this length to end the thistle's competition with his crops, a new infestation was assured from seeds blowing in from the four-foot belt of weeds growing within the angles formed by the worm fences around his fields. The hegemony of the pigeonweed (*Buglossoides arvensis*) over domesticated plants in many New York fields was another indicator of the level of cultivation. Reproducing annually and therefore subject to control by cultivation in the fall and spring, this plant was considered the weed most destructive to agriculture in the middle counties of the state.

The fertility of the soil was neglected. Manure which should have been returned to the soil was wasted. John Delafield, that astute

*There were in addition a large number of farm laborers. Probably a majority of the nearly 175,000 males listed by the census as laborers were farm workers.

BACKGROUNDS, 1850-1867

observer of agricultural practices, thought that in Seneca County only about one farmer in ten used it wisely. Modest amounts of wood ashes were occasionally used as a fertilizer. Except for a very few farmers who were experimentally inclined, the use of guano was practically unknown. Gypsum, which provided a source of calcium, was the most widely applied fertilizer. Delafield noted that in Seneca County it was a "universal" practice to apply gypsum to land seeded to clover at the rate of one bushel per acre. It is fortunate that larger quantities were not applied, for New York soils were not notably lacking in calcium; whatever effort was expended in applying gypsum was largely wasted. The rotation of crops, which could have assisted materially in the maintenance of soil fertility, was either neglected or carried on haphazardly outside of western New York. The application of lime, which would have been of substantial benefit, was rarely undertaken.

Soils other than those naturally well drained were "cold," prone to heaving in the winter, and difficult to till adequately because of excessive moisture. Only the slightest beginning had been made on tile drainage.

The tendency to cut costs of production by stinting on fertilizers also applied to the seed that was used for planting. Good seed, then as now, cost more than seed of inferior quality. The latter was commonly used, apparently in the belief that it would yield full measure at the harvest. Some farmers went so far as to sow tailings from their fanning mills. It may well be that the oft-repeated notion that wheat degenerated into chaff was given added currency by the use of inferior wheat seed that failed to germinate, thus leaving the field to the chaff seed already in the ground.

Horses, numbering nearly half a million in 1850, furnished the principal source of power, especially in the flatter, more mechanized areas of western New York. Even though their use was encouraged by some of the better farmers, only 963 asses and mules were discovered by the census enumerators. Oxen were used more extensively in the hilly areas of the state. In 1850 working oxen numbered 179,000, and much space in agricultural publications was given to methods of breaking oxen to the yoke.

Dairying was an important New York State industry, made so

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less by the quality of the cattle than by their numbers, nearly one million in 1850. Although estimates of milk production per animal vary, all were astonishingly low by present standards. Delafield thought that the milk produced in the state per cow per year yielded on the average about 90 pounds of butter and 110 pounds of cheese, but census figures for 1850 suggest that his estimate of cheese production was excessive. There was considerable variation within the state. Northern New York, which specialized in dairy farming, had higher-producing cows than western New York, which was primarily a grain-producing area. Butter and cheese making were home industries, and luck was frequently the principal ingredient in a successful product. Outside butter produced in Orange County, where an enclave of butter-making skills existed, the New York product had a poor reputation. Ultimately, much of it was sold as grease, at about half the price of the genuine article. Cheese making fared a little better. Cattle, other than dairy cows, numbered about 760,000 in 1850. In Wayne County about one-third of the cattle consumed for beef were slaughtered in the county, the rest driven to city markets. The quality of the meat may be inferred from the common practice of feeding cattle through the winter on straw and other coarse provender that had no cash value. Although some Shorthorn and Devon cattle had been imported into the state and crossed with native cattle, the improvement by breeding was limited to a few localities. The general pattern was one of neglecting to utilize what good blood was available. Nevertheless, cattle were more profitable than sheep, and in 1850 many New York farmers were switching to cattle.

Although there were about thirty times as many sheep on New York farms in 1850 as there would be a century later, even then the number had fallen to one-third of those on New York farms at the beginning of the previous decade. With low wool prices prevailing after 1842, sheep followed the frontier westward to a region of lower production costs associated with grazing on cheap land or on the public domain. During the same decade of 1840 to 1850, the number of hogs in the state fell about 50 per cent. As midwestern farmers found these animals good consumers of their corn, New York farmers discovered it was more profitable to feed their corn to cattle. The

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care of swine was generally neglected by New York farmers. Better management of these animals might well have led to a more profitable adjustment to midwestern pressure. At that time, however, neither the knowledge nor the inclination was present. In this transition from sheep and swine to cattle, New York farmers were making, in the area of animal husbandry, as dramatic an adjustment as they would again accomplish in a hundred years.

The production of poultry on New York farms in 1850 was thoroughly unorganized. Although the breeding, feeding, and housing of the larger animals was primitive by modern standards, at least most farmers were aware of these matters and some were making an effort to improve them. This was not true with poultry. As poultry yards were practically unknown, chickens of nondescript origin fended for themselves in fields and barnyards. The annual egg production is, of course, unknown, but it was estimated at the time at eight eggs per hen. Poultry products were a luxury for city people. When the gradual extension of the Erie Railroad into upstate New York in the 1840's made possible quick transportation of poultry and eggs, prices of these commodities immediately increased 25 per cent, and even then buyers were unable to secure an adequate supply.

Substantially more grain—wheat, corn, oats, and rye—was produced by New Yorkers in 1850 than their descendants would produce a century later. Wheat production was at its height, and yields in western New York were respectable (the Seneca County average was twenty bushels an acre) in spite of attacks from the midge and the Hessian fly. That farmers successfully met such formidable pests was due to the development of tillage and planting practices which circumvented the worst effects of the fly and the midge. Unquestionably the yield of wheat had declined over the years in western New York, but the decline had been less precipitous than in the eastern part of the state. Famed horticulturist Andrew Jackson Downing observed that areas of Dutchess County that once produced thirty bushels of wheat to the acre produced six in 1851. This decline Downing attributed to farm practices which resulted in "skinning" the land of its fertility. Also relevant were the effects of the black stem rust, which spent part of its life cycle on the barberry bushes native to eastern New York.

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The production of corn in New York was increasing in 1850 in spite of cutworm depredations, although the rate of increase was small when compared to that of the Midwest. Corn was grown in all parts of the state and was used for both grain and fodder. Cornfields received what manure was applied. Some selection of seed was occurring in order to obtain varieties which would ripen under New York conditions.

Hay was the state's principal crop. In 1850 New York was the largest hay-producing state, accounting for more than a quarter of the nation's production. One might anticipate that this degree of specialization would have led to improved practices, but such did not generally occur. Hay, usually consumed on the farm, was subordinated to those crops normally sold for cash. The preparation and maintenance of ground for hay and pasture was neglected in favor of planting grain. Clover, which was frequently rotated with wheat in western New York, was not cut until the blossom was ripe and the most nutritive elements in the plant had departed. Timothy was harvested after the wheat, when little remained but woody fiber. In other parts of the state even this poor-quality hay was exceptional, for all too frequently weeds and self-seeded grasses dominated meadow and pasture.

Potato production declined 50 per cent in the decade 1840-1850, following the appearance of a blight then called "potato rot"; but since the blight struck other areas also, New York still accounted for about 25 per cent of the national production. From the point of view of farm management, the blight was not an unmitigated disaster, for the decrease in quantity quickly led to an increase in price. Attention was thereupon called to the practices of certain farmers who by careful attention to cultivation and seed selection were able to increase their income from potatoes in spite of the blight. Before its advent New York potatoes were consumed at the table and by livestock; but the varieties fitted for table use, being less blight resistant, had largely given way to the coarser varieties by mid-century.

Apples, like potatoes, were valued as feed for livestock and their relative merit was a subject of considerable discussion among farmers. Also discussed, but to a lesser degree, were the relative merits of sweet and sour apples. One observant farmer noted that

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his pigs, if allowed to make a choice, preferred their apples sour. Certainly the production of apples had increased considerably in the five years before 1850, especially in the areas best adapted to fruit growing—the Hudson Valley and the Lake Ontario plain. It was estimated, on the basis of Erie Railroad clearances, that Wayne County shipped 400,000 to 500,000 bushels in 1851. Thanks primarily to the writings of New York horticulturists Andrew Jackson Downing and John J. Thomas, the volume of sound information about fruit varieties had increased substantially in the years immediately before 1850. At the time, however, this information had little influence on the practice of itinerant grafters who made exaggerated claims for the quality of fruit which would follow use of their scions and who, by their fraudulent misrepresentations, contributed to the current meaning of their occupation in the American speech.

Diseases and destructive insects posed a major handicap to increasing the production of orchards, animals, and fields. How little was known about the nature of diseases is indicated by the emphasis put on purging and letting blood from the bodies of humans and animals as a means of relieving their ills. People consumed patent medicines in vast quantities, lacking more certain remedies. "Cures" for plant diseases like the "potato rot" were numerous, and if many of these had some relevance to the disease, none was in itself an adequate remedy. Insects at least were large enough to permit man to observe their life cycles. This knowledge made possible such minimal controls as late planting of wheat to avoid the worst damage of the Hessian fly, plowing trenches around fields to trap crawling insects, digging grubs from trees, and shaking insects from branches.

Forests were not regarded as a crop to be replanted after a harvest of timber. Trees that survived the initial clearing and the increased market for timber created after the construction of the Erie Canal were being cut around 1850 to provide lumber for plank roads. It was confidently assumed that these roads, financed by joint-stock companies, would provide the means of rapid overland transportation. In 1849 Jefferson County alone had 140 miles complete or under construction. Plank roads, however, were soon dismissed as a craze, for the planks quickly rotted, thereby posing considerable danger to horse and traveler alike. With the exception of a few turnpikes con-

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structed prior to 1850 on stone foundations, roads returned to the condition of previous years—muddy in spring, dusty in summer, rutted or snow filled in winter.

It was a rare farmer who kept methodical farm accounts. Even some of those respectably literate individuals who answered the simple inquiries of the commissioner of patents—and this alone separated them from the mass of farmers—admitted an inability to make adequate reply because they had no records.* Many farmers, indeed, did not know with any degree of precision the size of their fields or the yield of various parts of their farms. Under these circumstances farm management was a matter of following tradition or intuition.

Wages for laborers on New York farms in 1850 were in the range of sixty to seventy-five cents a day, including board and lodging, although in the north country a skilled cradler could earn as much as \$1.50. Wages for men employed by the month ranged from \$8 to \$14, depending on the part of the state and their degrees of skill. Low though they were by present standards, these wages were high relative to the selling price of farm products at the time. So scarce was labor at prices farmers could afford to pay that many farm operators turned toward mechanical aids to accomplish the work. This was especially true in western New York, where agriculture was more commercialized and the land sufficiently level to permit the operation of the somewhat cumbersome machines. In 1843 the first reaper introduced into Seneca County did the work of seven cradlers, and by 1850 the Hussey reaper was being manufactured at Auburn. Mowing machines were widely used in western New York, and grain drills were attracting some attention. Threshing machines, which had generally replaced more primitive methods, were operated by the horse power, a device for utilizing the energy of horses attached to a sweep or moving in a treadmill. Crops of recognized value not then subject to mechanization, such as turnips and carrots, were being discontinued.

In terms of the effort required, the lot of the farmer's wife was at least equal to that of her husband. The lower wage for female help

*Until 1862, when the Department of Agriculture was established in Washington, the federal official responsible for agricultural improvement was the commissioner of patents.

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—\$1 a week—provided little incentive for mechanization. The replacement of the fireplace by the wood-burning stove, however, considerably simplified woman's work in winter. Advertised in 1850 as "automatic heat," this simple device was ridiculed by a number of traditionalists, who probably feared it would weaken the fiber of the younger generation. There were, however, few other major mechanical improvements in homes. Women were expected to raise large families, manage a large house, make the butter and cheese, and sometimes milk the cows. Of course, in the butter-making process they were often aided by a sheep or a dog which walked in a treadmill to provide power to operate the churn.

Since farm and homemaking practices have altered so markedly in the century following 1850, it is easy for us to assume—inculcated as we are with the concept that change is inevitable—that the major trends in 1850 were clearly in the direction of these changes. Such an assumption would be far from correct, for at that time pervasive socioeconomic forces operated toward the stabilization of existing conditions. Predominant among these was the educational system.

Agricultural education began when children were young and took the form of acquainting them with farm tasks to the measure of their ability. Little theory was involved. Children learned by doing, either at home or while working for neighbors. Charles Y. Lacy, the first graduate in agriculture at Cornell University, remembered driving two horses on a harrow for a half day when seven years old and doing the same thing all day for weeks on end when eight.² By similar means girls were introduced to sewing, cooking, and other household tasks. This method of education, conservative in its essence, involved the transmission of farm and household skills from generation to generation in the same way that earlier people had transmitted skills in hunting game.

The content of formal education and the conditions under which it was conducted added little to what understanding of agriculture was acquired at home. The typical learning situation involved a one-room school serviced by wood stove, common drinking bucket, and unsanitary privy and presided over during winter months by a youth who regarded teaching as a steppingstone to a more attractive occupation. Indeed, in 1850 fewer than three thousand New York males

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would admit to being teachers (and teaching school was then an occupation for males). There were fewer teachers than there were carters, coachmakers, coopers, joiners, peddlers, sawyers, and wheelwrights.³ The teacher was essentially a taskmaster, the learners' task being to commit to memory books in reading and arithmetic, to recite long passages from the former with proper gestures, and to write with a round firm hand. Neither the readings, which tended toward the patriotic and sentimental, nor the examples in arithmetic had much relevance to the farm lives most of the students would lead. Downing insisted that the local schools were actually subverting agricultural improvement by luring the more talented youngsters away from the roles of farmer and farmer's wife, a condition he claimed occurred when they were exposed to teachers and textbooks oriented toward the learned professions—law, medicine, and the ministry.⁴

Agricultural reform could hardly be expected from the colleges, for they served these three honored occupations with the same methods pursued in the local schools. Themselves poorly differentiated from the academies (later called high schools), they admitted students at the age of fifteen and then subjected them to a highly structured curriculum which emphasized learning by rote. To gain admission, proper social background or orientation toward the ministry were desired qualifications. The occasional suggestion that the admission policies and the educational program of American colleges should be democratized was dismissed as visionary by spokesmen for the existing institutions.⁵

Since the books produced by the American educational system contained little that was relevant to farming, it is not surprising that farmers were highly skeptical of what little agricultural information was to be found in them. "Book farming" was used as a brickbat for assailing foolish ideas. William H. Brewer, a Tompkins County farm boy who was for many years professor of agricultural chemistry at Yale, recalled, "I continually heard that term used with profound contempt all through my youth and manhood by many men not otherwise ignorant."⁶

There was no dearth of men anxious to reform education as it affected agriculture, but their effectiveness was reduced through

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failure to agree on the goals to be adopted or the means to be pursued. In a noteworthy instance where an element of agreement was attained, the effort failed through the inability of those who administered the plan to approach the dedication of those who set it in motion. This was the experience of the New York State Agricultural Society in the 1840's. Organized in 1832 through the efforts of Jesse Buel of Albany and reorganized in 1841 after a series of lean years, the organization at that time secured a subsidy from the state of \$8,000 a year, part of which was allocated to county units on condition that the allotment be matched by local contributions. The principal educational instrument of the New York State Agricultural Society was the agricultural fair. These annual events, held at both county and state levels, provided a meeting place for the inspection and judgment of a wide range of farm products and farm implements. The educational value of these fairs was largely a function of the standards used in judging the displays. If production standards were used in awarding premiums, the quality of an item was judged in relation to production conditions most farmers would be able to meet; if fanciers' standards were used, judgment was rendered without relating the item to the means of production possessed by most farmers. In terms of advancing the education of large numbers of farmers, production standards were as valuable as fanciers' standards were destructive.

The outlook was hopeful with the clear-cut adoption of production standards in 1841. However, the substantial sums of money and the element of prestige attached to receipt of premiums provided considerable inducement to win prizes by giving fancy treatment to a small number of animals or a small area of land. To make certain that items entered for competition did not result from such practices, a notarized statement of the conditions under which each entry was produced had to be submitted to the officers of the society. Unfortunately, it soon became apparent that this requirement was not being met.⁷ Failure to insist on the submission of records, from which the commercial applicability of the methods used to produce the premium entries could be determined, vastly reduced the value of the agricultural fair as a method of improving agriculture.

The development of model farms was also advocated by a number

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of reformers, the assumption being that farmers who saw these farms would then go home and recreate the operation they had witnessed. That this concept still had vigorous support as late as the 1870's indicates how thoroughly unrealistic a number of agricultural reformers were. Advocacy of model farms was based on a simple view of agriculture not unusual among reformers who had no personal acquaintance with farming. These men remained secure in their faith by remaining unaware that a farm was an unreproducible complex of soil-plant-animal relationships. Although vocal and persistent, the advocates of model farms were always a minority among agricultural reformers in New York.

Greater support was given the view that formal agricultural education for young people would be an effective approach to improving agriculture. At issue among those who held this view was the kind of school to be established. Some wanted a school of practical farming where the student would learn how to plow and mow and "make ends meet"; others wanted a school which would teach the sciences underlying agriculture with perhaps some ancient language added; still others wanted to achieve both ends with a school teaching the theory and practice of agriculture. The latter position was taken by Simeon DeWitt as early as 1819. The method by which schools would be financed was also an open question. Those advocating a self-supporting institution were countered by those who insisted that state endowment was vital to success.⁸

A number of agricultural schools were actually opened in the state in the 1840's and early 1850's. All were privately financed, in several cases by stock subscriptions, all featured manual labor by students as the basis of the educational program, all had a small enrollment, and most had a short life. Here are three examples. In October, 1846, the Western New York Agricultural School advertised for students, the cost for forty-four weeks of instruction being \$100, which included "board, washing, tuition, lights and firewood." Three months later the school closed because of insufficient funds.⁹ The Dutchess County Agricultural Institute began with three students in 1846. By the spring of 1849, when it had moved to Mt. Airy at Germantown, Pennsylvania, it had fourteen students.¹⁰ The Oakwood Agricultural Institute had a life span of one year. It was housed

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in a farmhouse near Buffalo, and the student body consisted of a dozen boys, aged fourteen to seventeen.¹¹

These failures bear examination. In terms of educational objectives, these schools sat squarely on the horns of a dilemma. Manual labor expended in acquiring farming skills had little value for farm boys who could learn much the same thing at home while contributing to the family income. There was little demand from farmers for instruction in the theories underlying the practice of agriculture. Farmers were not generally inclined to see the relevance of agricultural chemistry to growing corn and potatoes and, given the development of the subject at the time, they had much reason for their skepticism. On the other hand, the schools could not attract nonfarm youngsters, for farming was then widely regarded as an unprofitable occupation. In urging the establishment of an agricultural school, DeWitt devoted a substantial part of his forty-two-page pamphlet to an attempt to lay that particular hobgoblin to rest.¹²

Efforts to introduce agriculture into elementary schools, and in the process correct their orientation toward the so-called learned professions, met with little more success. Several books were published, including *The Farmers' School Book* by J. Orville Taylor. Published in Albany in 1837 and republished at Ithaca two years later, this 238-page compendium of agricultural practice was designed to be used in place of *The English Reader*, *The Columbian Orator*, and similar books. By giving "practical knowledge to the labors of manhood" the author hoped to "make farming *delightful, honourable, and profitable*." If we judge by the number of copies extant in 1960 relative to those of titles it was designed to replace, there is little evidence that the book had more than a modest sale.

Another group among agricultural reformers advocated an experimental farm. There was much logic in this position. If schools were to serve as a vehicle for agricultural improvement, they needed a body of sound information concerning agriculture from which to draw. In 1850 no such body of information existed. This is not to say that there were no good farmers at the time; indeed, a number of men were applying techniques later demonstrated to be scientifically sound. However, the reasons for success were often misunderstood. All too frequently progressively minded farmers learned to

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their sorrow that practices which brought prosperity to their neighbors brought disaster to themselves. Until the principles underlying farm practices were established by scientific experimentation, successful farm management would remain an art.

There were a number of attempts to turn science to the use of agriculture in the 1840's. Agricultural chemistry had been developed as an experimental science by Baron Justus Von Liebig at Giessen, Germany, and his conclusions were eagerly received in America following the English publication of his *Familiar Letters on Chemistry* in 1843. Liebig dismissed the view that the organic portion of manures had value for plants; only inorganic substances could be assimilated, he insisted. His explanation of plant nutrition made possible a simple means for increasing crop production. All that was necessary was to analyze the ashes of a plant to determine its needs, then analyze the soil to determine what it lacked, add the necessary mineral supplement, and let nature do the rest. Unfortunately, his explanation of plant nutrition was erroneous but Liebig, a somewhat overly proud genius who was quick to draw conclusions but reluctant to admit mistakes, left it to farmers to proclaim the error of the mineral theory when they found that yields did not meet expectations following the application of his principles.¹³ Some experimentally inclined farmers in New York and New England had come to other conclusions than Liebig's but, like him, had derived their conclusions from very limited observations. In 1848 John Stanton Gould, later to be the mainstay of agricultural education at Cornell, declared:

Hitherto, experiments and observations have been so loosely made, that scarcely a single mooted question in agriculture has been definitely settled. So great has been the discrepancy of the results that have been published, that it would seem that each experimenter believed that there was but one soil, one climate, and one set of circumstances, to influence results.¹⁴

The status of agricultural chemistry among farmers had declined by 1850 after the fanfare of earlier years failed to produce viable results.

Drawing erroneous conclusions about basic botanical processes was practically inevitable at the time, for agricultural science had not yet passed through the natural history phase of its development.

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Little was known about the components entering into agricultural production, to say nothing of their range of variability. Until the basic elements affecting plant growth were recognized there was little possibility of generalizing beyond the conditions under which experiments were conducted.

Given the element of uncertainty of outcome following the adoption of new practices, it is understandable that most farmers stayed close to traditional methods. For some, conservatism was so innate that it did not seem to require logical justification. John Johnston, the Geneva farmer who introduced tile drainage into this country, recalled that, when he began laying tile in 1835, "some would ask if I was going to *put crockery all over my farm.*" Other men, whose conservatism arose from seeing farmers go bankrupt after investing in improvements which cost more than they returned, warned Johnston that tiling would surely cost him his farm.¹⁵

An abundance of inexpensive land also mitigated against improvement in agriculture. It was considered cheaper to occupy new land than to improve land that was decreasing in production. The ready availability of land led New York farmers in the 1840's to spread their energy over more land and more animals than could be cared for to best advantage.¹⁶ Widespread efforts toward agricultural improvement awaited more intensive agriculture, but in 1850 the end of low-cost land in the West that could be taken up by emigrating New Yorkers was not yet in sight.

Finally, the subsistence element bolstered the agricultural *status quo* in 1850. Once the land and basic implements were obtained, farmers needed little cash. Since social services were few, taxes were low, and one of these, the tax on highways, was paid in labor. As long as the farm produced most of the family needs, there was less incentive to make improvements which, in a purely market economy, would be necessary to continue in agriculture.

Against the social and economic pressures tending to stabilize the agricultural practices of 1850 must be weighed other pressures tending toward change. Basic among these was the snowballing effect which occurred as improved machinery replaced less efficient equipment. Farmers made this change in order to reduce the cost of production, but they tended to increase the number of units produced

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in order to finance the cost of the new machines. In addition to this planned increase there was an additional output due to the improved efficiency of the new machines. Spring-tooth harrows, for example, made a better seedbed than the spike-tooth harrows they replaced; seed planted with a drill had a higher and more uniform germination than that sown by hand. Agricultural production increased more rapidly than the demand for agricultural products. To circumvent the resulting low prices the individual farmer often increased production in order to increase income, and this, in turn, called for further mechanization.*

The growth of cities, combined with the development of rail transportation, created a demand for certain agricultural products not currently emphasized on New York farms. Poultry has already been mentioned. Fluid milk is a more significant example. By 1850 urbanites were becoming aware that New York farms provided a source of fluid milk that was more tasty and wholesome than that which came from cows housed near cities and fed exclusively on distillery slops. Fluid milk was first shipped from Orange County in 1842, and thereafter the production of milk for fluid consumption slowly displaced production directed toward butter and cheese manufacture.¹⁷ The rapid decline of cheese and butter manufacture in New York, however, was not to occur until the early decades of this century.

As railroads extended into upstate New York, they not only changed agriculture by orienting it toward a market economy but, by annihilating distance within the memory of living men, prepared many people hitherto unaware of the dramatic possibilities in the technical applications of science, to believe that such applications opened the way to a better, more exciting life. Even more was this true of the telegraph, popularly called "the lightning," for while the steam train involved the application of principles widely understood, few had any understanding of the electromagnet. Dramatized by itinerant demonstrators who sometimes suggested that magnetism might open doors to the occult, telegraphy made a profound impact

*"If prices fall," noted the *American Agriculturist* in a description of McCormick's reaper, "we must endeavor to grow our products at less cost" (Aug., 1844, p. 238).

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on a generation which measured distance in terms of how far a horse could travel in a day.¹⁸ Change was in the air, and changes, once widely adopted, suggested new directions for education.

In 1842 a small book was published in Boston bearing the title *Thoughts on the Present Collegiate System in the United States*. Its author was Francis Wayland, President of Brown University. After reviewing the educational methods then in vogue, he dismissed manual labor schools as irrelevant to the needs of society. A college meeting these needs, he declared, must give attention to the sciences. By calling for a wider choice of studies to furnish the basis for the new education in science while maintaining the substance of the old classical curriculum, Wayland anticipated the elective system later popularized by Charles W. Eliot and Andrew D. White. Wayland's was not a voice crying in the wilderness. Within the decade the basis was laid for the Lawrence Scientific School at Harvard and the Sheffield Scientific School at Yale. In New York State, Regent Samuel Luckey warned that any agricultural school established in the future should avoid "every appearance of affinity with the old hackneyed theories of manual labor schools."¹⁹

The impact of European agricultural science promoted change. The most virulent period of American nationalism, when things European were dismissed as unworthy of American consideration, had passed by 1850, and the way was open for the study of European scientific developments on their own merits. The consequences which followed the uncritical acceptance of Liebig's explanation of plant nutrition did not lead to a general reaction against European science. The work of J. B. Lawes and J. H. Gilbert at Rothamsted in England was highly respected. The investigations in plant nutrition conducted at the experiment station on Lawes' farm were closely followed, and considerable space was devoted to their description in the *Transactions of the New York State Agricultural Society*.

Newly established agricultural periodicals promoted change by linking together islands of agricultural improvement. Subscribers could learn about new agricultural practices and the conditions under which they were adopted without waiting for the annual publication of the *Transactions*. They also could read the recommendations of farmers with a reputation for successful management.

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Of the three agricultural periodicals established in New York in the 1840's, the *American Agriculturist*, founded in 1842, and the *Rural New Yorker*, established in 1849, were still important publications over a century later. *The Horticulturist*, after an honorable life beginning with the editorship of Downing in 1846, ceased publication in 1875. Two periodicals started in the 1830's continued with increasing vigor through the following decade. These were the *Cultivator*, established in Albany in 1834 as the voice of the New York State Agricultural Society, and the *New Genesee Farmer*, reorganized in 1839 after publication for nine years under the title *Genesee Farmer and Gardner's Journal*. Those who wrote for these publications, either on a regular basis or by occasionally contributing their farm experiences, carried the main burden of agricultural education in New York until the College of Agriculture at Cornell and the New York State Agricultural Experiment Station at Geneva were firmly established.

In any analysis of the forces leading to agricultural change in New York, the impact of a small number of observant and articulate individuals who not only promoted changes but played a notable part in determining their direction must be considered. Some of these men contributed to the sciences related to agriculture — Samuel L. Mitchill, Ebenezer Emmons, and Asa Fitch. Some were practical farmers who used a trenchant pen in the agricultural press; in this group John Johnston stands preeminent. The contribution of others, especially Amos Brown and Ezra Cornell, lay in providing financial support or in persuading others to provide financial support for agricultural education. John Delafield effectively combined the roles of farmer and publicist. Andrew Jackson Downing and John P. Norton were both scientists and publicists.

Numerous contributions had been made to sciences related to agriculture — chemistry, entomology, geology, pomology — in the years immediately preceding 1850. Some progressive farmers, duly impressed with the increase in scientific knowledge and improvements in technology, believed they had passed from a dark age into one of agricultural enlightenment. In the light of our knowledge of science and technology, it is easy, in mid-twentieth century, to dismiss the enthusiasms of over a hundred years ago. To appreciate

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the basis for the feeling of progress at that time, the accomplishments of the years immediately preceding 1850 must be considered in relation to what had gone before.

The first organized efforts in New York State toward the improvement of agriculture were those of the Society for the Promotion of Agriculture, Arts, and Manufactures, established in New York City in 1791. In spite of its wide-ranging title this was an agricultural society organized not for literary display or studies of the unusual but

to supply the wants and relieve the necessities of mankind, and thereby to *render human life more comfortable*; to multiply the productions of the land, to shorten or facilitate the toils of the labourer, and to excite a Spirit of honest industry, whereby *riches may become more abundant*, and by inculcating the importance of ordinary and common things, and of practical everyday truths.²⁰

Probably few agricultural educators of today would take exception to these objectives.

Science had not yet acquired the aura it later enjoyed; indeed, the word hardly appears in the *Transactions* of this society. But certainly a scientific approach to knowledge was reflected in systematic records of observations and descriptions of experiments. The society moved toward the goal of applying science to agriculture in several directions simultaneously. A rudimentary survey by means of circular letters was initiated to obtain information on such questions as: "To what depth ought land to be plowed? How is your land best made mellow for the reception of seeds? What kinds of grain or grass are found by experience to thrive best in any particular soil? What substances do you find in soils, unfriendly or hurtful to vegetable life?"²¹ The president of the society, Chancellor Robert Livingston, conducted a number of experiments to determine the best agricultural practices. In 1792 he described eighteen experiments with calcareous and gypseous earths and two years later reported the results of a three-year sequence of experiments with alfalfa. The level of scientific understanding did not permit sound theoretical explanations of observations; witness Chancellor Livingston's statement that "we find in a calcareous earth, most of the elements that go to the composition of vegetables, to wit, earth,

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air, fire, water." However, his advice on experimental methods was thoroughly sound:

I would recommend it to the young farmer not to be discouraged from pursuing the culture of this plant [alfalfa] by the observations of some of the older ones, who will tell him that Mr. A. and Mr. B. tried it, *but it would not do*. Experiments carelessly made, or not regularly pursued, the accidental circumstances of soils, or seasons, afford no conclusive arguments, as may be inferred from the register I have exhibited. Out of about fifteen acres which I sowed last year, but four succeeded; had I not tried the plan in various ways, I should probably have determined that it was not worth attention.²²

The society also pressed for an institutional approach to agricultural science. In 1792 a professorship for natural history, chemistry, and agriculture was established at Columbia College, the salary of the professor to be paid under a five-year grant from the New York State legislature.²³ Samuel Latham Mitchill, secretary of the society, received the appointment. Like many of his contemporaries who were interested in science, Mitchill was trained in medicine. A highly speculative individual, he readily generated theories which would explain phenomena he had observed. Through a wide correspondence with scientists in this and other countries, Mitchill was able to examine the validity of his theories by determining how well they explained observations made by others. His theory on the formation of hailstones, his observations on the cankerworm, and his report on the soil and agricultural resources of the state suggest the broad scope within which he applied the techniques of science to agriculture.²⁴

A noteworthy feature of the society was the composition of its membership. Among the seventy-two incorporators were such worthies as Robert and Edward Livingston, John Stevens, John Jay, Simeon DeWitt, Horatio Gates, and Ezra L'Hommedieu. The remaining membership, while somewhat less renowned, was composed of men who, by wealth or position, had the leisure to pursue their interest in agricultural science.²⁵ Few among them, however, had the means to conduct experiments in the manner of Robert Livingston. The limited resources of most farmers would not permit risky departures from traditional methods.

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Notwithstanding the grant of state aid, the position occupied by Professor Mitchill did not evolve into a sound foundation for the development of agricultural science. A garden in connection with Columbia College, which Mitchill insisted was necessary for experimentation and class room illustration, was not established.²⁶ Moreover, state support was not placed on a permanent basis. Over one hundred years were to pass before the legislature would take that step with relation to a privately controlled university.

Although the Society for the Promotion of Agriculture, Arts, and Manufactures failed to achieve its goal of improving agricultural methods, it staked a claim on our gratitude by keeping alive the spirit of inquiry during what was generally a dark day for agricultural science. According to Elkanah Watson, by any measure one of the wisest and best-informed friends of agricultural education in the early nineteenth century, the society failed because the knowledge it accumulated "did not reach the doors of farmers to any visible extent. Nor was their plan of organization calculated to infuse a lively spirit of emulation."²⁷ Only five hundred copies of the *Transactions* of this society were printed, and it is unlikely that many of these reached hands bearing callouses from farm practice.*

The next attempt to advance agricultural science on a broad basis was instituted in response to the leadership of newly elected Governor DeWitt Clinton. On January 27, 1818, he told the legislature that "it has not been sufficiently understood that agriculture is a science, as well as an art; that it demands the labor of the mind as well as of the hands," a statement he developed to the conclusion that "if not the exclusive duty, it is certainly the particular province of the state governments to superintend and advance the interests of agriculture." Governor Clinton called for the creation of a state board of agriculture which would advance and diffuse agricultural knowledge in cooperation with county agricultural societies.²⁸ Such a state board of agriculture could, by providing an institutionalized structure for

*A resolution of the legislature authorizing publication of these *Transactions* at the expense of the state stipulated that a copy was to go to "each Person who shall be entitled to receive the Laws and Journals of this State" (*Transactions of the Society Instituted in the State of New York for the Promotion of Agriculture, Arts, and Manufactures*, 1794, p. ii—hereafter referred to as *Trans. of the Society*).

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the continuing development of leadership, overcome a basic weakness of the old society.

The legislature appropriated \$10,000 a year to implement the Governor's plan, part to be used for an annual publication, part to be allocated to county agricultural societies for awarding premiums to outstanding farm produce under the same conditions that were later in effect for the New York State Agricultural Society. The knowledge gained from the statements accompanying the award-winning products was to be extended to others through the annual publication of the State Board of Agriculture. The membership of the board was composed of delegates elected by county societies, the officers of which were required to be "practical farmers."²⁹

The State Board of Agriculture began with several pronounced assets: it enjoyed the support of Governor Clinton, and its president, Stephen Van Rensselaer, was a man of vast enthusiasm and ability. Several members of the board were able agricultural writers. This small group of educators planned well but, confronted with conditions far beyond their power to change, were prevented from reaching their goals. According to Elkanah Watson:

In every stage of the six years of experiment, the opposition to the law increased, and finally it was permitted to expire, by its own limitation [in 1825]. This opposition became outrageous, even with some farmers, members of the legislature; as though the fate of the state was implicated in the expenditure of ten thousand dollars a year, to promote its vital interests . . . This opposition had its most rancorous incitement by involving the system in the destructive and poisonous vortex of party politics, with which it is in no wise connected. Candour and truth, also, impel me to admit, that many of our counties had just cause for disgust and opposition, owing to the scandalous frauds and meanness committed by many base individuals in reference to the distribution of premiums; thus perverting the spirit, and magnanimous views, of the patriotic legislature of 1819; who were impelled, by the novelty of the subject, to take a leap in the dark—treading untrodden ground.³⁰

In 1825 a joint committee on agriculture of the Senate and Assembly conducted a post-mortem examination of this first attempt to organize agricultural improvement on a state-wide basis. After noting that no effort was made to enforce the provisions of the law

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requiring a statement of information prior to payment of premiums, the committee concluded that the law was unenforceable. Their report suggests that the law was a compromise between what the advocates of agricultural reform desired and what the people of the state would accept. The system desired by the former revolved around a department of agriculture established in the state government with a salaried officer in charge; the system that emerged from the legislation was centered in a board of delegates serving gratuitously for an indefinite term and without the means of enforcing the provisions of the law in the counties of the state. The committee recommended, on the basis of the six-year "experiment," the immediate establishment of a department of agriculture with the possibility in the future of creating "an experimental farm in connection with an agricultural seminary," a distant goal which the committee recognized "public sentiment is not yet sufficiently matured to embrace."⁸¹

Yet all was not in vain. For six years the Board of Agriculture served as a medium for the collection and publication of ideas. The three volumes which the board prepared are landmarks in the development of agricultural education in New York State and indicate, perhaps as well as anything, the vast gulf between the advocates of agricultural education and the constituency which they hoped to benefit. The first volume projects a survey of existing agricultural practices, including the physical and social environment in which these practices occurred, and contains four schedules for the collection of information in specified categories.⁸² Completion of these schedules depended on people in the various counties who had both time and energy as well as sufficient appreciation of the survey concept to make intelligible replies. Much of New York State was still frontier in 1820. It was difficult for pioneers to appreciate the relevance of survey schedules when busy struggling with tree roots too green to admit the plowshare.* The advancement of agricultural science by the survey technique awaited the passing of frontier conditions.

An outcome related to the activities of the Board of Agriculture, in

*It is reported that as late as 1842 only two-fifths of the land in Genesee County had been cleared (Neil A. McNall, *An Agricultural History of the Genesee Valley* [Philadelphia, 1952], p. 85).

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the long run of greater importance than its *Memoirs*, was the establishment by its president, Stephen Van Rensselaer, of the Rensselaer Institute at Troy, New York. Although intended from its beginning in 1824 as a school which would give instruction in science to those who would, in turn, teach the fundamentals of science in the lower schools of the state, this objective involved a reform of those schools too ambitious to be realized; by about 1850, the Institute had evolved into a school of engineering under the name of Rensselaer Polytechnic Institute. However, a thing once done well is done forever. For nearly twenty years prior to his death in 1842 the Institute provided a place where the pioneer scientist Amos Eaton investigated and instructed others in geology, chemistry, botany, and zoology. A number of those who studied there as students or colleagues of Professor Eaton later made significant contributions in New York and elsewhere to the sciences related to agriculture. Among them were entomologist Asa Fitch, geologist James Hall, and Ebenezer Emmons, an investigator with interests so broad as to preclude classification.³³

Legislation which was practically identical to that of 1819 was enacted in 1841, but with one important difference. Instead of constituting an administrative committee dependent on the uncertainty of authority delegated under a variety of local circumstances, the New York State Agricultural Society was made responsible for the administration of the law. By placing responsibility for agricultural improvement in the hands of this organization, the state took a small step forward, for administrative responsibility was fixed and provision was made for continuity.³⁴ On the other hand, this assignment of responsibility with the payment of a small subsidy was short of what the more farsseeing agricultural educators had desired twenty years before.

Prior to 1850 the program pursued by the New York State Agricultural Society to increase and diffuse agricultural knowledge was not noticeably more effective than the work of the Board of Agriculture. The agricultural fair as a medium for the improvement of agriculture in the state has already been discussed. A state-wide survey of agricultural practices was attempted and, as in the 1820's, the attempt ended in failure when only twelve counties complied with the corresponding secretary's request for reports on local

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agricultural conditions.³⁵ It was by providing a platform for the exercise of individual leadership in the improvement of agriculture that the New York State Agricultural Society earned our lasting gratitude.

In the 1850's and 1860's those who made the greatest contribution to the improvement of agriculture were usually not farmers earning their living from the land but men, such as Robert Livingston in an earlier day, whose farming was financed by wealth obtained in other connections. Such was true of John Delafield. Born in 1786, Delafield was a student at Columbia when Samuel L. Mitchill was a member of the faculty. He entered business with his father after graduating in 1802 and later became a banker in London and New York, but throughout these years he maintained an interest in the application of science to agriculture. In the middle 1830's he worked for the passage of an act to incorporate the New York State Agricultural School, in which he was named a commissioner to sell stock for the institution. Although the act was passed in May, 1836, insufficient stock was sold to establish the school. In 1842 Delafield moved to a farm near Geneva in Seneca County, where John Johnston was his neighbor. Soon he became an enthusiastic supporter of tile drainage and in 1848 imported the first tilemaking machine into the United States. In 1850 he made a classic survey of the agricultural resources and farm management practices of Seneca County, which he regarded as a base line with which later data could be compared.* The following year Delafield was elected to the presidency of the New York State Agricultural Society.

New York's need for an agricultural college was the subject of his presidential address, delivered in January, 1852. After noting that Great Britain had seventy agricultural schools and France seventy-five, Delafield observed that the experience of foreign countries indicated that such schools were not efficient without the support of government. The abortive attempts to establish such schools in the

*Liberty Hyde Bailey wrote in 1912 that Delafield's survey "may serve as a text at the present day." A biographic sketch of Delafield and the entire act of 1836 may be found in L. H. Bailey, ed., *Cyclopedia of American Agriculture*, IV (N.Y., 1912), 389-393. See also *Transactions of the New York State Agricultural Society*, 1850, pp. 350-616 (hereafter referred to as *Trans.*).

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United States he attributed to lack of adequate financing.³⁶ Delafield must have been well aware that the likelihood of securing state support for an agricultural college in New York State was slight. Six years previously the Assembly Committee on Agriculture had rejected a petition for state aid for an experimental farm and agricultural college on the basis that the state had never given funds unless the institution in question had first procured funds from other sources and, in any case, the state was already doing as much for agriculture "as can reasonably be asked of her."³⁷ Delafield had no choice but to rely on private sources. An act similar to that of 1836 passed the legislature in 1853, and soon thereafter Delafield's farm, Oaklands, was chosen as the site for the new institution. Unfortunately, Delafield was not to realize his hopes. His sudden death in October, 1853, resulted in the temporary abandonment of the enterprise.

Comparable in importance to Delafield's contributions to the improvement of New York agriculture was the work of John Pitkin Norton, appointed professor of agricultural chemistry at Yale in 1846 at the age of twenty-four. This young genius not only strengthened agricultural chemistry as a science but, through a direct style of speaking that avoided scientific jargon, presented to farm people in New York a realistic picture of what chemistry could contribute to the improvement of agriculture. Norton used the written word as skillfully as the spoken; in the late 1840's his writings received wide circulation in the agricultural press. In 1850 he received the \$100 premium from the New York State Agricultural Society for his prize essay, *Elements of Scientific Agriculture*, and one thousand copies of this 132-page essay were printed by the society.³⁸ That year Norton gave a public address during the Seneca County Fair. So great was his popularity that no building in Ovid could contain the audience which gathered to hear him; consequently, he spoke in the public square from a hastily erected platform. His speech that day was a model of sound judgment and has stood the test of time.

In contrast to Liebig, Norton did not assure his audience that the requirements of sound practice were met when the soil had been supplied with those elements which plants removed from it. His view of soil chemistry stressed other substances possessing what he called a "solvent power" — the capacity to make nutrients otherwise insolu-

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ble available to plants. Even those soils chemically sufficient, Norton warned his audience, require correct tillage and drainage to produce an abundant crop. Those farm practices are best, he declared, which are correct in theory and at the same time stand the test of experience.³⁹

Norton was convinced that experimentally oriented institutions should precede schools or colleges giving instruction in agriculture in order that there might be a substantial body of knowledge to teach. It was the research aspect of agricultural education which he was emphasizing at Yale when he died in 1852 at the age of thirty.⁴⁰

His death was an inestimable loss to American agriculture. "No other man," declared William H. Brewer, "has ever done, in so few years, so much for science and for education."⁴¹ Fortunately, the study of science in relation to agriculture at Yale did not end with Norton's death. His successors, notably Samuel W. Johnson, John A. Porter, and William H. Brewer, made Yale the outstanding center for the advancement of agricultural science in the United States throughout the 1860's and 1870's.⁴² It was not by accident that the first agricultural experiment station in the United States established with state aid was located in Connecticut.

Entomology in the 1850's had not progressed to the point of becoming an experimental science. Nevertheless, the importance of the subject was recognized by many progressive farmers. In 1854 Asa Fitch, M.D., was appointed entomologist of the New York State Agricultural Society, at a salary of \$1,000 a year, provided by the legislature. Fitch's reports, published in the *Transactions* of the society, were largely descriptive and of variable accuracy, for he was forced to depend on other observers for much information on the range and behavior of insects. Although a substantial part of his data was taken from sources already in print, he performed a useful service by bringing together observations from scattered and inaccessible publications, some printed in foreign languages. Like Professor Norton, Fitch was anxious to make his work of use to farmers. He classified insects according to the vegetation they infested, avoided technical language, and tried to be critical of existing recommendations for controlling insects considered harmful.

Not every student of New York agriculture shared this willingness to organize information for the use of farm people. A five-volume

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study entitled *Agriculture of New York*, published between 1846 and 1854, is a case in point. Written by Ebenezer Emmons, M.D., and financed by the state, these volumes were more notable for a wealth of undigested information, excellent bindings, and handsome lithographs than for any practical suggestions for the improvement of agriculture. Such publications tended to reinforce the views of farmers already suspicious of knowledge to be found in books.

Although Fitch and a number of his contemporaries approached the application of science to agriculture with a high degree of dedication and enthusiasm, the impact of their efforts on the public imagination was circumscribed by the limited circulation of their writings and their unwillingness or inability to popularize their contributions to agricultural science. After the death of John Delafield there was no effective bridge between agricultural scientists and members of the legislature, in whose hands lay the means for further support of agricultural education. It is one of the oddities of history that the man who took up Delafield's mantle as a promoter of agricultural education was little interested either in science or in agriculture, but his talents as an educator and a promoter were truly remarkable. This person was Rev. Amos Brown, who was at the time of Delafield's death in 1853 principal of Ovid Academy. "I have no doubt whatever in my own mind," wrote Professor William H. Brewer in 1894, "that, but for him, Cornell University would have been a very different affair from what it now is, if indeed, it would have been founded at all, if he had never come to Central New York.*"

*This statement, in a letter to W. T. Hewett dated Dec. 15, 1893, represents the considered judgment of a scholar well qualified to assess the work of Amos Brown. Brewer married Brown's niece and was a member of the faculty at Ovid Academy, the New York State Agricultural College, and (on paper) the People's College before becoming professor of agricultural chemistry at Yale. In a 127-page letter to Hewett dated March 11, 1894, Brewer developed, largely from personal experience, the history of agricultural education in New York from about 1830 to 1870. Therein he recounts Brown's activities and suggests how certain of Brown's personal qualities made possible both brilliant but temporary success and ultimate failure. Correspondence in the William H. Brewer Papers dating from the 1850's supports this analysis. (Brewer Papers, microfilm [hereafter MF]). Unless otherwise indicated, all manuscripts and microfilms are located in the Collection of Regional History and University Archives, Cornell University.

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In the year prior to Delafield's death Brown came from Maine to become principal of the then practically defunct Ovid Academy. Quickly he secured a new faculty and infused the institution with vigor; it soon became, according to Regent Samuel Luckey, the best-organized academy in the state. One of the tenets of Brown's educational philosophy was that a school should serve the needs of the surrounding community. To this end he employed Brewer to give a course on chemistry and its applications. These lectures, delivered in the Seneca County courthouse during the winter months, were well attended. Shortly after Delafield's death Brown conceived the idea of removing the New York State Agricultural College to Ovid and merging it with the Ovid Academy to form an institution strong in both the classics and the sciences. In 1855 he actively promoted this plan in Seneca County. By the end of January, 1857, Brown had raised \$46,000 by subscription to finance the development of the agricultural college after its removal to Ovid. The extent of this sum indicates some measure of the enthusiasm Brown generated, for it was raised locally without recourse to men of wealth. No contribution exceeded \$500. Brown had already approached the state legislature. His strategy there was to circumvent the tradition against public grants to educational institutions by getting a loan of \$40,000, which he assumed would eventually be canceled if the college were successful. He managed his case in the legislature carefully, and in March, 1856, the loan was granted along with transfer of the charter. Thereupon Brown was named to the Board of Trustees and appointed a member of important committees. However, it soon became apparent that a number of Brown's fellow trustees opposed him, and by the end of 1856 this group was in ascendancy. Instead of Brown, Samuel Cheever, a former president of the New York State Agricultural Society, was elected president. Soon thereafter Brown severed his connection with Ovid, to become president of the newly founded People's College at Havana (now Montour Falls) in Schuyler County.⁴³

The development of the New York State Agricultural College at Ovid after 1856 can be stated briefly. The administration of the College under President Cheever was marked by mismanagement. Perhaps because neither he nor the trustees were experienced in educational matters, they concentrated on the college farm and

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buildings. A sum greater than the entire state loan was spent to obtain a site for the College. Nevertheless, the trustees were optimistic, feeling, according to Brewer, that the institution was certain to be successful "merely because it was to be an *agricultural college*." By the beginning of 1859, however, the trustees had determined to rid themselves of their president and, after his resignation that January, they administered the institution for ten months through committees.⁴⁴ During this period the principal task was completion of the college building, a somewhat ambitious structure designed to accommodate 350 students. The College opened on December 5, 1860, with the new president, Major Marsena R. Patrick, heading an able faculty. A three-year course based on sound educational principles was announced along with the declaration that this was not to be a manual labor institution. Instead familiarity with the theory and practice of agriculture was to be achieved through closely relating classroom study to supervised practice in such farm techniques as pruning trees and breaking horses. The over-all charge for each student was to be \$200 a year.⁴⁵ In addition, short winter courses were planned for farmers in the area.⁴⁶ Yet, however promising the faculty and curriculum, the results of mismanagement of college affairs in the past in combination with the uncertainties of the times worked against success.

The College opened deeply in debt. In addition to the loan from the state, \$30,000 was owed to the Mutual Life Insurance Company of New York. The financial situation was so desperate that President Patrick and three other trustees gave \$250 each to support the operation of the College.⁴⁷ On the basis of correspondence the trustees had expected eighty students when the College opened, some of whom were to come from the Southern states. Due to political and economic uncertainties, however, only twenty-seven students actually enrolled, and the number never exceeded forty-five. With the outbreak of the Civil War, Major Patrick was needed in the army. In the spring of 1861, when it had operated less than six months, the College closed, never to reopen.⁴⁸

The People's College, to which Amos Brown went in 1857, like the institution which he left, received its charter from the legislature in 1853. Its original backer was Harrison Howard, a mechanic residing

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at Lockport, New York, who visualized it as a means for training workers in the so-called mechanic arts. In 1851 a plan for the People's College was prepared by Horace Greeley, who had become an enthusiastic supporter after Howard expanded the scope of the College to include agricultural education. The new institution was to be coeducational — a radical concept at the time — and manual labor was to be required of student and teacher alike. Subscriptions came in slowly. It was not until 1856, when Charles Cook offered a farm and a substantial sum of money, that the College was located in Havana. This was a momentous step as this small rural community was a most unlikely place for a college, especially one intended to educate mechanics. The support of Charles Cook, consequent to the location in Havana, did not strengthen the enterprise, because many early supporters abandoned the College after it fell into his hands. Moreover Cook, who appears in retrospect to have used his philanthropy to promote his political and business interests, was slow in making good on his promises of support.⁴⁹ At this point Amos Brown read in a newspaper that Representative Justin S. Morrill of Vermont had introduced a bill in Congress providing a donation of federal land to each state to aid in the establishment of colleges for instruction in agriculture and the mechanic arts. Apparently with no more information than was contained in the newspaper account, Brown set off for Washington to aid the passage of the measure.⁵⁰

As a lobbyist Amos Brown was in his element. Letters which he wrote to Professor Brewer from Washington reveal considerable insight into the operations of Congress. Brown worked indefatigably for the Morrill bill but surmised, quite correctly, that if the measure passed Congress it would be vetoed by President Buchanan. Nonetheless, Brown was optimistic about eventual success, for he felt the bill was in accord with "the demands of the time."⁵¹

Brown's assessment of "the demands of the time" was not based on the widely expressed opinions of farmers and mechanics, inasmuch as these groups were generally apathetic on the subject of agricultural and mechanical colleges. Rather it reflected the conviction of a small number of reformers that Americans were ready to accept a form of higher education open to the industrial classes and meeting their educational needs. There were, in practically every northern and western

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state, men whose interests and activities paralleled those of John Delafield and Amos Brown. Such men founded Michigan Agricultural College in 1855 and Iowa Agricultural College in 1858, in both instances with state support. Before 1860 others had secured authorization from the legislatures of Massachusetts, Maryland, and Pennsylvania for state-supported institutions providing instruction in agriculture.⁵² Unquestionably, the best known of these educational reformers was Professor Jonathan Baldwin Turner of Illinois. It was his speeches, articles, and correspondence, claim his supporters, which suggested to Representative Morrill the possibility of advancing education for the industrial classes through a distribution of federal land.

Turner's plan for an industrial university, published in the *Report of the Commissioner of Patents for the year 1851*, bears examination, for it is similar in its concepts to ideas advanced by Ezra Cornell and, indeed, may have influenced Cornell's thinking. An industrial university, Turner said, should teach "all those studies and sciences, of whatever sort, which tend to throw light upon any art or employment which any student may desire to master; or upon any duty he may be called to perform, or which may tend to secure his moral, civil, social, and industrial perfection, as a man." This university should be open to all classes of students, and the means should be available to those without sufficient money for tuition and board to earn these by labor on the premises. Rewards should be given to the best student laborers, that it may be established in the minds of all around "that *WORK ALONE IS HONORABLE*." The most unusual feature of his plan was the emphasis placed on research and particularly research involving replication. "The professors," he stated, "should conduct, each in his own department, a continued series of *annual experiments*." To illustrate, he suggested a number of experiments in agriculture such as were actually conducted at Cornell some thirty years later. Turner's plan provided the inspiration for a memorial to Congress from the Illinois legislature in 1853 asking assistance in the establishment of industrial universities in each state by an allocation of land from the national domain.*

*Turner's influence on the Morrill Act is examined by Carl Becker in *Cornell University: Founders and the Founding* (Ithaca, 1943), pp. 24-31. Apparently Becker drew his description of Turner's plan from a somewhat misleading secondary source.

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In 1862 the Morrill bill was again introduced in Congress, this time with a provision that land be granted each state at the ratio of 30,000 acres for each senator and representative it had in Congress. Amos Brown was again in Washington to promote its passage. The Morrill Act, signed by President Lincoln in 1862, represented the culmination of many influences. Passage of the act followed the departure of Southern representation from the national capital, for this group had opposed the principle of land distribution. A recent student of the subject, Professor Paul W. Gates, states, "It was the able lobbying of Joseph R. Williams, Freeman G. Gary, Amos Brown, Marshall P. Wilder, James Gowen, and the supporters of five other agricultural colleges, backed by forty-five petitions and memorials, thirteen of them from state legislatures, that won over hesitating members of Congress to the support of the Morrill bill."⁵³ Among this group Amos Brown played a leading, if not, as his supporters claimed, a vital role. Senator Benjamin F. Wade, who introduced the Morrill bill in the Senate, asserted that without the work of Brown the bill would not have passed. "It encountered great opposition in some quarters, on account of its supposed opposition to the 'Homestead Bill'," wrote Senator Wade, "and much also from the mere indifference of members who did not take interest enough in the measure to give it a thorough investigation, more still from several members of the public land states, who feared its passage would conflict with the rapid settlement of their states."⁵⁴

Similar statements were made by three other senators and nine representatives from New York, their purpose obviously being to assist Brown when the New York legislature decided which institutions should benefit from New York's share of the Morrill grant. Representative Morrill said as much in a letter recounting the value of Brown's services. Writing to Representative E. B. Morgan of New York, a trustee of the People's College, Morrill said, "It is due to him and to the institution of which he is the head, whenever a final disposition of the fund shall be made, that his merits shall not go unacknowledged by the State of New York."⁵⁵ Brown's efforts to secure the grant for the People's College were supplemented by those of Charles Cook, who was said to be well versed in the political arts and who was, in 1863, a member of the New York State Senate.

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In May of that year the entire Morrill grant was awarded to the People's College on condition that within three years the institution meet certain requirements including possession of a farm of at least 200 acres free of encumbrance, at least ten competent professors, and buildings capable of housing 250 students.⁵⁶

It soon became evident that these conditions were not being met. Charles Cook, never generous with his adopted institution, suffered a paralytic stroke and thereafter refused to give either additional funds or a clear title to the land which the College occupied.⁵⁷ It was at this point that leadership in the cause of agricultural education in New York was taken up by Cook's fellow senator, Ezra Cornell of Ithaca.

Until he was about twenty-two years old, Cornell lived on a farm. Even after coming to Ithaca in 1828, where he worked as a carpenter and millwright and soon rose to become manager of a plaster and flouring mill, his interest in agriculture continued. In 1840, when thirty-four years old, he helped organize the Tompkins County Agricultural Society and the following year served as marshal of the Tompkins County Fair.⁵⁸ In 1841 and 1842 he received first prize for the best acre of corn in Tompkins County, the yield in 1842 being a very respectable 107½ bushels to the acre.* Cornell was not then a wealthy man; his purchase of the purebred Shorthorn bull "Arab" about 1840 was a considered investment in farm management.⁵⁹ In 1841 he paid the minimum fee of one dollar for membership in the New York State Agricultural Society and in 1843 supplemented his income by becoming one of the seven agents in the United States for the newly established agricultural periodical, the *American Agriculturist*.⁶⁰

The previous year circumstances had led Cornell to become an itinerant plow salesman and later inventor of a plow which was used to bury wires for a trial of Samuel Morse's new telegraph. This led him into the telegraph business, where his mechanical ability and tenacity as a businessman carried him through a speculative maze from which he emerged with a sizable fortune for the time. During

*Cornell met fully the requirement for a statement of the conditions under which the prize crop was produced. He even indicated the moisture content when the corn was weighed and described his method of calculating the yield on the basis of a sample (*Trans.*, 1841, pp. 95-96; 1842, p. 396).

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those years of travel in strange places and association with difficult colleagues, Cornell's faith in scientific agriculture was strengthened, along with his conviction that the best citizen was the man who earned his living directly from the land.⁶¹

In 1846 Cornell advised his son Alonzo not to enter the telegraph business. "I should prefer," he wrote, "that you would choose a rural occupation and become an intelligent scientific [farmer]. The time is not distant when such farmers will be more respected as they will be more useful than Kings or Princes."⁶² In 1855 Cornell looked forward to the time when he could retire from the telegraph business and return to farming, a desire which he achieved in 1857.⁶³ That year Cornell purchased a farm overlooking Ithaca once owned by Simeon DeWitt and named it Forest Park.⁶⁴

Cornell then set about reviving the Tompkins County Agricultural Society, which had fallen to a low estate. Shortly before he assumed the presidency of the organization in 1858, its secretary reported that the activities of its members provided evidence "of a weak vitality and speedy dissolution."⁶⁵ This condition Cornell attributed, in the language of agricultural metaphor, to "the bitter waters of political strife [which] seemed to drown out the crop of harmony and good fellowship requisite for sustaining the interest and dignity of the agricultural cause. Thorough underdrainage," said Cornell with reference to his own administration, "speedily relieved the soil of this corroding influence." That same year Cornell established the Ithaca Farmers' Club which he provided with a reading room over the post office "kept open and warmed daily" for all who chose to visit. A dozen current agricultural periodicals and the principal New York papers were on hand there, almost certainly at Cornell's expense. In 1860, when he was both president and corresponding secretary, the organization met each Friday evening and its library contained 1,500 volumes.⁶⁶ Local farmers' clubs were not unusual at the time. The *Transactions of the New York State Agricultural Society* listed fifty-two town agricultural societies in 1858 and seventy-one in 1860. It is unlikely, however, that many of these were, like the Ithaca Farmers' Club, completely overshadowed by the patronage of their founder.

By 1860 Cornell had built up, largely by purchase, a prize herd

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of Shorthorn and Devon cattle. In 1858 he took first prize at the state fair for his Shorthorn bull and in 1860 for his Devon bull.⁶⁷ Yet it is doubtful if these and his other prize animals were of much consequence in improving Tompkins County agriculture. Even if they wished to do so, few farmers were able to follow Cornell's example. Moreover, it is probable that many were offended by Cornell's exhortations delivered through the pages of the *Ithaca Journal and Advertiser* urging them to improve their methods of farming. These letters, which appeared frequently after 1858, were paternal, if not sometimes patronizing in tone. Yet, withal, Cornell was a strong booster of Ithaca and Tompkins County; his patent dedication to this cause must have tempered much antagonism aroused by his great wealth, vast enthusiasm, and trenchant wit.*

Cynics who noticed how frequently Cornell's letters appeared in the local press during 1859 and 1860 may have guessed that he was preparing to run for public office. In September of 1860 alone four letters appeared describing his journey to Quebec, and each occupied nearly two full columns of the four-page paper. That November, Cornell was elected to the New York State Assembly, running well ahead of the rest of the Republican ticket.⁶⁸ He was reelected to the Assembly the following year, then represented Tompkins County four years in the state Senate.

Cornell was a keen observer of agricultural affairs. If, in the 1860's, his wealth from Western Union made him something of a "gentleman farmer," his earlier years had given him substantial practical experience. He kept careful records and, with the exception of his purebred animals, tried to make his farm operations pay their way—a difficult goal for one constantly trying new ideas. He was fascinated by statistics and was familiar with the idea of using a randomly selected, or as he said, "promiscuously selected," sample as a model of the universe from which it came. Disgusted with the "gross errors" in the reports on Tompkins County agriculture made by the enumerators for the United States census of 1860, Cornell directed his own census

*Cornell did not conceal his contempt for those not dedicated to the improvement of society; they were, he said, "mere drones in the great social hive" (*Trans.*, 1859, p. 555; Philip Dorf, *The Builder: A Biography of Ezra Cornell* [New York, 1952], pp. 207-217).

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of the county by having competent members of the county agricultural society canvass their school districts. The results of this canvass, published in the *Transactions* for 1860, presented a more favorable picture of Tompkins County agriculture than did the data which appeared in the census of 1860. The following year Cornell used these data, after making allowance for statistical error, to demonstrate that farmers in the county were operating at a profit. He found additional confirmation by examining county records; many farmers, he discovered, were investing their surplus in western land mortgages. In 1862 Cornell secured legislation for the collection of agricultural statistics throughout the state in the manner of his Tompkins County census.⁶⁹ The legislation proved unworkable, however, for Cornell's system demanded a degree of skill and motivation not present in all counties.

Early in his farming experience Cornell noted the relationship between the price of corn and the price of hogs, and in 1862 he drew some equally sage conclusions on the subject of cattle feed lots. Bringing food to cattle rather than allowing them to roam over pastures seemed to Cornell highly advantageous, for expensive fencing was avoided, manure was better preserved, and animals were enabled to make more efficient use of forage. "I do not urge an indiscriminate destruction of fences, or a rash and imperfect adoption of the practice," stated Cornell, who then appreciated how readily farmers dismissed even minor reforms. "What I advise is, that farmers should reflect upon this subject, and wisely prepare themselves for a change that must come sooner or later."⁷⁰

As president of the New York State Agricultural Society in 1862, Cornell represented the organization at an exhibition of the Royal Agricultural Society in London and, while in England, visited the experimental farm of Lawes and Gilbert at Rothamsted. In addition, he made extensive observations of British agriculture. A good reporter, Cornell arose at five one morning to record some of these observations in a "short letter" for the readers of the *Country Gentleman*.*

*Cornell's "short letter" occupied two pages when reduced to the small print used in the *Transactions*. His report on the Royal Agricultural Society exhibition and his visit to Rothamsted required thirty printed pages (*Trans.*, 1862, pp. 115-117; 1863, pp. 673-703).

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Traditions connected with the presidency of the society made it almost mandatory for the incumbent to aid the New York State Agricultural College. The five presidents prior to Cornell had been active officers of the College, and he was undoubtedly expected to evince a similar interest. In his presidential address to the society, delivered in February, 1863, he noted the passage of the Morrill Act and suggested, by implication, that greater state aid to agriculture would be a sound social investment. Countering the charge that farmers were "sturdy beggars" adept at raiding the state treasury, Cornell pointed out that state aid to agriculture over the past twenty-two years had averaged only \$7,278 per annum, exclusive of printing the *Transactions*.^{*} In 1863 Cornell did no more than state a position; his time was occupied with the construction of the substantial library building which he gave to the citizens of Ithaca.⁷¹

As the 1864 session of the legislature opened, it was evident that the supporters of the People's College would be unable to meet the conditions set for receipt of the Morrill land grant, and on January 12, Senator Cornell introduced a bill to divide the proceeds of the Morrill Act between the People's College and the New York State Agricultural College. This measure was opposed by Andrew Dickson White, then a freshman senator from Syracuse, whose chairmanship of the committee on literature gave him jurisdiction over matters concerning education. It was Senator White's position that the entire Morrill grant should be kept together in order to provide adequate support for a single first-rate institution. By parliamentary maneuver White prevented Cornell's bill from reaching a vote during the session.⁷²

That September, Cornell took a step consistent with his interests in the improvement of agriculture and the development of Ithaca. At a meeting of the trustees of the Agricultural College, to which Senator White was invited, Cornell offered a farm of 300 acres and a donation of \$300,000 if the trustees would transfer the location of the College to Ithaca and the state would endow it with an annual income of \$30,000, to be derived from the Morrill land grant. To the trustees the

^{*}Cornell found that about one-third of the \$8,000 appropriated annually for the state and county agricultural societies remained in the state treasury, since many counties lacked societies or failed to match the state appropriation with local funds (*Trans.*, 1862, pp. 22-23).

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offer represented release from financial embarrassment, but to Senator White it represented division of the land grant. Again he insisted that the entire Morrill grant should go to a single institution. He remembered stating, however (whether at that time or later is not entirely clear), "that if Mr. Cornell and his friends would ask for the *whole* grant—keeping it together, and adding his three hundred thousand dollars, as proposed—I would support such a bill with all my might."⁷³

Fate, it is commonly said, makes strange companions, but rarely does it bring together two such unlikely colleagues as Ezra Cornell and Andrew D. White. White was then thirty-one years old, the youngest member of the Senate; Cornell at fifty-seven was one of the oldest. White came from a wealthy family whose sound political connections made him eligible for the chairmanship of the committee which dealt with education; of Cornell's larger fortune no part was inherited and his chairmanship of the committee on agriculture was earned by service to the cause of agricultural improvement and the advancement of the Republican party. White had enjoyed the best education available at the time; Cornell was largely self-educated. Yet these obvious differences were less important than their agreement on a fundamental issue—the need for reform of higher education in the United States. Although they differed on the details by which the concept would be transformed into an operating educational program, they shared the belief that higher education must contribute to the further development of science and technology.

White had long been deeply interested in education. Before entering the Senate, he spent five years teaching history at the University of Michigan, where, as he relates in his *Autobiography*, he was impressed with the educational concepts of its president, Henry Philip Tappan. There he developed a plan for a university in his home state which would "afford an asylum for *Science*" and be "worthy of our land and time." Only funds were lacking. White was ready to contribute his own substantial fortune, but for the broad scheme he had conceived this was clearly insufficient. Writing to Gerrit Smith in 1862, White offered his "fortune and life" if Smith would join in developing his projected university.* This Smith was unable to do,

*Sept. 1 (Andrew D. White Papers). White made no provision for agricultural education in his projected university.

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and White's plans remained dreams. Then, in 1864, Ezra Cornell and the Morrill Act offered White another opportunity to establish his university.

The Morrill Act was in many ways an ideal instrument for Andrew D. White. The type of higher education he advocated was more expensive than the textbook instruction it would replace; federal aid provided by the act would help secure the equipment and support the maintenance of this new education. The Morrill Act provided federal aid without federal control. Each state was free to allocate the benefits of the grant to whatever institutions it wished, subject only to the requirement that provision be made for instruction in agriculture and the mechanic arts. This provision, later a source of considerable controversy, stated that each state must devote the funds derived from the act

to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.⁷⁴

Acting under this provision, the legislatures of some states, and of this group Michigan and Iowa are outstanding examples, awarded the benefits of the land grant to state institutions which were primarily agricultural colleges; other states, such as Wisconsin and Connecticut, assigned the land-grant income to institutions having the scope of universities. In Wisconsin a state university was the recipient; in Connecticut the grant was assigned to privately controlled Yale College.

By the time the 1865 session of the legislature opened, White had persuaded Cornell to subordinate his interest in agricultural education to the founding in Ithaca of the university White had so long desired. Before them lay the task of persuading the legislature to assign New York's share of the land grant to the embryonic Cornell University. This action by the legislature would deprive the People's College of what it had already won, and this Charles Cook, no longer a senator

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but still politically powerful, was unwilling to permit. In opening the issue of reallocating the land grant, Cornell and his associates faced the possibility that a number of small colleges—most of them sectarian—would secure a portion of its benefits, a situation made more likely by the frustrations of those who still supported the People's College and the New York State Agricultural College. To secure the result he desired, Cornell hired Amos Brown to promote his bill in the lobbies of the legislature. Brown was willing to do this, for he had long since concluded that the People's College would not materialize and he apparently hoped to get a position on the faculty of the new university. Cornell later stated that Brown had rendered him great services, which he paid for in accordance with a definite understanding. Among these services was the suggestion, adopted by Cornell, to weaken the opposition generated by supporters of the People's College and the New York State Agricultural College by appointing some of their more influential trustees to the board of the new institution. There is some evidence that it was Brown who made the arrangement whereby Cornell paid Genesee College \$25,000 to establish a chair of agricultural chemistry, in return for which its supporters withdrew their demand for a share of the land grant. By these and other measures a small group of men, dedicated to a concept of higher education calculated to meet the needs of the time, obtained the opportunity to implement their convictions.* The bill incorporating Cornell University as New York's land-grant institution was signed by the Governor on April 27, 1865.

It is doubtful whether many members of the legislature recognized the issues at stake when they voted for that legislation, for by it they at once placed agricultural education in a privately controlled institu-

*The bargain with Genesee College and other steps taken to secure the incorporation of Cornell University are described in Becker, *Cornell University*, pp. 90-107, and Andrew D. White, *Autobiography of Andrew Dickson White* (New York, 1905), I, 296-334. Brewer, who knew both Cornell and Brown, indicated the part Brown played in getting the Cornell charter in his letter to W. T. Hewett, March 11, 1894, Brewer Papers, MF. When Brown later submitted a bill to Cornell University for services rendered in securing passage of the Morrill Act, a group of trustees attempted, unsuccessfully, to obtain for him a position on the faculty (*Cornell University Trustee Proceedings*, Feb. 13, 1867, p. 12 [hereafter referred to as *Trustee Proc.*]).

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tion and in a university context. In shifting to Cornell University the responsibility for agricultural education that Governor Clinton had insisted was the proper province of the state, the legislature acted consistently with its own traditions but also placed a privately controlled institution in a highly difficult position. In making Cornell University its land-grant institution, the state assumed a certain responsibility toward it; by accepting the land grant, the University assumed a certain responsibility toward the state. Beyond the few specific requirements stated in the Charter the relationship between New York State and Cornell University has never been clarified; rather it rests on the administrative decisions of those representing the interests of the state and the University and on laws and court decisions concerning immediate and pressing situations. The absence of a clearly defined framework has posed both danger and opportunity for education at Cornell, for in this situation much has depended on the personal qualities of those occupying key roles in both state and university government.

In this connection two provisions of the Charter have acquired a special significance. The provision which made available 512 free scholarships grew out of the idea that the University should have close contact with the secondary schools of the state. This number, later increased to 600, required a substantial financial outlay by the University and in later years provided the basis for a university claim for state aid.* The provision for ex-officio trustees broadened the University's base of support but left power in the hands of those trustees who took an active and continuing interest in its affairs. Farmers, the largest occupational group in the state, were represented on the Board of Trustees by the president of the New York State Agricultural Society; the public at large by four state officials, the governor and lieutenant-governor, the speaker of the assembly, and the superintendent of public instruction.⁷⁵

The legislature's work completed, an early task facing the Board of Trustees was to outline the new education in terms of courses and professors. A committee on organization was appointed, but the

*Fortunately for the financial position of the University, only a small number of these scholarships were filled during the early years by the county officials responsible for selecting candidates.

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burden of its work fell to its chairman, Andrew D. White. The philosophy underlying his report, presented in October, 1866, was that the essence of sound education lay in exposure to a broad variety of courses taught by able professors. Students concentrating on technical study such as agriculture and the mechanic arts (or, to use the modern term, "engineering") were expected to take other courses designed to liberalize their thinking by placing their technical skills and information in a larger educational context. Much emphasis was placed on substituting student electives for the rigidity of the fixed curriculum, thereby enabling each student to develop an educational program to meet his individual needs.⁷⁶

While White gave his attention to organizing the educational program, Ezra Cornell supervised construction of the buildings and organized the University's finances. Much effort was devoted to a plan he had originated, destined to be vastly successful, for "locating" western land with New York's land scrip, holding it for a rise in value, and then placing the proceeds in an endowment fund for the University.⁷⁷ Another task facing Cornell in his capacity as chairman of the Board of Trustees was the selection of a suitable candidate for president of the new institution. In spite of the surprise he reports having felt, Andrew D. White did not refuse the position.⁷⁸ On his shoulders fell the burden of implementing his report on organization.

The Beginning, 1868-1880

JUDGED by modern standards, conditions were primitive at the new university as it opened in September of 1868. The physical plant consisted of two permanent structures, Cascadilla Hall and University Building (later renamed Morrill Hall). These two buildings, which served as classrooms and dormitories for both faculty and students, are still in service, but today the chill of winter is tempered by central heating instead of numerous stoves fed by bucket-transported coal. A supplementary wooden building, a drafty structure, to be used as a chemistry laboratory was not yet completed. For the teaching of agriculture, the University utilized Ezra Cornell's barns, as the new institution occupied part of his cow pasture. The campus, with rough surface as yet untouched by grading, was divided by two streams; the one, turbulent Cascadilla Creek, had been only recently bridged, while the slippery bank of the other, located near the present site of Olin Hall, posed a challenge to student and professor alike. The view toward Ithaca and the lake revealed an eroded hillside, piles of waste rock from quarries near the present men's dormitories, and rambling rail fences.¹

The supply of water and removal of waste—matters we today take for granted—were the responsibility of each member of the university community. Cascadilla Hall at least had the advantage of water, supplied by hydraulic ram, which probably was drawn from the creek above the point where it could be contaminated by the slops dumped by students and staff alongside the building. A month after the University opened, the privies were still not completed at Cascadilla, and toward the end of October students living in University Building still had to carry their water nearly a quarter of a mile.²

Living conditions at the University, however, were comparable to those of most homes at the time. Much of the physical hardship of life at Cornell resulted from the efforts of getting there, for Ithaca

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was remote from any center of population and the University was hard to reach from Ithaca. From its wind-swept location the University was connected by a dirt road to the village then only beginning to extend up East Hill.

Until the temporary chemistry laboratory was completed in the spring of 1869, all space not already allocated to dormitories was utilized for classrooms. "The department of Geology was crowded into a room next to the coal cellar," recalled a member of the original faculty. "Chemistry performed its analyses under similar circumstances, while dissections and demonstrations in Natural History were conducted next to the furnace."³

Yet Cornell had a tremendous advantage in its very newness. For development of an invigorating sense of working together with faith in the future, there is no substitute for starting with new ideas and new buildings. In the excitement of implementing fresh educational concepts, Cornellians looked beyond their harsh physical environment to a brighter future. Secular at a time when most colleges were sectarian, emphasizing the study of science when the classics still predominated, resisting the educational authoritarianism of a fixed curriculum by permitting the student to elect subjects, in these and other ways the University was building from the ground up. The attacks of the traditionally minded, and these attacks were extensive and frequently vicious, served to bind together those who had already chosen Cornell University and to advertise its existence to teachers and students who were seeking something different in college education. It was the denunciations of ministers which brought Cornell University to the attention of John H. Comstock and Simon H. Gage, later to stand among its most illustrious professors.⁴

In selecting a faculty, President White was forced by limited finances to rely on young men of promise. Some, such as James Law and Burt Green Wilder, had already established reputations; President White's good judgment was proved by the forty years of effective service each gave to the University. To supplement the young faculty White brought to Cornell a group of illustrious teachers as nonresident lecturers. Among these were Louis Agassiz, James Russell Lowell, Goldwin Smith, and John Stanton Gould. The work of these men stimulated the students and resident faculty, and their presence,

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usually at substantial financial sacrifice, was an expression of their confidence in the new university.⁵

In selecting a faculty, as in almost every other area of university administration, the subject of agriculture posed special difficulties. A new subject in college curriculums, it was beset with the usual problems attending the introduction of new subjects, compounded in this case by antagonism toward technical studies both within and without the University. Its advocates disagreed over the objectives to be pursued, and its critics questioned whether it properly belonged in a university at all. There is little reason to believe that President White was interested in agricultural education; indeed, much evidence indicates the opposite. It had no place in his ideal university in 1862 and barely received passing mention in his report on organization. Nevertheless, White could not exclude this field of study from the University's curriculum, since it was Ezra Cornell's special interest and one of the few requirements stated in the Morrill Act for receipt of the land grant. Clearly, this was not a textbook subject; the books published before 1868 on agriculture as conducted in the United States did not collectively encompass the information on agricultural science and practice which then existed. The proper techniques and content of instruction in agriculture were an open question.⁶ But if agriculture itself was so difficult to establish in the curriculum, it was generally agreed that other subjects were of particular relevance, especially botany, agricultural chemistry, and veterinary medicine. It was in these areas that White began the selection of his faculty of agriculture.

A natural place to turn was the existing agricultural colleges, which had recently gone through the same difficult process of accumulating a faculty. From the State College of Pennsylvania, White obtained ✓ George Chapman Caldwell as professor of agricultural chemistry, a fortunate opportunity for both Caldwell and Cornell University. Shortly before his correspondence with White, Caldwell recorded his dissatisfaction with his situation in Pennsylvania: "Nearly two years since an entry has been made in my diary and here I still am at the Agricultural College of Pennsylvania—not because I am wholly contented, but that there seems no other place for me and I cannot endure to be without work."⁷ Caldwell was educated at Harvard and

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Göttingen, a background which must have impressed White, who much admired things Germanic. Certainly, he soon had White's confidence, for hardly had Caldwell arrived in Ithaca when the President sent him off to Michigan Agricultural College to hire a professor of botany and a professor of agriculture.⁸

At Michigan, Caldwell looked over the work of Manly Miles and reported that he was far and away the best available candidate for professor of agriculture. Caldwell offered Miles the maximum salary and promised cooperation in any experiments he might conduct at Cornell—correcting a situation which Caldwell said Miles did not enjoy at Michigan—but Miles proved unwilling to leave, whatever the inducements. Caldwell did secure Albert N. Prentiss as professor of botany, again offering the maximum salary of \$2,250 to a very young man because of another offer Prentiss had received from the recently organized Iowa Agricultural College.⁹

Some three months before this, White had embarked for Europe with the aim of persuading James Law of the British Royal Veterinary College to join the Cornell faculty, but in June White was pessimistic about getting him. Writing to Cornell, he said, "The rock on which we shall split will probably be the salary—still I will screw my courage up and do everything I can." A month later White reported success; he had secured Law on "exceedingly favorable terms," \$2,250 until his outside income reached \$500, then \$2,000 thereafter.¹⁰ This arrangement was exceptional, for professors were generally expected to devote their full services to the University.

The ease with which these men were secured and their subsequent success at Cornell contrasts sharply with the experience of those who occupied the professorship of agriculture. When Professor Miles refused the position, White returned to his original choice, Joseph Harris, an agricultural journalist of Rochester, New York. Harris had gained some prominence for his articles in the *Genesee Farmer*, which were based on his own farm operations. The series "Walks and Talks on the Farm" were interesting accounts oriented toward farm management.¹¹ Harris was a rare man in having established a reputation for making farming pay and being able to communicate his management methods to others. There was every reason to consider him an ideal person to develop agricultural education at Cornell.

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The relationship between Harris and Cornell University was confused from the beginning and developed into something of a comedy of errors which illustrated, if nothing else, the scarcity of qualified professors of agriculture. Ezra Cornell and White first approached Harris at the New York State Fair at Buffalo in the fall of 1867 and found him receptive to the appointment. Writing to Harris in October of that year, White said: "Your letter has greatly gratified me . . . You shall be appointed. I believe you to be the best man for the place—and know of no other so well fitted for it." White then revealed something of his lack of understanding of agricultural education by indicating how simple he considered the job to be. "Tact—indeed will be demanded but not very much 'management' in your department, I think." Confident that he had located his professor of agriculture, White turned to completing the faculty.¹²

When the trustees made the appointment on February 13, 1868, Harris, much to White's dismay, accepted a much higher offer from the Orange Judd Company to prepare his "Walks and Talks on the Farm" for the *American Agriculturist*. Quickly, White compiled several pages of reasons why Harris should reconsider, concluding with:

But if you cannot or do not wish to dispose of your farm and commit yourself *irrevocably* to our work, can you not, *ought* you not, to give us *one year*. It would be of great value to us . . .

Cannot you make this small sacrifice to so great a work. The Cornell University is to be a success, a *great* success, and I would most earnestly ask that you relieve us from this unexpected embarrassment.

I am confident that you will never regret it. It seems to us that pleasure, interest, and duty combine to draw you to this place.¹³

Spring was coming, forcing the commencement of farm operations at the University. With no resident professor of agriculture available, White and Cornell accepted Harris' counter offer to manage the work in agricultural education through occasional visits to the University.* The unsatisfactory nature of this arrangement was soon all too evident, and by August, White was again begging Harris to reside in

*This arrangement is described in a letter from Harris to White, c. Sept., 1868. There is no reason to doubt that White approved it, for parts of this long letter claiming payment of salary are supported by other evidence. The trustees rejected Harris' claim for compensation.

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Ithaca or, if he could not do that, to help persuade Professor Miles of Michigan to accept the position. Two months passed, and the University opened without a resident professor of agriculture. In late October, White again wrote Harris, desperately asking "advice as to men for the place." Apparently, competent professors of agriculture were as scarce as in 1849, when Andrew Jackson Downing wrote, "They must be sought for and carried off by violence, and made to understand that the State has a noble work for them, which she means to have rightly and well done."¹⁴

The University was little more successful in attracting students to its College of Agriculture. The *First General Announcement* indicates that White and his colleagues were well aware that securing students would be difficult. To dispel the popular belief that farming, by its very nature, would not pay, the *Announcement* stated that the work in agriculture would be "tried by an economic test"; Professor Harris was described as one who had "succeeded in applying science to agriculture in a common sense way and in *making it pay*." At the same time it was stated that "special attention will be given to the education of young men, ambitious to become instructors and professors in the numerous agricultural colleges now rising in nearly all the states of the Union." Finally, courses for two and three years were offered, in addition to the four-year course. The "agricultural community," it was believed, would regard with special interest these shorter courses containing the more purely agricultural work.¹⁵

Of the 412 students registered during that first year, only thirty were in agriculture. According to the *Cornell Era*, "a very large share" of these were city boys who "know nothing of farming and have romantic notions of what can be accomplished in farming." A writer in that magazine pointed to the unprofitable nature of farming as the principal reason for the small number of agricultural students. This was undoubtedly an important factor, for many students endured poverty at Cornell only in order to escape further contact with it. A month after the University opened, the treasurer proposed to deduct fifty cents a week from the board of students who would use water instead of tea or coffee, and a brief examination of his account book shows similar examples of student need.¹⁶ Such hardship was made endurable by promises of a brighter future, but farming did

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not seem to present this opportunity. The rare agricultural student who worked his way through Cornell was interested in improving agriculture by instructing others rather than by farming himself.

The agricultural press discouraged farmers from sending their sons to Cornell. Luther Tucker, distinguished among such editors for supporting the development of agricultural colleges, criticized Cornell for relegating agricultural education to a minor place in the curriculum.¹⁷ More typical was a statement in the *American Agriculturist* the year before the University opened:

The few agricultural schools that have been started have not done much to dispel the popular prejudice against agricultural education. The abiding conviction of farmers is, that education beyond the rudiments is a dangerous thing for a farmer's son, and if he attempts to master the science of his calling, he is pretty sure to have a call to some other business soon after he opens his books. The great majority do not believe a young farmer can have any education, to fit him for his business, half as good as that he can get upon the farm.¹⁸

This glorification of the farm as the place to learn farming made little sense to Professor Law. He knew from his European experience that agriculture could be profitable if correctly practiced. Failure on the good land in New York he blamed on such practices as lack of crop rotation, waste of manure, inbreeding of cattle, feeding of poor hay and cold water, and milking but twice a day.¹⁹ Yet it is doubtful if a student who accepted Law's indictment could have seen better practices on Cornell University's farm.

This farm was intended to supply the principal articles of food used by the students, but by June of 1869 it had "shown no income beyond the sale of a few raccoon skins and the milk which is furnished to the boarding house."²⁰ A sorry group of animals had replaced Ezra Cornell's prize cattle; the poorest cow yielded at its best only twenty-six pounds a week, or less than a quart at each milking. The farm manager added: "Since the 15th of July no grain has been fed. Seven of the ten cows have had foot rot." The foot rot, he thought, would be corrected soon, "as we are about to have stables with a dry floor."²¹ The following summer Vice-President William C. Russel regarded the farm as "the most dangerous point in our arrangements:"

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Thousands of Canada thistles with seed vessels just bursting and ready to send the seed of future thistles into our neighbors' and our own fields far and near; fields mown in a slovenly manner, the hay filling all the fence corners; fields which had been cleared of their crops of weeds because no grain had been planted on them; pastures without fences; in fine a farm without manure, without fences, without proper culture, a sample of unthrift, improvidence and waste.

I have seen a farm which, if any smart farmer who could write well should describe it to the public, would inflict on us a disgrace we could hardly throw off in many years . . .

For Heaven's sake let us do something.²²

The absence of effective supervision was all too evident, but by the summer of 1870 the University had still not located a professor of agriculture. To fill the gap, Lewis Spaulding had been made assistant professor of agriculture and director of farm in February, 1869. Spaulding had studied history under White at the University of Michigan, and, in 1867, White thought of him as "really a noble fellow," who could help Professor Harris as "sort of Asst. Prof.—half farmer—half professor."²³ Whatever Spaulding's merits as an agricultural educator, he was soon incapacitated by ill health and was succeeded in October, 1870, by Allen B. Benham as director of farm. Benham, a farmer from Dryden, had described himself to Ezra Cornell as a practical man who had made money and enriched the soil, "although much of my life has been spent in groveling darkness and ignorance of a scientific knowledge."²⁴ Actually Benham was being unduly modest. An unusually competent farmer, he had been president of the Tompkins County Agricultural Society and in 1860 and 1863 received the \$50 premium from the State Agricultural Society for the excellence of his farm management. Unfortunately, he did not manage the university farm with the same efficiency, perhaps because he lacked a personal interest in its development and the guidance of a resident professor. The previous winter George Geddes had been elected professor of agriculture but had declined the position on the grounds of age and ill health, a declination that was probably fortunate for the University in spite of Geddes' recognized abilities as a farmer and writer on agricultural subjects. John Stanton Gould, trustee of the University and White's advisor in

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selecting the faculty, praised Geddes as an agriculturist but warned of his inability to get along with others. This turned out to be good advice. Geddes' defense of agricultural education at Cornell, prepared in 1869, was countered in 1872 by what Gould called "a furious diatribe" against it.²⁵

Benham's effectiveness as director of the farm was also limited by conditions beyond his control which had existed since the University opened. Among them was the plague of student labor, a consequence of Ezra Cornell's promise to provide work for those students who otherwise would not be able to attend college. The total wages paid students for work on the farm averaged over \$200 a month during 1870-1871, which at existing wage rates amounted to some two thousand hours of labor. Many of the boys had no knowledge of farm work and were very inefficient. During those first three years, when the farm absorbed about one-fourth of the student labor at the University, the farm manager must have spent much of his time keeping the boys out of trouble. A resolution of the trustees, passed at the request of the President, reserved farm labor for students, which suggests that at some time in the past the farm manager had rid himself of some unwanted help by hiring outside workers.²⁶ At a time when the virtues of manual labor were widely proclaimed, Ezra Cornell could proudly declare that one state, at least, "has a farm of 100 acres that . . . is worked by students entirely."²⁷

There is another side to the matter of student labor. David Starr Jordan, later President of Stanford University but once a scholarship student who worked on ditching and grading around the foundations of McGraw Hall, recalled that "the report that a student without money could pay his way soon brought to the new institution very many extremely able men."²⁸ Future entomologist John Henry Comstock husked corn near the present site of Baker Laboratory for three cents a bushel. Future horticulturist William R. Lazenby, while working on the university farm three hours a day plus six hours on Saturday, earned the Founders' Prize of fifty dollars for "the student in Agriculture working on the farm, who without neglecting his other University duties, shall show himself most efficient, practically and scientifically upon the University farm."²⁹

Whatever its value in aiding needy students, the exclusive use of

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their labor on the farm had an unfortunate effect on the farm management by increasing labor costs, thereby decreasing funds available for other requirements. The farm manager could do little more than clean up the fields, as Vice-President Russel noted when he decried the sorry state of the farm. Entries in the treasurer's account book indicate that he thought of farm management in terms of utilizing deposits in the university privies and waste swill from the kitchen. "An Agricultural College must economize this material," he had stated.³⁰

The farm situation was so bad by the summer of 1871 that students were complaining to Russel. The Vice-President, who was carrying on during one of White's numerous absences from the University, was relieved to be on the trail of another professor of agriculture.³¹ This one turned out to be Henry McCandless, a young graduate from Glasnevin in Ireland, who was later remembered by his successor primarily for his good looks and good grooming.* McCandless, too, was a failure, but for different reasons than his predecessors.

McCandless wished to use the British system as a model for agricultural education, at that time a realistic goal if the development of new knowledge through research were to be emphasized, for Great Britain was much more advanced in agricultural research than the United States. Indeed, both White and Cornell had visited British and other European agricultural colleges in 1868 with the hope of bringing home some useful ideas. However, if agricultural education were to be closely related to New York agriculture, British practices based on an abundance of inexpensive labor were largely irrelevant. Root crops, so important to European agriculture, had been almost abandoned here, and corn, the staple of New York farms, was practically unknown in England. McCandless proposed to establish a Scottish farm, and for this purpose fifty acres were set aside and the remainder of the university farm rented to Benham on a crop-sharing basis. Determined to get the work in agriculture under way, Ezra Cornell personally furnished the money to build the special barn McCandless desired, the trustees set aside \$1,000 for the operation of his model farm, and a number of implements were imported from Ireland. When this equipment was assembled and the building completed,

*Isaac P. Roberts, *Autobiography of a Farm Boy* (Albany, 1916), p. 180. This is an interesting account of Roberts' experiences in Iowa and New York.

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McCandless suddenly resigned. In several petulant letters to White and Cornell, he complained of his low salary and lack of authority, apparently feeling that these conditions justified breaking his agreement not to resign without ample notice.³² "If anything is said about the Agricultural Professorship," White wrote to his friend, D. Willard Fiske, "it may be well to mention that the vacancy was caused by his promotion."³³ On leaving Cornell, McCandless became head of the Provincial Agricultural School in Guelph, Ontario, where he stayed two years before being dismissed.³⁴

The departure of McCandless marked a critical point in the development of agricultural education at Cornell. Buildings and equipment of little value to anyone else remained as a reminder of more promises unfilled. It became increasingly more difficult to square the pretensions made for the College of Agriculture in the university announcements with the all too obvious condition of the university farm, and local farmers, already suspicious, had been further alienated by McCandless' habit of wearing kid gloves and refusing to touch farm implements.³⁵ The state superintendent of public instruction had reason to ask, "Can we reasonably hope to make the *Agricultural College a success?*"³⁶

President White originally planned to maintain a political and religious balance in the faculty but had long since given up these qualifications in selecting a professor of agriculture.³⁷ After the McCandless experience, White and Russel reviewed applications submitted several years earlier in response to their advertisement for a professor of agriculture. From this source and from other suggestions, they compiled a new list of possibilities, ranging from a candidate with "really extraordinary qualifications as to foreign experience" to a recent graduate of Yale.³⁸ They also considered dividing the position and hiring two young men, one to lecture and the other to conduct experiments in feeding cattle.³⁹ At this point a solution appeared from an unexpected direction, and Cornell soon benefited immensely from the folly of the trustees of the Iowa Agricultural College.

That institution was undergoing one of its recurrent clashes between a group of trustees and members of the faculty and administration. One result was that its professor of physics, William A. Anthony, came to Cornell with a strong suspicion that his colleague Isaac P.

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Roberts, professor of agriculture, was also ready to make a change. On seeing something of the crisis at Cornell, he wrote to Roberts asking him to submit a plan for the organization of a college of agriculture at Ithaca.* Ezra Cornell and other trustees were so delighted with Roberts' plan that they immediately dispatched Professor Russel to Iowa to interview him. President White was interested in another candidate, but Caldwell would not consent to his appointment until Roberts had been seen.⁴⁰ Professor Roberts proved to be an ideal choice. This practical farmer turned teacher was familiar with New York agriculture from his youth in Seneca County. He made things go from the day of his arrival. ✓

Developments in agricultural education were so rapid thereafter that it is easy to overlook the earlier contributions of other members of the faculty. During 1869 Professors Caldwell, Law, and Prentiss found time from their resident teaching for lecturing to groups of farmers about the state. This may be regarded as the beginning of extension work at Cornell, a natural development of the desire of the more progressive farmers for new information and of faculty willingness to communicate what they believed to be important. During that first year farmers in the state looked over the Cornell faculty, and by the winter of 1869 the New York State Dairymen's Association had arranged for lectures by these three professors. In February of 1870 Law was scheduled to speak to the New York State Agricultural Society.⁴¹

As a nonresident lecturer, John Stanton Gould provided unity and direction in agricultural education in the years before Professor Roberts arrived. A personal friend of both White and Cornell, this classically educated scholar was deeply interested in scientific agriculture. His journal shows that he viewed science as an avenue through which the endless inquiries arising from his observations could be systematically considered.⁴² An agricultural college, he felt, should be no mere manual-training institution; rather it should deal with basic principles and add to existing knowledge. Toward this end he set out on a modest program of research with the aid of Ezra

**Ibid.*, pp. 169-171. Roberts incorrectly places this event in October, 1873. There are numerous such errors in the *Autobiography*, which he wrote from memory without the aid of documents. See pp. 9-10.

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Cornell and Farm Manager Benham. "I can assure you," wrote Cornell, in reply to Gould's inquiry about an experiment with potatoes, "that we will continue the experiment as long as any good will result from it . . . I have cooked and eaten from several varieties of those potatoes this winter, and I can give you a copy of the result whenever you want."⁴³

Professor Gould viewed agriculture as a framework within which a vast part of man's knowledge could be fitted. He believed that no man could be educated without some exposure to agriculture, and from this perspective he gave a series of lectures on "agriculture at large" to the entire senior class of the University. He also took the leadership in obtaining lecturers in the special fields of agriculture, trying first to find the best men and then, when necessary, attempting to overcome their fears about speaking before a university group. During the winter and spring of 1871, nine men promised to give a total of fifty-three lectures.⁴⁴ It was hoped that when these men of practical experience arrived at Cornell they would give advice on a permanent plan for the agricultural college. "I think too," said Gould, "that they will influence public opinion in our favor, and be a strong shield from the attacks of our enemies."⁴⁵ X. A. Willard, a nonresident lecturer, did not disappoint him. "I have never seen a more earnest and orderly set of young men. The University is really doing a great work," reported this pioneer dairy scientist in *Moore's Rural New Yorker*.⁴⁶

Possessed of deep faith in the future of agricultural education at Cornell, Professor Gould exercised a moderating effect on President White, who was inclined to vacillate between elation and despair. Reminding the President of the need to take a long view, he said about the time that Roberts was hired, "I am very sure the right man could make the Agricultural Department a power in the earth."⁴⁷ After Gould's death in 1875, a memorial window was erected in his name in the university chapel; and thirty years later, in assessing the importance of those who established agricultural education at Cornell, White would link his name with that of Ezra Cornell.⁴⁸ Although he was unquestionably a man of great ability, Gould's contribution to agricultural education at the University was limited by his age and the part-time nature of his service.

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Before the days of experiment stations and organized extension work, the number of students in residence was the popular measure of the success of an agricultural college. This matter of student enrollment was of special importance to Cornell University, for agricultural education loomed high among the purposes of the Morrill Act. A small number of agricultural students could be considered evidence by the University's critics that New York's share of the Morrill grant was not being utilized in the way that Congress had intended. Unfortunately the number of students in agriculture, small at the beginning, fell quite steadily until 1874, as the figures on student enrollment for the years 1868-1873 show:⁴⁹

<i>Year</i>	<i>No. in Agriculture</i>	<i>No. in University</i>
1868-69	30	412
1869-70	24	563
1870-71	20	609
1871-72	13	597
1872-73	15	539
1873-74	7	509

Although the University had advertised its work in agricultural education in the agricultural press as early as 1869, in the summer of 1873 the trustees authorized a further expenditure of \$200 for this purpose.⁵⁰ Meanwhile, President White, who knew the value of a good public image, made the less appear the more. He pointed to the lectures of Professor Gould which the trustees required all students to receive before they could graduate from Cornell.* This method of obtaining attendance went a long way to defeat the purposes of the lecturer, which were further compromised, as Professor Caldwell noted in later years, by scheduling the lectures during the spring term immediately after lunch period. Yet, if more than fifteen agricultural students were to be found at Cornell, these lectures must be counted as well as work in what was then called the Department of Natural History. A congressional report showed 112 Cornell graduates "in branches relating to agriculture" in 1872-

**Trustee Proc.*, Jan. 24, 1870, p. 43. After June, 1872, the faculty was permitted to grant exemptions from these lectures (*ibid.*, June 22, 1872, p. 67).

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1873 and, of the student body, 112 were classified "in agriculture."⁵¹

That only seven students were enrolled in agriculture during 1873-74 created a crisis in that area, but was only a single item in the investigation the state conducted into Cornell University affairs that year. The investigating committee had been appointed by Governor John A. Dix at the request of Ezra Cornell, who hoped to clear himself of charges made in the legislature that the University's endowment fund had been manipulated for his personal advantage. In the course of extensive testimony, the committee looked beyond the endowment fund into all aspects of the University's operations. Professor McCandless returned from Canada to vent his animus against Cornell, as his twenty-four pages of testimony before the committee readily reveal.⁵² In the end, Ezra Cornell's integrity was completely vindicated, but not before the University's handling of agricultural education had been subjected to extensive criticism.

Russel had anticipated that the committee would question the practical value to farmers of the agricultural work at Cornell. To forestall this criticism, he helped L. B. Arnold, secretary of the American Dairymen's Association, prepare an affidavit "showing we are teaching something valuable." The testimony of such responsible men was noted by the committee but not given the weight Russel had anticipated, for, according to the committee, "the institutions contemplated by Congress were not places for the diffusion, primarily, of knowledge among those already engaged in agriculture; they were to be schools for the young." For the committee, a more serious issue turned on the question of manual labor :

Any mechanical or agricultural course of study, of which continuance of manual labor on the part of the student does not form a prominent part, is defective, and does not contribute to carry out the purposes of the act of Congress. The habit of physical labor intermitted during the four years at College, will hardly be recouped in after life.⁵³

The investigating committee's interpretation of the will of Congress had wide support in the agricultural press and was in accord with the dominant point of view in the states of Iowa and Michigan.⁵⁴ According to its advocates, agricultural education emphasizing manual labor had the double advantage of teaching the necessary

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skills without educating the student away from the farm. This essentially conservative view was adapted to a static system of agriculture and was of questionable merit in 1874, when agricultural techniques were changing so rapidly. In states where separate agricultural colleges had been established, education emphasizing manual labor could be used to stabilize existing practices; but where the agricultural college was part of a university, the aims and methods of such education were affected less by existing agricultural practices than by the educational orientation of the larger institution. This method of organization was attacked by the *American Agriculturist*, which charged that the New York State legislature should never have exposed an agricultural college to adverse academic influences: "No matter if there be no outward assumption of authority on the part of those in the academic courses, farmers' boys do not like to be even in contact with those who are pursuing branches to which they can never hope to aspire, and they will not go where they can be looked upon as in a lower grade of scholarship."⁵⁵

Cornell's College of Agriculture, or the Department of Agriculture as it was called after 1874, was simply a group of men associated through similar academic interests without any implication of constituting a separate administrative unit. Its faculty in 1871 included seven professors, six of whom were members of other colleges as well. The position of dean was largely honorary, with nearly half of the University's nineteen full professors serving in that capacity. When McCandless complained about not being head of his department, Dean Caldwell scoffed about "the weight of the duties, honors, and emoluments appertaining to the office of Dean of the Faculty of Agriculture."⁵⁶ In actuality, the burden of instruction in agriculture was carried by the professor of agriculture, supplemented by Caldwell in agricultural chemistry, Law in veterinary science, and, later in the decade, Comstock in economic entomology and Lazenby in horticulture. In addition, Wilder in zoology and Prentiss in botany sometimes stressed agricultural applications in their lectures. However, the only person devoting his full time to agricultural education was the professor of agriculture.

Power at Cornell rested in three locations—the trustees, the president, and the faculty. Although the division of authority between

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them was anything but clear in the 1870's, it was certain that no individual professor, and least of all the professor of agriculture, could set standards for admission or instruction that were substantially lower than those of the rest of the faculty. So seriously was the academic respectability of agricultural education questioned that Professor Roberts' family, on moving into Cascadilla Hall in January, 1874, "suffered a sort of social neglect and felt ourselves in an alien atmosphere."⁵⁷ If Roberts was to prove himself at Cornell University, it would be by meeting the standards of his associates.

Agricultural colleges, President White declared in 1869, should take young men already trained in the processes of agriculture and, through developing their powers of observation and reasoning, turn them into first-class farmers.⁵⁸ The four-year program of Cornell's College of Agriculture was indeed oriented toward developing powers of observation and reasoning. Containing little that was related to the immediate processes of farming, its curriculum provided extensive exposure to the languages, science, and mathematics. During the first two years, German or French was required, along with English and mathematics; third-year requirements included agricultural chemistry, physics, and veterinary anatomy and physiology. Only in the final year were requirements in agricultural chemistry and political science supplemented by subjects of more immediate relevance to farming, taught by the professor of agriculture.

According to the *Cornell University Register*, Roberts delivered five lectures a week to the senior class throughout the college year. The term "lecture" suggests a greater solemnity than actually existed in these talks to classes of less than a dozen students. Roberts covered all phases of agriculture—animals, plants, soils, drainage, the use of machinery, buildings, farm accounts, and marketing—plus (and this is not in the *Register*) personal philosophy, good citizenship, and the matter of selecting a wife (a most important subject for a farmer!). On two afternoons a week Roberts met these students for three-hour practice periods when each tried his hand at field work and the feeding and handling of animals.⁵⁹

Such a curriculum with its brief exposure to applied agriculture was of little value for turning those without farm experience into farmers, but it was of substantial value for students desiring to

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specialize in a science related to agriculture. Those who graduated from the four-year program during the 1870's usually went on to develop agricultural sciences, such as horticulture and animal husbandry, at Cornell or other institutions. Not that this number was large. It was not until 1873 that Cornell produced its first graduates in agriculture: Charles Lacy and Loren P. Smith, a class of two, which number was not exceeded during the 1870's.

Lacy was admitted to the two-year agricultural course in 1869 with conditions in certain entrance subjects. Like other students who have entered since that time, he had only a vague idea of what college education involved and was fully convinced that he had enough education for a farmer when he entered but, spurred on by his parents and rivalry with a schoolmate, concluded after arriving that he could benefit from the full four-year program. After graduating he became professor of agriculture at the University of Minnesota, a position he later recalled was obtained less because of any special fitness on his part than because of "the scarcity of teachers having any training whatever" in the sciences related to agriculture.⁶⁰ Unlike Lacy, Smith turned to farming after graduation but later became professor of agriculture at Iowa Agricultural College. There his lack of familiarity with midwestern agriculture substantially reduced his effectiveness.⁶¹

Most students enrolled in agriculture stayed only long enough to take the courses they considered of immediate value. That only a small number graduated from the four-year program was viewed by critics desiring a more "practical" college of agriculture as evidence that the Morrill fund was being misapplied. This evidence was highly misleading for there were, among the twenty men who received the degree of Bachelor of Agriculture by 1881, several who made outstanding contributions to the further development of agricultural education. In the class of 1874 were William R. Lazenby, whose contributions to Cornell will be examined and John L. Stone, later professor of farm practice at Cornell, who managed the University's farms and instructed countless students in techniques applicable to northeastern agriculture. Two students who roomed together in White Hall, William A. Henry and Henry H. Wing, graduated in 1880 and 1881 respectively. Wing was to develop animal husbandry

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at Cornell, and Henry was for many years dean of the College of Agriculture at the University of Wisconsin, where he performed for that institution a function comparable to Roberts' at Cornell. Moreover, many Cornellians who received the Bachelor of Science degree contributed to the sciences related to agriculture and to the diffusion of agricultural knowledge in ways equally significant. Clinton D. Smith, '73, became director of the agricultural experiment station at the University of Minnesota and later at Michigan Agricultural College, where he resigned to become president of Brazil's first agricultural college. L. O. Howard, '77, was for over thirty years chief entomologist of the United States Department of Agriculture. William Trelease, '80, was director of the Shaw School of Botany at St. Louis for over twenty-five years. Daniel E. Salmon, who received his degree in veterinary science, became chief of the Department of Agriculture's Bureau of Animal Industry.⁶²

In every way—instruction of students, administration, and finance—the work in agriculture was part of the University, and its development was completely dependent on the general progress of the University. With the faculty selected, finances remained the crucial area, since the new institution required funds for both operation and expansion. In giving the first building for the College of Mechanic Arts, Hiram Sibley conferred a benefaction on agriculture by releasing some of the pressure on university funds. Appropriations for the work in agriculture were dependent at all times on conditions in the University because its funds were reallocated as crises developed elsewhere.⁶³ Sources of income were largely limited to student tuition and gifts from individuals, but tuition was set at only \$30 a year in order to attract students with little money, thereby serving the purposes of Ezra Cornell. Without alumni or enough wealthy friends to provide financial stability, the University was badly in need of a new source of revenue.*

In this need Cornell shared the predicament of land-grant institu-

*Tuition was increased by 50 percent in 1870 to \$45 a year (*Cornell University Register*, 1869-70, 1870-71). The Cornell Endowment Fund was not productive until Cornell's western lands were sold in the 1880's (Paul W. Gates, *The Wisconsin Pine Lands of Cornell University* [Ithaca, 1943], pp. 222-243).

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tions in other states. The situation was quite parallel to that which gave rise to the Morrill Act; clearly a solution to this financial crisis was a further conversion of national domain into endowment for the land-grant institutions. Bringing pressure to bear on Congress was easier at this point, since the interests of the state agricultural colleges were represented in the national government by the Department of Agriculture, created by Congress in the same year the Morrill Act was passed. In December, 1871, Frederick Watts, commissioner of agriculture, called representatives of the land-grant colleges and state agricultural societies to a convention in Washington to discuss "subjects of mutual interest." Professor Prentiss, who represented Cornell University along with Ezra Cornell and Professor McCandless, was disappointed that these mutual interests were reduced to "almost every effort being directed to the one purpose of obtaining more land from Congress."⁶⁴ The convention was most informal and was carried on in high good humor, broken only by occasional references to carpetbaggers as the conversation turned to the education of Negroes in the South. The convention was so loosely planned that no provision had been made for printing the proceedings, but its sponsorship by the United States Department of Agriculture, the attendance of Senator Morrill, and the emphasis on the need for further endowment of the land-grant colleges suggested the direction of more fully organized efforts in the future.* The immediate result was a bill for further endowment introduced into Congress by Senator Morrill and drawn, according to President Adonijah Welch of Iowa Agricultural College, "under the advice of Mr. Cornell." This Welch pointed out in urging President White to join him in Washington to support the legislation.⁶⁵

During the year prior to the Washington meeting a convention had been held in Chicago, attended by twenty-nine agricultural educators and journalists. The organization of this meeting was rather remarkable since it was arranged by seventeen men, widely

*Ezra Cornell offered to have the proceedings of the convention printed free of charge by the students of Cornell University (*Senate Misc. Doc. 164*, 42d Congress, 2d sess., 1872, pp. 66-68; True, *A History of Agricultural Education in the United States, 1785-1925* [USDA Miscellaneous Publication 36, 1929], pp. 194-195).

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separated geographically, who had a common interest in agricultural education. The purpose of the convention was to bring together agricultural educators so each could learn what the others were doing and especially to discuss recent developments in agricultural experimentation. For leadership in the discussion on the conduct and coordination of experiments the convention looked to Professor Manly Miles of Michigan. Miles was the leading—some authorities have said the only—professor of agriculture in the United States at the time; his understanding of experimental techniques clearly surpassed that of other men attending the convention.⁶⁶ Much useful information on agricultural experimentation was exchanged but, as developments later in the convention indicated, a sizable minority of its members was more interested in discussing coeducation and a system of agricultural education based on manual labor. When the convention returned to the principal subject, a resolution was adopted calling upon Congress and the state legislatures for the “speedy establishment” of agricultural experiment stations throughout the country.⁶⁷ This objective, however, was not to be accomplished until the next decade, when the forces leading to this convention merged with those which dominated the Washington convention of 1872.

Roberts had attended the Chicago conference. There he described the difficulties he and President Welch experienced at Iowa Agricultural College in conducting experiments. In stressing the danger of drawing conclusions from an experiment without repetition under a variety of conditions, he said that agricultural papers were the best means of communicating the experimental data necessary for replication in other states.⁶⁸ During the 1870's and later, these papers did perform this function but in a haphazard fashion, due to the necessity for catering to reader interest and the demands of advertisers. Nevertheless, when Roberts came to Cornell, these periodicals were the principal source of agricultural information. They could be supplemented by the transactions of the state agricultural societies and the few published proceedings of agricultural conventions. Beyond this, Roberts' knowledge of agriculture came from his experience as a farmer in central New York and in Iowa, from his conversations with farmers and fellow teachers of agricul-

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ture, and from his extensive correspondence.

The rudimentary development of means for the communication of agricultural information left each teacher dependent on his own resources, and in this situation Roberts' experience was of particular value. However, the informal nature of his education was a source of difficulty. At Iowa the absence of a college degree had been no handicap, but at Cornell this set him apart from the rest of the faculty. President Welch, well aware that the lack of a degree would reduce Roberts' effectiveness at Cornell, persuaded the faculty of Iowa Agricultural College to make him an honorary Master of Agriculture. The contrast between Roberts' educational attainments and those of other members of the faculty probably caused the unenthusiastic reception he received. Although successful at Iowa and bearing rather impressive recommendations from Welch, Roberts came to Cornell as an assistant professor, his arrival receiving no more than passing notice in the President's annual report.⁶⁹

On the other hand, the professorship of agriculture at Cornell offered great opportunity for this man of ability and energy who had faith in the future of agricultural education and sufficient psychological stability to withstand alienation by his colleagues. For one thing, the very lack of interest on the part of the trustees and most of the faculty assured him a free hand, within the limits of available finances, in developing the agricultural work. The year of his arrival witnessed the passing of Ezra Cornell and John Stanton Gould, and with these strong personalities gone, Roberts was free to build on or alter what traditions had been established in agricultural education. Even the lack of students was an immediate advantage, for Roberts could turn to the work he knew best, building the university farm and establishing contacts with the farmers in the state. A rural constituency, Roberts knew from his experience in Iowa, was an absolute necessity for a successful college of agriculture.

One of Roberts' early activities at Cornell was to inventory the holdings of the Department of Agriculture. This inventory lists the results of six years of mismanagement: animals old, thin, and sterile; tools too few and frequently broken; fences down so flat that "I do

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not think there is a single rod that would induce a cow to hesitate a moment if she desired to pass through, under or over"; no grain for seed; doors off their hinges; and manure leaching down to Cayuga Lake. With this inventory, Roberts presented a plan for the operation of the farm, saying, in a characteristic way, that his reputation could not survive present conditions.⁷⁰

Managing to secure an annual appropriation of \$7,500, an amount larger than he would receive again for the next ten years, Roberts set out to replace the herd of ten dairy cows which he had soon discovered was infected by tuberculosis and had within it only twenty-two milkable teats. The new cattle were the first occupants of Professor McCandless' barn, which Roberts said "never ceased to be a monstrosity."⁷¹

During that first year of repairing buildings and erecting fences, Roberts joined the Tompkins County Agricultural Society and the Ithaca Farmers' Club. The next year he was president of this club and, according to a report in the Ithaca paper, ran it with a firm hand: "Professor Roberts made some very suggestive remarks in regard to the best method of conducting the meetings of the club. He thought the speeches should be limited to ten minutes and that all ill-natured personalities and irrelevant talk should be promptly suppressed."⁷² Practical problems, such as the desirability of soaking seeds before planting and the kind of ground best suited for the production of potatoes, were the basis of discussion. Roberts was effective in extending agricultural knowledge, whether discussing planting potatoes with a group of local farmers or discussing the problems of agricultural experimentation before the New York State Agricultural Society.⁷³ Before his first year at Cornell ended, he was already broadening the understanding of men who farmed under a variety of circumstances.

Without publications to pave the way, establishing contact with farmers was a slow process. For Roberts to attend a meeting as close as that of the Ithaca Farmers' Club meant a lengthy horse-and-buggy ride, and if the meeting were any distance away, a rail trip was also required. Roberts was greatly aided by the appointment to the staff of W. R. Lazenby and Henry Comstock in 1874.⁷⁴ These men, appointed primarily to conduct resident instruction, realized

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that effective teaching in horticulture and economic entomology required a firsthand knowledge of the problems farmers faced in the production of plants and the control of insects. Comstock contributed to Cornell's reputation by helping New York farmers control insect damage. Lazenby worked successfully in the broader area of establishing working relationships between Cornell University and farmer groups. He may well be considered Cornell's first specialist in extension.

During the 1870's the primary purpose of the University was the instruction of resident students. If faculty members spoke to groups outside Cornell, these engagements were arranged personally, to be done outside of their university duties. But agriculture posed a special problem. The support of farm groups was necessary before farmers would send their sons to receive the agricultural instruction the University provided. The opening of the University had been postponed to avoid conflict with a meeting of the New York State Agricultural Society in the hope that the society's officers would attend the ceremony.⁷⁵ The relationship thus inaugurated was continued in the work with farm groups of Professors Caldwell, Law, and Roberts and reached its most formal expression in an appropriation for extension work by Instructor Lazenby.

Five months after this appropriation, Lazenby was a special agricultural correspondent for the *Ithaca Daily Journal*, publishing in that paper extensive reports of the agricultural conventions he attended.⁷⁶ At this time the Grange was making tremendous advances among the farm population of New York State.* In the enthusiasm of its early years, the Grange was vigorously active, dedicated to increasing the political and economic influence of farmers through collective action. In 1875 Lazenby was secretary of the Forest City (Ithaca) Grange. By 1877, when the Grange was a real power among the farmers of New York State, he was a delegate from Tompkins County to the second annual meeting of the State Grange. At that gathering a resolution was introduced calling for a legislative investigation of Cornell University on the charge, widely circulated in the agricultural press throughout the 1870's, that the

*There were 165 organized Granges in New York State in 1874, 341 in 1875. (*Proc. of the N. Y. State Grange*, 1874, pp. 5-9; 1875, pp. 68-72).

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University was subordinating agriculture to other interests. Lazenby, then only twenty-four years old, rose to the defense. Stating that one of the principal aims of the University was to help the farmers of the state, he defended the methods used and the work accomplished in agricultural education. As a result, the resolution demanding an investigation by the legislature was altered to provide for a Grange committee of three men who were to visit the University and personally examine its work. The committee appointed included the two men who had launched the attack on Cornell.⁷⁷

By this time the good work of Professor Roberts on the University's farms was evident and the Grange visitors who came to scoff remained to praise. Vice-President Russel was delighted beyond his hopes at the conversion of these two prejudiced Grangers, a conversion which turned out to be more than a passing fancy.⁷⁸ Two years later one of these men spoke at the annual State Grange meeting, following addresses by Professors Law and Roberts, to recall the investigation of 1877:

As a member of that committee I spent two days in looking through the various departments at Cornell, and I am glad to confess that I discovered that my prejudices were entirely unfounded, and that Cornell was prepared to accomplish wonders for agriculture, and that she needed more than anything else the cooperation of farmers. It behooves us to do all in our power to encourage the University in its work.⁷⁹

President White later called the Grange investigation a turning point in the affairs of the Department of Agriculture.* Roberts, too, was encouraged, saying, "I have faith to believe that we are at no distant day to take the lead in Agriculture in the U.S."⁸⁰ Shortly after the Grange visit, the trustees appropriated \$250 to Lazenby for "writing and publishing and attending conventions and addressing them."⁸¹

The increase in the number of students gave additional reason for optimism. During the dark days of 1874, Roberts had recommended the abolition of tuition for agricultural students. In approving this recommendation, the trustees were sufficiently impressed with the small enrollment to consider releasing agricultural students from

*White, *Autobiog.*, I, 370. White's account of the incident, however, is highly exaggerated and otherwise inaccurate.

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room rent as well.⁸² Free tuition, along with the improving relationship with farm groups, seemed to be the answer to attracting students, for the number enrolled in agriculture increased dramatically after 1873-74. At the same time, the quality of the students improved. It was no longer, as in 1874, Stone, Lazenby, "and a few strays in search of a snap,"⁸³ as student enrollment in the years 1873-1877 shows:

<i>Year</i>	<i>No. in Agriculture</i>	<i>No. in University</i>
1873-74	7	509
1874-75	18	532
1875-76	17	542
1876-77	29	561
1877-78	42	529

On this note Roberts took his first vacation from Cornell, spending the summer of 1878 in Europe studying agricultural methods.⁸⁴

While a larger number of students was necessary if certain critics were to be satisfied, the matter of student numbers was part of the larger question of the objectives of agricultural education. If the diffusion of existing knowledge were stressed, a large number of students was clearly desirable; if, on the other hand, the discovery of new information were to be stressed, a small number of students would give the faculty more time for investigation. Agricultural education at Cornell was skewed in the latter direction from the beginning through its association with a university curriculum heavily weighted on the side of the sciences. As early as 1871 Professor Caldwell pressed for the establishment of a farm to be used exclusively for the conduct of experiments; in 1874 President White announced its establishment in a speech before the State Agricultural Society.⁸⁵

At a later meeting of the society, the University was attacked with the claim that "real agricultural education can only be obtained on experimental farms controlled by practical farmers." Roberts rose to this charge. Pointing to the complexity of agricultural experiments and the difficulty of obtaining reliable results, he stated that agricultural experiments are the work of years and that failure is as likely as success. He added that two hundred varieties of wheat were then being tried, and in sixty experiments the relation of variations in soil

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and application of manure to wheat production were being studied. George Geddes, who had urged White to emphasize experimental investigation in 1869, secured the passage of a resolution by the society approving Cornell's experimental farm.⁸⁶

L. B. Arnold of the New York Dairymen's Association was already cooperating with Caldwell in dairy feeding experiments. In 1876 this association was negotiating with White for the establishment of an experimental center at Cornell, the University to furnish the building site, water, and faculty, the association to provide the building, equipment, and superintendent. The President's report for 1877 does not mention this plan but does include a plea from Professor Roberts for an assistant to help him maintain the 134 experimental plots and keep the necessary records.⁸⁷

Roberts operated the plots on which he conducted his experiments at a cost of \$268 in 1877. Even this small sum placed him on the horns of a dilemma, for he felt that Cornell's reputation with the agricultural press depended on extensive experimentation, while the University trustees had decreed that any expenditure in excess of their appropriation would come out of the guilty professor's salary. The experiments, said Lazenby, were of the type that scientific agriculture demanded. They were not simply tests to determine the most efficient seed or fertilizer, but studies aimed at discovering fundamental relationships. The visiting Grange committee approved the experimental work, but expressed some reservations about the way results were released to the public. Less concerned with fundamental principles than with immediate economic considerations, they questioned Caldwell's insistence on replication of experiments under a variety of conditions before releasing results. "It seems to us," they reported to the State Grange, "that if the results were given, accompanied by a statement of the circumstances attending the tests, the farmers might be trusted to make the proper inferences."⁸⁸

Meanwhile, the movement for the application of scientific techniques to agriculture was gaining impetus in other states. By 1877 experiment stations had been established with public funds in Connecticut and North Carolina, and in other states the advocates of agricultural experiment stations were formulating their claims to their legislatures.⁸⁹ Vice-President Russel, in preparing the annual

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report for 1877, noted that such a bill had been introduced into the New York State legislature. Anticipating that it would come up for consideration in the next session, he declared, "It is of vital importance to us that this station, if ever established, be located here."⁹⁰ From that time until he was dismissed from the University in 1881, Russel worked for the passage of an experiment station bill and, with this accomplished, tried to bring the station to Cornell.

The experiment station bill had been introduced in 1877 at the request of the State Grange, which contemplated an institution that would not only conduct agricultural experiments and publish the results, but would also test fertilizers, thereby protecting the farmer against the numerous fraudulent analyses then on the market. That the Grange had Cornell University in mind as a possible site is indicated by authorization for a committee "to confer with the managers of any existing institution which has accepted any National or State aid." The following year, the State Grange called for "uniting with the Agricultural Department of Cornell University in an earnest effort to secure legislative aid," adding: "We give it as our opinion that the proposed institution can be established more profitably to all concerned, in connection with Cornell University than elsewhere."⁹¹

When the legislature did not act, Caldwell took the initiative by organizing an agricultural experiment station at Cornell in February, 1879. In this he had the cooperation of Roberts and other members of the faculty of agriculture and the support of eight agricultural organizations. The faculty of agriculture, together with representatives of these eight groups, constituted the Board of Control of the Experiment Station. As far as the Board of Trustees was concerned, the station had no official existence, its only funds consisting of \$250 given by Jennie McGraw for printing its reports.* In his introduction to the first report, Caldwell, its director, noted, with what was probably a touch of irony, "All of the work of the station has therefore

*"President's Report to the Trustees," 1879, MS, White Papers. Miss McGraw's contribution was probably due to her father's interest in the agricultural work of the University. A trustee of the University, he offered in 1877, annual awards aggregating \$500 to students who best operated small plots as miniature farms. This award apparently was not offered after his death in that year (undated report to I. P. Roberts, folder dated Aug. 1-Nov. 13, 1877, Executive Committee Papers).

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been volunteer work, and has been limited, of course, by the amount of time not required for professional duties in the University."⁹²

The first report of the Cornell University Experiment Station appeared in May, 1880, with 133 pages of observations and reports of experiments by the faculty of agriculture, supplemented by the work of two recent graduate students, S. M. Babcock and W. H. Jordan. This publication was very favorably received by the agricultural press and especially by the widely circulated *Cultivator and Country Gentleman*. In a complimentary two-column review of the report, the journal encouraged readers to secure their copy by sending thirty cents to Professor Lazenby at Cornell.⁹³

Almost coincident with the publication of the Cornell Station's first report, a bill for the establishment of a state agricultural experiment station was finally placed before Governor Alonzo B. Cornell for signature. This bill provided for a board of control which was empowered to select the location of the station. The Governor was made a member, ex-officio; otherwise, its composition was remarkably similar to that of the Cornell University Station.* The Governor was in a difficult position; as eldest son of the founder and member of the University's Board of Trustees, signing the bill would leave him open to a charge of favoritism. This already difficult situation was complicated by a circular letter prepared by Acting President Russel in a moment when his zeal outran his judgment. Addressing the Board of Control of the State Station, Russel said: "The bill to establish an agricultural experiment station, which has recently passed both branches of the legislature, was drawn here, and its passage was urged by all proper efforts on our part. Our effort was to have the Station located here, and to make this a center of information on matters relating to agricultural progress."[†] Francis Finch, member

*The Board of Control of the State Station included a delegate each from the State Agricultural Society, the State Grange, the American Institute Farmers' Club, the Central New York Farmers' Club, the Western New York Horticultural Society, the Western New York Farmers' Club, and the Elmira Farmers' Club (ch. 592, *Laws of New York*, 1880). The Cornell station's Board of Control included these plus a representative of the Ithaca Farmers' Club.

[†]Russel, circular letter dated May 31, 1880, White Papers. Professor John L. Stone stated later that the bill was drafted by Lazenby (*Cornell Countryman*, Nov., 1910, pp. 40-42).

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of the Executive Committee of Cornell's Board of Trustees and counsel to the Governor, attacked Russel for his forthrightness: "To openly declare that this was a job got up by Cornell University and put through in our interest was to peril the measure in all directions . . . If the bill is signed I fear your circular will so irritate and sour the persons named in the bill that they will put the station elsewhere."⁹⁴

Governor Cornell resolved the dilemma by signing the bill, and the following month the trustees authorized Caldwell, Lazenby, and L. B. Arnold to attend a meeting at Albany of the Board of Control "in order to set forth Cornell University's claim to same." This was clearly not Caldwell's first trip to Albany on experiment station matters. In reporting to Russel, he said that his frequent trips to the state capital gave him the appearance of an office seeker. In any case, the state station would not be an unmitigated blessing, he said, for by meeting regularly the Board of Control could restrict the director's freedom of action.⁹⁵

The year 1880 ended hopefully as far as securing the station was concerned. Patrick Barry, of the famous Rochester nursery firm of Ellwanger and Barry, had been named chairman of the Board of Control and was considered not unfriendly to Cornell. Like the members of the Grange committee, he had earlier been critical of the University's handling of agricultural education; but through the attendance of Roberts and Lazenby at the meetings of the Western New York Horticultural Society, his attitude was gradually modified. As president of this society, which U. P. Hedrick has called "one of the leading organizations of its kind in the nation," Barry was in a powerful position to influence the development of agricultural education in the state.⁹⁶ Securing his interest in the University was an important accomplishment of the 1870's.

Barry became linked to the University in another way, less direct but no less important, when he joined in establishing the Society for the Promotion of Agricultural Science. The initiative for establishing the society came from E. L. Sturtevant, then the editor of *Scientific Farmer*, who called for the formation of

an association which should not seek a popular but a scientific membership; an association which should ignore the commonplace opinions and crudities

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of the popular society meetings, and should publish only those papers which could pass the ordeal of a competent and critical committee, as being contributions to knowledge and advancing to agriculture.

W. J. Beal of Michigan Agricultural College acted on this call and through correspondence prepared the way for a meeting at Rochester, New York, in September, 1879, when he, Barry, J. J. Thomas, Caldwell, L. B. Arnold, and Sturtevant formed the organization. Although never large, the society was soon national in scope. Its members, almost without exception, took an important part in the establishment and development of agricultural experiment stations throughout the United States.* Its proceedings and annual meetings provided improved media for communication in agricultural science, thus linking the period of personal communication with that of the experiment station bulletin.

Books also served to disseminate scientific knowledge. "A library of the best agricultural literature the world has ever seen has emanated from Cornell," declared A. C. True, director of the Department of Agriculture's Office of Experiment Stations, in 1914. Two books published during the first decade of the University's operation were among this number.⁹⁷ Caldwell's *Agricultural Qualitative and Quantitative Chemical Analysis*, consisting primarily of translations from Wolff, Fresenius, Krocker and others, was intended for students and fellow scientists. James Law wrote for a different audience. Recognizing the low value placed upon veterinary medicine in the United States, he attempted in *The Farmer's Veterinary Adviser* "educating the public up to a better appreciation of its value." By addressing his book directly to farmers, Law by-passed veterinarians, whom he regarded as "ignorant pretenders" not above treating such familiar but imaginary diseases as hollow horn, horn-ail, tail-ail, and black tooth.⁹⁸

Another contribution to agriculture from the Cornell faculty was of immediate economic significance. This was the whirling-spray nozzle, perfected by William S. Barnard, B.S. '71, while serving as assistant professor of entomology between 1879 and 1881. By breaking

**Proc. of the 1st, 2d and 3rd Meetings of the Society for the Promotion of Agricultural Science, 1880-1882* (Syracuse, N. Y.), pp. 9-10. The society had about forty members throughout the 1880's.

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up liquefied poisons forced through it into a fine spray, this small device made possible more efficient control of harmful insects and fungi. Although by modern standards spraying equipment remained primitive after the perfection of this nozzle, for only low pressures could be developed by the hand pumps then in use, the nozzle at least helped make spraying an economically feasible process and ultimately led to further research toward improving other parts of spraying machinery.⁹⁹

The nature of agricultural education at Cornell during the first twelve years was largely determined by the size of the institution, its recent establishment, and its uncertain financial stability. These conditions were healthy to the extent that they contributed to the high morale faculty and students achieved through working together to create a new institution under difficult circumstances.* In other ways they were debilitating, for they placed limits on the expansion of buildings and faculty at a time when such improvement was necessary to maintain the feeling of progress. Moreover, they made day-to-day operations difficult, since the absence of both money and tradition meant that decisions largely based upon expediency would be readily altered as circumstances changed.

One consequence of the size of the University was relationships between students and faculty and of both with the townspeople which a modern dean of students might consider ideal. The student Agricultural Society established in 1871-1872 was small enough to give John Stanton Gould's talks to its membership the quality of personal conversation.¹⁰⁰ Students attending Professor Prentiss' botany lectures in 1875 had a number of local farmers for classmates. The agricultural students participated with the faculty in the affairs of the Ithaca Farmers' Club.¹⁰¹ During the two afternoons a week that students spent with Professor Roberts visiting other farms in the neighborhood they had an opportunity to learn the problems of farm management, for their contacts with neighboring farmers were of sufficient intimacy and duration to evaluate the resources of the farmer in relation to the

*High morale due to the conquest of adversity is reflected in numerous contemporary diaries and letters in the University Archives. For example, see John Y. Davis Letters, Oct.-Dec., 1868; James Shearer Letters, Nov., 1874-April, 1875; W. P. Sturgis Diary, 1875.

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possibilities of his farm operation.¹⁰²

These working relationships between students, faculty, and local farmers created the psychological climate necessary for holding the first farmers' institute in New York State. Professor Roberts had been an institute lecturer in Iowa earlier in his career.* In 1877, while president of the Ithaca Farmers' Club, he introduced New York farmers to this form of agricultural education. The institute, held on the twenty-eighth of February, was described in detail by the *Cultivator and Country Gentleman*.¹⁰³ The Ithaca Farmers' Club acted as host, and six members of the Cornell faculty participated, discussing such practical concerns as weeds, insects, animal parasites, the cultivation of corn, the use of fertilizers, and the value and construction of the trench silo. The success of this institute indicated, perhaps better than any other measure, the acceptance of Cornell's agricultural education by Tompkins County farmers.

Relations between the administration and faculty were also informal. Both President White and Professor Russel taught classes and had numerous other contacts with the faculty, for the small adult population on East Hill was drawn together in those days. The relationship between the President and Roberts was closer than it might have been had White not needed expert care for his horses and cow during the time he was away from the University. By 1879 Roberts felt sufficiently familiar with White to advise him on general university matters.¹⁰⁴ Of course, informal relationships and frequent contacts with colleagues did not necessarily assure cooperation. Roberts would have been greatly aided had Professor Prentiss emphasized agricultural relationships in his botany instruction more often and acquiesced in the clarification of Lazenby's position as head of the Department of Horticulture. Horticulture was officially a sub-department of botany, yet Lazenby's work was most closely connected with agriculture. When Roberts requested that horticulture be transferred to agriculture, the trustees replied by "examining the expediency of abolishing the Department of Horticulture."¹⁰⁵

*Roberts, *Autobiog.*, pp. 165-167. The institutes were meetings of farmers who came together to hear lectures on agricultural subjects. Their development is described in A. C. True, *A History of Agricultural Extension Work in the United States, 1785-1923* (Washington, 1928), pp. 5-14.

THE BEGINNING, 1868-1880

What benefits accrued from the small size of the University were constantly jeopardized by the shortage of funds. Always serious, this shortage became a subject of open complaint after 1876. Comstock noted in his report to the President that the only microscope in his department available for student use had been purchased from his own salary.¹⁰⁶ Roberts was so fully occupied with teaching, supervising the farm help, and conducting experiments that he required his daughter's help in maintaining the farm and experiment station records. In 1878 the Executive Committee of the Board of Trustees refused his request for a foreman, even though the farm had produced a profit.¹⁰⁷ In that year, also, Professor Law requested some needed equipment or the removal from the *University Register* of the provision for a veterinary degree. The following year Roberts prefaced a statement concerning a Holstein heifer with, "If I thought it would be any use I would ask for . . ." In 1880, Law repeated his requests of 1878, while Caldwell simply went ahead and paid out of his own pocket the assistant who did the experiment station analyses.¹⁰⁸

These financial hardships, combined with the trustees' lack of interest in the Department of Agriculture, might seem to support the charge that the University was neglecting agricultural education. However, an examination of the financial records of the University indicates that, based on the number of students enrolled, agriculture did at least as well as the other departments of the University and in some years it did better.¹⁰⁹ It may be said, of course, that even in the 1870's the number of students was not an adequate measure of the needs of the Department of Agriculture, for experiments already under way created expenses beyond those required for teaching. A judgment on this score must consider the funds available to the University. From this perspective, it seems unrealistic to have expected the University authorities to aid the experimental work in agriculture when the total appropriations for all teaching departments was in several years less than \$15,000.*

Financial difficulties became more pressing with the rapid fall in student numbers after 1878. Student enrollment in agriculture com-

*Between 1873-76 and 1878-80, total appropriations to all teaching departments (excluding salaries) ranged between \$12,000 and \$18,000 (Treasurer's Rpt., 1873 to 1880, MS).

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pared with the total enrollment during the years 1878-1880 was as follows:

<i>Year</i>	<i>No. in Agriculture</i>	<i>No. in University</i>
1878-79	41	505
1879-80	35	463
1880-81	26	399

The resulting decrease in tuition income led the trustees, then committed to a balanced budget, to tighten expenditures further, thereby making the University even less attractive to prospective students. In 1879-80, tuition income fell so much that the trustees faced a deficit of nearly \$18,000.¹¹⁰ In the spring of 1880 the University advertised for students in nine newspapers, the Department of Agriculture having its own advertisements in addition.¹¹¹

Under these circumstances the construction of a new barn in 1879 was all the more remarkable. Although erected for less than \$6,000, the barn was a marvel in its time. Built into the side of a hill on the present site of Comstock Hall, it stood one hundred feet high, with a permanently installed thresher and system of conveyors to move the straw and grain.¹¹² Roberts was excited about the glories of his new barn, calling it "an honor to the University." Fully two thousand people, he said, came to see it during the summer of 1879.¹¹³ The decision to build this barn in the midst of a financial crisis was probably prompted by the desire to secure the support of New York farm organizations. The condemnation of the McCandless barn by the Grange committee in 1877 clearly identified an area within which the University could demonstrate its concern for agricultural education.¹¹⁴

In the years immediately preceding the construction of the barn, Professor Roberts began the development of the Holstein herd which later acquired a national reputation under the management of H. H. Wing. At that time there were only a few Holsteins in the United States; as a breed it was generally regarded as far inferior to the Shorthorn or Jersey. Much to his surprise, Roberts' purchase of three Holstein cattle brought a bitter attack from Governor Alonzo Cornell, who evidently considered Roberts' action a reflection on his father's acquisition of purebred Shorthorn cattle. Thus was his sound judg-

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ment rewarded: "My heresy in buying Holsteins nearly cost me my job," Roberts recalled later, "and it was a long time before the prejudice against them died out."¹¹⁵

It should not be assumed that the kind of difficulties Roberts faced were limited to Cornell University; similar problems occurred wherever a college of agriculture was part of a university. The status of agricultural work was generally lower than that of other courses, which in turn was related to the lower student enrollment in agricultural courses. At the University of Mississippi the combined enrollment in agriculture and the mechanic arts was five in 1874 and three in 1875, and it is presumed that these three were in mechanic arts. E. W. Hilgard, one of the outstanding agricultural scientists and educators this country has produced, was in charge of the agricultural work there. In 1875 he went to the University of California as professor of agriculture, where he had no students for two years. The University of Minnesota had no more than three students enrolled in agriculture at any time prior to 1880, and few of these lasted all year. Yale College had more professors of agriculture than students. The University of Wisconsin had only one graduate in agriculture by 1882.¹¹⁶

By comparison, Roberts was remarkably successful in attracting students, a situation almost certainly due to his ability to provide sound information to farmers about matters they considered important in language they understood. It is noteworthy that Roberts undertook to extend agricultural knowledge to New York farmers largely on his own responsibility. Unlike California and Kansas, where by 1870 the boards of regents required the professor of agriculture to extend the advantages of his college to the people of the state, Cornell's governing board, thinking of agricultural education in terms of resident instruction, viewed extension with considerable skepticism.¹¹⁷

The Search for Identity, 1881-1890

DURING the 1870's the method and content of agricultural education at Cornell were only slightly influenced by conditions associated with the production and marketing of agricultural commodities in other states. This isolation was a result of the inevitable gap between agricultural change and agricultural educators' adjustment to this change. In the 1870's, events were already occurring in areas seemingly remote from New York agriculture which would, in the next decade, affect the activities of many New York farmers and, in turn, the teaching of agriculture at Cornell.

Measured by the number of farms, New York agriculture reached its zenith by 1880. For forty years New York farmers had been successfully competing with middle western farmers, whose land was often more fertile and easier to cultivate, but who faced higher transportation costs in marketing their produce in the East or in Europe. Just as middle western competition was becoming serious in the 1850's, New York farmers were reprieved from its consequences by the increased wartime demand for farm products in the United States and, following the Civil War, by a series of poor harvests in Europe. This reprieve ended in 1880 with the return of good harvests abroad.¹ At the same time that the demand for farm products declined, New York farmers faced increasing competition from the Middle West, following Gustavus Swift's utilization of refrigerator cars to ship fresh meats eastward from Chicago.² Now meats, in addition to wheat and feed grains, were farm products on which many middle western farmers had a competitive advantage. With other agricultural areas of the country competing in eastern markets, New York farmers were forced into a process of adjustment that has continued to the present. Cornell aided farmers in this process of

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adjustment; Roberts and other members of the faculty of agriculture identified themselves with the interests of farmers, and in the long run the University's policy of attempting to gain the support of farm groups required alignment of its agricultural education with the expressed needs of farmers.

In the summer of 1880 the trustees set out to recapture the feeling of progress which had characterized the University at its beginning by demanding that White, then serving as American Minister to Germany, either resign as president of the University or return to the personal direction of its affairs. At the same time Acting President Russel, whose administration was associated with failure in the minds of the trustees, was dismissed from the University.* In this shake-up the Department of Horticulture was abolished—whereupon Professor Lazenby became head of the Department of Horticulture at Ohio State University. The return of President White marked no significant change in policy toward the Department of Agriculture, but his prestige prevented the trustees from ignoring his recommendations for the department, as they had those of Russel.

The Cornell University Experiment Station was the principal concern of the faculty of agriculture during the 1880's, and on his return White supported its development. The six months preceding his return, however, were crucial for the Experiment Station, and in this period administrative power rested in the hands of the chairman of the Board of Trustees, Henry W. Sage.† It was he who decided not to press Cornell's claim for the state experiment station when it was evident that failure to do so would lead to its location elsewhere.

At the State Grange meeting in January, 1881, a resolution was introduced by a member of the investigating committee of 1877 who had praised Cornell at the State Grange in 1879 and who, presumably,

*The dismissal of William C. Russel and the return of White to active administration of the University is analyzed by Anita Shafer Goodstein in *Biography of a Businessman: Henry W. Sage, 1814-1897* (Ithaca, 1962), pp. 230-240, and by Morris Bishop in *A History of Cornell* (Ithaca, 1962), pp. 215-223.

†Russel was dismissed in January, 1881, effective that June, but his administrative authority was nominal after January (Sage to White, Jan. 5, 1881, White Papers).

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was still a friend of the University. The basis for his resolution, which called for locating the state station "at least 100 miles distant from Cornell University," was that public institutions established for aiding scientific agriculture should be located in different sections of the state "for the purpose of distributing as widely as possible the benefits arising therefrom."* There was a sound scientific basis for this position, since information derived from agricultural experiments was limited in its applicability to environments similar to those in which the experiment was conducted. The combination of soil and climatic factors at Cornell was not typical of the better agricultural areas of the state; consequently, experiments conducted there had to be repeated under a variety of soil-climate combinations before their significance for New York agriculture could be determined. The environment at Ithaca was also less congenial than that in many other parts of the state for experiments in pomology and nursery operation, both of which were becoming increasingly important in New York agriculture.

On February 22, 1881, P. B. Crandall, a prominent Tompkins County farmer and member of the Ithaca Farmers' Club, wrote to Sage urging him to make a "definite proposition" to the Board of Control of the state experiment station so that it would be located in Ithaca. Nearly two weeks later Crandall wrote Patrick Barry, chairman of the Committee on Location, urging the selection of Cornell. Barry replied immediately: "I am not aware that the Board of Control has received any proposition from the Trustees of Cornell University. I expected they would and I have regretted they did not. For my own part I would be glad to have the station connected with the University."⁸ Before Barry's reply was received, Sage had made a proposition to the Board of Control, and at the same time Crandall sent another letter to Barry urging the Ithaca location.

Sage's letter was perfunctory. There was no mention of what Cornell had done or hoped to accomplish with its agricultural experiment station. Rather, in the briefest way, he offered Cornell's facilities "for one at least of the stations you propose to establish," provided

*It is interesting that in the Grange resolution Cornell was regarded as a public institution. The resolution was referred to a committee where it died (*Proc. of the N. Y. State Grange*, 1881, p. 86).

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that this be accomplished "without interfering with the regular duties of our Professors."⁴ Sage was a prolific writer and successful businessman who knew how to get what he wanted, so no other conclusion seems possible than that he did not want the state agricultural experiment station at Cornell. This conclusion is reinforced by Sage's comment to Crandall that the University was not interested in assuming responsibility for the success of the station or for the administration of its finances.* This decision was certainly colored by his lack of interest in the Department of Agriculture. It was not until around 1890 that Roberts first saw Sage on the agricultural part of the campus, and then he turned and drove off without saying a word. In his *Autobiography*, Roberts also recalls the trustees' lack of sympathy and cooperation, stating at one point that he "felt the College of Agriculture existed only by sufferance."⁵

By June of 1881, Roberts felt it was "settled almost beyond a doubt" that the state experiment station would be located at Geneva.† As a consequence, unless the university trustees provided direct support, the Cornell Experiment Station would be overshadowed by a state station with an annual appropriation of \$20,000. Continued dependence on uncertain farm income was clearly impossible, since the operation of an organized experiment station required known assets. With the support of President White, Caldwell and Roberts pressed for an appropriation, which they secured in October, 1881. In granting \$1,000, the trustees officially conceded the existence of the Cornell University Experiment Station.⁶

The second report of the Cornell Station was prepared almost entirely by Professors Roberts, Caldwell, and Comstock. It was favorably received on its appearance in June, 1883, by the *Cultivator and Country Gentleman*, which selected Roberts' research and

*Crandall reports this conversation with Sage in his letter to Barry of March 9, 1881, saying that it occurred a few days previously (Executive Committee Papers).

†Roberts in "President's Report to the Trustees," 1881, pp. 154-155 (MS, White Papers). The Geneva location was selected by February, 1881, but because of faulty legislation it did not become the property of the state until February, 1882 (*1st Ann. Rpt. of the Board of Control of the N. Y. State Exp. Sta. for the Year 1882*, p. 3).

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writing for special praise. The other articles, this periodical reported, were somewhat too technical for general interest. Although written for a limited audience of fellow scientists, Caldwell's report on how changes in the composition of rations affected cattle and Comstock's report on scale insects were equally significant additions to agricultural knowledge.

Roberts was enthusiastic about the experimental work of the year, which he described at the beginning of his report to the President. He urged a slightly increased expenditure, by which "a station might be established which would rank second to none." Caldwell was sufficiently encouraged to recommend an appropriation for the appointment of an assistant director to supervise the experiments.⁷

Some of this enthusiasm may well have been calculated to overcome trustee opposition to continuing the experimental work. In July, 1883, Caldwell urged that the trustees make an appropriation so he could employ a chemist beginning September 1 to do the experiment station analyses. However, the question of continuing the station was tabled by the trustees during August and September.⁸ While the decision was finally made to continue the station, the trustees chose to strangle its work by degrees, through continuous reduction of the annual appropriation. The Cornell University Experiment Station appropriations from 1881 to 1886 were as follows:⁹

<i>Year</i>	<i>Appropriation</i>
1881-82	\$1,000
1882-83	1,145
1883-84	750
1884-85	250
1885-86	150
1886-87	—

The refusal to make appropriations for the Experiment Station after 1885 was consistent with the trustees' attitude toward the Department of Agriculture; what is surprising is the support the station received over the five-year period. The decline in the number of students after 1880 probably prompted the original appropriation; it seems most unlikely after Sage's coolness toward locating the state station at Ithaca that any desire to aid agricultural science was intended.

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The connection between the development of agricultural experiment stations and increasing enrollment of agricultural students was tenuous, but unquestionably was believed to exist. Crandall drew on this presumed relationship in his letter to Barry, saying that experimental work would elevate the pursuit of farming and thereby interest the sons of farmers in agricultural education.¹⁰ A more complex connection was made in the argument that information produced by agricultural experiment stations would lead to a more profitable agriculture, and that once this was perceived by students they would turn toward agricultural education in increasing numbers. Although the experience of 1881-1885 might suggest the contrary, Caldwell stated in 1886 that "it takes no argument to prove" that resumption of the Experiment Station would bring us students and friends among the farmers of the state.¹¹ Whatever the validity of the argument in the long run, the Cornell University Experiment Station brought no immediate increase in agricultural students. Student enrollment in the years 1880-1884 was as follows:¹²

<i>Year</i>	<i>No. in Agriculture</i>	<i>No. in University</i>
1880-81	26	399
1881-82	16	384
1882-83	15	406
1883-84	13	461
1884-85	20	575

Given their preoccupation with enrollment, which was increasing elsewhere in the University, the trustees could no longer justify support of the Experiment Station.

Until the fall of 1885 the agricultural curriculum remained much the same as during the 1870's with Professor Roberts' instruction attached to the end of three years of language, science, and mathematics. As before, most of the students enrolled in agriculture attended only to take the work most directly related to farming.¹³ By 1885, when the University had 1,028 graduates, only thirty had received the degree of Bachelor of Agriculture.¹⁴ Classes continued to be small, with considerable flexibility possible in their arrangement. In 1882 Roberts combined the junior and senior classes, thereby freeing himself from classroom duties in the winter of 1883 in order

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to make an on-the-spot study of southern agriculture. In the spring of 1885 he took nine students on a five-day trip to the Ontario Agricultural College at Guelph, stopping at noteworthy farms along the way.¹⁵

Roberts continued to spend two afternoons each week with students on the university or neighboring farms, observing and discussing farm operations. This close association with a master farmer who could bridge agricultural science and practice in the outdoor classroom was probably ideal for the students, but was not what Roberts desired. During the 1880's he was increasingly concerned about the absence of technical farming skills on the part of those who graduated in agriculture. After 1875 the *Cornell University Register* contained a statement that additional summer work might be required of students who did not become proficient in field work during the two afternoons a week. However, this provision was more an indication of concern than a requirement for graduation, for Roberts was far too kindly a man to stop a student from graduating because he could not handle a plow.* Roberts' desire to strike a balance between the manual labor system, which he considered "a farce" in teaching the "more complex operations of the farm," and the almost complete lack of farm practice that existed at Cornell was frustrated by a shortage of funds. His desire to use the university farm as a place where the students could practice farming techniques conflicted with the operation of the Experiment Station, where, when expenses exceeded trustee appropriations, the deficit had to come from farm profits.¹⁶ These profits, in turn, were dependent on the work of skilled farm laborers. If their work was compromised by the mistakes of novices, the Experiment Station was certain to suffer.

As had been the case in the previous decade, the farm continued to be the center of Roberts' interests, with much of his experimental work developing out of its operation. One of the limitations on increasing the efficiency of the farm was the lack of convenient living accommodations for farm help. The married men had to come a long distance by buggy or sleigh; the single men slept in the barn but

*In his *Autobiography*, p. 232, Roberts says, "I was compelled to recommend for graduation for many years students who had no acquaintance whatever with farm practice."

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had difficulty in getting board. In recommending the construction of cottages for the farm laborers, Roberts said that they were expected to be at the barns summer and winter at 5:30 A. M., and, "although they work only until 6 P. M. in the field, it is usually 7 P. M. before they get all of the barn work completed."¹⁷ Accommodations for the dairyman were especially important since a herd of dairy cows could not be managed from a distance. Not content to await the time when the trustees would appropriate the necessary money, Roberts advanced the funds to construct a house for the dairyman, the trustees agreeing to repay the loan within three years. The following year, Roberts secured a \$200 appropriation for repairing a small tenant house he planned to move near the farm buildings.¹⁸

George W. Tailby, who had come to Cornell as farm foreman in 1878, moved into the dairyman's house. Much of Roberts' success with the university farm was due to his relationship with Tailby. He admired his foreman and was always careful to cast instructions into the form of asking advice. "George," he would say, "don't you think we had better plow that field today?" Tailby, in turn, was dedicated to his job and pushed the work along as if it were his own farm. James Drew, a student in agriculture who lived at his house, recalled Tailby's working to get in the hay on a Fourth of July when the farm hands were away. In order to help out, Drew took the team, "George" and "Garfield," and cut clover the entire day, an incident which illustrates something of Tailby's conscientiousness and that of his boarder as well.¹⁹

Through plowing green crops under and careful crop rotation, Roberts gradually increased the productivity of the farm. In 1883 he installed tile drainage, which, unlike the former practices, involved a large initial outlay, an expense he justified to President White with a characteristic aphorism: "A farm is like a bank; neither honors drafts without receiving previous deposits."²⁰ It was through his efforts to increase farm productivity that Roberts noticed the economic value of properly preserved manure. He later determined this value under experimental conditions and made it the subject of an experiment station report.²¹ In 1874 the university farm yielded less than eight bushels of wheat per acre; in 1882 the average yield was thirty bushels, an increase which Roberts attributed to the use of farm

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manure. The steps traversed between the low yield of wheat in 1874 and Roberts' conclusion, in 1885, that farm manure could be worth \$3.61 a ton, illustrate the combination of experimental scientist-practical farmer that was Roberts at his best—an example for wise farm managers everywhere.

In 1874 manure in sufficient quantity was available only by hauling it from the stables in Ithaca. The expense of transportation and the poor quality of the product—manure was then usually thrown outside the stable door to be leached by the rain and “burned” through chemical decomposition—made this source of plant nutrients economically prohibitive. Roberts then tried commercial fertilizers, but found them equally unsatisfactory. Costs were high and results uncertain, for although sulphate, phosphate, potassium, and nitrogen were being widely advocated, little was known about the nutritional requirements of different crops and the abilities of different soils to assimilate fertilizers. After 1879 Roberts utilized manure from the pen stable of the new barn. This was a covered yard where the horses and cows could exercise, clean bedding being added each day. Control of the moisture content and the amount of bedding added produced manure of high quality, as demonstrated by chemical analysis and the results of field production.²² Roberts passed these observations on to farmers in the *Cultivator and Country Gentleman*, urging them to husband a resource they could only partially replace by the purchase of expensive commercial fertilizer.*

Other members of the faculty also had information of practical value for farmers. Through observations and experiments Caldwell had arrived at improved methods for producing dairy products; Law knew how to prevent the spread of bovine tuberculosis; and Comstock could recommend controls for harmful insects. In spite of uncertain support, the Cornell University Experiment Station had produced a body of information of potential economic value. However, this potential could not be realized until the work of the station was placed before farmers in a context where it could dominate conflicting information. In this respect the agricultural press was a poor tool for

*Feb. 26, 1885, p. 171. For a critical analysis of Roberts' experiments on the value of manure by an advocate of commercial fertilizer see the issue of April 9, 1885, p. 303.

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communicating scientific information, for journalistic skill and a reputation for authority were required to make one article more persuasive than another. Talks before agricultural organizations also had built-in limitations, for in the 1880's these organizations included members with a wide range of interests. Talks dealing with specialized topics were submerged in the diversities of the program and the pressures of time. A new form of communication was needed to connect Cornell's faculty of agriculture with the farmers of the state, and in establishing this link, Charles Kendall Adams played a vital role.

In the summer of 1885, this former professor of history at the University of Michigan, who succeeded White as president of Cornell University, actively advanced the interests of the Department of Agriculture. Where White had stood before farm organizations as an apologist defending Cornell's contribution to New York State agriculture, Adams stood among farmers asking what Cornell could do to aid them. Where White's relationship to the Department of Agriculture appeared to be one of making the best of a situation forced upon him by the requirements of the Morrill Act and his association with Ezra Cornell, Adams was directly involved in making the University the center of agricultural education in New York for both farmers and the sons of farmers.

The movement of events favored Adams, for by 1885 New York farmers were more open to conviction that Cornell's agricultural education had relevance to their own farm operations. Through the leadership of the agricultural press and farm organizations like the Grange, farmers were learning that experiment stations could provide more useful information than was available from other sources. The development of this changing expectation was facilitated by the increasing respect for science that was sweeping American society; indeed, changing the orientation of the largest occupational group in that society toward new sources of information depended upon this fundamental social change. Any evaluation of Andrew D. White's effect on agricultural education must weigh his contribution to promoting an understanding of the value of science, through books, speeches, and the Cornell University curriculum. We can only question whether, prior to the development of a widespread respect for science, greater financial support for the Department of Agriculture

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would have resulted in greater farmer interest.

President Adams and Professor Roberts promoted the farmers' institute as a communication link between the University and the farmers of the state, thus utilizing on a broader basis the technique which had worked so well in Tompkins County in 1877. The desirability of holding an institute at Cornell for the farmers of the state was suggested to Roberts at the convention of the Western New York Horticultural Association in 1885. In reporting the idea, Roberts said that about forty of the most prominent agriculturists could be induced to attend. "I believe the time is ripe for this move and that it would do both agriculture and the University great good. I have already taken some steps in this matter."²³ President Adams described the basis for his decision to hold this institute in his annual report for 1892, which, although written well after the event, was consistent with other evidence:

After repeated conferences with the professors most directly interested, I decided to invite to the University a large number of the leading agriculturists of the State for the two-fold purpose of holding a farmers' institute and of making the resources of the University for the improvement of agriculture as widely known as possible.²⁴

The institute was held in February, 1886, and lasted three days. The invitations, numbering about one hundred, were prepared by the careful hand of Professor Roberts' neighbor, Mrs. Anna B. Comstock.²⁵ In order to provide headquarters for the institute, the University Faculty was temporarily turned out of its room in Morrill Hall. Classrooms were used to accommodate the institute lecturers. About one hundred people registered, and it was estimated that over two hundred were present.²⁶ On the evening of the first day, President Adams addressed to the group "A Plea for Scientific Agriculture," in which he stated that experiment stations could be the means for transforming American agriculture. During the institute Caldwell, Comstock, Law, and Roberts described their work at Cornell. Over half the speakers, however, were not faculty members—many were practicing farmers.²⁷ Years later one of the participants recalled Roberts' fear that the institute would not end successfully:

Professor I. P. Roberts was much worried for fear that someone would

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“make a break.” Never before had the leading interests been brought together . . . Nothing occurred to break the harmony of this conference and it was *then* considered a great success, and Professor Roberts was congratulated on it, and its results, at its close.²⁸

Before separating, those attending the institute resolved that Cornell be asked to hold similar meetings each year.²⁹

J. S. Woodward, corresponding secretary of the New York State Agricultural Society, was one of the most active participants in the Cornell institute and, following the success of this meeting, he moved to organize similar institutes under the sponsorship of the society. In February, 1887, an institute was held at Cornell in conjunction with the annual meeting of the society. This three-day gathering was addressed by President Atherton of the Pennsylvania State College, President Willets of Michigan Agricultural College, and H. E. Alvord, then at Massachusetts Agricultural College. The *Cornell Era* reported that farmers were “made to feel at home” at the University and that students were impressed by the “ease with which President Adams adapted himself to his surroundings.”³⁰ During that winter of 1886-1887, other institutes were held at Lockport, Oswego, Batavia, and Schenectady, with at least one Cornell professor taking a prominent part in each institute. The success of these meetings prompted the legislature to appropriate \$6,000 to the New York State Agricultural Society for its institute work during 1887-1888.³¹ The great popularity of this form of agricultural education, along with public funds to pay travel expenses, soon gave the Cornell faculty access to nearly every agricultural community in the state.

While encouraging the faculty to go to the farmers, Adams supported a change in the University’s admissions policy which facilitated the entry of farmers’ sons as special students. Prior to 1886 special agricultural students were not admitted without entrance examinations unless they had reached the age of twenty-one. The recommendation of the faculty of agriculture that this age limit be reduced to eighteen was rejected by the University Faculty in 1885, but was approved in April, 1886, after strong support from President Adams. Thereafter, applicants were screened in an informal interview with Professor Roberts; and selected special students were admitted to the

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agricultural courses, where they were not required to take the regular course examinations.³² This admissions policy provided the flexibility needed to meet the professional needs of farm boys who were highly motivated but lacked the academic preparation to pass entrance examinations. The success of this policy depended on Professor Roberts' ability to determine whether candidates possessed sufficient motivation and facility with English to make attendance at Cornell useful to them. After a year's trial, President Adams declared that the special agricultural students were "earnest, faithful, and efficient."³³ Professor Caldwell, who was an advocate of high standards, said the special students did better than he had expected; there was no reason, he thought, for regretting the new admissions policy.³⁴

The four-year course was also adapted to the needs of farmers. President Adams felt that this curriculum, unchanged in its fundamentals since the University opened, was "likely to create the impression that it is intended quite as much for those who would teach the science of agriculture as for the education of farmers."³⁵ In the new curriculum, introduced in 1886, the foreign language requirement was limited to the freshman year; otherwise the first two years consisted almost entirely of science and mathematics. The major change was in the last two years, which were made entirely elective with the exception of a junior theme and a twelve-hour requirement in courses related to agriculture or horticulture.³⁶ Students could continue to concentrate on the sciences during their last two years or move toward farm management through study with Professor Roberts.

The new curriculum and admissions policy combined with farmers' increasing awareness of the University and growing respect for its agricultural education led to an increase in students after 1885,* as shown in the following figures of student enrollment for 1885-1890:³⁷

*The Master of the State Grange had promoted attendance at Cornell even before these changes were made. "Possibly I have had some little influence already in adding a few names to the agricultural class," W. A. Armstrong wrote to White, Dec. 23, 1884 (White Papers).

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<i>Year</i>	<i>No. of Regular Ag. Students</i>	<i>No. of Special Ag. Students</i>
1885-86	23	—
1886-87	33	5
1887-88	33	12
1888-89	37	21
1889-90	28	21
1890-91	32	20

This was not an unmitigated blessing, for as the number of special agricultural students increased it became more difficult to give them the necessary individual attention. By 1889 Caldwell considered the difficulty of teaching regular and special students in the same class a substantial handicap to everyone involved. He recommended that special students be required to stay two years, the first being devoted to basic science and the second to the agricultural applications of science.³⁸

The increased enrollment was in decided contrast to other colleges of agriculture in universities. The University of Wisconsin had two students in agriculture in 1885 and none during the next two years. The University of Minnesota had one student in agriculture in 1884 and none the following year. In 1887 seven students were enrolled in agriculture in the University of Missouri. Even Pennsylvania State College, which had been concentrating on agricultural education, had no students in agriculture in 1882, thereby enabling Caldwell's former graduate student, Whitman H. Jordan, now professor of agriculture, to devote full time to experimentation.³⁹

Cornell's agricultural students came from many states and countries. Although most were from New York during the decade 1881-1890, every adjacent state was represented, as was Ohio, Indiana, Illinois, Michigan, Wisconsin, Maryland, Virginia, Kentucky, and Louisiana. Eleven students came from foreign countries; four from Japan, three from Brazil, and one each from England, France, Turkey, and Colombia. While the effectiveness of Roberts and his colleagues in extending the work in agriculture to people outside Cornell was unquestionably related to the increasing enrollment from New York and adjacent states, it does not explain the substantial enrollment

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from foreign countries. In all probability these students were attracted by the reputation of Cornell University rather than by knowledge of its contribution to agricultural education.⁴⁰

The year 1886 was one of transition for the Cornell University Experiment Station. Adams termed the trustees' refusal to provide support "a mistake," especially at a time when the national movement for further aid to agricultural colleges seemed about to produce results in Congress.⁴¹ Since this movement was initiated at the Washington convention in 1872, it had proceeded fitfully to a second Washington conference in 1882. At that meeting Caldwell expressed the combination of hope and frustration that enveloped the advocates of the agricultural experiment stations. The lack of financial support, said Caldwell, reflected the lack of public interest and understanding of experiment station work, but if the public was not willing to be educated, "the idea of progress in agriculture is nothing but a dream." Such a public must exist, he concluded, or experiment stations would not have spread so far from their birthplace in Germany and England. The convention dealt with a broad range of agricultural problems; Professor Law read a paper on the lung plague and Professor Roberts one on the perpetuation of milk qualities in dairy cattle. A committee on cooperative experiments pointed the way to the more highly organized Washington conference of 1883 in recommending that the U. S. Department of Agriculture become a medium of communication for those interested in agricultural experimentation and that Congress be asked to contribute funds for this development.⁴²

By the time this convention met, a bill going well beyond the recommendations of the previous Washington conference had already been introduced in Congress. Drafted by President Seaman A. Knapp of the Iowa Agricultural College, it provided for the establishment of "national experiment stations" in connection with state agricultural colleges. This bill was perfected during the 1883 convention and presented before Congress in somewhat modified form each year until 1887. The provision for a \$15,000 annual appropriation to each state was maintained throughout, but the provisions containing even a minimal degree of federal control were removed at the insistence of the states before the act was finally passed in 1887.⁴³ On its third appearance in Congress in 1884, the bill was viewed

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with indifference by the House Committee on Agriculture. According to Professor G. H. Cook of Rutgers, who appeared before the committee, "they really did not seem to think it was of any consequence whatever."⁴⁴ Thereafter, the commissioner of agriculture, Norman Colman, worked effectively with a committee appointed in 1885 at a convention of delegates from agriculture colleges and experiment stations to secure the cooperation of Representative William Hatch of Missouri, who finally directed the act through Congress. In 1886 President Adams appeared before the same House Committee on Agriculture to emphasize the value of experiment stations to farmers, using as his principal evidence Roberts' experiments with farmyard manure.⁴⁵ Otherwise it does not appear that Cornell's representatives took a direct part in obtaining passage of the experiment station legislation.* Their contribution lay in advancing research related to agriculture, in facilitating the exchange of scientific information, and in avoiding the pitfalls of the model farm and the glorification of manual labor.

The passage of the Hatch Act placed the United States commissioner of agriculture in a difficult relationship to the state agricultural colleges. At the request of the representatives of these colleges, he was made responsible by a provision in the act for securing "as far as practicable, uniformity of methods and results in the work of said stations," but by the insistence of these same representatives was given no authority over how the state experiment stations used their \$15,000 annual subsidy.† The necessity for a continuing process of accommodation between the commissioner of agriculture and the agricultural colleges and experiment stations had been anticipated. For this purpose an organization to replace their previously unstructured relationship was established during October, 1887, when delegates from the state institutions, meeting at the Department of Agriculture in Washington, formed the Association of American

*Roberts was not listed as present at the Washington convention of 1885 on the day the experiment station bill was being discussed (*Proc. of a Convention of Delegates*, 1885, pp. 42, 118).

†Uniformity of results referred to uniformity in the method of reporting results. The full text of the Hatch Act is printed in Bailey, *Cyclopedia of American Agriculture*, IV, 424-425.

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Agricultural Colleges and Experiment Stations. Under the association's constitution the Department of Agriculture was admitted to membership. An executive committee was made responsible for "looking after legislation affecting the stations," its expenses to be met by an annual contribution of \$30 from each station receiving the full Hatch Act fund.⁴⁶

Henry E. Alvord was named chairman and President Adams a member of the first executive committee.⁴⁷ Alvord was an excellent man for the position. Aggressive and able, he had taken a major part in organizing the Washington conventions of 1882, 1883, and 1885, and in preparing the transition to permanent organization.* Anxious to strengthen the association, in 1889 he asked Roberts, as a member of the executive committee, to write President-elect Benjamin Harrison and get others to do so on behalf of measures desired by the association. He also urged all members to transmit their business with the national government through the association.⁴⁸

Enactment of the Hatch Act did not mean that Cornell University immediately received \$15,000 annually for its Experiment Station, for section eight of the act gave the state legislatures broad authority in determining the distribution of the fund. Under this provision, the New York State legislature could give all or part of the fund to the New York State Agricultural Experiment Station at Geneva. Actually, well over \$15,000 was involved, since the stations receiving the fund were assigned the franking privilege for official publications. Within a week after President Cleveland signed the Hatch Act, the Cornell trustees approved a draft of a memorial to the state legislature setting forth the University's claim to the fund.⁴⁹ The legislature, however, refused to make any decision on the allocation of the fund, simply giving, by concurrent resolution, its consent to the Hatch Act as required by section nine. By this device the legislature passed the issue to the United States Treasury Department, where Alvord helped present the Cornell claim. On March 12, 1888, Alvord reported that the federal comptroller had practically decided to pay the fund to

*Alvord had been general manager of Houghton Farm, a private experimental farm located near Newburgh, N. Y., which was supported by Lawson Valentine (*Houghton Farm Experimental Department*, ser. I-III, 1882-1883).

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Cornell.⁵⁰ Meanwhile, the New York State Agricultural Society had been supporting Cornell's claim in Albany. "We are *not going to be beaten*," J. S. Woodward wrote Adams. In describing his lobbying efforts, he suggested that if Adams had any Democratic friends it would be well for them to see the Governor.⁵¹

Anticipating the Hatch appropriation, which Cornell secured in 1888, the trustees organized an agricultural experiment station at Cornell in the fall of 1887. Ignoring the existence of the Cornell University Experiment Station, the trustees established a station council to consist of the heads of the departments related to agriculture, the director of the station, the President of the University, and two trustees, one to be the president of the New York State Agricultural Society and the other a resident of Ithaca.* It was soon decided that the director should not be a member of the faculty. In January, 1888, Adams approached Professor W. A. Henry of Wisconsin for the directorship, giving every indication that his nomination would be approved by the trustees.⁵² Henry was not interested. In March, H. E. Alvord was appointed to the position but declined to accept.⁵³ Finally in April, 1888, Roberts was appointed to the directorship, and provision was made for an assistant director.⁵⁴ With Roberts' appointment a potential source of discord, which might have arisen if the administration of teaching and of research had been separated, was eliminated. Roberts' former student, Henry H. Wing, then at Nebraska Industrial College, was named as deputy director.

The Department of Agriculture to which Wing returned was not substantially different from what he had known in his undergraduate years. Comstock still lectured in White Hall; Prentiss in the south wing of Sage College, where the Botany Department was located; Law met the seniors in agriculture at 8 A.M. daily in McGraw Hall for lectures on veterinary science; and in Morrill Hall, Roberts continued to dispense "knowledge born of experience" in talks not noted for pedagogical form. Only Caldwell had new quarters, having moved into recently completed Franklin Hall. With the exception of Comstock, these men wore luxuriant beards, and Roberts, especially, presented to his students the appearance of an ancient prophet.⁵⁵

*For many years former President White was the resident trustee (*Trustee Proc.*, Oct. 26, 1887, p. 24).

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The only new building used exclusively by the Department of Agriculture was a small dairy house measuring some twenty-four by thirty feet. Completed in 1886, it stood on the present site of Bailey Hall and provided a place for practical instruction in making cheese and butter.⁵⁶

Aside from the Roberts barn, the principal facility of the department continued to be the university farm. It contained 237 acres in 1886, 125 of them under tillage.⁵⁷ Much of the land suitable for cultivation was that now occupied by the athletic field and the buildings of the College of Agriculture.

Students who did not live in the university dormitories continued to board in Ithaca at the foot of the hill. Rooms were available for one dollar a week, and board could be obtained for three dollars, the fare consisting of bread, potatoes, and fried or roasted meat, topped off with pie. James Rice, who entered Cornell as a special student in agriculture in 1887 and later became professor of poultry husbandry, earned his college expenses by managing a boarding house on Linn Street. According to a classmate, Rice established the innovation of allowing his guests unlimited milk—a practice made possible by low milk prices and bulk purchase—and refused to follow his cook's recommendation to dilute it with water.⁵⁸

The rapid change in the Department of Agriculture, following the passage of the Hatch Act, contrasted dramatically with its slow development prior to 1887. Soon after the organization of the Experiment Station was completed, Adams recommended that the academic departments involved in its work be incorporated into a college of agriculture. This was done in June, 1888, when the trustees united the Departments of Agriculture, Veterinary Science, Agricultural Chemistry, Botany, Entomology, and Horticulture into the College of Agriculture and named Roberts dean.⁵⁹ This step was apparently taken to increase the prestige of the work in agricultural education. The College at this time was not an effective administrative unit for the departments remained under the direct authority of the President and trustees.

The Hatch Act opened the way to increasing the personnel in experimental work. Where it had been possible to secure only one assistant, intermittently, before 1888, four assistants were then hired.

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The number of resident teachers was also increased by having men who were brought to the University primarily for experiment station work devote part of their time to teaching. This arrangement, financed by splitting salaries between University and federal funds, was educationally ideal for a teacher sufficiently gifted to communicate the implications of his research to students with limited technical knowledge. This was an opportunity suited to the talents of Liberty Hyde Bailey, who came from Michigan Agricultural College in 1888 to fill the professorship of horticulture.

Bailey's background included contact with unusual persons. A child of the Michigan frontier, he has been fortunate in his early youth in having a teacher who had impressed him with the importance of developing a critical awareness of the features of his environment. This awareness, together with pronounced native talent, made him an outstanding student of botanist William J. Beal at Michigan Agricultural College and later carried him to Harvard University, where as herbarium assistant he became intimately associated with the famed botanist, Asa Gray. Gray was then the peerless leader of American botany; as Bailey knew, this association was a privilege of a high order. After two years with Gray, Bailey was prepared to make significant contributions to the content and teaching of horticulture.⁶⁰

When the trustees made the appointment in April, Bailey had concluded a series of lectures on horticulture given during the winter term.* That his tenure was not made contingent on the continuation of Hatch Act appropriations suggests that he must have made a very favorable impression—not a surprising accomplishment for a young man who had already demonstrated an ability to analyze scientific concepts and dramatize their implications in language that was both accurate and interesting.†

The division of knowledge into increasingly narrow fields, each developing its own language and methodology, had only begun in the 1880's, but Bailey was already aware of how this increasing specializa-

*Cornell University was on a trimester system until 1900.

†Bailey was appointed at a salary of \$3,000, one-third being paid from university funds (*Trustee Proc.*, April 14, 1888, p. 195). On Bailey's contributions to horticulture at Michigan Agricultural College, see Madison Kuhn, *Michigan State: The First Hundred Years* (East Lansing, 1955), pp. 151-153, 170.

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tion threatened to defeat the ends it was expected to attain. "One can never become a successful investigator in any subject," the twenty-seven-year-old specialist in horticulture told the Massachusetts Board of Agriculture in 1885, "if his whole skill and education are confined to that subject. Much of our experimenting is entirely worthless," Bailey insisted, "because the experimenter is not able to grasp the relations which exist between his subject and other subjects akin to it." Bailey saw that the advancement of agricultural knowledge required that the compilation and classification of information keep pace with the trend toward specialization. With intensity of purpose, he set out to fill this need in the broad field of agricultural education. In the same talk Bailey stated his conclusion on the warmly debated question of the relation of science to practice in agricultural education. "Then do not discourage the pursuit of science," he said, "however much you may have been taught to regard it as opposed to practice. Science is practice. All so-called popular and useful science must be founded on recondite facts and principles."⁶¹ An obvious point, perhaps, but stated in a way that would later help New York farmers understand the value of experiment station work.

Bailey was an immediate success at Cornell. His classroom work was well organized and sufficiently interesting to attract numerous auditors. At the end of Bailey's first year, President Adams reported that the twenty acres of the farm assigned to him already showed "the results of his thoughtful and skillful administration."⁶² Although initially dependent on the outdoors for a laboratory, he began construction of a forcing house, which was completed for \$800. At the end of his first year at Cornell, Bailey was granted his own domain through assignments by the trustees of specific buildings and land to the Department of Horticulture.⁶³ During this busy year he also found time to review the contributions made to horticulture in North America and prepare descriptions of these discussions and discoveries for his first *Annals of Horticulture*.^{*}

^{*}*Annals of Horticulture* (New York, 1890), pp. 1-2. For an examination of the origin of Bailey's drive, especially as it relates to competition with a favored older brother and the desire to attain status in the eyes of a puritan father see G. H. M. Lawrence, "The Real Gift of Liberty Hyde Bailey," *Professional Gardener*, Nov., Dec., 1957, Jan., 1958.

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The federal money which made possible Professor Bailey's forcing house also permitted the purchase of other long-desired equipment. Professor Comstock was able to build his "Insectary," where he could study the life cycles of insects and produce the plant food they required, and to secure a \$400 microscope. These new facilities made him, according to his wife, "the happiest entomologist in all America."* At the same time that Cornell was enabled to create more efficient physical conditions for the conduct of agricultural experiments, it was provided with money for publishing the results. The last of the three reports of the old Cornell station had been issued in 1885; in 1888 alone, four bulletins appeared, and by the end of 1889 eleven more had been issued to a mailing list which then included nearly 7,000 names. Federal funds also made possible the purchase from other experiment stations of bulletins which seemed especially relevant to agricultural conditions in New York.†

The experiment station bulletins covered a wide range in content and style of writing. Some were highly technical and required an understanding of scientific terms; others were directed to the immediate needs of farmers. Some were restricted to a single subject; others, like the reports of the earlier Cornell station, included a number of unrelated topics.†† All bulletins were distributed from a single mailing list to recipients ranging from farmers with little formal education to research specialists. A classified mailing list was clearly desirable, but for many years other needs were given higher priority.

Much depended on continued receipt of the Hatch Act fund, and President Adams was not satisfied that this was assured by decision

*Comstock, Anna B. *The Comstocks of Cornell* (Ithaca, 1953), p. 161; the "Insectary" is described in *Cornell Univ. Agr. Exp. Sta. Bull.* 3, 1888.

†Three thousand copies of a Tennessee Agricultural Experiment Station bulletin on the potato blight were distributed to farmers in the potato-growing regions of the state in 1889. (*2d Ann. Rpt. of the Cornell Univ. Agr. Exp. Sta.*, 1889, pp. 7-8).

††For example, Bulletin No. 4 included experiments on planting corn and analyses of "Economic Seed Manure" and of "Curwin's Hog Powder." Bulletin No. 5, dealing with the production of lean animals, is interesting in the light of recent efforts directed toward this subject.

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of the federal comptroller. In February, 1889, James Wood, president of the New York State Agricultural Society and member of the experiment station council, assured Adams that the fund was secure at Cornell. At about this time an agreement was reached by which the Geneva station promised not to ask for any of this money, but three months later a bill was introduced in the legislature calling for its division between Cornell and Geneva. Director Peter Collier of Geneva assured Adams that the bill was a surprise to him and not a matter of bad faith.⁶⁴ Although Cornell's representative in Albany reported, "a great deal of feeling in the Legislature against Cornell," the issue was temporarily resolved by the assignment of the fund to Cornell, only to be reopened at the next session of the legislature. It was then recognized that Geneva's supporters wished to obtain part of the Hatch fund for the franking privilege for station publications. J. S. Woodward recommended that an investigating committee look into the relative merits of Cornell and Geneva and suggested to President Adams how the committee could be packed with Cornell's supporters.⁶⁵ Woodward's advice was not followed.

After 1888 agricultural education received increasing attention from the university authorities. The time was past when a member of the Executive Committee of the Board of Trustees could practically ignore the subject as Mynderse Van Cleef had done in 1887; in reporting that year to the alumni on the condition of the University, he chose to devote five lines to veterinary science and none to agriculture.⁶⁶ D. E. Salmon's report to the alumni in 1889 was the direct opposite. Salmon, then chief of the Bureau of Animal Industry in the U.S. Department of Agriculture, devoted most of his report to the condition and needs of the Department of Veterinary Science and other work in the College of Agriculture. The small enrollment in agricultural work at Cornell, when compared to the 400 students enrolled in Michigan Agricultural College, suggested to Salmon that the University was not meeting the needs of this important segment of American society. The departments of the College of Agriculture, he said, should be brought together within a single building. The small lecture room in Morrill Hall used for instruction in agriculture and horticulture and the museum in the basement, where tools were ruined by dampness, were declared thoroughly inadequate for the

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demands of agricultural education.*

Obviously, Salmon was working closely with President Adams. In his report for 1889 Adams indicated that an agricultural building to cost about \$75,000 was being discussed and added his hope that some friends of agriculture would come forward to provide this amount along with sufficient endowment to support its operation. These efforts apparently produced results; at least, in November, 1889, the Board of Trustees reported having "received an intimation from two of its members that there are two gentlemen, from either of whom the means may possibly be secured as a gift to erect an Agricultural Building."⁶⁷ By February, 1890, plans had been prepared. In describing the anticipated building the *Cornell Era* stated that the initial impetus for its construction came from the alumni report of D. E. Salmon. By October, 1890, the "two gentlemen" had not come forward; but the trustees went ahead and appropriated \$80,000 on the basis of setting aside about \$20,000 each year until a sufficient amount accumulated to construct the building. When the building was complete, the provision for free tuition was to be rescinded.⁶⁸

The decision to establish the College of Agriculture in its own building was a fitting climax to five years of rapid development in research, resident teaching, and extension. In the early 1880's the faculty had been able to reach only local farmers on a regular basis, but with the development of farmers' institutes, they were able to bring the College of Agriculture to farmers in all parts of the state. In this extension work they enjoyed the consistent support of President Adams, who encouraged faculty participation in the institutes even to the point where this interfered with resident instruction.⁶⁹ The expansion of the staff, made possible by the Hatch Act fund, offered a temporary solution to Roberts' need to be several places at once. In 1888 he planned to have Deputy Director Wing attend institutes or take over the agricultural students while he was away on institute work. The experiment station fund also made it possible for

**Proc. of the Associate Alumni*, 1889. Salmon's comparison of the enrollment in agriculture at Cornell with the total enrollment of Michigan Agricultural College was misleading, for the latter included students concentrating on the mechanic arts (Kuhn, *Michigan State*, pp. 147-149).

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the College to provide resident and extension lectures in horticulture. Professor Bailey's attendance at institutes filled a need that had troubled Roberts since the departure of Lazenby.⁷⁰

By 1888 Roberts had established a reputation among agricultural educators for his success in placing the work of the agricultural college before the farmers of the state. In planning the next annual meeting of the American Association of Agricultural Colleges and Experiment Stations, its president, George W. Atherton, wrote to Alvord suggesting that Roberts discuss the topic "How the Station Shall Reach the Farmer." Alvord agreed that Roberts' experience made him ideally suited for this subject. This is not to say that Roberts was always well received by farmers. Once a group in the northern part of the state asked him if he knew how to plow and otherwise so abused his abilities as a practical educator that he remembered years later the stinging rebuff he had received.⁷¹ By 1890, however, such receptions were unusual.

The farmers' increasing knowledge of the activities of the College of Agriculture and increasing approval of its work were the result, in part, of the more favorable attitudes toward the College expressed in the agricultural periodicals circulating in New York State. Luther Tucker's *Cultivator and Country Gentleman* had been cordial since the agricultural faculty made its first feeble efforts to establish an experiment station; the *Rural New Yorker*, however, had been cautious and the *American Agriculturist* openly hostile. During the 1880's, however, the *Rural New Yorker* adopted a friendly editorial position toward Cornell, while continuing to print correspondence attacking agricultural colleges.* In 1884 this publication's editor hoped that Cornell would become the "model agricultural school in America," and in 1886 wrote that 150 agricultural students at Cornell would be a great benefit to the state.⁷² The *American Agriculturist* ceased to attack Cornell during the 1880's. Thoroughly out of step with events, it practically ignored the agricultural colleges during that decade.

Federal funds and an enhanced public reputation did not end the

*The prominent horticulturist, Peter Henderson, regularly accused agricultural colleges of being too scientific and not sufficiently practical (*Rural New Yorker*, May 5, 1883, p. 285).

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frustrations of a limited budget. In 1888 Roberts still was not able to use the college farm to illustrate his classroom teaching, for the trustees continued the policy that the farm should be operated for profit. Out of necessity, trips to farms about the state continued. In 1889 Roberts suggested that the University pay the cost of these trips, since they were a vital part of his resident teaching and much cheaper for the University than maintaining examples of good and bad farm management on the college farm.⁷³ It is unlikely he had any real hope that the trustees would implement this recommendation, as by 1888 their appropriations for agricultural education had increased only slightly over the 1870's.*

The time lag between change in New York agriculture and the accommodation of Cornell's agricultural education to that change was substantial as far as the University's appropriations for agricultural education were concerned. The reluctance of the Executive Committee of the Board of Trustees to make appropriations for academic work was exaggerated, in the case of agricultural education, by the lack of interest this group of Ithaca businessmen showed toward agriculture. Not until 1885 did they recognize the growing importance of dairying to New York State by establishing on a permanent basis the series of lectures in dairy husbandry that had long been given by L. B. Arnold.† Beyond the peripheral benefits from the federal funds allocated to the experiment station, enrichment of the curriculum in agriculture depended largely on volunteer efforts. Such was the case with a series of lectures on personal and real property given by members of the Law School for agricultural students after 1887.⁷⁴

This period of the 1880's, when the faculty of agriculture was struggling to match available means to perceived needs, was remembered by students as a golden age of agricultural education at Cornell. Classes were small, and each student had the benefit of association with men who were continually opening new areas for

*For 1888-89 the total appropriation to the Departments of Agriculture and Horticulture was less than \$8,000 (Treasurer's Report, 1888-89, MS).

†*Trustee Proc.*, June 17, 1885, p. 361. After Arnold's death in 1888 the series of lectures was continued by Professor James W. Robertson of Guelph, Ontario (*ibid.*, Oct. 23, 1888, p. 94).

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investigation.* In discussing the strength of agricultural education in the period, Jared Van Wagenen, Jr., emphasized the personal qualities of Professor Roberts. In 1945 he wrote to his old classmate, James Rice:

As compared to the present the College of Agriculture as we knew it seems pitifully small and primitive but you and I can always boast of one thing that the present graduates will never understand. We had Roberts for a teacher. I explain him by a certain phrase in the Old Testament, "*NOW THERE WERE GIANTS IN THE LAND IN THOSE DAYS.*"⁷⁵

Van Wagenen's reputation as an agricultural journalist lends weight to this opinion; he rarely permitted the dramatic phraseology so characteristic of his writing to detract from his accuracy as a reporter.† Too few of Roberts' letters remain to make a detailed examination of Van Wagenen's judgment, but certainly it is supported by the correspondence that is available. His official correspondence with President White reveals a man of great dignity deeply concerned about his reputation but possessed with a sense of humility that limited his means of advancing it. Letters to his friend and professional colleague, John Comstock, show an unflinching courtesy that goes well beyond the requirements of the formal style of writing then in use.⁷⁶ A letter to a former student suggests other dimensions of Roberts' personality. "It is now 6 P. M.," he wrote, "and so I thought I would give you this fraction of the day so that none might be lost." There follows a detailed description of the new thirty-by-forty-foot addition to the barn, complete with floor plans, with the comments: "All these betterments please me more than anything I have done for a long time. Nothing is fine or expensive but it is satisfying. . . . We have thirty sheep, eight pigs, and fifteen chickens under experimental conditions this winter and we are getting some strange results which may make Hoard and Smith open their eyes." Concluding his three-page letter, Roberts said, "I have already written too

*This point was stressed by L. C. Corbett, then horticulturist in charge, Bureau of Plant Industry, USDA (Corbett to Bailey, Dec. 9, 1912, Liberty Hyde Bailey Papers).

†Van Wagenen wrote extensively for the agricultural press. His *The Golden Age of Hometown* was published by Cornell University Press in 1953.

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much of myself and not enough of others, so with many good wishes for your future prosperity and that of your good people and with hope that we may meet again at no distant day, I remain, yours faithfully, I. P. Roberts."* Roberts did more than write to former students. John L. Stone remembered the time, when he had only recently graduated from Cornell and, with a young wife, was struggling to manage his father's farm that Roberts visited them and offered help and encouragement.⁷⁷

The increasing number of students in agricultural work encouraged further enrollment by spreading Cornell's reputation in other communities. The research of the 1880's opened areas for investigation that required new techniques and equipment; the extension of information through the agricultural press, experiment station bulletins, and farmers' institutes led farmers to desire further information. A contemporary statement by Professor W. A. Henry of Wisconsin reveals the aura of progress which then marked the agricultural work at Cornell. After a visit to Ithaca, he wrote Comstock, "We have come back full of ideas, and with strong determination to push our agricultural department well to the front."⁷⁸ Additional funds were needed after 1888, however, if Cornell were to maintain the momentum it had gained.

As in 1862 and 1887 funds were again provided by the federal government at a crucial time, in this instance through the Morrill Act of 1890. This legislation resulted from Senator Morrill's eighth attempt to implement the request for further federal aid to the land-grant colleges expressed at the Washington convention of 1872 and, most surprisingly, was introduced in Congress without the knowledge of the Association of American Agricultural Colleges and Experiment Stations.† This legislation provided \$15,000 annually to each state and territory, with an increase of \$1,000 each year up to a total of

*"Hoard and Smith" refers to W. D. Hoard, of *Hoard's Dairyman*, and Wing R. Smith (Roberts to James Drew, Dec. 25, 1890, James Drew Correspondence).

†Before 1890 Morrill's bills to aid the land-grant colleges included provisions for federal aid to the common schools (True, *History of Agricultural Education in the United States*, pp. 196-199; circular letter signed by H. E. Alvord, May 19, 1890, New York State College of Agriculture Establishment Papers).

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\$25,000. The land-grant institutions were left to determine the allocation of the fund within the broad limits stated in the act.⁷⁹ At Cornell the trustees appropriated about two-thirds of this Morrill fund for the work of the College of Agriculture. This brought the total appropriation for agricultural education at Cornell in 1890-91 to nearly \$35,000, an increase of \$26,000 over that available in 1886-87.* The increase was almost entirely from federal funds, for the trustees continued to depend on farm income for most of their appropriation for agricultural education.⁸⁰

Other events of the 1880's, seemingly isolated from each other and unrelated to agriculture, were to prove significant for the further development of agricultural education. One of these events was the trustees' decision to move toward the establishment of a separate veterinary college by establishing the Department of Veterinary Science in its own building.† Since the opening of the University, Professor Law had given lectures in animal physiology to the agricultural students, and by 1885 he had trained four veterinarians, but during much of this time he was employed by the federal and state governments in the eradication of bovine tuberculosis. The appropriations for his department during the 1880's were twice limited to \$100 annually, and for two other years to \$200; in 1883 Law did not even complete the form requesting a statement of the needs of his department.⁸¹ Under these circumstances, the trustees' decision to appropriate \$10,000 for a building is surprising, especially when, according to Law, the "department has never been urged upon the attention of the trustees as imperative and vital to the interests of the University."⁸² This amount, which Law considered inadequate, was never spent, through the inability of university authorities to agree on a proper site. (President White was apparently afraid that several hundred feet was not sufficient to dissipate the contagion he expected to emanate from the veterinary building.) In 1886 the amount was

*These figures include funds available to the Departments of Agriculture, Horticulture, and the Agricultural Experiment Station (Treasurer's Rpt., 1891-92, MS).

†In his annual report for 1883, White said, "The Board of Trustees at a former meeting took action looking toward the establishment of a fully equipped veterinary college" (*Rpt. of the Pres.*, 1883, pp. 44-45).

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reappropriated, but again difficulties in selecting a site proved insurmountable.⁸³ The significant aspect of these events for the College of Agriculture was the clear indication that the university authorities were moving toward the establishment of a separate veterinary college.

Another important development was the first state appropriation to establish on a more efficient basis work already being carried on at Cornell University. Professor Estevan A. Fuertes had long been impressed with the importance of systematic weather observations and for this purpose had established an observatory in 1878 in connection with the College of Civil Engineering.⁸⁴ However, this part-time operation was soon inadequate for the rapidly expanding interest in meteorology. By 1883 nine states had established weather services which coordinated their observations and reports with the National Weather Bureau. Fuertes moved to secure a similar bureau in New York State. Writing in the third person, he later reported: "Efforts were made at Albany for three consecutive years to obtain the aid of the State in this work; but, failing to accomplish this, he decided in 1888, to establish mainly by private enterprise, a provisional service which should demonstrate the usefulness of the plans submitted to the Legislature."⁸⁵ The reaction of the trustees to Fuertes' efforts was to "disclaim all responsibility for or interest in" the bill to establish a state weather bureau at Cornell.⁸⁶ The creation of such a bureau in 1889 and the location of its central office at Cornell was a tribute to the work of Professor Fuertes but hardly cast any glory on the judgment of the University's trustees.⁸⁷ Thus began state support for educational activities at Cornell.

The Founder's Day address of 1888 was significant both because of its author, Jacob Gould Schurman, professor of philosophy, and its statement of the relationship Schurman presumed to exist between Cornell University and the state. Cornell, he said, is "a People's University." Free instruction to over five hundred scholarship holders and low-cost education to others made Cornell accessible to all the people without regard to economic considerations, a public service which, according to Schurman, gave the University at least a moral claim for public support. "We are working for the people of every class and profession," he said, "and the wealth of the country cannot pass us by." Logically, the speech should have ended with an appeal

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to the legislature for state support, but Schurman, a master of the flank attack, apparently felt there was no likelihood of success in Albany until the legislature was prepared to accept his view that the state had a special responsibility to its land-grant institution.⁸⁸ The Founder's Day address was the opening shot in a long campaign for state aid.

Schurman enjoyed a close personal relationship with Henry W. Sage and other members of the Board of Trustees, and by 1890 a clique within the trustees was planning to place him in the presidency of Cornell University.* Sage had already clashed with President Adams over the locus of administrative power, insisting, over Adams' protests, that the appointment of faculty members was not the exclusive prerogative of the President.⁸⁹ While the appearance of harmony was maintained, the intrigue between Sage, Schurman, and disaffected members of the faculty had reached the point where a crisis could precipitate the replacement of President Adams by Professor Schurman. The ideas expressed in Schurman's Founder's Day address were not forgotten until the date of his elevation would arrive. In the spring of 1891 Professor Charles A. Collin, almost certainly with the approval of Sage, was collecting information to document specifically the state's debt to Cornell University for educating the students holding state scholarships.⁹⁰ Unlike some trustees of more recent years, Sage was not opposed to using public money in operating the University. However, his position may well have been based on the expectation that state funds could be acquired, like the federal funds under the Morrill and Hatch Acts, without compromising private control.

*Moses Coit Tyler, who was a friend of both Sage and Schurman, recorded in his diary a conversation with A. D. White on Aug. 20, 1890. White "talked much of University matters: said that Sage and Boardman have formed with others a scheme to get rid of CKA and to put Schurman in his place; and that the latter has entered into the project." Entries for Sept. 30, Oct. 31, and Nov. 24, 1890, also deal with the relation of Sage to Adams (Moses Coit Tyler Diaries, MS, Rare Books Dept., Olin Library).

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IN his annual report for 1891 President Adams reflected at length on the remarkable development of agricultural education at Cornell following the advent of federal funds. On that June 11 the agricultural students celebrated these accomplishments, while the plans for the new agricultural building, recently published in the experiment station report, gave further cause for great joy.¹ A banquet was prepared entirely by the students. The menu, bound between a front cover of oak and a back cover of pine, both sawed on the college farm, included sixty edibles, all produced at Cornell.* Speeches by President Adams, former President White, members of the faculty, and President Potter of the State Agricultural Society conveyed the impression that agricultural education had passed through its period of trial to the point where it had become an accepted part of Cornell University's curriculum. In his address, "Training for Farmers," White referred to trustee indifference to agricultural education as something associated with the past.²

The University had recently received an unexpected bequest of \$200,000 from the estate of Daniel B. Fayerweather. A week following the agricultural banquet a resolution was introduced at a meeting of the trustees to draw on this bequest for the immediate construction of the agricultural building. The motion failed to pass, by a vote of seven to seven, with Sage and three other local trustees voting in opposition. That October the trustees, after referring to the need

*The menus were bound with wool from Cornell sheep, and each front cover was decorated with a flower hand painted by Mrs. Wing. The principal ingredient for the sparrow soup was shot from the eaves of the Roberts' barn, and the fish were withdrawn from Fall Creek where it passed by the University farm. Strawberries were served by gardener Charles Hunn, who placed potted plants on the table and allowed guests to pick their own (*Cornell Era*, June 18, 1891, p. 2; James Rice in the *Cornell Countryman*, Feb. 1930, pp. 125-127).

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for "stringent economy," postponed consideration of the agricultural building for a year.³ By June of 1892 rumors had reached Roberts that the money being set aside each year for this building was to be used for another purpose. "I think you do not fully understand how greatly we are cramped for room," he wrote alumni trustee, R. H. Treman. Roberts then shared his small office in Morrill Hall with four others, and six teachers were using the small classroom set aside for the College of Agriculture. Elsewhere in his long letter to Treman, Roberts compared the facilities he thought so inadequate with those of other colleges of agriculture, implying that when so much had been accomplished already, further development should be encouraged. "At the present time it is not egoism to say that the Cornell University Experiment Station stands at the head in the United States, and that the College of Agriculture offers better facilities for giving a practical and liberal education in agriculture than any other institution in the land."⁴ Treman accepted Roberts' statement that the College of Agriculture was in good condition but differed radically in his recommendations. In reporting to the alumni, Treman stated what was to become the position of the Board of Trustees. He considered the appropriation for the College already too large in view of its enrollment of twenty-two students, especially when the enrollment in other divisions of the University was increasing so rapidly. Concentration on student numbers as the sole criterion for judging the success of Cornell's agricultural education led Treman to question faculty participation in farmers' institutes and other agricultural meetings since these took the faculty away from their university duties.*

Adams' last report to the trustees — he had resigned the presidency on May 5, 1892, "on account of grave and seemingly irreconcilable differences of opinion in regard to matters of administrative importance" — urged the immediate construction of the agricultural building. Failure to do so, he said, would imperil the good relations with the agricultural community, which had supported Cornell in its efforts to secure the Hatch Act fund.⁵ When Adams departed from Cornell, to become President of the University of Wisconsin, the

*Treman chose to count only the students who were candidates for a degree. There were 41 enrolled in agriculture in 1891-92 (*Proc. of the Associate Alumni*, Ithaca, 1892, pp. 29-32).

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close personal relations between the Faculty of Agriculture and the President of the University ended. Looking back over the previous seven years, Roberts said that because of these harmonious relations difficulties "peculiar to the College of Agriculture have been met and overcome."⁶

In June, 1892, the Executive Committee reported a deficit of over \$100,000 and recommended the indefinite postponement of the agricultural building. Elaborating on this recommendation, the committee insisted that the state had already been repaid for its generosity to Cornell by free education for agricultural and scholarship students. Referring to the small number enrolled in the College of Agriculture, the committee added, "The simple truth is, that the expenditure for this work has been wholly out of proportion to the benefits which the farmers of the state have been willing to receive." With admonitions about "stern adherence to living within our means" and cutting "every useless expense," the committee concluded that "the maximum of our capital from known resources has been reached."⁷

In 1891 the trustees were faced with pressure from two groups, one advocating the construction of a building for the College of Agriculture, the other demanding a building for the Law School. Lacking the means for satisfying both, the trustees chose to erect a building for the Law School. From a consideration of student enrollment, this was a sound decision, for the Law School was growing rapidly and in 1890-91 had more than twice as many students as were enrolled in agriculture.* The decision was also justified from a financial point of view, because the equipment required for the Law School was relatively inexpensive and could be financed by tuition income. Schurman was realistic in emphasizing the need for state support, since, by 1890, experience both in New York and other states had demonstrated that men of wealth would not come forward to support agricultural education on an adequate basis.

When Schurman took office in the summer of 1892, a plan had not yet been developed for securing state funds. That September, Schurman, Sage, and former Governor Alonzo Cornell considered presenting a proposition to the legislature asking the state to establish a

*122 law students, 52 agricultural students (*Cornell Univ. Register*, 1890-1891).

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veterinary college under the control of the Cornell trustees as soon as the University provided a building for the College of Agriculture to cost at least \$100,000.⁸ By November the trustees decided that the University could not finance this building, and at the meeting on November 10 Chairman Sage appointed a committee to determine the "best means" for securing it. The membership of this committee indicates that the university authorities had already approached state officials, for Governor Roswell Flower would hardly have been appointed without his consent.* On the following day President Schurman gave his inaugural address, which was in its entirety an appeal for state aid to all departments of the University. Again he emphasized the theme that Cornell is a "People's University." "Denominational and private colleges belong in an age which is passing away," he declared; "the future must be with the People's University." In a somewhat lower key he played on the University's great need for money for faculty salaries, for student scholarships, for dormitories, and for publications. Providing this money, Schurman suggested at the end of his address, would initiate no new policy but simply carry out a previous commitment; for "in accepting the land grant from Congress, New York State pledged aid to the institution receiving the proceeds." This address, Schurman later claimed, set forth "for the first time with perfect correctness" the "true relation of Cornell University to the State of New York."⁹

Schurman had established Cornell's claim for state aid on a base sufficiently broad to permit movement in almost any direction, but the immediate effort was aimed toward the establishment of a state-supported veterinary college and state aid for the College of Agriculture. On the fifteenth of December, Schurman and Trustee Samuel Halliday talked with Governor Flower in Albany, and two days later, at the Governor's request, Schurman sent him a memorandum setting forth Cornell's claims on the public treasury. "Your own desire to promote the agricultural interests of the state," wrote Schurman, "coincides so completely with the aims of Cornell University that I entertain good hopes of enlisting your support in our endeavor to make the University more serviceable to the farming population of

*The committee also included Schurman, Roberts, Treman, and A. B. Cornell (*Trustee Proc.*, Nov. 10, 1892, p. 232).

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the state." To the list of the University's needs he added the statement, "Dairy husbandry would be a good place to begin."¹⁰ The trustees had already decided to circularize the members of the legislature and state officials with Treman's alumni report setting forth the needs of the University. The next move was up to the Governor.*

In his message to the legislature on January 3, 1893, Governor Flower used the information which Schurman had provided. He described and praised Cornell's contribution to agricultural education, mentioned the 512 state scholarships, indicated what other states were doing for agricultural education, pointed out that the State Meteorological Bureau was already at Cornell, and concluded, "It is entirely, however, with a view to state advantage that I would urge the concentration at Cornell University of the various agencies for promoting scientific agriculture." Schurman was clearly impressed with the Governor's political finesse. "Your message," he wrote, "recalls the Jeffersonian simplicity of the founders of the Republic. The object seems to be to point out how the state may be enobled and adorned without adding much of anything to present expenditures. At any rate this is what the message actually accomplishes."¹¹

It is tempting, but probably unfair, to dismiss as hypocritical Schurman's declaration: "If Cornell wants money from the State of New York it is simply for the good and glory of the state. The sons and daughters of farmers and mechanics must not be denied in a civilized and Christian country the advantages of the very highest education."¹² Like many of his contemporaries, Schurman understood that God had selected this Christian nation for his special blessing; thus it is likely that sometimes what appears as plain opportunism was to him a step in advancing "higher civilization."

In securing state aid, the cooperation of the Governor was vital; in fact, such a step could hardly have been attempted without his active support. Was it a fortunate coincidence of viewpoint that led the Governor to fall in so thoroughly with Schurman's plans or was

*That Treman's report was distributed is surprising, with his comments on the College of Agriculture and Schurman's desire to secure a building for that college. However, the decision to distribute this report was made before the University's immediate claims had been specified (*ibid.*, Dec. 6, 1892, p. 235).

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he motivated more by his presumed friendship with the Sage family and the persuasive talents of President Schurman?¹³ There is much evidence on the side of the former. During the legislative session of 1892, the Governor vetoed a bill appropriating \$100,000 for distribution to agricultural societies for the awarding of premiums in addition to \$90,000 already appropriated for the same purpose. In his veto message, the Governor went beyond the immediate issue to what he considered the basic need of New York agriculture — a more rapid adjustment to changing economic conditions. New York farmers, he said, should utilize growing urban markets through the production of milk products, poultry, fruit, and vegetables instead of trying to compete with Western farmers in the production of grain. The existing relationship of the state to agriculture, maintained through independent appropriations for premiums at fairs, farmers' institutes, the State Dairy Commission, and the State Agricultural Experiment Station, was a poorly considered vehicle from the Governor's point of view for promoting agricultural adjustment to changing conditions. The Governor's recommendations to the 1893 legislature were a consistent sequel. Along with the concentration of "agencies promoting scientific agriculture" at Cornell, he recommended the establishment of a bureau of agriculture in the state administration; together these organizations could promote the rationalization of the state's relationship to agriculture.¹⁴

The need for an agricultural building was pressing after Cornell established its first short course in the winter of 1892-1893. This course was designed for working farmers who could get away from the farm only during the winter months. The only limitations on enrollment were a minimum age of sixteen and "good moral character."¹⁵ A winter course which would "conform to the necessities of agricultural life" had been recommended by President Adams in 1891; by the following June, Roberts was anxious to undertake this course, modeling it on one developed successfully by Professor Henry at the University of Wisconsin.¹⁶ At Roberts' invitation a group of some eighty farmers, journalists, and agricultural educators, including representatives from the agricultural colleges in Pennsylvania, New Jersey, and Ontario, assembled at Cornell that June. According to J. S. Woodward, the purpose of the conference was "to consult

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over the desirability of certain movements forward in agriculture." Methods of getting more agricultural students at Cornell were discussed and the group recorded itself as strongly in favor of a winter short course. University extension work in agriculture and larger appropriations for farmers' institutes were also recommended. At the close of the conference Woodward said, "We have pushed in the right direction and we have *tried* to push hard."¹⁷ By October 1, 1892, the Cornell winter short course was definite. The *Rural New Yorker*, which plugged it consistently, assured its readers, "The course will be practical in the extreme—with no nonsense about it, but a fair and earnest discussion of the 'why' of the principles that underlie farm operations."¹⁸ Forty-eight students attended during the winter of 1892-1893.¹⁹

By February 8, 1893, arrangements had been made for introducing a bill in the legislature appropriating state funds for the construction of a dairy building at Cornell adequate for instructing two hundred short-course students in making cheese and butter. In the 1890's these industries were widely distributed in the state and provided both the major milk market for New York farmers and a source of employment during all except the winter months.* Schurman reported to his representative in Albany that the Governor was "greatly interested" in the winter course, which was developing most successfully. "The boys are all so delighted with what they are getting that they assure us that we will have two or three times as many next year."† To complete the campaign Roberts got out a circular letter urging the recipient to write his senator and assemblyman urging support of the dairy building appropriation. All states except New York, he said, have supported colleges of agriculture, but New York "has not given a dollar."²⁰ Schurman was optimistic about securing future state aid if the measure passed even in part.²¹ The legislature voted the full \$50,000 requested and in August, 1893, the contract for the

*During the 1890's the opening of the winter short courses was coordinated with the closing of the cheese factories (interview, H. E. Ross, Feb. 15, 1961).

†Schurman to Collin, Feb. 8, 1893, Jacob Gould Schurman Papers. Professor Charles A. Collin, a member of the Cornell Law School, watched over Cornell's interests during this and other sessions of the legislature.

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construction of the dairy building was signed.²²

Anticipating that this building would eventually form one wing of an agricultural hall, it was located where space was available for future expansion — on the east side of the university quadrangle adjacent to Lincoln Hall.* In the course of events, however, a building for the College of Arts and Sciences was constructed on this site, and the dairy building became its north wing. A pipette and acid bottle used in the test for butterfat developed by Caldwell's former graduate student, S. M. Babcock, may still be seen carved into the stone beside the north entrance of Goldwin Smith Hall.

Along with the effort to secure the dairy building, Schurman cultivated the support of farm organizations for his subsequent move to secure the establishment of a state veterinary college. Following Governor Flower's address to the legislature, he wrote officers of the State Grange and the State Agricultural Society suggesting that their organizations might welcome an address by Professor Law on the needs of veterinary education.²³

The projected expansion of public support for Cornell's agricultural education and the closely allied field of veterinary education alarmed the friends of the State Agricultural Experiment Station at Geneva, for that institution would be eliminated if the Governor's recommendation for concentrating the state agencies "for promoting scientific agriculture" at Cornell were implemented. The possibility of losing the support of the State Grange posed a further threat to Geneva. State Master W. C. Gifford said that the Grange regretted its earlier support of the Geneva location and desired removal to Cornell as soon as the state could dispose of the Geneva property.† The Governor's position was crucial. On September 26, he visited the Geneva Station and was lavishly entertained by Senator Hammond and exposed to the station's possibilities for future usefulness.²⁴

*This agricultural hall appears as if completed on the campus map in the *Cornell University Register* from 1892-93 to 1894-95.

†Gifford made this statement in a conversation with Schurman (Schurman to Collin, Feb. 8, 1893, Schurman Papers). In his address to the State Grange on Feb. 6, 1894, Gifford complained that the farmers of the State Grange were not recognized in the management of the Geneva Station equally with "the political farmers of the state" (*Proc. N. Y. State Grange*, 1894, p. 24).

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In 1894 three bills affecting agricultural education at Cornell were before the legislature; one established and made appropriations for a state veterinary college at Cornell, one made an appropriation to support extension work in horticulture at Cornell, and the third allotted 10 per cent of the Hatch Act fund to the Geneva Station. Schurman considered the veterinary college measure essential but made intensive efforts to prevent diversion of any part of the federal experiment station funds from Cornell. The appropriation for extension work came to Cornell without the active intervention of the President.

Schurman skillfully managed Cornell's legislative interests with the able assistance of Assemblyman E. C. Stewart of Ithaca. By January 3, 1894, Schurman had persuaded the newly appointed commissioner of agriculture to recommend increased state aid to Cornell, had prepared the president of the Senate for the veterinary college project, and was having Professor Collin approach members of the legislature about attending the dedication of the dairy building.²⁵ The date of the dedication was set in order to secure the presence of the maximum number of legislators. In planning the ceremony, President Schurman intended to remain in the background. "It is a State College of Veterinary Science that is proposed," he noted, "and the cause might be prejudiced if the President of Cornell University were discovered to be taking too prominent a part in such State affairs."²⁶ However, when the day arrived, President Schurman was very much in the center of events, reminding the twenty-six members of the official party from Albany what other states were doing for their land-grant colleges and what Cornell was doing for New York. The event was something of a love feast, with great praise for President Schurman amid promises of future state aid.²⁷

Assemblyman Stewart observed that "after much work and *log rolling* in executive session" he secured a favorable report on a bill providing \$150,000 for a state veterinary college at Cornell.* On

*A funding bill which would require the state to pay 5 per cent interest to Cornell University on the land-grant fund was also involved in Assemblyman Stewart's logrolling; the funding bill was vetoed by Governor Flower (E. C. Stewart Diaries, II, 71; Malcolm Carron, S. J., *The Contract Colleges of Cornell University: A Co-operative Educational Enterprise* [Ithaca, 1958], p. 35).

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February 20, however, much of his effort was negated by unfavorable publicity following an attempt by Cornell sophomores to disrupt a freshman banquet with chlorine gas, which misfired and resulted in the death of a cook. To that incident Assemblyman Stewart attributed the reduction of the veterinary college appropriation to \$50,000 by the Senate Finance Committee. President Schurman was in no position to press for restitution. Amid press attacks on Cornell following the death of the cook it was decided "to take what the Senate would give and be grateful."²⁸ On March 12, 1894, Governor Flower signed the law appropriating \$50,000 for the state veterinary college. Although insufficient for the building that was desired, it prepared the way for an additional appropriation the following year.²⁹

The state appropriation to the Cornell University Agricultural Experiment Station in 1894 for extension work in horticulture was of more complex origin. University extension work was then a social movement which had "assumed considerable importance and great popularity in this country." This phrase was used by Governor Flower in 1892 in a five-page statement urging the legislature not to promote the extension movement. It is "wrong in principle," the Governor declared, "because it taxes the majority for the benefit of the few" and its support would place an incalculable burden on the finances of the state. The \$10,000 appropriation made in 1891 to the Regents of the State University for promoting university extension was not, he urged, a precedent to be followed.³⁰ The Governor's position, consistent with the state's policy of limiting aid to colleges to short-term grants for narrowly defined uses, did not close the door to extension work in agricultural education, for in this context extension became a means for carrying out the state's declared policy of aiding agriculture.

The impetus the movement for state aid to agricultural extension work received from the conference held at Cornell on June 10 and 11, 1892, was supplemented by the work of Professor Liberty Hyde Bailey and his assistant, E. G. Lodeman, in Chautauqua County. They had been working in the orchards and vineyards there and had met a local fruit grower, John W. Spencer. Many years later Bailey told Mrs. Anna Comstock how Spencer in 1894 stood behind Assemblyman S. F. Nixon in securing the legislation enabling Cornell to

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conduct extension work in horticulture in sixteen counties of western New York: "It was by the efforts of Mr. Spencer working through the Chautauqua County Horticultural Society that the thing was largely done . . . It was Mr. Lodeman, I think, who put the question of state help up to Mr. Spencer."³¹

By 1894 Governor Flower had changed his attitude toward continued support for the Geneva station, and in 1894 his message to the legislature recommended that it receive "ample appropriations."³² Following this recommendation, a bill allocating 10 per cent of the Hatch Act appropriation to the Geneva station was introduced. Although Professor Roberts had been advised to let Geneva have the \$1,500 in order to secure the franking privilege, he strongly opposed any diversion of federal funds which would result in curtailing valuable work in entomology and horticulture. Schurman supported him in this. Together they wrote to stations in other states to determine how Hatch funds were allocated elsewhere. A. C. True, director of the Office of Experiment Stations, and Charles W. Dabney, assistant secretary of agriculture, supplied information and personal support.³³ On the basis of this information, the University prepared to argue that division of the fund would not only greatly handicap the work at Cornell but would be illegal, since it would have the effect of disestablishing the Cornell Station. This statement reflects the animosity then existing between Cornell and Geneva, for it was specifically charged that Geneva's action was motivated by unfriendly sentiments. With an additional \$6,000, claimed Schurman, the Cornell Station could do all the work accomplished at Geneva with an appropriation of \$66,000.³⁴

Bailey called this measure "the Geneva *Steal Bill*" and was anxious to have the Governor reject it. He was also anxious to have the extension bill approved. When they reached the Governor, however, both measures had been incorporated into a single bill which also provided an \$8,000 appropriation for extension work at the Geneva Station. The form of this legislation made opposition by Cornell difficult. When the law was signed by Governor Flower, the Cornell trustees decided to take no legal action.³⁵ This did not, however, end conflict with Geneva. In response to a warning from John W. Spencer, Schurman asked Nixon to reduce the appropriation requested for

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Cornell's extension work in 1895 from \$50,000 to \$16,000 in order to avoid further friction with Geneva.*

The Council of the Cornell University Agricultural Experiment Station was empowered to carry out the provisions of the law authorizing extension work in horticulture, subject to the approval of the Executive Committee of the trustees. In June, 1894, the Council appointed Bailey chief horticultural expert and authorized five assistants to help him carry out "a definite line of experimentation," the preparation and issuance of bulletins, and the presentation of schools of horticulture. These objectives were designed to meet the expressed desires of farmers in western New York, who wanted members of the station staff to inspect their orchards, conduct experiments on their own premises, and provide lectures by means of itinerant schools.³⁶ This threefold approach established organized extension work on a sound basis. The results of the experimental work at Ithaca and other experiment stations were extended to farmers through bulletins calculated in form and content to communicate with readers who lacked a technical vocabulary. The experimental work under the Nixon Act, consisting primarily of tests to determine the best horticultural practices under a variety of conditions, was quite different from the controlled experiments conducted at Ithaca and Geneva. It was hoped that farmers observing these tests would raise questions relating to fundamental problems which could be treated in extension bulletins or itinerant schools.

The extension work was an immediate success. Fifty-eight students attended the first School of Horticulture, held at Fredonia, Chautauqua County, December 26-29, 1894. In November, 1895, nearly twice that number attended a three-day school at Jamestown. These schools were based on sound educational practices. Both morning and afternoon sessions began with an effort to develop skill in observation. A twig, fruit, flower, or other object was examined by

*Schurman to Spencer, Feb. 11, 1895, Schurman Papers. According to Roberts, relations with Geneva were unfriendly throughout the administration of Director Peter Collier (Dec., 1887-June, 1895). After Collier's departure from Geneva a number of pamphlets attacking Cornell were found in a closet there. Roberts incorrectly dates the division of federal experiment station funds after the administration of Director Collier (*Autobiog.*, pp. 228-229).

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each participant, who was then asked to explain what was seen. This was followed by a lecture of rather fundamental character designed to interest the listener and stimulate his thinking. Evening lectures were often illustrated with lantern slides, which were in the 1890's something of a treat. Synopses of the lectures were given to the participants at the end of the school.³⁷

In 1895 a series of "spring rallies" was initiated, with two or three people from Cornell present at each. Bailey's purpose at these meetings was "to send the farmer into the season's work with such an initial velocity that he could not stop himself before the harvest time. There were plain direct talks about philosophy of tillage, fertilizing the land, conservation of moisture, and the like, instructions about spraying, and sometimes talks about insects. An orchard was generally sprayed for the purpose of explaining the operation." The interest in these field lectures and demonstrations was phenomenal. Bailey reported that in 1895 he addressed a single audience numbering between three and four thousand farmers. "Surely," he concluded, "the time is ripe for sowing the seeds of the new agriculture." Bailey was concerned about the farmers who were not participating in the extension work. "The results of the experiment station work must be carried to every farmer's door," he said, "and if he shuts the door, they must be thrown in at the window."³⁸

In 1896 the appropriation for the extension work in horticulture was increased to \$16,000, the work to cover twenty-two counties or about one-half the agricultural area of the state. The Chautauqua County farmer who had secured the original extension appropriation was active in the extension work, although his name rarely appeared in the experiment station bulletins.³⁹ "It may interest you to know," Bailey wrote his publishers in January, 1896, "that the man who is really behind this movement is John W. Spencer." He was described in the same letter as "one of the most progressive and intelligent farmers whom I have ever met."⁴⁰ Spencer was fascinated by the principles of nature that underlie farm operations and believed that these principles should be understood by children. In 1896 he and George T. Powell, a former director of farmers' institutes, visited fifty-four public schools, trying to interest teachers and students in nature study through "object lesson teaching," thus applying in the

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rural school a technique that had been used successfully in the horticultural schools. The teachers in these fifty-four schools, "without exception," agreed to cooperate if only they could themselves be instructed in proper methods for presenting nature study to children. This need Bailey proposed to meet through the preparation of nature study lessons for teachers. By December, 1896, he completed *How a Squash Plant Gets Out of a Seed*.⁴¹ This was the beginning of the Cornell program in nature study.

The following year the state appropriated \$25,000 to Cornell for extension work throughout the state in all phases of agriculture. This decision to broaden the scope of Cornell's extension work was in part an outgrowth of the accomplishments of the previous three years and in part, the result of acquiring a broader basis of support.

During the three years extension work was developing under the Nixon Act, the Board of Charities of New York City was becoming concerned about the increasing number of migrants from rural areas who were seeking charity. To halt this influx of the rural poor, they determined to improve the conditions under which these people labored. A Committee for the Promotion of Agriculture was formed under the chairmanship of Abram S. Hewitt, which included such men of wealth as Jacob Schiff and William E. Dodge. This committee employed George T. Powell to initiate an experimental nature study program in the Westchester schools as an approach to the improvement of rural life. The success of this program led Hewitt to see Nixon, then chairman of the Ways and Means Committee of the Assembly, to urge him to increase the extension appropriation for Cornell.⁴²

Experiments conducted by farmers in cooperation with the Cornell staff evolved to a more organized basis in 1897. Four hundred and sixty farmers asked to participate in experiments to determine the fertilizer needs of particular crops. Two hundred and thirty farmers were selected from forty-five counties to receive, free of charge, 160 pounds of fertilizer. Forms for reporting the results were provided by the College, and almost all of these were returned. In the same year, five hundred cooperative experiments in sugar beet culture were undertaken in order to encourage New York farmers to investigate the sugar beet as a possible crop for New York agriculture and to

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determine the locations best suited for its production. In June, 1897, President Schurman reported that "experience has induced" the College of Agriculture to subordinate these cooperative experiments to the extension lectures and nature study leaflets.⁴³ Perhaps this decision was made after judging their relative value as educational media; perhaps because the extension lectures and nature study work had greater public support. It was in that year John W. Spencer joined the Cornell staff.⁴⁴

The Morrill Act of 1890 made possible the expansion of resident instruction in agricultural education during the 1890's, but in a way much less dramatic than the expansion of extension. In February, 1891, a Department of Animal Industry and Dairy Husbandry was created, and in April, Henry H. Wing was named assistant professor in this department, in addition to his duties as deputy director of the Cornell University Agricultural Experiment Station.⁴⁵ He immediately began a spring trimester course in dairy industry, which met daily from 5 A.M. to 10 A.M. In spite of the early hour, the six students went through the term without a single cut.⁴⁶ The Morrill fund also provided \$500 to employ James E. Rice as assistant in agriculture. While a student, Rice had insisted that poultry husbandry was a proper subject for an agricultural college, and in 1891 Roberts gave him an opportunity to try out his ideas. The first poultry house was constructed without authorization by the trustees; Rice and Roberts erected the structure with their own hands, using scrap lumber for building material.⁴⁷ In 1892 Rice began what Roberts described as "the first systematic, practical, and scientific course in poultry culture" in the United States. That year other assistants gave instruction in minor agricultural industries and mathematics as applied to agriculture. Continued expansion under Morrill funds was prevented when the trustees assigned a smaller part of these funds to the College of Agriculture after 1896.⁴⁸

In 1896 the meaning of the "College of Agriculture" was changed by a general reorganization in which the academic work of the University was differentiated into separate colleges. With the exception of the School of Law, a single faculty had considered all educational questions since the University opened, but the growth of the student body and the delineation of technical courses within the

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curriculum made it seem desirable to group faculty and students into colleges. Thereafter matters relating to the academic work of students in the College of Agriculture were considered by the Faculty of Agriculture, which held its first meeting as a formally organized group on September 26, 1896.⁴⁹

The relation of the members of the Faculty of Agriculture to the President of the University was much the same as before this reorganization. The close personal contact which had existed with President Adams had been replaced by a relationship at once distant and impersonal, of the sort conducive to a breakdown in communication. Two events occurring in 1895 reveal the extent to which the sound relationship existing before Schurman's accession had deteriorated. That winter Professor Roberts was elected to the presidency of the New York State Agricultural Society, which under the University Charter made him a member of the Board of Trustees. Instead of congratulating him on the eminence he had achieved and relying on his judgment, Schurman called Roberts in and rather gratuitously informed him that a member of the faculty could not participate in trustee affairs.⁵⁰ In 1896 Bailey made a matter of public record Schurman's failure to coordinate the construction of the veterinary college buildings with the work of the Agricultural Experiment Station:

We have . . . suffered a serious loss during the past season in the wanton destruction of all our cherry orchard, our entire vineyard, nearly our entire collection of native plums, and a lot of seedling currants and other plants by the grading which was done to provide for a site for the State Veterinary College. These plantations were devastated without warning, and the work of several years was irrevocably lost.⁵¹

Schurman showed much greater finesse in his conduct of the University's external affairs. By 1896 the University had secured \$200,000 from the state for building construction, \$150,000 of it for the Veterinary College. With the state committed to this extent, Schurman pressed for permanent state maintenance of the Veterinary College. He had been politically sagacious in deemphasizing the need for continuing appropriations when attempting to secure state funds for building purposes. The resolution of the Cornell Board of Trustees

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of June, 1894, disclaiming any financial responsibility for the operation of the Veterinary College was given little publicity. When the bill to provide maintenance came up, many legislators were surprised to learn that further appropriations were expected by Cornell.⁵² Schurman asked former Governor Flower, who had joined the Board of Trustees on Schurman's urging that he could be of great value in the future, to appear in Albany in support of the maintenance appropriation for the Veterinary College.⁵³ In 1896, \$25,000 was secured. The question of administration remained. Schurman had advised Collin in 1895 that "unity, harmony, and efficiency of administration" would be secured if the College were placed under the charge of the University's trustees with their number augmented by the commissioner of agriculture.* The administration act for the New York State Veterinary College, passed in May, 1897, was everything Schurman desired; complete "custody and control" of the College's property and maintenance appropriations was vested in Cornell University.⁵⁴

Within the University, administration of the Veterinary College was placed in the hands of a director who was to act according to rules established by a Veterinary College Council. Established in January, 1897, this Council included the President and treasurer of the University, the director of the College, and two members elected by the faculty of the College. However, the Executive Committee of the Board of Trustees remained the ultimate decision-making body in the University; decisions of the director and the Council were subject to its approval.⁵⁵ The establishment of a separate Veterinary College did not lead to the immediate separation of veterinary and agricultural education. After his appointment as director, James Law continued as a member of the staff of the Cornell University Agricultural Experiment Station.†

In 1898 the legislature increased the appropriation to Cornell for the extension of agricultural knowledge to \$35,000, bringing the state

*Schurman to Collin, Oct. 17, 1895. The commissioner of agriculture was added in legislation enlarging the Board of Trustees in 1896 (*4th Ann. Rpt. of Pres. Schurman*, 1895-96, p. 6).

†Law reported to Roberts as veterinarian of the Experiment Station through 1898. He continued as a member of the Experiment Station staff until 1903.

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appropriation for agricultural education to almost twice the amount then received from the federal government. In January, 1898, the Faculty of Agriculture recommended the division of the work done under the Nixon appropriation by the establishment of two coordinate bureaus, with Bailey to be chief and Spencer deputy chief of the Bureau of University Extension of Agricultural Knowledge, and Roberts to be chief of the Bureau of Investigation in Agriculture. The faculty also recommended a budget which included eleven employees in addition to Roberts, Bailey, and Spencer. In approving the budget, which included a reserve fund of nearly \$10,000, the trustees authorized such minor adjustments as might be agreed upon by the director and Faculty of Agriculture. In June, 1898, both the extension work and the Experiment Station were placed under the supervision of a six-member Agricultural College and Station Council, which was made responsible for the administration of all public funds coming to the College or the Station.⁵⁶

This expansion of the work in agricultural education, along with the parallel development of agricultural extension and experimentation in other states, created a demand for agricultural educators similar to that which existed in the early 1870's. John L. Stone, who became assistant in agriculture in 1897, recalled that Roberts "raked the country, to find helpers in that work, and that was when he caught me."⁵⁷ In 1898 assistants were also appointed in horticulture, botany, chemistry, entomology, and dairy husbandry. Among them were Benjamin M. Duggar — who was later to be professor of plant physiology at Cornell, the Missouri Botanic Garden, and the University of Wisconsin, and who was to discover aureomycin — and Wilhelm Miller, later editor of the *Garden Magazine* and professor of landscape horticulture at the University of Illinois.⁵⁸

The larger Nixon appropriation enabled Roberts to employ enough assistants to supervise the cooperative experiments more closely. Such supervision was required if these experiments were to be effective, either as teaching devices or as a means for testing agricultural practices; for the farmers most in need of the information these experiments provided were unable, on their own, to lay out and maintain the necessary plots. The experiments with fertilizers continued, for many years of study are required to determine the adaptability of

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fertilizers to a variety of soils and crops. To these was added a series of tillage experiments to determine the relation between crop production and methods of tillage. Personal help was also given farmers who would cultivate small areas as "object lessons" to others.*

The nature study program expanded rapidly under Bailey's direction, establishing for the first time the connection between the University and the public schools that had been contemplated in 1865. Cornell's assistance was available to all public school teachers, rural or urban, who wished to introduce their students to nature study. Bailey feared that the effectiveness of the program would be destroyed if the school teachers did not approach the work with enthusiasm: "The teacher must first of all feel the living interest in natural objects which it is desired the pupils shall acquire. If the enthusiasm is not catching, better let such teaching alone." The formalities of fixed curriculum, recitations, and examinations should be studiously avoided, he warned. Ten minutes a day for one term of "short, sharp and spicy" observation of plants he thought more valuable than a whole botany textbook.⁵⁹ For Bailey the purpose of nature study was to place the child "in living sympathy with everything that is."⁶⁰ To reach this goal, he helped teachers overcome their dependence on pedagogical techniques which had evolved for other purposes.

By April, 1898, eleven nature study leaflets for teachers had been prepared by six authors. The variation in style and content reflected the range of talents and interests of the authors. Mary F. Rogers and Anna B. Comstock, for example, wrote as teachers communicating with other teachers; Simon H. Gage wrote for both students and teachers in his *The Life History of the Toad*; and Bailey, with marvelous perception, wrote in a fashion which assumed that the teacher

*Until December, 1900, the College shipped 160 pounds of fertilizer to each cooperator free of charge. Thereafter the College arranged with a manufacturer to provide 260 pounds divided into seven lots of different analyses for \$4.00 (*Cornell Univ. Coll. of Ag. and Agr. Exp. Sta. Circ. 20*).

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retained some of that innocent enthusiastic curiosity characteristic of childhood.*

While these leaflets for teachers were being prepared, John W. Spencer was organizing Junior Naturalist Clubs. When a group of children signed a membership list and elected their officers, Spencer sent a charter and badges for each member. The member paid his weekly dues to Cornell in the form of a letter or drawing showing what he had learned about nature during the week. By May, 1899, 135 clubs had been formed. Many of these were located in larger cities and forty-five of them were in other states.† “Do not worry about your spelling and punctuation,” Spencer told the junior naturalists, “for these will improve as you develop your ideas and powers of observation. Please do not be afraid of us,” he urged, “but write us as you would to an old friend of whom you are very fond.”⁶¹

The Cornell program in nature study was eagerly received in all parts of the country. By June, 1899, 25,000 teachers were receiving the nature study leaflets, a large part of this number going to other states. A series of publications written especially for the junior naturalists was already under way, and in June, 1899, these were coordinated with the teachers' leaflets, four of each being issued yearly. In initiating the new series of nature study bulletins, Bailey said: “We appeal to every person who loves his kind and his country to help us. We need the cooperation. We can do nothing alone. We want to know the shortcomings and the mistakes. We want to reach every child in New York State; and we hope that others will carry the movement beyond our boundaries and make it better.”⁶² The enthusiasm of the

*The following passage from “The Birds and I” is typical of Bailey: “The birds remember the old places. The wrens pull the sticks from the old hollow rail and seem to be wild with joy to see the place again. They must be the same wrens that were here last year and the year before, for strangers could not make so much fuss over an old rail” (*11th Ann. Rpt. of the Cornell Univ. Agr. Exp. Sta.*, 1898, p. 99). The nature study leaflets were bound at the end of the annual reports of the Experiment Station until 1919.

†*12th Ann. Rpt. of the Cornell Univ. Agr. Exp. Sta.*, 1899, pp. 637-643. Bailey later said the idea of organizing children into clubs for the study of outdoor objects originated with Spencer (*Cornell Univ. Agr. Exp. Sta. Bull.* 206, Oct., 1902, p. 177).

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Cornell University faculty was tremendous — Roberts called it “true missionary spirit.” Many of the nature study bulletins were written by people outside the College of Agriculture who advanced the work without financial remuneration.⁶³

Through cooperation with the Department of Public Instruction, a nature study instructor was hired in March, 1898, to attend teachers' institutes.* During the year the instructor presented the case for nature study to some 14,400 teachers at seventy-two institutes. Sufficient time was made available to explain the techniques and philosophy of nature study work and help liberate teachers from the conviction that examinations are the measure of all things educational. So great was the demand for instruction in nature study techniques that a summer school was organized at Cornell in 1899 to provide instruction in insect life, plant life, and the relation between man and nature on the farm. By June, 1899, 111 teachers were enrolled.⁶⁴

In 1898 a series of reading courses for farmers was introduced in order to make rural life more profitable and enjoyable. The ultimate objective was to improve farm management by giving farmers a better understanding of the cause-and-effect relationships underlying everyday farm operations. Previously, the College had suggested a list of books which could help farmers achieve this understanding, but this did not work because most farmers had not yet learned to think of books as sources of useful information on agriculture. The first lessons were directed toward the perennial question received by the Experiment Station: How can impoverished lands be restored to their original productive power? The first two lessons explained the principles involved in the formation and tillage of soil, the third lesson considered the meaning of fertility, and the next two, the means by which plants secure food from the soil and air.† Each lesson was accompanied by a list of questions designed to make the reader apply the lessons to his own farm situation. Farmers were encouraged to form study clubs to discuss the lessons, with the possibility of a visitor from Cornell held out to the group which had the largest attend-

*These institutes were the principal method of in-service training for teachers, most of whom had only a normal school education.

†The educational impact of these lessons was not compromised by insistence on technical accuracy.

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ance and made the fullest replies to the questions. In some cases public-spirited farmers were employed to organize a club in their neighborhood.⁶⁵

The model for these ventures in adult education was the Chautauqua reading course, then at the height of its popularity. Over the state, adults were trying to bridge the gap between the rudimentary education of their youth and that required in a society undergoing rapid technological change. However, in providing basic education for a highly complex occupation, Cornell was going beyond its model. The problem of communication was tremendous. To be effective the reading course had to deal with the condition of the student; but this varied, both with regard to the student's ability to assimilate written information and with regard to his farming experience. Elementary education on a mass basis presumes a large number of common factors but in the diversity of New York agriculture these common factors were limited. By 1898 the organization of the itinerant schools of agriculture, horticulture, and dairy husbandry was proving difficult in some parts of the state, for specialized information was desired, in many cases, by men who lacked the basic education needed to give meaning to the more advanced instruction. In 1898 it became extension policy to organize these schools around a core of experience, either a common agricultural speciality or attainment of a similar level of basic education. Reading courses and farmers' institutes were considered desirable prerequisites to the itinerant schools.

During the winter of 1897-1898, a total of 280,000 pages of literature was distributed to 7,500 farmers enrolled in the reading course. By 1900 enrollment had increased to some 20,000 farmers. Reading course bulletins by this time showed some departure from the original philosophy of minimizing the handicraft aspect of farming. Three bulletins of that year dealt with balancing rations for livestock feeding; one was specialized to the extent of giving sample rations for milk cows. These bulletins attempted, through numerous references to an experiment station bulletin dealing with livestock feeding, to introduce the reader to this more technical form of communication.⁶⁶

Instruction in skills having immediate application was provided in the eleven-week winter courses. Two courses were given in the 1890's, general agriculture and dairy husbandry. The latter, emphasizing the

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manufacture of cheese and butter, attracted more students than the work in agriculture. By the end of the winter course in 1898, 194 students had taken the course in dairy husbandry. These students, Roberts reported, helped make New York State cheese competitive in foreign markets with that of Canadian manufacture, long favored because of its consistent high quality. By this time the winter courses were considered full, the facilities available being inadequate for a larger number of students.⁶⁷

The number of regular students did not increase appreciably over the previous decade, with the single exception of the year 1897-98. After that sudden increase in enrollment, the entrance requirements for the agricultural course were made equivalent to the course in arts, which added a full year to the time needed to prepare for entrance.⁶⁸ Roberts attributed the decline in the number of regular students the following year to the increased entrance requirements, which were then "somewhat modified." Further modification he thought desirable until the admissions requirements were comparable to the instruction available in the secondary schools. This was also the position of the *Country Gentleman*. In considering the agricultural course, it added that in an age of specialization agricultural students should take only agricultural subjects.⁶⁹ President Schurman arrived at this same conclusion by a different route — consideration of the University's finances. To prevent arts and science students from utilizing the free tuition, he recommended that all four years of the agricultural course be composed strictly of agricultural subjects.⁷⁰

Student enrollment in the College of Agriculture for the years 1891 - 1900 was as follows:⁷¹

<i>Years</i>	<i>Regular</i>	<i>Special</i>	<i>Graduate</i>	<i>Winter</i>
1891-1892	22	19	12	
1892-1893	24	24	9	48
1893-1894	25	20	9	61
1894-1895	24	21	9	77
1895-1896	30	21	13	83
1896-1897	34	34	20	60
1897-1898	56	28	20	93
1898-1899	46	39	17	89

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<i>Years</i>	<i>Regular</i>	<i>Special</i>	<i>Graduate</i>	<i>Winter</i>
1899-1900	43	45	19	83
1900-1901	48	50	23	94
1881-1890	250	82	12	
1891-1900	352	301	151	688

Although tuition remained free, part of the cost of agricultural education was transferred to the students through the establishment of term fees.* The fixed fee had been preceded in 1887 by Roberts' requirement that students in the dairy course buy their own milk and become owners of their cheese, be it good or bad.⁷² In terms of educational outcomes, this was clearly more desirable than the fixed fee but also more difficult to administer. The substitution of the term fee, made necessary by the increasing number of students, involved a gain in administrative efficiency at the loss of opportunity for education.

The transfer to administration of particular aspects of the educational process and the consequent isolation of these aspects from the student-teacher relationship had then only begun. Close personal relations continued between members of the College. Agricultural students were often transported to meetings of farm organizations free of charge by the railroads, and in 1898 when Roberts rose to speak to members of the Western New York Horticultural Society he was greeted by a brisk Cornell yell.⁷³ After completing a letter to a former student, Roberts turned it over to his assistant who added a note of greeting of his own. Students were frequently invited to faculty homes. "We had a good time and a good sing," wrote R. A. Pearson after a reception at Professor Wing's home.⁷⁴ The organization of agricultural students which had existed spasmodically since the early 1870's was then an active affair.⁷⁵ At the annual Agricultural Association banquet in 1894, over 125 students and guests were present.⁷⁶

Aside from the establishment of the winter courses, the most nota-

*In 1893 a \$5-per-term fee was levied on agricultural students and a \$10 fee established for the dairy husbandry course. In 1895 the agricultural term fee was increased to \$7.50, the dairy course to \$15 (*Trustee Proc.*, July 26, 1892, p. 209, Nov. 14, 1893, p. 295, Feb. 19, 1895, p. 359).

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ble change in student enrollment during the decade 1891-1900 was a twelvefold increase in the number of graduate students concentrating on some phase of agricultural science. Many of the graduate students whose major subject was in the College of Agriculture received their undergraduate training at Cornell but institutions in twenty other states and two Canadian provinces were represented, as well as the Graduate Institute of Forestry in St. Petersburg, Russia. Most of the graduate students came from the larger state colleges and universities; Michigan Agricultural College sent six students — twice as many as any other — but three students came from the Agricultural College of South Dakota and two from Acadia College in Nova Scotia.⁷⁷

By 1900 nearly \$65,000 a year was available for agricultural education at Cornell, of which about \$55,000 came from the federal and state governments.* The staff of the College and Station included over twenty-five people who had, by the end of 1900, prepared 185 experiment station bulletins in addition to the farmers' reading courses and nature study leaflets. That November John Craig was appointed as a full-time extension professor. The selection of this experienced horticulturist to head the extension work brought Cornell substantial praise from the *Country Gentleman*.⁷⁸

We may wonder how much of this outpouring of information proved useful to its recipients. Those on the mailing list were required each year to acknowledge receipt of the experiment station bulletins, and in 1892 over one-half of the 14,000 names were dropped because the recipients did not send a postcard to Cornell.⁷⁹ Part of the difficulty was the inability of farmers to understand the bulletins, a condition which the expository bulletin and farmers' reading course were designed to meet. It was the technical bulletins, usually published in smaller editions of 5,000 which probably had the greatest immediate impact. These bulletins were the principal means for communicating results of research conducted at the Cornell Station to other agricultural educators. Of little immediate relevance to farmers' production problems, they were fundamental for the

**Laws of New York*, 1900, chs. 418, 419; Treasurer's Rpt., 1900, MS. The \$10,000 appropriation from the University included that made to the Departments of Agriculture and Horticulture.

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advancement of agricultural science. However, there was an unfortunate overtone which the prestige of the Cornell Station lent to its technical publications; that is, the workers at the newer experiment stations were inclined to conclude uncritically that Cornell's methods and results applied in environmental situations quite different from those at Ithaca.*

Many of the experiment station bulletins dealt with "common-sense" matters known to farmers in a general way but unknown in their particulars. The approximate gestation period of cattle was common knowledge but its range and average length could be established only by recording a large number of cases. It was surely a rare farmer who had no theory on the relation of the length of gestation to the sex of the offspring, but this question, too, was settled by extensive observation.⁸⁰ Other bulletins dealt with new techniques in agriculture. Dehorning cattle had been practiced for about five years prior to 1893, but its uncertain legality led Roberts to compile a group of court cases for dairymen to consider.⁸¹ The desirability of spraying orchards was widely recognized, but the proper timing of these applications was determined through numerous trials. By 1900 it was definitely established that spraying apple trees in bloom affected the crop adversely.⁸² Other bulletins, especially those in entomology, were descriptive. In November, 1900, Mark Slingerland, described a "new beneficial insect," the praying mantis, first discovered in New York State in 1899.⁸³ Quite different from the bulletins containing new information were those designed to extend existing knowledge to farmers. "It is hoped that they do not contain a single new fact," wrote Bailey in 1896 when inaugurating this new type of experiment station publication.⁸⁴

In the 1890's farmers' institutes were probably more important than bulletins as a means of acquainting farmers with the work of the Cornell University Agricultural Experiment Station. The institutes had the advantage of bringing the farmer into direct contact with agricultural experts in an informal situation where his interest, already established by the decision to attend the meeting, was height-

*This point is made rather strongly by E. W. Hilgard, director of the Agricultural Experiment Station at the University of California, in a letter to Bailey, Oct. 8, 1896, Bailey Papers.

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ened by interaction between himself, the speakers, and his neighbors. A common appreciation of the practical problems of farming was the basis of rapport between farmer and institute speaker. It was a mark of confidence when institute lecturer James Rice was asked, "How were *your* apples last year?"⁸⁵ While anxious to communicate the implications experiment station research had for New York agriculture, the Cornell staff studiously avoided creating undue expectations of what these stations might accomplish, for the memory still lingered of how agricultural science had been retarded by the uncritical acceptance of Liebig's mineral theory in the 1840's. Farmers were cautioned that they must examine experiment station results in relation to their own situation. "The thought I want you to carry home," said Roberts at the conclusion of an institute, "is that in agriculture, as in religion, you must work out your own salvation with fear and trembling."* Nevertheless, much of the research conducted at Cornell during the 1890's, and that of Roberts in particular, gave the farmers considerable guidance in accomplishing that salvation.

Roberts' experiments with ensilage were comparable to earlier experiments with manure in their economic value to New York agriculture. The expansion of the livestock industry in the state — especially dairy cattle — depended on the availability of a palatable and inexpensive source of animal nutrients during the winter months. Green roughage or ensilage had long been considered such a source, but spoilage in the early silos — simple pits below ground level or extended above the ground with board sides — was excessive.⁸⁶ Roberts tried various methods to prevent air from decomposing the ensilage, first by compressing it with large screws and later by covering it on different occasions with stones, earth, and straw. While most of these attempts failed to produce a feasible method, they were important to farmers in pointing out what would not work and by encouraging the examination of new approaches. In 1898 Roberts drew on the experience of others to construct a stave silo, the fifth in the United States.⁸⁷ This cheap, durable, and relatively effective

**Trans.*, 1896, pp. 636-637. The number of farmers' institutes held annually in New York State increased from 100 in 1890 to 296 in 1900 (John Hamilton, "History of Farmers' Institutes in the United States" [*USDA Office of Exp. Sta. Bull.* 174, 1906], p. 69).

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storage for green roughage was adopted rapidly in the state after its construction was described in a bulletin issued in March, 1899.⁸⁸ The variety of corn, its maturity, the length of cut, and the type of preservative were also known to affect the quality of the ensilage and were being studied along with the construction of silos.⁸⁹

Sugar beet investigations begun in 1893 had a less fortunate effect on New York State agriculture. These experiments were conducted on a cooperative basis, with the United States Department of Agriculture furnishing the seed, which was distributed to farmers in the state willing to cooperate. The results of these experiments were published each year in a station bulletin. It was then government policy to decrease the nation's dependence on cane sugar produced in Spanish possessions by developing a domestic supply of beet sugar. In 1899 beet sugar factories were located at Binghamton and Rome; by 1901 New York State's two factories each had a daily capacity of 600 tons of beets.* By this time the Cornell Station had found beet pulp to be an excellent food for cows.⁹⁰ "That sugar beets can be grown in this State with profit has been amply demonstrated," wrote agriculturist L. A. Clinton in 1902, adding: "We believe it was largely due to experiments conducted by this Station that the farmers of the State were induced to undertake the culture of sugar beets."⁹¹ Thereafter the great increase in Cuban sugar, admitted under tariff concessions, combined with the lower cost of producing beet sugar in the West led to its rapid abandonment in New York.† This result could hardly have been anticipated in the 1890's. In abandoning sugar beets, New York farmers were adjusting to national and international conditions entirely beyond their control.

Agricultural research during the decade was marked by a broadening of the lines of investigation, as agricultural science expanded through the experience gained by the researcher and the publication of the results. Two bulletins were prepared on the effect of electric light

*By 1901 the factory in Rome was closed, but one in Lyons, New York, was opened ("The Sugar Beet" [*USDA Farmers' Bull.* 52, Feb. 1899], p. 41; 2d rev. ed. [Sept. 1901], p. 43).

†Cornell's cooperative sugar beet investigations concluded in 1903 ("The Sugar Beet" [*USDA Farmers' Bull.* 52], 3d rev. ed. [Aug., 1908], pp. 43-46).

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on the growth of plants. By 1898 four bulletins had been published on the chrysanthemum, two on the sweet pea, and one on the dahlia. This research was justified by the economic importance of the florist industry in the state. "The chrysanthemum industry in New York State probably involves more capital than the growing of peaches" was the opening sentence of Cornell's fourth bulletin on the chrysanthemum.⁹² The research in floriculture also had implications for the decoration of country homes and was of basic importance in the development of a science of plant breeding. Agricultural chemistry and horticulture were both in the process of division as students delved into various parts of these broad fields and developed these parts into separate disciplines. The ambition and curiosity that motivated the scientist to explore new areas was encouraged by groups of agriculturists in the state — florists, orchardists, dairymen, and others, who anticipated economic applications from this research.* However, this combination of scientific specialization supported by economic interest groups had the unfortunate effect of diverting attention from certain basic problem areas in New York agriculture. In the 1890's New York ranked first in the nation in the production of forage crops, which were vital to the maintenance of the substantial lead New York enjoyed over Wisconsin in the production of dairy products, yet research on the improvement of ensilage, meadows, and pastures received relatively less emphasis as the decade progressed.

Bailey was a student of the history of agriculture and frequently drew on historical sources for theories and observations having relevance to present conditions. In 1733 Jethro Tull had introduced what Bailey called "the first great epoch in the evolution of agriculture" with the publication of his observation that cultivation increases the productivity of plants. By 1890 this observation had been confirmed many times, but Bailey wished to restudy it under controlled conditions. A field of wheat was planted in strips five and one-half feet wide, leaving each alternate strip unplanted but subject to cultivation. The following year the strips were reversed, a procedure which was

*In the case of the poultryman, this relationship had reached the point by 1900 that the legislation appropriating funds for the College of Agriculture stipulated that \$3,000 must be used for work related to poultry and egg production (*Laws of New York*, 1900, chs. 418, 419).

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repeated over four years. The result, as expected, was that the yield from the test area exceeded that of similar fields planted solidly even where manure had been applied. Bailey used this experiment to support his recommendation for the cultivation of orchards—a widely debated subject on which little scientific evidence was then available.⁹³

The farmers' institutes and broader distribution of experiment station bulletins made more farmers aware of Cornell as a center for up-to-date agricultural knowledge. Farmers wrote in increasing numbers, some wishing to know how research methods and results could be applied to their own operations; others, whose knowledge of Cornell was probably recent and certainly vague, asked such questions as: "My ducks are dying. What shall I do?" During the winter of 1894 about fifty letters a day reached Roberts' table. In 1896 nearly eight hundred letters of inquiry concerning insects and insect damage reached the assistant entomologist of the station, M. V. Slingerland. One hundred and twenty-five of the answers were prepared for publication and appeared in the columns of agricultural periodicals.⁹⁴

The cordial relationship with the agricultural press which made this kind of publication possible existed throughout the decade with the *Country Gentleman* and the *Rural New Yorker*. These periodicals published an ever larger number of articles by Roberts, Clinton, and Slingerland. Between June, 1894, and June, 1895, Roberts had twelve articles published in the *Rural New Yorker*; in the same period of 1896-1897 he published twenty-four articles in that paper and four in the *Country Gentleman*. In 1899-1900 the *Country Gentleman* published twenty-four of his articles. During these years L. A. Clinton wrote an even larger number of articles for the *Rural New Yorker*, and Slingerland prepared numerous articles for the same periodical on aspects of economic entomology.⁹⁵

Professor Bailey was most active in publishing books and articles; in fact, he was hardly rivaled in this respect by anyone in the University. The range of interest reflected in his publications is as astonishing as their quantity. Matters relating to plants from theoretical concepts to practical problems of production fell within his professional interest. Notes on *Carex* and theories of plant evolution loom large but no

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larger than pointers for the decoration of home grounds and hints on planting orchards. From June, 1894, to June, 1895, he wrote thirty articles, brought out the third edition of *The Horticulturist's Rule-Book*, contributed over forty articles on plants to *Johnson's Universal Encyclopedia*, of which he was associate editor, and revised and extended Asa Gray's *Field, Forest, and Garden Botany*.⁹⁶

Bailey maintained excellent relations with his publishers. Before 1894 the Rural Publishing Company put nine of his books through the press.⁹⁷ In 1894 Bailey decided to publish with Macmillan, a company with resources for selling a larger volume of his books, including new editions of those previously issued by the Rural Publishing Company. Bailey was able to secure the transfer of these titles to the Macmillan Company without antagonizing the temperamental John J. Dillon, who as president of the Rural Publishing Company controlled its agricultural periodical, the *Rural New Yorker*. "We have no fear," wrote Dillon in 1897, "but that we shall get all the credit that is due to us, and more too, from your hands."⁹⁸

In 1894 Bailey agreed to edit the "Rural Science Series" for Macmillan. This series was planned to sell in a national market, an aim which required studied avoidance of content having only regional interest. In developing this series Bailey corresponded extensively with the leading agricultural scientists in America. The editor that emerges from this correspondence maintained good working relations with his authors while insisting on accuracy, good writing, and a broad point of view.⁹⁹ His editorship of the "Rural Science Series" contributed to a growing national reputation which extended beyond horticulture to all aspects of agricultural education.

By the mid 1890's Bailey was recognized as one of the foremost teachers of horticulture in the country. Graduate students came to him from other states and from foreign countries. These students he organized into an informal group called the Horticulturists Lazy Club. S. W. Fletcher, a graduate student in the late 1890's, recalled that the club was sparked by Bailey and his "genial gardener," Charles Hunn:

The club met every Monday evening in the Forcing House, a small frame structure attached to the greenhouses. After some student had reviewed material in current horticultural periodicals, another would give a talk on horticultural conditions in his native state, be it Oregon, Texas, or Alabama.

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Then Hunn would bring in the refreshments—apples, pears, grapes, cider—and there was badinage back and forth. Professor Bailey was a relaxed and stimulating companion at the Lazy Club.*

When a number of his students had left Cornell to take up positions in other colleges, he organized them into the Cornell Horticultural League to act as a correspondence bureau for the collection of horticultural information from all parts of the country.¹⁰⁰ Bailey's enthusiasm and selflessness made what under other circumstances might seem manipulation entirely acceptable to his students and co-workers. Comradship in the pursuit of knowledge was the basis of Bailey's association with them. It was assumed that each man would contribute what he could, and if Bailey had a flair for organizing people to produce their best effort, so much the better.¹⁰¹ Under his guidance E. G. Lodeman conducted a pioneer investigation on the application of sprays for controlling plant diseases. Originally presented for the M.S. degree, this classic study was published in 1896 under the title *The Spraying of Plants*.† As his former students developed the work in botany and horticulture in other colleges, they sent their students on to Cornell for graduate work with Bailey. "I have a splendid assistant," wrote Fred W. Card of Nebraska, "who wants to come to Cornell for a year as soon as he can see his way to do it." The assistant's name was R. A. Emerson, later head of the Department of Plant Breeding at Cornell.¹⁰² When future agricultural economist George F. Warren was wondering where to go for graduate study, botanist Charles E. Bessy of the University of Nebraska told him to attend Cornell "because that's where Bailey is."¹⁰³

A fascinating and significant aspect of Bailey's character was his attitude toward social organization in America, as this advocate of scientific agriculture accepted to a large extent the values and conclusions of Jeffersonian agrarianism. The country — that scene of

*Fletcher, later a professor at Cornell and dean of the School of Agriculture at Pennsylvania State College, wrote that Bailey was "generally recognized as the foremost teacher in horticulture in the country" (Fletcher to Mrs. Edith M. Fox, c. Oct. 16, 1953). This letter is part of a collection of reminiscences about Bailey by his former students (L. H. Bailey Items).

†New York, 1896. Reprinted ten times by 1913, it remained until the late 1930's one of the few valuable source books on agricultural chemicals. Lodeman's promising career was cut short by his untimely death in 1896.

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the "purer and better life" — he saw being downgraded in American society because the tastes of educated people were being infected by materialism.¹⁰⁴ Country life, he felt, must be preserved as liberty's congenial home, for in its essence agriculture is associated with freedom. The time will never come, said Bailey, when agriculture "shall be governed by a well-defined series of rules and precepts . . . Happily there is one vocation in which men engage which can never be bounded by methods or precedents, one occupation which is as elastic and untrammled and unconventional as the blowing of the wind, the falling of the rain, and the singing of the birds."¹⁰⁵ Like Jefferson, he believed that the solution to whatever agrarian difficulties existed lay in better education. In 1896, in a statement approaching the social-Darwinism of William Graham Sumner, Bailey suggested that the pain arising from "the inexorable struggle for existence" would prepare the normally conservative farmers to receive the "broadening and educative impulse."¹⁰⁶

Professor Comstock, whom L. O. Howard in his history of applied entomology called "the first real teacher of entomology in the United States," was also notably successful in attracting graduate students. Among those who studied with him in the 1890's were Vernon Kellog, later professor of entomology at Stanford University, William A. Riley, later professor of entomology at Cornell (where he was called "Bug" Riley to distinguish him from agricultural engineer Howard W. "Gas Engine" Riley) and E. Porter Felt, for many years state entomologist of New York. Following the example of the graduate students in horticulture, the entomologists organized a graduate student-faculty study club which they named *Jugatae* after a group of Lepidoptera on which Comstock had been doing research. As the decade progressed, Comstock increasingly devoted himself to the noneconomic aspects of entomology, leaving economic entomology to his former student, Assistant Professor Mark Slingerland. According to Howard, Slingerland's publications "soon became models for the on-coming generation of applied entomologists."¹⁰⁷

Unlike Bailey and Comstock, Professor Henry H. Wing had few graduate students in the 1890's, in part because he lacked their national reputation, in part because animal husbandry and dairy industry were as yet too new to the college curriculum to attract many

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disciples. But to a large degree Wing's graduate students made up with quality what they lacked in quantity. Raymond A. Pearson, M.S. '99, was to become the first head of the Department of Dairy Industry at Cornell. Otto F. Hunziker, M.S. '01, acquired an international reputation through his outstanding textbooks, *The Butter Industry* and *Condensed Milk and Milk Powder*.

In the 1890's animal husbandry and dairy industry were at a level of development comparable to horticulture and entomology several decades earlier. Wing laid the basis for further development at Cornell. To dairy industry he contributed several experiment station bulletins on cream separators and the textbook *Milk and Its Products*, which was reprinted ten times before being revised in 1913. In animal nutrition he conducted experiments on the relation of certain feeds to milk and fat production. From these records and those resulting from later studies emerged the systematic testing of cows for milk and fat production—the forerunner to the testing presently conducted by the Dairy Herd Improvement Association.¹⁰⁸ Wing also continued the program Roberts initiated in 1874 for building up the college dairy herd through selective breeding, a method which involved the use of thoroughbred bulls and the rigid selection of the best heifers. The value of this method, which could be duplicated by intelligent farmers, was demonstrated by the increase in production per cow from a little over 3,000 pounds of milk per year in 1874 to over 7,500 pounds in 1897-1898.¹⁰⁹ In 1894 Wing established a precedent for a more structured relationship than had previously existed between the College and agricultural organizations when he instituted advanced registry tests for the Holstein-Friesian Association. The College filled the role of disinterested observer; the milk and butterfat production of cows under test were measured by its employees, who were paid from funds furnished by the Holstein-Friesian Association. By the end of 1894, nineteen other experiment stations had agreed to perform this service for the Holstein-Friesian Association in their areas.¹¹⁰ By providing objective evidence for the superior milk-producing capacity of Holstein cattle, these tests contributed to the rapid expansion of this breed in America.

In 1898 a second state college was established at Cornell through the initiative of state officers without efforts on the part of representa-

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tives of the University. The establishment of the New York State College of Forestry followed Governor Frank Black's recommendation for state-supported experiments in forest culture which would determine the best management practices for the forest resources in the Adirondack area. At issue was the management of the public lands in the Adirondack State Park and surrounding forest preserve and the policy to be adopted toward the extensive private holdings scattered throughout these public lands.¹¹¹ The need for scientific study of forest management was made apparent by the conflicting claims of powerful social groups whose interests ranged from complete prohibition of timber-cutting to open commercial exploitation.

President Schurman's position on the University's relation to the state made it difficult to oppose the Governor's proposal for giving to Cornell University the responsibility for conducting the desired investigations in forestry. By the end of January, 1898, Schurman had decided that the Governor's recommendation seemed desirable.¹¹² In terms of public policy, information on rational forest management in the state was long overdue. The establishment of the State College of Forestry at Cornell enabled the University to extend its curriculum into an area of substantial significance and made possible the enrichment of agricultural education, which had not previously included instruction in the management of the farm timber crop. As early as 1879 Lazenby had insisted that forestry should be a regular part of the curriculum in agriculture. "There are many things taught," he said, "which might be omitted or postponed in favor of this."¹¹³

Unfortunately, the work in forestry began under less than ideal conditions. The College was required by law to operate an experimental forest management area in the Adirondacks which was almost certain to alienate powerful vested interests. This operation was further handicapped by the mistaken belief of state officials that an experimental project could be financially self-sustaining.¹¹⁴ The consequences of these requirements will be seen in the next chapter.

Twenty-five years after Roberts arrived at Cornell, circumstances were favorable for his appearance before the Executive Committee of the trustees to describe the work and indicate the needs of the College of Agriculture; Henry W. Sage had passed from the scene in 1897 and two years later Schurman was away from the University

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serving as president of the Philippine Commission. Roberts' invitation was secured by Acting President T. F. Crane, who had known Roberts in the days when the Agricultural Department was associated with weed-choked fields, a useless barn, a small classroom, and a handful of students. At his appearance before the Executive Committee, Roberts explained the need for additional classrooms and other facilities, which were then more critical than ever before.¹¹⁵ The number of regular and special students had doubled since 1890, and farmers not only sent their sons but sometimes accompanied them to the winter courses. The instruction of graduate students, each working on an individual project, placed even heavier demands on the facilities of the College.

The rapid expansion of the College of Agriculture in the 1890's was aided by an increasing interest in agricultural education throughout the nation. The United States Department of Agriculture, which was raised to cabinet status in 1889, expanded its work during the decade in both research and the extension of agricultural information to the individual farmer. In 1900, \$205,000 in research funds was available to this governmental department in addition to an appropriation of \$950,000 to the Bureau of Animal Industry, part of which was used for research.* By 1900 the department had published 120 farmers' bulletins, many of which were similar to those published by the state experiment stations.

After the passage of the Hatch and the Morrill Acts agricultural education was established on a sound basis in many states, frequently under the leadership of Cornell graduates. In June, 1891, President Adams reported that sixty of the seventy-one graduates of the College of Agriculture were holding "presidencies, professorships, or other positions of collegiate grade."¹¹⁶ In many states the funds available for agricultural education were far greater than those available to Cornell, since, in New York, state support was divided between Cornell and Geneva. However, if these two institutions are considered together, New York's support for agricultural research

**Yearbook of the U.S. Department of Agriculture*, 1900, p. 636. About 22 per cent of the total federal funds available for agricultural research were appropriated for use by the Department of Agriculture.

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and extension was considerably greater than that of other states.* It was in facilities for resident instruction that New York lagged behind. The substantial appropriations for such facilities in California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio, and Wisconsin provided the principal argument for those advocating increased state aid for agricultural education at Cornell.¹¹⁷

The public's acceptance of agricultural education as a desirable social investment was associated during the decade before 1900 with increasing uniformity of educational methods. Stress on common elements resulted from the growth of the Association of American Agricultural Colleges and Experiment Stations as a medium for the discussion of educational methods and objectives and was also a consequence of the United States Department of Agriculture's becoming an agency for the coordination of agricultural research. As a result of widespread irregularities in the use of Hatch Act funds by the states, Congress, in 1894, made the Office of Experiment Stations responsible for supervising expenditures under the act. This office interpreted its authority broadly. Going beyond the establishment of uniform financial procedures, it recommended the use of sound methods in research and insisted that the projects outlined by each station should be scientific investigations embodying some original features.¹¹⁸ This control was not undesirable when carried out by administrators who used their power wisely. In practice it facilitated the coordination of research at the state stations and promoted the abandonment of practices which could not be defended in terms of their value to education. A similar result followed from the cooperative experiments conducted under contracts between the state experiment stations and divisions of the Department of Agriculture. The price of these additional federal funds, utilized by forty-three states and territories in 1900, was acceptance of the conditions set by the national department.¹¹⁹

The motivation behind this increasing national interest in agricul-

*For agricultural research, New York appropriated about \$99,000 in 1900, or nearly three times that of any other state. The mailing list of the Geneva Station alone was larger than those of other states (*Ann. Rpt. of the Office of Experiment Stations for the Year Ending June 30, 1901*, pp. 214-223).

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tural education was complex. Historical factors, including state and national policies of public aid to agriculture and changing attitudes toward science, were involved. The agricultural depression, which marked much of the 1890's, and the emigration from rural to urban areas attributed to this depression, had its effect. The political successes of the Populist party, with its radical solutions to agrarian difficulties, also called the nation's attention to the plight of the farmer.

That urban areas were increasingly attractive to rural youth was unquestioned, but what could be done to keep young people on the farms was an open question. Roberts recognized that overproduction of agricultural goods combined with increased mechanization in agriculture made the rural exodus inevitable, but he could not accept the loss of the best farm youth to the city. Like Bailey, he saw materialism as the villain, to be destroyed, hopefully, through a reorganization of the value system of the American people. To his colleagues in other agricultural colleges Roberts said, "If, somehow, we could get clear of the grasping, sordid, money-getting spirit which is so prevalent in all America, and learn to prize highly leisure, wisdom, and knowledge, the problem of low prices, overproduction, and exodus from a healthy rural life would be measurably solved." At the same session of the Association of American Agricultural Colleges and Experiment Stations, Dean Eugene Davenport of the University of Illinois, also stressed social values in discussing the rural-urban movement:

I come now to what in my judgment is the most potent influence in draining the best young people from the farm. I refer to that caricature of humanity that passes for a farmer in the pages of current literature. Simple minded, and incidentally honest, uncouth in language and coarse in manner, destitute of everything but good intentions, he is depicted more unfavorably than is positive villainy.¹²⁰

In the late 1890's the new rural free delivery service became an agency for psychological conflict in rural New York as it carried to the farm family periodicals reflecting the superiority of urban life, along with Cornell's extension bulletins designed to improve rural living.

The extension staff at Cornell was dedicated to preserving country life by making it more attractive. It was this dedication to a concept

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far broader than technical agriculture that gave the Cornell extension work its special significance and accounts for the expanding scope of extension from the farmers' institutes of 1890 to the diversified program of 1900. Cornell bulletins in the decade of the 1890's dealt with such diverse aspects of country life as the decoration of home grounds, making the rural school more attractive, artistic design of the outhouse, and, most important, the introduction to nature study for young and old. The four series of extension publications issued in 1900 all emphasized nature study; the farmers' reading course, the home nature study course, the teachers' leaflets, and the junior naturalist leaflets. By this time John W. Spencer had assumed the role of Uncle John to give a personal dimension to the work with the school children. During the 1890's and for the following decade, Bailey and his colleagues received thousands of letters from other states inquiring about nature study education. As developed at Cornell, nature study gave direction to the movement for the introduction of agriculture in the secondary schools and, unlike much other secondary education at the time, had relevance to the lives of the students. The then-dominant cultural epoch theory of education, emphasizing the study of Greek and Latin on the ground that the education of children should parallel the development of man, was not adapted to a society which was becoming more and more oriented to the uses of science. By helping to liberate secondary education from outworn theory, nature study made a lasting contribution to American society. Graduate student M. F. Miller was so impressed with the program that on retiring as dean of the College of Agriculture at the University of Missouri in 1945 he undertook a similar set of nature study bulletins for the young people of that state.¹²¹

Sentiment at the turn of the century favorable to the further development of agricultural education unquestionably aided President Schurman in his efforts to secure further state support for this area of education at Cornell. He had carefully fostered the concept that Cornell's possession of the Morrill land grant made the state responsible for the further development of the University and the establishment of the state-supported Veterinary College and College of Forestry, and the assignment to the Cornell Board of Trustees of responsibility for their administration provided some evidence that

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Cornell's quasi-public status had been recognized by the state. As the decade ended, the state was annually appropriating \$35,000 for extension work in the College of Agriculture and \$10,000 each for the Veterinary College and College of Forestry. However, any attempt by Cornell officials to secure a substantial increase in state support for these or other activities of the University was certain to encounter serious opposition, a situation made evident to President Schurman at the time of his unsuccessful attempt to secure a state-supported teachers college at Cornell.

Unlike the legislation appropriating state funds for constructing buildings for agricultural and veterinary education and initiating the College of Forestry at Cornell, the bill to establish a state teachers college at Cornell lacked the support of the Governor on its introduction in 1896. Moreover, it encountered considerable opposition from colleges and universities in the state which did not concede that possession of the land grant gave Cornell a special basis for claiming state support.¹²² The press also was becoming critical. The *Country Gentleman*, which had long and consistently supported Cornell's handling of agricultural education, reprinted without comment a long article from the Rochester *Union* attacking Schurman's efforts to secure state funds while maintaining private control.¹²³ Overcoming this opposition to further state support required all of President Schurman's reputed capacity for astuteness.

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ROBERTS' CONCLUDING YEARS

IN December, 1901, the issue of state aid to Cornell was reopened by the agricultural press, the immediate objective being a state appropriation to construct the long-contemplated agricultural building. The *Country Gentleman* made the first appeal on December 5, following this on February 6, 1902, by a similar article, which included a picture of a new agricultural building at Iowa State College. The front page of the December 7 issue of the *American Agriculturist*, devoted to praise for Cornell's work in agricultural education, included a description of the cramped conditions under which the faculty worked—the business office of the College of Agriculture, the director's office, the office of the Experiment Station, and the agricultural library were all combined in a single room on the second floor of Morrill Hall. President Schurman had already arranged to pay \$750 for the distribution of 30,000 copies over the state, with the understanding that the *American Agriculturist* would "make appreciative reference to the work of Cornell University."¹ This article, according to the issue of December 21 was "universally approved by the farmers of the state." A picture of a new building at the College of Agriculture at the University of Illinois was included with the announcement that the New York State Dairymen's Association had called on the state to erect the agricultural building at Cornell.²

In 1902 the *Rural New Yorker* joined in emphasizing the state's obligation to Cornell. Early in November, 1902, Editor Herbert W. Collingwood visited the University and had a frank discussion with Schurman. Later Schurman sent him a long statement cast in the form of an interview between himself and Collingwood, which was printed in the November 29 issue of the *Rural New Yorker*. In the statement Schurman referred to his own farm background and paid tribute to

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the farmers as "the backbone of the country, the most conservative class we have, the people of the solidest character." Only at the end of the "interview" did Schurman raise the subject of state aid by attributing to Collingwood the question, "Do you agree with me that the state must make provision for agricultural education?"³

The objective in 1902 was still limited to securing a state appropriation for an agricultural building. In February, 1902, James Rice, who had kept in close touch with developments at the College, wrote to President Schurman in a vein which probably reflected the opinion of the college faculty. The failure of the University properly to support the College, he said, "has gone so far already that a mere statement of good intentions will not suffice. The people will insist upon positive assurance on the part of the University just what they will do for agriculture from the land grant funds before they will ask the state to build proper buildings."⁴ Schurman used Rice's letter as a point of departure for a long address to the faculty and students in the College of Agriculture. Schurman conceded nothing. Raking over his arguments of the last ten years, he neatly avoided the issue of what part of the land-grant income should be devoted to agricultural education.* However, in 1903, the trustees increased from \$5,700 to \$10,000 the allotment to the College of Agriculture from funds received under the Morrill Act of 1890.⁵

Professor Cuthbert W. Pound of the Law School was then Cornell's advisor on legislative matters. In early February, 1902, he prepared a bill for the agricultural building which was introduced by Senator Slater, a Cornellian of the Class of 1894. Schurman thought that the support of farm groups and the agricultural press might make its passage possible, but the legislature adjourned with the bill still in committee.⁶ There was hope for success the following year, however, if the bill could be brought to a vote. Roberts reported in June, 1902, that he had received "personal letters from a majority of the Senators and Assemblymen" which led him to believe that the state would appropriate funds "in the near future" for completing the building started in 1893.⁷

**Cornell Alumni News*, Feb. 26, 1902, p. 143. Schurman added insult to injury by sending Rice six copies of this speech (Schurman to Rice, Feb. 25, 1902, Schurman Papers).

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S. F. Nixon, who had sponsored Cornell's appropriations for agricultural extension, was in a powerful position to aid Cornell. Speaker of the Assembly since 1899, he was a key figure in the dominant Republican party. However, it is fairly evident that Nixon was not satisfied with the extension work of the College of Agriculture as administered by Director Roberts. Nixon's basis for dissatisfaction and the lengths to which Schurman would go to please him are indicated by events in June, 1902.

Nixon was president of the Chautauqua and Erie Grape Company and the owner of large vineyards and orchards in Chautauqua County. On June 6, 1902, he wrote Roberts, asking for aid against the leaf hoppers and rootworms which were plaguing the grape growers in his area. Roberts replied on June 9 that he was dispatching Professors John Craig and Mark Slingerland to Chautauqua County. Meanwhile Nixon had taken up the matter with Professor Pound, who held public office as a member of the State Civil Service Commission. On the morning of June 10, Pound personally communicated Nixon's wishes to Schurman, who that same day wrote a thoroughly patronizing letter to Roberts ordering him to set aside the plans of the extension division and concentrate on the work in Chautauqua County. "I regard the matter as one of the utmost importance," he wrote, "and the successful treatment of it demands and deserves your wisest, promptest, and most absorbing attention." On June 11 Pound sent Nixon a copy of Schurman's order to Roberts, and on the following day Schurman wrote Nixon, expressing regret that "a plague of insects is threatening your grape crop" and enclosing his letter to Roberts "instructing him to throw the entire resources of the Department into the problem." By the end of July, Professor Craig was well on the way to clearing out the leaf hoppers in ten acres of Nixon's vineyard and was pleased that Nixon had turned his apple orchard over to the Station for "a demonstration experiment in cultivation, pruning, and spraying."⁸

Nixon's friend, John W. Spencer, then serving as liaison between Nixon and the College of Agriculture, wanted Roberts to do more demonstration work on Nixon's farm, to be financed from the extension appropriation.⁹ In late August, Roberts visited this farm. Afterward he wrote Nixon making a series of recommendations, none of

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which involved direct assistance from the College of Agriculture. "Never mind," Spencer wrote Nixon, "I will see something is done beginning early another year."¹⁰ By January, 1903, what Spencer termed "an earthquake" was occurring at the College of Agriculture as it became known that Bailey would succeed Roberts as director that summer. Spencer had several talks with Bailey about the extension work and was greatly encouraged. Writing to Nixon, Spencer noted that "Roberts has always cut out your name in connection with this work. This will now be changed. With Bailey I shall have a strong influence in council. I am hoping that in the shuffle I'll have an advance in salary."¹¹

Legislation for an agricultural building was not pushed in the 1903 session of the legislature, probably because Schurman had been forewarned by Governor Odell that other college presidents would oppose further state aid for Cornell. In reporting this information to Collingwood, Schurman professed surprise that any college president would oppose "the legitimate demands of the farmers of the State of New York." One of these presidents, Palmer C. Ricketts of Rensselaer Polytechnic Institute, thought that the demand for state aid emanated from Cornell authorities rather than the farmers. Other colleges, he stated, had an equal claim to the public funds which were being secured by Cornell.¹² The \$101,000,000 appropriation for the Barge Canal was also a factor in the postponement of the agricultural building, for the canal appropriation had priority over other matters. It was late in the session when bills were introduced calling for a state appropriation for an agricultural building, the strategy evidently being to establish a claim which could be pressed in the future.¹³

The increase in enrollment continued, making a new building more urgent each year, as is shown by the number of students in the various courses for the years 1901-1905:¹⁴

<i>Year</i>	<i>Regular</i>	<i>Special</i>	<i>Graduate</i>	<i>Winter</i>
1901-02	49	43	22	96
1902-03	60	53	18	121
1903-04	77	64	21	134
1904-05	98	90	31	199
1905-06	128	102	40	248

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Until the fall term of 1903, the curriculum of the College remained much the same as in the 1890's, with Professors Roberts, Bailey, and Wing carrying the bulk of the teaching load with the aid of Instructor G. N. Lauman. Lauman assisted both Roberts and Bailey, taught agricultural history and the economics of agriculture, and gave two courses in reading technical works in German. Roberts continued the practice of supplementing instruction on technical agriculture with advice concerning personal situations basic to rural life. "A small house makes the family neighborly with themselves," he told his class in 1902. On the subject of visiting—so vital to happiness in rural neighborhoods—he tactfully suggested that "it is a great gift to know how long to call on a person and when to go." Roberts was not without a sense of the dramatic. On the centennial of the Louisiana Purchase he chose to lecture on history rather than horses.¹⁵ Much of the information contained in his lectures appeared in 1900 under the title, *The Farmstead*.

The extension work continued to expand during these years. By 1901 the farmers' reading courses had been organized to provide a three-year home study program. Three series, each containing six lessons, followed in logical order, beginning with the soil and the plant, continuing through livestock feeding, and concluding with orchard care. The winter courses, which had been placed under Professor Craig's direction in 1900, were integrated with the farmers' reading course that they might serve as a culmination to the home study program.¹⁶

In 1900 Anna B. Comstock and John W. Spencer secured a "young woman of broad sympathy and understanding and great capacity for work" to initiate an extension program for women.¹⁷ It was at a typewriter located under the basement stairs of Morrill Hall that Martha Van Rensselaer began a reading course for farmers' wives which evolved into the College of Home Economics at Cornell. Bailey and Spencer had already learned from replies to a circular they had distributed to ascertain the potential readership for such a course that many women were ready to be liberated from a life of "men and mud."¹⁸ Miss Van Rensselaer's first two bulletins, "Saving Steps" and "Home Sanitation" were sent to a list of nearly five thousand women who replied to this circular. "Housekeeping is a fine

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art," declared Miss Van Rensselaer in the second lesson, "and it was never intended that a woman's health and happiness should be sacrificed in doing that which to do well is elevating and essential to the comfort and happiness of the human race."¹⁹ The series soon went beyond household management to consider other aspects of country life ranging from hints on the appreciation of beauty to the significance of the school in the rural community. In 1903, 3,600 new readers were enrolled. Twenty thousand junior naturalists that year enlisted in 600 clubs.²⁰

By itself the experiment station bulletin was not proving an effective agent for agricultural change in the state, for farmers were unwilling or unable to put the recommendations to a practical test. Direct assistance from Cornell staff members in applying agricultural research to the situation of the individual farmer remained as vital as previously.²¹ Roberts continued to emphasize the cooperative experiment, both as a teaching device and as a means for testing results obtained at the Cornell Station under a variety of climatic and soil conditions, but the necessity for frequent supervision placed limits on the number and complexity of these experiments. These limits were widened somewhat in 1903 through the organization of winter course students into the Agricultural Experimenters' League of New York under the direction of John L. Stone. This organization provided a medium for the continuing education of former students, who used the fields of their home farms as laboratories under the direction of Mr. Stone. The organization also served to keep former students in touch with the College of Agriculture.²²

Roberts' retirement in the summer of 1903 marked the end of an era in agricultural education at Cornell. When he came from Iowa in 1874, there were only a few professors of agriculture in the country; when he retired in 1903, the expansion of agricultural knowledge had made professors of agriculture an anachronism. An individual could no longer encompass the knowledge which fell within the science and practice of agriculture. Plants and animals had long been separated as fields of study, and within these broad areas further specialization was occurring. For Roberts, administration had been a job which interfered with his other duties but never prevented him from carrying a full program in resident instruction.

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"As the years have gone by," he wrote Bailey, "the running of the College has become more and more complex and more difficult. I fully discern that it is quite time that the College should enter upon a new life, however good the old one might have been."²³ In the autumn of 1903 the man Bailey called "the wisest farmer whom I have known" left Cornell to live with his children in California.*

SECURING THE NEW YORK STATE COLLEGE OF AGRICULTURE

Bailey's national reputation as an agricultural educator and his familiarity with the Cornell scene made him the obvious choice to succeed Roberts as director of the Experiment Station and dean of the Faculty of Agriculture. He did not want the job but took it, he wrote a friend, because "there are times in a man's life when he must take the things that seem necessary whether they are quite in the line of his desires or not." Some forty years later Bailey told a group of faculty members that he had hoped to go further as a scholar but had reluctantly become dean because of Schurman's urging.²⁴ In 1903 he resigned as editor of *Country Life in America*, a magazine he had been instrumental in founding two years previously, to accept a position where he could more effectively influence the movement for the improvement of country living.²⁵

The most noticeable change that followed Dean Bailey's accession was an expansion of faculty and curriculum greater than had occurred in all previous years combined. Seven new positions of professorial rank were established, six of which were filled by former students of the College. The most important of these was the position, professor of agronomy and manager of the university farms. To fill this, Bailey secured Thomas F. Hunt, then dean of the College of Agriculture and Domestic Science at the Ohio State University.†

*I. P. Roberts, *The Fertility of the Land* (New York, 1897), p. v. The first dean of the College, Professor George C. Caldwell, retired the same year as Roberts. His contacts with the College of Agriculture had become less frequent during the 1890's.

†In this instance Cornell benefited from an ill-considered Ohio law which limited salaries at its State University to \$2,500 (James E. Pollard, *History of Ohio State University* [Columbus, 1952], p. 182).

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Professor Wing's old position was divided, Wing retaining the professorship of animal husbandry, Raymond A. Pearson becoming professor of dairy industry. "I believe you are going to build up the greatest College of Agriculture in our greatest state and I shall be proud to be one of your helpers," wrote Pearson, after rejecting a substantial increase in salary at the Walker-Gordon Company. Professor Craig was transferred to the professorship of horticulture and S. W. Fletcher was made assistant professor of extension teaching in agriculture. In June, Bailey asked James Rice what would be "the very lowest terms" at which he would take over the work in poultry husbandry. In August this veteran of over 1,100 farmers' institutes agreed to take a financial loss in order to "be one of the corps who, working together toward the common end, shall see Cornell occupy in the agricultural world the position of pre-eminence which is hers by right."²⁶ Jay A. Bonsteel was secured as professor of soil investigation through assignment to Cornell by the Bureau of Soils of the Department of Agriculture. John L. Stone was made assistant professor of agronomy and George W. Cavanaugh assistant professor of chemistry in its relation to agriculture. George N. Lauman became instructor in rural economy and secretary of the College.²⁷ The most radical innovation was that of adding Miss Van Rensselaer and Mrs. Comstock to the core of regular teachers; each gave a half-year course in women's activities.²⁸ The principle of coeducation, which had been accepted from the beginning at Cornell, had not previously been extended to the faculty.

Even this expansion did not satisfy Bailey, who saw still other areas of agricultural education which should be developed. In October, 1903, he corresponded with Elwood Mead about the need for irrigation in the East and the relationship between such technical operations and agricultural engineering. On his own responsibility Bailey had just announced some courses in agricultural engineering which, he added, "are wholly inadequate, but they are a beginning." He approached the Secretary of Agriculture, James Wilson, for some help in getting these courses under way, but was told the department had only \$5,000 for farm engineering and was already "under a promise to the Wisconsin people to help them make a start." Bailey also started a class in landscaping, or, to use his phrase, "outdoor art,"

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but by December this had practically ceased to function because of a lack of money. "It is a work that is very much needed and we shall try to make it go if it is a possible thing," he wrote Warren Manning, who wished to assist in the work if he could afford to do so.²⁹

From the beginning Bailey emphasized to student and staff alike the need for personal identification with the advancement of the College. He instituted regular agricultural assemblies which everyone was expected to attend on pain of being counted delinquent by Lauman.³⁰ In 1903 he established a student magazine to which he allotted office space in the lecture room in Morrill Hall. Here office hours were held at noon and late afternoon when the room was not otherwise in use.³¹ Filled at that time largely with articles written by members of the faculty, the *Cornell Countryman* noted new developments in agricultural education and served, through news of the alumni, to keep former students in touch with the College.

In the fall of 1903 the big push to secure the agricultural building was under way with Bailey and Schurman each organizing support for a state appropriation in his own way. There was little advance planning between them; rather what cooperation occurred was in the context of adjustment to new situations as they arose. Each had only a general knowledge of the other's activities. When success finally came, each could claim a major share of the credit on the basis of information available to him.

Bailey concentrated on securing the support of farm groups and other agencies involved in agricultural education. He was fortunate in having good working relations with Whitman H. Jordan, director of the Geneva Station, and F. E. Dawley, director of the Bureau of Farmers' Institutes.* Members of the Cornell faculty continued to lecture at these institutes; over the years, since the policy of encouraging faculty participation was established by President Adams, they had made the work of the College of Agriculture known to thousands of New York State farmers. In the fall of 1903, the institutes took precedence over other educational activities. Faculty members were assigned to institutes directly by Dawley, sometimes to as many as

*Direction of the farmers' institutes was placed under the control of the commissioner of agriculture when the State Department of Agriculture was created in 1893.

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four a week. Dawley was a strong booster of the agricultural building; his support facilitated placing the accomplishments and needs of agricultural education at Cornell directly before the farmers.³² In November and December, 1903, four-day Normal Institutes were held at both Cornell and Geneva in order to acquaint the institute lecturers with information of value to New York farmers.³³

By September, 1903, a Committee for the Promotion of Agriculture was formally organized by officers of the leading farm organizations in New York and of the State Department of Agriculture, editors of the agricultural periodicals published in New York, and Directors Jordan of Geneva and Bailey of Cornell. H. E. Cook, president of the New York State Dairymen's Association, was named chairman.³⁴ This combination of farmers, journalists, and agricultural educators, joined in advancing a common interest, is an indication of how far agricultural education at Cornell had progressed since its uncertain reception by farmers and the agricultural press in the 1870's. In 1904 the president of the Central New York Farmers' Club insisted that Bailey appear and make a rousing speech for state aid to Cornell on the grounds that agriculture had been neglected long enough.³⁵

Early in September the Committee for the Promotion of Agriculture met at Syracuse to consider "ways and means" for securing state aid. In reporting the meeting to Schurman, Bailey said that "a good deal of inquiry" had developed concerning the relation of the University to the state, adding, "It seems there are forces at work to influence public opinion against making an appropriation to what some people think to be a 'private institution.'" The committee realized that arousing farm people would not be sufficient; the Governor and Senator Platt would have to be approached, a task Editor W. G. Johnson of the *American Agriculturist* thought could best be handled by President Schurman. "I was surprised," Bailey concluded, "to find out how ignorant the Committee is of the exact status of Cornell University in respect to the State . . . Many seem to think that if the State is to give money to the College of Agriculture the State must have more direct control in the affairs of the University."³⁶

Between September and December, 1903, the objective gradually shifted from securing a state appropriation for an agricultural build-

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ing to making the College of Agriculture a state institution. On September 9 Bailey wrote to fourteen eastern agricultural colleges asking whether state aid was received on a regular basis.³⁷ During the following three months various strategies for obtaining a state college of agriculture were thoroughly explored, but in early December the matter was still undecided. The initial decision to press for a state college was apparently made by Speaker Nixon and almost certainly involved, as a *quid pro quo*, the extinction of the State College of Forestry. ✓

In May, 1903, Governor Odell had vetoed the annual appropriation for the College of Forestry in response to demands from Adirondack land owners who opposed the clear-cutting policy of Director B. E. Fernow.³⁸ In June, 1903, instruction in the College ceased and the faculty was dismissed. "The veto of the appropriation," Bailey said later, "was a surprise to all of us."³⁹ However, the College of Forestry continued as a legal entity, and the way was left open for the renewal of instruction in the future.* In September, Bailey went directly to Albany from a meeting of the Committee for the Promotion of Agriculture to confer with Speaker Nixon, who asked Bailey to collect statistics on forestry and forestry education and to accompany him on a trip to inspect Cornell's forest lands in the Adirondacks.⁴⁰ In planning his opening address to the Assembly, Nixon asked Bailey about forestry in connection with colleges of agriculture. In the same letter Nixon said, with reference to a state college of agriculture at Cornell, "I think I might as well make the effort to get it."⁴¹ ✓

Schurman still had to be persuaded that it would be wise to unite the instruction in forestry with a college of agriculture. To this end Bailey wrote two long letters, the first on December 17.

You know, of course, what my own attitude is toward this forestry question. I believe that forestry should be a part of the College of Agriculture . . . As a matter of public policy, also, I believe it would be much better

*In his veto message the Governor said: "The operations of the College of Forestry have been subjected to grave criticism, as they have practically denuded the forest lands of the State without compensating benefits. I deem it wise therefore to withhold approval of this item until a more scientific and more reasonable method is pursued in the forestry of the lands now under the control of Cornell University" (Charles Z. Lincoln, ed., *Messages from the Governors*, X [Albany, 1910], 555).

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to have one strong college than two or three relatively weak ones, each asking for a separate fund from the Legislature.

There is another exceedingly important phase to all of this. We are going to ask for the agricultural college building. The maintenance of this building will demand heavy drafts upon the University treasury. In fact, I do not see how the University can maintain it. It will be a difficult thing, I fancy, to get an appropriation within at least three or four years to supplement the regular University funds in maintaining the college. However, the State has committed itself to the maintenance of a College of Forestry. I believe that if the College of Forestry can be combined with the College of Agriculture that the State will find itself in duty bound to aid in maintaining the agricultural building when we get it . . .

Of course I should not expect that if the College of Forestry were combined with the College of Agriculture it should teach only farm forestry.

On the following day, Bailey repeated these arguments and added others.

I hope I do not press this matter merely because I am Director of the College of Agriculture. I believe it is the wisest course in the interest both of public policy and of the University. Last winter at Albany I was confronted by inquiries which indicated that the State would be willing to give to either a College of Forestry or a College of Agriculture, but not to both. The question will always come up when there are two such closely related institutions and one will be set off against the other to the detriment of both . . .

I believe that this handling of the matter could be made an entering wedge for placing the College of Agriculture on a state basis as far as maintenance is concerned.⁴²

The evidence for a political bargain exchanging a college of forestry for a college of agriculture is necessarily circumstantial, for it was not the type of agreement to be made a matter of record. Its existence must be inferred from the correspondence between Nixon and Bailey in December and the events which followed in the legislative session of 1904. In his address to the Assembly on January 6, Nixon used information Bailey had provided. After comparing New York's contribution to its agricultural college with what other states were making he said that this state should establish and maintain a "state agricultural college equal to the best in the Union."⁴³ Forestry, he

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added, "ought to be taught in our College of Agriculture and should be a department in every agricultural college."⁴⁴

In securing special interest legislation, timing is of the utmost importance. For many years Editor Luther Tucker of the *Country Gentleman* had kept close watch on legislative matters from his office in Albany and for several years before 1904 had dampened Roberts' hopes for state aid by indicating that in an unfavorable political situation no amount of effort could accomplish the ends desired. At the beginning of the 1904 session Tucker insisted that this was the year for action; a barrage of letters from farmers directed to the legislature could now prove helpful. Roberts was delighted to hear that prospects were favorable. "It makes my nerves vibrate to even think of it at long range," he wrote from California.⁴⁵

At the beginning of the session a bill appropriating \$250,000 for a state agricultural building at Cornell was introduced in the Senate by E. C. Stewart of Ithaca, and the week following a similar bill was introduced in the Assembly by George Monroe of Dryden. The chairman of the Senate Finance Committee, George Malby, and the chairman of the Assembly Ways and Means Committee, James T. Rogers, a Cornellian of the Class of 1893, were known to favor the proposed legislation.⁴⁶ H. E. Cook, who was busily pushing the bill at farmers' institutes, told Bailey there was little cause for anxiety. Nevertheless, Bailey had prepared carefully to secure a favorable expression of rural opinion through letters to members of the legislature and through statements to be presented at a hearing of the Senate Finance Committee on February 9.⁴⁷

On January 8 and 9 the Agricultural Experimenters' League had an attendance of over 150 at its first annual meeting. Bailey was frank about this organization serving as an agricultural pressure group; he stated its purposes to be cooperative experimentation, the advancement of agricultural education, and the support of appropriate legislation.⁴⁸ The league's president, Harry B. Winters, wrote to college alumni at Bailey's request, urging their support of the pending legislation. Securing attendance at the hearing in Albany was complicated by the cost of travel. Cook was anxious to impress the legislators by having Cornell's case pleaded by working farmers instead of

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the officials of farm organizations who usually attended legislative hearings. "Can't you find men enough among your great correspondence list that will pay their own R.R. if you pay the dinners?" he asked Bailey.⁴⁹ The cost of travel was considered important; by the time the hearing occurred, Bailey had secured funds to reimburse travel expenses.⁵⁰

The political strategy adopted to secure a state college of agriculture resulted in keeping the public uninformed about the true objective during January and February, 1904, for the bills before the legislature provided only for the state's erecting an agricultural building at Cornell. On February 4 a conference of legislative leaders was held when, stated Nixon, "the question of a state agricultural college was taken up and the consideration of it was very favorable."⁵¹ On March 11 Assemblyman Monroe introduced a new bill entitled "An Act to Establish a State College of Agriculture at Cornell University and Making an Appropriation Therefore" and thereafter the bill of Senator Stewart was amended accordingly. Additional changes in the Stewart bill provided for the erection of four buildings instead of the single structure originally intended and the conveyance to the state of the land on which the buildings were to be located.⁵²

Only supporters of the \$250,000 appropriation for an agricultural building at Cornell appeared at the hearings of the Senate Finance Committee held on February 9. However, at a second hearing of this committee, held February 22, Chancellor James R. Day of Syracuse University presented a long statement on behalf of his institution and six other colleges and universities located in New York State. Chancellor Day looked beyond the immediate issue of a \$250,000 state appropriation for Cornell to the relation between Cornell and other colleges in the state. The cast of his argument pointed up fears that, step by step, Cornell would use its land-grant status to become a state-supported institution with a competitive advantage over the other colleges in the state. State aid to Cornell he considered discriminatory. In a declaration similar to those made in 1865 opposing the concentration of the Morrill land grant at a single institution, Chancellor Day insisted that the state "should treat us alike. Either give to all or not to any." As to the constitutional provision prohibiting

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state aid to denominational institutions, he said he did not believe this applied to Syracuse University, for although it was affiliated with the Methodist Church, sectarian instruction was not given there.

The Chancellor's approach to the question of further state aid for agricultural education at Cornell was, as he indicated in his statement to the committee, similar to that with which he and other college presidents successfully checked President Schurman's attempt to secure a state appropriation for a college of education five years previously. However, his argument overlooked the essential difference between the two cases. Several institutions in the state had, in terms of equipment and personnel for a school of education, as good a claim for public support as Cornell. This was not true of agriculture, for in this field Cornell was unique. No other institution in the state had the foundation for developing skilled resident and extension teaching allied with an agricultural experiment station. Chancellor Day evidently recognized this fact when he insisted that what the farmers of the state needed was not a single college of agriculture but a number of local agricultural schools. "The quarter of a million," he insisted, "would start five of these schools." In addition to these arguments, Chancellor Day resurrected the claim that Ezra Cornell had illegally manipulated the land-grant fund and that the university bearing his name had diverted to "general purposes" funds which Congress had intended for agricultural education. Together with the six other college presidents, Day offered as a substitute measure a proposal to establish a commission of five senators to investigate the subject of state aid to the colleges and universities of New York State.⁵³

The situation was further complicated by a bill introduced on February 19 establishing a state college of agriculture at Cobleskill and making an initial appropriation of \$200,000.⁵⁴ At a hearing of the Senate Finance Committee on March 16 about one hundred citizens of Cobleskill, along with President Raymond of Union College, urged the committee to postpone the appropriation for the college of agriculture at Cornell until a commission could consider the merits of a separate agricultural college at Cobleskill. The *Country Gentleman* viewed this testimony, which was repeated in similar form by other

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witnesses, as a deliberate maneuver to delay the appropriation for Cornell.*

It soon became evident that Chancellor Day was enlisting further opposition to the appropriation for Cornell. On March 10 Senator Stewart urged Bailey to stir up "our farmer friends," who had lagged in their appeals and correspondence after the initial wave of enthusiasm. "I find," he said, "that President Day is now working the Methodist preachers throughout the state and letters are being received every day from them." Speaker Nixon saw that "quite a fight" was about to develop but had little doubt that "we will be able to handle this matter so that it will come through all right this winter."⁵⁵

Chancellor Day did not confine his efforts to the Methodist ministers and other college presidents. After the second hearing of the Senate Finance Committee on February 23, he circulated in pamphlet form the same charges that had been refuted by Schurman and Bailey. This was followed on March 10 by another pamphlet containing three pages of rather gross misrepresentations. To counter these charges President Schurman prepared a twenty-four page pamphlet which was published over the name of Professor Bailey, refuting each of Day's charges and concluding that further aid to the Cornell College of Agriculture would be a continuation of state policy long approved by the farmers.⁵⁶

In broadcasting what were essentially irresponsible charges Chancellor Day did agricultural education in New York State a substantial disservice. His recommendation for a commission to consider the state's relation to agricultural and other higher education, which could well have stood on its own merits, was tainted by the nature of the arguments he advanced in its support. If agricultural education in the state was to develop rationally, a plan was needed which would include the proposed introduction of agriculture into the secondary schools, the establishment of separate agricultural schools, and the work in agricultural education already established at Cornell University. Such a study might have prevented the somewhat chaotic devel-

**Country Gentlemen*, March 24, 1904. The *American Agriculturist* report that "over 200 people" appearing in defense of the bill were urged on by the presence of Chancellor Day is in error (*American Agriculturist*, March 26, 1904, p. 382).

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opment of agricultural education that occurred in New York State after 1906.

While Bailey usually appeared as spokesman for the interests of the College of Agriculture, Schurman's contribution to the process of securing additional state support was of comparable importance. Before the legislative session of 1904, Schurman spent several days in Albany as a guest of Governor Odell.⁵⁷ The Governor did not enter into Schurman's plans, however, with the enthusiasm Governor Flower displayed in 1893. In his annual message to the legislature, Odell recommended "adequate provision" for agricultural education without suggesting specifically how this should be accomplished.⁵⁸ Schurman's efforts were complicated by animosity between the Governor and Speaker Nixon. When the session opened, these two most powerful men in the state government were at loggerheads over the proposal to concentrate authority over the state's educational system in the Board of Regents.⁵⁹ In early February the Speaker indicated to Bailey the relationship between the bill unifying state authority over education under the Board of Regents and that involving the College of Agriculture at Cornell:

Many of us are desirous that President Schurman should come here at the meeting on Tuesday next of the two educational committees, who are to have a meeting on the unification bill . . . It would be a good opportunity for him also to see some of the fellows with reference to the college. I wish that you would say for me to him that I think it will be of material benefit to Cornell if he will come here to this meeting expressing his views with reference to the unification bill, which we understand are favorable.⁶⁰

President Schurman testified at the meeting as Nixon requested.⁶¹ In March, Schurman was working with Editor W. G. Johnson of the *American Agriculturist* to secure Democratic support in the Senate, for the political division there was sufficiently close to jeopardize the bill if the Democrats made opposition to it a party measure.⁶² Some Democrats did vote for the bill, which passed the Senate on April 8 by a vote of thirty-three to thirteen, having already passed the Assembly by a vote of eighty-seven to forty-five. Immediately thereafter Johnson took specific credit for securing the support of Senator McCarren and his Democratic colleagues from Brooklyn.⁶³ Late in

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March, Schurman prepared the pamphlet over Bailey's name refuting the charges of Chancellor Day, which Bailey later called "the turning point in the great contest for the life of the College of Agriculture."⁶⁴ After the bill passed the Senate, Schurman wrote former President White that he was "continuing to bring influence to bear upon the Governor" who reportedly had become alarmed by Chancellor Day's threats to stir up the Methodists against the Republican party if the bill was signed.*

The Governor postponed his decision until a hearing could be held late in April. The only opposition at this hearing came from the Presidents of Union College and Colgate University who argued that the state should not provide further aid to Cornell until the matter had been studied by a commission. Chancellor Day was not present.⁶⁵ After the hearing the Faculty of Agriculture took preliminary steps toward celebrating the anticipated victory. Arrangements were made with the superintendent of the Ithaca pumping station to blow five blasts on the whistle if the bill were signed, three blasts if vetoed.⁶⁶

News of the Governor's signature reached Ithaca about seven o'clock on the evening of May 9. As the whistle signaled the establishment of the state agricultural college, the agricultural students rushed to the Armory to carry out a prearranged plan to fire a cannon salute to the Governor. Soon about 1,200 students gathered. Led by a large black bull from the university farm, they marched to the homes of President Schurman and Professor Bailey. A college holiday was declared for May 12, and a bigger celebration was planned for the evening of that day.⁶⁷

This celebration began at 6:45 P.M. with a prolonged blowing of whistles and ringing of church bells, followed by a parade of floats that represented the various activities in the College of Agriculture. This in turn was followed by a huge bonfire on the Library slope — the largest ever seen in Ithaca said C. S. Wilson in the *Cornell Countryman*. At about 9 P.M. the members of the College of Agricul-

*April 13, 1904. Schurman's statement in the letter — "the facts that I have just mentioned confidentially to you are unknown to the workers in the cause" — points up the lack of coordination between Schurman and Bailey.

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ture and their guests gathered at the Armory for a banquet prepared entirely from produce from the university farm. H. E. Cook served as toastmaster. At the close of the banquet, Director Bailey was presented with a loving cup. From California came a telegram from Dean Roberts: "Cornell I Yell Cornell I Yell Yell Yell Agriculture."⁶⁸

When calm returned to the campus, the question remained: who had secured the State College of Agriculture? Editor W. G. Johnson had already claimed credit for initiating the campaign and suggesting the successful strategy. "I know from members of the legislature that your words had great weight with that body," Schurman wrote to Editor Collingwood. The *Cornell Alumni News* credited H. E. Cook with doing "more than any other man in creating the sentiment which resulted in the passage of the bill." Bailey was active in organizing support, both within and outside the legislature.⁶⁹

Schurman claimed substantial credit in his annual report for 1904. Quoting at length from his inaugural address of 1892, he represented the recent legislation as a logical outcome to a relationship the state had recognized with the establishment of the New York State Veterinary College.⁷⁰ Schurman's claim was well grounded as far as establishment of a precedent was concerned — and the precedent was important — but it overlooked basic differences in the total complex from which the two state colleges developed. The veterinary college measure enjoyed the support of the Governor, and in terms of cost to the state was a relatively small item compared to the agricultural college. The establishment of a state veterinary college was not opposed by powerful interest groups; only a single member of the legislature then felt it necessary to vote in opposition.

Ultimately, it was the organized farmers of New York who secured the State College of Agriculture. Of course, some of this organizing was the work of Schurman, Bailey, and members of the Cornell faculty who were anxious to obtain greater financial support for the work in agricultural education. The farmers, however, were not passive puppets manipulated from Ithaca, but concerned citizens who accepted the help of Cornell officers in advancing their own interests. This recognition by New York farmers that further public aid to the College of Agriculture was indeed in their interest reflected an awareness of the help the College had given them over a period of thirty

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years. In creating the favorable rural opinion essential to the success of the campaign of 1903-1904, W. R. Lazenby and President Adams made contributions perhaps no less important than their successors. Conditions outside New York also favored a movement for greater public aid to agricultural education within the state. That other states were more adequately supporting their agricultural colleges was constantly held before New York farmers.

It was this widespread interest that made possible on the national scene a successful campaign for greater federal support of the agricultural experiment stations. In 1902 the Association of American Agricultural Colleges and Experiment Stations approved a resolution introduced by Dean Davenport of Illinois calling upon Congress to double the amount of federal money available to each state under the Hatch Act.⁷¹ Late in 1903 this objective was undertaken by Congressman Henry C. Adams at the urging of his friend, Dean W. A. Henry of Wisconsin.⁷² Unlike Congressman Hatch, who did little more than sponsor legislation prepared by a committee representing the state agricultural colleges, Adams gave considerable personal attention to winning his legislation, including spending the Christmas vacation of 1904 in Washington to urge Speaker Joseph Cannon to permit his bill to come before the House of Representatives.⁷³ Through correspondence with the officers of the state experiment stations, the specific content of the bill had been worked out and support organized. Bailey, who was near the center of this communication network, knew something of the complex motivations involved in support of this legislation.⁷⁴ In January, 1904, Dean Henry indicated to Bailey his fear of the expanding federal Department of Agriculture, a fear which Bailey shared during his tenure as director.

*Remember if we do not get this money from the government, the Department of Agriculture will get it, for the Government is ready to help agriculture. In the last two years the income of the Department has grown about \$800,000. There will be a further increase of several hundred thousand dollars in the present session probably. The Department is hiring away many of the good men from the colleges and stations . . . It is a fight for life with the Experiment Stations. If we allow this to go on . . . the U. S. Department of Agriculture will compete with the experiment stations in their own territories.*⁷⁵

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BAILEY AS ADMINISTRATOR

In his administration of the College of Agriculture, Bailey continued an important arrangement which had prevailed under Roberts. Professor Hunt, who succeeded to many of Roberts' responsibilities, was made virtually a vice-director, with control over all expenditures in the associated Departments of Agronomy, Animal Husbandry, and Dairy Industry, as well as those of the university farm.* In another area, the use of college income, Bailey tried to institute a different procedure. Under the old system, which required the deposit of farm receipts in the university treasury, a method of barter had developed in the operation of the farm so that all receipts did not appear on the financial records. The best solution to this abuse, Bailey assured Schurman, would be the automatic reappropriation of farm income.⁷⁶

In his early years as director, Bailey favored the complete separation of experiment station work, resident teaching, and extension. In 1905 he offered the position of vice-director of extension to Kenyon L. Butterfield and a year later informed him that if the extension work were not yet entirely separate, the College was "gradually approaching that goal."[†] Members of the faculty paid by federal experiment station funds were not required to teach or do institute work; persons not paid from federal funds were not required to publish.⁷⁷ Had Butterfield accepted Bailey's offer in 1905, the history of the College might be quite different, for the separation of college functions under the administration of vice-directors would almost certainly have conflicted with Bailey's policy of making the department head completely responsible for the operation of his department, which, of course, usually included resident teaching, extension, and research functions.

Much of Bailey's success as director of the College of Agriculture stemmed from an abundance of energy sufficient for the needs of several normal men. During his tenure at Cornell, Bailey continued to write about one book a year, edit numerous others, and bring to publication his four-volume *Cyclopedia of American Agriculture*. He

*Bailey to Hunt, Oct. 27, 1903, Bailey Papers. Animal Husbandry included the sub-department of Poultry Husbandry.

†Bailey to Butterfield, Aug. 29, Oct. 5, 1905, Dec. 5, 1906, Bailey Papers. In 1905 Butterfield was President of Rhode Island State College, in 1906 President of Massachusetts Agricultural College.

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was constantly collecting information to determine how his College of Agriculture compared with similar institutions and how New York State agriculture compared with that of other states. In December, 1903, he suggested a "wake-up" session to W. C. Barry to determine how New York State fruitgrowing compared with other areas. Nine other fruitgrowers were asked if New York was holding its own. Bailey constantly received requests for speeches from all parts of the country. "It is not too much to say," asserted Dean Davenport when asking Bailey to give a major address at the installation of the new president of the University of Illinois, "that we look upon you as the foremost exponent of sound doctrine in agricultural education." By the fall of 1903 he had already addressed the New York Farmers — a group of prominent New York City businessmen interested in agriculture — on several occasions.⁷⁸

Fame had its complications. Every year Bailey received hundreds of requests for personal advice on a wide range of subjects. He answered each at length, trying conscientiously to meet the problems raised by the correspondent. When the President of Illinois College asked how to offer agricultural instruction on a limited budget, Bailey offered to stop off on one of his trips west and give him some specific advice.⁷⁹ He was actively involved in civic improvement in Ithaca, his opinion being sought as a matter of course in questions relating to the preservation of the natural beauty of the Ithaca area.⁸⁰ With all these activities he still found time to cheer up his colleagues. One day when feeling especially depressed, Professor Fletcher went into Bailey's office and came out feeling more optimistic than he had for some time. "The unfailing optimism of that man is a perennial inspiration to me," he remarked after the session.⁸¹ No matter how busy with speaking, writing, or administration, Bailey tried to reserve Sunday evening for informal sessions at his home with small groups of students. Following the practice of Theophilus C. Abbot, President of Michigan Agricultural College when he was a student, Bailey read poetry and other literature, sometimes of his own composition. He looked forward to these sessions, saying that they helped to keep him young.⁸²

Bailey also found time to carry on two sets of correspondence. That associated with his roles of dean and director was prepared at the

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College; that associated with his roles of publicist and lobbyist was conducted from his residence. The "outside" correspondence was substantial during periods when he was mobilizing the support of groups and individuals.⁸³

Bailey's evident abilities, industry, and national reputation brought him offers of other administrative positions. In 1905 he was offered the post of dean of the College of Agriculture at the University of California. The following year he was approached about the presidency of the Massachusetts Agricultural College with every indication of his election. Bailey was not interested in other administrative positions, but sometimes used these offers to advance the interests of the College of Agriculture. After the California offer H. E. Cook promised to do all he could to promote agricultural education at Cornell. George Malby, chairman of the Senate Finance Committee, made the same commitment. Bailey's place, they assured him, was here in New York.⁸⁴

The combination of roles which Bailey occupied gave him considerable power to influence decisions in organizations connected with agricultural education. His support was frequently sought by persons seeking influential positions in these organizations. Bailey used his power wisely, refusing to give any statement which might be used to embarrass him later. To do so, he usually pointed out in his replies, would be inappropriate for one in his official position. He rarely broke this rule and, when on one occasion he did so, he had to backtrack.⁸⁵

Bailey used his power effectively in advancing his conception of the College of Agriculture, but in his first major decision after the State College was established he was defeated by superior authority. He planned to locate the new buildings along East Avenue in front of the Veterinary College in order to promote the unification of the two colleges. However, this site was not approved by the state architect, who, after looking over the ground, was completely convinced that the knoll where Roberts Hall now stands would be the ideal site for the buildings he envisioned. Furthermore, the Board of Trustees was unwilling to demolish two faculty homes which stood in front of the Veterinary College.⁸⁶ In view of the great expansion of the College since 1904 it is well that Bailey's location was rejected. When the ground-breaking ceremony occurred on May 1, 1905, he was recon-

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ciled to the selected location. After former President White turned the first shovelful, Bailey seized the plow and, together with the students who pulled it, turned out the first furrow.⁸⁷

With the State College established and the buildings under way, the next step — certainly of equal importance — was getting an administration act through the legislature. The administration law for the New York State College of Agriculture at Cornell University, as the institution was therein designated, was everything that the Cornell authorities desired. Recognizing existing relationships, it vested complete control of the College in Cornell University. The requirements for an annual report and approval of vouchers by the commissioner of agriculture were continued from the Nixon laws and the provision that college income be applied to current expenses was already in effect where this income resulted from operations financed by the state.⁸⁸ Bailey had been instrumental in securing this legislation and was duly praised by the Governor's counsel, Cuthbert W. Pound, who evidently considered Bailey's methods well adapted to the legislative process in a democratic society. "Personally, I want you to know that I appreciate what your tact and sound judgment have accomplished thus far this winter. There has been no strife, no newspaper discussion, no public hearings, but everything has been done regularly and in order."⁸⁹

More than two years were required to complete the buildings started on that first of May, 1905. During that time Bailey continued to expand the work of the College, adding at least one new subject to the curriculum each year. In 1905 a course in rural sociology was announced along with a two-year program in outdoor art and a two-year terminal program in nature study for those desiring to teach the subject in secondary schools.* The following year a course in field engineering was given by Professor Hunt, and in 1906-07 courses in agricultural botany and plant diseases were announced over the name of Assistant Professor Herbert H. Whetzel.⁹⁰ The extension work of the College was also expanded. In April, 1904, a new type of publication called the "press bulletin" was initiated to meet the need for concise up-to-date information on problems of immediate concern to

*The term "rural sociology" was continued to 1908, when it was dropped from the *Register* in favor of "rural social organization."

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farmers.⁹¹ Seeking a larger audience for the reading courses, Bailey asked the lecturer of the State Grange to recommend them to the subordinate Granges.⁹² By 1905 additional reading courses on poultry and dairying had been added for farmers and courses on the farm family and food and sanitation for farm women. The latter furnished a basic program for women's study clubs, which sometimes went beyond the lessons to such diverse activities as pronunciation drill and the study of Shakespeare.⁹³

In some cases this policy of expansion was resisted by persons who saw in the new activities a threat to their own sphere of action. The course in agricultural botany was opposed by the head of the University's Department of Botany while the course in field engineering was readily accepted, for this was a new academic area as yet unoccupied by other educators.⁹⁴ Much more serious, however, was the opposition of the agricultural press to Cornell's extension publications.

In the fall of 1903 Bailey's relations with Gilbert Tucker were so cordial that Tucker asked him to prepare an editorial on the needs of the College which would be printed in the *Country Gentleman* as the work of the editor. Yet four months later Tucker was suggesting a price for further support of the College. "Would you be willing," he asked, "to drop your correspondence schools and general circulation of general rural matter that floods the farmer at no cost, if by so doing you could effectively aid in securing your appropriation and further fostering of your interests year after year by the state?" In 1906 the publishers of the *American Agriculturist* joined Tucker in opposing the continuation of the Cornell reading courses. Early that year representatives of the agricultural papers circulating in New York State held a meeting in New York City, which Bailey attended, and, according to W. G. Johnson, they there "inferred" that he "intended to discontinue the publication of the circulars and drop the reading course business." The holding of this meeting is a measure of how damaging the agricultural press regarded the Cornell publications. Ordinarily these editors were too busy fighting each other to join together against a common danger. Dozens of letters in Bailey's correspondence complain of preferential treatment accorded their competitors; the columns of these publications were frequently used for attacks on the motives and good judgment of fellow editors.⁹⁵

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It was President Schurman who decided that no new reading course bulletins would be issued; instead, four-page supplements to previous bulletins were released as a means of retaining the mailing privileges.⁹⁶ In 1907 Tucker followed up this success with a complaint about the out-of-town advertising in the *Cornell Countryman*. Schurman promised to try to restrict this student publication to Ithaca advertising, but Bailey was unwilling to adopt this restriction. The student publications at eleven other agricultural colleges, he pointed out, all took out-of-town advertising.⁹⁷

In 1907 Bailey was anxious to expand the reading courses. "Instead of having 25,000 persons reading," he wrote Schurman, "we ought to have at least 100,000. A small additional increase in funds will enable us to do it." Miss Van Rensselaer and Charles Tuck, who succeeded Professor Fletcher in 1906, were equally anxious to expand the work. Tuck sought the opinion of key members of the legislature and officers of the State Grange. Their replies were encouraging. Continue publications on the broadest basis, they said, and do not be intimidated by the agricultural publications. With these assurances of support, Bailey was prepared to approach President Schurman for a change in policy.⁹⁸

The kind of disagreement between the President of the University and the Director of the College of Agriculture that occurred over the reading courses existed in other areas of college administration; indeed, such differences were almost inevitable between a strong president and a director who insisted that the attainment of his broad objectives required the use of broad authority. The consequences that followed from the conflicting interpretation of their roles were accentuated by differences in personality. The generally able and aggressive President Schurman was often rather cavalier with his equally able and aggressive associate.

By March, 1906, friction had developed over the date the College would vacate the old dairy building which was to form the north wing of Goldwin Smith Hall.* Delay in the completion of this much needed center for the College of Arts and Sciences was threatened by

*The law establishing the state college provided that when the University paid \$40,000 toward the cost of a new dairy building, it could take over the old structure (*Laws of New York, 1904, ch. 656*).

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Bailey's desire to avoid any interruption in the dairy course work. Schurman's insistence that the dairy work move to a temporary location was in accord with his role as university president, for Goldwin Smith Hall would provide office and classroom space for many faculty members then working under cramped circumstances.⁹⁹ An incident of a more personal nature occurred in November of that year. San Jose scale was at that time a most serious pest in New York orchards and had, to some extent, invaded the grounds of the Department of Horticulture. Without consulting Director Bailey, who was presumably aware of its presence, the trustees determined to have it eradicated. President Schurman then wrote Bailey in the peremptory style he had employed with Roberts in 1902:

Accordingly I have to request that you, as Director of the College of Agriculture, will see that these grounds are cleaned up and that this extermination is affected. My own feeling is that no investigation work, no extension work in other parts of the state, and perhaps even no instruction to students has such a primary and emphatic claim upon us as the maintenance and proper condition of our own horticultural establishment.¹⁰⁰

Another message of four days later could hardly have been better calculated to aggravate the situation. In 1906 Bailey had secured a state appropriation of \$100,000 for the operation and maintenance of the College, but this amount was insufficient to support adequately the activities Bailey had initiated. He wished to secure a substantial increase in 1907, in part to compensate the men who had come to Cornell at reduced salaries. Schurman, however, thought no additional state money should be requested:

In any event the matter must be settled by the Board of Trustees of Cornell University, who are responsible for the administration of the State College of Agriculture; and I need not say to you that nothing should be done by you in the way of attempting to secure additional appropriations until the Trustees have decided that additional appropriations are necessary and expedient for the best interests of the College.¹⁰¹

Their subsequent correspondence on the subject deals not only with Bailey's justification for larger appropriations but indicates something of how appropriations were secured at the time. Late in December, 1906, Bailey reminded the President that it was time to

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make a "definite move" to place the needs of the College before the legislature. "I wish therefore," he said, "that you would authorize me, as you have done in the past, to organize the affairs at Albany for the purpose of securing additional funds for our work." In January he wrote a fourteen-page letter to Schurman stating the needs of the College. If these needs are great, said Bailey, the tasks at hand are even greater. Technical agriculture was only a step toward the reorganization of rural society which he envisioned. By itself technical agriculture was not enough; it must be applied to social and economic ends. "There is *not one* institution now existing in the country from school to church and grange, and even to habit of mind, that does not need redirection . . . The kind of work this college ought to do is really undreamed of." By February 2, Schurman had not yet authorized him to arrange matters at Albany. Again Bailey asked permission to proceed, stating that if a "considerable additional sum" was to be requested "we should have our friends informed in case their help is needed."¹⁰² Although Bailey eventually persuaded Schurman and the trustees that additional appropriations should be requested, his way had not been easy.*

In 1907 the Association of American Agricultural Colleges and Experiment Stations, working with the Assistant Secretary of Agriculture, W. M. Hays, secured the passage of the Nelson Act which provided further federal aid to the land-grant colleges.¹⁰³ Bailey had taken an active part in getting favorable action on this legislation.¹⁰⁴ Since the Nelson Act had been conceived and fostered by agricultural college interests, he argued, the entire proceeds coming to Cornell University under the act should be allocated to the College of Agriculture. Schurman did not contest Bailey's explanation of the law's origins but pointed out that he must follow the wording of the law which, in its final form, designated the land-grant institutions as beneficiaries.¹⁰⁵ Eventually the trustees assigned two-fifths of the Nelson fund to the College of Agriculture.¹⁰⁶

Bailey and Schurman also differed on who should act as spokesman for the University in its relations with the agricultural organizations of the state. In 1904 the New York State Committee for the Promotion

*The 1907 appropriation for operation and maintenance was increased 50 per cent over the previous year (*Laws of New York, 1907, ch. 577*).

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of Agricultural Education and Research was organized as a permanent medium for communication between the University and the thirteen member organizations after the University agreed to pay the expenses incurred on an annual visit to Cornell.* In September, 1905, the committee, under the chairmanship of H. E. Cook, held its meeting in Bailey's office. The delegates, who regarded Bailey as the representative of Cornell University, became accustomed to leaving after their annual visit without seeing President Schurman. In 1907 the President made it clear that this practice should not continue. In three letters on the subject Schurman made his position perfectly evident. "In future years," he wrote Bailey, "you will make a conference with the President a part of their visit."¹⁰⁷

Schurman was a complex person. There was another side to his personality which could hardly have left Bailey unaffected. This aspect of Schurman was noted by Anna B. Comstock, who knew him during all his years at Cornell: "He was a man who, as a Professor and President of Cornell, walked alone, for he had no intimate friends; but when sorrow came to members of the University Faculty, he was full of genuine sympathy. Through this, many learned to love him."¹⁰⁸ In 1907 Schurman appointed to an instructorship a graduate student in the College of Agriculture who had lost his wife and had two children to support. "It is awfully pathetic," he wrote Bailey. Among all the President's letters to Bailey, it is one of the few signed "sincerely yours."¹⁰⁹

The relationships of the College with New York farm organizations were generally cordial. Members of the faculty participated in the activities of these groups, and Bailey made Professor Tuck specifically responsible for keeping the College in constant touch with their affairs.¹¹⁰ Throughout the decade the State Grange was especially active in supporting the College. In 1904, when the issue of greatly expanded state support was before the legislature, the Grange established four winter course scholarships in the College of Agriculture.¹¹¹ In 1907 the Master of the State Grange offered to help the

*Bailey to Schurman, Nov. 14, 1907, Bailey Papers. Schurman announced the plan to pay the expenses of delegates shortly before the Governor's hearing in 1904 dealing with the establishment of the state college (*Country Gentleman*, May 5, 1904, p. 529).

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College "in any way within my power," adding that he would see anyone in Albany whom Bailey might wish.¹¹²

If Bailey were to redirect rural life in New York it was necessary for him to coordinate and, to an extent, control the development of agricultural education in the state. A good working relationship with Geneva was vital, for Director Jordan was a powerful and respected figure in New York agriculture who could advance or disrupt Bailey's plans. Fortunately, there was no break in the cooperation between Cornell and Geneva during Jordan's long administration. He admired Bailey as an educator and generally shared his social philosophy; together with Bailey he deserves credit for contributing to the development of agricultural education in New York. In 1906 Bailey and Jordan were drawn together in the Committee for the Promotion of Agricultural Education and Research. Both agreed that this was the proper medium for the development of broad-scale agricultural policy and the agency through which agriculture should "make itself felt" in the legislature.¹¹³ In that year the Agricultural Experimenters' League was extended to include members of the Geneva staff, who could thereafter participate in the cooperative experiments of the organization.¹¹⁴ Several situations tending to produce discord between the institutions were successfully neutralized.* In 1909 the Jordans held a reception for the College of Agriculture faculty which was attended by some fifty members and their wives.¹¹⁵

Bailey was pleased with this good relationship but feared it would not continue unless a "more organized" plan was worked out. Forces were already active which he thought would eventually force the institutions apart. Such forces, of course, had existed since the two stations were established, but were likely to be accentuated by competition for state funds. Bailey, however, may have been reacting less to perceived conditions than to attacks on his motives. "It has seemed too bad," he said, "that I have been obliged to waste some of my energy in merely explaining that I have no desire to 'control things' but rather to help things on toward progressive rural movement."¹¹⁶

*These involved the relative allocation of state funds between the stations (*Country Gentleman*, Jan. 31, 1907, p. 108; Bailey to Jordan, Feb. 4, 1907, Jordan to Bailey, April 6, 1906, Bailey Papers).

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The planned reorganization of rural life which Bailey proposed was complicated by the proliferation of institutions involved in agricultural education. During the decade 1900-1910 New York was swept by a national movement for the introduction of agriculture into the secondary schools. The time lag between the first agricultural schools in California and Wisconsin and the establishment of similar institutions in other states was slight. There was no opportunity to evaluate the success of the first agricultural instruction at the secondary level. By the time the first schools were well under way, over twenty other states and territories had established separate agricultural schools or had introduced agriculture into the secondary school curriculum.¹¹⁷

Speaker Nixon prepared the way for such schools in New York in his opening address to the Assembly in 1905. Refurbishing the arguments he had used previously to justify increased state support for the College of Agriculture, he pointed out what other states and European countries were doing in the area of secondary agricultural education.¹¹⁸ Assemblyman Edwin Merritt, who had consistently supported the expansion of the College of Agriculture, was anxious to establish an agricultural school in St. Lawrence County. He asked Bailey's advice. If Bailey opposed the school, he said he would not move forward but if Bailey were favorable he would "feel more courage."¹¹⁹ Bailey supported Merritt's proposal.¹²⁰ In 1906 the state appropriated \$80,000 to establish an agricultural school at Canton in connection with St. Lawrence University.* Meanwhile, Bailey learned that President Boothe C. Davis of Alfred University intended to press for a similar arrangement for his institution. Early in 1908 a group of Morrisville boosters sought Bailey's support in converting the former county buildings into a state school of agriculture.¹²¹ Bailey supported legislation for establishing an agricultural school in both of these locations.†

Unlike the first school at Canton, these later institutions were coor-

**Laws of New York*, 1906, ch. 682. This legislation provided broad authority to carry out work in resident instruction, research, and extension, the latter to be conducted "so far as practicable in harmony with the college of agriculture at Cornell University."

†William W. Armstrong to Bailey, Jan. 4, 1908, Bailey Papers. A building at the Morrisville school carries Bailey's name.

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minated with Cornell and other agricultural interests by a provision in their enabling legislation making the director of the College of Agriculture, the commissioner of agriculture, and a representative of the State Grange ex officio trustees.* Before these institutions opened, the school at St. Lawrence had already entered a period of trial. Its first dean, K. C. Davis, called it a failure and urged Bailey to oppose the establishment of additional agricultural schools in connection with institutions which were only interested in getting state money.¹²² However, the position of this school improved in 1908 when H. E. Cook replaced Davis as dean.† Cook had the confidence of farmers in the northern part of the state and enjoyed the additional advantage of close contact with sources of political power. At the end of 1908 Bailey was in a position to coordinate the work of these schools with that of the College of Agriculture through a combination of personal relationships and his role as ex officio trustee.

The introduction of agriculture in the public schools posed quite a different problem, since it fell within the authority of a powerful existing agency—the State Education Department. In 1905 the department had a representative at farmers' institutes to promote the introduction of agriculture in the rural schools. In 1906 the department allowed agriculture as a possible high school subject, and nature study and agriculture as optional elementary school subjects. The assistant commissioner of education, Augustus S. Downing, was interested in promoting the work but was unwilling to proceed at the pace Bailey desired. There was, he thought, considerable opposition around the state to the introduction of agriculture in the secondary schools. The same was true concerning the introduction of agriculture into the normal schools. Bailey pointed to the successful experience

**Laws of New York*, 1908, chs. 200, 201. In the case of Morrisville, one of the five trustees appointed by the Governor was to be recommended by the Grange. This school was to give courses preparatory to the more advanced courses at Cornell.

†Cook to Bailey, April 27, 1908, Bailey Papers. At this time the law establishing the school at St. Lawrence University was amended to restrict its functions. The words "throughout the state" were dropped from the passage on extension and the authorization for work in resident instruction was qualified by the phrase "elementary and practical" (*Laws of New York*, 1908, ch. 202).

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in Wisconsin; Downing replied that this state was not yet ready and to proceed faster would invite press opposition to "fads." Bailey was even less successful with another assistant commissioner of education, E. J. Goodwin, with whom he was trying to arrive at a satisfactory syllabus for high school agriculture. Commissioner Goodwin regarded Bailey's syllabus as excessively flexible and lacking "definiteness." Since Bailey was not accustomed to having his ideas on agricultural education rejected, Goodwin did well to conclude his letter of June 9 with the hope that "this unfavorable judgement may not displease or dishearten you."¹²³

Bailey was himself under pressure from the federal commissioner of education, Elmer E. Brown, who was urging him to use the Nelson Act fund to form an organization for training elementary and secondary school teachers of agriculture. Bailey agreed that the time was ripe and that Cornell should surely act, "since we have been the first to take up this line of work in the schools and have pushed it hardest and the farthest."¹²⁴ By 1907 Cornell had a substantial base on which to build. The number of junior naturalist leaflets distributed each school month had grown from 18,000 in 1902 to 37,000 at the end of 1907. The work with children had been expanded to include school grounds and gardens. In the spring of 1902 alone about 2,600 children wrote about their improvements to the grounds of 427 schools. By 1907 students in the two-year nature study course were practicing teaching in the Ithaca schools, and Anna B. Comstock was teaching a three-week course in nature study for New York schoolteachers each summer at Chautauqua.¹²⁵

While the work in secondary agriculture developed more slowly than Bailey desired, it did not suffer the difficulties of his school for highway commissioners. The proposal for this school developed out of a three-way correspondence between Senator George Malby, Bailey, and Utica lawyer W. Pierrepont White, who more than any other person was the father of the good-roads movement in New York State.¹²⁶ The suggestion that the College of Agriculture should be training the town highway commissioners in road construction and maintenance came from White. Bailey was at first inclined to justify the existing method of road management—planning, construction, and maintenance by untrained men, usually local farmers — but

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quickly recognized the validity of White's argument that the increased agricultural production advocated by the College would result in rural bankruptcy without better roads. Senator Malby feared that Chancellor Day would take up the instruction of highway commissioners unless Cornell acted quickly.¹²⁷ Once convinced, Bailey acted with characteristic energy. He contacted Editors Collingwood and Johnson, who agreed to promote the study of road building in their papers. From the state engineer and surveyor, H. A. Van Alstyne, he exacted a promise that men would be detailed to help with the proposed course. White, however, did not think that Bailey was sufficiently energetic in securing the \$10,000 appropriation which they agreed was needed for the highway commissioners school and demanded that Bailey be more active.¹²⁸ On May 16-19, 1905, a good-roads conference was held at Cornell, which the Faculty of Agriculture thought so important they suspended all regular work so that the students might attend.¹²⁹ Still, Bailey did not secure the \$10,000 in 1905 or 1906. Early in 1907 he proposed the item to Schurman, stating that the good-roads school would be used to give instruction to all agricultural students since "on the agricultural sentiment must ultimately rest the strength of the movement."¹³⁰ It was thirty-one years later that the school which Bailey desired was finally established.

On April 27, 1907, Cornell University celebrated the hundredth anniversary of the birth of its founder and, quite appropriately, dedicated the new buildings of the College of Agriculture. The dedication featured a round of speeches beginning with Governor Charles Evans Hughes and ending with Director Bailey. It is interesting and somewhat instructive to contrast Schurman's introduction of Bailey with the second paragraph of Bailey's address. In introducing Bailey, Schurman chose, quite immodestly, to review his own "policy of state aid to Cornell" which culminated with "two colleges splendidly housed at the expense of the State, and the State generously appropriates for their support nearly \$200,000 a year." Bailey's statement appears in sharp contrast:

It is first necessary to state a point of view. This College of Agriculture is not established to serve or to magnify Cornell University. It belongs to the people of the State. It will justify its existence only if it serves the people

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of the State. The farmers of the State have secured it; no amount of academic sentiment would have secured it. Their influence has placed it here. They will keep it close to the ground.¹³¹

The new buildings—which included an impressive central structure later named after Roberts, an agronomy building to the west later named after Stone, and, to the east, a dairy building and animal husbandry building—were occupied some eight months before they were completed, the first class being held on October 10, 1906.¹³² On May 23, 1907, “last meeting in Morrill Hall” was recorded in the minutes of the Faculty of Agriculture.

New honors came to Bailey. It was Dr. Bailey who directed the College in its new facilities. He was offered, almost simultaneously, the degree of Doctor of Laws from both Michigan Agricultural College, and the University of Wisconsin. In May, 1907, he chose to accept the latter.¹³³

Measured by Bailey’s personal interest, the most important of the new buildings was the model rural schoolhouse near the agronomy building; it was completed in the spring of 1907 at a cost of \$1,800.* He had been planning this building since 1903 as part of his campaign to improve the condition of rural schools. Since very little money was generally available for rural schools, he intended to construct his model at a price school districts could afford.¹³⁴ In 1904 Schurman refused to permit the construction of this building but the following year agreed that it would be a necessary part of the State College of Agriculture.¹³⁵ Designed to emphasize learning by doing, the building contained two rooms, the smaller being a workroom. Within five years Bailey thought this would have to be enlarged as students responded to what he considered “real education.”¹³⁶ When the building was completed, however, the trustees refused to permit Bailey to organize it as a working rural school. The opportunity to conduct an experimental curriculum was thereby lost, and the building was leased by the University to Martha Hitchcock for use as a private school.¹³⁷

*This building stood in front of Bailey Hall until it was razed in 1962 (*Address at the Dedication of the Buildings of the New York State College of Agriculture*, p. 45).

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The new facilities made possible a substantial expansion of faculty and curriculum. At this time Professor Hunt left Cornell to become dean of the School of Agriculture at the Pennsylvania State College. The Department of Agronomy was abolished and its activities separated into new departments. A department of farm crops was established under George F. Warren, a department of farm practice under John L. Stone, and a department of rural engineering and architecture under Howard W. Riley. The name of this latter department was changed the next year to the more appropriate "farm mechanics," since the work consisted of elementary instruction in the adjustment and operation of farm machinery.* In connection with entomology a start was made in limnology with the appointment of James Needham as assistant professor. The previous year Bailey had persuaded Thomas L. Lyon to accept the newly created chair of experimental agronomy, later changed to the professorship of soil investigation.¹³⁸

The Department of Farm Practice was of especially complex origin. In part it was designed to fill the gap in resident instruction long stressed by Roberts—the development of farming skills. The farm tours which Roberts had successfully substituted for more direct farm practice had not worked out with men who lacked his skill and prestige. Early in 1907 Tuck expressed concern about the effect student misbehavior on these trips was having on local farmers.¹³⁹ That April the faculty decided that after June, 1907, no bachelors or advanced degrees would be awarded unless the candidate had first passed an examination in the practice of agriculture.† The necessary skills could be acquired on farms or through noncredit courses given by the Department of Farm Practice. The requirement had the addi-

*Interview, W. H. Riley, Nov. 14, 1960. Although elementary in terms of later developments in agricultural engineering, the proper adjustment of a walking plow was a skilled operation and one absolutely vital when the power unit had no unutilized capacity.

†Faculty of Ag. Minutes, I, 211. A schedule providing credit for farm experience was established, with 60 farm practice points required for graduation. Up to 10 points, for example, were allowed for "experience in harnessing, hitching, and driving horses" (*Cornell Countryman*, Oct., 1907, pp. 9-10). The farm practice requirement for advanced degrees was rescinded on June 11, 1908 (Faculty of Ag. Minutes, I, 247).

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tional purpose of protecting the College against students who registered there merely to escape tuition payments.¹⁴⁰ The farm practice department also provided a solution to the administration of the university farms after the departure of Professor Hunt. At this time these farms contained 235 acres; however, only about ninety acres were arable, and competition for them was keen among the departments. After a lengthy consideration of possible solutions, it was decided to place the farms under the administration of the Department of Farm Practice, which was not itself doing experimental work.¹⁴¹

The basis was laid for future development in plant science with the establishment of three new departments in that area. A department of plant pathology was created under Herbert H. Whetzel, a department of plant physiology under Benjamin M. Duggar, and a department of experimental plant breeding under Herbert J. Webber. Bringing Webber to Cornell from his position as director of plant breeding investigation at the U.S. Department of Agriculture was a real triumph, for Webber had already attained a national reputation for his breeding of citrus fruits and cotton. A plant industry seminar was established to bring the graduate students together with Webber and the other plant scientists.¹⁴² With the exception of Comstock, Webber, and Wing, the faculty consisted of men who still had their reputations to make. Most of them were former students of Bailey who had acquired several years of experience in other institutions.

From Bailey's point of view, the expansion of facilities did not make a "modern and effective" college of agriculture, but were indications of the state's willingness to proceed toward that end. The University, he said, should perform its duty and inform the legislature and people of the urgent need for barns, for land, and for livestock. Greenhouses too were needed; the poultry department required more money; a chair in forestry should be created; and the instruction of teachers in nature study and elementary agriculture should be put on a sound foundation. Moreover, the University needed to reestablish its formerly preeminent position in the training of agricultural chemists.¹⁴³ The new buildings were hardly adequate the year they were opened. Space was at such a premium that home economics, the only depart-

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ment representing the activities of half the state's population, was relegated to the top floor of Roberts Hall.

The study of home economics had begun in the agricultural colleges in Iowa, Kansas, and Illinois in the 1870's and had come east as part of the broad social movement demanding equal rights for women.¹⁴⁴ In 1905, while inquiring about teachers of home economics, Bailey learned of the outstanding ability of Flora Rose. Two years later he asked Martha Van Rensselaer to make a "very conservative" beginning in resident instruction while carrying on the extension course for farmers' wives. The following month he despaired of luring Isabel Bevier away from the University of Illinois to head the work at Cornell and cast his lot with Miss Van Rensselaer and Miss Rose, whom he made coheads of the work in home economics. He recommended that each be made an assistant professor at an annual salary of \$1,500, Miss Rose to handle the resident work, Miss Van Rensselaer the extension. President Schurman appointed them lecturers at \$1,200 while waiting for the full Board of Trustees to decide whether women should be admitted to membership in the faculty. With a basic staff appointed, Bailey moved to establish a four-year program in home economics leading to the degree of Bachelor of Science in Agriculture, but was halted by Schurman's calculation that sixty-four of the proposed ninety-two course hours in the first three years would be in the College of Arts and Sciences, supported at the expense of the University. By March, 1909, Bailey had temporarily abandoned his plans for the four-year program.¹⁴⁵

Martha Van Rensselaer soon became an aggressive and power-conscious administrator. In 1908 she feared the State Department of Agriculture would get control of home economics and, with the "balance of power" in its favor, benefit from all the pioneering work of Cornell. By 1910 she was actively working to secure a state appropriation for a separate home economics building. She sent Bailey copies of letters to legislators prepared by members of the New York State Assembly of Mothers and the New York State Federation of Clubs which, thoughtfully, had been mailed from different post offices about the state. "They not only did much for our bill," she said, "but they created among the women of the state an interest in the College of Agriculture."¹⁴⁶

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Like home economics, the Department of Poultry Husbandry developed a loyal and enthusiastic constituency in the state. In this field Cornell had a substantial lead over other states, due in large part to the dedication of James Rice. In January, 1907, there were 185 students taking poultry courses.¹⁴⁷ By 1909 the department was paying the price of leadership as its staff was drawn away at much higher salaries by other colleges and commercial institutions. Rice was even forced to train winter course men as assistants.¹⁴⁸ Still he wanted to place the poultry work before more people. An advertising card of the department from that period is studded with phrases like "write to us, come see us, send for an announcement and take a course, arrange for a meeting." The number of winter poultry course applications increased from eighteen in 1909 to eighty-six in 1910.¹⁴⁹ By 1909 Bailey was receiving numerous letters from poultrymen urging increased appropriations for this department. "This is," he replied, "primarily a question for the poultrymen of the State themselves to handle with the Legislature."¹⁵⁰ His advice was followed; in 1910 an intensive campaign for a new poultry building was organized by the New York State branch of the American Poultry Association.*

The Department of Dairy Industry had at that time the largest budget and the greatest impact on the area around Ithaca. In 1904 the department maintained a retail milk route. Most of this milk was purchased from local farmers along with that needed for making butter and cheese.¹⁵¹ In 1907, having already secured two milk plants near Ithaca, Bailey anticipated controlling the milk production of a territory of ten to twelve miles in radius in order to be assured of the 10,000 pounds needed daily for the winter course. These purchases of milk by the College were encouraging the farmers around Ithaca to concentrate on its production. "This will mean," said Bailey, "that eventually the country within our neighborhood will take on a different agricultural character."¹⁵²

The emphasis in the department had not yet turned to fluid milk. New York State then produced nearly one-half the cheese in the United States—at an annual value of five million dollars a year—and

*In 1910 the association published a 31-page pamphlet entitled *Reasons for an Appropriation for the Department of Poultry Husbandry of the New York State College of Agriculture* (James Rice Papers).

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Professor Pearson was anxious to push the manufacture of cheese even harder.¹⁵³ Considerable skill was required to make butter and cheese of a uniform color, flavor and texture. To make certain that winter course students were up to the high standards the department desired, certificates of completion were awarded only after the student had successfully served as manager of a cheese factory or creamery for a year.¹⁵⁴ At the close of the decade the Department of Dairy Industry was anxious to push cow-testing associations as a means for improving New York State dairying but was informed by Professor Wing that this activity fell within the province of the Department of Animal Husbandry.¹⁵⁵

Before 1910 a rudimentary library for the College had been established by setting aside a room for this purpose. All books not purchased on department funds were supposed to be housed there. There was, however, no full-time librarian, and in 1910 the indefinite withdrawal of books led to frequent complaints.¹⁵⁶ The library was administered by a faculty committee, which, in practice, meant the committee chairman. In 1910 Bailey appropriated \$1,250 for the library in addition to the \$400 made available by the University for the purchase of books.*

As an administrator, Bailey established the components of agricultural education as separate disciplines; in his publications he studied the relation of these various disciplines to the body of knowledge from which they emerged. In 1907, while president of the Association of American Agricultural Colleges and Experiment Stations, he took the next logical step and moved toward the examination of how agricultural information and research techniques could be correlated with the total body of science and knowledge; to this end he appointed a commission consisting of President David Starr Jordan of Stanford University, Director Jordan of Geneva, Gifford Pinchot, then chief of the Division of Forestry, and two others. "Here," wrote Bailey to President Jordan, "is an opportunity for you to serve the cause of science." While hoping that they would deal with the fundamental issue he projected, he recognized that these were busy men and allowed them to set the scope of the study as they saw fit. The com-

*Bailey's appropriation covered both book purchases and wages for the library assistant (Bailey to E. O. Fippin, Oct. 29, 1910, Bailey Papers).

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mission's report dealt with the organization and policy which would secure the most efficient expenditure of public money for agricultural research, a subject of considerable significance but treated from a narrower perspective than Bailey desired.¹⁵⁷ Nonetheless, it was characteristic of Bailey to pose problems of this dimension and to bring what power he could to bear on their solution.

In retrospect, Bailey's hope to reorient country life seems little less than fantastic, yet in 1907 one in his position might reasonably have entertained such a vision. The American people were apparently in a receptive mood for planned social change. There was widespread dissatisfaction with the fruits of unrestricted free enterprise. The association of progress with poverty made by Henry George was echoed by countless others, and by the time of Theodore Roosevelt's administration the American people appeared to be ready to use government as an instrument for securing a more desirable social order. This new attitude toward the use of government manifested by a majority of politically active Americans was associated with a renewal of faith in the national destiny. The enthusiastic President Roosevelt was both captive and leader of the people's determination to use government as an instrument for achieving this destiny.¹⁵⁸

One result of the national urge for social reform was the election of Charles Evans Hughes as Governor of New York. In March, 1908, Hughes consulted Bailey about the appointment of a new commissioner of agriculture. Having a close ally in this position was important to Bailey, for the commissioner's contacts with the legislature and with farm organizations could be used to complement his own in advancing a common program. In March, 1908, Governor Hughes appointed as commissioner Professor Raymond Pearson, who had secured the strong support of agricultural organizations in the state. "I think," declared Bailey, "things in the state are now beginning to get into shape."¹⁵⁹

On the national scene, Bailey appeared to be in an equally strong position. By March, 1907, he was corresponding with Sir Horace Plunkett and Gifford Pinchot, both close friends of President Roosevelt. The President was soon to give an address at the Semi-Centennial of Michigan Agricultural College, and Pinchot asked Bailey to outline what the President might say, a request that caused some

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difficulty since Bailey was also to speak at the Michigan celebration. His advice for the President emphasized the need for a thorough and active study of rural institutions and the organization of the open country around the rural school and country church.¹⁶⁰ The President, in talks with Pinchot, Plunkett, and others, considered establishing a permanent "social economic bureau" in 1907, of which Plunkett thought Bailey would surely be appointed head.¹⁶¹ However, the end of Roosevelt's term was rapidly approaching. Early in 1908 Bailey had several talks with the President. The result was a commission appointed by the President to inquire into the condition of country life in the United States.¹⁶² At Pinchot's insistence Bailey became the chairman of this commission and eventually drafted its report.¹⁶³

The advocates of a national movement for reorganizing country life received a setback with the election of President Taft, for it soon became evident that his administration was to depart substantially from the policies of his predecessor. In a controversy over the administration's conservation policies, Pinchot became embroiled with the Secretary of the Interior, Richard A. Ballinger, and in 1910 was dismissed from his post as chief of the Bureau of Forestry. The value to be derived from the evidence collected in the coast-to-coast hearings of the Country Life Commission depended on the wide circulation of the commission's report, but the Taft administration was unwilling to publish this document.¹⁶⁴ Bailey did not seem discouraged by the philosophy of the new national administration. Its hold on the government was limited to four years, and Bailey had faith in democratic processes. While awaiting an improved political climate on the national scene, he turned toward rejuvenating the New York State Agricultural Society as a vehicle for a country life movement in New York State.¹⁶⁵

In 1909 country life sentiment was at its height; from that time the movement went into a long decline through inability to develop a program to accomplish the desired reform in rural life. The country life movement remained as it had been—diffuse, romantic, and generally ineffectual. Had the issue of rationalizing the conflicting elements within the movement been forced in 1909, it might have expired then instead of lingering on. The area of conflict was both

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between and within individuals. Bailey's concept of country life, for example, combined progressive elements from current science and technology with regressive elements from his own frontier boyhood.

In 1910 he took Roosevelt's phrase, "the fighting edge," as his text in several lectures, arguing that the strenuous quality of country life was a virtue to be preserved. "I think," he wrote, "that we have made a serious mistake in overemphasizing the sulky plow and in endeavoring to make agriculture appear easy."¹⁶⁶ He wished to reintroduce the rural games of his childhood and preserve the rural school as the focus of local pride and initiative.¹⁶⁷ Some of Bailey's actions, however, were directly opposed to these ends. In 1910 he asked Dean V. A. Moore of the Veterinary College to advise the winter course students to take a bath at least once a week since he was trying to introduce plumbing into rural homes and wanted students to get used to the idea.¹⁶⁸ He recognized that economic changes were forcing the rapid abandonment of the marginal land in the state and had no sympathy with the back-to-the-land movement which would preserve the rural institutions he apparently desired.¹⁶⁹ These contradictions—and there were many more—were all involved in a context of power. A planned reorganization of country life required an extensive application of power from a central source, but the essence of country life for Bailey was the freedom it provided.

Freedom and control were the two central elements in Bailey's administration; his pursuit of these two somewhat conflicting goals affected practically all of his actions as dean and director. Beyond this, almost every generalization about Bailey as an administrator is subject to numerous exceptions. His flexibility as an administrator was enhanced by a pronounced skepticism about the sanctity of regulations. "I do not see," he wrote his old friend "Uncle" Henry Wallace, "how it is possible for any people to make any progress if everything is held within the literal interpretation of the statutory law. We all know how laws are passed and why."¹⁷⁰

Bailey tended to organize the College around men rather than fit men into an organizational structure. In 1907 he wrote a potential faculty member, "In my mind it is not so important to teach certain subjects as it is to have certain men; therefore, I like to get men and then try to arrange the work so they can do their best."¹⁷¹ In many

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cases this meant establishing a new department, a procedure that laid the basis for future expansion and, it may be noted, preserved for the director a larger element of control than if these faculty positions were made subordinate to department heads. The Departments of Drawing and of Meteorology, established in 1908 and 1909, respectively, each had a faculty of one.

Department heads were responsible to the director for the operation of their departments, including the promotion of department members. In this latter respect, however, the power of the department head was more illusory than real; for when Bailey had objections he stated them rather pungently, concluding that he would, of course, follow the wishes of the department head.¹⁷² Rarely, after such a reply, did a department head press the issue. The courses taught were determined by each department, and here Bailey refused to intervene, even when repeatedly asked to do so by men he generally favored.¹⁷³ The administration of the experiment station work was completely informal. Bailey studiously avoided the project reports used by the U. S. Department of Agriculture, preferring, he said, "to be in touch with the men rather than with their formal projects."¹⁷⁴

The organization of the soils work into a single Department of Soil Technology in 1909 represented a departure from his previous position of separating the teaching and investigational work. Such consolidation, he said, would aid "the growth and future development of the work when all of us have ceased our active connection with it."¹⁷⁵ His plan to unify the soils work was facilitated by the ready cooperation of the two professors involved.¹⁷⁶

Everything connected with the College of Agriculture concerned Bailey. In October of 1907 he asked to have a telephone installed in the boiler room of the new buildings so he could call the night watchman. "I have these buildings on my mind all night," he told the university treasurer; "I often come up at night to see how things are going." To keep the buildings "models of neatness," he instructed the faculty in the proper supervision of the janitors and personally ordered uniforms to fit each janitor. Not until 1910 did he deal with helpers and mechanics through a subordinate officer.¹⁷⁷

If the College of Agriculture were to lead in the rationalization of

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the rural life of the state it was essential for it to achieve and maintain a position in the communications network between agencies of the United States Department of Agriculture (USDA) dealing with agricultural education and the individuals (and organizations) in the state receiving this education. The success of the College was thought to depend on maintaining cooperative relations with the agencies of the USDA while at the same time preventing these agencies from developing a direct relationship with its constituents. Director Jordan took a similar view of the interests of the Geneva Station.

In 1907 a crisis occurred between Cornell and Geneva on the one hand and the Bureau of Plant Industry on the other over which agency was to do research on grape rot in a particular vineyard at Romulus, New York. Bailey and Jordan felt that the intervention of the national Department of Agriculture, even though requested by the State Department of Agriculture, threatened a loss of freedom in research through centralization of authority.¹⁷⁸ "States should take the responsibility for solving their own questions just as far as they are able," Bailey wrote the owner of the vineyard in question, adding: "The responsibility should not be transferred to agencies outside."¹⁷⁹ In *The State and the Farmer*, Bailey developed this position:

They [the colleges and experiment stations] would not think it right, however, to have independent laboratories or fields developed alongside, even though requested by persons in their own state or by the state department of agriculture, not because of jealousy (for jealousy should be unknown to scientific men) but because such action would tend to diminish the confidence of its own people in the local institution, depriving the institution of the support it needs for the work for which it was created, and encouraging in the people a desire or willingness to shift responsibility.

Bailey was far too sophisticated to leave this statement without qualification. He knew that the centralization of power in federal agencies was both necessary and inevitable. Still, he thought, local initiative and vitality could be preserved if only "a clear distinction of functions was maintained."* The United States Department of

*Pages 101-102. In the next sentence, which is far from clear, Bailey indicates what he means by a clear distinction of functions. Bailey was ordinarily a remarkably lucid writer. His difficulty apparently stemmed from attempting to square subjective feelings with his observations of social change.

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Agriculture could properly undertake work in the state, he said, only if seeking regional information on a problem of national scope or if the "inefficiency or incompetency" of the state institution made such intervention necessary for the benefit of the state.¹⁸⁰

As real cooperative work developed, Bailey urged, the U.S. Department of Agriculture would have less need for independent relations with individual farmers in the state.¹⁸¹ The issue, of course, turned on what constituted real cooperation. Bailey desired mutual planning of proposed research rather than initial planning at the national level followed by a proposal of cooperation. This was the subject of a heated exchange between Bailey and Beverly T. Galloway, chief of the Bureau of Plant Industry, in which Bailey charged Galloway with not cooperating with the federal agencies on the scene until the work was already planned.* Certainly part of this interchange was the rationalization of ambitious men. There was less need for rationalization between friends. Said Jordan: "If the Department is to be constantly anticipating us, we shall be forced to pluck the second quality of fruit from the scientific tree. I am anxious that the stations in this state shall till the scientific field that is rightfully within their borders." When Professor Warren was considering cooperating with the USDA on research in pasture and hay production, Bailey advised him to "attack the problem with the funds at your disposal if for no other reason than to hold the ground."¹⁸² The officers of the USDA were equally aggressive in attempting to use the State Department of Agriculture as a means for securing entry into the state. In March, 1908, Commissioner Weiting complained that employees of the USDA were writing to his subordinates in an attempt to secure an invitation for further soils work in the state.†

*Galloway to Bailey, April 9, Bailey to Galloway, April 15, 1907, Bailey Papers. If the department were seeking regional information on a national problem, as Galloway claimed, it would seem natural for the initial planning to occur at the national level. Bailey often used the phrase "federal agencies" to refer to the Cornell and Geneva Experiment Stations, which divided the Hatch and Adams funds on a 90-10 basis.

†C. A. Weiting to Bailey, March 8, 1908, Bailey Papers. When Pearson became commissioner of agriculture, he joined Bailey and Jordan in opposing USDA incursions into the state.

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In 1907 the United States Department of Agriculture, without consulting Cornell or the Geneva Experiment Station, organized a convention in cooperation with the Syracuse Chamber of Commerce to consider the problems of New York State agriculture.¹⁸³ In 1908 the national department conducted dairy investigations in the state without consulting Cornell or Geneva.¹⁸⁴ In 1909 it conducted farm demonstration work in the hill lands of Tompkins County without consulting Cornell even though the College had devoted several years to a thorough survey of these lands. In connection with this work the Secretary of Agriculture and the chief of the Bureau of Soils came to Ithaca and stayed overnight without calling at the College.¹⁸⁵ In this situation it is not surprising that Acting Director Webber regarded Alfred University's use of USDA pamphlets in its extension work as "playing into the hands of the Federal Department to our detriment."¹⁸⁶

The U.S. Department of Agriculture, however, was far from monolithic. During the decade 1901-1910 agricultural education at Cornell progressed in many areas through cooperation with its officers. For three years the Bureau of Soils provided the College with a professor of soils and gave temporary appointments for advanced study at the department to as many as six Cornell students a year.¹⁸⁷ In 1906 the Departments of Dairy Industry, Agronomy, and Horticulture were doing cooperative work with a division of the USDA.¹⁸⁸ Throughout the decade Bailey cooperated on frequent occasions with A. C. True, the director of the Office of Experiment Stations. In 1908 the third Graduate School of Agriculture was held at Cornell with Dr. True as dean.* The Department of Meteorology was maintained through cooperation with the USDA, the College providing quarters, heat, and light in return for instruction in meteorology.¹⁸⁹

The relations of the College to the University were a comparable

*These graduate schools, sponsored by the Association of American Agricultural Colleges and Experiment Stations, were intended to bring college and experiment station workers abreast of the latest information and techniques in their fields. The four-week session at Ithaca had a faculty of 61 and an enrollment of 163 (*Proc. of the 22d. Ann. Convention of the Association of American Agricultural Colleges and Experiment Stations*, 1908, pp. 18-25; Bailey to True, Feb. 18, 1908, March 17, 1909, Bailey Papers).

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study in conflict and cooperation. The basis for the conflict was Bailey's insistence that where the interests of the College of Agriculture were affected he should occupy a position relative to the people of the state similar to that of the President of the University. Bailey did not grant a similar status to Director James Law since he considered veterinary medicine a part of agriculture, which should be under his own administration. Bailey had presented his arguments for the unification of the state colleges in 1903, and Schurman later promised him an opportunity, on the proper occasion, to state his views to the trustees. The occasion came with the approaching retirement of Director Law in 1908. Bailey argued that unification would be politically beneficial by presenting a united front in Albany and educationally beneficial through relating the veterinary work more closely to the agricultural interests of the state.* Dr. Law made a stinging analysis of Bailey's position. Veterinary medicine, he held, was more closely related to human medicine than to agriculture. From this premise he developed his arguments that the work and prestige of the Veterinary College were certain to suffer if it were subordinated to agriculture. Bailey, he suggested, would "make a catspaw" of the Veterinary College for the benefit of the College of Agriculture.† The trustees decided to continue the separation of the colleges and appointed Veranus A. Moore as Dr. Law's successor.

The lack of authority over the funds available to the College challenged Bailey to achieve a freedom in administration greater than that currently permitted by the Executive Committee of the Board of Trustees. In order to prevent departments in the University from bidding against each other for the services of clerks and stenog-

*Bailey also called up the memory of the late Speaker Nixon, who, he said, had favored the unification of the state colleges at Cornell. Bailey's letter to Schurman, dated Jan. 28, 1908, is printed with Law's memorandum at the end of *Cornell University Trustee Papers - 1907-1908*.

†Apparently Bailey had no knowledge of Law's memorandum, which had been prepared in 1905. After its appearance in the printed record, Bailey protested in a letter to Schurman that Law's statement reflected on his integrity. Five days later, however, he withdrew the letter and destroyed it in Schurman's office. Schurman assured him that neither he nor the trustees had any doubt of the "integrity of your motives" (Schurman to Bailey, April 1, 1909).

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rappers, thereby leading to a higher wage scale, the Executive Committee had established a schedule of maximum wages for the University. This had the effect, said Bailey, of making the College of Agriculture "a training school for stenographers."¹⁹⁰ The work in other colleges, Bailey declared, was "largely passive," but the College of Agriculture was "conducting a business organization" in which the professors were too busy to train office help.¹⁹¹

Measured by the quantity of correspondence involved, the schedule of maximum wages was one of the principal sources of friction within the College and between the College and the University authorities. One case was especially galling. Through some pointed correspondence with the federal Department of Agriculture, Cornell and Geneva had together secured control over the grape rot experiments in the Romulus vineyard only to have the instructor in charge resign because Bailey's recommendation for a \$1,000 salary was reduced to \$850 by a committee consisting of President Schurman, Treasurer Williams, and Trustee R. H. Treman, in order to avoid a precedent justifying a general increase in instructors' salaries.¹⁹² Even the College income funds were outside Bailey's control. It was the University practice to pay a deceased professor's salary to his widow for the remainder of the year, but Bailey was prevented from using college income funds for this purpose.¹⁹³ In other cases the trustees changed the college budget without consulting Bailey.

In 1908 the budget of the Department of Entomology and General and Invertebrate Zoology, already housed in the agricultural buildings, was transferred to the College of Agriculture, effective in 1909. While Bailey protested this action, it was, from the point of view of the University's authorities, perfectly sound and justifiable.¹⁹⁴ Under the legislation establishing the State College, the University was to continue its support which amounted at the maximum to an annual appropriation of \$5,700, plus the 1,669 course hours which agricultural students took in the endowed divisions of the University. The hours of accessory instruction, however, multiplied with the rapid increase in agricultural students. The transfer of the Department of Entomology to the College of Agriculture thus made possible a temporary financial adjustment.¹⁹⁵

There was also a difference of opinion between Bailey and the Uni-

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versity authorities over the location of dairy barns authorized by the state in 1908, although in this instance Bailey was less concerned about the issue than Professor Wing. Wing wished to locate the new barns near the animal husbandry building—now the site of the Plant Science Building—but the trustees insisted on locating them east of the Judd Falls Road, a distance across an open field from the animal husbandry classrooms.¹⁹⁶ Time has demonstrated the wisdom of the trustees' judgment. By the 1950's the development of the campus made the site adjacent to these barns the obvious location for new classroom and research facilities for the Department of Animal Husbandry.

Conflicts between the trustees and the administrators of agricultural colleges and experiment stations were common enough at the time. Bailey received numerous letters from fellow administrators in other states describing difficulties with their boards of control, usually of a more serious nature than he was experiencing. When asked about the relationship between the governing board and the lack of continuity and permanence in agricultural research, Bailey replied without qualification that any difficulty in agricultural research at Cornell "is not due to the faults of the governing board."¹⁹⁷

In May, 1909, Bailey resigned from the University in accord with his frequently stated desire to retire at fifty so that he might devote the remainder of his life to his own interests.¹⁹⁸ He had considered resigning in 1908 and further discussed the matter with Commissioner Pearson in the spring of 1909.¹⁹⁹ In his resignation he stressed the fifteen full summer vacations he had been on the job during his twenty-one years at Cornell.²⁰⁰ He applied to the Carnegie Foundation for his retirement allowance, wrote to Thomas Cook and Son for South Sea travel information, and informed a correspondent who asked him about his first name that "the name represents quite perfectly my whole philosophy in life. My whole desire is to be free in every way."²⁰¹

This resignation occurred at a difficult time. His highly personal method of administration made a smooth transition to a successor difficult, and Commissioner Pearson, the anticipated successor, was opposed by a substantial part of the Faculty of Agriculture. The trustees were anxious to avoid dispute. In May, 1909, R. H. Treman

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asked Bailey to remain, adding that if his retirement were "due to any restriction of the work on the part of the President or the Trustees" they would remedy the situation.²⁰² Bailey's response combined future hopes with past complaints. The director, who Bailey said is responsible to the people of the state, should be able to formulate plans and carry them through the legislature. After noting that the Executive Committee had appropriated and reappropriated college funds without consulting him, he declared that it was the disposition of the Veterinary College matter that really determined his present course. Through its unification with the College of Agriculture he had hoped to "bring a united policy to bear on the problem of rural civilization."^{*}

During the summer and fall of 1909, while Bailey was officially on sabbatic leave, the conditions under which he would remain as director were gradually worked out. Bailey left others to carry on the brunt of his conflict with the trustees while he appeared to be outside the contest. In July, Director Jordan suggested that if his retirement were due to unsatisfactory conditions, a "strong movement" might be made by alumni and friends to have them rectified. "I have no expectation whatever of resuming my connection with Cornell University," Bailey replied. "My preference in this matter is that nothing be done about it." "I shall really look to you, as my friend, to see that there is no movement in the state looking to 'correcting' things in my behalf," he wrote Pearson, adding that a group of farm organization leaders had met him in Syracuse recently with that in mind but had been assured he had no grouch. "There is nothing in the world that I want," he wrote to F. N. Godfrey of the State Grange.²⁰³ In October, 1909, Professor Albert R. Mann, who was probably Bailey's closest colleague at Cornell, wrote Governor Hughes in a vein that indicated how Bailey's actions were interpreted by his associates:

Please permit me to add my voice to those that have already reached you concerning Dean Bailey . . . He has labored against hard and exasperating

^{*}Bailey to Schurman, June 4, 1909, Bailey Papers. When in September, 1909, Bailey again raised the issue of the Veterinary College, Schurman said he believed unification would have led to the resignation of the dean and faculty of the Veterinary College (Schurman to Bailey, Sept. 28, 1909, Schurman Papers).

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odds. His very bigness prevents him telling anyone the fundamental difficulties and discouragements, and he courageously gives as his reason for leaving, his desire to be free. It is just this bigness that the college needs. His associates here are convinced that it is his sincere desire to carry this work forward to a higher and more effective place, and that he will gladly return if it is made possible. No one outside the college can estimate our loss.*

On September 19, 1909, Andrew D. White, then a member of the Board of Trustees, recorded in his diary that Bailey "now consents to stay third year. Much debate in view of possible trouble between Bailey and Pearson factions. I favor conciliation with B and retaining him as long as possible at almost any sacrifice.†

A solution to the conflict between Bailey and the Executive Committee was adopted by the Board of Trustees on November 6, 1909, with the appointment of a seven-member standing committee on state colleges.²⁰⁴ The idea was Schurman's, which he presented, almost in passing, in a twelve-page conciliatory letter to Bailey dated September 28, 1909. Bailey immediately seized this suggestion, which, he said, agreed with his own thinking.²⁰⁵ Both Bailey and Schurman recognized the need to develop within the trustees a group especially informed about the interests of New York State agriculture which would advise the director of the College of Agriculture and review his budget and appointments. The establishment of a standing committee on state colleges was a step in that direction.

The structure of authority over the College of Agriculture was, of course, part of the larger issue of the relation of the University to the state. Both President Schurman, who had in the College of Agriculture an example of what might be accomplished through greater access to public funds, and the commissioner of education, Andrew

*Mann to Hughes, Oct. 16, 1909, Bailey Papers. A pamphlet entitled *Echoes from Alumni Regarding the Resignation of Director L. H. Bailey* almost certainly dates from this period. It contains thirty letters written in response to a statement by an alumni committee in Ithaca that "unsatisfactory conditions" relative to the University were causing Bailey's resignation. The pamphlet bears no date or place of publication (Rice Papers).

†R. M. Ogden, ed., *The Diaries of Andrew D. White* (Ithaca, 1959). Other evidence indicates that the statement "he now consents to stay third year" must be taken to mean he now opens the possibility of staying a third year.

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S. Draper, who desired a state university system in New York, favored steps toward making Cornell University more the instrument of the state.²⁰⁶ In 1909 the state increased its potential influence over Cornell University by adding to the Board of Trustees five members to be appointed by the Governor.²⁰⁷ On June 23, 1910, the Committee on State Colleges was altered in line with Bailey's wishes to include the state trustees appointed by the Governor, the commissioner of agriculture, the trustee elected by the State Grange, and, representing the interests of the University, the President, the treasurer, and Trustee Van Cleef.²⁰⁸

If, in certain respects, membership in the University proved harmful to the College of Agriculture, it proved beneficial in other ways. Its students received instruction in the basic sciences, English, and other liberal arts which the College of Agriculture was in no position to provide. Moreover the standards of scholarship maintained by the University served as an incentive to the Faculty of Agriculture. The pressures to conform to the standards of the College of Arts and Sciences were probably no less intensive than in Professor Roberts' day. Director Bailey's efforts to develop a college combining intensive research in the biological sciences with high-quality teaching were certainly aided by the association of the College with Cornell University.

In the relation of the College to other state institutions dealing with agricultural education, it was the hope of college and university authorities to maintain the *status quo* and, if possible, bolster existing relationships with additional sanctions. In February, 1909, Bailey, Schurman, and Pearson were developing plans to make certain that the agricultural schools at Morrisville and at Alfred and St. Lawrence Universities acted as feeders to the College of Agriculture and did not become agricultural colleges in their own right.²⁰⁹

That summer Webber became acting director for the period Bailey was on leave, and, unlike the usual occupant of temporary authority, pushed forward existing programs and developed new ones. In November, 1909, he sought additional support for Cornell's relationship to the secondary schools of agriculture by asking Dick Crosby of the Office of Experiment Stations to make a survey of secondary agricultural education in New York State in preparation for a con-

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ference of state leaders called by Commissioner Pearson for January 19, 1910. Webber felt that matters were rapidly approaching a crisis. In 1909 eleven bills had been introduced to establish additional secondary agricultural schools. Webber hoped that the January conference would be sufficiently authoritative to head off this movement.²¹⁰ As expected, the conference took the position that the number of agricultural schools should be limited and that agriculture should be introduced into the regular high schools of the state. Webber, who had noted "some movement toward establishing other colleges in the state as this one became overcrowded," was pleased that the conference recommended only one state college of agriculture.²¹¹ The conference, however, did not have the desired effect. In April, 1910, a bill was introduced to establish an agricultural school at Cobleskill and a move was under way to establish an agricultural school or subexperiment station in Niagara County.*

Cornell was able to exercise a degree of control over the introduction of agriculture into the regular high schools through cooperation with the State Education Department. In 1909 Webber prepared the Civil Service examination for the key position of inspector of agricultural education, the occupant of which was to determine those qualified to teach agriculture in the secondary schools. With the strong support of President Schurman, a summer school was planned for 1911 which would prepare teachers of secondary agriculture.²¹²

In determining the relation of the College to the state government and to the other institutions engaged in agricultural education in the state, Bailey, the director of the College, contended with Bailey, the political scientist. In *The State and the Farmer*, he expressed the desire to be free of the need to turn politician in order to secure the needs of the College. In this book he suggested the establishment of boards or commissions in state governments which would conduct annual studies of institutions engaged in agricultural education and made recommendations on their comparative needs to the legislature. In his annual report for 1909, however, he departed completely from

*Webber was placed in the position of drafting the bill for the Niagara County experiment station in order to have it coordinated with Cornell. This bill failed to pass (Webber to Mark D. Williams, April 21, 1910, Bailey Papers).

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this sound advice, taking the position that the high aims of the College placed it in a different relation to the state than other institutions:

I think the time has come when this College of Agriculture should throw itself directly on the people of the state, acquainting them with the work that needs to be done . . . The legislature does not yet realize that a college of this kind should be a regular part of the state program. It is not merely another institution, competing with those already in existence, but a new kind of enterprise having for its object the betterment of the State and the training of young men and women to live hopefully and resourcefully in the country.²¹³

In 1910 he favored a state plan of agricultural education which would preserve the complete autonomy of each institution and at the same time "appeal to the legislature and the people as a wise and progressive program."²¹⁴ This plan found wide support among those involved in the administration of agricultural education in the state. In its implementation Bailey quickly emerged as chief planner.*

In 1909 the University asked the legislature for \$200,000 for operation and maintenance plus \$75,000 for a new auditorium. Bailey organized a letter-writing campaign, with John W. Spencer alone getting about thirty-five farmers to write the chairmen of the Senate Finance Committee and the Assembly Ways and Means Committee.²¹⁵ Bailey arranged to bring the members of these committees to Ithaca for a two-day inspection of the College, Speaker Wadsworth being rushed from Owego on a special train provided by the University.²¹⁶ The result was a total appropriation of \$185,000, an increase of \$15,000 over the previous year, but an amount insufficient to satisfy Bailey. When Speaker Wadsworth took credit in print for "liberal appropriations for increased facilities at the State College of Agriculture," Bailey took the unusual step of writing the Speaker that this was not true and that enrollment would have to be restricted.²¹⁷ The failure of the state to provide sufficient support Bailey called "the hardest blow that has struck the College of Agriculture since my connection with it."²¹⁸

While the University exercised rather close control over the College of Agriculture, a great area of administrative freedom remained

*See page 232.

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between the College and the state. Once the director's budget was approved by the University's trustees, he could approach the legislature directly. When the College's appropriation was approved by the Governor, it was granted in a lump sum to be segregated by the University without interference from state agencies. The income funds of the College, which in 1910 amounted to 35 per cent of the total funds available, were completely under the control of the University. There was not even an obligation to account for these funds to the state government.²¹⁹ These income funds, which came from tuition and the sale of goods and services produced at the College, did not come within statutory restrictions on the use of state appropriations.

EXTENSION

It was with College income funds that Bailey financed the gradual retirement of John W. Spencer. He had tried on several occasions to secure a pension for Spencer but found that the regulations governing pensions were not sufficiently broad to cover his unique position.²²⁰ Finally, in 1908, Spencer was made representative of the College in Chautauqua County with whatever duties he felt able to handle. Measured by immediate contributions to the people of the state, few educators were more deserving of reward than this farmer who visited nature study clubs and school gardens in all parts of the state. Some fifty years later an elderly woman, reflecting on how much the study of nature had enriched her life, recalled:

I first become interested in nature through "Uncle John Spencer," who came to our home at Cooper's Plains, New York, to try to get a nature club started among the country children . . . Professor Spencer gave us a vivid program to follow and I enjoyed writing my monthly letter to him and kept my eyes wide open to see the unusual things he said were free to us all.²²¹

Spencer's retirement marked the end of the time when the College might be represented by men who themselves lacked a college education. Spencer's strength as an educator lay in his ability to draw together information in a way that appealed to the imagination and curiosity of the learner. It is almost certain, however, that in covering

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such vast areas of knowledge, he sometimes lapsed into technical error. Increased emphasis on technical accuracy was a consequence of the narrowing focus of individual departments toward agricultural science. While such accuracy was vital to the further development of science, it presented obstacles to effective communication, especially in extension. Cornell lost an articulate advocate of the broad view of knowledge when Spencer retired; the problem of the relative importance of technical information and communication skills in extension work remained behind him.

The extension work of the University assumed a more definite organization with the establishment of an extension department under Charles H. Tuck in 1907. The department had two functions: to coordinate the extension activities of the other departments and to publicize the work of the College.²²² In the early development of the department these functions were quite compatible, publicity following from contacts made throughout the state in the course of the extension work. The farm train was a principal means of making these contacts.

In November, 1908, the College ran its first "farm special" over the Erie Railroad. The initiative came from officials of this railroad who were anxious to improve the agriculture along its lines.²²³ It had long been railroad policy to aid the education of farmers by offering reduced rates to farmers attending institutes and other educational meetings. The farm train reversed the process by taking education to the farmer. Such trains had already proved very popular in the Midwest and Jared Van Wagenen, Jr., who had lectured on a farm train in Maryland, assured Bailey of its educational value.²²⁴ On November 23-25 the first Cornell farm train, under the direction of Professor Tuck, ran through what the *Country Gentleman* called a "poorly farmed and somewhat underdeveloped section of the state." Stops of one hour provided time for lectures to adults while the school children, who at first proved rather disturbing, were gathered at the rear platform, where one of the speakers attempted to interest them. Since the function of the farm train was primarily to arouse interest among the audience, vast quantities of pamphlets were distributed. Cornell, concluded the *Country Gentleman*, was "well advertised."²²⁵ The following spring the New York Central ran a

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farm train through the good farm country in the Ontario Lake Plain. Twenty people from the College aboard the train lectured to a total audience estimated at 10,000. Up to ten meetings a day were held for four days, the first at seven in the morning, the last in the evening. Regarded by the faculty as missionary work, it seemed an appropriate way to spend the Easter vacation.²²⁶ During the college year 1909-10, Cornell ran five farm trains over four railroads reaching a total audience of over 30,000. These trains were operated in cooperation with the State Department of Agriculture and the state agricultural schools.²²⁷ This cooperation involved complications. In 1910 Webber accommodated the president of the Northern New York Corn Growers' Association—only recently organized at the agricultural school at St. Lawrence University—by agreeing not to emphasize dairying on the projected farm train through the area.*

The extension activities of the College were concentrated in the better agricultural districts of the state, since people in these areas were most prepared to utilize the services the College offered. "We have now reached the point when we must take up the more difficult situations and conditions and meet them on their own ground," Bailey declared in 1907.²²⁸ To achieve this goal was another matter, for the recommendations of the College, when they could be understood and accepted as desirable by farmers in the poorer agricultural areas, were frequently not applicable, because these farmers lacked financial resources with which to implement the recommendations. In 1910 Bailey noted that the work was still unevenly distributed. As a step toward correcting this situation, he planned to have maps made which would show the location of all the extension activities of the College.†

To inform the public about the work of the College, Professor Tuck, in 1909, began issuing press releases in the form of mimeographed

*In terms of educational outcome this was a questionable compromise, for the northern part of the state was not particularly suited for the production of corn for grain (Webber to William H. Daniels, May 2, 1910, Bailey Papers).

†Bailey to the Heads of All Departments, Nov. 18, 1910, Bailey Papers. His insistence in this memorandum that all field trips be reported to the Extension Department indicates that this department had not yet developed into an effective coordinating agency.

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letters to editors. These were apparently adequate for the editors of newspapers but did not satisfy the more specialized interests of editors of agricultural periodicals. In 1910 Bailey urged Tuck to request systematically news from each department for transmission to the agricultural press.²²⁹

The Extension Department was also responsible for exhibits which the College displayed at the state and county fairs and at important meetings of farm organizations. By 1909 the State Fair at Syracuse had become the principal annual event in New York agriculture and in that year was extended from four to six days. The preparation, transportation, and servicing of the Cornell exhibits at Syracuse and other locations required considerable effort.²³⁰ In addition, by 1910, the department was also instructing students in public speaking and extension work, organizing an annual farmers' week, and taking a prominent part in the work of the farmers' institutes.²³¹

Commissioner Pearson's appointment of Professor Tuck as section director of farmers' institutes was a step toward the closer integration of the institute work with the College of Agriculture.²³² The decade 1900-1910 saw the institute movement at the height of its popularity. Since the 1880's these meetings had evolved into a pleasant combination of education and conviviality. Arranged by local people and frequently accompanied by vast amounts of home-cooked food served by the young ladies of the community, the institute meetings provided a comfortable medium for the communication of information. Martha Van Rensselaer was a frequent participant and more than anyone else established the women's institutes—a special division of the farmers' institutes — on a successful basis.* After 1910 the farmers' institute became less important as a medium for agricultural extension because its lecturers, most of whom were "practical farmers with a gift for gab," could not master the technical information flowing from the rapidly developing disciplines in agricultural science.† In 1909 Acting

*Director F. E. Dawley said, "Miss Van Rensselaer had done about as much in establishing Women's Institutes as the Department has" (Dawley to Bailey, Oct. 24, 1906, Bailey Papers).

†The phrase was used by Jared Van Wagenen, Jr., who was connected with the farmers' institute work in the state longer than any other person (tape recording, undated).

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Director Webber facilitated a temporary adjustment of the institute system to the farmers' developing demand for technical information by reorganizing the normal institutes. Instead of having the entire institute force attend the same lectures at the normal institutes held at Cornell, he split the force into sections, each one taking up a special subject.*

The first Farmers' Week, held in 1908, was an outgrowth of the annual meeting of the Experimenters' League and the desire of mature farmers for a winter course of two or three weeks' duration. Neither Bailey nor the faculty wanted to organize such a course but thought that similar educational ends might be accomplished at an annual farmers' convention of about a week's duration. Such a convention would also provide a meeting place for agricultural organizations and other friends of the College and give old students an opportunity to get reacquainted.²³³

Although a printed program was prepared for the first Farmers' Week, conflicts between events were so numerous that a blackboard was set up on which the latest information was recorded. About three hundred persons attended. Many were attired in work clothes, which, in well-heated rooms, indicated recent acquaintance with hay and animals. The enthusiasm of both guests and students was substantial. At the end of the day the participating students were rewarded when Misses Rose and Van Rensselaer demonstrated the cooking of steaks for their benefit.²³⁴

The following year Farmers' Week combined lectures, demonstrations, and exhibits; the students and faculty prepared weeks in advance for their part in the week's activities. Arrangements were made with townspeople living near the College to accommodate the visitors. Although held the last week in February, when winter was at its height, 1,200 people were registered and, it was thought, five hundred others were present. The week provided "a true uplift" stated one older farmer.²³⁵

Special conferences were held in connection with the week's activities. A poultry institute was featured in 1909. A 1910 conference

*Webber to Jordan, Nov. 2, 1909, Bailey Papers. The State Department of Agriculture gave the College complete control over the normal institute programs (Dawley to Bailey, Oct. 16, 1905, Bailey Papers).

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of country pastors was considered quite successful in spite of being organized on short notice.²³⁶ Permanent organizations were also formed. In 1908, at the instance of Professor Webber, the New York State Plant Breeders' Association was organized with some thirty charter members. The following year the New York State Drainage Association was formed with Professor E. O. Fippin as president. It was said to be the first organization of its type in the country.²³⁷

Unquestionably, the most pleasant extension activity was the school picnic, an annual event held at the College for Tompkins County school teachers, children, and their parents. Mornings were devoted to athletic competition. In 1908 the freshmen won an interclass tug of war but were in turn defeated by the faculty, captained by Rice and Bailey. In the baseball game Bailey ran to home plate on a passed ball. Later, 1,200 children and parents marched behind the cadet band to the new buildings, where they were addressed by Bailey and "Uncle John." Professor Warren talked on alfalfa in the auditorium. As a climax to the day's events, the band led the way to the model schoolhouse, where a flag was raised on the newly erected pole.²³⁸

Demands for extension services were much more numerous than the College was able to meet. Requests for on-the-farm advice, ranging from a study of soil conditions to an analysis of farm management procedures, resulted in charges of unfair treatment when all the requests could not be granted. The Department of Rural Art was especially subject to this difficulty. To grant requests for complete landscape gardening plans placed the College in the position of competing with private operators, and difficulty arising over charging for such work led to the resignation of a member of the department. Merely answering the incoming mail posed a challenge. In the college year 1909-10, about 300,000 requests for information were received of which about 40,000 were answered by personal letter.²³⁹

Agricultural extension work in the United States developed during the decade 1901-1910 in a manner comparable to that of the experiment stations in the 1880's. Extension work, like agricultural research in the earlier period, was being conducted by the states and the federal government quite independently. Following the earlier pattern, the Association of American Agricultural Colleges and Experiment Stations was moving toward becoming a coordinating

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agency for existing extension activities and a medium for securing federal support for the extension programs of the state agricultural colleges. By 1909 Bailey's friend and confidant, Kenyon L. Butterfield, had organized those forces within the association favoring increased emphasis on extension work to amend the association's constitution by establishing a section on extension. Butterfield also secured association approval of the plan to approach Congress for an annual appropriation of \$10,000 to each state for extension work, with additional funds provided by the state to be matched from the federal treasury.²⁴⁰

RESIDENT INSTRUCTION

Both the extension and experiment station work took second place to resident instruction during the second half of the decade. Student numbers quickly increased to the point where course work occupied almost the entire time of the faculty members paid from state funds. Enrollment during 1906-1910 was as follows:²⁴¹

<i>Year</i>	<i>Regular</i>	<i>Special</i>	<i>Graduate</i>	<i>Winter</i>
1906-07	145	133	36	244
1907-08	206	142	43	270
1908-09	268	145	58	364
1909-10	419	120	57	371
1910-11	597	169	80	477

By the time the new buildings had been occupied three years, they were badly overcrowded. Faculty members used a variety of methods to restrict the size of classes to the available facilities, Whetzel basing admission on academic average; others selecting their students by lot.²⁴² The rapid increase was not due to conditions associated exclusively with Cornell; other major agricultural colleges were also experiencing comparable increases in enrollment.²⁴³

During the decade after 1900 students were admitted to the four-year program either by school certificate or entrance examination. Where a question existed about the standing of an applicant, Bailey was inclined to give the student the benefit of the doubt, stating in one instance, "This you are to consider is a distinct violation of our regulations and in no way must be regarded as a precedent for

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anyone else.”²⁴⁴ In 1908 Bailey decided to allow agriculture as an entrance subject, a step President Schurman quickly reminded him he should have taken only with the permission of the University Faculty.²⁴⁵

Effective in February, 1910, new entrance procedures were established by the University when it abolished entrance examinations. Thereafter students were to appear with what Registrar “Davy” Hoy called “clear papers.”²⁴⁶ However, the College of Agriculture planned to continue examining applicants offering credits in agriculture until the secondary instruction in that subject was sufficiently stabilized to merit certification. In 1909 one applicant offered entrance credit in agriculture; in 1910 sixteen applicants did. Of the sixteen, three passed the entrance examination.²⁴⁷

Admission of special students continued by permission of the director. There was no set program for these students, but most stayed at Cornell about two years. The more successful often transferred to the four-year program* Faculty members opposed to teaching poorly prepared students were permitted to exclude those whom they considered unable to meet the requirements of their courses.²⁴⁸ By 1906 prerequisites had been established for some courses, which had the effect of automatically excluding the special students. The faculty met this situation by recommending the establishment of special courses for these students where the regular ones were beyond their capacity.²⁴⁹ After April, 1904, the proportion of full-time students who were specials declined steadily, in part because of increasing stress on farm experience as a requirement for admission. By 1910 this requirement was a fixed policy which permitted no exceptions.²⁵⁰

Before 1911 there was no tuition in the College of Agriculture, but effective that year students from outside New York State were required to pay tuition. From 1907 to 1909 these students comprised about 27 per cent of the total student body. However, since almost all the winter course students were from New York State, the percentage of full-time students coming from outside the state was much higher. For the three-year period 1907-08 to 1909-10 they comprised

*In 1903 about 10 per cent of the special students transferred (*11th Ann. Rpt. of Pres. Schurman, 1902-1903, App. VIII*).

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about 45 per cent of the full-time students. About 9 per cent of these full-time students came from foreign countries.²⁵¹ A few years earlier the proportion of foreign students was even higher, about one in seven coming from outside the United States. In 1904-05 sixteen countries were represented in addition to the Philippines and the Hawaiian Islands. In the fall of 1906 seven students from India were enrolled.²⁵²

Admission to the winter courses continued to be by affidavit of good moral character. Professor Rice requested stricter admission requirements after one of his instructors was felled to the floor by a single blow from a student who took offense at criticism of his work. Bailey replied that increased requirements would conflict with the "general feeling" that all aspects of the winter course work should be made as simple as possible.²⁵³ (Elsewhere he admitted to liking the "rough and ready ways" of the winter course students.) In 1907 the average cost for board and other expenses for the eleven weeks' course was about \$75, although Bailey feared the rising cost of living would soon carry it to \$100. Winter course students sometimes had difficulty finding board and housing, for they came at a time of year when the more adequate accommodations were already occupied.²⁵⁴ However, familiarity with rugged rural living conditions prepared them for the less adequate boarding houses of Ithaca.

The winter courses were well advertised by the College and, in addition, were pushed by the departments offering them. In 1904 a poultry course was added to the two courses available since 1894. This was followed by a course in horticulture in 1905, and, in 1907, by a course in home economics.²⁵⁵

The short course students tended to live apart from the regular student body. Many had not been away from home before and were sometimes homesick and frequently lonesome. Beginning in 1905 organized efforts were directed toward making them feel a part of Cornell and the Ithaca community. A twenty-page handbook was prepared containing Cornell yells and information about Ithaca churches and instructions for obtaining rooms. The "shorthorns," as the winter course students were called by the regulars, were encouraged to form athletic and other organizations during their stay in Ithaca. Some of these groups, like the James E. Rice Club, bore

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the name of the department head. There was also a Bailey Club. The Fletcher Club met weekly, always concluding its session with:

Cornell, we yell
We work we strive,
Fletcher Club, Fletcher Club
1905!²⁵⁶

All the winter course clubs met monthly, a time when Cornell yells were yelled and Cornell songs were sung. There was also skating on Beebe Lake and perhaps a dance or two. One winter course student recalled that "many of the fellows said it was the best time of their lives."²⁵⁷ Former President White thought all this was to the good. "These shorthorns," he stated, "are having a happy influence in improving the other breeds in our great herd."²⁵⁸

After the winter course students completed their work, they tended to lose contact with the College. To overcome the effects of physical dispersion, considerable effort was invested in developing a sense of group identity. Composite pictures were made of the students in each short course, and Professor Tuck promoted the election of a permanent life secretary by each group who would keep in touch with the College.²⁵⁹ Bailey was anxious to bring the winter course students, the members of the reading course clubs, and the Experimenters' League into a single organization.

In 1909 there were fourteen student organizations in the College of Agriculture in addition to those of the winter students. By 1904 a Poultry Club had been organized, and in 1907 the Synopsis Club was formed for those interested in plant breeding. In March of that year the Round-Up Club, a group interested in animal husbandry, was organized at the home of Professor Wing, the name being suggested by Mrs. Wing.²⁶⁰ Misses Rose and Van Rensselaer took the lead in organizing the agricultural college girls into Frigga Flyge—the followers of Frigg, who as wife of the supreme Anglo-Saxon god Woden was the bringer of rich harvests.²⁶¹ The College also had a Glee Club, a Mandolin Club, and a number of athletic teams. (Cornell track coach "Jack" Moakley eagerly watched the agricultural enrollment increase in anticipation of a substantial amount of "healthy farm-reared athletic material.")²⁶²

To assure that these student activities would be "guided by a sym-

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pathetic man" responsible to the college administration, Bailey placed Albert R. Mann in direct charge of student affairs.²⁶³ His duties also involved developing an alumni organization. A major campaign to secure additional buildings was planned for the winter of 1910, and Bailey wanted the former students to play an effective part. During Farmer' Week of 1909 a rudimentary association of students and alumni was formed with Jared Van Wagenen, Jr., as president.²⁶⁴ Bailey wrote to other colleges to learn how their students and former students were organized, and at a meeting on February 9, 1910, the organization of the Students Association of the New York State College of Agriculture was perfected.²⁶⁵

Bailey was impressed with the importance of high student morale and considered the student organizations an important factor in its development. To maintain a student publication, he allocated \$500 annually; this sum, he informed the editor, was not a subsidy but a business arrangement by which the *Cornell Countryman* printed a college advertisement and provided copies for distribution to the high schools of the state.²⁶⁶ In his own relation to the students Bailey played the role of benevolent parent. It was a role compatible with his other interests and activities and one which was made comfortable for the students by his great prestige, romantic flair, skill with language, and basic humanism.

This role became more difficult to maintain as the number of students increased. The biweekly college assemblies had been an important vehicle for informal contacts between Bailey and the students, but as time passed these contacts became more and more impersonal. In 1910 the assemblies ceased to be social occasions when it became physically impossible to continue the serving of refreshments.²⁶⁷ The administration gradually lost the contact with student opinion necessary for the planned development of that opinion. In 1909 Mann tried to head off a student petition demanding that the director give them more attention.²⁶⁸ The petition was both a compliment to the position Bailey had achieved in relation to students and an indicator of the difficulty he would have in maintaining this position in the future.

Taken as a whole, however, the morale of the student body during this decade was excellent. The establishment of the College in new

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buildings, the selection of a new faculty led by a new dean with great dramatic talent, and the establishment of new departments gave students the feeling of participating in the beginning of a great adventure. This was especially true of students associated with Professor Rice. In 1904 Bailey could allot only \$600 for the construction of a building to house the poultry department while the lowest price a contractor would accept was \$1,800. The students took matters in hand; made the excavation, laid the foundation, and erected the superstructure with lumber taken from the old Carnegie filtration plant, which they razed for the purpose.²⁶⁹ Such dedication and identification with the success of the College enabled agricultural students to resist that time-honored snobbery which declared their social status inferior to that of other students. So great was their confidence in this regard that the *Cornell Countryman* could optimistically declare that the old prejudice "has to all appearances now passed away."²⁷⁰

What happened to students after graduation continued to receive attention, for the old issue of whether attendance at an agricultural college educated students away from the farm was still much debated. The persistence of this concern about the graduates of agricultural colleges was rather remarkable, since a parallel situation did not develop with comparable intensity concerning the graduates of other professional colleges. Replies from alumni to questionnaires distributed by the College indicated little change at this time in the ratio of graduates who were engaged in "practical agriculture" to those connected with agricultural colleges and experiment stations.²⁷¹ Bailey hoped to liberate the College from the need to justify its existence in terms of the number of farmers it was training. The purpose of the College, he declared on numerous occasions, was not to train farmers but to provide a broad education through agricultural subjects.²⁷²

Little financial aid was available to students in the College of Agriculture. Before 1906 the only scholarship was shared with the Veterinary College. This situation was somewhat relieved by Dr. C. H. Roberts' unexpected gift of \$30,000 for the endowment of scholarships in the College. The gift, which Bailey considered the first for this purpose in any college of agriculture, was all the more remarkable since it came from one who had no connection with Cornell Uni-

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versity.²⁷³ One of the Roberts scholarships aided Carl E. Ladd '11, later dean of the College of Agriculture.²⁷⁴ The only other scholarships were those provided by the New York State Grange for winter course students; in 1910 these were increased from six to twelve.²⁷⁵

The industrial fellowship provided a source of financial assistance for graduate students. This form of fellowship was developed at Cornell by Professor Whetzel following a pattern pioneered in Kansas. Funds were provided by corporations, and in a few cases by individuals, to support research in which they were interested. The first industrial fellowship was established by the Niagara Sprayer Company in July, 1909, after the company admitted, in response to queries from the College, that it could not support the claims it was making for its products.²⁷⁶ In October, 1909, a second fellowship was established in plant pathology by the nursery firm of C. W. Stewart and Company.²⁷⁷ Professor Whetzel wished to publicize these fellowships, but Webber favored caution until the "correct principle" was established. He had been surprised when the sponsor of the first fellowship used the reports made by the investigator in what he called "rather glaring advertisements." In negotiating the third such fellowship with Davey Tree Expert Company, Webber inserted a provision that reports made under the fellowship were not to be used for advertising purposes.²⁷⁸

By decreasing the dependence of the College on legislative appropriations, the industrial fellowship introduced an element of flexibility into administration. The investigations pursued under these fellowships were under the control of the College and could, in some cases, be used to support studies aimed at discovering fundamental principles independent of the immediate needs of the day. This was the kind of research Bailey favored but which, in order to obtain the support of the farmer constituency, was usually subordinated to research problems that would produce immediate technical applications.²⁷⁹ The industrial fellowship, of course, posed the same temptation to an individual or department to modify research activities in order to secure a particular fellowship.

CAMPAIGN FOR EXPANSION

In the fall of 1909 a major campaign was undertaken to expand the

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facilities of the College of Agriculture. In October the New York State Association for the Promotion of Agricultural Education and Research, then representing eighteen agricultural organizations, appointed a special committee in connection with the campaign.²⁸⁰ In November, Webber asked each department to make "conservative and reasonable" plans for expansion over the next ten years on the basis of anticipating 3,500 students at the end of the decade. In December, after the Board of Trustees authorized the College to complete plans for the proposed expansion, Webber made a rapid trip through the Midwest to determine which agricultural colleges had superior facilities and to collect other information that could eventually be submitted to the legislature. "This is," declared Webber, "the most important work I have ever had to handle."²⁸¹

The trustees appointed by the Governor played an active part in preparing the plans for expansion and placing them before the legislature. By January, 1910, they had approved a substantial booklet which considered the needs of both the Veterinary College and College of Agriculture. In it a description of overcrowded conditions was followed by a detailed statement of building requirements. The immediate needs of the College of Agriculture, it was estimated, would cost the state \$1,158,000.²⁸² To bring this figure into accord with the immediately attainable, it was decided to press for a poultry building, a home economics building, and an auditorium for the College of Agriculture. With the funds requested for maintenance, the University was asking the state for over a half-million dollars for this College alone.

In many ways the outlook was hopeful. The agricultural organizations were generally united in their support for the ten-year plan, and the members of the faculty were in close touch with these organizations. In 1909 Professor Rice was president of the New York State branch of the American Poultry Association and Professor Wing was president of the State Dairyman's Association. Both the poultrymen and the womens' organizations were prepared to support their particular buildings. There were only two open sources of opposition, a group of legislators who wished to establish another agricultural college in eastern New York and the Onondaga County Pomona Grange.²⁸³ The opposition of this Grange, which was given

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circular form and distributed to other Granges, caused more embarrassment to the officers of the State Grange than harm to the College of Agriculture.²⁸⁴ The New York State Canners Association, which ordinarily supported the development of the College, was not active because it had its own claims on the legislature, which it did not wish to diminish through open support of the college appropriations.²⁸⁵

The legislative hearing on the Cornell appropriations was scheduled for April 5, 1910. Webber organized this with great care and planned to follow it up with a letter-writing campaign.²⁸⁶ Thirty-six people spoke, including the president of the New York Central Railroad and State Trustee John Carlisle, who was a member of the State Public Service Commission. Bailey, Webber, and Schurman stressed what the midwestern states had done for their agricultural colleges.²⁸⁷ The hearing was most successful and was said by those present to have been greatly superior to that held on the establishment of the State College of Agriculture in 1904. Naturally, Webber was greatly pleased.²⁸⁸ The legislature committed the state to erecting the three buildings at a cost of \$357,000, of which \$200,000 was made immediately available. The appropriation for maintenance and operation was raised from \$185,000 to \$212,000.*

An interesting sidelight to the hearing occurred in Madison County, where the state's policy of concentrating its college-level agricultural education at Cornell was used as an issue in a local election. The *Oneida Dispatch* published an editorial charging that the "Cornell System" with its "aristocratic and expensive methods" was trying to restrict the usefulness of the Morrisville School of Agriculture.²⁸⁹ The charges — remarkably close to the position of the Onondaga Pomona Grange — were completely without foundation.† Such attacks were a natural outcome of the existing statutory relationships between the schools of agriculture and the College. As long as these schools continued to be independently administered, the statutory

**Laws of New York*, 1910, ch. 530. The plan for the development of the College is specifically mentioned in this legislation.

†The correspondence between the officials of the school and Bailey, Webber, and Pearson indicates a cooperative relationship, with Director Helyar of Morrisville expanding the services of his institution with the aid of the College of Agriculture (Bailey Papers).

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limitations on their development could be used as a basis for self-serving attacks on the College of Agriculture.

It was soon recognized that the ten-year plan submitted to the legislature had built-in limitations. While the plan had the apparent advantage of committing the legislature to future appropriations within its scope, it left in limbo aspects of agricultural education that had not been included. The problem, however, was not insurmountable where the omitted aspects were of concern to organized groups in the state. This was the case with the commercial florists, who set out, with the cooperation of Professor Craig, to secure an appropriation of \$50,000 independent of university authorities for the construction of greenhouses.²⁹⁰

The passage of the legislation for the new buildings resulted in reopening the conflict between the college administration and the university trustees. At issue was the ultimate development of the agricultural campus, which would be largely determined by the location of the three buildings authorized by the legislature. One area of contention was the land in front of the existing college buildings. Part of the university farm in 1902, it had since been transformed into athletic fields by the University. Bailey wished to use this land for building sites and for adjacent outdoor laboratories and gardens.²⁹¹ This issue was settled to the desire of the trustees with one exception. That was Bailey's plan to use the east end of the athletic field as a site for a group of animal husbandry buildings. Under the pressure of the state trustees, the board reserved the area for that purpose.²⁹² Of all the events of the year, wrote Professor Roberts from California, "the thing which gives most *satisfaction* is the fact that the College of Agriculture by reason of its great power and usefulness, has forced the trustees to restore some of their plunder."²⁹³

RELATIONS WITH OTHER COLLEGES

A blend of cooperation and competition characterized the relation of the College to other agricultural colleges. Scientific information was, of course, constantly exchanged by published bulletins and private correspondence. Aid in securing appropriations was also given and received. In 1904 Dean Henry sketched for Governor Odell the benefits that would flow to New York after establishing a state college

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of agriculture at Cornell. In 1909 Webber visited other colleges to collect information of potential value in the New York legislature. In the fall of 1910, at the request of Dean Davenport, Webber spoke in Illinois on the recent campaign in New York, which Davenport considered the crucial breakthrough in opening the way for enlarged colleges of agriculture in the United States. "You will never know," he wrote Webber later, "how much good you did us with your address."²⁹⁴ In November, 1910, Davenport brought eight prominent Illinois farmers to visit Cornell. In reporting to his board of trustees, he used Cornell "as a buffer to show how far behind Illinois is getting."²⁹⁵ As the same time Webber regarded Illinois and Wisconsin as the "great competitors" of the College and reported to Schurman that "we are in the lead in some respects without question but in other regards it seems they are ahead of us." The following year Webber noted that the College had the largest faculty of any college of agriculture in the country and nearly as many graduate students as all the rest of the other agricultural colleges in the United States combined. With the developing agricultural colleges in the Far West looking to Cornell for leadership, Webber was anxious to maintain the position Cornell had gained.²⁹⁶

"I believe that when agricultural institutions are seeking men, more of them look toward Cornell University than anywhere else," declared Director L. A. Clinton of the Storrs, Connecticut, Experiment Station.²⁹⁷ This judgment is supported by hundreds of letters to Bailey asking him to recommend candidates for available positions. With colleges of agriculture rapidly expanding their curriculum following the lead of Cornell, the demand for qualified candidates for faculty positions was much greater than the supply. At one point in 1907, Bailey thought he could place twenty men if he had them.²⁹⁸

In 1910 the element of competition with another institution provided the vital factor in establishing a department of forestry in the College of Agriculture. Bailey, of course, had long favored such a step, and by 1909 Schurman was ready to proceed, pending the outcome of litigation over the lumbering contracts of the former College of Forestry.²⁹⁹ In the College of Agriculture budget for 1910 a provision was included for a professor of forestry. Meanwhile, however, Chancellor Day had been seeking, with the active assistance of three

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state senators, a branch of education which might be supported by the state at Syracuse University. After surveying the educational activities and commitments of the state, forestry was selected.³⁰⁰ In March, 1910, a bill was introduced in the legislature to establish a state college of forestry at Syracuse University. Webber indicated his reaction in a memo for Bailey:

Cornell is not now in position to fight such a bill. Doubtless no action will be taken at the present legislature. It seems to me that the only way to checkmate this move is for us to immediately establish a Department of Forestry and get the best man available to take charge of the department. The advertising which this would give us, and possibly the utilization of this man largely at first in connection with the extension work on the farms would show that this matter was well underway. I am looking up a man.³⁰¹

Webber had not succeeded in finding this man by the time Bailey returned in the summer of 1910.³⁰² When the trustees later used for other purposes the funds set aside for forestry, Bailey thought the College had "completely lost out." Schurman, however, had forgotten about the lack of funds and secured Walter Mulford as professor of forestry.³⁰³

ALBERT R. MANN AND GEORGE F. WARREN

Two members of the faculty underwent unusual metamorphoses during the decade after 1900 which prepared them for future leadership roles. Lacking funds for the regular course, Albert R. Mann entered as a special student in 1901, but later was persuaded by George F. Warren, then a graduate student, to complete the course, which Mann did by taking a heavier schedule and by earning extra money working as a milk tester for Professor Wing.³⁰⁴ As a senior in 1904, Mann took an especially active part in class affairs. After graduation he spent a year at the Farm School for destitute boys on Thompson's Island in Boston. In 1905 Bailey persuaded Mann to return to Ithaca as his personal secretary to help prepare the *Cyclopedia of American Agriculture*.³⁰⁵ In 1908 Mann was appointed assistant professor of dairy industry to handle Professor Pearson's office work. Five months later Mann resigned to follow Pearson to Albany as private secretary.³⁰⁶ By March, 1909, he was back at the

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College as secretary to the director, handling the routine office work and providing student guidance. Mann's responsibilities were then substantial, for Bailey spent much time away from the College attending hearings of the Country Life Commission. These responsibilities did not decrease the following year, since Webber's multiple roles as director, head of the Department of Plant Breeding, and advisor to twenty-one graduate students did not permit him to do more than the most important of the director's duties.³⁰⁷ In 1910 Mann was given a professorship in agricultural editing, in addition to his titles of secretary and registrar of the College, so that he could participate in meetings of the University Faculty.³⁰⁸ The title of professor involved no additional duties, for he had been editing the college publications since his return to Cornell. Mann was also active in relating the College of Agriculture to the social work of the rural church.³⁰⁹ This was an area of activity Bailey considered important but in which he did not feel entirely comfortable.

George F. Warren came to Cornell as a graduate student after teaching mathematics for five years in the high schools of Nebraska. He studied with Bailey, specializing in horticulture. In 1903, equipped with camera, notebook, and bicycle, he began an apple orchard survey of Wayne County to determine the conditions related to successful apple production. The following year he made a similar survey of Orleans County. Through the use of statistical methods, Warren segregated the more significant production factors from the experience of individual farmers and, in the course of the two studies, found that current recommendations for success in apple production needed reexamination.³¹⁰ His methods also made it possible to determine the normal conditions of production, thereby establishing a standard with which an individual orchard could be compared.

After receiving his Ph.D. in 1905, Warren was for a year horticulturist at the New Jersey Experiment Station. He then returned to Cornell as assistant professor of agronomy and in 1907 became head of the new Department of Farm Crops. This department included a professorship of farm management, at the time unfilled by agreement between Warren and Bailey.³¹¹ One of the most noticeable of Warren's qualities as a teacher was his ability to attract graduate students. In 1908 ten of the forty-three graduate students in the College were

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working with him.³¹² During their stay at Cornell he encouraged high-quality work and on their graduation made substantial efforts to place them in desirable positions. In 1910, when the graduate students were not up to his high standards, he wrote with characteristic terseness at the bottom of Mann's letter requesting recommendations for fellowships, "No recommendations — a poor lot."³¹³

Warren's ambition and talent for administration made Bailey wonder how long it would be possible to keep him at Cornell. In 1908, when Warren held two offers from other institutions, Bailey agreed to promote him to full professor and assign to him the work in farm management.³¹⁴ Nearly twenty years later Warren reflected on the circumstances which led him away from the experimental work in farm crops to concentrate on farm management:

I began Farm Management work because I had too little money to do anything else. Undoubtedly I would be in the Farm Crops field at the present time had it not been for the very limited funds. In the first year when I was professor of Farm Crops and also had Farm Management, my total budget was \$500 for all purposes. I could not employ a stenographer to say nothing of doing field experiment work. Therefore, I went into the Farm Management field.*

This decision had the effect of placing him in an educational environment different from that of most of his colleagues, for where they were engaged in the intensive exploration of a narrow area of agricultural science, he was involved in synthesizing the information they produced. Professor Mann, through association with Bailey and Pearson and involvement in the administration of the College, was also acquiring a broad view of agricultural education. During the decade both Mann and Warren went through the process of selecting from their knowledge of agriculture the information they thought most pertinent for a beginning student of the subject.†

Along with George Lauman, who in 1909 was appointed head of

*The agricultural survey of Tompkins County published in 1911, Warren stated, did not cost the College of Agriculture more than \$1,500 (Warren to James Rice, March 26, 1926, Rice Papers).

†It is interesting to compare the two books, both published in Bailey's "Rural Text-book Series" (A. R. Mann, *Beginnings in Agriculture* [New York, 1911]; G. F. Warren, *Elements of Agriculture* [New York, 1909]).

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an independent Department of Rural Economy, Warren helped compensate for the compartmentalization of agricultural knowledge following the proliferation of courses in the College. The student, faced with a broad range of choices, was forced to select a program on the basis of the advice he could secure and, having chosen, was faced with the difficult task of composing seemingly unrelated information into a unified body of knowledge. Bailey attached great importance to the unifying function of the Departments of Farm Management and Rural Economy. The former he expected to tie together the business organization of the farm, while the latter integrated information relating to rural citizenship.³¹⁵

By developing the survey method into an instrument for determining what factors were related to success in agriculture, Warren filled a gap in agricultural education which Bailey had long stressed. The agricultural survey of Tompkins County, which Warren took over from Professor Hunt in 1907, was, in Bailey's opinion, one of the great contributions of the College.³¹⁶ To expand survey work Bailey planned to use half of the \$10,000 extension fund appropriated by the state in 1908. A soil survey in cooperation with the United States Department of Agriculture was projected for Livingston and Montgomery Counties, a pomological survey of Ontario and Monroe Counties was projected along the lines already laid out in Orange County, and a truck gardening survey of Long Island was planned.³¹⁷

PUBLICATIONS

By 1907 Bailey had departed from his earlier position of not expecting research from faculty members paid from state funds. That year and regularly thereafter he exhorted all members of the faculty to get the results of research in shape for publication.³¹⁸ Each department, he said in 1908, should produce at least two bulletins a year.³¹⁹ In 1909 he noted that in the entire College only about nine bulletins a year were being prepared, although with much smaller staff and appropriation about twelve had been published each year from 1887 to 1904. Some of the best research, he noted, had been conducted on a very modest budget. "I am afraid," he told the faculty, "that we have become so accustomed to waiting for equipment and conveniences

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that we are in danger of losing our power of making the most of our opportunities.”³²⁰ Publications not immediately related to research, primarily reading course and nature study material, accounted for about half of the total number of pages prepared for publication during the first ten years of the century.

Until Mann took up the work in 1909, Bailey acted as editor of all college publications. This may have some bearing on why so few experiment station bulletins were submitted, for his prejudice against poor scholarship was well known. Certainly many of the bulletins submitted to Mann required extensive revision. Errors in tabular material were so frequent that Mann regularly sought the assistance of Professor H. H. Love in checking calculations.³²¹ Even transferring the costs of correcting these errors to the departments responsible did not cure the difficulty, for poorly written and inaccurate bulletins continued to reach the desk of Professor Mann.³²² To him must go a substantial part of the credit for maintaining the quality of the Cornell University Experiment Station bulletins during the years he served as editor.

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BAILEY'S ADMINISTRATION: THE CONCLUDING YEARS

"I MUST this spring call up my resignation of a year ago," Bailey announced in March, 1911, adding the hope that his friends would not think it necessary to ask him to reconsider. After Schurman and State Grange Master Godfrey urged just this, Bailey replied: "I very much hope that you will not ask me to remain longer, for this will only increase my difficulties. I am becoming impatient for release, and the time of my deliverance is long overdue."¹ There is every indication that Bailey was completely sincere. His resignation was announced and he refused to make appointments and speaking engagements after the date it was to become effective. However, appeals to remain as director continued to reach him and by May 8 he had indicated the possibility of staying as much as two years longer².

The balance of forces was similar to that which existed during the resignation crisis of the previous year. Again groups outside Cornell favored Raymond Pearson as Bailey's successor while the Faculty of Agriculture was again unalterably opposed. This time the position of Pearson was even stronger, for all five state trustees favored his selection and were prepared to press the matter to a vote if his name was not suggested. It was also evident that Pearson was prepared to advance his candidacy through a systematic canvass of the agricultural interests of the state.³ "This all emphasizes," Trustee Hiscock wrote to President Schurman, "the desirability of doing if possible what we briefly discussed at your home two weeks ago, namely, providing such relief of Dean Bailey from routine matters as will persuade him to remain longer where he is."⁴ On July 4 Schurman asked each member of the Faculty of Agriculture to suggest

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possibilities for a director. All strongly favored retaining Bailey, many claiming he could not be replaced. Otherwise the three names most frequently suggested were President Kenyon L. Butterfield and Directors Eugene Davenport and Thomas F. Hunt. It is noteworthy that the members of the faculty did not recommend each other. Professor Craig made by far the most perspicacious statement:

As the situation appeals to me, we are now approaching something in the nature of a crisis in the affairs of the College of Agriculture. Director Bailey's regime has been one characterized by stimulating leadership. He has developed a large number of relatively small departments, all immediately responsible to the Director. He has differentiated more than occasionally at the expense of economical administration. This system has been successful with Director Bailey as leader largely because of his inspiring and pleasant personality. But the system cannot bring maximum possibilities unless there is full and free cooperation between departments, and how far such can be maintained, rests largely upon the influence and animus of the Director.

I make this statement to emphasize the fact that the members of our Faculty worked under the spell of respect for the striking gifts of a leader and loyalty to the institution, rather than as a result of the guidance of a well organized institution. The former may represent an idea, but the practical outcome, is always hazardous and depends upon the one individual in authority.⁵

By September 18 Bailey had definitely agreed to remain until the following June with the understanding that an effort would be made to locate a successor.⁶ Concessions, however, were expected by Bailey from the university authorities, and in this expectation he had the support of most of the faculty and a number of organized alumni. On September 30 a committee of alumni of the College met with the members of the Executive Committee and the Committee on State Colleges and requested the trustees to invite Bailey to present to the board his ideas on the organization and administration of the College of Agriculture.⁷ On the same day twenty-two members of the faculty approached what they called an "epoch making crisis" in the College by pledging their "loyal and undivided support" to Bailey.⁸ Editor Collingwood came to Ithaca and promised Schurman he would open the pages of the *Rural New Yorker* to an examination of the Univer-

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sity's restraints on the College of Agriculture unless Bailey were granted satisfaction. To Bailey, Collingwood wrote, "Remember that you have in your hand a power greater than that ever given to any man by the farmers of New York State."⁹

Bailey wrote to President Butterfield and Directors Davenport, Hunt, and H. L. Russell of Wisconsin soliciting their ideas on college administration. In one of Davenport's replies Bailey marked a reference to "red-tape" and a passage which said, "I think it ought to be distinctly understood that the province of the board of control is general rather than specific and limited to questions of large policy, not to detail administration."¹⁰

Bailey's statement to the trustees was a rather grandiose declaration of independence from university authority. After stating that he had "no 'policy' to present, no advice to give, and no recommendations to make," he launched into a long statement which former President White called "ideas in advocacy of a complete revolution in the Government of the University."¹¹ In the relation of the director to the trustees he demanded a large degree of freedom in executive processes. On the relation of the director to the legislature and public he said:

He should be responsible for legislative appropriations, as he is naturally the person who knows best the internal condition of the institution and the needs of the people of the state; and his appeal to the people is direct. The people hold him responsible for the institution, and he should have such freedom as will make his responsibility effective and easy to bear.

The same principle, he argued, should be the basis of internal organization within the College, each department having control over its funds and administration and full freedom to carry on its work.¹²

A committee of the trustees was appointed to consider Bailey's suggestions. Its chairman, Andrew D. White, was not unfriendly to what Bailey desired, and other members of the committee were known to be sympathetic.¹³ Another factor in inducing the trustees to grant Bailey's requests were the zealous, if sometimes misguided, efforts of his supporters. This situation was the subject of a letter Bailey wrote to George C. Boldt, chairman of the Board of Trustees, one week after he presented his statement.

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In the requests you made of me last Saturday, you desired that I remain at the University to safeguard the Board of Trustees from criticism by many persons who have been writing to the Trustees. Let me say that if personal criticisms have been made they are not mine and I am not responsible for them. I did not know that any intimation of "graft" had been made against any members of the Board of Trustees, or anybody else, until the matter was mentioned by R. H. Treman in the meeting on Saturday.¹⁴

At a special meeting held in New York City on December 16, the Board of Trustees accepted in substance Bailey's view of agricultural college administration. An agricultural council was established to aid the director in preparing the budget and, after its approval by the full board, to assume responsibility for its presentation to the legislature. Otherwise it took over the functions formerly performed by the Executive Committee except that the director no longer needed prior approval of appointments ranking lower than assistant professor. The state government and agricultural organizations had a preponderance of weight on the eleven-member council, the University being represented only by its president and two members elected by the full Board of Trustees. "I congratulate you and the College," telegraphed A. D. White at the end of the meeting, "in obtaining thorough self-government beginning a new and better era for both the University and the College."¹⁵ With the new plan in operation, Bailey felt duty bound to remain until it was in working operation. "I have," he said, "dropped from my mind for the time being the question of my retirement."¹⁶

As Bailey was securing greater authority within the university framework, his authority as coordinator of agricultural education within the state was becoming increasingly uncertain as events moved toward a disintegration of the existing relationships between institutions engaged in agricultural education. Much of the director's authority as coordinator depended on his personal relationship to the Governor. Under Governor Hughes, Bailey's position was particularly strong, for Hughes not only had the greatest confidence in Bailey as an educator but possessed the means for keeping public support to other institutions engaged in agricultural education within the limits Bailey desired.¹⁷ As a social reformer with broadly based sources of

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political support, Governor Hughes could afford to veto the plans of various communities that hoped to become the site of a state school of agriculture. Bailey's relation to Hughes' successor, John A. Dix, was equally favorable, but in the state Bailey's position was less secure because of the political instability of the Governor.

In the Dix administration the vehicle which Bailey had used informally for advising Governor Hughes was given legal status with the creation, in 1911, of the State Advisory Board in Relation to Agricultural Education and Country Life Advancement, shortened, at its first meeting on November 24, 1911, to State Agricultural Advisory Board. At this meeting, which comprised the administrative officers of the state institutions engaged in agricultural education, Bailey was elected permanent chairman. A subcommittee was then appointed to act as an executive committee for the next meeting. In addition to Bailey, this committee included Director Jordan, Commissioner Pearson, Dean Cook, and President Boothe Davis of Alfred University.¹⁸ It is clear that under this arrangement the Advisory Board spoke with the voice of Director Bailey and lent additional authority to his plans for the orderly development of agricultural education in the state.

Other aspects of the Dix administration were less favorable to this orderly development. In 1911 the Governor vetoed the Harte bill, designed to prevent the establishment of state-supported agricultural schools by the process of logrolling.* Consistent with this veto, the Governor approved bills establishing a state school of agriculture at Cobleskill and a state college of forestry at Syracuse. Neither law contained provision for relating their work to the State College of Agriculture.¹⁹

Dix's successor, Governor William Sulzer, went further toward disrupting existing relationships. Additional state schools of agriculture were established at Delhi and on Long Island; the composition of the State Agricultural Advisory Board was changed by the addition of Syracuse Chancellor James R. Day; and \$250,000 was appropriated for buildings at the State College of Forestry.²⁰ It was this appropria-

*The Harte bill provided for sharing costs of agricultural schools between groups of counties and the state (Franklin W. Hooper to Bailey, May 27, 1911, Bailey Papers).

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tion that led to the final resignation of Bailey as dean of the New York State College of Agriculture.

It was Bailey's contention that state funds for research and instruction in forestry could be spent to best advantage in connection with the College of Agriculture where related instruction in plant sciences was available. Even if the state chose to establish a separate college of forestry at Syracuse, he insisted that a department of forestry would still be needed at Cornell to handle the farm wood lot situation. This limited objective, however, did not furnish a basis for securing first-rate teachers and investigators. To secure these persons, said Bailey, "we shall be forced in the very nature of the case to give professional work in forestry."²¹

Once the State College of Forestry was established at Syracuse, the concentration of the state's investment in forestry education at Cornell could be accomplished only at the expense of open controversy with the Syracuse authorities. This the Cornell trustees were most anxious to avoid. They did, though, agree to Bailey's plan for the development of a department of forestry at Cornell.²² The division of state support for forestry education posed a threat to the permanence of such a department, which, in turn, made it especially difficult to obtain an able faculty. That a group of outstanding men was secured was an expression of confidence in Bailey's leadership.*

It was Bailey's plan to secure a strong faculty, obtain an appropriation for a forestry building, and have the work under way in order to meet the state's need for forestry education before Syracuse could secure a building appropriation.²³ The plan appeared to be succeeding when the College of Agriculture secured an appropriation of \$100,000 for a forestry building in 1912.† In 1912-13 the Department of Forestry had a faculty of three with additional courses announced for positions still unfilled.²⁴ In that year, however, a bill was introduced appropriating \$250,000 to house the College of Forestry at

*Professor Filibert Roth, who at one time agreed to head the department at Cornell, wrote Bailey on July 10, 1911, "As I see it now, the most serious blow is not so much the appropriation to Syracuse, as *your leaving*" (Bailey Papers).

†The appropriation was actually for a forestry section of a plant industry building (*Laws of New York*, 1912, ch. 530).

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Syracuse and in the maintenance appropriation there was a provision for "instruction in accessory lines." This the authorities at Cornell interpreted to mean a college of agriculture at Syracuse.²⁵

In preparing for hearings before committees of the legislature regarding the Syracuse appropriation, Maurice C. Burritt, editor of the *Tribune Farmer* and president of the Students Association of the College of Agriculture, organized opposition to the measure.²⁶ When this opposition did not have the desired effect, Bailey, in a letter to State Trustee Carlisle, made his continuance at Cornell contingent on the Governor's vetoing the Syracuse appropriation. Carlisle replied that he would show Bailey's letter to the Governor, adding, "I know of the strong pressure being brought to bear on the Governor through Louis Marshall and others on personal friendship grounds, and I do not know whether he will stand up or not."²⁷ Several weeks later Bailey wrote the secretary of the Governor, again stating that he would resign if the Governor approved the Syracuse bill.* At Burritt's request, eighty-six men from thirty-three counties attended the Governor's hearing on May 13 to oppose the appropriation to Syracuse as an inefficient expenditure of state money.²⁸ However, the impact of this testimony was weakened by Chancellor Day's use of an ill-advised handbill prepared by the editor of the *Cornell Alumni News*.²⁹

When Governor Sulzer signed the bill Bailey had little choice but to resign. As a member of the State Agricultural Advisory Board, he wrote Burritt: "I can never bring myself to being a party to foisting upon the people of this state the enterprises that are now gaining foothold. I shall not compromise myself by taking part in such a program . . . It has happened that the situation in the state has forced me to retire this year whether I desired to retire this year or not."³⁰ After resigning, effective July 31, 1913, he continued with the aid of Burritt and John Dillon of the *Rural New Yorker* to oppose the Syracuse appropriation by organizing a petition to the attorney general calculated to prevent state support for the College of Forestry on the ground that establishing a separate board of trustees for the institution constituted an illegal evasion of the constitutional prohibition against state aid to denominational institutions.³¹ Bailey con-

*In this letter Bailey said he had told this only to Carlisle, not even to his family (Bailey to C. C. Platt, May 8, 1913, Bailey Papers).

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sidered the contest with Syracuse a personal matter. After his resignation he did not consult or inform officials at Cornell about the controversy; when the attorney general refused to act on the petition, Bailey insisted Burritt leave leadership to John Dillon, since his further participation might involve the University in "a very unpleasant and unprofitable controversy."³²

Up to the time Bailey's resignation was effective, he continued the policy of broadening the educational framework of the College by creating new departments. In 1911 he tried to persuade E. G. Montgomery to head the Department of Farm Crops by promising sufficient support to make Montgomery feel that he might develop a department of farm crops at Cornell "second to none in the country."³³ In 1913 Montgomery accepted Bailey's offer.* After the death of Professor Craig in 1912, Bailey divided the Department of Horticulture into three separate departments—pomology, floriculture, and vegetable gardening, the latter being the first such department established in the United States. Professor Charles Wilson, who had charge of the subdepartment of pomology under Professor Craig, became head of pomology; Paul Work was appointed superintendent of the Department of Vegetable Gardening; and in the following year E. A. White was made head of the Department of Floriculture.

The financial straits of the University and the desire of the Faculty of Agriculture to secure more adequate instruction in elementary botany than was currently offered in the College of Arts and Sciences made the establishment of a department of botany in the College of Agriculture mutually advantageous. Bailey was anxious to secure as head of the new department someone who would provide the intellectual leadership needed to tie together the work on plants and at the same time the kind of teaching that would give the students a sense of their relationship to the plant kingdom. Bailey had such a man in mind—Karl M. Wiegand. In February, 1913, the Department of Botany was established under his leadership. Since B. M. Duggar had resigned from the faculty the previous year, the work formerly

*Bailey to Stone and Montgomery, Nov. 26, 1912, Bailey Papers. During 1912 the Departments of Farm Crops and Farm Practice had been united.

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carried in the Department of Plant Physiology was placed within the new department.³⁴

In 1912 Webber also resigned from the Cornell faculty to become director of the Citrus Experiment Station and dean of the Graduate School of Tropical Agriculture at the University of California. At that time Bailey hoped to transform the Department of Plant Breeding into a department of genetics under Vernon K. Kellog, but was frustrated by his inability to offer Dr. Kellog better conditions than he already enjoyed at Stanford University.³⁵

In the four-year period including 1910 to 1913, the Faculty of Agriculture nearly doubled in numbers while the positions at the rank of full professor increased more than three times.³⁶ Bailey wished to make more effective use of this talent than the current schedule of the College permitted. Traditionally, resident instruction practically ceased during the summer months—the very time when maintenance costs were lower than at other seasons of the year. For a college of agriculture located in a northern area, the summer months offered the best opportunity for utilizing the outdoors for demonstration and laboratory work. In 1913 the trustees approved Bailey's plan for placing the College on a twelve-month basis with each faculty member serving nine months each year.³⁷

Many of the plans developed by Bailey, although sound and far-sighted, were coolly received by the university community, yet in spite of this he continued to generate new ideas with unrestrained enthusiasm. From the viewpoint of others, he was often too radical or too impractical. Consider, for example, his plan for bringing freshmen into intellectual and physical contact with the activities and background of the College of Agriculture. He would have had them, in lieu of an orientation course providing instruction by the lecture method, go about the university farms "frequently and painstakingly" making a journal of their observations.³⁸ While thoroughly sound in terms of educational procedure, this plan emphasized flexibility at a time when educational methods were becoming more structured. To assure that agricultural students would receive basic course work in their first two years which would be sympathetic and relevant to their later studies in the College of Agriculture, he proposed placing instructors in certain departments of the College of Arts and Sciences

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to teach the agricultural students.³⁹ Since these instructors would be paid by the College of Agriculture, the plan had the additional advantage of reducing the charge due the University for accessory instruction. Bailey's proposal, however, conflicted with the natural desire of these departments to select their own staff and control their own curriculum. His ideas on the physical plant were equally expansive. In 1910, visualizing the time when the area between Judd Falls Road and Stewart Avenue would be filled with buildings and gardens, he inquired about the possibility of an intercampus trolley system and in 1912 looked forward to the time when the university farms would include all the land between the College and the community of Varna.⁴⁰

Throughout his administration Bailey continued to emphasize freedom of action for the individual departments, refusing even to establish a college purchasing office lest this interfere with the spirit of the faculty.⁴¹ Given this degree of independence, conflict between departments was probably inevitable, especially when so many of them represented new subjects without clearly delimited fields of activity. There was a tendency among departments either to contend for control over a particular investigation or to investigate a problem along with other departments but refuse to exchange information. The Farm Practice Department often put routine farm work ahead of the services it was expected to provide those departments conducting experimental work; yet when this occurred the aggrieved departments had no recourse but to purchase their own equipment or appeal to the director. When such conflicts occurred, it was Bailey's practice to call a conference and secure a settlement based on agreement among the parties involved.⁴² In this context his personal prestige and powers of persuasion were central to the successful operation of his organizational structure.

On the other hand, Bailey was not satisfied with the research the College was producing and attributed the isolated and fragmentary research of the departments to the absence of a central organization. In 1911 he told the chairman of the newly organized faculty committee on experiment station work that he would like a real experiment station organization which would pass on the research work of all departments.⁴³ He later asked this committee if a separate director

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should be appointed for the Experiment Station. The committee concluded that the present method was best because of simplicity and because Bailey's personal direction and final decision were desired.⁴⁴ This direction is just what Bailey had not provided and, as administration become increasingly complex, was less and less able to provide. On one of his last days as director, Bailey questioned the wisdom of the committee's position. Developing the "spirit of research" he thought required giving the work of the Experiment Station a sense of direction it currently lacked.⁴⁵

The absence of any organic plan for extension work also concerned Bailey. Acting under the principle of departmental autonomy, departments ignored the coordinating function of the Extension Department and continued to conduct their extension activities as they thought proper. This resulted in duplication of effort and, in some cases, presentation of conflicting information. The latter situation was confusing to farmers and harmful to the reputation of the College, yet the solid front Bailey desired could not be achieved without some sacrifice of departmental autonomy.⁴⁶ In 1911 both Bailey and Tuck appeared to accept the desirability of some limitation in this regard when they contemplated the formation of an extension council to plan and coordinate extension work.⁴⁷ Bailey's actual proposal, however, provided only for establishing a standing committee of the faculty on extension work. This group, like the committee on experiment station work appointed at the same time, was unfitted by its multiple membership to perform the continuing administrative functions which a unified extension program demanded.⁴⁸

Bailey might possibly have coordinated the experiment station and extension work had he been willing to relinquish direct control over the maintenance operations of the College. Such matters as the relative heating value of coal and coke, the use of Bell telephones versus independent phones, types of plumbing to be used, and the layout of sewers made substantial claims on his time. Bailey retained control over the maintenance functions in order to secure what he regarded as maximum efficiency—there is no question he wanted the state to receive full value for its appropriations—and because he recognized no separation between maintenance and educational

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functions.* Papers lying under bushes and disorderly shelves in classrooms and laboratories he considered as harmful to the education of students as sloppy instruction. In 1912 he again ordered new uniforms for each janitor.

Social change made Bailey's method of administration obsolete. The degree of personal control he exercised subjected the institution to increasing strain as pressures from outside the institution, frequently at variance with the values of the director, increased in intensity. The concept of the College of Agriculture as a center for the advancement of Bailey's romantic view of country life found decreasing support as the faculty turned toward developing means for increasing farmers' incomes.

Bailey considered the annual Tompkins County School Picnic one of the big events of the year and set aside appointments and speaking engagements in order to be present.⁴⁹ In 1911, however, the field events proved so unsuccessful that the faculty moved to abolish that aspect of the annual event and the following year the school picnic followed the field day into oblivion.⁵⁰ Attendance at the college assembly, held on a monthly basis by 1912, fell off so badly that Bailey threatened its abolition unless attendance increased. Thereupon faculty members, in order to preserve what they called "the chief unifying agency in the College," promised to do all they could to secure a satisfactory attendance.⁵¹

In 1913 Bailey's opposition to materialism was anachronistic in a nation busily calculating success in material terms. His insistence that the high cost of living was due to the cost of high living and his conviction that money corrupted the educational process led him to reject almost indignantly an offer of the Bureau of Plant Industry to take third-year students for a year as assistants in the bureau at a salary of \$900. "It would," he insisted, "make a man more impatient than he already is to be earning money at the expense of careful and disinterested training."⁵² The development of the farm bureaus perhaps illustrated most clearly the variance of Bailey's values with

*Bailey's desire to save the state's money extended to the point of prohibiting the use of paper towels in the College buildings (Martha Van Rensselaer to Bailey, Dec. 30, 1912; see also Bailey to John Mason, Jan. 8, 1912, Bailey Papers).

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the dominant mood and his inability to implement plans based on these values in the face of external pressure.

The initiative for the first farm bureau in New York State came from private business organizations dependent on the prosperity of agriculture in the area they served. This farm bureau was established in Binghamton through the cooperation of the Binghamton Chamber of Commerce and the Delaware, Lackawanna and Western Railroad. These organizations had earlier considered establishing a demonstration farm for the benefit of local agriculture but by 1910 had become attracted to the idea of a farmer advisory bureau. Doubtless they were motivated in this by the possibility of obtaining financial support from the USDA Office of Farm Management.⁵³ When these organizations requested the cooperation of the College of Agriculture, Bailey suggested the establishment of an industrial fellowship to study the problem.⁵⁴ This suggestion was not acceptable, and by April, 1911, the Farm Bureau of the Binghamton Chamber of Commerce and the DL & W Railroad was established in cooperation with the Office of Farm Management. While the College of Agriculture was listed on the letterhead of the bureau as a cooperating agency, its only obligation was to offer advice and library facilities to the bureau's agent, John Barron, an alumnus of the College.⁵⁵

In February, 1912, a law was drafted by John Carlisle permitting boards of supervisors in New York State to support farm bureaus with county funds.⁵⁶ In April, W. J. Spillman of the Office of Farm Management wrote Bailey that Congress had been so generous in its appropriation for his division that he could share the cost of a man to be stationed at the College in charge of the farm bureau agents and also share half the expense of additional agents to be stationed in the counties, with the expectation that the counties would provide the other funds necessary.

In replying, Bailey was decidedly unenthusiastic.⁵⁷ Spillman's letter, however, spurred him to appoint special agents in the counties who would have a direct and exclusive relation to the College before the USDA could occupy the ground. Having such agents stationed where they could adapt current information to local conditions was an old idea of Bailey's; early in 1907 he had called it "an opportunity to breed a teacher of a new kind."⁵⁸ On April 16, 1912, "ten represen-

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tative farmers" gathered at Westfield, Chautauqua County, at Professor Tuck's request "for the purpose of naming a person who would give special attention to the agricultural needs of the county and assist in connecting the College with those needs at the proper time in the proper way."⁵⁹ Tuck continued to arrange similar conferences in other counties. By May, 1912, special county agents were appointed in Cattaraugus, Chautauqua, Cortland, Genesee, Jefferson, Orange, and Oswego Counties, and negotiations were under way for agents in Clinton, Dutchess, Herkimer, Otsego, and Washington Counties.⁶⁰

In May, 1912, the Chemung County Farm Bureau was organized by the Elmira Chamber of Commerce and the DL & W Railroad with the same relation to the USDA and Cornell that existed with the Binghamton Bureau except that, in this case, the county unit was given greater emphasis.⁶¹ A month later the Jefferson County Farm Bureau was organized by the Watertown Chamber of Commerce; the Office of Farm Management provided \$700, the State Department of Agriculture \$600 from Farmers' Institute funds, the Jefferson County Board of Supervisors \$1,000, the Chamber of Commerce office space, and the New York Central Railroad transportation for the agent.⁶²

By August, 1912, Bailey was ready to cooperate when Professor Spillman came to Ithaca for a conference armed with an abundance of federal money, providing such cooperation did not imperil the system of county representatives already established by the College.⁶³ In October, Bailey accepted the desirability of having a single state leader stationed at Cornell to supervise both the College's representatives and the farm bureau agents associated with the Office of Farm Management. Spillman was relieved to secure Bailey's assent to this arrangement, for he was under pressure from the New York State Department of Agriculture to appoint the state leader in connection with that Department and have him known as its representative.⁶⁴ Such an arrangement conflicted with the existing relationship between the USDA and the agricultural colleges and posed a discordant element in preparing the way for cooperation under the Lever bill, then before Congress. This bill, providing for federally aided state extension services, had already been approved by the Association of American Agricultural Colleges and Experiment Stations; Spillman

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and other officials of the U.S. Department of Agriculture were anxious to avoid any administrative arrangement not in accord with its provisions.⁶⁵

The method of organizing farm bureaus by agencies outside the farm communities, aided in some cases by funds provided by Sears-Roebuck and Company, was so antagonistic to Bailey's philosophy of rural life that it is surprising he did not speak out openly against it. Perhaps the reasonableness of Professor Spillman acted as a deterrent, or perhaps the advice from Professor Tuck that the whole farm bureau movement would quite likely blow itself out quickly.⁶⁶ In any case, it was not until January, 1913, that he wrote to influential people condemning the methods of organizing farm bureaus. To John Carlisle he wrote:

I am very much afraid of the farm bureau work. I think it is one of the most dangerous enterprises that has come before the country in many years. It must be handled with the greatest care not only to avoid making a political machine of it but also to avoid the establishing of local community work by means of overhead or outside agencies which really do not represent the farming interests and which do not develop the very essential quality of self-help on the part of farmers themselves.⁶⁷

In a later letter to Henry Wallace he called it his "particular function" to save farming people "from being exploited by benevolent agencies, and to try to develop in them the proper intelligence and self respect so that they will not be accepting gratuities." His position toward the farm bureaus was reinforced by Director Jordan, with whom he frequently exchanged views on important matters. Jordan considered the farm bureaus, as conceived by some farmers and businessmen, nothing less than "paternalism run rampant."⁶⁸

Still Bailey was drawn gradually, if not willingly, into the farm bureau work. On January 3, 1913, he returned a memorandum of understanding for a county farm bureau, prepared by the USDA and sent to him for signature, on the ground that he did not wish to be a party to the choice of county agents. Yet less than two weeks later he signed a memorandum of agreement for establishing a farm bureau in Herkimer County with the reservation that he held himself free to criticize the work at any time. "This condition," replied B. T.

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Galloway, "is acceptable to the Bureau."⁶⁹ One factor in making the farm bureau work more acceptable to Bailey was the freedom given him by the USDA in selecting the state leader and the "absolute authority" given that officer in selecting the county agents.*

It was under this arrangement that Bailey appointed Lloyd Tenny as state leader. "He has had experience enough to make him cautious," said Bailey, "and he has enthusiasm enough to make him useful."⁷⁰ Although Tenny was a member of the college staff, Bailey continued to avoid the appearance of any responsibility for the farm bureaus, insisting that "the College itself has no authority."⁷¹ This untenable position was made necessary by his insistence on protecting the College's direct relations to farmers through its independent agents. On Bailey's retirement the system of independent agents quickly collapsed, and soon thereafter he became a cautious supporter of the farm bureau movement.⁷²

Bailey's resistance to the direction of social change in country life was consistent with his earlier but unsuccessful efforts to shape the direction of rural social change. Both activities reflected the intensity of purpose and self-confidence that made Bailey an effective leader of men. His inability to achieve a rural society planned to his liking was a failure made magnificent by the magnitude of the opposing forces. It was, however, the very breadth of his vision that made possible the broad framework within which the College of Agriculture operated in 1913.

In many ways Bailey was the ideal person to be the first dean and director of the expanded College of Agriculture. An institution calculated to educate toward the achievement of his concept of rural society required the broadest definition of its functions. His goal for research, resident instruction, and extension was nothing less than technical education based on a sound understanding of scientific principles and supplemented by sufficient emphasis on aesthetics and political science to make the student a happier individual and more effective citizen. Bailey had the imagination and administrative ability to translate this broad goal into an educational program; he had the

*The "absolute authority" was qualified only by the provision that no person should be selected who was objectionable to the USDA (Spillman to Bailey, Jan. 3, 1913, Bailey Papers).

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energy and skill in public relations to secure support for this program in the legislature. During his administration a substantial beginning was made in fundamental research and in developing practical applications for this research in the soils and plant-industry phases of agricultural education; extensive provision was made for studying the processing of dairy products and the production and processing of poultry and poultry products; and the subject of farm management was placed on a scientific basis. A department of rural economy was established to consider the relation of the rural citizen to the larger society and a department of rural art to explore tasteful arrangements of buildings and grounds in the rural environment. The College made a major contribution to secondary education through the nature study program, and by 1913 the way had been opened for the appointment of a professor to make systematic studies of rural education. A department was established to explore the possibilities for the more efficient management of the home, and the basis was laid in animal husbandry for future expansion comparable to that which had occurred in the plant sciences.

The breadth of the curriculum provided Bailey's justification for requesting the University Faculty to grant the Bachelor of Science degree to the graduates of the College of Agriculture. In June, 1911, he reminded the Faculty of Agriculture that the primary aim of the College was not to make farmers. "As a matter of fact," he stated, "the courses in the College of Agriculture are science courses."⁷³ There was opposition to the change, both in the Faculty of Agriculture and in the University Faculty. Some members of the former, who did not share Bailey's broad definition of the function of the agricultural college, claimed that the state appropriations which supported the broad curriculum had been secured on the basis of misapprehension on the part of the people of the state.⁷⁴ Professor Mann later recalled the "bitter struggles" in the University Faculty lest the standing of the B.S. degree be reduced.⁷⁵ Bailey, however, was able to secure the change, and since 1912 the degree has been given to graduates

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of the College.* This step had the double advantage of providing a degree which more accurately reflected the nature of the College's curriculum while serving as an incentive to faculty members to make their work of equal standing with other colleges in the University.

The members of the Faculty of Agriculture who opposed dropping the reference to agriculture from the Bachelor's degree tended to favor greater emphasis on farm practice as part of the educational experience of students. In 1912 there was serious consideration for making a year's farm experience prerequisite to admission. Bailey was in complete disagreement with a policy which restricted enrollment in the four-year program to farm people:

Personally, I am glad that we have many students from the cities. The cities pay the greater share of our bills, and may fairly claim unimpeded access to our courses. Surely it is well that city people are ready for higher education by means of agricultural subjects.

Nor can I see that the presence of some students here attracted by free tuition is occasion for serious concern; for among them are many of our best students, who otherwise could not come at all. I hope the opportunity for a college education for every ambitious youth will come to be a part of the social heritage.⁷⁶

Within the ten-year period Bailey served as director, the physical plant of the College assumed its present shape. In 1912 the concept of an agricultural college quadrangle was adopted when it was decided to abandon plans to enlarge the existing agronomy building (Stone Hall) and house the work in a separate building to be located north of the main buildings and directly east of the home economics building.⁷⁷ The period between 1910 and 1913 marked the most rapid expansion of the physical plant that has occurred during the life of the College. When Bailey retired, he could see new construction all about him. At the extreme western end of the agricultural campus an auditorium (Bailey Hall) was under way which would also house three departments, and at the opposite end of the campus an animal husbandry building (Wing Hall) and a stock-judging pavilion were

*The degree of Bachelor of Agriculture was awarded until 1885; Bachelor of Science in Agriculture was awarded from 1886 to 1896 and again from 1907 to 1912; Bachelor of the Science of Agriculture was given from 1897 to 1906.

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forming the nucleus of the projected animal industry group. Between these locations, forestry (Fernow Hall) and agronomy (Caldwell Hall) buildings were under construction near the recently occupied poultry (Rice Hall) and home economics (Comstock Hall) buildings. The home economics building was an excellent physical manifestation of change in agricultural education at Cornell. This four-story brick structure housing a department less than ten years old stood on the site of the barn which had given Roberts so much pleasure and which, at the time of its construction in 1879, was regarded as a marvel for miles around.

Several "temporary" buildings were also constructed when state appropriations proved inadequate to meet the pressing need for classroom and laboratory space. In 1912-13 a one-story farm mechanics building measuring 40 by 96 feet was erected on the present site of Mann Library by the staff of the department from lumber formerly part of the old Roberts barn. (Later moved to a site along Judd Falls Road, it was used by the Department of Agricultural Engineering for another half-century.) The same year "Case Hall," a small building literally constructed around a Case thresher, was located on the north side of this building, and six years later another temporary structure, also measuring 40 by 96 feet, was located to the east.⁷⁸

The new buildings led to increased need for larger state appropriations. Routine maintenance alone was expensive, and the expanded teaching and research activities carried on within them added greatly to operating costs, but such increases were unavoidable if the buildings were to serve their intended purposes. Bailey was successful in securing a steady increase in the appropriation for operation and maintenance from \$35,000 in 1903 to \$575,000 in 1913. The increase from 1912 to 1913 alone was \$214,000.⁷⁹

Conditions both within and without the College were favorable to the exercise of Bailey's leadership. The faculty was composed almost entirely of young men, some of whom accepted his leadership uncritically. Others, who did not share his broad concept of the functions of a college of agriculture—and they were many—were in no position to oppose a leader of national reputation as a scientist and educator to whom they were attracted by personal friendship. Agricultural prosperity of nationwide scope contributed to a favorable political

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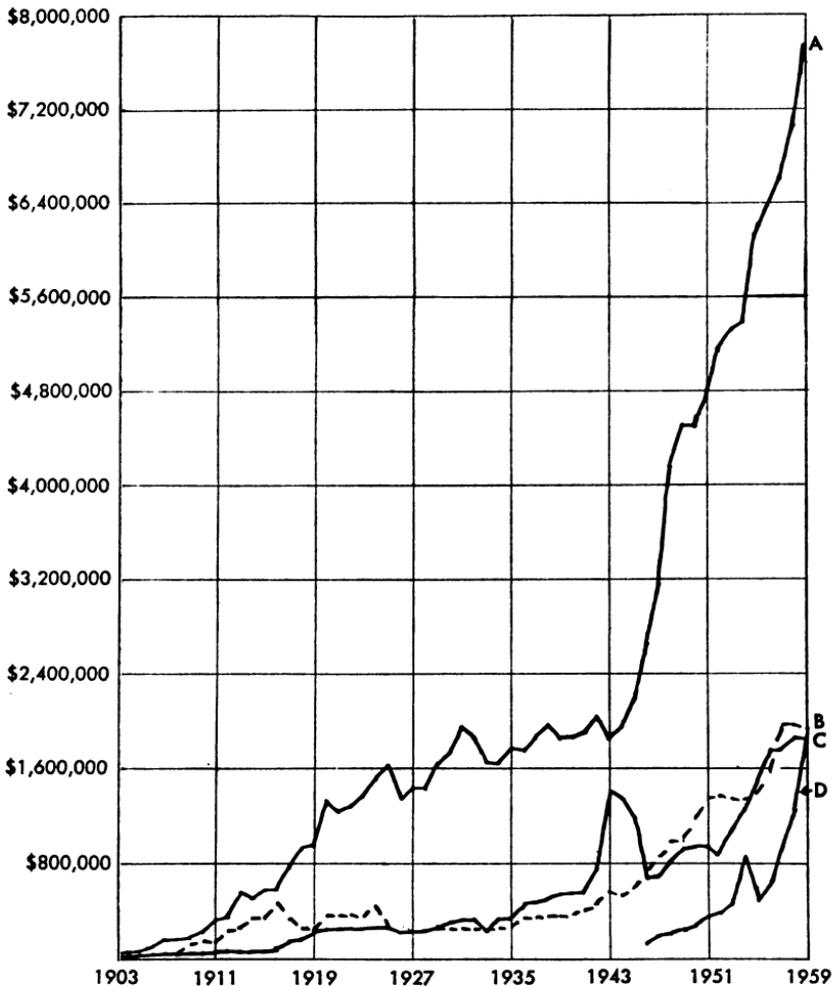


Chart 1. Sources of income of the College of Agriculture, 1903-1959: A—state appropriations for operation and maintenance; B—college income funds; C—federal funds; D—income from grants and investigatorships.

environment for developing a broadly conceived college of agriculture. (In the period before the impact of Keynesian economics, prosperity loosened the strings of the public purse.) Yet widespread prosperity did not mean that funds would be automatically forthcoming for the needs of a new institution which had to compete with those already supported by the state. Securing adequate appropria-

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tions required the aggressive presentation of the institution's needs to the people and to their representatives.

During Bailey's administration the allocation of the state's financial resources was determined by the legislature, for this was a period before the development of the executive budget and the growth of executive agencies engaged in the planned allocation of state funds. Appropriations were then secured by interest groups contending against other interest groups for the support of members of the legislature. It was a system alien to Bailey's ideas of social order but one admirably suited to his talents as an advocate. The College of Agriculture benefited substantially from his personal impact on the arbiters of appropriations.

In hiring faculty members Bailey enjoyed a freedom not available to his successors, for in launching new departments he could select men without reference to the limitations generated by existing organization. Under the circumstances he should have selected an able faculty. His success in that regard is certainly a basic measure of his success as director, but the lack of accepted criteria for measuring the work of faculty members places an evaluation on shaky ground. There was some criticism of the faculty from within the federal Department of Agriculture but this was apparently a consequence of viewing what was primarily a teaching institution from a researcher's point of view.⁸⁰ Certainly Webber and Lyon, both employed purely for research, were unusually competent men. Bailey properly emphasized teaching ability in the faculty members he hired; indeed, he could hardly have justified giving priority to research when so many resident students and farmers in the state had not yet been brought abreast of existing knowledge. It is a credit to Bailey's judgment that many faculty members hired primarily for their ability as teachers also developed into good research scholars. In founding what was, in effect, a new institution he can hardly be criticized for the few who fell along the way.

During Bailey's administration the position of department head evolved to become the key role in the administration of the College. By 1913 the institution had become too large for a single individual to keep in touch with the entire undertaking. Continuing application of leadership came necessarily to depend on the department heads

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who were in direct contact with the work of individual faculty members. The department heads were, in effect, subdirectors, bearing the same relation to the internal administration of departments as the director bore to the entire College. Through personal leadership and control of the departmental budget, they influenced the relative emphasis placed on teaching and research and also affected the methods of teaching and the content and direction of investigation. The position demanded a combination of scholarly and administrative skills. If the department were to have a sense of unity and direction, the department head had to be able to evaluate the teaching and research work of its members in relation to an organic plan and, where indicated, persuade faculty members that different goals or techniques were desirable. Lest the work of the department become parochial, the department head had to keep in touch with similar work in other states and countries and evaluate and direct the work of his department both in relation to work done elsewhere and to the needs of its immediate constituency. The department head also performed a key part in maintaining the morale of the faculty. Tensions are inevitable and desirable in an educational institution, provided they do not become debilitating. Ideally, the department head acted as a tension-reduction device within his department and between the members of his department and the rest of the College so that tensions did not reach the point of reducing the effectiveness of the director or individual faculty members.

Individuals possessing a combination of scholarly and administrative skills desirable in a department head were, and continue to be, difficult to locate, but even when such men are found, it is uncertain that they will retain this combination of skills under the pressure of changing conditions. During the Bailey administration the precedent was established that no limit would be placed on the tenure of the department head. This tradition made the position even more demanding, for its occupant had to adjust continually to new scientific, technological, and personal situations. Agricultural science and technology change rapidly. Work that at one point would give a department a position of leadership could, if pursued too long, place it in the position of beating old straw. Personal relationships were subjected to stresses as new faculty members appeared on the scene

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and older members changed through the process of aging. The men Bailey appointed as department heads must be judged both by their contribution to developing new fields in agricultural education and by the adequacy of their adjustment to changing conditions in the years that followed.

The greatest single weakness of Bailey as an administrator was his failure to prepare for an orderly transfer of authority to a successor. Conditions were ideal for a recurrence of the crisis which had been forestalled on two previous occasions by persuading Bailey to remain. And even with a successor selected, the problem remained of stabilizing his position, since many of the administrative precedents established by Bailey were too personal to be utilized by another. Bailey accentuated these potential difficulties by concealing from the faculty the part which conflict over the State College of Forestry played in his resignation. It was widely assumed that, as with his previous resignations, difficulties with the university authorities were involved. Professor Rice said he could hardly restrain himself from taking the field "to avenge the inexpressible injustice which the President of the University and the local Trustees have done."⁸¹

In July, 1913, William A. Stocking, Jr., was appointed acting director of the College. This appointment was generally popular. Stocking was a quiet and able man whose substantial abilities were sometimes underrated. Chance played an important part in his advancement in college administration. In 1908 Bailey made him head of the Department of Dairy Industry only after a search through other agricultural colleges had not produced an available candidate; yet several years later both Bailey and Commissioner Pearson agreed that he had done an exceptionally competent job.⁸² As director, Stocking carried on, in so far as possible, the policies Bailey had laid down, consulting the former director whenever major issues arose. On the last day of Stocking's administration he thanked Bailey for giving up a trip to Europe in order to remain in Ithaca to advise him.⁸³

BEVERLY T. GALLOWAY

The basic issue underlying the selection of a permanent director was Bailey's policy of making the administration of the College as independent as possible from university authority. A group of col-

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lege alumni, including several members of the faculty, were determined to preserve this and other policies of Bailey; the President of the University was equally determined that the college administration should be more closely integrated with that of the University. In the normal processes of institutional administration such differences would be compromised, but in this instance both parties departed from the normal course, propelled by the intensity of their feeling and a misconception of the strength of the adversary. The misconception of the alumni group reflected a combination of misinformation and wishful thinking. Maurice C. Burritt, ordinarily a remarkably astute person, considered the power structure of the University so unstable that the trustees would not dare risk incurring the hostility of a large number of alumni. "It is my personal opinion," he said, "that 90% of the Cornell alumni and I know that at least 95% of the Board of Trustees are opposed to the continuance of President Schurman in the University."⁸⁴ In addition to Burritt, the active spokesmen for the alumni were the secretary of the Students' Association, Professor Mann, and the Committee of Twenty-five, a group appointed to determine alumni policy.*

The problem for these alumni was to find means for participating in the selection of the new director. The university practice, when major appointments were under consideration, was that interested alumni might urge the selection of particular candidates, with the final choice being a matter of trustee decision. By April, 1913, the alumni group, then under the presidency of C. H. Royce, demanded that this tradition be altered to permit the alumni of the College to pass judgment on a candidate before his final appointment, a procedure which Schurman pointed out would establish a precedent antagonistic to sound university administration.⁸⁵ After this rebuff the alumni group took the position of recommending that Stocking be appointed acting director for another year.⁸⁶ By this time, however, President Schurman had a candidate in mind.

This was Assistant Secretary of Agriculture, Beverly T. Galloway, who had been suggested to Schurman by President C. R. Van Hise

*In January, 1914, Mann was replaced as secretary by E. L. D. Seymour, and in February, 1914, C. H. Royce replaced Burritt (*Cornell Countryman*, March, 1914, p. 223, April, 1914, p. 234).

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of the University of Wisconsin. Dean Russell of Wisconsin agreed that Galloway would be an admirable choice but thought there was little possibility of securing him.⁸⁷ Indeed, that appeared to be the case. In March, 1914, Galloway "after carefully considering the Deanship," asked that his name not be presented to the trustees. Schurman, however, persisted. Persuading Galloway to visit Ithaca at the end of March, he told him then that he was his "first and only choice" for the vacant position.⁸⁸

There seemed to be every reason for Schurman's enthusiasm. Galloway was a scholar of established reputation in the field of plant pathology. Under his administration the Bureau of Plant Industry had developed from a small division to a major center for agricultural research and extension. In 1913 he was drafted by the Secretary of Agriculture, David Houston, to fill the position of Assistant Secretary.⁸⁹ Galloway's reputation within the USDA was similar to that which Bailey had achieved within the College of Agriculture; he was regarded by Cornell alumni employed in the federal department as the practically indispensable man whose concepts and administrative methods shaped the form of the Bureau of Plant Industry.⁹⁰ Indeed, there was some suggestion from these alumni that the College of Agriculture would benefit considerably by a similar application of strong constructive administration oriented toward the concept of the University as a unified institution.⁹¹

By April, 1914, Galloway was ready to reconsider the position of director. He then saw no insurmountable difficulty in bringing the College into harmonious relation with the University. "You may have to perform a few incidental surgical operations," he wrote Schurman, "but I believe the patient, when it is all over, will feel greatly relieved, and perhaps a little bit surprised at its rapid recovery."⁹²

On April 14 a joint meeting of the Faculty of Agriculture and the Agricultural College Council was called by President Schurman to consider the appointment of a director. Seven members of the faculty, evidently spokesmen for the entire faculty group, opposed the appointment of Galloway and favored either retaining Stocking or securing Dean Russell of Wisconsin. According to Professor Rice, the President "made it perfectly clear that he was emphatically opposed to the present method of administering the College of

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Agriculture [and] that he proposed to have Dr. Galloway appointed Director if it is within his power to bring it about.”* The trustees met on May 2 to fill the position. Schurman’s penciled notes indicate that only Pearson and Galloway were considered. The faculty objections to Pearson and Galloway’s substantial reputation and gift for leadership were discussed. After the decision was cast in favor of Galloway, Schurman wrote at the bottom of the page: “He will direct the College and cooperate with the University. Solution to our problem. Never more confident of nomination.”⁹³ On the same day the Senate of the United States discussed whether it should raise the \$5,000 annual salary Galloway received in order to hold him in the federal department. After much wandering and irrelevant discussion the Senate concluded that such a salary increase would create an undesirable precedent.†

Galloway certainly underestimated the difficulties he would face at Cornell. On the day Professor Rice wrote to the president of the alumni association about possible measures to prevent his taking office, Galloway wrote to President Schurman about his pleasure at being part of the institution. “The difficulties are insignificant,” he stated, “compared to some of the issues that we have had to face here.”⁹⁴ President Royce of the alumni group and Professor Rice were determined that Galloway should know how matters stood.

*Rice to Royce, April 17, 1914, Rice Papers; Schurman to Members of the Faculty, March 31, 1914, Selection of Director Papers. It may be noted that the contest over what degree of independence the College of Agriculture should possess was not unique to Cornell. In an earlier period such a contest in Mississippi and South Carolina resulted in the separation of the college of agriculture from the state university (John K. Bettersworth, *People’s College: A History of Mississippi State* [University, Ala., 1953], pp. 18-26; Daniel W. Hollis, *University of South Carolina* [Columbia, S.C., 1956], II, 148-153). At the University of Minnesota, after a separation flurry in the late 1880’s, the College of Agriculture was given a large degree of autonomous administration (James Gray, *The University of Minnesota* [Minneapolis, 1951], pp. 98, 116). Even those states which from the beginning maintained agricultural colleges apart from the state university did not avoid conflict over the division of educational functions and allotment of funds. See Bailey to R. A. Pearson, Jan. 30, 1913; C. S. Potts to Bailey, March 14, 1913, Bailey Papers.

†*Congress. Rec.*, Senate, May 2, 1914, pp. 7607-7613. The director of the New York State College of Agriculture received \$6,000.

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Late in June, Royce called on him in Washington and warned him not to depart from Bailey's policies. Then, writing to President Schurman, he indicated the alienation the alumni of the College of Agriculture felt toward his administration. "I think we can now disregard ethics and take our stand for our College of Agriculture," Royce wrote Bailey the same day.⁹⁵ Meanwhile, a two-column editorial appeared in the *American Agriculturist* warning Galloway that he must decide whether to be an errand boy for President Schurman or one of the spokesmen for the agricultural interests of the state. "We all know," the editorial said, "that Schurman schemed you in."^{*}

The core of opposition to Galloway came from a group of faculty members who used the alumni group as a vehicle for carrying on their dispute with the President. The absence of unity among the alumni themselves was soon evident. In June, 1913, Professor Mann had been faced with the necessity of raising about \$800 to finance the campaign against the building appropriation for the State College of Forestry, but the money was secured only when he and Professor Tuck endorsed a loan of \$640 to the Students' Association.⁹⁶ In the midst of the attempt to secure a voice in the selection of the director only slightly over one-half of the members of the Committee of Twenty-five replied to a letter from Burritt requesting a meeting.⁹⁷ In July, 1914, shortly after President Royce warned Schurman and Galloway in the name of a united alumni, Secretary E. L. D. Seymour wrote Royce that he could not see much excuse for the organization's existence. He noted that only 6 per cent of the alumni were members and "the meetings come so rarely that it is hard to remember from one to the next." The following year he wrote to Galloway, suggesting that the Students' Association be dissolved or reorganized "on an active self-supporting basis."⁹⁸

Although Galloway became director under less than auspicious circumstances, he early made a good impression on Professors Stocking and Mann. "You will find Dr. Galloway a very pleasant man to work with," Stocking indicated to Director F. G. Helyar of Morrisville. Mann was very pleased with Galloway after he had been on

^{*}*American Agriculturist*, May 30, 1914. Almost the entire editorial followed point by point a letter Rice wrote editor Burkett on Oct. 15, 1911. See also Rice to C. W. Burkett, May 26, 29, June 8, 1914, Rice Papers.

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the job for a month. "He brings to his work," said Mann, "an unusual experience in administration, and a remarkable grasp of American agriculture in all of its phases."⁹⁹ Yet within two years Galloway had returned to the U.S. Department of Agriculture, and Mann himself was dean and director.

Galloway's difficulties did not develop, as might have been anticipated, over the relation of the College to individual farmers and organized agriculture, for in these external relations his objectives and methods of administration were quite similar to Bailey's. They did not develop over the scope of the curriculum, for Galloway wished to extend it even further than Bailey. They did not develop over the relation of the College to the University, for while Galloway tended to relate the interests of the College to those of the University, he was anything but a mouthpiece for the men in Morrill Hall. Rather, the area of contention was the internal administration of the College; therein a conflict with the faculty developed following his attempt to apply administrative techniques he had found successful in the Bureau of Plant Industry to an institution with quite different traditions. Two aspects of administration were involved, the personal relationship of the director to the faculty and the administrative structure of the College of Agriculture.

The faculty found the interposition of a group of clerks between themselves and Galloway a shocking contrast to the open-door relationship they had enjoyed with Bailey. Under Galloway's administration it was difficult for members of the faculty to see the director, since almost invariably they were stopped in the outer office by his private secretary, H. E. Allanson, who was also a student in the College. Questions not involving policy were decided by Allanson; questions involving policy were taken to Allanson, who, in turn, transmitted them to Galloway for decision. In either case, he posed an effective barrier between the faculty and the director. Allanson was a capable administrative aide, but it was galling for some professors to call on a student in resolving important college issues. The college budget was also prepared by conference between department heads and administrative clerks. The faculty was further antagonized by Galloway's unfortunate characteristic of treating faculty members he did not like as something less than his equal.¹⁰⁰

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Galloway's attempt to separate administrative functions from the faculty's responsibility for determining educational policy contributed to the friction. Under Bailey these functions had been intertwined, with the dean acting as director of educational policy through force of personality and the faculty engaging in administration through committees dealing with the library, the Experiment Station, and extension. At a meeting of the Faculty of Agriculture in February, 1916, Galloway ruled a joint report of the committee on experiment station work and the committee on extension work out of order on the ground that it dealt with administrative matters not within the jurisdiction of the faculty. Galloway quoted from university statutes on the function of the special faculties but was immediately overruled by an overwhelming vote. Later in the meeting a committee was elected to determine if the functions and responsibilities of the faculty "might be cleared up by a frank interchange of opinion or adjusted by faculty vote."¹⁰¹ When this committee met, instead of discussing the functions of the faculty, it turned to an examination of Galloway's fitness to be director. His method of administering the College through clerks was condemned, and enough examples of arbitrary action were noted to signify a lack of confidence in his leadership.¹⁰² Some of these decisions appear to have been the routine acts of an administrator unused to having his decisions questioned; others, such as the changes in departmental budgets, were forced upon him by outside events, but he was nonetheless blamed. It was his misfortune to become director at a time when a movement for budgetary reform and economy in government struck the state capitol.

The state appropriation for operation and maintenance for 1914-15 was \$68,000 less than had been available the previous year and represented the first reduction for the College since it became a state institution. In addition, the newly established State Department of Economy and Efficiency classified the budgets of all state institutions into groups for purposes of appropriation. The appropriation for that year provided stated amounts for stated numbers of employees in each category. Stocking protested that a college of agriculture could not work under such a system, for the amount the College would need to pay staff members to hold them against higher offers could

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not be anticipated.¹⁰³ In 1915 even less flexibility was permitted when the contingent fund was reduced from the \$24,200 available in 1914 to \$10,000.¹⁰⁴ When the appropriation for accessory instruction plus the entire contingent fund did not equal the amount due the University for accessory instruction, Galloway was forced to reduce the maintenance funds of the different departments in order to secure this payment.¹⁰⁵ The following year the state adopted a line-item budget which attached a stated salary to every position in the College, and at the same time the state comptroller refused to sanction the existing practice of augmenting state salaries from college income funds.¹⁰⁶ The combination of line-item budget and restrictions on the use of income funds had the effect of transferring a substantial part of the College's administration to Albany. It placed the director in the uncomfortable position of being required by statute to restrict the work of a faculty accustomed to administrative flexibility and expanding budgets.

The personal element plays a large part in the conduct of the state's business. An official of a state institution does not reach maximum efficiency until he has established a reputation as a competent administrator and a "good fellow." In coming before the state's officials as a stranger, Galloway was at a great disadvantage in securing appropriations for the College. His impersonal relationship to the Governor made it necessary to rely on an intermediary to defend the College's budget. In 1915 this intermediary was Franklin Matthews, a trustee of the University and personal friend of the Governor. According to Matthews, he and the Governor were "as close as brothers." "We have," he said, "sat up nights scheming how to advance his political career until he should occupy the place he now does."¹⁰⁷ Unfortunately Matthews used his crucial relationship with the Governor to justify sitting in judgment on the content of the College's budget, a judgment his position in the School of Journalism at Columbia University hardly qualified him to render. His narrow view of agriculture did not encompass the possibility that fish ponds might be a useful addition to New York farms, and, after his strenuous objection, the trustees removed an item for experimental fish ponds from the college budget.¹⁰⁸ This action further postponed

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a project which Bailey and Professor James Needham had planned many years before.

This incident illustrates, perhaps as well as any, a consequence of defending a project on the basis of its value to agriculture when, in fact, an agricultural application was almost incidental to the purpose of the research. As Professor Needham indicated to Galloway, there were excellent reasons why the College should experiment with fish ponds. The College had in its staff and equipment a basis for research in limnology which could place the state's fourteen fish hatcheries in sound operating condition.* Although in actuality a college of science, the institution was trapped by its name. The public and the legislature expected the work of the College to relate to agriculture, and the spokesmen for the College had no choice, in the short run, but to justify its work in terms of the public's expectation. In the long run, perhaps, the faculty could educate the public to a more realistic understanding of its activities. An immediate consequence of this incident for the Galloway administration was to alienate further the head of the largest department in the College.

The faculty's demand for his resignation was precipitated by Galloway's plan to eliminate the departments as administrative units and reorganize the work of the College into eight service units. Galloway had evidently discussed the plan with Schurman before becoming director but did not mention it to the faculty because he found the situation "so delicately balanced" that he did not want to take a step which might create a disturbance.¹⁰⁹ In June, 1915, Galloway prepared a long analysis of the organization of the College in which he developed the thesis that the department, with its frequent changes, was an inefficient administrative unit. Instead, he proposed to group the departments into services dealing with administration, animal industry, plant industry, soils, chemistry, rural technology, the rural community, and extension. "All business of the institution," he stated, "all accounts, all budgets, and all matters of business are conducted strictly in accordance with this administra-

*Needham to Galloway, Jan. 23, 1915, Galloway-Schurman Correspondence. After being twice rejected by the legislature a \$25,000 item for a fish-culture experiment station was secured in 1919 (Mann to Schurman, Oct. 8, 1919, Albert R. Mann Papers).

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tive plan of organization.”¹¹⁰ By May, 1916, the faculty was aware of this plan. On May 20 the faculty elected a committee of nine which prepared a statement to the President and trustees covering the faculty attitude toward “a matter of organizaion newly injected into the situation.” The statement, which called for Galloway’s resignation, noted that the plan called for reducing the present twenty-six departments to eight and declared that “this would mean the elimination of a large number of the Faculty.” The statement was approved by the Faculty of Agriculture by a vote of seventy-two to zero with two members abstaining.¹¹¹

Some members of the faculty reacted to Galloway with an emotional intensity that affected the soundness of their judgment. In November, 1915, one faculty member reported that Galloway had placed eight of his relatives on the College payroll.* In early June, 1916, a department head carried his grievances to the *Ithaca Journal* by providing “authoritative information” relating to the “Dean’s competence to lead the College.” Several weeks later two younger members of the faculty complained about coercion at the meeting of the faculty where the vote of seventy-two to zero was secured in favor of requesting Galloway’s resignation.¹¹² In February, 1916, a group of faculty members led by Professor Needham held a night session with a group of arts college professors to consider the agricultural college situation a University matter on the ground that Galloway was endangering the spirit of academic freedom.¹¹³ These and other indications of faculty opposition brought Galloway to the conclusion that his usefulness at Cornell had ended. On June 3, 1916, he sent a second letter of resignation to Schurman with the request that it be accepted; much remained to be done that he would like to see accomplished, but he recognized that “the best interest of all concerned” would be advanced by his leaving.¹¹⁴

It was a tragic conclusion for a man who came to Cornell two years earlier to make its College of Agriculture the model in the nation. Perhaps his personality made him essentially unsuited to be director of the College of Agriculture at any time but it was his misfortune to arrive on the scene as successor to Liberty Hyde Bailey. Neverthe-

*Schurman to Franklin Matthews, Nov. 11, 1915, Galloway-Schurman Correspondence. Schurman found no basis for the charge of nepotism.

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less, Galloway's unsuccessful attempt to reorganize the College was not entirely in vain. By absorbing the brunt of faculty opposition he made the way easier for his successor, for his resignation did not end the demand for reorganization. On June 19 the Agricultural College Council expressed confidence in Galloway's administration and went on record as favoring "the greatest possible consolidation of existing departments in the College."¹¹⁵

The following week President Schurman presided at a special meeting of the Faculty of Agriculture. Conciliation was the keynote, but Schurman held a steel fist in the velvet glove. He presented a statement from the trustees which accepted the resignation of Galloway while strongly approving his policies. Then, at the request of the trustees, he also presented a twenty-one page statement on the relation which ought to exist between the President, the trustees, the dean, and the Faculty of Agriculture. Schurman's lecture—no other term seems equally appropriate—dwelt at length on the nature and extent of academic freedom in a technical college. The College of Arts and Sciences, he warned, was not to be regarded as a model to justify freedom of action by separate departments in the College of Agriculture. Schurman left the plan for reorganization of the College before the faculty while extending the opportunity for a faculty voice in the administration of the College. The trustees, he announced, had moved to admit two faculty representatives to the Agricultural College Council.¹¹⁶

Albert R. Mann was an excellent choice to succeed Galloway as director. He was thoroughly familiar with the administration of the College, and if not personally acquainted with the leading members of the legislature and farm organizations, at least had some knowledge of them. He had maintained good personal relations with Galloway, and, since he was away on sabbatic leave, had avoided involvement in the troubles of 1915-16. Raymond A. Pearson, then President of Iowa State College, considered him an able administrator. Galloway recommended that Mann be made acting dean and director of extension after a conference attended by Mann, Schurman, Galloway, and C. B. Smith of the States Relations Service, USDA.¹¹⁷

Although Mann stepped into the same position occupied by Bailey

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in 1903, the perimeter of the roles of dean and director were more sharply defined as a result of pressures arising both within and outside the University. It was clearly expected that Mann would direct college operations in a manner consistent with the view that agricultural education was a part, and only a part, of the total field of education encompassed by the University. This expectation came not only from university authorities but from state officials, who had ended the free-wheeling type of administration by placing tight budgetary restrictions on the director's freedom of action. Working within these limits, Mann directed an institution which was undergoing closer alignment to the interests of the farm people of the state. Extension work, in 1910 the weakest of the three divisions of agricultural education, was by 1920 receiving the greatest emphasis. The significance of this change went well beyond the extension work itself; for as the College became more closely associated with farmers and farm organizations, they in turn acquired an increasing influence over the content of agricultural education, not only in extension but also in resident instruction and the work of the Experiment Station.

EXTENSION

While the decade witnessed the development of new forms of extension education and the abandonment of old forms, some extension techniques inherited from the past were carried on throughout the period. Such was the case with the extension schools, which continued to be a useful means for extending information even though from Bailey's point of view they were less effective than formerly. Much to Bailey's regret, they were settling into communication by lecture. In 1911 he warned that they were becoming "talking schools," which he regarded as a departure from the "real teaching" involved in the examination of materials in laboratory periods.¹¹⁸ In 1912-13 twenty-five extension schools were held; the following year sixty-one.¹¹⁹ During 1901-1910 the annual attendance at these schools fluctuated between seven hundred and three thousand. Schools of one, two, and three days' duration were also held on such topics as the operation of gas engines and the use of

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milking machines. One school, held in the winter of 1911 at Riverhead, Long Island, lasted seventeen days.¹²⁰

The farm demonstration train reached the apex of its usefulness about 1912 and by the end of the decade had been abandoned as a major form of extension. In 1911 Professor Warren, on returning from the annual meeting of the Association of American Agricultural Colleges and Experiment Stations, reported an undercurrent of disapproval with extension work in the United States. Many of the extension lecturers, he said, were regarded as little more than windbags. Warren thought the brief and rather superficial lectures from farm trains contributed to that impression and recommended that in New York the farm train immediately be replaced with extension work of a "more solid" character.¹²¹ The following year a major effort was made to improve the educational efficiency of the Cornell farm train. Stops were made for a half-day and longer so that depth could be given to the lectures and demonstrations. Attendance averaged one thousand persons at a stop; many farmers drove ten miles over mud roads in order to participate. The train was preceded by an efficient campaign of publicity and was followed by extension schools and reading course bulletins.¹²² Although this was considered a successful season, the farm train was quickly displaced by a much more efficient extension medium, the county farm bureau association.

By 1914 twenty-five county farm bureaus had been organized in the state. This number increased by about five counties a year until 1917, when wartime emergency funds led to an increase of fifteen counties within a single year. In 1918 the fifty-six counties comprising the area in the state suitable for agriculture had farm bureau organizations.¹²³ Professor Tuck's conclusion that farmers were not interested in these organizations turned out to be unfounded. When F. E. Robertson, the new farm bureau agent in Jefferson County, was offered the position of assistant professor of animal husbandry at Cornell, the farmers of the county, within two days, voluntarily subscribed enough money to meet the offer.¹²⁴ The change in the sources of county farm bureau funds in New York State between 1913 and 1914 is a measure of the willingness of counties and individual farmers to support the organization; while funds raised

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outside the counties increased about 7 per cent, those raised within the counties increased 61 per cent.¹²⁵

The Smith-Lever Act, signed by President Wilson on May 8, 1914, clarified the official connection between the county farm bureau agents and the College of Agriculture. Thereafter, these agents were the local representatives of the cooperative federal-state extension service. The Smith-Lever Act provided for the decentralized administration of forms of extension education which had already been developed by the U.S. Department of Agriculture without specific congressional authorization. By 1913 Seaman A. Knapp had developed a highly centralized system of nearly six hundred farm demonstration agents in the South under a loosely drawn appropriation to the Bureau of Plant Industry for breeding cotton resistant to the boll weevil. Dr. Knapp found the best method of fighting the boll weevil to be farm-by-farm demonstrations on the advantages of mixed farming; by decreasing the dependence of southern farmers on a single crop, he made a lasting contribution to American agriculture.¹²⁶ In the northern states the Office of Farm Management, although established as a research agency, engaged in farm demonstration work similar to that of Dr. Knapp. While the agricultural colleges accepted the principle of agricultural agents stationed in the counties, they opposed control by agencies located outside the state. This was also the position of the National Soil Fertility League, a lobbying organization founded by a group of midwestern businessmen to secure federal aid for a system of decentralized agricultural extension work.¹²⁷

The Smith-Lever Act provided a \$10,000 annual grant to each state, with additional funds based on rural population to be matched by the states. Cooperative administration of the extension work financed by Smith-Lever funds was based upon a memorandum of understanding signed by the Secretary of Agriculture and the president of the college receiving these funds. This memorandum, drafted by A. C. True of the Office of Experiment Stations and approved by the executive committee of the Association of American Agricultural Colleges and Experiment Stations, called for the establishment of a distinct division in each cooperating college for the administration of all extension work. In the Department of Agriculture, a States

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Relations Service was established to represent the Secretary of Agriculture in the administration of this law.¹²⁸

The reorganization of the extension work in each state to fit within the cooperative structure of the Smith-Lever Act offered numerous opportunities for personal friction between state and federal employees. That the transition was generally smooth is in large part due to the personal qualities of Dr. True, appointed to head the States Relations Service, and his subordinate, C. B. Smith, who was in charge of extension work in the North and West.

The passage of the law had three significant results in New York State. By requiring a separate division of extension in the College, the law made it possible for the director to appoint an administrator to head this division without incurring opposition by the faculty. By associating home economics extension with agricultural extension, the law assured the permanence of home economics education at Cornell. Finally, by emphasizing the relationship between the agricultural colleges and the USDA, the law pointed toward the eventual elimination of the State Department of Agriculture in the conduct of extension work.

As chief of the Bureau of Plant Industry and later as Assistant Secretary of Agriculture, B. T. Galloway played a vital role in the formulation of the Smith-Lever Act.¹²⁹ As director of the College of Agriculture, one of his principal tasks was to implement this law by coordinating the extension work of the College with that of the county farm bureaus. The plan he laid down for this coordination established the fundamental relationships within which the Extension Service still operates. Among its provisions were: the county farm bureau to be the local administrative clearing house for extension work; the local community to support the administrative work of the bureau; extension work to be based on the project plan, the projects to be made up at least once a year through cooperation between the professor of farm bureau extension and the various departments; all farm bureau projects to be initiated by county committees in cooperation with the county agent, the professor of farm bureau extension then to present to the departments the needs for assistance from the counties; each college department to have its extension experts and to control the subject matter, the time

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and place of presentation to be determined by the county farm bureau; and the Lever funds and state extension funds to be used for the salaries and expenses of specialists assigned to the departments.¹³⁰

Maurice C. Burritt and Howard E. Babcock had the chief responsibility for implementing this policy. Burritt succeeded to the position formerly held by Lloyd Tenny on January 1, 1914, when he was appointed extension professor in charge of farm bureaus. In October, 1914, Babcock was appointed assistant extension professor and assistant state director of farm bureaus.¹³¹

Galloway's plan of coordination placed considerable emphasis on county committees planning extension work at the local level; indeed, he thought the success of the farm bureau movement would "depend largely on the development of local initiative and local organization."¹³² The extension leaders at Cornell placed greater emphasis on local organization than was done in many other states. Burritt was dismayed at the "utter disregard" the great majority of state farm bureau leaders and extension directors, meeting at a conference in Chicago, showed toward the principle of self-help. "Their idea seems to be," he said, "that the success of the work depends almost wholly upon the way it is projected, carried out and administered by the College authorities."¹³³ While the policy of Burritt and Galloway was clear, the development of local initiative depended, in practice, on farm people with a capacity for leadership and a county agent with ability and willingness to utilize local people in developing a county program. Needless to say, there was often a wide gulf between the ideal and existing situation.

Much of Burritt's time in 1914 and 1915 was devoted to establishing farm bureaus in counties as yet unorganized. In doing this, his first step was to persuade a group of farmers to form a county farm bureau association. This was often a difficult process, for Burritt encountered widespread apathy among farmers and was sometimes faced with opposition generated by earlier farm bureau mistakes. On occasions discouraged, he reminded himself that "to have support one must go out, get it and organize it." At another time he noted in his diary, "*N.Y. farmers don't know how to cooperate yet. The \$ sign is too big in their eye and they don't know that*

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cooperation means *give* as well as *take*.”¹³⁴ After a farm bureau association was formed, Burritt accompanied the new agent to the county, pointed out for his benefit some of the possibilities in farm bureau work and, for a number of afternoons and evenings, helped him organize “get acquainted” meetings with local farmers. Then, leaving the agent on the job, Burritt returned to Ithaca, to spend evenings in his office “catching up” on correspondence.¹³⁵

On July 1, 1917, the Extension Service was established as an administrative division of the director’s office to coordinate the extension work of the subject matter departments with the project plans of the county farm bureaus. Professor Burritt was appointed vice-director of extension. Under this arrangement Director Mann retained the ultimate control of appointments and allocation of funds.¹³⁶ It was a relationship that required considerable forbearance on the part of both director and vice-director. Burritt was an able administrator, equally effective in the planning of policy and in the conduct of day-to-day routine. He regularly subjected reports from county agents and departments to careful analysis, which he made the basis for criticisms and suggestions.

Burritt faced a major task in coordinating the extension work of departments that had become used to working independently. Shortly after his appointment he reported that the departments showed little inclination to cooperate with each other or with the farm bureau organization. Accustomed to emphasizing means of work, the departments resisted the transition to concentration on objectives to be attained. The orientation of the local farm bureaus was quite different. They were impressed with the problems to be solved and were relatively unconcerned about what departments accomplished the solution. Demand for solutions to immediate problems in combination with an increasing awareness of the complexity of these problems eventually led to greater cooperation among departments. The tendency during the decade, however, was to preempt rather than share the projects outlined by local farm bureau associations.¹³⁷

The alternative method of organization favored by the USDA was to make all extension personnel directly responsible to the division of extension. While this relationship had the advantage of

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emphasizing a problem orientation, it posed the danger that extension personnel isolated from the research activities of departments would soon lack the necessary technical competence. The plan also had the effect of isolating research from the immediate needs of agriculture. Well aware of the imperfections of the Cornell organization, Mann and Burritt felt it superior to that which Washington offered.¹³⁸

Differences on the matter of extension organization, however, did not weaken the generally pleasant working relationship between the officials of the College and the USDA. By 1911 the Bureau of Soils had abandoned the practice of conducting soil surveys without consulting the College; thereafter the counties to be surveyed were selected by the College of Agriculture.¹³⁹ In 1912, when a group of grape growers petitioned the Bureau of Plant Industry to establish an experimental vineyard at Hammondspout, Galloway, as chief of the Bureau, replied that the USDA would proceed only with the approval of the College of Agriculture.¹⁴⁰ The friction that developed from the independent farm demonstration activities of the Office of Farm Management was ended with the passage of the Smith-Lever Act. Thereafter the federal department agreed to clear all its work in the state through the College.¹⁴¹ The authority vested in the States Relations Service to review Smith-Lever projects planned by the College was not used arbitrarily. Rather, the relationship was cooperative in the best sense. After the review of projects in 1918, Burritt remarked, "Some of Mr. Smith's more detailed criticisms of particular projects were, I think, well taken, and I have tentatively accepted them."¹⁴²

The system of county farm bureau agents provided the combination of local and centralized organization needed to put the farm demonstration work on an effective basis. In 1911 the Agricultural Experimenters League was still in existence, with several hundred members, but it had not met the expectations of its organizers. The demonstrations had not been sufficiently supervised and in many cases seemed to have little effect in improving farm practices in communities where they were conducted.¹⁴³ It was possible with agents stationed in the counties to demonstrate improved farm practices as part of a program planned to secure the maximum

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educational value from each demonstration. The realization of these possibilities depended upon the presence of a county farm bureau agent skilled both in agricultural and public relations techniques. Although the demonstrations were frequently conducted with the aid of extension specialists from Cornell, the agent needed sufficient technical knowledge to follow up the demonstration work with the individual farmer. Perhaps of even greater importance, he had to arrange conditions under which the demonstrations were presented for maximum diffusion of the techniques illustrated. Public relations skills were also needed in the organization and conduct of meetings. In 1917 alone, county farm bureau agents in the state addressed over four thousand meetings with an average attendance of fifty-six persons.¹⁴⁴ The most important job of the agent, however, was to develop strong local leadership to plan and support the county extension program. Unquestionably, this task demanded all the sophistication and maturity the county agent possessed, but in those early years some county agents were insufficiently skilled to realize the possibilities in the cooperative extension system. To a degree, however, youth and enthusiasm compensated for a lack of maturity and experience.*

The success of the farm bureau agents in promoting better farming methods depended to a large degree on the extension specialists at the College, for it was these men who made recommendations for the treatment of specific farm problems at meetings arranged by the county agents. College policy required that extension specialists be as well trained and as well paid as other members of the staff. Prior to 1916, when their number was small, their status was substantially equal to that of other members of the Faculty of Agriculture. In that year, however, President Schurman, without consulting the administration or faculty of the College, announced a decision of the trustees limiting membership in the faculty to those

*In 1918 the average age of the county agents was 32 (Burritt to Mann, Aug. 27, 1918, Mann Papers).

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engaged in resident instruction.* It was an unfortunate blow to the morale of the extension specialists to be reduced to an inferior status at a time when the Smith-Lever Act offered the promise of greater effectiveness for extension work. Implicit in the action of Schurman and the trustees was the assumption that the educational standards of extension teaching were below those of resident instruction. Support seemed to be given to this assumption by the insistence of farm bureau agents that the primary stress in the training of extension specialists should be on the acquisition of communication skills. This position was condemned by the Faculty of Agriculture, which took a strong stand in favor of emphasizing technical training. In 1920 the faculty requested the inclusion of extension specialists in their membership, lest division develop between the interests of resident and extension teachers.¹⁴⁵ Twenty years would pass, however, before the extension specialists were granted faculty status.

The contest over the relative importance of technical proficiency and skills in communication obscured the fact that effective extension specialists needed substantial strength in both areas. The contest was doubly unfortunate, for those who advocated emphasizing communications skills were so thoroughly routed from the field that the element of soundness in their argument was dismissed along with the vacuities. There was a certain pride among faculty members in promoting what they recognized as a transition from the bombast of the farmers' institutes to the unemotional communication of technical up-to-date information. So anxiously did some members of the faculty await the new day that they were prone to suspect the scientific soundness of a man who could speak effectively on an agricultural subject.¹⁴⁶ In 1918 the farmers' institutes were transferred from the State Department of Agriculture to the Extension Service, where they were subjected to greater pressure for technical accuracy.¹⁴⁷ In 1917, however, communication skills were stressed in the appointment of a special agent to work with non-English-speaking Jewish

*When it was pointed out that this decision also excluded faculty members engaged in full-time research, Schurman secured a modification which admitted them (Mann to Schurman, Nov. 9, 1917, Mann to Farrand, March 20, 1922, Mann Papers; Faculty of Ag. Minutes, IV, 16).

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farmers. "This was," said Mann, "the first definite provision to meet the needs of foreign language farmers in this state."*

With the efficiency of the county agent so completely dependent on the relation he maintained with farmers, it was obviously wise to conduct the work of the College in a way which strengthened this relationship. There was a danger, however, that in strengthening the position of the county agent the work of the College would be compromised in other areas. This consequence was especially likely at a time when the development of extension work was the center of attention. The propagation of new varieties developed by the Department of Plant Breeding is a case in point. Prior to 1920, samples of seed of new varieties were distributed to a large number of farmers who were expected to grow this seed under conditions which maintained its purity and then sell the product to other farmers. The inefficiency of this system was quickly recognized. In 1916, for example, seed was distributed through the Extension Service to 461 farmers, a number far too large to be adequately supervised. In addition, the farmers who received the samples kept the product for their own use rather than offering the seed for sale. The system was a bonanza for farmers with close ties to the Extension Service but did not result in the widespread introduction of new varieties. In 1920 the department proposed to overcome these difficulties by cooperative agreements which would utilize the propagation and distribution facilities of commercial seed companies. This arrangement, however, was questioned by the Agricultural College Council because it would weaken the relationship of the county extension organization to the farmers.¹⁴⁸

The kind of farmer on whom the Extension Service should concentrate in order to make its work of maximum effectiveness was examined by a special committee of the faculty in 1920. County farm bureau agents and members of the county farm bureau executive

**26th Ann. Rpt. of Pres. Schurman, 1917-1918, App. VIII.* The idea that a locality having a large foreign-language-speaking population should have its own agent was proven false. According to L. R. Simons, who became county agent leader in 1928, "Foreign born farmers preferred to meet with their native born neighbors on an equal basis" rather than in segregated groups (Coll. of Ag. Historical Notes, 1962).

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committees were asked whether or not extension was most effective when conducted with the more successful farmers on the assumption that others would learn from them. The views of the executive committee members differed substantially from those of the county agents, the former stating overwhelmingly that extension personnel should work with the more successful farmers. This position was shared by the faculty. The extension worker, declared the faculty, should be rated by his ability to deal with advanced farmers, particularly those with a college education.¹⁴⁹ In spite of the views they expressed, the county agents found themselves increasingly involved with the more successful farmers, since these men made up the county committees and were the first to ask for the services which the county agent could provide. In addition, as new agricultural techniques became increasingly costly to implement, the county agent found he had less useful advice for the farmer who lacked access to additional capital.

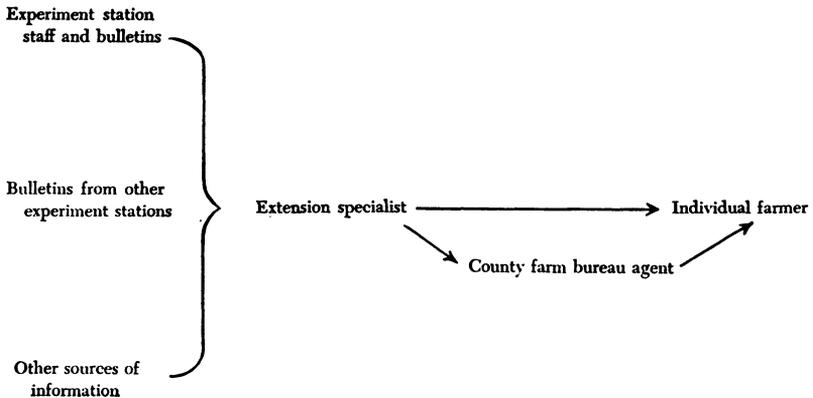


Chart 2. Extension Service chain of communication.

The county farm bureau agent was a public official supported by county, state, and federal funds. As such, his services were available to all people living in the county. At the same time he bore a special relationship to the county farm bureau association and was known to the public as the farm bureau manager or farm bureau agent. As an outgrowth of the philosophy that extension work could be most effective only if based on local membership organizations, the mem-

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bers of the county associations furnished active support for the work of the county agent and paid annual dues, initially usually one dollar a year.¹⁵⁰ As long as the county farm bureau associations regarded their function as educational, there was no conflict between the agent's role as local representative of the publicly supported Extension Service and manager of a local voluntary association organized to support this educational work. In the Middle West, however, the farm bureau associations quickly became commercial organizations engaged in the cooperative purchasing of farm supplies and marketing of farm produce. While the management of the commercial functions of the associations was presumably conducted by other than extension personnel, the phrase "farm bureau" attached to the title of the manager of the educational arm of these associations caused considerable embarrassment to federal extension officials. From their point of view, the title should not emphasize a connection with commercially oriented private associations.¹⁵¹ In New York State, however, the county farm bureau associations were regarded as public organizations without commercial functions.* "They do *not*," said Professor Burritt, "do things which public organizations may not do, except in a few individual cases."¹⁵²

While avoidance of direct management of commercial matters remained farm bureau policy in New York, the county associations soon branched out to become spokesmen in matters of political interest to farm bureau members. Two resolutions adopted by county farm bureau agents assembled at Ithaca on November 2, 1916, marked a significant step in the expansion of objectives and the expansion of organization to accomplish these larger objectives:

Resolved: that it is the sentiment of this conference that means should be created to cause public sentiment to look with favor on adequate agricultural appropriations for the State College of Agriculture, Experiment Stations and other agricultural departments . . .

Resolved: that it is the sentiment of the conference that the Presidents of the various Farm Bureau Associations should form a permanent State Federation or Association for the general advancement of farming interests in the state.¹⁵³

*They are specifically recognized as public organizations in ch. 499, *Laws of New York*, 1919.

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At Farmers Week, February, 1917, representatives from thirty-four county farm bureau associations assembled at Ithaca and, following the example of associations in Missouri, Massachusetts, and Illinois, formed the New York State Federation of County Farm Bureau Associations, later called the New York State Farm Bureau Federation. Burritt and Howard E. Babcock, at that time state county agent leader, were primarily responsible for organizing the State Federation. Following the organization meeting Babcock was named general secretary of the State Federation.*

The close articulation of the Extension Service and farm bureau associations, reflected by the joint position held by Babcock, seemed a good policy to Dean Mann in 1918.¹⁵⁴ Burritt wanted to go even further in consolidating the central office of the Farm Bureau Federation with the Extension Service by establishing a joint position of state county agent leader and state farm bureau manager. This, he noted, would parallel the county form of organization and bind the federation so closely to the Extension Service that it could not take independent action harmful to the work of the College. Burritt regarded the strong opposition to his proposal by Dr. True and C. B. Smith of the States Relations Service as "100 percent conservative and standpat."† Mann, however, moved away from his earlier enthusiasm for close articulation and by 1920 found considerable merit in the position of the States Relations Service. The trend in the agricultural press toward referring to county agents in a manner which suggested that they were exclusively agents of the farm bureau associations had already given Mann concern.¹⁵⁵ This was accentuated by a report of the educational committee of the New York Farm Bureau Federation which claimed a right to a controlling voice in determining extension policy and stated specifically the desire to be represented

*L. R. Simons, *Cornell Ext. Bull.* 993, pp. 11-13; Smith, *People's Colleges*, pp. 461-462. The constitution and by-laws of the State Federation were copied from the Illinois Federation (Burritt to B. F. Crocheron, Aug. 15, 1918, Mann Papers).

†Burritt to Mann, Dec. 31, 1919; Burritt to C. B. Smith, April 6, 1920, Mann Papers. The combined title of state county agent leader and state farm bureau manager was used in 1920 and for a number of years thereafter.

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in the allocation of state and federal funds and the employment of specialists. "If there were to be any large amount of this sort of thing," declared Mann, "the situation would become intolerable."¹⁵⁶

The American Farm Bureau Federation developed from a preliminary conference held at the College on February 12 and 13, 1919. At this meeting, attended by representatives of twelve state federations, the basis was laid for an organizational meeting held in Chicago that November.¹⁵⁷ Prior to the November meeting a proposed constitution was drafted. Dean Mann's comments on this draft indicate that his concept of a national farm bureau organization was vastly different from the agricultural pressure group envisioned therein: "I note that in the statement of objects there is no reference whatever to the educational function which is a primary function of the Farm Bureau movement. The objectives as stated do represent the drift of sentiment, but I think that such an omission would be notable and unfortunate."¹⁵⁸ The rapid growth and aggressive leadership of the American Farm Bureau Federation posed a further danger to close association between the New York State Extension Service and a national organization not primarily interested in education.

An effective national federation required substantial financial support. An immediate result of its establishment was a campaign for higher membership dues in New York, part of which would be used to finance the national organization. "Don't you want New York to stand with the other states in a program for aggressive National work for the farmers?" asked the State Federation president, S. L. Strivings, in a letter which pointed out that many middle western states were raising dues to ten dollars.¹⁵⁹ To banish any doubt among county agents about their relationship to the national organization, J. R. Howard, president of the national federation, sent each agent a New Year's message:

Show me a weak, listless, ineffective county Farm Bureau and I will show behind it a weak, listless, ineffective county agent—one of those harmless, meek, milk-and-water fellows forever reiterating that "this is your bureau, members, and I am your agent, please tell me what to do." . . . The county agent is the strong right arm of the American Farm Bureau Federation . . . We intend to make increasing use of the county agent.¹⁶⁰

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In addition to providing a foundation on which state and national farm bureau federations could be developed, the county agent system brought the College into much closer contact with existing agricultural organizations and fostered the establishment of new organizations, especially in the field of cooperative purchasing of farm supplies and marketing of agricultural products. This was an area of activity that brought endless attacks upon the Extension Service, for private companies engaged in these businesses were unwilling to permit the disruption of commercial relationships they had found profitable. In 1913, members of the Agricultural College Council questioned the wisdom of aiding the formation of agricultural cooperatives. When finally persuaded that this was a desirable course of action for the College, council members suggested that no mention be made in the budget that extension funds were being requested for this purpose.¹⁶¹ The Council was probably more conservative than the general public on the issue of promoting agricultural cooperatives, for the Granger and Populist campaigns of the late nineteenth century had created a national sentiment receptive to programs designed to secure greater economic justice for agriculture. President Wilson eloquently declared equality of opportunity a principal goal of his administration. Furthermore, by 1914 both state and national governments stood behind a policy calling for the instruction of farmers in the establishment of cooperative business organizations.*

The Dairymen's League was one marketing cooperative which received substantial aid from the Extension Service. Organized in Orange County in 1907 by 691 dairymen, it had made little impact on the agriculture of the state five years later; neither Professor Mann nor Professor Stocking had heard of the organization.¹⁶² Membership grew slowly but continuously after 1907; by 1916, 10,000 dairymen were enrolled in the League. Before this enrollment was attained, it had become evident that dairy farmers would not benefit from the

*Chapter 235, *Laws of New York*, 1913, created a Bureau of Supervision of Cooperative Associations in the State Department of Agriculture and authorized its superintendent to assist agricultural cooperatives "with aid and advice in the management and conduct of their affairs". Burritt, *The County Agent and the Farm Bureau* (New York, 1922), p. 98.

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high wartime prices for manufactured dairy products unless they bargained collectively through the league organization for a higher price for milk.¹⁶³ In September, 1916, a conference was held between representatives of the League and Professor Tuck, Director Galloway, and a representative of the USDA Office of Markets. It was then agreed that the first step toward improving the marketing of milk would be to get "definite and specific facts relative to the cost of production from the standpoint of the farmer and the cost of marketing and distribution from the standpoint of the city dealer."¹⁶⁴ To secure figures on the cost of milk production the League turned to Professor Warren. The result of his research was the so-called Warren formula, which provided a sliding price scale fluctuating with the cost of feed, labor, and other elements making up the cost of milk production. This formula provided a basis for a minimum price which was demanded by the League, effective October 1, 1916. When the milk dealers of New York City refused to meet this price the league members refused to ship their milk and engaged in a certain amount of violence against farmers who did not cooperate in the milk strike. The most significant result of the strike was recognition of the League by the metropolitan milk dealers as the official bargaining agency for its members.¹⁶⁵ The strike also indicated the need for a larger membership so that the League would be able to bargain effectively without recourse to violence against nonmembers.

The position of the College, as drafted by Burritt, stressed the long-term aspects of the milk-pricing problem. Three courses of action were laid down:

- 1) A state-wide campaign for the removal from the market of the unfair and unnecessary competition of milk produced at a loss.
- 2) A vigorous effort to put dairymen in a position to do collective bargaining for the product of their cows and labor. This means the local cooperative ownership by farmers of milk shipping stations, creameries, and cheese factories.
- 3) The cooperative advertising of milk as a food in order to increase consumption of this valuable and wholesome article of diet.¹⁶⁶

The first goal set a long-term objective which could be attained only by cooperation between the College, regulatory agencies, and

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organized dairymen. The second goal, on which the first and third objectives so largely depended, was the point of concentration from 1916 to 1920, with the Extension Service playing a major part in expanding the membership of the Dairymen's League. A memorandum of agreement between the League and the central office of the farm bureaus provided that county farm bureaus offices were to be used as headquarters by league organizers. County agents were to aid the league organizers but were not to become involved in the actual business of the League. The distinction between organizing and business matters was sometimes hazy to county agents and quite beyond the understanding of many farmers who wanted direct advice from the county farm bureau agents on the marketing of their milk.¹⁶⁷

The element of self-help remained an important part of extension philosophy. Both Galloway and Mann insisted on numerous occasions that the Extension Service should not become involved in performing commercial functions for farmers.¹⁶⁸ "The easy thing at the present time," said Mann in 1920, "is to lend ourselves freely to the promotion of interests which it is the business of farmers themselves to promote. The hard thing is to hold unswervingly to an unadulterated educational effort."¹⁶⁹ However, it became increasingly difficult to act in accord with this ideal when the needs of farmers seemed to require more direct action by the College's personnel than the philosophy of self-help permitted. It was one thing to explain to farmers how to spray an orchard; it was another thing to explain how to organize and manage a cooperative business able to compete with profit-oriented organizations already in the field. There was no planned departure from the philosophy of self-help; rather the departure occurred step by step in situations where the skills required were too complex to be acquired quickly by farmers. When farmers asked for help, extension personnel were not inclined to weigh the fine points of extension philosophy against the all-too-evident needs of the people they were expected to serve. This was especially true of the county agents, who found it difficult to resist appeals from men who were frequently their friends and neighbors. In 1920 the Schuyler County agent was selling wool, and, according to Babcock, other agents were doing everything from distributing seed to selling carloads of maple syrup.¹⁷⁰

The limitations of the self-help philosophy were evident in the

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organization of the G.L.F. Exchange. It seems certain that a business of this complexity could not have been organized or managed by men primarily engaged in agriculture. As a general principle successful farmer-managed cooperatives have been limited to a single commodity. The G.L.F., named from the initial letters of the farm organizations which provided the initial support—the State Grange, the Dairymen's League, the State Farm Bureau Federation—was organized in 1920 on a basis sufficiently broad to overcome the weaknesses of previous Grange and Dairymen's League organizations engaged in the purchase of farm supplies. College personnel had a large part in establishing the G.L.F., which assumed in New York State the commercial activities performed in many other states by the farm bureau federation.

The uncertain quality of farm supplies was the principal factor leading to the formation of the G.L.F. Seed furnished by dealers was often not true to name and was all too frequently adulterated with weed seeds. The content of cattle feeds was based on unknown formulas that frequently bore little relation to the nutritional requirements of cattle. Better seed was available by ordering in large lots directly from producers. Before 1916 farmers were pooling their seed orders through better-seed committees of county farm bureau associations.¹⁷¹

The content of better feed for dairy cows had been determined by Professor Elmer Savage of the Department of Animal Husbandry. In 1914 he recommended the production of these rations on an open-formula basis. The concept that the contents of a feed bag should be openly stated on the label was strongly resisted by the feed manufacturers, who were accustomed to concealing a variety of content behind a fancy-sounding brand name. Savage's ideas were given a boost by the public revelations of the Wicks Committee, a joint committee of the New York State Senate and Assembly appointed to investigate phases of agricultural business. The committee said of the feed service then available to farmers: "It is not going too far to assert that many thousands of dollars are yearly paid out by the dairyman of the State of New York for dirt, dust, straw, and rubbish permitted to be sold under some high sounding name as a valuable cattle food sure to increase the production of his dairy."¹⁷² The Wicks

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Committee report, Babcock noted, greatly increased the aggressiveness of Savage, the county agents, and other public officials.

In 1917 a Dairymen's League plan to distribute feed based on the Savage formulas failed because of inadequate financing and the opposition of manufacturers and dealers. In 1918 the State Grange attempted to achieve the same purpose through the establishment of the Grange Exchange. While this organization met with some success, its capital of \$100,000 was insufficient to permit effective competition with existing dealers, who offered such services as keeping stock on hand and, in addition, undersold the Grange Exchange.

The impetus for the necessary unity among farm organizations that made the G.L.F. possible came from John Dillon of the *Rural New Yorker*. Dillon's position as publisher of the most widely circulated farm paper in New York State and his official capacity as a commissioner of foods and markets made him a powerful figure in New York State agriculture. However, his somewhat erratic qualities alienated other agricultural leaders. Dillon's threat to promote a new organization called the New York Federation of Agriculture until it superseded existing agricultural organizations brought a greater degree of unity among these organizations. In 1919 Babcock and Edward R. Eastman, then editor of the *Dairymen's League News*, sparked the formation of the New York State Agricultural Conference Board to act as official spokesman for New York agriculture. Formation of policy was to be by unanimous vote of the members—originally the State Grange, the Dairymen's League, the State Farm Bureau Federation, and the Western New York Horticultural Society. It was this Conference Board, meeting at Syracuse on April 28, 1920, that established the G.L.F.

Initial capital for the G.L.F. was set at one million dollars, ten times that of the Grange Exchange. H. E. Babcock resigned as county agent leader to manage the stock-selling campaign. In a farewell letter he called on the county agents to support the stock issue, saying that this "will put it on a par with competing organizations of a private nature; and finally, and most important of all, the company itself constitutes a rallying point for the agriculture of the state."¹⁷³ As in the case of the Dairymen's League membership campaign, the county farm bureau offices were used as headquarters

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for the stock-selling campaign, the county agents assisting county committees in a clerical capacity and in organizing publicity for the campaign.¹⁷⁴ Within six months the stock subscription reached \$683,460.¹⁷⁵

The timing of the campaign was fortunate, for it was well under way before the advent of the postwar agricultural depression. During those six months Babcock, as secretary and member of the Board of Directors, was a key figure in the management decisions of the G.L.F. Even after becoming professor of marketing at Cornell in September, 1920, he continued to guide the organization, because its success seemed to depend on his managerial skills.* Dean Mann thought this dependence on Babcock most unfortunate. "Personally I feel that the farmers will arise to meet the situation when it is left in their hands," he wrote to Warren. "This must be true or else they are not ready to organize."¹⁷⁶

Enthusiasm for the organization of agricultural cooperatives swept into the vegetable-growing area of western New York, where farmers organized, with the encouragement of the Extension Service, to demand from the canning factories a higher price for produce. This resulted in some embarrassment when the growers looked to the College for figures on which a price could be based. The situation contrasted with the organization of milk producers, where marketing research preceded college aid to the membership campaign of the Dairymen's League.¹⁷⁷ Once the organization of agricultural cooperatives had become a widespread social movement, the extension division of the College, caught up in the momentum generated by the movement, could not hold back while researchers engaged in the lengthy process of collecting and evaluating marketing information.

Other accomplishments of the Extension Service were less dramatic but probably no less important than the promotion of agricultural cooperatives. Hundreds of demonstrations were conducted. By 1915 these were often incorporated into farm tours, an educational technique made possible by farmers' adoption of the automobile. During

*Babcock resigned from his positions in the G.L.F. effective Jan. 1, 1921. However, he continued to take an active part in management from his position at Cornell (Knapp, *Seeds That Grew* [Hinsdale, N.Y., 1960], pp. 46-47).

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a single day a number of fields were visited and the results of different practices compared. Method demonstrations were often held in the evening after supper in order to avoid interference with farm work.¹⁷⁸ Some demonstrations involved new techniques such as the use of power sprayers; others were directed toward encouraging the adoption of practices long familiar to the better farmers such as the application of lime. Thousands of cows were tested for milk and fat production, a process which contributed to breed improvement and, since it was supported by dairymen organized into local testing associations, to cooperation among farmers.¹⁷⁹ Surveys continued to provide a basis for organizing extension programs and to suggest problems for research. The Department of Plant Pathology alone conducted eight plant disease surveys during the decade 1911-1920.¹⁸⁰ A survey conducted by the College in 1919 showed farmers overwhelmingly opposed to the continuation of wartime daylight-saving time, and on the basis of these results Burritt worked to force repeal of the measure. (Meanwhile the clock in Roberts Hall was turned to "God's time" when large numbers of farmers were on campus.)¹⁸¹ Among the extension activities held on campus was the first Farmers Field Days, held June 20 to July 2, 1920. Exhibitors set up tents, about three thousand people attended, and special interest was shown in the tractor demonstrations. A meeting of greater significance in the long run was held the previous June under the auspices of the Soil Improvement Committee of the National Fertilizer Association. About one hundred executives and salesmen from fertilizer companies attended the conference—thought to be the first such meeting in the nation—where they were acquainted with Cornell recommendations for the manufacture and utilization of fertilizers.¹⁸²

The value of the New York State Extension Service was demonstrated under emergency conditions when the United States became involved in World War I. Food was a critical item in winning the war, every effort turning toward increasing production. The county agent system—expanded by special wartime funds from the federal government—was almost ideally constituted as an instrument for uniting farmers behind a national purpose and providing services for making the individual farm a more efficient production unit. A state-wide agricultural survey conducted by the Extension Service with

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financial assistance from the New York State Food Supply Commission indicated areas where seed, labor, and other items entering into agricultural production were in short supply. To alleviate these shortages, county farm bureau offices served as farm labor employment bureaus, and the Extension Service distributed seed purchased by the State Food Supply Commission. College personnel operated three traction ditching machines and supervised the allocation of twenty-seven tractors and a number of power sprayers provided by the Food Supply Commission. Twenty-two county agents assisted in organizing farm loan associations to enable farmers to secure operating capital. Home economics specialists gave nearly eight hundred demonstrations on the preservation of food, many of them on the "Victory Special" provided by the United States Railroad Administration.¹⁸³ Two members of the New York State Extension Service helped organize the federal food production program. Martha Van Rensselaer served as head of the Home Economics Division of the Federal Food Administration, and Lloyd R. Simons was employed in the States Relations Service to organize farm bureaus with emergency funds in the thirty-three northern and western states.¹⁸⁴

The decade marked the triumph of the farm management point of view over the country life approach to agriculture. In 1919 Burritt considered one of the most significant aspects of extension work the promotion of the view that farming is a business, a concept he 'declared to be "an integral part of our approach to most agricultural problems."¹⁸⁵ Dean Mann's interest lay in developing the country life approach but the issues involved were too complex and the objectives too much in conflict with the direction of social change for even a modest degree of success. Rural church work declined after Mann became dean for a variety of reasons, not the least of which was the conflict over whether the rural church was primarily an institution for improving country life or a transcendental medium for the salvation of souls.¹⁸⁶ In 1918 Mann took a position which contrasted with the view of farming as a business when he joined Bailey, Kenyon L. Butterfield, and George Vincent in what was essentially a call to return to a better day. "The tendency of the world is to permit economic considerations to dominate; and so the world over we need an

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organized leadership that shall set the world right in its valuations."¹⁸⁷ Professor Roberts must have been pleased.

Changes were continually introduced to make the extension work more effective. In 1919 county agents were assembled at the College for one week to bring them up to date on recent experimental work.¹⁸⁸ In 1920 the services of the College were extended to the Indian population of the state with the appointment of Erl Bates as adviser on Indian extension.¹⁸⁹ In the fall of 1919 the New York State Sod Busters' Association was formed. Consisting of county agents and former agents, it contributed to the maintenance of high morale among the agents by providing an informal atmosphere where extension policies and activities could be discussed and gripes could be aired. High morale was important for its own sake and as a means for retaining agents against the much higher salaries offered by commercial organizations.¹⁹⁰ During this decade implement manufacturers and other makers of farm supplies were developing their own extension services and by 1920 provided aid to farmers in some instances superior to that available from the College.*

The decade witnessed the expansion of the work in home economics to the point where, by 1920, university authorities were supporting legislation to make home economics a separate college. The conditions proposed for separation provided home economics a large degree of autonomy in research and resident instruction—that is in the subject matter of the field—while providing for joint administration of the extension work with the College of Agriculture. The dean of the College of Agriculture was to be chief administrative officer of both colleges. The arrangement—a compromise satisfactory to few—was the result of six years of adjustment between the aggressive co-heads of the Department of Home Economics and the administration of the College of Agriculture and was adopted at the time under the pressure of forces generated outside the University.

A number of circumstances combined to make this adjustment difficult. It was a time when women, who had just concluded a long

*Burritt to Mann, March 7, 1919, Mann Papers. One of the first of these commercial agricultural extension services was established by the International Harvester Company in 1910 (R. D. Owings to Webber, April 8, 1910, Bailey Papers).

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campaign for the right to vote, were sensitive about their subordination to men elsewhere. Flora Rose protested against men making the major decisions regarding the Department of Home Economics. The department, she said, should be represented on important faculty committees and the Agricultural College Council.¹⁹¹ There was, in addition, a fundamental conflict of interest between the constituency of home economics and agriculture; where the former represented the interests of food and fiber consumers, the latter represented the interests of food and fiber producers. A dairyman who complained about a favorable comment he had overheard a home economics instructor make about oleomargarine expressed in a forceful way this basic conflict of interest.¹⁹² Finally, the public reception accorded agricultural extension was much more cordial than that which home economics received. Both agriculture and home economics benefited from federal wartime emergency funds, but when these funds were withdrawn in 1919, only slightly over half of the counties having home demonstration agents were willing to make appropriations for the continuation of the work. The farm bureau agents, on the other hand, benefited from the good will generated by the forty years of extension service initiated in the 1870's by Professors Caldwell, Roberts, Law, and Lazenby. None of the county appropriations for agricultural extension work were discontinued at the end of the wartime emergency.¹⁹³

In November, 1916, the state home demonstration agent was made subordinate for administrative purposes to the state leader of county agents with a similar relation prevailing in the counties between the farm bureau and home demonstration agent. This arrangement, stressing the unity of the county extension organization, was favored by Mann and Burritt.¹⁹⁴ Professors Rose and Van Rensselaer were equally concerned about unity, but thought of the concept in terms of the relation between the Department of Home Economics and its constituents. "The extension work with women in the State is *county-heavy* and *college-light*," declared Miss Rose in a statement condemning what she called "*the evils of forced growth*." Burritt, too, was concerned about these evils and thought this was just what the policy of the Department of Home Economics involved. Commenting on the department's plans for extension work, he said: "*Women must really*

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solve their problems for themselves. The College can give a little help and leadership . . . The plan is, in general, too paternal. It either assumes that the solution of all the problems which housekeepers now face is dependent on the College; or it totally ignores what these women are already doing to meet these problems."¹⁹⁵

Burritt's desire to unite the county extension organization and rely on local initiative triumphed at the level of policy formulation. In 1918 and 1919 Babcock, with the aid of Ruby Green Smith, persuaded each farm bureau association to change its name to farm and home bureau association.¹⁹⁶ In 1919 this change was recognized in the Farm and Home Bureau Law which provided for the appropriation of state funds for farm and home bureau extension work to a single county extension association. The provisions of the law were to be administered through the state leader of county agents.* The Department of Home Economics, however, ignored college policy and continued to centralize extension work in the department. Specialists were sent to work with Cornell home study clubs—the successors to the farmers' wives reading clubs—without informing the home demonstration agent in the county. Burritt insisted that in many cases the extension work administered by the Department of Home Economics actually competed with the program of the county home bureaus.¹⁹⁷

The Department of Home Economics was the first headquarters for the junior project work financed under the Smith-Lever Act. As state club leader, Martha Van Rensselaer insisted from the beginning that the junior work be on a more substantial foundation than what she considered the mere propagandist work proposed by O. H. Benson of the States Relations Service.¹⁹⁸ In 1916 this junior project work was transferred to the Department of Rural Education, where it slowly but steadily expanded under the name "4-H"—a term standing for head, hands, heart, and health. In 1920 eight counties had full-time 4-H agents.¹⁹⁹

The publications division of the Extension Service assumed its present form during this decade with the establishment in 1915 of the Office of Publication to edit and distribute experiment station and

*Chapter 499, *Laws of New York*, 1919, provided that state funds must be matched by appropriations by county boards of supervisors on what amounted to a three-to-one basis.

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extension publications and to act as a central office for channeling information to the public. It was primarily to improve the public relations activities of the College that the Office of Publication was formed. This function, although earlier assigned to the Extension Department, had not been performed efficiently. The *Announcer*, which Bailey started in 1911 to inform the public each month about the work of the College, was written in a rather heavy style and reached only about 60,000 people. Galloway, experienced in the techniques of public relations from his work in the Department of Agriculture, recognized that the money invested in the *Announcer* could be used to reach perhaps a million people a week if invested in an information service distributing news items to the commercial press. He brought Bristow Adams to Cornell to head the Office of Publication. Adams was, in the long run, an excellent choice. Although regarded primarily as a publicity agent by some members of the faculty, Adams was a capable editor and a colorful teacher of journalism.²⁰⁰

The Office of Publication also acted as a service bureau to the county farm bureaus. The *Extension Service News* was edited in this office, and material was prepared that could be used in county extension publications, often in a form which could be adapted to local conditions by filling blanks in the text. The College refused to send out material completely prepared for publication even though this was frequently requested. To grant such requests, it was believed, would be a disservice to publications presumably concerned about local conditions.²⁰¹

In 1913 a new series of bulletins called memoirs was issued to serve as a medium of communication between agricultural scientists. Previously, the regular experiment station bulletins had performed this function, sometimes at the expense of repelling readers who could not understand the technical material they contained. Scientific sufficiency, Bailey declared, would be the test for contributions to the new series, rather than the personality or status of the writer. In projecting the series, he intended to appoint a separate committee to judge each manuscript.²⁰²

The establishment of the Office of Publication reopened the question of the editor's power to alter manuscripts. This appears to have

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been the principal issue behind an investigation of publication procedures conducted in 1916 by the joint committee on experiment station and extension work. In its report, submitted in April, 1916, the committee laid down lines of demarcation between experiment station bulletins, extension bulletins, and memoirs—a distinction that had not been at all clear previously—and declared that complete responsibility for the content and method of presentation in bulletins should rest with the department of origin. With the approval of Galloway, a standing committee on publications was created to pass judgment on manuscripts, the committee to consist of the dean and the committees on experiment station and extension work. This group was far too large to function effectively and, in addition, soon came under fire from a prominent department head for rejecting a manuscript submitted by a member of his department.²⁰³ This opened the further question of the role of the department head in the publication process. In 1919 Mann declared it was the specific intent of the faculty that manuscripts should be submitted directly by the author to the dean for consideration by the Committee on Publications and that “each author should stand on his own feet with reference to what should be published.”²⁰⁴ In 1920 the faculty voted to make the dean and vice-directors the Committee on Publications.²⁰⁵

RESEARCH

Research received increasing emphasis during the second part of the decade. By 1918 monthly research conferences were held to “increase the spirit of research throughout the institution” and improve research techniques. All members of the faculty devoting their major attention to experimental work were expected to attend.²⁰⁶ At the beginning, faculty members came to these conferences thinking of research from widely different points of view but in time a more common understanding gradually emerged. Scientists were brought from other institutions to speak at these conferences. Director Jordan of the New York State Agricultural Experiment Station at Geneva presented the case for intimate administration of research and a clear separation of research and teaching; several months later Mann asked Dean Davenport if he would come and present a point of view “for the encouragement of thorough going research by other

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means."²⁰⁷ These conferences were given further structure in 1919 by dividing the entire faculty into four groups, the dean acting as chairman of each group.²⁰⁸

During the decade a considerable shift occurred away from research on immediate agricultural problems to that of a more fundamental nature.²⁰⁹ A large amount of research, of course, remained oriented toward the immediately practical; such was inevitable in an institution having close connections with agricultural organizations. There was an unfortunate tendency at the time among farmers to oppose basic research under the mistaken impression that it had no value for them. "There is the general feeling among farmers," reported Burritt in 1916, "that the College is too far off, too scientific, and too impractical."²¹⁰ The Geneva station, relatively free from the pressures of farm organizations, was better able to concentrate on fundamental research.²¹¹

The split which Bailey felt would develop between the Geneva station and the College of Agriculture did not materialize; rather, by 1920 preparations were well under way to unify the administration of the institutions pending the retirement of Director Jordan. The policy approved by the Cornell trustees in 1920 of appointing certain members of the staff of each institution to the staff of the other, had been worked out with the Geneva station four years earlier by Director Galloway, who also made arrangements for taking over most of the extension work formerly performed at Geneva.²¹² The effect of these arrangements was to bring the staffs of the two stations into a more cooperative relationship, with greater coordination in planning and executing related research projects. The two institutions, however, remained competitors for state appropriations. The private arrangement between Director Jordan and Dean Bailey providing that Cornell would not request state support for its experiment station activities was feasible only so long as the College concentrated on resident instruction.²¹³ As research became a normal activity for faculty members paid on state salaries, the arrangement became increasingly untenable. Organized agriculture's practice of giving support in the legislature to the institutions giving them the greatest practical assistance accentuated the competition between Cornell and

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Geneva. A unified administration for the institutions was probably more important in 1920 than at any time previously.

Research in the Department of Poultry Husbandry during the decade was largely related to immediate problems of poultry management. Feeding and housing were studied, the latter in cooperation with the Department of Rural Engineering. Research on the relationships between body type and productivity provided a basis for instructing poultrymen in culling procedures. A breeding program, started in 1908, and carried on for twenty-six years thereafter, emphasized the improvement of flocks by the selection of higher-producing hens. An early product of this program, Lady Cornell, produced 257 eggs in her first year of laying, a feat Professors Rice and C. A. Rogers enthusiastically termed "startling evidence of human triumph in handling the forces of nature."²¹⁴

Research in rural engineering was also oriented toward immediate applications. H. W. Riley developed simplified sewage disposal systems and B. B. Robb studied aspects of farm drainage, including the layout of systems, the durability of tile, and the development of instruments for measuring the efficiency of drainage systems. The Department of Plant Pathology studied the nature, cause, and control of plant diseases, in some cases at field stations located where the disease under investigation constituted a serious economic problem. The application of lime sulphur as a fungicide was examined and a special study of disease inheritance in beans was undertaken with the Department of Plant Breeding. The control of insects based on detailed examination of their life histories was the subject of many research projects in entomology. In dairy industry a 1912 study of the bacteria of spoiled canned peas and beans pointed toward increased emphasis on bacteriology and the eventual expansion of the scope of the department to include food science. Research in pomology, which started with Bailey but lapsed when he became dean, was renewed with the appointment of W. H. Chandler as research professor in 1913. He initiated studies of hardiness, and the effects of pruning, of fertilizers, and of irrigation on a number of fruit varieties. As in other departments, some of the best research during the decade was the work of graduate students. In 1916 A. J. Heinicke, later head of the Department of Pomology, completed a study suggested by Chandler

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on the abscission of flowers and the partially developed fruit of the apple.²¹⁵

In animal husbandry research, Professor Savage wished to supplement nutrition experiments based exclusively on feeding tests with investigations of the chemical processes occurring inside animals. He was aware of the important contributions to animal nutrition that investigators trained in chemistry were making in other institutions, and on his recommendation a chemical laboratory—the forerunner to the Laboratory of Animal Nutrition—was incorporated into the new animal husbandry building. In 1915 Leonard A. Maynard was appointed to work in this new laboratory.²¹⁶ Wing continued to concentrate on testing of dairy cattle and the development of the Cornell dairy herd. By 1908 this long-sustained research resulted in the birth of a Holstein calf named Glista Ernestine, who later established seven, seven-day production records for all breeds. During her lifetime Glista Ernestine produced 202,006 pounds of milk and 7,342 pounds of fat, a yearly average, calculated on the basis of allowing a mature equivalent for the first three years, of 14,878 pounds of milk and 541 pounds of fat.²¹⁷

Federal funds for the support of basic research under the Adams Act were assigned to the Departments of Plant Breeding and Soil Technology. In addition to research directed toward the development of high-yielding timothy, corn, and cereals adapted to growing conditions in New York State, studies were undertaken in the Department of Plant Breeding on variation, the laws of inheritance, mutations and their use in breeding, the correlation of plant characteristics, and, especially after R. A. Emerson became department head in 1914, theoretical genetics. In soil technology, three studies of considerable significance were pursued throughout the decade by Thomas L. Lyon and his associate, James A. Bizzell: the influence of soil moisture on the availability and utilization of plant nutrients in soils; the effect of plant growth on soils, especially that relating to the formation of nitrates; and conditions under which lime is removed from soils and changes which accompany its removal. For the latter study lysimeter tanks were constructed on Caldwell Field in 1909. Eventually numbering twenty-four, each tank was .0004 acre in surface area and contained about three and one-half tons of soil.²¹⁸

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The construction of lysimeters was a step toward the attainment of more rigorous experimental conditions than were possible using field plots subject to soil variability. Their use facilitated greater control over the elements present in experimental situations and also permitted more accurate measurement of results. The desire for more rigorous techniques also led a number of the college faculty to apply statistical methods in their research. Generally, however, agricultural scientists were slow to weigh the implications of statistical methods, although C. B. Davenport's pioneering book, *Statistical Methods with Special Reference to Biological Variation*, had been published in 1899 and, as republished in 1904, included reference to the techniques elaborated by Karl Pearson and his associates. It was not at all unusual for agricultural researchers to attribute to experimental manipulation results which could be equally well explained by normal variation in the subject under investigation. By calling the attention of agricultural scientists to the concept of probable error, members of the Faculty of Agriculture made a substantial contribution to the adoption of more reliable research techniques.

The work of Harry H. Love, who received his Ph.D. at Cornell in 1909 for a study of variation in plants, was of special significance in this connection, for he not only used statistics as a tool in his plant breeding research but also made a number of contributions toward the refinement of statistics as applied to agricultural experimentation.²¹⁹ In 1922 Love presented a paper on the concept of probable error in agricultural experimentation at the annual meeting of the Land-Grant College Association. The presentation was quite elementary, for Love assumed that a large part of his audience was unacquainted with the concept. After illustrating the inevitability of error in any series of experiments, he proceeded to show how results from a number of published experiments dealing with plant breeding, animal feeding, and fertilizer application were invalid because the number of items in the experiments or the number of replications were insufficient to demonstrate that the results were due to other than experimental error. His conclusion was not that every agricultural scientist should master statistics but rather that every agricultural experiment station should have on its staff a person trained in biometrics who could assist his colleagues in planning

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experiments and interpreting the results.²²⁰ In performing this function at Cornell, Love gave a course in biometry for graduate students as early as 1911. One of those taking this course was L. A. Maynard, who had been encouraged, while on the staff of the Rhode Island Experiment Station, to take advantage of the training in statistics offered at Cornell. Later, he and W. I. Myers, at that time a graduate student, prepared a bulletin on the application of statistics to the development of more sophisticated methodology in feeding experiments for milk production.²²¹

RESIDENT INSTRUCTION

The faculty reexamined some of the perennial problems involved in resident instruction but made few significant changes in policy. The instruction given in the first two years by the College of Arts and Sciences continued to receive criticism. Professor Warren, at a time when he was advising ninety-one undergraduate students, declared he was tired of trying to convince them of the value of what he called "tread mill work."²²² Much of the dissatisfaction centered around instruction in chemistry. In 1917 the faculty dropped one course in chemistry from the list of required courses. The following year the chairman of the Department of Chemistry was sympathetic to Miss Van Rensselaer when she noted that 50 per cent of the home economics students were failing organic chemistry. There was, in fact, little he could do when members of his department proved unwilling to adapt their teaching to the needs of that part of their class comprising upper campus students.²²³

The orientation of freshman was another area of contention. In 1912 "The Natural History of the Farm" was made a required course for freshmen by a vote of thirteen to twelve in the Faculty of Agriculture, a vote much too close to assure the stability of the decision. The value of residence as an element in education was also debated. Before 1914 able students could complete the requirements for graduation in seven terms; in 1914, however, the faculty decided after considerable discussion that residence was of sufficient educational value to justify requiring eight full terms. Two years later this policy was reversed when the faculty approved a formal system of graduated residence credit based on academic average.²²⁴

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The farm practice requirement remained a warmly contested issue. Professor Comstock thought the best solution lay in abolishing the requirement; others thought the requirement should be made a prerequisite for admission.²²⁵ The opposition to the requirement was so great in four departments that laboratory work was allowed in these cases as a substitute for farm practice, an exception which led Bailey to question the wisdom of any farm practice requirement at all.²²⁶ The requirement apparently was not popular with certain students who, Professor Stone insisted in 1914, were taking fifteen hours in home economics, entomology, forestry, or landscape art in order to escape its application.²²⁷ A considered examination of the requirement was complicated by the difficulty of separating its educational value from its value as a test for eliminating potential arts and science students enrolling in agriculture to escape tuition.²²⁸

Part of the opposition to the requirement was due to the difficulty the College experienced in placing students on farms where they would get an introduction to the dimensions of a farming operation. In 1911 Bailey appealed to New York farmers to aid the work of the College by taking students for summer apprenticeships. Farm practice, however, was not systematized until 1915, when Asa C. King was hired to supervise the placement of students on farms.²²⁹ He faced a difficult problem since nearly 40 per cent of the student body was then of urban origin, too unskilled to do more than hoe or pick up stones. All too often farmers were so occupied with haying and cultivating that they had no time to teach students the foundation skills of practical farming, with the result that students sometimes returned to college dissatisfied and frustrated after spending the summer at unskilled manual labor. To break this cycle, A. W. Gibson was hired in 1915 to instruct students in such basic skills as driving horses before they attempted to meet their farm practice requirement.²³⁰

The registration figures for the period 1910-1920 show that enrollment in the regular course increased steadily until 1914-15, when it leveled off.²³¹

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<i>Year</i>	<i>Four-year</i>	<i>Special</i>	<i>Winter</i>	<i>Graduate</i>	<i>Summer</i>
1910-11	597	169	477	80	128
1911-12	806	180	451	119	223
1912-13	1,105	158	597	111	333
1913-14	1,328	135	555	151	388
1914-15	1,544	124	549	168	445
1915-16	1,482	106	425	395	445
1916-17	1,485	86	282	*	382
1917-18	1,032	44	190	*	405
1918-19	871	43	83	100	493
1919-20	1,216	89	396	229	530
1920-21	1,142	75	326	215	530

By 1912 the College had the largest registration of any unit of the University, thereby bearing out a prediction Roberts had made many years before. The following year the College had by far the largest enrollment of regular and graduate students of any agricultural college in the nation, and the size of its teaching staff was substantially larger than that of Iowa State College, its nearest rival.²³² "It is looked up to as the foremost institution of its kind in the country," proudly asserted alumnus P. C. Stark of the nationally famous Stark Bros. Nursery.²³³

In 1917 resident instruction was disrupted by wartime conditions. Students enrolled in the Student Army Training Corps at Cornell were restricted to courses outside the College with the exception of biology and meteorology.²³⁴ When the postwar enrollment did not return to prewar levels, there was a tendency to attribute the decline to the high tuition charged out-of-state students.²³⁵ Study of the sources of enrollment, however, does not support this view. Between 1913 and 1921 nonresident students composed between 19 and 23 per cent of the undergraduate enrollment.²³⁶

The psychological effects of a declining enrollment must have been substantial and pervasive in a college accustomed over fifteen years to a rapid and continuous increase in resident students. The feeling of progress is a vital element in the efficient operation of an educational institution, and the increase in student numbers furnished an obvious and acceptable indicator of such progress. After the war

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it was necessary to find other measures of success. An immediate result of declining enrollment, however, was to give the faculty more time for research and extension, thereby accelerating a shift in emphasis initiated by the organization of the county agent system.

The conditions for admission to the four-year program received considerable study from the Faculty of Agriculture and the University Faculty. A basic issue throughout the decade was whether the ability to use a foreign language—as measured by the completion of courses at the secondary level or at Cornell—was a fundamental quality of the educated person. Prior to 1910 the language requirements for admission to agriculture were the same as those prevailing for arts and sciences. In that year the Faculty of Agriculture departed from this common standard by lowering the admissions requirement to three units of either French or German at the same time that requirements for admission to the course leading to the A.B. degree were increased to five units of language.²³⁷ An even greater departure occurred in 1914 when students admitted to the College of Agriculture were allowed as many as four entrance units in vocational agriculture.²³⁸

By 1919 the study of agriculture and home economics at the secondary level was sufficiently systematized to be recognized by a standard vocational diploma issued by the State Education Department. The Faculty of Agriculture then debated whether students presenting this diploma should be required to take the equivalent of three entrance units of foreign language at Cornell before receiving the B.S. degree. After coming to three different conclusions in as many months, the faculty decided in April, 1919, to accept the vocational diploma for admission with the provision that applicants not presenting three units of a foreign language must take at least eleven hours from among eight stated liberal arts subjects. This represented a triumph for the views of Dean Mann, who opposed a language requirement for graduation and favored more English and political science.²³⁹ The discussion of admission by vocational diploma was later reopened after the first fourteen students so admitted made a "rather bad showing." A two-year program for students interested in vocational agriculture was seen as a possible solution to this difficulty.²⁴⁰

Earlier in the decade the faculty had been closely divided on the

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desirability of admitting special students for vocational work. In 1911 the Committee on Educational Policy concluded a long report with a strong recommendation for the exclusion of special students "of the present grade" after 1914. Professor Warren dissented and at the next meeting of the faculty presented a long carefully considered minority report which pointed out that, in general, the specials did as well as the regular freshmen and sophomores. "I consider the most important duty of this college to be to prepare men for farming, and consider it our duty to give such preparation to students who wish to take less than four years' work if they are qualified for work of college grade." At the end of the meeting continued admission of special students was supported by a vote of nineteen to fourteen.²⁴¹ Thereafter requirements for their admission were made more exacting, both in terms of agricultural experience and academic preparation. Beginning in September, 1912, applicants had to offer two full years of recent farm experience and fifteen units of entrance credit or, if twenty-one years old, satisfy the Committee on Petitions of a real desire for special work.²⁴² During the decade the percentage of specials in the full-time undergraduate student body declined from 25 per cent in 1910 to 6 per cent in 1920.

Enrollment in the winter courses reached a high point in 1913 after an almost unbroken annual increase from the time these courses were established in 1892. Thereafter enrollment declined in spite of the proliferation of winter courses. The precipitous decline after 1915 was due to wartime conditions but after the war the demand for practical instruction was increasingly met by other institutions, especially the Extension Service and secondary schools. Winter courses offered in 1915-16 included work in general agriculture, dairy industry, poultry husbandry, fruitgrowing, home economics, vegetable gardening, and flower culture; several years later an additional course was offered in the production of wild game. Almost half of the winter course students enrolled in general agriculture.²⁴³ When enrollment hit a low point in 1918, Dean Mann, though ready to discontinue the courses, found there was substantial support in the state for their continuance. By 1920, when enrollment had again climbed to nearly four hundred, it appeared that a continuing demand existed. At that point the dean launched an extensive advertising

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campaign promoting the winter course work. The demand, however, was more apparent than real, and the advertising campaign failed even to maintain the enrollment of 1920.²⁴⁴

By imperceptible degrees the relations between students and faculty became more formal during the decade, a result of increasing student numbers and changing social values. Close association with adults no longer had the attraction for students it once possessed. Close association with students no longer seemed as vital a part of the teacher's duty. The college assemblies, already faltering while Bailey was dean as meeting places for students and faculty members, evolved under Galloway into purely social gatherings of students, with dancing the principal form of entertainment. In 1916 Mann hoped to revive the assemblies as an informal meeting place for students and faculty; at a meeting of the faculty in November, 1916, he stressed the importance of this institution in the life of the College.²⁴⁵ Nevertheless an attempt to revive the assemblies resulted in failure, for most of the faculty did not attend and the students indicated that if they could not meet their teachers they preferred not to attend or to entertain themselves while there by dancing. "We feel," wrote Professor Glenn Herrick on behalf of a special committee appointed to investigate the possibility of reviving the assemblies, "that the assemblies can be made to serve their former and original function if and only if the Faculty will do its part."²⁴⁶

In 1919 the first fall assembly featured Professors Bristow Adams and Cornelius Betten debating the question, "Are Professors People?" As would be expected, the hall was filled, and many students were turned away. The faculty, however, did not repeat this performance, which was as much a perversion of the assembly's original function as the student dancing it replaced.²⁴⁷ By 1920 the assemblies had again become entirely informal student gatherings. In a report on a recent assembly, Professor Rice implied why some members of the faculty did not attend these meetings, thereby contributing by their absence to the very conditions they found offensive. "While dancing was in progress in the Home Economics Assembly Room and Hallway," he noted, "four students lighted cigarettes in the presence of others. Cheek to cheek dancing was conspicuously in evidence during the evening."²⁴⁸ Mann was less concerned about the moral aspects of

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dancing than with the students' preoccupation with dancing as their only form of sociability and the adults' apparent lack of interest in student affairs. In 1920 Mann appointed a committee to look into the social activities of students but in doing so he carefully avoided infringing on the field of the Women's Self Government Association and other student organizations.²⁴⁹ By this time supervision of such student activities on the agriculture campus had been largely abandoned by the adults, as students vigorously insisted that they could manage their own affairs.

In athletics the students seemed to manage successfully. In 1916 the Agricultural College basketball team won all its six games and even succeeded in holding the varsity to a two-point lead. A college crew was then in training.²⁵⁰ Trophies were displayed in a special room set aside for students by Dean Bailey (and smoking was outlawed there by student vote after Bailey declared, "I see no reason why a young man with a clear conscience and good digestion should need to calm his nerves by building a fire in his mouth.").²⁵¹ In the interest of athletics, agricultural students raised \$740 by 1915 for the purchase of a college gig and medals to be awarded athletes.²⁵²

The mechanism for the maintenance of academic integrity followed a course rather parallel to that of the college assemblies. Bailey had been instrumental in instituting the honor system in 1907 and thought it worked well at the beginning when "everything was new and enthusiasm ran high," but by 1911 he saw that it was practically defunct as an effective force in the College.²⁵³ In 1913 the honor system was reorganized on a basis which eliminated faculty participation in its organization and administration.²⁵⁴ This reorganized system also proved unable to cope with dishonor; in 1917, when the honor system had been in effect ten years, not a single case had been reported to the honor committee by a student. A vote on the continuance of the honor system in 1918 showed a significant difference of opinion between faculty and students, with the faculty much less confident that it could be effective in the future.²⁵⁵

Financial aid available for undergraduates was thoroughly inadequate for the size of the student body. In 1913 Professor Tuck promoted the philosophy of self-help by urging students to contribute to a student loan fund; under his direction \$500 was added

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to the small loan fund already existing.²⁵⁶ After 1913 the single fellowship formerly shared with the Veterinary College was awarded each year within the College of Agriculture. The industrial fellowship remained the principal source of financial aid for graduate students; by 1920 over fifty of these fellowships had been granted.²⁵⁷

"The Eastman Stage is now coming to be one of the most prized events in the University year," declared Bailey in 1913; Sibley Dome, at that time the largest auditorium in the University, "was full of visitors, University students, agricultural students, and others."²⁵⁸ The event, which featured formal speeches by students, was first held during Farmers Week, 1908, under the name "Agricultural Stage"; in 1910 it was named in honor of A. R. Eastman, a farmers institute lecturer and a state trustee of the University, who gave annual prizes to encourage students to learn to speak before large audiences. The Eastman Stage was emphasized by Bailey, who was thoroughly in sympathy with the purposes of its founder. Each year he secured a prominent person, often former President White, to preside over the event.²⁵⁹

The annual banquet was another major event of the college year. In 1912 the banquet was held in the University Armory. Fully six hundred guests heard a battery of speakers which included "Uncle" Henry Wallace and "numerous popular airs" played by a professional orchestra. At the banquet in 1920 Dean Mann revealed a bit of college tradition connected with Roberts' stovepipe hat which theretofore had been unknown to the students. It seems that this hat had been given to Roberts so that he might be properly attired for formal affairs. Roberts had considered it an emblem of office and had passed it on to Bailey with due solemnity in 1903. Thereafter each dean, in turn, came into possession of Roberts' hat.²⁶⁰

The alumni organization was put on a sounder basis by the end of the decade. In February, 1917, its name was changed from Students Association to Alumni Association of the New York State College of Agriculture. By October, 1918, it had some five hundred members of which 150 were active.²⁶¹ The *Cornell Countryman*, placed on a straight business basis by Galloway, was slanted toward alumni; in 1920, \$1.50 purchased an annual subscription and paid the annual dues of the Alumni Association. The association was used to bolster

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the student enrollment, each alumnus being encouraged "to interview at least one *farm boy* in regard to attending the regular or short course in agriculture the coming season."²⁶²

RELATIONS WITH OTHER COLLEGES

Events at other educational institutions had an intense effect on the development of the College during the decade. Competition with other institutions for graduate students and the services of faculty members was much keener than in the previous decade, when Cornell had both a recognized lead in many areas of agricultural education and the blessings of rapidly increasing state appropriations. In 1911 Bailey tried to dissuade the trustees from charging tuition to graduate students majoring in agricultural subjects. The reputation of the College depended on these students, whom, he feared, would be attracted elsewhere by free tuition.²⁶³ Although tuition was not charged graduate students at that time, the decline in their numbers after the war was almost certainly related to the excellence of graduate instruction available in other institutions.

Each time a college of agriculture was reorganized on an expanded basis it disturbed the equilibrium of other colleges having strong faculties. In 1912 a former Cornell professor, Thomas F. Hunt, became dean of the College of Agriculture at the University of California and soon thereafter came to Cornell to offer professorships to George F. Warren and C. S. Wilson at salaries "much in excess" of what they were receiving at Cornell.²⁶⁴ Several months later, Webber left for California to become director of the Citrus Experiment Station, where he received a salary and had the use of facilities superior to what Cornell could afford.²⁶⁵ Soon after arriving in California, he asked Whetzel to take charge of pathological investigations there at a substantial increase in salary. In order to retain Whetzel, Bailey had to increase his department budget from \$15,000 in 1912-13 to \$20,000 the following year, thereby affecting the budgets of other departments.²⁶⁶ Offers from other institutions not only led to individual increases but resulted in higher salary levels at Cornell. In 1912 Stocking was offered \$4,500 at the University of Illinois, with a possibility of increase to \$5,000, at a time when he was receiving \$3,500 at Cornell. Schurman and Bailey were anxious to retain him

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but recognized that increasing his salary would mean increasing the salaries of other men.²⁶⁷ Like Professors Warren and Wilson, Stocking decided to remain at Cornell but not because of an increased salary. Competition for staff members was so keen at the time that three men were promoted to assistant professor while still graduate students in order to hold them.²⁶⁸

"During the last five years," Mann noted in 1919, "the State College of Agriculture has lost about 150 teachers from its staff. Records of 110, for whom data are available show that these persons left at an *average* increase of \$882 per annum."²⁶⁹ The impact of this loss extended beyond the work that was disrupted to affect the morale of the staff that remained. Salary is a measure of the worth society places on the efforts of a man; as the decade progressed it became increasingly difficult for the staff to find satisfaction in work the public was so reluctant to recognize by compensation equivalent to that provided in many other states.

Of all educational institutions, Syracuse University probably had the most significant effect on the College of Agriculture. In 1912 a division of agriculture, later named the Joseph Slocum College of Agriculture, was established at Syracuse University. Those responsible for the development of this institution faced two major challenges: establishing an effective program in resident instruction and extension, fields already covered by the College of Agriculture at Cornell, and securing adequate public support, for, like their counterparts at Cornell, Syracuse authorities early experienced the difficulty of maintaining a college of agriculture on an endowed basis. A situation was thus established which made conflict with those responsible for the administration of the State College of Agriculture practically inevitable. It was in the context of this conflict that Dean Mann learned of a plan to establish a state college of home economics at Syracuse. Immediately he moved to have the status of the Department of Home Economics at Cornell elevated to that of a state college.²⁷⁰

Even the athletic relations between Syracuse and Cornell affected the College of Agriculture. In March, 1919, Cornell Trustee Frank Hiscock learned from the chairman of the Assembly Ways and Means Committee that "notice has been given Cornell that its

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prospects for appropriations by the legislature will be somewhat endangered if it does not resume athletic relations with Syracuse."²⁷¹ A few days later Mann had a long talk with Chairman H. E. Machold, who assured him that the adjustment of athletic relations with Syracuse had its bearing on the College's appropriations. "I feel confident," Mann stated after the interview with Machold, "that it has cost us this year the appropriation for our plant industry building. The matter has therefore become very serious and I believe that we should give it our most earnest attention."²⁷²

The attractive or cooperative forces between educational institutions, however, were apparently stronger than the competitive forces. The Association of American Agricultural Colleges and Experiment Stations, reorganized in 1920 as the Association of Land-Grant Colleges, continued to develop as a useful medium for the discussion of common problems and as a pressure group for appealing to Congress and dealing with the federal Department of Agriculture. Perhaps of most importance, the organization provided a vehicle for the wider application of leadership. Cornell and other institutions benefited from the ideas and energy of Dean Davenport of Illinois; Illinois and other institutions benefited from the leadership of Dean Bailey and Dean Mann. In 1919 Mann was elected to the executive committee of the association at the suggestion of Director Jordan of Geneva, the chairman of the nominating committee.²⁷³ The association also served as a nucleus for the organization of college administrative officers along professional lines; the Association of Agricultural College Editors was formed in 1911, and the Association of University and College Business Officers was organized by 1921.²⁷⁴ Other forms of cooperation included exchanging professors and inviting scientists from other institutions to spend two or three days at the College discussing research problems. In 1918 the third faculty exchange was made with the University of California, the first having been with the University of Wisconsin.²⁷⁵

RELATIONS WITH THE STATE

At the beginning of the decade 1911-1920, the ten-year plan served as a check on special legislation requiring appropriations for the physical plant.²⁷⁶ It did not, however, serve to check special legis-

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lation not involving major appropriations. In 1911 Bailey was surprised when \$1,000 was appropriated for the investigation of diseases in gladioli. The following year the item was increased to \$2,000 and placed in the regular supply bill without his knowledge.²⁷⁷ In 1917 a bill was introduced at the request of the American Game Protective and Propagation Association establishing a game-breeding experiment station at Cornell. Since this bill would force the College into an area of activity it had not planned to enter, Mann sought the opinion of the University Committee on General Administration, which supported his view that the University should take no action on bills making appropriations for the College of Agriculture which it did not originate. The bill, however, passed the legislature without support from the University; in 1917, \$15,000 was appropriated to start research in game breeding at Cornell.²⁷⁸

In 1919 a similar game-breeding experiment station was established at the New York State College of Forestry; and in 1920 the state appropriated \$15,000 to support work at this station, this at a time when the legislature was sufficiently concerned about duplication of effort by state agencies to pass a concurrent resolution calling for a conference of representatives from the State College of Agriculture, the State College of Forestry, the State Conservation Commission, the state botanist, and the state geologist for the purpose of delimiting the functions of these institutions.²⁷⁹ As might have been anticipated, the conference did not get beyond the point of discussing the separation of educational and regulatory functions, for none of those in attendance was willing to give up any ground.²⁸⁰

The College maintained good working relations with the two state agencies having the greatest impact on its work—the State Education Department and the State Department of Agriculture. The occasional departures from these good relationships, which occurred in the operating divisions of these institutions, were resolved without becoming causes for conflict at the top level of administration.²⁸¹ In the case of the Department of Agriculture, a good relationship was facilitated by the commissioner's familiarity with the work of the College. During most of the decade two former professors occupied the position, R. A. Pearson until 1912 and C. S. Wilson from 1915 to 1920. Wilson secured the position with the blessing of Dean Galloway and there-

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after worked closely with Galloway in preparing changes in the agricultural law which, in 1917, placed the work of the Department of Agriculture in a newly instituted Department of Farms and Markets.²⁸² The sound relationship with the State Education Department was laid in Bailey's efforts to cooperate with the department in improving the work in the rural schools and in placing the program for secondary agriculture on a sound basis. This cooperative relationship continued at the top administrative level. In 1919 the commissioner of education, John H. Finley, sent Mann a memorandum, prepared by one of his subordinate officers, opposing the bill to establish a college of home economics at Cornell on the ground that its activities might possibly conflict with the work of the State Education Department. To the memorandum Finley attached the comment, "Our relations have been so cordial and above-board that I think I may frankly send you this memorandum and ask your advice."²⁸³

A principal goal of college administrators after 1915 was to secure relief from the rigidity of the line-item budget which established maximum salaries for all positions in the institution. Early in 1916 Galloway joined with Director Moore of the Veterinary College and Director Jordan of Geneva in a protest to Governor Charles S. Whitman concerning the form of the budget. The conditions anticipated in the protest quickly followed. Galloway's budget was cut arbitrarily by men in Albany who decided even such minor matters as how many janitors were needed at the College and how much they should be paid.²⁸⁴ In 1919 Mann devoted three pages of his report to President Schurman to the evils of the fixed-item budget. After listing examples of how the state's attempt at efficiency resulted in waste at the College, he indicated the long-run consequences of this administrative technique:

Economy is the claim. It is not economical. It will in time make the State the most inefficient employer of labor. The competent persons will be drawn off and the less competent left behind. This is now taking place . . . In this institution we have gathered our present staff from men who have been trained in from forty to fifty institutions through-out the country—wherever we could get the best for the money and opportunity available. Such men are not easily engaged nor easily replaced. Woe betide these institutions if they are gradually to become manned by the kind of per-

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sons that other institutions do not want—the kind who are not picked out and therefore will stand without hitching beside a segregated appropriation act.²⁸⁵

By the time this report appeared in print Mann had achieved, in large degree, the relief he desired because of the confidence in his administration of Senator H. M. Sage, chairman of the Senate Finance Committee, and H. E. Machold, chairman of the Assembly Ways and Means Committee. By January, 1919, Mann had achieved a personal understanding with Sage which enabled him to hold certain key faculty members against higher offers from other institutions. At Mann's request, Senator Sage introduced a bill, later passed and signed by Governor Alfred E. Smith, which released educational and research institutions from the provisions of the appropriation act prohibiting administrators from filling vacancies at increased salaries.²⁸⁶

Mann also developed good working relationships with the Governor and with the Governor's secretary—a key official in state administration who was frequently a confidant of the Governor. In Governors Whitman and Smith, Mann faced a major challenge, for the experience of these men in business and politics in New York City and Albany was quite outside the field of agriculture.²⁸⁷ To establish a basis for communicating the needs of the College, Mann had, in effect, to fill a gap in their education. He also had to educate William Orr, secretary to Governor Whitman, who in 1916 thought that the College was largely patronizing Jewish students, that it was not the function of the College to train teachers of secondary agriculture, that salaries at the College were "liberal," that college income funds should revert to the state treasury, and that appropriations for the Drill Hall (Barton Hall) and the College of Agriculture should be considered together since "both fundamentally are Cornell University." Orr was anything but cordial to Mann at first but became more so as his contact with the Dean increased.²⁸⁸

The relationship to the state comptroller—an official elected independently of the Governor—was not satisfactory. All requests for out-of-state travel by faculty members had to be approved by this official. In spite of appeals from Mann stressing the importance of such travel, the comptroller's usual practice was rejection. In addition he strongly

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opposed the independence the College enjoyed in the administration of its income funds.²⁸⁹

The increase in the state appropriation for operation and maintenance from \$212,000 in 1910-11 to \$1,330,000 in 1920-21 provides one measure of the development of the College during the decade. This measurement is somewhat misleading, for the latter appropriation, while six times as large as that in 1910, would by no means purchase six times the goods and services. The increase from 1919 to 1920 of \$378,000—the largest increase to that date in the history of the College—allowed the establishment of only several new positions, almost the entire amount being used to raise salaries until they were comparable to those of other major agricultural colleges.²⁹⁰ It was necessary to increase the research budget each year, even if no new lines of investigation were projected, since the increasing complexity of research techniques required more expensive equipment.

The increase in appropriations was by no means constant. During the four years between 1913 and 1917 appropriations remained at practically the same level except for 1914, when they were substantially reduced. S. J. Lowell, Master of the State Grange, thought the College had brought on this condition by requesting in previous years amounts in excess of what might have been sufficient, "a fact," he said, "which is well known to quite a large number of people through the state."²⁹¹ Whatever the explanation, static or reduced appropriations for colleges of agriculture were not peculiar to New York State. "It was expected that there would be a reaction against the granting of large appropriations to the colleges of agriculture," wrote Mann, "but the reaction has been so great that it is throttling the usefulness of some of the institutions."²⁹² Letters from other agricultural colleges reported losses of outstanding men through inability to increase salaries.²⁹³

RELATIONS WITH CORNELL UNIVERSITY

The period of conflict between college personnel and university authorities that reached a climax under Galloway quickly passed away; in November, 1916, Mann noted a "real desire to reestablish good relations with the College so as to clear away the difficulties of last year."²⁹⁴ The College received considerable benefit during the

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latter half of the decade from the work of university trustees who had political contacts in Albany, especially that of former Governor Horace White in the Whitman administration and former Governor John A. Dix in the Smith administration.²⁹⁵ To White's conference with Governor Whitman, Mann attributed the sudden transformation of Mr. Orr, who thereafter was most cordial in his treatment of the Dean. "Never before in my opinion," declared Schurman, "has our board had such an efficient Chairman of its Committee on Legislative Appropriations."²⁹⁶ During the Smith administration the presence on the Board of Trustees of the prominent Democrat, Charles E. Treman, was a help to Mann in acquainting the Governor with the needs of the College.²⁹⁷

Association with the University continued to serve as an incentive to high-quality work in the College. Both Bailey and Mann were sensitive to criticism coming from elsewhere in the University and worked to maintain educational standards which would be above reproach.²⁹⁸ While much of this criticism undoubtedly was based on prejudice or ignorance of what the College was accomplishing, it nevertheless served the healthy purpose of forcing the members of the faculty to examine and defend the work which they were doing.

Association with the University also permitted the College—with university approval—to use its income funds without authorization by state officials, a privilege allowed no other state institution except the Veterinary College.²⁹⁹ This was a matter of great importance, since income funds at that time represented as much as 40 per cent of the annual income of the College and could be increased during periods of retrenchment at Albany to give some relief in the operation of the College. Under a ruling of the state comptroller, however, the income funds could not be used to augment salaries paid from state funds. It was in this connection that the \$5,700 annual appropriation from the University, required by the legislation establishing the College of Agriculture as a state institution, assumed some importance. In 1920 Mann was able to grant a petition from janitors requesting a wage increase by mortgaging this university appropriation.³⁰⁰

On occasion, university authorities served as a check on what proved to be unwise proposals. A case in point was Bailey's request to purchase a farm for the demonstration of farm management princi-

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ples. Such a farm, declared Bailey in 1911, would return to the University its regular rate of interest while demonstrating good farm techniques in the hilly part of the state. Fifteen years later, when the Cornell work in farm management had acquired an international reputation, Warren saw the 1911 recommendation in different light: "Departments of Farm Management put their money into employees. I once proposed that the Department of Farm Management have a farm. Had this mistaken recommendation been approved we would doubtless be putting money into the operation of a farm rather than into people."³⁰¹

The University acted in other ways which restricted the development of the College. It was the practice of the trustees to bring the college budget into accord with what they thought could be secured from the legislature, but this, while galling to the departments, was a necessary act of responsible administration.³⁰² The Drill Hall (Barton Hall), which cost the state \$350,000 by 1917, was a somewhat different matter. Unquestionably, it was more than coincidence that the four years when the College secured no more than a token increase in appropriations coincided with the construction of this building.³⁰³ There were excellent reasons why the state should support the University in carrying out the provision of the Morrill Act requiring military training at institutions receiving the land grant. At the time, however, Professor Rice's protest that the trustees would never have dared to push the Drill Hall had Bailey been director, probably reflected the thinking of many of his colleagues.³⁰⁴ The trustees' decision to risk reduced appropriations for the College of Agriculture in order to obtain the Drill Hall reopened the question of how well the trustees understood the needs of the College. Like the Governors, they tended to be men without acquaintance with agriculture. To Burritt, the need was apparent to "have some real, genuine farmers and more of them, on the Board of Trustees and the Agricultural Council."^{*}

*Burritt to Mann, Oct. 16, 20, 1919, Mann Papers. The interests of agriculture were, of course, already represented on the Board of Trustees by the commissioner of agriculture and the president of the New York State Agricultural Society. In addition the Governor appointed T. B. Wilson, who was an active farmer and member of the Agricultural College Council.

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The maintenance of the physical plant, an aspect of college administration which had occupied so much of Bailey's time, was taken over in 1914 by the University.³⁰⁵ This change offered the possibility of greater efficiency through centralized control over the maintenance of the existing plant and the planning of new facilities. The price of increased efficiency, however, was a narrower concept of the educational function of the College. Conditions affecting the working environment of faculty and students became someone else's responsibility.

The legal relation of the College to the University was examined in two opinions by the state attorney general and in two court cases during the decade. In a 1915 opinion involving the use of income funds, the attorney general ruled that "absolute control" of the affairs of the College was vested in Cornell University, an opinion which was reaffirmed in 1920. The court cases, *Hamburger v. Cornell University* and *Green v. State of New York*, held, in accord with the attorney general's opinion, that the University and not the state was legally responsible for the acts of the employees of the College of Agriculture.³⁰⁶

Agricultural education at Cornell continued to be affected, but to a diminishing degree, by the presumption of some faculty members and students in the College of Arts and Sciences that their area of education was inherently superior to that represented by the College of Agriculture. This presumption was based on a complex of assumptions and traditions including recall of the not-distant time when the liberal arts held the center of the educational stage without serious contest, the belief that the values associated with the study of liberal arts were superior to the materialism associated with professional education, and the conviction that the educational standards of the liberal arts somehow approached educational fundamentalism. The colleges of engineering at Cornell, while also under the onus of professionalism, were not burdened with the weight of the fantastic and ludicrous image of the farmer which was widely held. To become an engineer was to enter a profession embodying high prestige. Agriculture, as understood by a large element in the public and also by some members of the University Faculty, meant farming, and farming was thought to be an undesirable occupation. This sadly uninformed view must have colored their relationship to the students

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and faculty in agriculture. Students in the College were frequently not welcomed in the student activities of the University.³⁰⁷ The continuation of this discrimination, based in many instances on incorrect information, was encouraged by the tendency to use men uninformed about agriculture in key positions affecting the administration of Cornell and other universities. In 1915, for example, the Carnegie Institution of Washington elected four trustees. Andrew D. White proposed L. H. Bailey, who received only three votes. In spite of his national reputation in agricultural education he was, according to President White, "evidently unknown to our board."³⁰⁸

The two state colleges at Cornell operated during the decade without any mechanism for coordinating their activities. What coordination existed occurred at the personal level. Deans Moore and Mann were excellent cooperators, frequently consulting each other on matters of mutual interest. Dean Mann was careful, when supporting appropriations in the legislature, not to contravene the interests of the Veterinary College.³⁰⁹ In 1920 Dean Moore promised, at Mann's request, to continue a course for animal husbandry students even after Professor Wing withdrew a course he had been giving for veterinary students.³¹⁰ Only at the end of the decade was the first step taken toward creating a coordinating mechanism when the dean of the College of Agriculture was made a member of the Veterinary College Council, and vice versa.³¹¹

RELATIONS WITH AGRICULTURAL ORGANIZATIONS

Relationships with agricultural organizations were characterized by a desire of college personnel to advance the work of these organizations and to receive their support, both directly and in terms of assistance in securing appropriations in the legislature, without permitting a situation to develop where these organizations controlled the educational activities of the College. As early as 1909 the American Peony Society and the New York State Ginseng Growers were providing financial support for research. In 1913 an assistant professor of plant pathology was appointed on a basis that most of his salary would be provided by nurserymen.³¹² The major source of direct support from private associations during the decade, however, came in the form of industrial fellowships. By 1920 there was some feeling

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that the acceptance of so many fellowships was affecting the institution's independence of operation, but a committee appointed by Dean Mann to investigate this possibility concluded that the agreements under which fellowships were established adequately protected the independence of the College.³¹³

One of the difficult challenges to college administration was to maintain an intermediate position between the staff of the College and interest groups in the state desiring the services of the staff. It was necessary to check the tendency of individual staff members and departments to appeal directly to interest groups to secure special legislation supporting their work. Such a relation between the college staff and interest groups in the state was a natural and healthy outcome of a strong extension program but which, in bypassing the coordinating function of administration, tended to reduce the overall efficiency of the College. The same result ensued when interest groups on their own initiative secured special legislation supporting college activities of benefit to them. The difficulty experienced in coordinating the activities of the College was part of the dilemma facing college administrators who considered order the essence of educational efficiency but who, as public officials, could not turn aside demands placed upon their institution by the public.

Soon after becoming dean, Mann started a personal correspondence with the executive officers of forty-five agricultural organizations in the state in order to acquaint them with the work and development of the College. This correspondence he thought should be maintained "whether or not these organizations are ever needed in support of our appropriations."³¹⁴ This action established no new policy; it simply put on a more organized basis a procedure followed by Roberts and Bailey. Three years later, however, the College called on these organizations for support of its appropriations.

The occasion was the formulation of a plan for expansion similar to that conceived in 1910. As had been the case at that time, the College's facilities were badly overcrowded, especially in the departments related to plant science. A procedure was established calling for a series of planning conferences at the department level during November, 1919, to be followed by the development of a semipermanent organization to coordinate and implement the recommendations of these

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departmental conferences. With Dean Mann hospitalized during most of November and December, leadership in organizing these conferences was performed most successfully by Professor Elmer S. Savage.

Preliminary conferences in October arranged for this series of meetings and provided for the coordination of publicity through the agricultural and rural press, the county agents, farm bureau officials, and officers of other agricultural organizations.* Groups of prominent farmers were invited to examine the work of each department and to make recommendations for improvement. Each group was asked to elect its own chairman and secretary so that the meetings in each department were "theoretically under the control of the visitors."³¹⁵ When these groups arrived at the College, they found statements of how the work of each department compared with that at other major agricultural colleges and, where building plans were involved, what facilities were available in other institutions.³¹⁶ The outcome of these carefully planned conferences was that the visitors made the recommendations which the college staff desired. This result was a tribute to the skilled use of public relations techniques which focused the visitors' attention on the needs of the College. It was not technique alone, however, which secured this result, for its application required a background of good work to justify additional facilities.

On December 5, 1919, delegates from each department conference formed the Permanent Conference for the Promotion of Agriculture and Home Economics at the New York State College of Agriculture at Cornell University. Recommendations were made for the construction of a plant industry building, a rural engineering building, and a dairy industry building in that order; a higher salary scale was recommended for the College; new positions of vice-dean and vice-director of research were recommended; further expansion of the work of the College was favored; and the placement of these recommendations before the Agricultural Conference Board was discussed. The major problem of securing money for immediate publicity was

*Conference folders, box 8, 9, Mann Papers. An unanticipated outcome of this preliminary work was the indication that the agricultural press and the Grange officers were not up to date in their contacts with farmers. Burritt called many of the names on the list of prominent farmers they submitted "dead wood" (Burritt to Mann, Oct. 21, 1919, Mann Papers).

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solved by the decision to borrow funds from the State Farm Bureau Federation until contributions could also be secured from other farm organizations.³¹⁷

William A. Mather, a farmer of Adams, New York, and Edward R. Eastman, editor of the *Dairymen's League News*, were the most active in presenting the conclusions of the permanent committee to the legislature and the public. Their work was greatly aided by support from Senator Sage and Mr. Machold. Both these men visited the College in the spring of 1920. Sage was sufficiently impressed by his inspection to declare that the state had neglected the requirements of the College long enough. Anticipating his retirement from the Senate, he promised Mann after his visit that he would try to write the initial building appropriation so as to commit future sessions of the legislature to the entire building program.³¹⁸ The formula adopted by Sage was to authorize three million dollars, with an immediate appropriation to commence work on "a plan to be approved by the trustees of said Cornell University." After this formula was signed into law by Governor Smith on April 12, 1920, Mather indicated the key role played by Machold. "He has constantly followed it up with Senator Sage and Governor Smith," Mather noted. "Had his attitude been passive rather than aggressive we would have had an uphill fight."³¹⁹

An incident in the work of the committee, quite unimportant in itself, pointed up the difficulty of securing the support of farm organizations while maintaining the independence necessary for an effective educational institution. The broader scope adopted by the committee in January, 1920, under the title Farmers' Joint Committee for the Promotion of Education in Agriculture and Home Economics, State of New York, brought the Geneva station within its purview. However, there was some reluctance about giving wholehearted support to the appropriations for Geneva. "Just between you and me," Eastman wrote to Mann, "some of us here feel that Dr. Jordan is somewhat out of touch with things, and did not render the service that he might have when he had the opportunity to place the milk situation properly before the New York public. Therefore we are not keenly enthusiastic about helping him out."³²⁰ It was probably inevitable that farm organizations would tend to put support for appropriations

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on a *quid pro quo* basis. To a degree this was desirable, for it kept the work of the College closely related to the needs of New York agriculture. At the same time it posed a threat to the substantial part of the College's activities having no immediate relation to agriculture. As the support of agricultural interests expressed through the medium of the Agricultural Conference Board became a routine part of securing appropriations for the College, the officers of agricultural organizations acquired a position from which they could affect the content of the educational program. That this has not resulted in serious restrictions on the freedom of college personnel to determine educational activities has been due, largely, to the wisdom and forbearance of the members of the Agricultural Conference Board.

SEMI-CENTENNIAL REVIEW

Earlier in 1919, in connection with the observation of the semi-centennial of the University, the activities and educational objectives of the College were given the most searching examination that they had yet received. In the latter connection, well-known alumni in the field of education, such as A. Ross Hill and J. E. Russell, along with prominent farmers in the state, made the research, extension, and resident instruction of the College the subject of a critical review.* Their report dealt with the balance desirable among professional instruction, basic course work, and liberal education; the importance of the faculty's possessing adequate teaching skills; the consequences of department competition; the consequences of the departmental courtesy whereby teachers in one department avoided measuring their work against that of men in other departments; the desirable balance among extension, research, and resident instruction; and the quality of the work of specific departments. The reports, largely based on questionnaires to alumni, revealed a wide disparity of opinion on what the objectives of the College should be and how particular objectives should be accomplished. There was, however, a large area of agreement that the College was generally doing good work, that most of

*A. Ross Hill was President of the University of Missouri, and J. E. Russell was professor of education at Teachers College, Columbia University.

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the basic courses given in the College of Arts and Sciences were not useful to students in the College of Agriculture, and that the Departments of Farm Crops and Rural Economy were producing work inferior to that of the widely approved Department of Farm Management.³²¹

INTERNAL ADMINISTRATION

The end of the war was marked by a certain nostalgia among the staff—a desire to return to a better day before membership became so large and relationships so impersonal. At the end of May, 1919, the staff held a party. Everyone was expected to attend. Provision was made for entertaining and feeding the youngsters and cots were even provided for the babies. Good natured memoranda passed back and forth among committees, all of which were trying to get ahead of the energetic “Jimmie” Rice. “It is my hope,” wrote Dean Mann in a letter to the staff, “that through this evening together we shall come to know each other better and promote acquaintanceship such as existed in the old days when our Staff numbered considerably less than three hundred.”³²² The relationships Mann idealized could not be recovered. Moreover, pressures generated in the business community that impinged on the College tended to make relationships even more impersonal. By 1920 the efficiency techniques of Frederick W. Taylor had invaded the University and Mann was caught up in a resolution of the full Board of Trustees providing that the deans of each college make an annual evaluation of members of their faculty regarding teaching capacity, productivity, and personality, for transmission to the President and as a basis for promotion.³²³

The organization adopted by the faculty for the conduct of its business varied with the relation of that body to the dean, but by 1920 it had settled into the form which presently prevails. When Bailey was dean, he appointed the members of the faculty committees and kept in close touch with their deliberations. After Galloway's first year this practice was reversed, the faculty then electing all its committees and making clear that the dean had no responsibility for matters relating to educational policies or practices.³²⁴ In 1917 the faculty considered returning to the former practice but left the matter in abeyance by asking Dean Mann to make appointments for that

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year only. The following year the faculty adopted a system which took the best from each previous method. By electing a committee to nominate members of standing committees, the principle of faculty election was combined with an efficient electoral mechanism; by making the dean chairman of the nominating committee, a link was preserved between administration and the continuing business of the faculty.³²⁵

In 1920 the faculty was still a relatively young group. About half the heads of departments had been appointed during the decade and most of these were in their thirties. Nevertheless, many members of the faculty remembered Professor Roberts, and these memories served as a link with the past. An additional link was established by naming buildings after faculty members who had made important contributions to the College. In 1914 the main building was named after Roberts and the auditorium after Bailey; in 1915 the new agronomy building was named in honor of Caldwell, and in 1919 the old agronomy building after Stone.³²⁶ At the end of the decade the College had only three emeritus professors, Roberts who retired in 1903, Comstock who retired in 1914, and Stone who retired in 1919.*

The centrifugal tendencies of departments continued during the decade. There was considerable resistance to concentrating a larger element of planning and control in the office of the dean and director, especially among the department heads who had been most active in opposing Galloway. Professor Needham, for example, complained bitterly about the red tape and "fiscal domination" emanating from the dean's office and thought he was quite justified in breaking administrative regulations in order to advance the interests of his department. Professor George Works condemned the "steady trend toward the elimination of departmental influence" and insisted that his was by no means an isolated opinion. One indication of the increased authority residing in the dean is afforded by correspondence concerning the issuance of publications under the name of the department instead of the name of the College. In 1914, while acting director, Stocking asked the department heads not to send out

*When Bailey resigned from the University he severed all connections. It was not until 1921 that he accepted the title of emeritus professor (*Trustee Proc.*, June 21, 1921, pp. 240-242).

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departmental notices about Farmers Week as they had planned, "since this might give the impression that the College was being administered by individual departments rather than as one institution."³²⁷ In 1920 the situation was reversed when a department head sought the dean's permission to issue the rural school leaflet under the name of the department.³²⁸

Interdepartmental coordination lagged behind the coordination between departments and the central administration of the College. The Department of Plant Breeding, for example, discounted a breed of corn while the Department of Farm Corps urged its introduction.³²⁹ Another consequence of inadequate coordination was a rising salary level for the clerical staff brought about by departmental competition for services.³³⁰ A more serious problem was the duplication of instruction among the departments. In 1920 the faculty expressed its concern and agreed that arrangements "should" be made to avoid duplication and specifically that departments working in the area of applied science should not give courses in pure science unless departments dealing in pure science refused to do so.³³¹ However, since each department determined what it would teach, no immediate steps were possible beyond discussion. A most hopeful note was struck in 1919 when Professor Needham, perhaps the extreme exponent of departmental freedom on the faculty, proposed with Professor Whetzel to create a new cooperative position, supervisor of field assistants in plant pathology and entomology.³³²

The faculty was so thoroughly committed to the idea of departmental independence that steps at variance with the concept were usually taken only under pressure from outside its membership. The caution with which the possibility of greater uniformity in departmental administration was examined is indicated by the events following a resolution passed at a meeting of the faculty in June, 1917. This resolution asked the dean to appoint a nine-member committee to study the question of the theory and practice of the organization and management of departments in this and other institutions. In complying with the resolution Dean Mann anticipated an argument of those opposing the committee by assuring the faculty that it "is not an administrative adjunct for the purpose of bringing departments and men into line."³³³ Although the committee dealt with what its

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chairman called "the most momentous questions now before the College of Agriculture," it met resistance when it started to examine the methods of department organization, budget making, and other aspects of departmental operation. By the end of 1918 the committee was practically defunct due to resignation of key members. Such a committee, said Professor Whetzel, is not "necessary or warranted."³³⁴

In actuality, theory had much less relation to the operation of departments than the personality of the department head. Methods of administration varied widely, ranging from a laissez-faire relationship between department head and faculty in farm management through a cooperative relationship in plant breeding to the somewhat paternal relationship in plant pathology. It was the method of administration as much as other factors that led to the crisis in plant pathology in 1918, which was resolved only by transferring a member of the department to the Department of Botany.* Other forms of administration were, of course, open to different objections. A likely consequence of a laissez-faire relationship was lack of coordination among the members of the department; a likely consequence of a cooperative relationship was the extension through the entire department of disrupting fears which should have been absorbed by the department head.³³⁵

Following Bailey's administration two new departments were created and an existing department was abolished. The Department of Rural Social Organization grew out of the interests of Mann and Galloway in the scientific study of social aspects of rural life.³³⁶ In May, 1915, Mann was named professor of rural social organization. During the following year he worked with Galloway in developing plans for rural recreation and for surveys of rural conditions based on

*J. DuPratt White to Mann, May 8, 1918; Mann to Schurman, Dec. 9, 1918; also contents of plant pathology folder, box 1, Mann Papers. In assessing Professor Whetzel's contribution to Cornell, his impact as a teacher must be weighed along with his difficulties as an administrator. He was a person of great energy and contagious enthusiasm, deeply interested in teaching methods, who tried to be helpful to all students, be they winter course or graduate. He kept his door open to students, invited them to his home to discuss their plans and aspirations, and, when they needed financial assistance, solicited employment for them from his neighbors (M. F. Barrus, *Cornell Countryman*, Jan., 1945, pp. 3-4; F. G. Marcham, H. H. Whetzel essay, MS).

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the project method.³³⁷ On learning that Galloway was leaving Cornell, Mann asked him to secure the Department of Rural Social Organization, for "the beginnings of which I have you to thank."³³⁸ In 1917 Mann himself brought Dwight Sanderson to Cornell to head the new department.

The Department of Rural Education expanded rapidly under the leadership of George A. Works, who became head of the department on July 1, 1914. The following year an experimental program for secondary agricultural teachers was started. When, in 1917, the Smith-Hughes Act provided federal aid for secondary school agriculture, home economics, and vocational education, the department was in a position to utilize effectively the \$19,800 available to train agricultural teachers. In 1918 Mann wrote to Works, "We have now perhaps the best beginning in teacher training of any agricultural college in the country; the time for advanced professional work in rural education is setting in this direction and we must look to you largely for the continuance of this fortunate situation."³³⁹

In 1917 the head of the Department of Drawing recommended the dissolution of the department and the division of its work between the Departments of Landscape Art and Rural Engineering.³⁴⁰ The disposition followed this recommendation.

The work in home economics was marked by continuous expansion during the decade. By 1919 seventeen faculty members taught courses which were divided into six major areas: food and nutrition; clothing and textiles; housing and design; women in household, industrial, and political life; household management; and institutional management. The courses in institutional management formed a basis for the later development of the School of Hotel Administration.³⁴¹

The relationship between the Department of Home Economics and the College of Agriculture was, in many ways, similar to that previously existing between the College of Agriculture and the University, with Dean Mann in the position of applying restraint. In 1919 he took issue with the tremendous expansion of courses in home economics, pointing out in a seven-page letter that many of the courses were duplications which could well be consolidated. Miss Rose, however, continued to stress expansion. "Mere standing still," she insisted, "would be fatal."³⁴²

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Her allusion to fatality referred to the possibility that a state college of home economics would be established at Syracuse University unless the work at Cornell was quickly placed on a college basis. Dean Mann, anxious above all else to avoid a repetition of the conflict over the College of Forestry, supported the aspirations of the Home Economics Department to become a college—a step he regarded as poor internal administration—in order to avoid the greater difficulty of renewed conflict with Syracuse.³⁴³ In September, 1919, the department was designated the School of Home Economics by the trustees, and in 1920, at Mann's request, a bill was introduced in the legislature to transform the school into a college.³⁴⁴ Martha Van Rensselaer and Flora Rose proceeded to gather representatives of women's organizations at luncheons about the state to win their support.³⁴⁵ By March, 1920, however, they learned that both the Governor and chairman of the Senate Finance Committee were opposed to any new state activities and furthermore questioned the wisdom of giving free instruction in home economics. The bill passed the Assembly in the closing hours of the legislature but did not pass the Senate.³⁴⁶

Each new activity established in the College complicated the process of administration, since it invariably required some adjustment between existing activities. Sometimes only a mechanical adjustment was required, as when the duck ponds of the new game farm polluted the water of the fish culture experiment station downstream, or when the use of automobiles was adopted by the departments. (In 1910 the College had no automobiles; in 1920 Mann wrote to the departments to determine how many vehicles they controlled and learned that the Department of Plant Pathology alone had eleven.)³⁴⁷ Cases which involved the nature of the educational program or the relation between educational and maintenance aspects of college operation were more difficult, since they fell within the province of both faculty and administration—a situation in which neither party could entirely avoid responsibility or, in many cases, assume sufficient responsibility to secure effective decisions.* The

*A number of frozen radiators is a case in point. Members of the faculty insisted it was the janitor's job to close windows and check radiators, but the salary schedule made it impossible to retain janitors for all the hours rooms were in use (Mann to Weigand, Feb. 8, 20, Weigand to Mann, Feb. 6, 1920, Mann Papers).

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necessity for adjusting burgeoning activities to available funds put further burdens on administration. In 1916, for example, budgetary restrictions required dropping thirty-seven people from the maintenance and clerical force, with administrators having to determine where these cuts were to occur.³⁴⁸ Since salary advances after 1916 were secured from the legislature only on an individual basis, it became a common administrative procedure to encourage the staff to engage in the demoralizing practice of getting offers from other institutions in order to prepare the way for a salary advance in the College.³⁴⁹

During the decade George Parker was head of the business office of the College. Mann frequently called on him for advice and authorized him to secure departmental compliance with the business regulations of the College. This was no small task, for some of the older department heads were unwilling to abide by regulations when their concept of departmental efficiency was threatened.³⁵⁰ In 1912 a public accountant was brought in for the first time to audit the financial records. While he discovered few errors, he found the record system "cumbersome and antiquated" and recommended a new plan.³⁵¹

By 1919 one man no longer had sufficient time or knowledge to cope with the issues facing the occupant of the roles of dean and director. At this date Mann reopened the question of appointing two vice-directors, one for research, the other for resident instruction. "Our institution has become so large and the problems so varied that I find great difficulty in giving anything like adequate attention to the problems that arise," Mann wrote to A. Ross Hill in preparing for the semicentennial study of college activities. "Traditionally, the College has been opposed to these sub-divisions, but I think this is somewhat passing." Mann carefully prepared for faculty acceptance of the new positions. It seems probable that he considered the inter-departmental research conferences a step in this direction. The positions were approved in 1919 by two groups from outside the College—the former committees and the alumni connected with the semicentennial evaluation. In December, 1919, Mann consulted the departments heads on the advisability of the positions and received a unanimous recommendation for their establishment.³⁵² Several days

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later he asked each professor and assistant professor to submit names of possible appointees. Cornelius Betten received the greatest support for vice-dean (later changed to vice-director) of resident instruction and Professor William A. Chandler for vice-director of research.³⁵³ Following the establishment of the two positions by the legislature in 1920, the two men were so appointed.

Betten had long been considered a desirable person to add to the faculty. In 1913, when he was teaching biology in Lake Forest College, Bailey offered him the professorship in rural education, but Betten could not afford to take a year to gain the necessary professional qualifications.³⁵⁴ In April, 1915, however, he succeeded Mann as secretary of the College. Betten brought considerable energy and great ability to the position of vice-director of resident instruction. At the same time, he managed to preserve sufficient detachment to view with a degree of humor the sometimes irrational behavior of the faculty.³⁵⁵

Chandler came to the College in 1913 as professor of research in the Department of Pomology and became the head of the department in 1915 when C. S. Wilson was appointed commissioner of agriculture. By 1919 he had become an advocate of the view that effective teaching required experience in research. On the contrasting position that good teaching requires experience with the practical aspects of a subject he commented: "Practical details should be taught only when a knowledge of them is necessary for an understanding of other problems. We think teaching such routine details may do the student harm by making him satisfied to use his mind on superficial things."³⁵⁶

Dean Mann thought that the success of Burritt's appointment as vice-director of extension, more than anything else, gave the staff courage to approve the appointment of additional vice-directors.³⁵⁷ During the two years before 1919, Burritt established a reputation for usefulness while exercising sufficient patience to avoid antagonizing department heads unwilling to depart from their former privilege of direct contact with the dean on extension matters. In November, 1919, however, Burritt asked Mann to give his position sufficient power to place him in "a real position of leadership." This Mann did the following month by requesting department heads to arrange

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salary adjustments and the selection of extension personnel with the vice-director of extension "in advance" of consulting him, thereby establishing a policy which has been continued by his successors.³⁵⁸ By the following year the position was so well established that Burritt found his interest lagging and asked for a leave of absence. He was interested, he said, in the beginnings of things, not "oiling the machinery."³⁵⁹

In 1919 Mann faced the question of discontinuing the summer term, initiated in 1913.³⁶⁰ A departure from academic tradition and at variance with procedure elsewhere in the University, the summer term was not accepted by either students or faculty. It achieved the greatest enrollment from 1914 to 1916, when the Galloway administration imposed a large degree of centralized control.

The summer term was discontinued in 1922. At that time the six-week summer school, established in 1911 for teachers and social workers, was expanded to include much of the instruction previously available during the summer term.* The summer term enrollment for 1914-1922 was as follows:

<i>Year</i>	<i>Undergraduate</i>	<i>Graduate</i>
1913-14	41	*
1914-15	108	86
1915-16	140	122
1916-17	43	65
1917-18	54	40
1918-19	97	67
1919-20	39	65
1920-21	72	76
1921-22	39	85

The library, during the decade, suffered from a combination of

*Mann to G. A. Works, Nov. 19, 1919, Mann Papers; *Cornell University Official Publications*, XIV, No. 7 (1923). A proposal to operate the University for three full terms a year was considered by the Faculty of Agriculture in January, 1952. It was opposed "with only a few dissenting votes" (Faculty of Ag. Minutes, XIV, 146). See also *ibid.*, V, 204. The summer term was open only to students who had completed the freshman and sophomore years (*22d. Ann. Rpt. of Pres. Schurman, 1913-1914, App. VIII*).

EDUCATION AND AGRICULTURE

inadequate appropriations, committee administration, and departmental intransigency. In 1910 its staff consisted of A. J. Lamoureux. Although commended by Bailey for "efficiency and faithfulness," he served more in the capacity of caretaker than professional librarian.³⁶¹ The total appropriation, limited in 1911 to \$1,400, meant that the Library Committee had to perform many of the functions of librarian. Consequently, these functions were performed with varying degrees of skill. No foreign periodicals were exchanged between 1907 and 1911 because the professor who promised to develop a new exchange list failed to carry out his commitment. The exchange of periodicals was further complicated by what the chairman of the Library Committee called the "discourteous and inconsiderate" actions of departments which maintained their own exchanges to the detriment of the library.³⁶² Books were ordered by the chairman of the Library Committee who took requests from departments, checked to see if the books were already in the library, and then prepared a list for purchase through the university library.³⁶³

In 1913 the appropriation for the library was increased to \$4,400, an amount which provided a \$1,500 salary for a librarian, \$900 for Mr. Lamoureux and \$2,000 for maintenance.³⁶⁴ Over two years passed before the librarian was appointed, a lag which was apparently related to the unresolved conflict over the extent to which books purchased on department funds should be centralized in the college library.³⁶⁵ During Galloway's administration, W. W. Ellis was appointed librarian; thereafter the Library Committee became advisory.³⁶⁶ Department libraries were continued, and in 1917 their relation to the college library remained, in the view of the faculty, "a serious problem." Effective steps were taken, however, to integrate the library more closely with the university library system.³⁶⁷

The location of the library was no less serious. In 1911 plans were prepared to convert the heating plant located beneath the auditorium on the north side of Roberts Hall into a two-story library.³⁶⁸ When it proved impossible to secure an appropriation for this renovation, the library was moved to the basement of Stone Hall in 1915, after the Department of Soil Technology moved into new quarters.³⁶⁹ The inadequacy of this location was all too apparent. In 1919 the faculty moved to solve the problems of both library housing and administra-

EXPANSION AND CONSOLIDATION, 1911-1920

tion when it asked the Board of Trustees to establish a library of the New York State College of Agriculture to be housed and administered as an integral part of the university library.³⁷⁰ This step was consistent with sound principles of library administration.

Improving the appearance of the agricultural campus also depended on obtaining a state appropriation; in its absence the campus remained in much the same condition as the building contractors left it. Weeds stood among holes in the agricultural quadrangle until that part of the campus was graded in 1918.³⁷¹ Four years earlier, however, a step was taken which required little money when a floricultural garden, later named after Lua A. Minns, was established adjacent to the campus on Garden Avenue near its present juncture with Tower Road. The location was regarded as temporary since the site was soon to be used for building purposes. Until moved to a location adjacent to the Plant Science Building forty-six years later, the garden stood near that busy campus intersection, a burst of color too delightful to be missed by those passing by.³⁷²

As part of his efforts to relate maintenance to education, Bailey secured from the University the administration of six dwelling houses on the university farms which were thereafter to be rented to college workmen and landscaped by the Department of Rural Art.³⁷³ By 1914 the College managed 916 acres of farm land, of which 766 acres were owned by the University. Most of this land lay south and east of the campus with a small area situated north of Forest Home. Most of the arable land, which constituted about one-half of that available, was assigned to departments conducting experimental work, leaving 286 acres for the regular farm operations.³⁷⁴ In 1919 Mann acted to end the unprofitable controversy over the administration of the farm. After surveying the practice at six other agricultural colleges, he recommended the abolition of the Department of Farm Practice and the transfer of responsibility for administration of the farms to a newly created Office of Farm Practice and Farm Superintendence, an administrative office directly responsible to the dean.³⁷⁵

The acquisition of large farm areas by the University affected the taxation structure east and north of Ithaca. In 1915 Galloway agreed to pay the school districts involved the equivalent of taxes on the university land provided that the Department of Rural Education

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could use their schools for experimental purposes, thereby accomplishing for that department much of what Bailey had desired eight years earlier.³⁷⁶ The commercial sales of departments also caused some difficulty in the Ithaca area. Such sales were closely related to resident instruction, provided information useful for research, and were a means for disposing of food and flowers which would otherwise be wasted. After a committee investigated the matter in 1920, a level of prices was established for products produced at the College sufficiently high to discourage charges of unfair competition from local producers.³⁷⁷

ALBERT R. MANN AND GEORGE F. WARREN

By 1920 Mann had been dean four years, a time perhaps sufficient to attain optimum effectiveness in the role. By then he had secured the confidence of legislative leaders, earned the respect of officers of most farm organizations, and attained a position of leadership in the Land-Grant College Association. Moreover, he had taken steps toward successfully bridging the gap between the University's administration and the faction of his faculty which had rebelled against Galloway. President Schurman relied on Mann to draft his speeches and essays dealing with agriculture and signed letters to the dean "very fraternally yours."³⁷⁸ On trips to Washington Mann frequently stopped for a friendly talk with Galloway.³⁷⁹ In the College he maintained the friendship of Galloway's opponents while insisting on a more centralized administration than had existed during Bailey's tenure.

Part of Mann's efficiency as an administrator resulted from a marvelous sense of timing. Well aware that considerable energy could be dissipated to little effect, he awaited the opportune moment to introduce changes. He seems to have calculated, in every major decision where a variation in timing was possible, the intensity and direction of the relevant social forces. As an example, and there are many, consider his statement in transmitting resolutions he had drawn in the name of the Board of Trustees calling for relief from the inflexible form of budget:

I believe this is the psychological moment to bring about the changes which we so desperately need . . . The time to make the change is while

EXPANSION AND CONSOLIDATION, 1911-1920

both political parties will be concerned and it is clear to me that both sides feel that their hands will be strengthened if there is a popular demand that changes be made.³⁸⁰

The most significant example, however, was the preparation of the campaign for the expansion of the College of Agriculture and the follow-up in the legislature. The faculty called the legislature's approval of the building program and the substantial salary increases "a brilliant achievement"; Stocking, who had some experience with the legislature, called Mann's success in Albany "nothing short of phenomenal"; and President Pearson of Iowa State considered it "a new record, not only at Cornell, but in the United States."³⁸¹

Another important quality of Mann as administrator was integrity, a quality noted both by his supporters and those who had frequent occasion to differ with him.³⁸² He avoided the deviousness which sometimes leads administrators into saying one thing and doing another. Forthrightness marked his approach to problems. In 1920, for example, he wrote Governor Smith that he considered the appropriation to the State College of Forestry for wildlife conservation poor state policy even though, as he noted in the letter, it was somewhat unusual for an official of one state institution openly to oppose appropriations for another state institution.³⁸³ Within the College he insisted on strict compliance with policies; faculty members deviating were quickly and firmly set straight.³⁸⁴

Another factor basic to Mann's success as an administrator was that he headed an institution which was considered by farmers to be rendering substantial services to the agriculture of the state. Probably no man played a more important part in establishing this situation than Professor Warren. He was, said Babcock in 1922, "the leading agricultural economist in the United States. His word on agricultural matters carries more weight with New York State farmers than any other man."³⁸⁵ Warren's rise to prominence during the decade was related both to the help he gave farmers in applying business principles to their operations and his constructive but cautious support of the movement for agricultural cooperatives. More than anyone else, Warren was responsible for elevating the study of farm management to the level of a highly respected discipline. At the

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time of the appointment making him the first professor of farm management in the United States, Warren was a "young Turk," highly critical of the theorizing which then passed for farm management.³⁸⁶ His approach was to get facts by which farm management could come to grips with the realities of farm life. Many of these findings he incorporated into the textbook, *Farm Management*, published in 1913. Over thirty years later, Professor Van Hart declared that the book "has never been equalled or even approached."³⁸⁷

In 1911 Warren recognized the future significance of cooperative purchasing and marketing in agriculture. After attending the annual meeting of the Association of American Agricultural Colleges and Experiment Stations he said:

I believe that secondary agricultural education is the next big subject that is to be attacked . . . I believe that the next great movement after high school agriculture has had its day will be a movement for agricultural cooperation in buying, selling, etc. This subject is not really up among college men. It was mentioned by Germany's agricultural representative to the United States at one of the meetings but did not create any enthusiasm or interest. I believe, however, that this subject will in the near future, be one of the most prominent subjects before the agricultural colleges.³⁸⁸

By acting on this assessment of events, he was prepared in 1915 to provide cost of production figures on which a milk price could be based. Warren's practice of anticipating events did not always, of course, lead to such accurate conclusions; in 1912, for example, he doubted that an engine could ever be invented which would be as cheap for light work as horses.³⁸⁹ However, his insistence on continually checking predictions against new data, minimized the adverse effect of error. Prediction for Warren was simply a useful planning device, to be confirmed or invalidated by additional data.

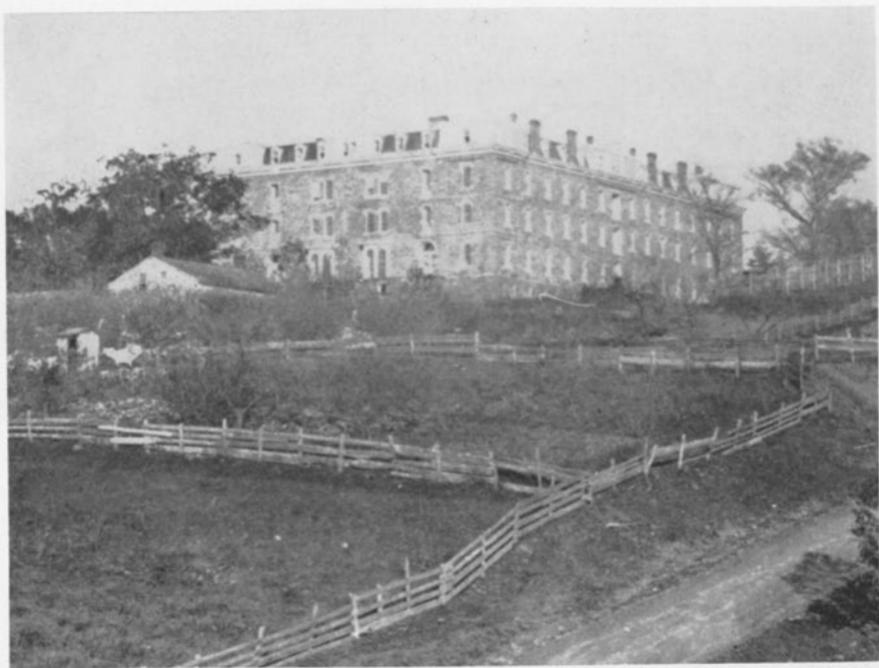
The ability to communicate with farmers was one of Warren's greatest assets. A terse and direct style and the effective use of the vivid illustration were skills of the able teacher, supplemented in Warren's case by a broad knowledge of agricultural problems gained from managing his own farm near Ithaca, from his agricultural survey work, and his frequent contacts with farmers. Warren's capacity for stating his views strongly and directly must have appealed immensely

EXPANSION AND CONSOLIDATION, 1911-1920

to farmers. It certainly did to Director Jordan, whom Mann occasionally asked to calculate the effect on the public of some of Warren's writing. "It did my soul good to read some of Warren's statements," Jordan commented. "The bulletin is pregnant with truths of which many people are ignorant, that deal with facts concerning which there is much misunderstanding. I would not call the bulletin caustic but rather incisive. It is Warrenesque."³⁹⁰ While Warren spoke strongly where he was confident of his ground, he was commendably cautious where he lacked data to support his position. Asked in 1918 by producers and dealers to indicate a bargaining price for milk, he justified his refusal with the statement, "My judgement is wrong in so many instances that I hesitate to take the responsibility of suggesting the price that farmers should receive for their labor."³⁹¹

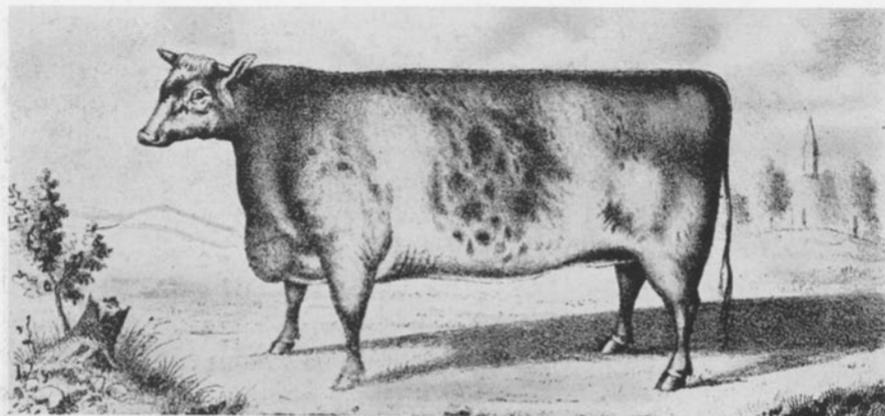
Perhaps Warren's most significant success resulted from the relationship he maintained with his colleagues and graduate students. Among the latter, during the decade 1911-1921, were two future deans of the College. Both later recalled Warren's unfailing courtesy and the encouragement they received from him as graduate students and later as his colleagues in the department.³⁹² Professor Frank A. Pearson, another of Warren's students who became a member of the department, considered Warren's Tuesday-afternoon seminar, conducted without class credit, examinations, or assignments, the scene of his most effective teaching.³⁹³

Agricultural economics and marketing actually fell within the field assigned to Professor Lauman but was taken up by Warren when Lauman proved constitutionally unable to give the kind of leadership which farmers demanded. The concept of extension was alien to Lauman, who wanted to wait until all the facts were in before making a decision. Even during the emergency period of 1917, he was incapacitated from giving any advice on what the College might do to help farmers because he feared "the danger of forcing a situation."³⁹⁴ As Warren moved into agricultural economics, Lauman moved toward the more congenial field of agricultural history, a field of study in which Mann was also interested. He thought that Lauman's writing, when completed, "will represent one of the best contributions this institution has ever made to the literature of agriculture."³⁹⁵



Cornell University in the fall of 1868. *Above*, Cascadilla Hall.
Below, South University, later renamed Morrill Hall.





A prize Shorthorn of Ezra Cornell.

THE AGRICULTURAL COLLEGE OF CORNELL UNIVERSITY.

This College is now fully organized, with the following Professors and Instructors:

I. P. ROBERTS,	<i>Practical and Experimental Agriculture.</i>
JOHN STANTON GOULD,	<i>Lecturer on Mechanics applied to Agriculture.</i>
A. N. PRENTISS,	<i>Botany and Horticulture.</i>
JAMES LAW,	<i>Veterinary Science & Practice.</i>
G. C. CALDWELL,	<i>Agricultural Chemistry.</i>
J. H. COMSTOCK,	<i>Agricultural Entomology.</i>
C. FRED. HARTT,	<i>General and Agr'l Geology.</i>
B. G. WILDER,	<i>Physiology, etc.</i>
E. H. FUERTES,	<i>Surveying.</i>
C. BABCOCK,	<i>Architecture.</i>
J. L. MORRIS,	<i>Mechanical Engineering.</i>
J. E. SWEET,	<i>Practical Mechanics & Sup't of Machine Shops.</i>
E. C. CLEAVES,	<i>Free-hand Drawing and Mechanical Draughting.</i>

Besides these, other University Professors give full instruction to this College, in MATHEMATICS, MODERN LANGUAGES, NATURAL PHILOSOPHY, HISTORY, POLITICAL ECONOMY and MORAL PHILOSOPHY.

THE COLLEGE FARM is now in condition to give useful illustration, both of processes and experiments.

The University LIBRARY and LABORATORIES, and the extensive illustrative collections of machinery, implements, models, apparatus, drawings and specimens are freely opened to students.

By a recent resolution of the Board of Trustees, all Students in the Department of Agriculture are to be educated

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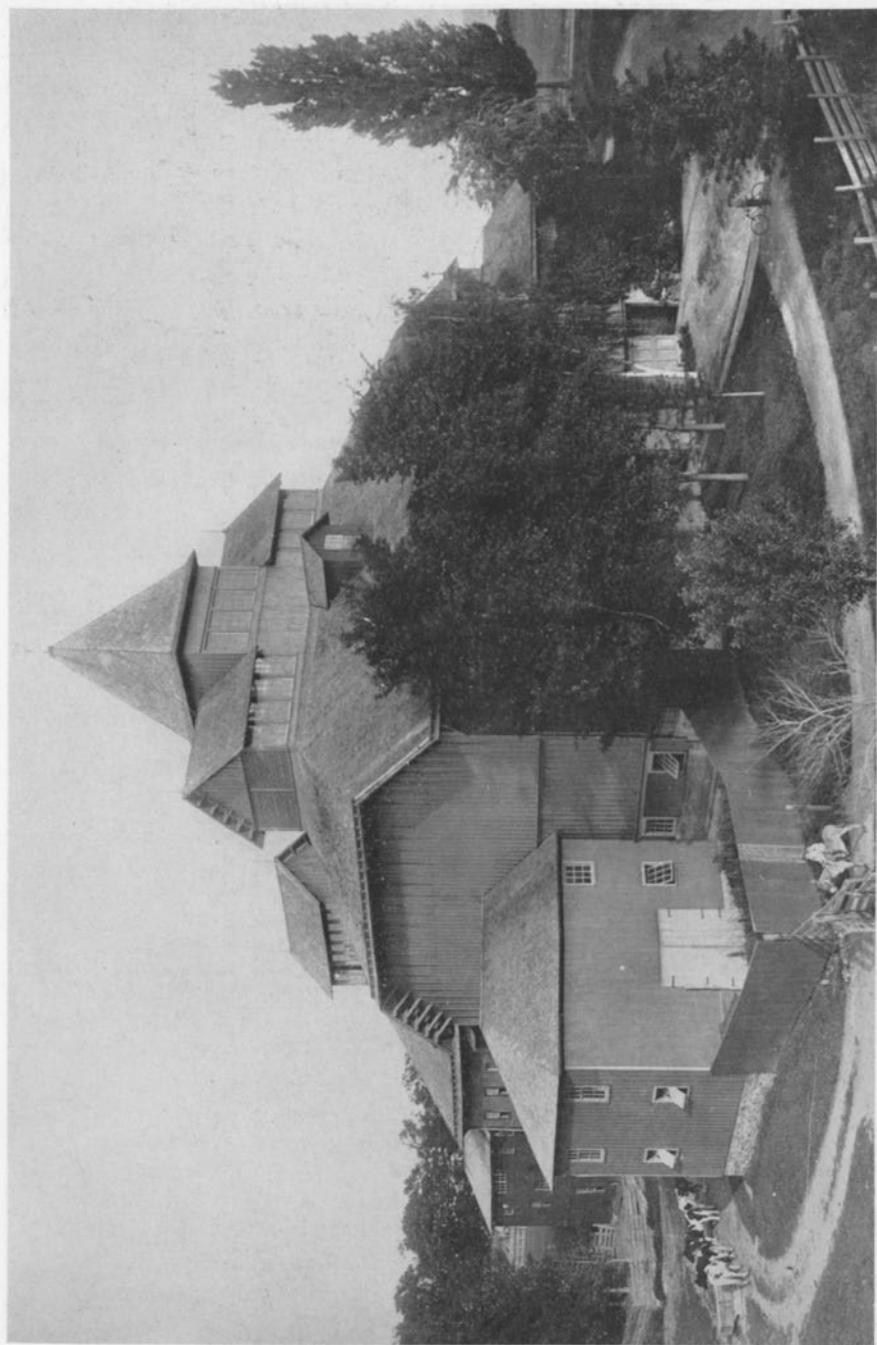
And ample opportunity will be afforded to such Students to pay for their room rent in the University buildings, and part of their other expenses, by labor on the farm, if they desire to do so.

The next entrance Examinations will begin September 8th.

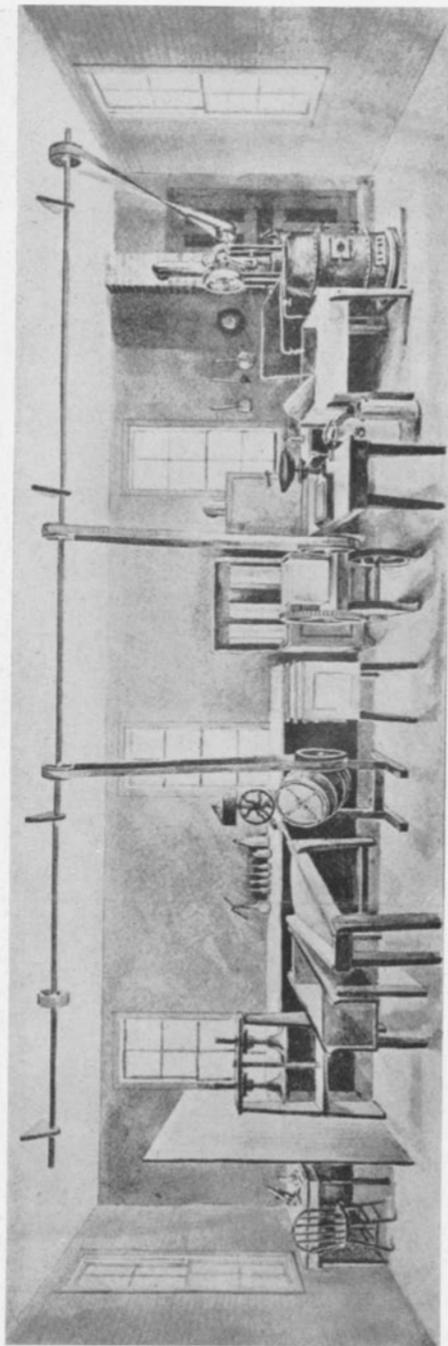
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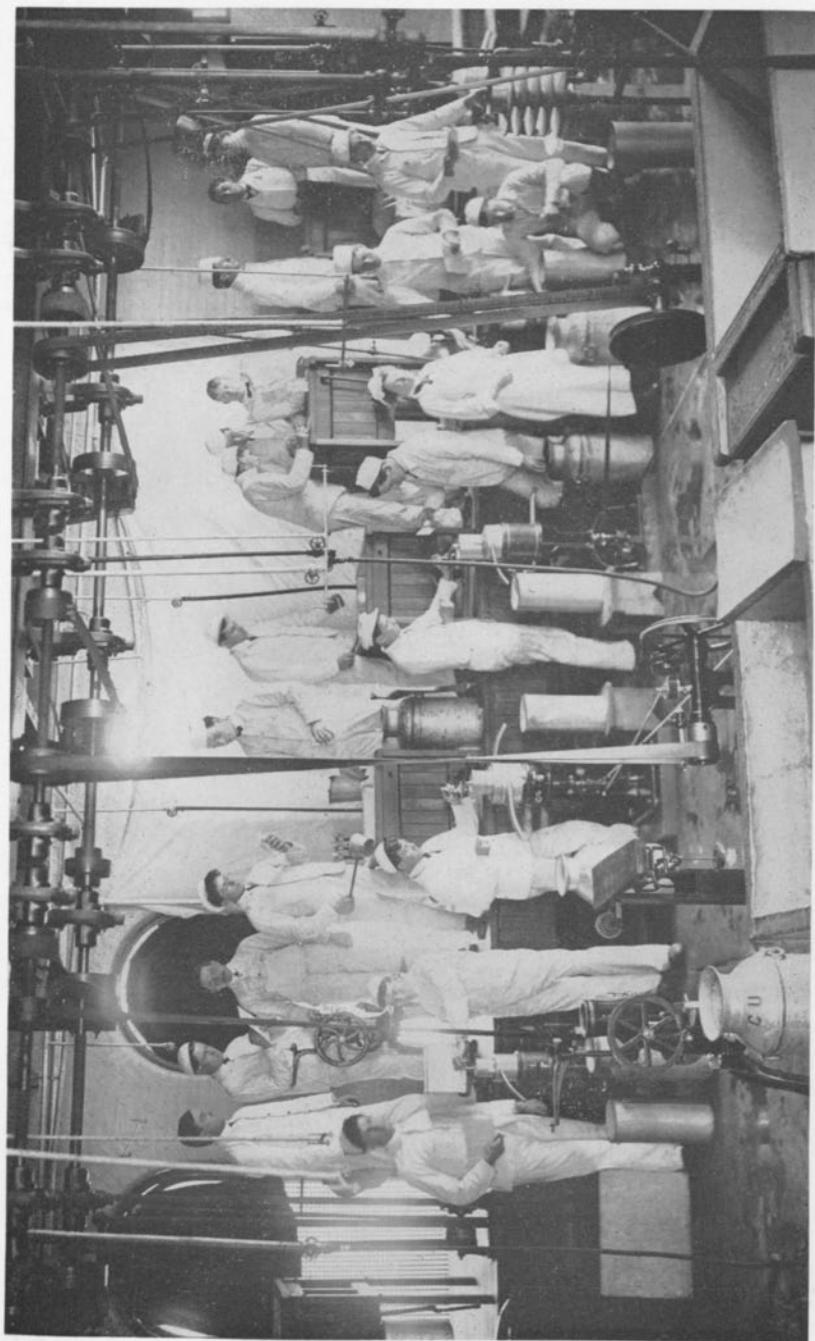
Advertisement of the College of Agriculture
in the *Cultivator and Country Gentleman*,
July 30, 1874.



The North Barn (Roberts Barn), designed by Professor Roberts and erected in 1879 on the present site of Comstock Hall.



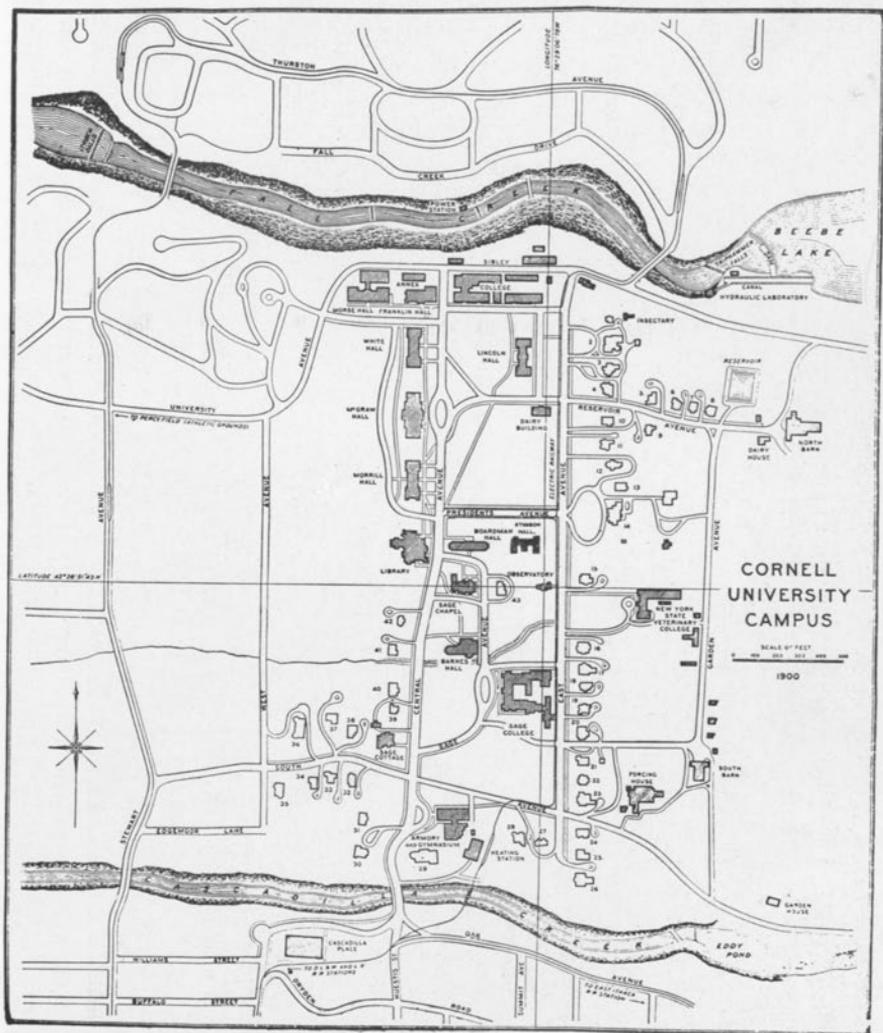
The original dairy building, located near the present site of Bailey Hall. Note laboratory at left, steam engine at right.



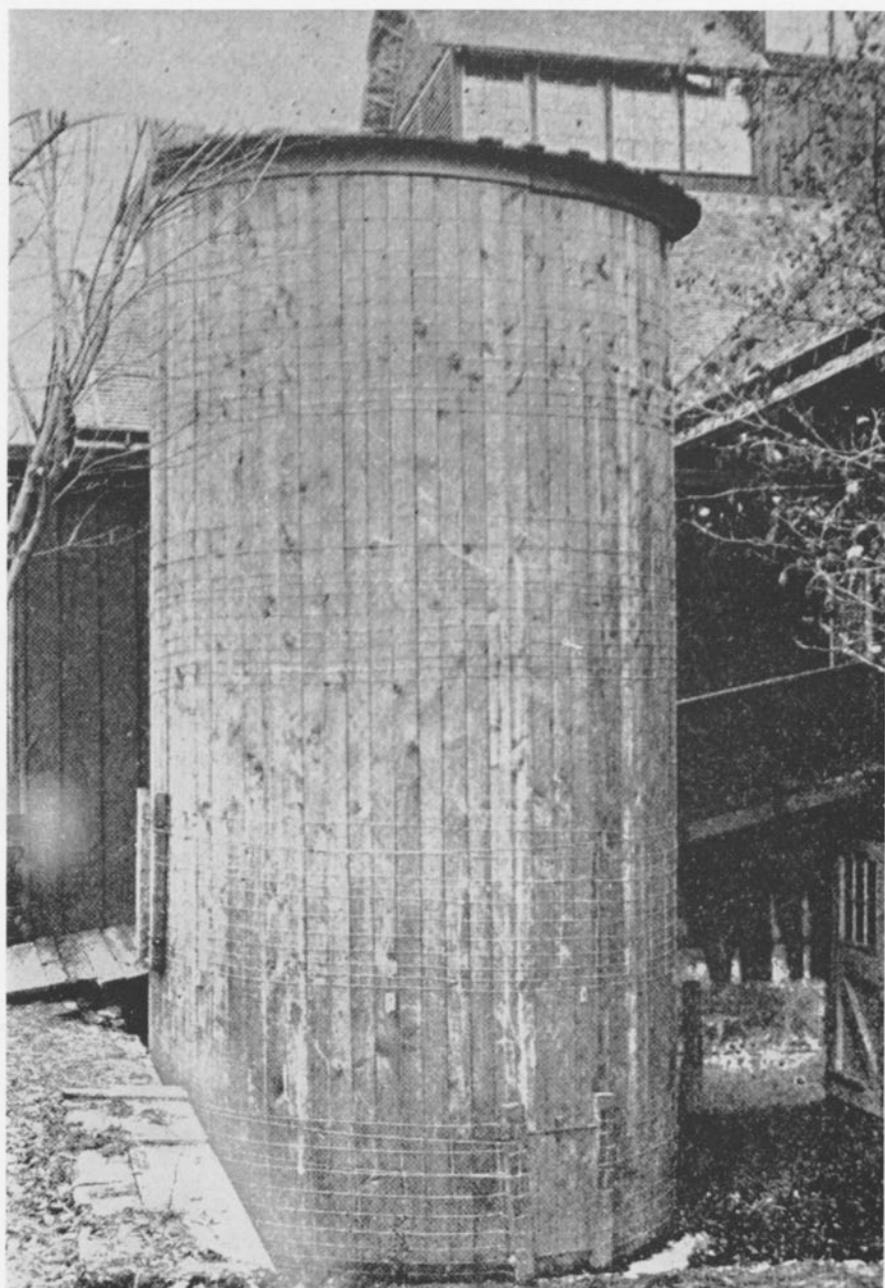
Interior of second dairy building. Constructed with a state appropriation in 1893, it is now the north wing of Goldwin Smith Hall.



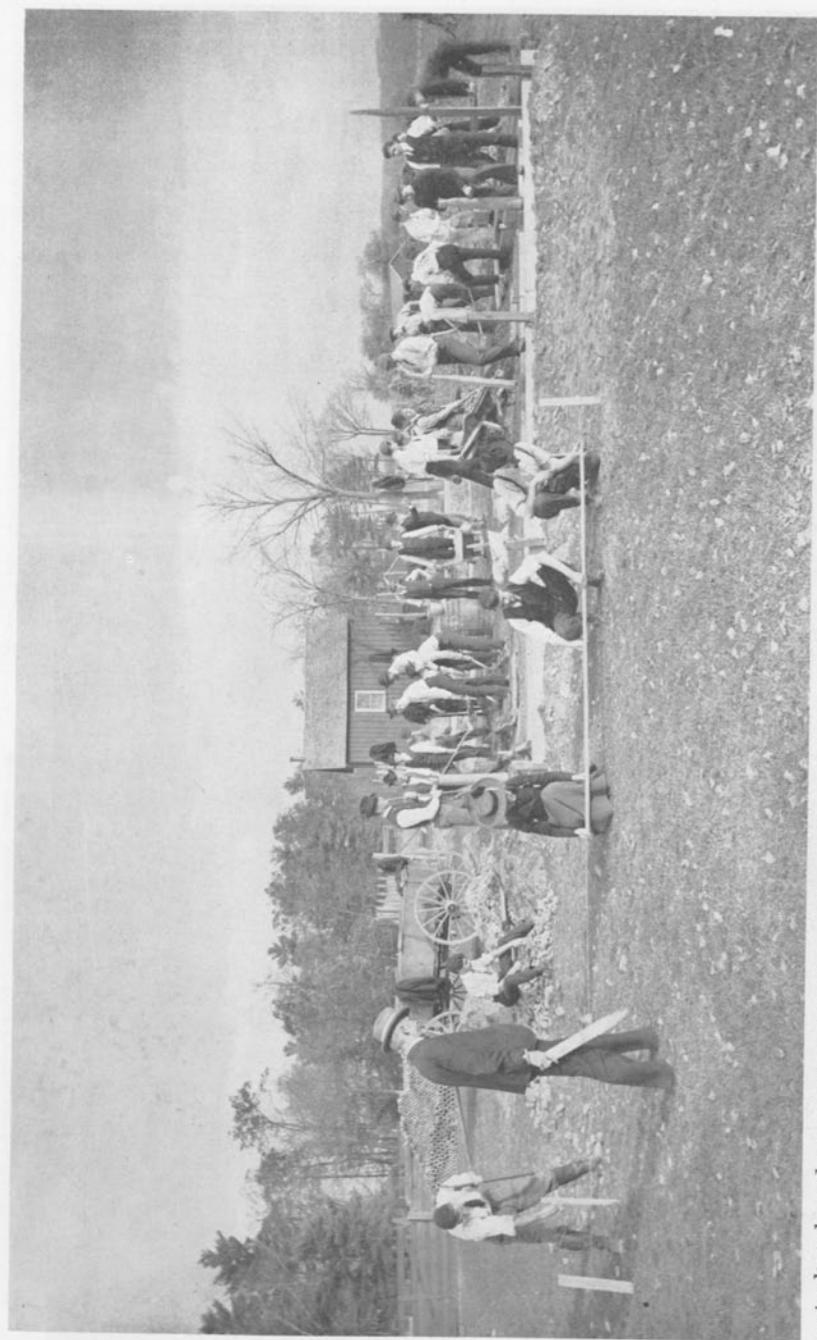
Nature Study School in front of Sage Hall (about 1898). Professor Roberts is third from left in *first row* (holding hat); "Uncle John" Spencer is in center of *first row* (between children); immediately behind Spencer and to the *right* are Professors Comstock and Bailey; immediately behind Bailey and to the *right* is Anna Botsford Comstock.



Map of the campus, 1900. The Comstocks lived in the house numbered 1, President Schurman in 2, Roberts in 4, Wing in 6, Law in 11, former President White in 14, and Craig in 22. Craig's home was formerly occupied by Bailey.



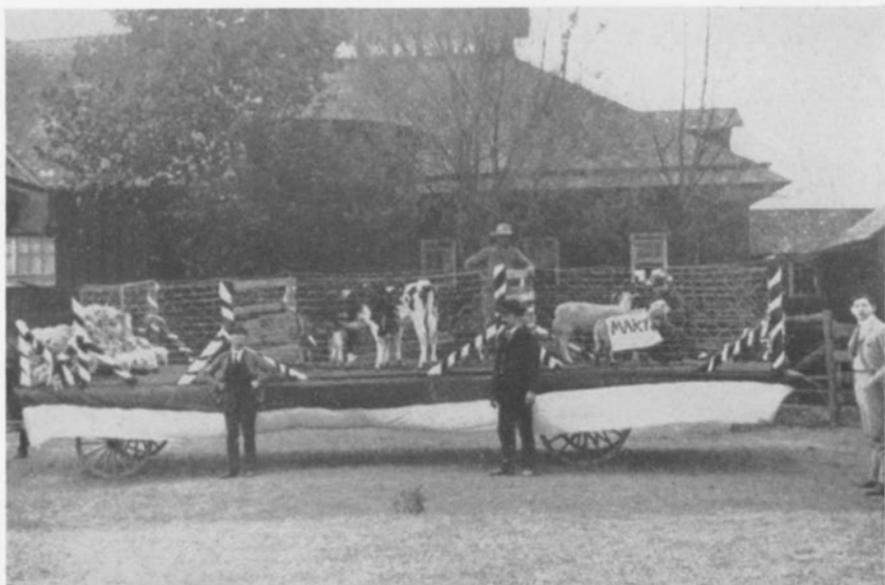
A stave silo as shown on cover of Bulletin 167. Note the woven wire fence binding the staves together.



Agricultural students constructing foundations about 1900. John L. Stone is in foreground, Roberts in center at rear. Note coed in front, center.



Dean Bailey examines a sandwich at the first Tompkins County School Picnic, May, 1905.



The animal industry float in the student parade at Cornell following Governor Odell's approval of the bill establishing the College of Agriculture as a state institution.



The first poultry building, erected by students under the direction of Professor Rice and later used for instruction in landscape art and marketing.



Former President White and Dean Bailey at the ground-breaking ceremony for the new agricultural buildings, May, 1905.



John Spencer talks to school teachers and children aboard the Farming Special, 1910.



Professor Whetzel answers inquiries from farmers. Agnes MacAllister, for many years secretary to the Department of Plant Pathology, stands at the *right*.



Roberts Hall in the summer of 1905.



The buildings of the New York State College of Agriculture about 1910, then called, from left to right, Agronomy Building (Stone Hall), Main Building (Roberts Hall), Dairy Building (East Roberts), and Judging Pavilion. The cupola on the Roberts Barn may be seen over the center of the Dairy Building.

FARMERS WEEK

AT THE
NEW YORK STATE
COLLEGE OF AGRICULTURE
AT CORNELL UNIVERSITY
ITHACA, NEW YORK

FEBRUARY 22 TO 27, 1909

L. H. BAILEY, Director

Practical Discussions and Demonstrations in Farming

Different phases taken up in detail every day from 8 A. M. to 5 P. M., with evening meetings at 7:30

ADDRESSES BY

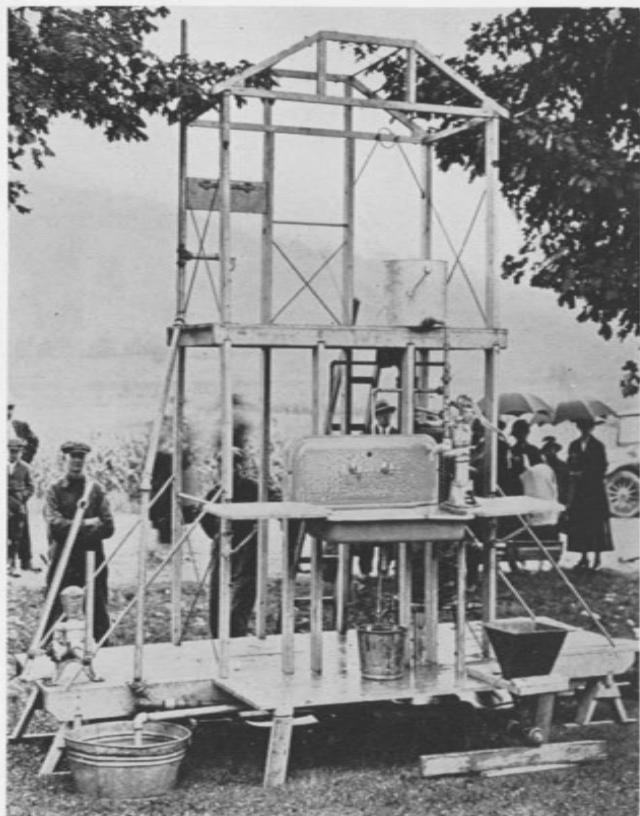
Pres. Schurman and Dean Bailey

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This Week is for you and your neighbors. Board and room convenient and cheap. Ask about it.

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Demonstration of a home water-supply system arranged by H. W. Riley

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FARM BUREAU
OF THE
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J. H. BARRON, AGENT

OFFICE WITH THE
CHAMBER OF COMMERCE

Binghamton, N. Y.

Letterhead of the first farm bureau in northern United States, April, 1911.



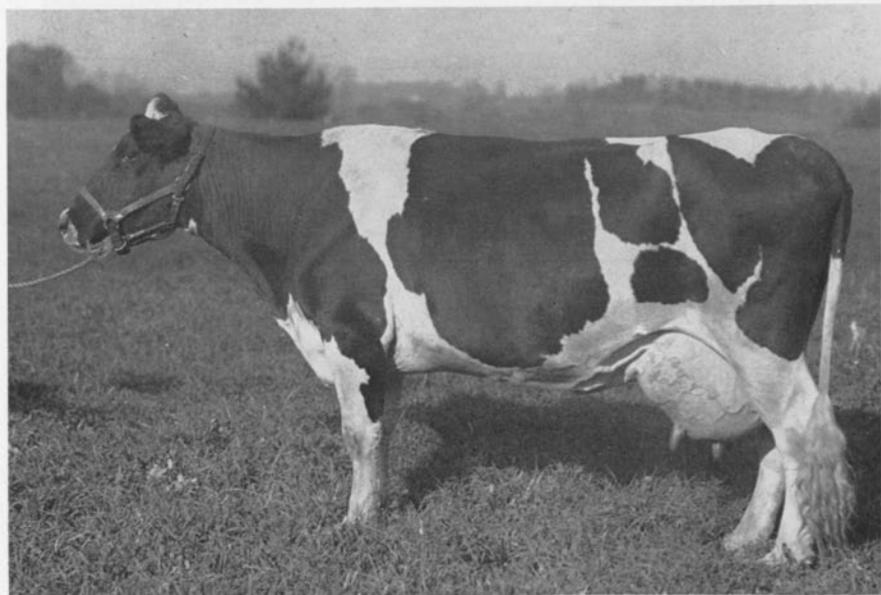
Menu cover for the dinner honoring Bailey in 1912. The road connects Cornell University on the left with the state capitol on the right. Note the faculty in lower left corner.



Parade prior to the cattle auction held at the end of Farmers Week, about 1920.



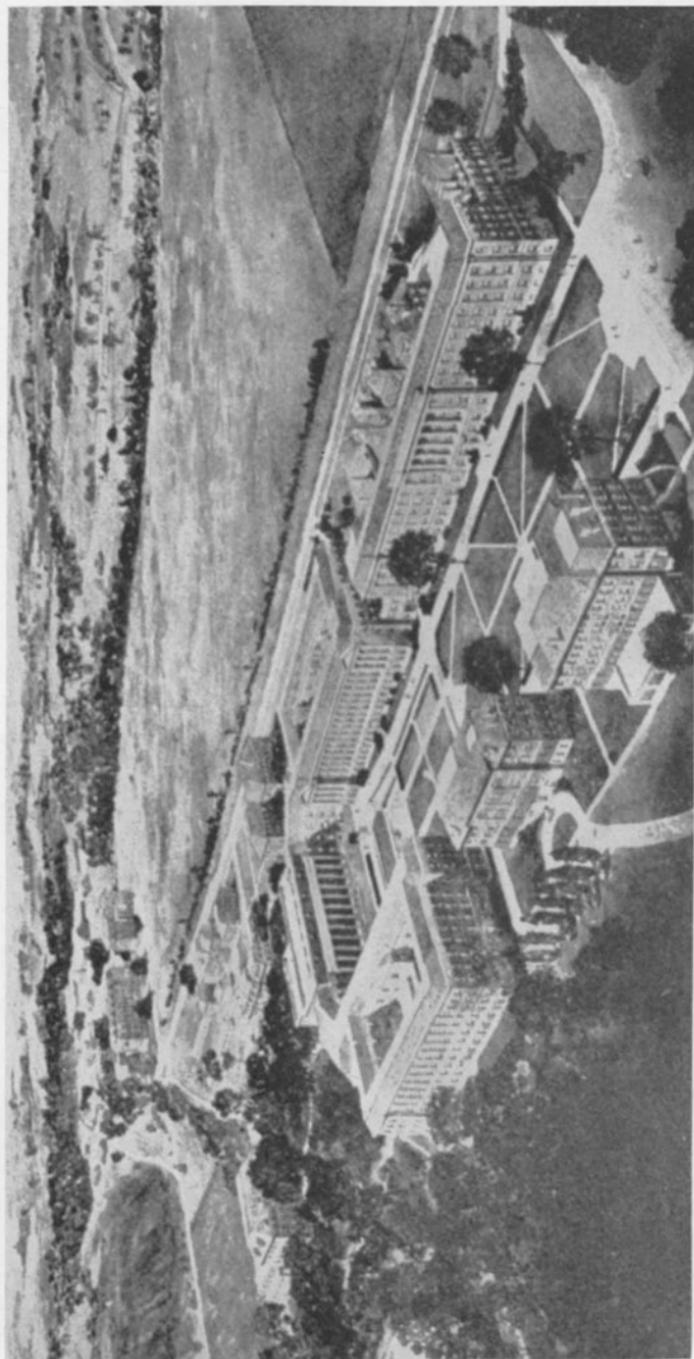
G. P. Scoville taking a farm management survey in Nassau County, 1915.



Glista Ernestine, 1908-1924.



A county farm bureau agent talks potatoes, about 1920.



The proposed development of the College of Agriculture (architect's drawing), 1920.



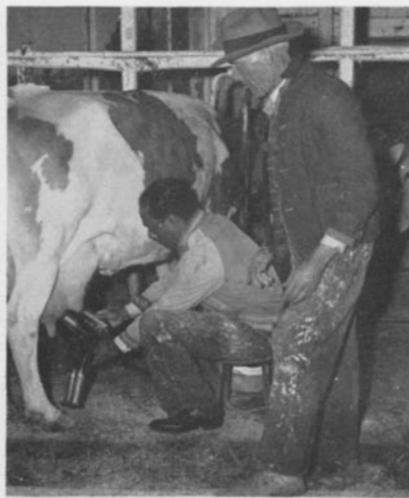
Dean Mann examines the steer which he donated for the College barbecue, 1926.



Dean Ladd and Seymour Bridge, potato grower, at the Empire State Potato Field Day, August, 1932



Directors C. E. F. Guterman and L. R. Simons with R. C. F. Sutliff, of the State Department of Education, plan a survey of New York farmers' opinions on agricultural programs, 1950.



Farm practice. A student from India learns how to use a milking machine on a New York State dairy farm, 1955.



A farm tour. Professor L. C. Cunningham, *second from left*, Dean C. E. Palm and Directors W. K. Kennedy and M. C. Bond, *at right*, examine grass silage on the Fassett farm at East Springfield, 1961.



College administrators and faculty members on a farm tour in northern New York, 1957. *Left to right:* Richard Bradfield, W. I. Myers, Arthur Peterson, Daniel Roberts, A. W. Gibson, C. E. Palm, T. N. Hurd, Leland McBath (host farmer), Hale Jones, L. C. Cunningham, C. C. Lowe, J. H. Bruckner, N. F. Jensen, R. P. Murphy, H. G. Hodges, S. T. Slack, and W. K. Kennedy.

The Examination of Objectives, 1921-1930

EXTENSION

THE close connection between the Extension Service and the New York Farm Bureau Federation was subject to serious strain throughout the decade. While generally acceptable to extension personnel, who found in working committees of county farm bureau organizations a convenient instrument for the implementation and diffusion of their ideas, the link was embarrassing to Dean Mann, particularly in his relations to the States Relations Service of the USDA. It is evident, however, that the Dean's opposition went beyond questions of expediency to the view that providing direct leadership to farmers was outside the educational function of the College. In January, 1922, Mann stressed the current attack in Congress on the extension service—farm bureau relationship in an unsuccessful attempt to persuade Burritt and County Agent Leader Jay Coryell to support his position for changing the title of the farm bureau manager to county agricultural agent, as recommended by the States Relations Service.* Several months later Mann favored moving the office of the secretary of the State Federation of Farm Bureaus from Roberts Hall to Syracuse. "As long as he [Secretary E. V. Underwood] is here we will be open legitimately to the criticism that the College is mothering, housing, and directing the whole enterprise. This will not only weaken the cooperative movement with farmers, but involve us in ways that would be unjust."¹

Mann's position found considerable support outside New York State. More than half of the state extension directors, noted Burritt,

*Mann to Burritt, Jan. 28, 1922, Mann Papers. Coryell succeeded Babcock as county agent leader in 1920.

EDUCATION AND AGRICULTURE

were having difficulty with farm bureau relationships and wished to cut loose from the organization.² At the national level the Department of Agriculture, while not reaching the point of advocating separation, acted to clarify the relationship between the publicly supported extension work and the privately supported farm bureau organizations by the so-called True-Howard Agreement, signed in April, 1921, by the director of the States Relations Service and the president of the American Farm Bureau Association and, in August, 1922, by a statement from the Secretary of Agriculture, Henry C. Wallace. Extension teachers are public teachers, stated Wallace. "They may not properly act as organizers for farmers' associations; conduct membership campaigns; solicit membership; edit organization publications; manage cooperative business enterprises; [or] engage in commercial activities."³

Burritt felt that the desire among extension workers in other states for separation from farm bureaus was "all due to not understanding farm bureaus and making a mess of their development."⁴ By providing strong leadership, he felt the state extension services could hold farm bureau associations to the educational work he considered their proper function. Although he shared Mann's conviction that the national farm bureau organization was a harmful influence on the New York Farm Bureau Federation, he favored a diametrically opposite adjustment to this influence:

While I recognize that we may at times be embarrassed and possibly the Federation may be handicapped, I think this is the lesser of two evils . . . On the other hand, the more the College divorces itself from the Federation, the greater are the chances for friction and that the Federation will get out of the educational field to which I think it should chiefly confine its efforts . . . I am not enthusiastic about the change and I do not think the Federation is. Not long ago the matter came up in the Executive Committee and it was rejected as not even worthy of discussion at the time.⁵

The work of the New York State Extension Service, which unquestionably had benefited by the rapid increase in farm bureau membership prior to 1920, was affected adversely by the decline in this membership, which coincided with the postwar agricultural depression and increased membership dues. By 1924 the average number

THE EXAMINATION OF OBJECTIVES, 1921-1930

of contacts of the extension specialists had fallen off substantially, while general meetings of the institute type not related to farm bureau sponsorship were holding up better. There was no question on the part of Mann, Burritt, or Coryell that farm bureau sponsorship of extension meetings was keeping nonmembers away, a situation that was certainly accentuated by the use of extension meetings to recruit farm bureau members. Mann's solution to this dilemma was to emphasize the public character of these meetings by dropping references to farm bureau sponsorship.⁶ The alternative to the separation Mann advocated was recruitment of the larger farm bureau membership needed to make the work of the extension specialists effective and to convince county boards of supervisors that the county extension organizations were of substantial value to farmers.

In 1922 officers of the College and of the New York State Farm Bureau Federation planned to secure an increase in membership while acting within the spirit of the True-Howard Agreement. To accomplish this, solicitors were employed by the State Federation to canvass for membership under its direction, thereby relieving county agents of a function they had often been performing *sub rosa* up to that time. The plan was anything but successful; membership continued to decline, and recruitment costs ran from one to two dollars a member. This costly solicitation impressed Mann as "serious and dangerous for the future"; the following year he used the word "fearful" as the membership fee in several counties reached five dollars.⁷ Moreover the reputation of the farm bureau was injured by the irresponsibility of paid solicitors who sometimes promised services which could not be given. From a high of 67,618 members in 1919, farm bureau enrollment declined to 28,398 members in 1924.⁸

In January, 1925, Carl Ladd, director of extension, and Coryell decided that the lagging membership had reached the crucial point. Regional conferences were organized by telegraph and assistant state leaders employed on a temporary basis were stationed in each region to work with county agents in training volunteer farm leaders in methods of membership recruitment. By May the membership roll had been brought close to the total for the previous year and by the end of 1925 showed an increase of nearly one thousand. Thereafter,

EDUCATION AND AGRICULTURE

until the 1950's, the director of extension assumed responsibility for membership recruitment.⁹

It may well be asked why Mann permitted his subordinate officers to reinforce relationships so variant with his own views. In fact, he had no alternative, for a close connection between the Extension Service and the New York State Farm Bureau Federation was too strongly established and too promising of future usefulness to be quickly dissolved. In addition, Mann could not afford to alienate the State Farm Bureau Federation, for in the process of securing College appropriations he depended on its support. Attacks on the activities of the Farm Bureau Federation did, however, lead Mann to foster a closer relationship between the College and the Grange. Each year he tried to spend a day at the State Grange meeting in order to allay suspicion concerning the connection between the College and the farm bureau organization in the state.¹⁰

The relationship of the College to the G.L.F. was part and parcel of the relationship of the Extension Service to the farm bureaus in New York State. To Babcock, who was involved in the major decisions in the G.L.F. during this period, the organization was not only the commercial arm of the State Farm Bureau Federation, but also the rallying point for New York agriculture. As the organization's manager, he claimed to be a spokesman for New York agriculture and expected the officers of the College to respond to his leadership. When, in 1920, Babcock accepted a professorship in agricultural economics as "specialist on problems of cooperation," Mann insisted that he withdraw from the active management of G.L.F. Shortly after this withdrawal was accomplished, Mann wrote Babcock a letter clearly intended to set the tone for Babcock's future relations with the College:

We must rid ourselves of any feeling that unless we take the leadership in promulgating cooperative activities we are not measuring up to our responsibilities. In the long run a sane conservatism in these matters, based on accurate knowledge of the fundamentals of cooperative activity will best serve the interests of the farmers of the State as a whole.¹¹

Babcock continued to have a voice in the management of the G.L.F. from his position at Cornell but management from a distance

THE EXAMINATION OF OBJECTIVES, 1921-1930

did not prove sufficient. In 1921 S. J. Lowell of the Grange withdrew in discouragement from the organization and by 1922 the G.L.F. faced a fight for survival.¹² In that year Babcock returned to direct management. Insisting upon unity within the organization, he instituted an aggressive campaign to expand the volume of business. In this campaign for larger volume, Babcock called on the extension workers for help. The G.L.F., he reminded them, was stable and adequately financed, but its success depended on the support of farmers who in many cases must be educated.¹³ Mann, however, continued to insist that it was not the function of the College to single out any organization for special support and that the services of the College were equally available to all organizations, cooperative or profit-oriented.¹⁴ In June, 1928, the issue was joined between the two men, one insisting on a degree of independence as dean of the College, the other insisting that his position as spokesman for New York agriculture gave him the right to have his recommendations accepted. "I have been accumulating the feeling," wrote Babcock, "that you thought I was someone who had to be handled." "You must have your mind wholly at rest," replied Mann, "with respect to my personal feeling. I have unbounded admiration for you personally . . . We are not going to have any trouble."¹⁵

In practice, it was impossible to implement the college policy of strict impartiality toward businesses dealing in farm supplies in the face of extension workers' enthusiasm for the methods and objectives of the G.L.F. County agents gave Burritt considerable anxiety by their support of the organization and extension specialists found it humanly impossible to treat companies which continued to give the farmer poor value for his money in the same way as the G.L.F., which implemented their recommendations.¹⁶

Mann did exercise some degree of control over extension work through his review of vouchers. In 1922, for example, he refused to permit the payment of state funds to Babcock's assistants for trips to Utica to discuss with Dairywomen's League management "the possibilities of eliminating useless and duplicate plants."¹⁷ The frank offered a means for controlling the circular correspondence of county agents. In one case, a county was presented with a bill for a letter addressed, "Dear Member." County farm bureau organizations tended to resent

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this control; Orange County, in one case, returned the franked envelopes.¹⁸

Most of the operating funds for the county farm bureaus were raised in the counties from membership dues and appropriations by boards of supervisors. In 1922 and 1923, local support amounted to about 84 per cent of the total budget of the county farm bureau associations, and of this about one-half was appropriated by county boards of supervisors. Throughout the decade over 80 per cent of the funds available in the counties were raised locally.¹⁹ In the national Department of Agriculture, however, there was widespread opposition to the College's policy of emphasizing local support of county associations and using federal funds to support the work of the extension specialists. In 1924 Burritt testified before the House Agricultural Committee in opposition to legislation then before Congress requiring the states to allocate at least 75 per cent of the Smith-Lever funds for the support of county organizations.*

Only once during the decade did a board of supervisors in the fifty-five counties supporting farm bureau organizations withdraw the appropriation for this work. When this occurred in Niagara County in 1922, the farmers and businessmen who considered agricultural extension programs too valuable to be lost on this account maintained the work by voluntary contributions, and, in 1923, even increased the budget although no public funds—federal, state, or local—were allocated for the work of the Niagara County Farm Bureau at that time.²⁰

Bristow Adams and some of his colleagues in the Office of Publication thought extension work would be more successful if an element of humor were injected into it. A higher entertainment content, Adams insisted, was also desired by many county agents. As a step in this direction "agrigraphs" were prepared for distribution to

*Burritt to Mann, March 4, 1924, Mann Papers; Burritt Diaries, March 10, 11, 1924. This was a continuing problem. In 1940 the director of extension, L. R. Simons, called "arbitrary" a USDA decision limiting federal cooperative funds paid to extension specialists to one-third of the total. Refusing to bow to this pressure, Simons said the College was already complying fully with all legal requirements (Simons to M. L. Wilson, Oct. 16, 1940, Carl E. Ladd Papers).

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local newspapers. The following must have appealed to prohibition sentiment.

How dry I am, said Tom Seed-Corn,
From noon to night, from night to morn.
John Farmer plucked me ere the frost
In which my many friends were lost.
My state of perfect dessication
Is guarantee of germination;
I couldn't freeze if I should try
Oh, ain't I glad I am so dry?²¹

Adams, however, was a minority voice. The trend, as perceived by Lloyd R. Simons, assistant county agent leader, was toward more definite specialized service based on the project approach and carried out by men of substantial technical competence.²² Where specialized skills were needed in a county over a period of time, specially trained agents were provided. In 1923, for example, special assistant agents were stationed for six months in the fruit and potato areas to provide spray service to growers.²³ Regular agents attended training sessions to prepare them to meet the demand for specialized service. The first marketing school for agents, held in June, 1930, dealt with how agents could teach farmers to market their produce cooperatively.²⁴

A new form of communication—the radio—was used to establish direct contact between the extension specialist and the farmer. In 1924 the College, in cooperation with the State Farm Bureau Federation, started broadcasting twice a month over WGY, Schenectady. At first this medium was very discouraging, for the number of farmers possessing radios was unknown and there was little tangible evidence that the programs were heard or appreciated. Radio, however, rapidly progressed from being a novelty to becoming a necessity. By August, 1929, when the College started broadcasting agricultural information for one hour each noon over the Cornell University station, it was evident that radio was an effective extension medium.²⁵

Farm study courses, started on a tentative and experimental basis by several departments in 1914, received greater emphasis in the 1920's. In 1921 the faculty recognized the educational significance of these courses by rescinding an action of 1916 which opposed granting certificates for their completion.²⁶ In 1923, 598 persons were

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enrolled in a total of ten courses. This enrollment gradually increased, especially in areas of the state where county agents organized study groups or otherwise made effective use of the courses. Participation was limited to those who could make practical application of what they had learned, a requirement which undoubtedly contributed to the success of the courses.*

The junior extension work attained maturity. In 1928 the total enrollment in 4-H clubs reached 18,797, and twenty counties employed full-time 4-H agents. As would be expected, enrollment increased most rapidly where strong leadership was present, a situation indicated by the large enrollment in several counties having low population density. In its early development the junior extension work had been conducted primarily by the employees of the College or county associations; but by the 1920's the emphasis had changed to the operation of 4-H clubs by voluntary leaders. By 1928 systematic training had been organized for these volunteers. In 1924 an amendment to the Farm and Home Bureau law placed the county 4-H club work on an equal rank with agricultural and home economics extension.†

The distaff side was accommodated with a new name for Farmers Week in 1928. Registered attendance that year at Farm and Home Week was only slightly below the 1927 record of 5,157. The young people had their own annual event at the College in the Junior Field Days, established in 1921. Held after school was out, this event in 1928 attracted over 2,100 youngsters.²⁷

Effective July 1, 1923, Burritt's title was changed to director of extension, with his relation to the dean remaining unmodified.° The following June, at his request, he was relieved of his position so that he might devote more time to his farms at Hilton. His successor, Carl

*As high as 50 per cent of those enrolling completed the work (*Ann. Rpt. of the N. Y. State Coll. of Ag.*, 1924, p. 54; 1929, p. 51).

†The counties having over seven hundred members in 1928 were Chautauqua, Chenango, Delaware, Jefferson, Nassau, Onondaga, Oswego, Otsego, and Wyoming (*Ann. Rpt. of the N. Y. State Coll. of Ag.*, 1928, pp. 122-123). The state made \$600 available annually for each division, providing it was matched by \$2,500 from the county (*Laws of New York*, 1924, ch. 248).

°Mann to E. R. Eastman, June 18, 1923, Mann Papers. The prefix "vice" was dropped from the titles of the other directors at the same time.

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E. Ladd, had been, like Mann and Burritt, an outstanding student while an undergraduate at the College.²⁸ Although Ladd was untrained in engineering, Professor H. W. Riley considered him such an able teacher and person of vast general competence in agriculture that he recommended his appointment to the extension staff in agricultural engineering in 1918.* By 1924 Ladd had a wide range of administrative and teaching experience, having served three years as director of the state schools of agriculture at Delhi and at Alfred, two years as specialist in agricultural education in the State Education Department, and four years as extension professor of farm management at Cornell.

The status of extension workers received considerable attention at this time. When it was suggested in 1921 that Mann use the occasion of President Schurman's retirement to press for the inclusion of extension specialists in the faculty, he indicated that opposition in the University was so strong that the selection of the new president might be prejudiced by requiring candidates to commit themselves on the issue.²⁹ In 1930 Director Ladd reopened the matter with his report that the extension staff was "pretty badly stirred up" about its continued exclusion from the faculty. Mann then thought there was some possibility of securing a favorable decision and asked Ladd to procure statistics comparing the number of doctors' degrees on the extension staff with those of other faculties.³⁰ Ten years were to pass, however, before extension specialists were admitted to the Faculty of Agriculture.

County agents were more fortunate. In accord with USDA policy, a step was taken toward the elevation of their professional status when the Cornell trustees decided in April, 1921, to permit agents sabbatic leave for purposes of professional improvement. This USDA policy was a result of more than ten years of agitation by county agents, working through their organization, the National Association of County Agricultural Agents, to secure means for their professional improvement.³¹

Among the most encouraging developments in extension was the planned adjustment to agricultural change at the county level, based

*Ladd did not accept the position (Riley to Mann, Aug. 9, 1918, Mann Papers).

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on cooperation between local people and specialists from the College. By 1925 enough data had been collected through soil and farm management surveys to predict with a fair degree of assurance the likelihood of success in a particular agricultural area. It was recognized that wise public policy should not encourage the maintenance of agriculture in areas ill-suited to compete for a share of the limited market for agricultural produce. Large parts of the state then being farmed, especially in the southern tier, were recognized as suitable only for reforestation or pasture. Other parts of the state could support agriculture only under a favorable combination of circumstances. The maintenance of schools and highways and the introduction of utilities like rural electric lines were frequently economically unsound in these marginal areas. An alternative to the cycle of mortgage, failure, forced sale, or abandonment of farms and of local businesses dependent on the patronage of farmers, lay in land use planning. In counties with a more favorable combination of soil, climate, and access to markets, land use planning offered the possibility of greater social stability.

The rapidly declining market for timothy hay, consequent to the decline in the use of horses, forced an agricultural readjustment in large areas of the state producing for this market. In Seneca County, farmers and businessmen dependent on the prosperity of agriculture decided that the options available to farmers in the area should be studied as a basis for planned adjustment to economic pressures. "We believe Seneca County has taken the leadership in the United States," stated L. R. Simons in 1928, "in attempting on a county-wide basis to study present agricultural conditions and to recommend long-term adjustments." Professor W. I. Myers and six other professors from the College selected by the County Farm Bureau Executive Committee prepared recommendations for this adjustment and, at a mass meeting attended by over three hundred people, presented their report. With a few minor changes, it was accepted by the County Farm Bureau as the basis for a long-range agricultural program.³² The implementation and continuing adaptation of these recommendations to changing conditions was entrusted to a county conference board consisting of selected farmers and businessmen. By the

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spring of 1931, similar conference boards were established in four other counties.³³

An extension contribution to New York agriculture of a quite different nature was the emergency instruction in increasing milk production given New York State dairymen in the autumn of 1927, 1928, and 1929, to enable them to meet the fluid milk requirements of New York City and thereby avoid an extension of the boundaries of the New York milkshed. Bringing more producers into the New York market would have threatened the gains made by the Dairymen's League over the past decade. The possibility that such an extension might be necessary was so great in the fall of 1929, stated Director Ladd, that "the entire energy of the extension force in the State was diverted to a program of securing enough milk to meet city needs."³⁴

Another outstanding extension activity was the assistance given to the work of the Committee of Twenty-One. This committee originated at Farmers Week in 1920, in a conference on rural education, where a resolution was passed calling for the formation of a committee to develop a program for the improvement of rural schools in the state. The following day a similar resolution was passed by the Conference Board of Farm Organizations providing for a committee representing private and public organizations interested in the condition of the state's rural schools: the Grange, the Home Bureau Federation, the Farm Bureau Federation, the Dairymen's League, the State Teachers' Association, the State Department of Education, and the College of Agriculture. George Works served as chairman of this twenty-one-member group. A survey of rural schools was conducted with financial assistance from the Commonwealth Fund, technical questions involving the centralization of rural schools were studied, and, perhaps of greatest importance, the committee helped prepare rural people for the change in what many regarded, however erroneously, as the backbone of the American educational system.³⁵

Assistance given New York farmers in the production and marketing of quality seeds also ranks high among the accomplishments of Cornell extension work. Prior to 1916 the College had assisted in forming the New York Potato Association and in that year began the inspection of members' fields with the aim of securing quality seed which could be labeled as "certified" by the association.³⁶ However,

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the effectiveness of the certification program was limited by the looseness with which some growers interpreted the reports of field examinations by Cornell inspectors and by the weakness of the New York Potato Association, which was beset by a controversy between members desiring to market their seed under a pooling contract and individualists who considered themselves "non-poolers."³⁷ By 1923 the need was evident for an organization which could control the sales of its members and certify seed grains as well as potatoes. In that year the New York Seed Improvement Cooperative Association, Inc., the forerunner to the present Certified Seed Growers Cooperative, Inc., was formed, and the following year its office was established at the College. From the beginning, this organization was able to enforce the standards for certification established by the College.³⁸

The establishment of fairly amicable relationships between the county farm and home bureaus was another important accomplishment, due less to planning at the College than to pressures generated within the counties where people working in close physical proximity found it important to get along well with each other. About twenty states attempted to assure coordination of extension programs at the county level by placing the farm bureau agent in general charge of the home demonstration and 4-H activities. In New York the opposite philosophy prevailed at this time, the work of these agents being almost completely separate.³⁹ A strong case could have been made early in the decade for the desirability of greater centralized control of extension programs at the county level, but by 1930 relations between the agricultural, home demonstration, and 4-H agents in New York State were generally based on a willingness to consult and cooperate.⁴⁰

Farmers and businessmen who accepted the desirability or inevitability of agricultural change tended to support the Extension Service; those dedicated to the maintenance of the *status quo* tended to oppose. Among the latter were dealers who not only refused to supply feeds mixed to formulas which would meet the requirements of farmers but who also discouraged farmers from obtaining these feeds from other sources.⁴¹ The *Rural New Yorker* seemed determined to prevent change in rural society throughout the decade. It attacked the G.L.F., opposed the consolidation of rural schools advocated by

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the Committee of Twenty-One, and, in the crucial period of declining farm bureau membership, mounted a strong attack on the farm bureaus and their relationship to the Extension Service.⁴² Much of the energy of the county agent leader and his assistants in 1924 and 1925 was devoted to countering these attacks. Although the *Rural New Yorker's* criticisms were rarely cast in a constructive form, they nonetheless served a useful purpose by forcing those attacked to evaluate their programs and make clear to farmers what they hoped to accomplish.⁴³

RELATIONS WITH THE STATE

The \$500,000 initial appropriation of the three million dollars allocated by the state for the College's building program was used to construct a new dairy industry building, a change in priority from the plans of the previous year, following the decision to locate the plant science building on the site of the existing dairy industry building. The new dairy industry building, later named Stocking Hall, was constructed and largely equipped within the initial appropriation. It was occupied in the summer of 1923.⁴⁴

An over-all plan for the physical development of the College was started in 1920 in such detail that two years were required for its completion. L. F. Pilcher, the state architect, entered into this planning with enthusiasm. The final plans, which included a new library and rural engineering building, resulted from a cooperative study by Pilcher, the Committee on Buildings and Grounds of the Board of Trustees, the Dean and members of the Faculty of Agriculture, and the consulting architect, A. L. Brockway. "It is confidently believed," said Brockway, "that it represents practically the first attempt to develop a completely comprehensive group plan for all the activities involved in Agricultural Education."⁴⁵ Political changes consequent to the election of 1920, however, made the implementation of this plan highly uncertain, and for the next several years it was difficult even to maintain the existing activities of the College.

Governor Nathan Miller (1921-1923) favored rigid state economy, which he equated with slashing expenditures for public services. On one of E. R. Eastman's several trips to Albany to talk with the Governor on behalf of the Farmers Joint Committee, the Governor

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broke into Eastman's description of the cramped working conditions at the College. "Take a look over there," he said, pointing to the crowded conditions of his office as if to justify the crowded conditions of an educational institution.⁴⁶ The Governor relieved the state of its commitment to the three-million-dollar building program at the College by declaring illegal the legislature's practice of permitting contracts in advance of appropriations.⁴⁷ An equally unfortunate situation existed in the legislature, where the view that the College should confine itself strictly to the education of farmers—a position that always had numerous supporters—became dominant. The new chairman of the Senate Finance Committee, Charles J. Hewitt, was strongly inclined toward this view and used his key role in the Senate to narrow the scope of agricultural education at Cornell.

In 1921 the total state appropriation for operation and maintenance was reduced by \$110,000 from the previous year, and all state support for the game farm was ended. Senator Hewitt believed this work should be concentrated at Syracuse and was adamant in his refusal to consider a deficiency appropriation to continue the work. At one point in the spring of 1920, he warned Dean Mann that any further attempt to come to Albany to reopen the issue would be regarded as "a waste of funds and a reflection on the institution."⁴⁸ The College had no recourse but to dismiss the staff, distribute the breeding stock to other institutions, and notify the 130 persons who had expressed interest in game breeding that the work would not be available.⁴⁹ On the return to power of the Smith administration in 1923, the College had a more favorable political climate for the restoration of the game-breeding work but faced a tactical dilemma. To press for the reestablishment of the game farm was thought to endanger the three-million-dollar building program; yet failure to put the matter before the legislature might be used to support the claim that Cornell was no longer interested.⁵⁰

Meanwhile, Mann was under considerable pressure to abolish other activities understood by members of the legislature to be unrelated to farming. In 1921 Mann asked the head of the Department of Floriculture, E. A. White, for help in justifying the existence of the department, saying at the time that if he could hold it one more year the College would be over the hump.⁵¹ Landscape art was

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also under considerable criticism. Erl Bates, who kept in close touch with legislative developments, reported that many legislators considered landscape art in a farmers' college something of a joke.⁵² In April, 1922, the trustees amalgamated the work of this department with floriculture under the new name Department of Floriculture and Ornamental Horticulture.⁵³ In view of these restrictions on the work of the College, Senator Seymour Lowman's threat of embarrassing consequences unless college employees voted to return the state administration to office seems nothing less than incredible.*

The operations of the College came under increasingly close scrutiny by the Board of Estimate and Control, which was determined to prevent duplication of activity by state institutions. The objective was of questionable application to educational institutions, where a certain amount of duplication was and continues to be inevitable and desirable, especially in research. Furthermore, the work of the board was colored by an element of the professional administrator's contempt for the academician. "Hypothesis [*sic*] may be all right for an institution of learning," stated Research Director Joseph Wilson to Director Betten, who was well aware that hypotheses did not obviate basic figures in considering the cost to the state of a college of home economics.⁵⁴ On the other hand, the work of the board also had the occasional effect of reinforcing the Dean's hand, thereby making possible accomplishments which had been resisted within the College as invasions on academic freedom. Witness an entry in the Minutes of the Faculty of Agriculture for 1926 dealing with a matter which had long concerned the Dean: "Attention was called to the fact that authors' corrections were adding greatly to the cost of the printing of bulletins and that the State Board of Estimate and Control had announced its intention to deal drastically with this situation."⁵⁵

Systematic administrative supervision of the College by a division of the state government was established in 1926 as part of the reorganization of state government advocated by Governor Smith. This step had been under consideration since the beginning of the Smith administration; as early as 1919 the Governor's Reconstruction Commission had recommended placing the state colleges under the

*Seymour Lowman to Mann, Oct. 16, 1922, Mann Papers. Lowman was Senator from Tompkins County.

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administrative direction of the State Education Department. In 1926 that department was given "general supervision over the requests for appropriations, budgets, estimates, and expenditures of the College."⁵⁶ This legislation clearly represented an infringement on the authority already granted Cornell University. The resolution of this conflict from the University's point of view was described in a memorandum prepared by the University's treasurer, George Rogalsky:

From the first the Education Department insisted it was supreme—the writer had a long three page letter from the Commissioner of Education himself, ordering us to take directions and follow the procedures as from time to time set forth by his deputy in charge of all financial matters. We said we were willing to cooperate, but did not concede Education's jurisdiction. Finally, with each side submitting briefs to the State Attorney General on the disputed question, we got a rather sweeping opinion in our favor. However, the Education Department still refuses to concede our semi-independent status. We flatly refused to comply with its request that we have no dealings directly with any other departments in Albany—but we went so far as to agree to tell Education about any direct negotiations we did have with the Comptroller, Budget Office, etc., and the results thereof . . . It simply does not work to have the employees of the Education Department try to represent Cornell before the other departments or agencies of the State at Albany. Such employees inevitably color the orders, directions, etc., with their own viewpoints and procedures, concede their applicability to the University, and in that way whittle away our liberties.⁵⁷

The budget director and chairmen of the appropriations committees of the two houses of the legislature made their own interpretation of the law. After 1926 they refused to admit any representative of the University to the budget hearings, thereby making it necessary for the commissioner of education to represent the state colleges at Cornell.⁵⁸

It was fortunate for the College of Agriculture that Frank P. Graves was commissioner of education. Graves had acquired some knowledge of agricultural education while director of the Experiment Station and president of the University of Wyoming and was personally on excellent terms with Dean Mann. Some of his subordinates, however, were less well informed. Assistant Commissioner James Sullivan, for example, showed a gross ignorance of the variations in

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the research and extension activities among the state colleges at Cornell when he presumed to compare the cost per student on the basis of dividing the total budget of each college by the number of students.⁵⁹

It became evident late in 1927 that financial authorities in Albany believed there was waste and inefficiency at the College even though they had no specific knowledge on which to base such a criticism. Late in 1927, Commissioner Graves stated that this feeling could be dissipated only by a thorough and complete survey of the College's activities. After a session with the finance committees, he reported numerous suspicions concerning the efficiency of the College. "I am quite certain," he added, "it is at the root of their unwillingness to increase salaries. I do not believe that, in the long run, you will ever get the College on the right basis by jamming through your program by political influence."⁶⁰ When Mann took exception to this reference to political influence, Graves replied, "I am inclined to believe that there are some things which have been practiced and which are open to legitimate criticism, and that rightly or wrongly, the financial authorities think that they have been obliged to swallow them in the past through political pressure."⁶¹

The survey was conducted in the spring and early summer of 1928 by a team of well-known educators selected by the University and State Education Department. Perhaps the most significant among the survey reports was that on research prepared by E. W. Allen, chief of the Office of Experiment Stations, and the one on resident teaching prepared by Harlan Updegraff, a professor of educational administration. The effects of the survey seem to have been almost entirely beneficial. Within the College the reports served as points of departure from which members of the faculty examined their work; in Albany the survey informed the state's officials and had the effect of restoring their confidence in the work of the College. By classifying college expenditures into the categories of teaching, extension, and research, the survey made clear to the budgetary officials for the first time how large a part of the budget was used to support the latter activities.⁶²

On January 8, 1921, the trustees met to decide if their action of the previous year asking the legislature to establish a state college of

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home economics at Cornell should stand or be revoked. A member of the board had prepared a statement setting forth the position that the University should not oppose state appropriations for a college of home economics elsewhere, a point of view which Mann claimed showed "a complete lack of appreciation of the history of divided institutions in other states."⁶³ Having already negotiated with university authorities on the timing of announcements indicating that the enrollment of women students would be restricted to available dormitory space, Mann prepared a twenty-two page statement for presentation to the trustees at the January 8 meeting. The trustees' responsibility for causing the state to act wisely by concentrating at Cornell advanced instruction in home economics while it was yet the only institution in the field was the nexus of his argument.⁶⁴ At least a majority of the trustees accepted Mann's position, and the struggle in the legislature was renewed.

The bill establishing a state college of home economics at Cornell was again defeated in 1921. When the legislative session ended in 1923, the bill had been defeated four years in a row. In 1924, when the bill had passed the Assembly and seemed certain of passage in the Senate, Senator George Fearon objected in a parliamentary situation where this was sufficient to defeat the measure.⁶⁵ Mann was incensed and made references to the distasteful possibility of fighting fire with fire. In his published report to the President of the University, he took the unusual step of laying the blame for the failure of the bill squarely on "the Senator from Onondaga."⁶⁶ It is probable that negotiations occurred between the authorities of Cornell and Syracuse Universities before the next session of the legislature, when the bill to establish the New York State College of Home Economics at Cornell University passed into law. At any event, President Livingston Farrand of Cornell later referred to promises made Syracuse regarding a state college of education which Syracuse was known to desire. Cornell would not, he said, press for the establishment of such a state college at Ithaca or oppose such a college at Syracuse providing Syracuse did not attack the state facilities at Cornell.⁶⁷

These promises were recalled in 1929 when Commissioner Graves insisted upon expansion of facilities at Cornell for training secondary teachers as the price of state support for work in child development in

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the College of Home Economics.⁶⁸ Flora Rose had long been interested in this field and in 1925 secured an annual appropriation of \$10,000 from the General Education Board, although she was cautioned at the time that it might be difficult to persuade the state to take over the work when the grant terminated five years later. By December, 1929, Commissioner Graves went even further and made the continuance of his support for work in rural education contingent on this expansion. Dean Mann was anxious to meet Graves' wishes by establishing a graduate school of education, but President Farrand then felt bound by promises given Syracuse.⁶⁹

The status of Cornell research and extension work on Long Island was a crucial question settled during the decade. One group on the Island wanted to upgrade the State Institute of Applied Agriculture at Farmingdale into a state agriculture college with its own extension division.⁷⁰ Another group wanted to encourage Cornell extension work there and make special research facilities available to the College of Agriculture for vegetable crops investigation. In 1921 Robert Seaman and other Long Island poultrymen persuaded Governor Miller to permit Cornell poultry extension work there, and special legislation was passed the following year appropriating \$38,000 to establish a vegetable investigations laboratory on Long Island, a piece of legislation which must have had remarkable guidance to pass during the administration of Governor Miller.* The supporters of Farmingdale were not completely routed, however; in 1926 they mustered enough strength to prevent Governor Smith from closing the institution and from using the buildings in connection with the state hospitals on Long Island.†

**Laws of New York*, 1922, ch. 406; Mann to Schurman, March 21, 1922, Mann Papers. This is one of the few letters in the Mann Papers written to Schurman after he retired in 1920. Its scope and tone indicate that the relationship of the College to Farmingdale had been a matter of serious concern during Schurman's administration. As early as 1895 a bill was introduced in the Assembly establishing a station for horticultural experimentation on Long Island to be administered by Cornell University (*Cultivator and Country Gentleman*, Mar. 14, 1895, p. 211).

†The plant industry building was again postponed by the Governor in order to secure funds for hospital construction on Long Island after the plan to take over the Farmingdale buildings was rejected by the legislature. (Mann to Betten, May 17, 1926, Mann Papers).

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Throughout most of the decade, state appropriations were inadequate to carry on effectively many aspects of agricultural education at Cornell. Salaries for clerks and stenographers were lower in the College than in the endowed division of the University; for this reason many positions were vacant for months at a time.⁷¹ The inadequacy of appropriations for maintenance sometimes reduced the value which could be obtained from more adequate appropriations in other areas. Through lack of available funds for wiring in 1921, the Department of Dairy Industry was unable to install a new electric pasteurizing machine which had been donated. For several years the department secured its milk supplies only by persuading the Dairymen's League to provide milk at a price which in effect required its members to subsidize the department.⁷² The budgetary process also failed to keep pace with changes in agricultural education. Research in agricultural economics required travel funds rather than material equipment, yet by 1927 the budget officers were not prepared to make this substitution.⁷³ After the salary adjustment of 1920, no substantial additions were made to salaries until 1925, when the salary scale had declined to about eighth place among the agricultural colleges of the country.⁷⁴ After 1925 the process was repeated, with the next salary increase coming in 1929. One major breakthrough occurred in 1928, however, when the legislature appropriated \$1,100,000 from a state bond issue for the long-deferred plant industry building. This was to house the Departments of Botany, Plant Breeding, Pomology, Plant Pathology, and Floriculture and Ornamental Horticulture, thereby relieving the pressure of these departments on the existing facilities.⁷⁵

In 1929 Governor Smith was succeeded in the Executive Mansion by Franklin D. Roosevelt. For once the long process of educating a new governor concerning the needs of agricultural education was unnecessary. Governor Roosevelt had frequently visited the State Experiment Station at Geneva, and Mrs. Roosevelt had taken a keen interest in the work of the Colleges of Agriculture and Home Economics during the Smith administration. In 1928 Mrs. Roosevelt persuaded the state architect to draft plans for a home economics building, and the following year the Governor counseled Miss Van Rensselaer on how to get a bill for this building through the legisla-

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ture. "I can't help but feel very optimistic about our Albany situation for the next few years," Ladd wrote Dean Mann shortly after Roosevelt took office. "I believe that we have turned the corner and that your burdens will be much easier with the new attitudes toward agriculture and toward the Colleges."⁷⁶

The College made impressive advances during the Roosevelt administration. Not only were salary increases granted in 1929 but, of even more importance, a salary schedule was obtained which provided maximum and minimum salaries at each academic level and recognized as an ultimate goal a salary of \$10,000 for the unusual man. Over \$150,000 was appropriated that year for new activities.⁷⁷ In 1929 Mann pressed for the inclusion of the college staff in the State Employees' Retirement System, having overcome his earlier fear that the security this system provided would tend to assure the permanency of the staff's less able members.⁷⁸ The following year the Civil Service law was amended to admit staff members to the retirement system; by increasing their economic security in a period of economic uncertainty, this made the College of Agriculture a more attractive place to present and potential members of the staff.⁷⁹ In 1928 and 1929 the legislature appropriated a total of nearly one million dollars for a new home economics building and in 1930 authorized the trustees to proceed with construction of a building to cost \$650,000 to house the Department of Agricultural Economics and Farm Management and the Department of Rural Social Organization. Dean Mann was even more delighted by the Governor's assurance, given during his visit to Farm and Home Week in 1930, that he intended to secure \$500,000 each year for construction until the building needs of the College were satisfied.⁸⁰

Governor Roosevelt's appointment of the Agricultural Advisory Commission, under the chairmanship of his friend, Henry Morgenthau, Jr., brought college and state personnel into closer contact. Unlike some commissions appointed to delay coping with problems, this commission was appointed to promote one of the Governor's personal interests — the effective utilization of soil resources. Conditions were now favorable for the implementation of findings growing out of research conducted at the College over the past twenty years, especially those that related to soils, farm management, and agricul-

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tural economics. The time was also opportune for the kind of thoroughgoing survey of the state's agricultural resources which Galloway had projected in 1915.⁸¹ As college representative on the commission, Director Ladd came into frequent contact with Morgenthau and F.D.R.; during 1929 and 1930 they came increasingly to rely on his judgment. In December, 1930, Roosevelt appointed Morgenthau state commissioner of conservation, and Ladd was asked to serve as deputy commissioner. In spite of the difficulty of filling his position at the College, Mann saw no alternative to granting him a leave of absence, since the reforestation aspect of the land utilization program was so close to the Governor's heart and Warren and Ladd had played such a critical part in laying out this program.⁸²

Roosevelt was a dynamic leader, who was able, with the strong support of farmers' and women's organizations, to secure the passage of legislation favorable to agricultural education and home economics at Cornell. There was, however, no move during his administration toward expanding the educational scope of the College of Agriculture. Mann's hopeful recommendation for utilizing the administrative machinery of the Extension Service for broad cultural subjects like music and art appreciation fell on deaf ears.⁸³ Instead of broadening the scope of the College, Albany officials ferreted out state-supported activities they considered more properly chargeable to Cornell University.

In 1929, at their request, the work in zoology, which had developed gradually within the Department of Entomology since the Bailey administration, was returned to the College of Arts and Sciences. Much more criticism had attached to placing zoology in the College than occurred in the case of botany, and the sequel to the initial step was quite different. Support for the Department of Botany in the College of Arts and Sciences was gradually reduced until, in 1920, the department was eliminated; support for zoology continued so that by 1929 there appeared to be considerable duplication in the areas of zoology and biology between the state and endowed divisions of

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the University.* In 1930 the Senate Finance Committee refused to bring Professor R. A. Emerson's salary to \$7,500 while he was dean of the Graduate School on the ground that it was a scheme to transfer to the state expenses which legitimately belonged to the University.⁸⁴ That year the appropriation committees also withdrew the semifluid budget permitted the College since 1919. In explaining the return to the rigidly itemized appropriation act, Dean Mann noted that "certain quarters" in the state had objected to the degree of freedom the College enjoyed, since the state budget had generally remained rigidly itemized.⁸⁵

INTERNAL ADMINISTRATION

The College adjusted to external pressure for instruction in "practical" agriculture by strengthening technical training as well as by transferring to the endowed divisions of the University activities considered by Albany officials to fall outside the scope of agricultural education. As early as 1921, Betten was visiting other agricultural colleges, examining the organization of two-year vocational programs and noting the degree to which they were oriented toward training students to become farmers.⁸⁶ In January, 1927, Mann presented a statement to the Faculty of Agriculture recommending the development of vocational courses of less than four years' duration and a reexamination of the plan and scope of the winter courses. Unless the duty to serve agriculture directly was recognized, he warned:

We are in danger of jeopardizing our ability, if not our right, to seek public funds from a State which has specifically excluded from its support the general fields of higher education . . . As long as this state policy continues, this College will be judged by the financial authorities of the State and by no inconsiderable proportion of the population in part by its immediate usefulness to the farming industries. The most common test applied by persons thus minded is the proportion of students who go into farming and the measure of their success. It is futile to ignore or attempt to resist this fact.

*The pressure to return most of the work in zoology to the College of Arts and Sciences was a consequence of the survey of college activities made the previous year (Mann to Farrand, March 7, Farrand to Mann, June 29, 1929, Mann Papers).

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Mann concluded by indicating the desirability of a larger enrollment of farm boys and the necessity for developing courses to meet their needs.⁸⁷

Betten met with the faculty in each department to encourage the development of special curricula for students interested in farming. Progress was slow, for he had to overcome natural inertia and a reluctance to give up engrossing problems in order to take on new duties. Unquestionably his work was aided by the report of the survey committee recommending greater emphasis on vocational agriculture and because of pressure from a number of alumni with the same objective.* Two-year programs were announced for September, 1929, in dairy farming, poultry farming, fruitgrowing, and vegetable gardening. The following year additional curricula were announced in marketing fruits and vegetables, manufacturing and marketing dairy products, commercial floriculture, and nursery landscape service. Although the new curricula were composed of existing courses, Dean Mann anticipated that from this beginning a separate program for the vocationally oriented student would eventually develop.⁸⁸

It was a questionable policy for the state's officials to put the College in a position where it seemed necessary to compete with the six state secondary schools of agriculture at a time when the demand for instruction in vocational agriculture was no longer increasing. The number of farms in the state had declined steadily since 1880, and the economic forces contributing to this decline were too pervasive to be halted, as some hoped, merely by providing more opportunities for vocational training in agriculture. In 1929 A. W. Gibson prepared to enlist the help of over three thousand alumni in recruiting students for the two-year program; yet this ambitious program, supplemented by some help from the Extension Service, did not achieve a large enrollment.⁸⁹

The faculty was ready to drop the winter courses in 1926-1927

*Betten to Mann, Nov. 10, 1927, Mann to Betten, June 30, 1928, Mann Papers. The president of the alumni association appointed a committee of alumni in February, 1929, to come to the College and work with the Educational Policy Committee on the subject (A. W. Gibson, Coll. of Ag. Historical Notes, 1962).

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when enrollment declined to seventy-nine students, but the same logic that supported the development of the two-year curricula required that they be maintained. In 1927 Mann urged the faculty not to count on the abolition of the winter courses; in 1928 he transferred their administration to the Extension Service, where it was hoped that Professor Charles A. Taylor could publicize the courses and make them serve the needs of farm people.⁹⁰

In spite of adaptation to external pressures, the trend in resident instruction was away from vocational agriculture toward the study of basic and applied science, teacher training, and business management, all of which had only partial relevance to agriculture. The students, who were largely free to take the work most attractive to them, showed a steadily decreasing interest in the courses related to the production phases of agriculture.* The tendency of faculty members was to broaden the scope of agricultural education by introducing new courses which presented the product of new areas of research while serving the needs of groups looking to the College for assistance. In 1921, for example, a new course in green-keeping on golf courses was introduced. In 1923 a group of faculty members pressed for special courses to train Boy Scout executive officers; this Mann opposed as an unsupportable departure from technical agriculture.⁹¹ In addition, during the decade, some departments moved away from the production phases of agriculture toward basic science. This was especially true in entomology, where economic applications were minimized so much that it proved difficult to justify the department budget to state authorities.† By 1930 a broad education in agricul-

*The percentage of total student hours taught by a group of departments which were primarily (but by no means exclusively) concerned with the production phases of agriculture, including animal husbandry, poultry husbandry, dairy industry, agronomy, farm crops, pomology, and vegetable gardening, declined from 38 per cent in 1910, 29 per cent in 1915, 27 per cent in 1920, to 15 per cent in 1927 (Faculty of Ag. Minutes, VII, 199).

†The problem was so serious that Mann took the unusual step of writing directly to members of the department to encourage greater stress on economic entomology (Mann to J. C. Bradley, Jan. 17, to Robert Matheson, Jan. 18, to G. W. Herrick, Feb. 6, 1928; Anna B. Comstock to Mann, Oct. 16, 1927, Mann Papers).

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tural science and agricultural business was available in the College to the student who would meet the farm practice requirement, maintained in part to justify the budget of the College to those who insisted that the function of the institution was to train students to produce crops and animals.⁹²

The pressures of public officials toward this end were, in the long run, countered by the faculty, which was itself under pressures from other directions. The long-term trend toward development of general education in the College of Agriculture was not altered during the decade, for the transfer of activities to the endowed divisions of the University was more than matched by the announcement of new courses by the remaining departments.

Although there was considerable evidence of interdepartmental cooperation before 1924, Dean Mann believed that the dominant tendency was still toward the departments "becoming strictly watertight compartments of instruction," so self-contained and self-centered as to constitute "one of the chief dangers in our whole development at the College."⁹³ Centralized planning and coordination had been attempted unsuccessfully in the Galloway administration. To a large degree Dean Mann held the same objectives in the 1920's; but in this instance reliance was placed on the slower process of educating the faculty. Over the decade increasing coordination of departments was achieved by imperceptible degrees through pressures generated by administration and by the growing awareness that particular problems, both in research and extension, were too complex to fall within the range of skills and knowledge available within a single department.

The desirable balance between the freedom and initiative of the individual faculty member and centralized planning was probably most difficult to achieve in the administration of research. Faculty paid with federal funds had long been accustomed to organizing their research in project form with the objectives, methods, and relation to similar research indicated. Coordination was provided by a review of these projects at the station level by the director and at the national level by a representative of the States Relations Service. However, no project plans were required for research financed on state funds unless made a matter of departmental policy. Faculty

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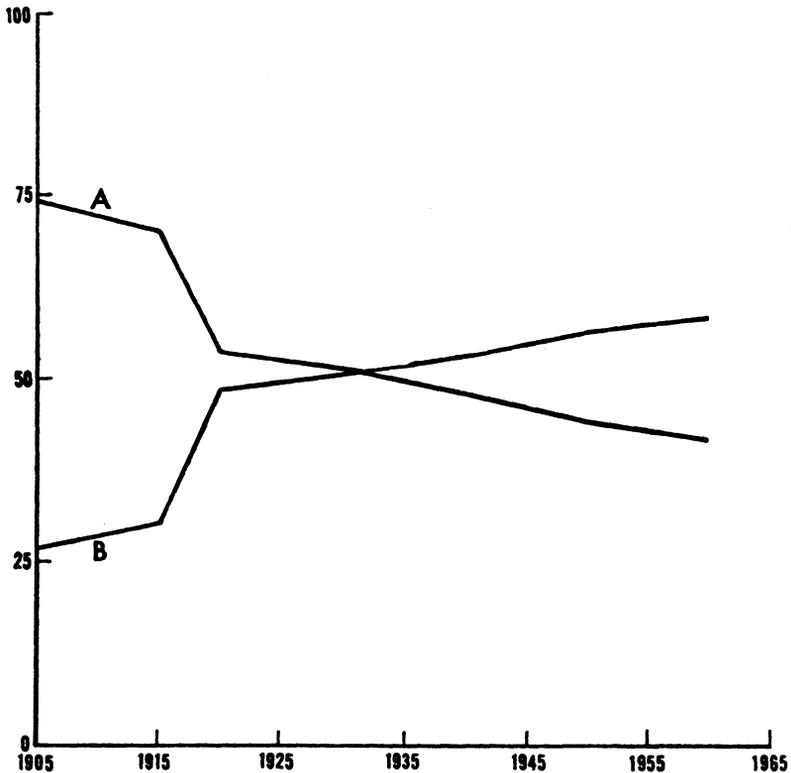


Chart 3. General education in the College of Agriculture: A—courses taught only in an agricultural college; B—courses which could be taught in other than agricultural colleges. (Based on the report of the Ad Hoc Committee on Educational Program, April 23, 1959, Faculty of Agriculture Minutes, XV, 210. The classification was made by Professor C. G. Sibley on the basis of course descriptions in the college announcements and confirmed by another faculty member working independently [interview, C. G. Sibley, Dec. 5, 1960].)

opinion was widely divided on the amount of coordination which was desirable; some faculty members favoring strict supervision, a much larger number preferring to rely on individual responsibility. On December 7, 1921, those present at the meeting of the Faculty of Agriculture adopted a resolution calling for consultation with the vice-director of research on all research projects; but, significantly,

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compliance with the resolution was left up to each person individually.⁹⁴

With the exception of federally supported research, the Cornell University Agricultural Experiment Station was an organization in name only, having neither a budget nor a director who could exercise authority. The majority of the faculty thoroughly opposed any sharp line between the research and teaching functions of the College. The reaction to administrative proposals for creating such a division, Betten declared in 1921, "has been so strong that we have never felt it was wise to force the situation."⁹⁵

Many faculty members felt that decreased support for research in basic science would be the price paid for greater coordination at the administrative level, and, at the time, this was not an unreasonable view. Administration was necessarily responsive to diffuse social pressures resulting from the public's preoccupation with the practical applications of science and its relative unconcern about the basic research underlying these applications. In addition, administration was directly responsible to agricultural and business organizations which looked to the College for aid in coping with pressing economic problems. In 1923 Mann and Burritt agreed that research should be "guided and directed" and research problems chosen "from the viewpoint of their value to the state." "This has been in my mind since the beginning," said Mann, "and was at the bottom of my recommendation for the creation of the position of Vice-Director of Research."⁹⁶ In 1922 Professor Chandler and Roscoe W. Thatcher, who succeeded Jordan as director of the Geneva station in 1921, agreed that a memoir on insects that infested cattails was of no economic value and put "the agricultural experiment stations as a group in the wrong light before the farmers of the state."⁹⁷ In 1926 Ladd wished to bring the research in the Department of Dairy Industry into line with current economic conditions by eliminating specialists on making cheese and ice cream and concentrating on fluid milk, a position, seemingly sound at the time, which was certainly unwise in terms of later developments.⁹⁸

Legislation to place the State Experiment Station at Geneva under the authority of Cornell University was passed in 1923 after Governor Smith threw the weight of his position behind the measure.⁹⁹ The

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merger came none too soon, for the problems of coordinating the activities of two independent research organizations were immense, and serious difficulties were already developing over control of horticultural research at the Vegetable Research Farm on Long Island.*

When Professor Chandler resigned in 1923 as vice-director of research to accept a position at the University of California, Thatcher was appointed director of both the Geneva and Cornell experiment stations.† It was Thatcher's intention to apply in the College of Agriculture methods for coordinating research which had long been routine at the Geneva station. The faculty, however, offered considerable resistance to his attempt to evaluate research and his efforts to secure annual research programs from each department, several departments dismissing his request for these plans in 1927 with a condemnation of administrative interference.¹⁰⁰ Thatcher's resignation in 1927 to become president of Massachusetts Agricultural College was viewed with mixed feelings. Many of the faculty were unquestionably relieved.

Dean Mann, on the other hand, was faced with the difficult problem of finding a successor who would be as effective in emphasizing the relationship of research to practical problems of agriculture while preserving some emphasis on fundamental problems, the views of some faculty members to the contrary. His choice was Frank B. Morrison, professor of animal husbandry and assistant director of the Experiment Station at the University of Wisconsin. Morrison became director of the Geneva and Cornell experiment stations in

*Mann to Thatcher, Oct. 27, June 8, 1922, Mann Papers. Although the land and facilities of the Vegetable Research Farm were placed under the administration of the College, Geneva was authorized by the legislation establishing the farm to maintain an entomologist and plant pathologist there (*Ann. Rpt. of the N. Y. State Coll. of Ag.*, 1922, Pt. I, p. 20). Control of the entomological and pathological work was placed in the departments at Cornell several years later.

†*Ibid.*, 1923, Pt. 1, p. 15. Thatcher had already demonstrated administrative ability at Geneva and in his previous position as dean of the Department of Agriculture and director of the Experiment Station at the University of Minnesota. After his appointment as director of the Cornell University Agricultural Experiment Station, the title of director of research was no longer used.

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October, 1927.¹⁰¹ Soon after he arrived, a program was initiated that illustrated the possibilities in interdepartmental research. Extensive borer damage in New York cornfields was the immediate stimulus. Little was then known about controlling the ravages of this pest. In January, 1928, Dean Mann called a conference at which a total of ten departments at Geneva and Cornell were represented in order to select a committee to be charged with developing a corn borer research program. An additional conference was also planned with members of the legislature and the Department of Farm and Markets, since an effective control program would require funds and regulatory authority.¹⁰²

A parallel situation existed in the reorganization of the potato improvement program. In September, 1928, Director Ladd found the program suffering from overspecialization of subject matter and an unwillingness of any department to be responsible or to permit any other department to be responsible. A master at securing a compromise of conflicting positions, Ladd organized a committee composed of representatives of interested departments to plan a statewide program and secured the release of Professor E. V. Hardenburg from other activities so that he could devote full time for a year to the extension program in potato growing and marketing. Securing potatoes which could compete in price and quality with those from other states required the participation of a large number of growers in the program. By the end of 1929, 270 growers in the leading potato-producing counties had been persuaded to enroll.¹⁰³

As dean of a faculty numbering over 160, Mann had little knowledge of what each individual was doing. A record of the time distribution of each faculty member seemed important to him, not only to protect the College from outside criticism, but also to prevent anyone from carrying a light teaching load presumably in order to do research unless, in fact, he was actually engaged in research. Four years were required to convince the faculty that they should make these data available to the administration.¹⁰⁴ Mann's efforts to improve teaching on a college-wide basis was another departure from the reliance formerly placed on departments. In 1924 Professor Works gave a course in college teaching for staff members, and Betten met with small groups to discuss such fundamental questions

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as the meaning of grades.¹⁰⁵ Mann was anxious to use faculty meetings to discuss educational problems common to all departments but found this a poor medium because of low faculty attendance, "a reflection," Mann concluded, "of the lack of interest in such discussions."¹⁰⁶

The survey reports made in 1928, and studies conducted immediately thereafter by faculty groups in order to clear up any inaccuracies in the reports, presented for the first time an accurate picture of the distribution of faculty time among the activities of the College. This distribution varied widely among departments, For example, the Department of Agricultural Economics and Farm Management, with the largest appropriation in the College for staff salaries, ranked in the first position among departments in the proportion of salaries allotted to research and sixteenth in the proportion allotted to administration; the Department of Floriculture and Ornamental Horticulture, ranking tenth in total salaries, ranked eleventh in research but first in the proportion of salaries devoted to administration.¹⁰⁷

E. W. Allen's report on research in the College generally had the effect of reinforcing positions already taken by the college administration. The authority of the director of the Experiment Station was so limited, it noted, that only with difficulty was he able to maintain a list of current research projects and their status. The development of research in general science blurred the lines between investigations undertaken for the benefit of agriculture and those of a more general nature. The former at least, said Allen, required supervision of a closer order than had been permitted, but all research, he insisted, should be based on definite and specific projects with the division of work between the Geneva station and the College being a matter of administrative decision.¹⁰⁸

The expectation by the State Department of Education that the recommendations in the Allen report would be implemented made it possible to achieve a degree of coordination that Mann had been unable to accomplish by persuasion alone. In October, 1928, the Board of Regents requested a list of current research projects with a critical analysis of each. Soon after this, the faculty voted to approve the project method for all research.¹⁰⁹ Professor Love, who was one of the most productive researchers on the faculty, considered this

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decision overdue. "Personally, I do not fear anything under a project system," he said; "a close study has convinced me that the sooner we can rid our minds of the wonderful freedom we enjoy and revamp our investigations in such a way that they will stand scrutiny, the sooner will our research be on a more sound basis and our results of more lasting value."¹¹⁰

While accepting a change in the organization of research, the faculty insisted that there be no change in emphasis. At the beginning of its analysis of Allen's report, the Committee on Experiment Station Work stated that it recognized research done in the basic sciences "of equal value" with that pertaining more obviously to agriculture.¹¹¹

The Updegraff report noted that administrative power was divided between the dean and the department heads, with little real power available to the dean's subordinate officers. Updegraff seemed to desire a transfer of authority from the department heads to these administrative officers.¹¹² However desirable it may have been in terms of administrative theory, it was far too radical a departure from existing practice to find acceptance. It is doubtful in any case if administration would have functioned more effectively by this reallocation of authority. Many of the activities of the directors were essentially unrelated to the possession of independent authority. One of their principal functions was to assist the decision-making process of the dean by providing expert judgment unbiased by pressures arising within particular departments. This source of independent information was of great value where an analysis of the work of a department was required or a question of interdepartmental relationships was involved. Through a continuing review of departmental activities falling within their particular sphere, the directors were able to give the dean a basis for supporting existing work or suggesting a change in direction at the time department budgets were arranged or department heads appointed. The directors also met as a group to consider problems of college-wide significance.¹¹³

Besides acting as a channel of communication between the resident and extension students and the dean, the directors also carried a large responsibility for exchanging information with other institutions and joining with their counterparts in these institutions in

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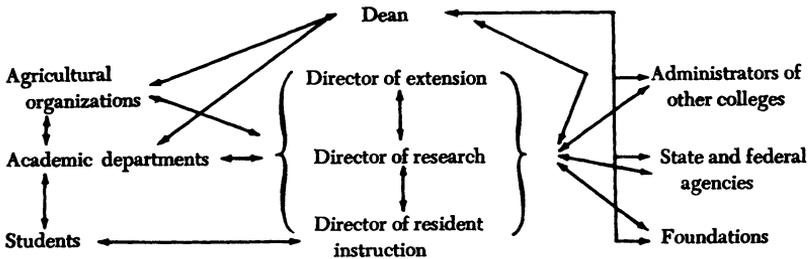


Chart 4. Communication network, College of Agriculture.

collective action where that seemed desirable. By 1920 the section on agriculture in the Association of Land-Grant Colleges was divided into three subsections: resident teaching, experiment station work, and extension work. By taking an active part in the activities of these sections, the directors gained perspective on problems common to agricultural colleges and gave others the benefit of their experience at Cornell.¹¹⁴

Professor W. I. Myers stated in 1930 that, along with Warren and Babcock, Director Ladd was one of the most important of the key men in New York agriculture.¹¹⁵ From his position as director of extension, Ladd kept in close touch with leading farmers and farm organizations and at every opportunity got out on the land to see for himself what was happening. It is evident, however, that he disagreed with Dean Mann about the importance of his position. Ladd considered the Extension Service the vehicle for transmitting the needs of agriculture to the College and an agency which should participate in formulating a research program directed toward meeting these needs. An agricultural experiment station, Ladd insisted in 1928, does not contribute to the development of science unless closely checked by and combined with practical agriculture.¹¹⁶ As the occupant of the position at the apex of the Extension Service, Ladd considered himself more valuable to the College than any single professor. Mann was less concerned about the source of motivation for research, although his support of the library and his interest in history suggests that he considered the record of human

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experience a likely starting point.* Ladd justified research directed toward the solution of immediate agricultural problems as a matter of fundamental conviction; Mann viewed it as a necessary adjustment to external pressures placed upon the College. For him the vital factor was having outstanding men on the faculty. "The greatest possession an institution can have is the professor of extraordinary capacity," he declared. "In any field there are only a few great minds and an institution can afford to pay almost anything that may be necessary to attract one of them."¹¹⁷ When Stocking resigned as head of the Department of Dairy Industry, Mann brought bacteriologist James M. Sherman from the USDA to head the department. The consequences of this appointment were contrary to the relationship Ladd predicted between research and extension; for while the research of the department became stronger, it gradually lost contact with the dairy-processing industry of the state.¹¹⁸

A variety of methods were used by Dean Mann to secure the excellence he desired in the faculty. Generally, however, a degree of control over faculty action was involved in their success, and Mann either lacked or was unwilling to use authority to make this control effective. For example, it was made clear that sabbatic leaves were to be used for professional improvement; but Mann never enforced his plan to have faculty members submit programs before taking this leave.¹¹⁹ His plan to contravene the narrowness of outlook which accompanied the departmentalization of agricultural knowledge by discussing basic educational problems at faculty meetings was frustrated by lack of attendance. The effectiveness of Betten's discussions of these matters with small groups was reduced by the reluctance of faculty members to give them priority over other activities. Mann's inability to develop a college-wide program for the continuing development of faculty members as educators pointed to a vacuum which could be filled only by the department heads taking a broad view of their responsibilities.

The idea of planning was attractive to Mann, as it had been to

*Burritt and Mann originally suggested and helped secure authorization for A. C. True's three volumes on the history of agricultural education (Mann to Burritt, March 8, to Henry C. Wallace, March 8, 1923; True to Mann, March 30, 1923, Mann Papers).

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Deans Bailey and Galloway. Like them, he desired to rise above the interplay of contending forces and create a plan within which the various college activities could be coordinated. At the state level also, he told Warren in 1923, he had long been interested in developing an educational policy and program. At a meeting of the Association of Land-Grant Colleges in 1922, he outlined a complex system for determining the aims and organization of courses of study in colleges of agriculture that was reminiscent of Galloway's plan to create eight administrative units and Bailey's plan to bring order to agricultural education in New York.¹²⁰ His success in implementing his plan was not appreciably greater than theirs, for the time had not yet come when the persons involved in these plans would admit that there was a wisdom greater than their own.

During the decade Mann's reputation as an able administrator, deeply concerned about broad educational problems, extended beyond the University to other institutions. In 1921 he was offered the position of state commissioner of agriculture; in 1924, the deanship of the College of Agriculture at the University of California as successor to Dean Hunt; and in 1927, the presidency of the University of Arizona. In that year also, President Pearson assured Mann that the way was open to succeed him at Iowa State College. In 1924 Mann was asked by the International Education Board to serve as director of its work in Europe, and for that purpose he was given a two-year leave of absence by the University. During that time the College was administered by a committee of the directors, with Director Betten acting as its executive officer.¹²¹

The criticism has been made that Dean Mann was somewhat inflexible, at least by comparison with his successor. Inflexibility seen from a different perspective may be called determination to stand for what seems right and important against powerful opposition. This quality was involved in pressing for the establishment of a separate college of home economics against the opposition of members of the Board of Trustees and of the New York State legislature. It was also involved in pressing for the establishment of courses in hotel management at a time when the state administration was committed to a program of economy. Mann's contribution in this connection

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was of vital importance in the development of the School of Hotel Administration at Cornell.

The initiative came from John M. Howie, coproprietor of the Hotel Touraine in Buffalo, who, in 1914, suggested the desirability, of a course in hotel management at Cornell. As a result of his activities in the American Hotel Association, the way was opened for Miss Rose to appear before the association in 1920 with the objective of securing funds to support a projected course in hotel management at Cornell.¹²² By June of 1921 funds and faculty approval of the course had been secured but the trustees moved to table the question of cooperation with the American Hotel Association because of opposition to the course and to the principle of private endowments for work in the state colleges. As in the case of home economics six months earlier, Mann appeared before the full board and obtained a favorable decision which left the way open for further private endowments.¹²³ The ultimate object, however, was to secure a state appropriation for the work in hotel management which would stamp it as a recognized part of the state's responsibility to education. In this attempt, said Dean Mann, "I am anxious that we shall not fail."¹²⁴

In 1922 the refusal of the state's officers to permit this appropriation for what clearly fell within the class of professional education led to considerable resentment in the American Hotel Association. Amid mutterings about the taxes paid by the hotel industry, members discussed the possibility of establishing the course at Columbia University, which was known to be anxious to cooperate with the association. However, the chairman of the association's education committee, who favored establishing the course at Cornell, managed to secure a subsidy from the association, pending further efforts in the legislature. The subsidy covered only the costs of professional instruction in hotel management; the faculty and equipment in other courses already organized were provided by the College of Agriculture with the understanding that no objection would be raised by state authorities. There was, in fact, little the state officials could do when Mann presented them with a *fait accompli*. However, he did not escape unscathed. "Speaker McGinnies was present," Mann later told President Farrand, "when Governor Miller, at the suggestion of Senator Hewitt, I think, rather thoroughly disciplined me for our

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having accepted the work in hotel administration in the College of Agriculture."¹²⁵

Renewed effort by the American Hotel Association did not secure the appropriation desired. Throughout the decade the course in hotel management was supported with an indirect subsidy by the state and direct support by the association. Continuation of the course under these circumstances was uncertain, for financial support depended on changing policies and personnel in the association; each year the course had to be justified anew.¹²⁶ In 1923 the work was conducted on an overdraft of \$5,200, and the following year there were more applicants for the course than the association would support.¹²⁷ In 1927 the agreement with the American Hotel Association terminated. Thereafter the necessity for financing the work entirely from tuition income added to the overdraft. Throughout those years, Dean Mann encouraged the expansion of the work in hotel management. Even in 1930, when the large overdraft and the uncertainties of financial support indicated caution, he did not recommend standing still.¹²⁸

Although unable to secure a state appropriation, the American Hotel Association was able to muster sufficient strength in Albany to prevent the state from withdrawing the use of the facilities of the College of Agriculture and, after 1925, of the College of Home Economics. Large and well-organized constituencies were also helpful in securing the home economics and agricultural economics buildings. No such group was available to support an appropriation for a new library. "Positively atrocious" was the phrase Mann used to describe the facilities of the college library in 1923.¹²⁹ Only a single small room in Stone Hall was available for student study, and many books could not be used because shelf space was insufficient to permit efficient circulation of the library holdings. This already frustrating situation was further aggravated when the state architect, doubting that the structure of Stone Hall could safely support the weight, ordered books removed from the second floor. Three thousand five hundred volumes then joined an equal number piled in the old farm management building, a decrepit structure unsafe for either books or people.¹³⁰

The Faculty of Agriculture's recommendation for integrating the

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college library with the university library was not adopted by the trustees, which seemed fortunate when, in 1923, there seemed a possibility of securing an appropriation for a college library. Early in 1924, prior to the expected appropriation by the legislature, the existing plans were hastily revised to meet the desires of faculty members.¹³¹ Haste proved to be unnecessary, however. No building appropriation for the library was to be forthcoming for over twenty years.

Some of the pressure on the existing facilities was removed by the inclusion of a department library in the new agricultural economics building. Meanwhile, Mann maintained what he called "the educational center" of the College with the limited resources available. When it was necessary to reduce department budgets in 1921, Mann favored the library by making a smaller cut in its budget than in those of the departments. In 1928 he supplemented the \$6,500 budget of the library—a sum which left less than \$1,000 for the purchase of books and periodicals—by shifting small funds to it during the year.¹³² Although thoroughly inadequate for the needs of the College, the library offered educational opportunity to foreign students unaccustomed to even these meager library facilities. "To the Cornell Agriculture Library," wrote a Turkish student under the cover of a volume he gave the library, "I am always the servant of him who teaches me even a single word."¹³³ Finally in 1930 hope for an adequate agricultural library was restored by Governor Roosevelt's promise to recommend \$500,000 annually for the College's building program.¹³⁴

A source of continuing difficulty was eliminated in 1921 with the abolition of the Department of Farm Crops. Over the years, its activities increasingly overlapped the work in plant breeding and soil technology without developing a research or extension program of sufficient soundness to justify such duplication. In 1921 the crop production work was transferred to the Department of Soil Technology, which was renamed the Department of Agronomy. The variety testing and crop improvement work was transferred to the Department of Plant Breeding. At the same time the Department of Vegetable Gardening, which had been consolidated with farm crops at the beginning of the war, was reestablished as a separate department. In June, 1923, the transfer of the work in agricultural chemistry

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to the Chemistry Department of the College of Arts and Sciences was consummated. In 1930 the Department of Vegetable Gardening was renamed the Department of Vegetable Crops, rural engineering was changed to agricultural engineering, and meteorology was abolished as a separate department to become part of the Department of Agronomy.¹³⁵

The farm lands and outdoor laboratories of the College increased substantially during the decade, with most of the additions occurring in areas away from Ithaca. However, in 1923, almost one hundred acres of arable land was added to the university farms.¹³⁶ Parenthetically, it may be noted that the increased mobility given farm workers by the automobile made it possible in 1929 for the College to close the boarding house it had operated for these workers since 1913.¹³⁷ The special appropriation secured in 1922 for a vegetable research farm on Long Island was used to purchase a farm near Riverhead containing thirty acres of land almost ideally suited to vegetable research.¹³⁸ Under an appropriation of 1923, five tracts of land were acquired in Columbia and Dutchess Counties for horticultural investigations under conditions typical of the Hudson Valley.* In 1927 the heirs of Matthias Arnot gave the University a forested tract of 1,750 acres some eighteen miles southwest of Ithaca to serve as a demonstration area for the Department of Forestry. This gift marked the culmination of hopes long entertained by the department; as early as 1914 Professor Ralph Hosmer had secured an option on the tract but had been unable to secure the funds to complete the purchase.¹³⁹ Substantial aid was given by the Charles Lathrop Pack Forestry Trust in making this long-neglected area suitable for the purposes of the College. In 1927 this foundation also gave a capital fund of \$130,000 to establish a research professorship in forest soils, a gift which created the first endowed chair in the state colleges at Cornell.¹⁴⁰

It is difficult to measure the contribution of an individual in an institution which is constantly responding to external pressures exerted with varying degrees of immediacy. A decision seen from one

*In addition, experimental vineyards were leased at Fredonia and Urbana, and fields for agronomy research were maintained at Alfred and Churchville.

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point of view as an exercise of leadership may appear from another perspective as an expeditious reaction to pressures which could not be avoided. Still, some individuals stand out with sufficient clarity from the pressures impinging on their disciplinary area that the word "leadership" seems appropriate for them. These men had the quality of setting long-term goals and then, with a blend of aggressive persuasion and personal magnetism, enlisting others into pursuit of the goals they projected. George Works, George Warren, and F. B. Morrison were such men. There were others, like E. S. Savage, L. A. Maynard, R. A. Emerson, and W. I. Myers, who possessed this capacity for leadership, and they by no means exhaust the list. These men, however, had an additional quality especially vital to the concept of leadership in education—the encouragement of diversity of opinion. Without this quality a form of leadership may be engendered which can, with confidence, take its followers down a dead-end street.

George Works viewed the Department of Rural Education as a nucleus that would be expanded with state support into an institution which "will compare favorably with other leading institutions in the field of education."¹⁴¹ He strengthened the department by collecting a strong research-oriented staff, which he attempted to make the impetus for improvement of teaching in the College. Outside the College, he served as chairman of the Committee of Twenty-One. By 1925 he was the highest-paid member of the Faculty of Agriculture, and his department staff received by far the highest average pay in the College. Conditions in the state, however, made it impossible to maintain this momentum. Professor Works could not stand still; when continued expansion proved impossible he began negotiations with the University of Chicago and in 1927 became dean of its newly established Library School.¹⁴²

Warren also became discouraged but at no time, apparently, did he seriously consider leaving Cornell. In 1930 the work of his department was housed in four separate buildings. Farm management was located in the old judging pavilion, converted in 1915 for "temporary" use after being condemned as unsafe by the state architect. In 1928 Professor W. I. Myers emphasized the danger to the health of the staff from poor ventilation, escaping steam, and rotting floors. Working conditions in the old poultry feed house, where the marketing work

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was located, were little better.¹⁴³ Throughout the decade Warren was overburdened by administrative duties. The policy of not increasing the number of departments resulted in the administrative consolidation of business administration, marketing, agricultural economics, and farm management, fields of study that in many institutions were separate departments. What relief Warren gained by giving his subordinates in these divisions considerable freedom—a policy possible because Warren had known many of them since they were graduate students—was partially negated by the effort of defending Professor James Boyle against the friends of the department who resented his exposures of the weaknesses of particular cooperatives.¹⁴⁴ Furthermore, the staff of the department found itself in a seller's market as other institutions upgraded their work in fields related to agricultural economics. In 1920 Warren turned down an offer of \$10,000; in 1927 Professor W. I. Myers counted the support given him at Cornell by Warren more valuable than the headship of the Department of Agricultural Economics at the University of Minnesota.¹⁴⁵

By 1924 the department was being criticized for failure to keep its research abreast of the needs of agricultural cooperatives, although the fault, in fact, lay primarily with the legislature. In that year Babcock, working through the Agricultural Conference Board, secured relief for the department through special legislation providing an initial appropriation of \$45,000 to initiate an expanded program in marketing and agricultural business.¹⁴⁶ Toward the end of the decade the graduate work, which Warren considered the greatest inducement to the staff, began to taper off as other institutions entered the field.* In 1930 Warren admitted that he was discouraged by the cramped physical conditions for instructing graduates and the competition from business organizations and other educational institutions—especially the University of California—for the services of the staff.¹⁴⁷ The speed with which relief was provided is a measure of the esteem that organized agriculture had for Warren. In 1929 the Governor's Agricultural Advisory Commission thought that "Warren's

*In 1927, 46 per cent of the 83 Ph.D. candidates in agricultural economics and farm management in the United States were at Cornell; the following year the number had dropped slightly to 33 per cent of 102 candidates (W. I. Myers to H. Updegraff, June 19, 1928, Mann Papers).

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is perhaps the most productive department in the state." Only a request from the University, said commission member M. C. Burritt, was needed to obtain its support for Warren's building.¹⁴⁸ When this request was made in 1930, the combined support of the commission and organized agriculture quickly secured the necessary appropriation.

The development of agricultural economics at Cornell bore Warren's personal stamp. A thoroughgoing knowledge of the problems of farm management he considered the only proper groundwork for the study of agricultural economics. The Wisconsin point of view, with its presumption that "scientific agriculture is unnecessary, that economics is the only fundamental" appeared to Warren as essentially unsound.¹⁴⁹

In 1928 Henry Hiram Wing retired as head of the Department of Animal Husbandry after nearly forty years of service to Cornell University. During his last years as department head the work in animal husbandry at Cornell had fallen behind that at other institutions, most notably, the University of Wisconsin. Along with other older faculty members, Professor Wing remembered a time when the essential information for improving the feeding and breeding of livestock had been the possession of a fortunate few. Like Professor Rice in the Poultry Department, he was determined to give the widest possible circulation to these basic principles of livestock improvement. This emphasis was desirable until the backward farmers caught up or went out of business; thereafter information based on new research techniques was required if New York livestock producers were to maintain a competitive advantage over those of other states.

With respect to livestock judging, however, Professor Wing deserves considerable credit for de-emphasizing an activity of questionable educational value which many agricultural colleges stressed to the point where students neglected other studies while competing for the judging teams. Moreover, much judging instruction was worthless in terms of livestock management, for the judges' concept of an ideal animal was frequently irrelevant to the production of milk and meat. Although Wing did not entirely neglect judging — in 1910 a team he trained were champions at the National Dairy Show in Chicago — his interest lay in developing reliable measures for livestock selection

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as evidenced by his contribution to instituting advanced registry testing.¹⁵⁰

In 1928 Dean Mann and others looked to F. B. Morrison, then newly appointed director of experiment stations, to "put animal husbandry on its feet."¹⁵¹ Morrison had been professor of animal husbandry at the University of Wisconsin and in that capacity had achieved an international reputation as an expert in animal nutrition. His book, *Feeds and Feeding*, with Dean W. A. Henry as coauthor, was the standard text and reference on livestock feeding in the United States and Canada. Financial support and offers of cooperation were made by livestock interests in the state to induce Morrison to accept the headship of the department. Special legislation was secured in 1928 to permit paying him \$7,500 as department head.¹⁵² An additional \$2,500 toward his salary was contributed by the New York Farmers, an organization of New York City businessmen, at the urging of Oakleigh Thorne, owner of Briarcliff Farms at Pine Plains. Members of this organization, said Thorne, were all of the opinion that the state should adequately support the work in animal husbandry and agreed that this "was simply a matter of proper organization and information."¹⁵³

If much was given to Morrison, much was expected. In 1929 he met this expectation by developing a plan for the reorganization of the department. He also took the leadership in forming a committee representing the livestock interests of the state which acted in an advisory capacity to the department. Appropriations for work in animal husbandry were increased 60 per cent within a year, and soon thereafter additional appropriations were secured for purchasing livestock, erecting new barns and remodeling existing structures, and purchasing a large farm for the use of the Department of Animal Husbandry.¹⁵⁴

The price paid for transferring Morrison from director of experiment stations to head of the Department of Animal Husbandry was higher than expected in terms of the coordination of research between Geneva and Cornell. A group at Geneva had continued to oppose coordination after 1923 and was insistent in claiming that the University was subordinating the station to its own interests. It was hoped that Morrison would allay this fear and irritation.¹⁵⁵ After his resig-

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nation, no person of comparable stature was available to succeed him. Moreover, U. P. Hedrick of the Geneva staff enjoyed widespread support for the directorship among farm organizations in the state, and after twice bringing in outsiders to fill the position, Dean Mann had little choice but to appoint him to the directorship of the Geneva Station.* Unfortunately, Hedricks' administration was not characterized by close cooperation with Cornell. At the College, the position of director of experiment stations was added to the duties of the dean.

RESEARCH

Agricultural research entered a new phase during the decade as previously developed experimental techniques were applied with increasing sophistication. In the field of poultry nutrition, investigators who had adapted the chick to controlled experiments under laboratory conditions had set the stage for a thorough study of the effects on this animal of mysterious nutrition-related substances then called "vitamines." In the late 1920's Leo C. Norris, who had received his Ph.D. in 1924 for research conducted in the Laboratory of Animal Nutrition with L. A. Maynard, joined with G. F. Heuser in establishing a research unit in poultry nutrition within the Department of Poultry Husbandry. In 1930 Norris and his associates reported a "nutritional leg paralysis" caused by a vitamin deficiency, which led them to the further conclusion that vitamin B was not a single vitamin as formerly believed but a vitamin group forming the B complex.¹⁵⁶

Within the Department of Animal Husbandry's Laboratory of Animal Nutrition fundamental studies on the metabolism of protein established the relative efficiency for growth and milk production of a number of animal feeds. The metabolism of calcium and phosphorus was also investigated and the relationship between the presence of these elements and bone changes in animals determined.¹⁵⁷

Utilizing the techniques of the chemist and microbiologist, the Department of Agronomy continued its investigations in soil properties and plant nutrition. Researches on the transformation of nitrogenous compounds in soils by legumes were continued from the previous decade as were lysimeter studies on the addition and

*In 1921 the State Federation of Farm Bureaus had recommended Hedrick to succeed Jordan (Mann to Burritt, March 3, 1921, Mann Papers).

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removal of plant nutrients from soils. Toward the perfection of methods for reducing experimental error in field experiments, artificial plats or "frames" were constructed, each of which was isolated from adjacent plats by walls formed of concrete. In addition to these fundamental studies, a number of investigations were directed toward determining the productivity of muck and other soils. Crop surveys were undertaken in connection with soil surveys to determine the areas best suited for particular crops; among these, a pasture survey was given special emphasis.¹⁵⁸

The Department of Plant Breeding perfected the rod-row system for testing on a large scale the varieties and strains of small grains. By 1927 this technique was widely used in other states and was being introduced in other countries. Research on the genetics of corn developed under R. A. Emerson to reveal more about its genetic behavior than was known of anything else except the fruit fly, *Drosophila*.¹⁵⁹

In botanical research, Karl Wiegand and Arthur Eames' *Flora of the Cayuga Lake Basin* was an important contribution to taxonomy and also aided the work of teachers and investigators in other fields who wished to utilize the botanical resources of the Cayuga Lake region. In plant physiology, Lewis Knudson's investigations on the culture of orchid seedlings yielded valuable information on the utilization of organic nutrients by green plants.¹⁶⁰

Carefully controlled experiments frequently had the effect of demonstrating the wisdom of farm practices which had evolved over long periods of time, but investigation in the Departments of Vegetable Gardening and Pomology had the opposite effect by laying to rest the old idea that cultivation preserves soil moisture. Both Roberts and Bailey had advocated cultivation during the summer on the theory that this broke up soil capillaries through which moisture escaped to the surface. H. C. Thompson, head of the Department of Vegetable Gardening, found, and these findings were confirmed at the Long Island Vegetable Research Farm, that the principal function of cultivation was weed control and that in the process soil moisture was frequently lost. The Department of Pomology in cooperation with the Department of Agronomy clearly demonstrated that the principal value of cultivation in orchards was to increase

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the nitrogen available to trees. It was recognized that the lack of nitrogen rather than a low level of moisture in the soil was the principal factor limiting tree growth under New York conditions.¹⁶¹

In the Department of Agricultural Economics and Farm Management, statistical techniques developed in connection with the study of farm management were applied to the marketing of agricultural produce. In studies of the relationships between prices, supply, and demand, the effect which particular changes in prices could be expected to have on supply and demand were determined for a number of commodities. One important application of these studies was in connection with efforts to prevent expansion of the New York milkshed in the late 1920's. Toward establishing a price for milk—a subject given to partisan controversy—the department was able to provide producer organizations and public officials with some basic working figures.¹⁶²

Rural social organization, a term the department head, Dwight Sanderson, preferred to the more conventional rural sociology, was a new subject which had to build up a body of information on which resident instruction and extension could be based. Under Sanderson's direction, a technique was developed for delineating the geographical basis of rural society by neighborhood and community units. This technique, first applied in a survey of Otsego County published in 1923, had a practical application in the work of the Committee of Twenty-One, which selected the community as the basic unit for school administration. Another study, also published in 1923, dealt with the farmer's standard of living in Livingston County. The first study of its kind, it was a significant step toward developing measures for standards of living which could be used for comparing communities or groups of people.¹⁶³

These studies and the cost accounting work in farm management were conducted in cooperation with the USDA's Bureau of Agricultural Economics. This relationship was advantageous, not only in terms of financial support, but also in maintaining the quality of research. In 1926 Professor Rice took the position that cost of production investigations belonged in the departments concerned with the production of crops and livestock, and was well on his way toward securing control of investigations of costs of poultry production when

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Warren pointed out that this would not only be illogical, since poultry was usually only one part of a farm operation, but also "would bring to a stop the fifteen years of cooperative work that we have had with the Bureau of Agricultural Economics." There are, Warren added, "many other states which desire to cooperate with them." There the matter ended.¹⁶⁴

During the decade, counties and the state were supplemented by a larger region as a unit for the organization and administration of research. This long-overdue development was not the result of a sudden awareness that scientific problems do not follow political boundaries; rather, this awareness made it possible gradually to overcome the limitations consequent to dependence on political units for financial support. By 1926 the Conference of Northeastern Experiment Station Directors was meeting regularly to coordinate agricultural research in the region. These conferences featured "referees"—experts in particular disciplines who made recommendations for the allocation and coordination of projected federally supported research among the stations represented. The conference also assumed responsibility in the significant area of cataloguing past research.¹⁶⁵

In 1925 the agricultural colleges and experiment stations, acting through the Association of Land-Grant Colleges, were once again successful in securing federal funds for research without the increased federal controls which had been anticipated as the price of this legislation. The Purnell Act granted \$20,000 to each state in 1925 with annual increments of \$10,000 until the maximum annual payment of \$60,000 was attained. These funds were made available for all research within the scope of colleges of agriculture and home economics, but the law made specific reference to "economic and sociological investigations."¹⁶⁶ At Cornell the Purnell funds were concentrated in these areas.¹⁶⁷

RESIDENT INSTRUCTION

With the exception of a slight increase in 1925, the number of regular students declined continuously from 1919 to 1928. Although this phenomenon was part of a national pattern of declining college enrollments, the impact of the decline on authorities responsible for

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the state budget was no less serious. The College's administration, already concerned about the need to recruit farm boys to satisfy the forces demanding emphasis on technical agriculture, was advised in 1928 that the greater part of its difficulties in Albany was due to the shrinkage in enrollment of regular students.¹⁶⁸ Student enrollment, 1921-1930, was as follows:¹⁶⁹

<i>Year</i>	<i>Regular</i>	<i>Special</i>	<i>Winter</i>	<i>Graduate</i>	<i>Summer</i>	<i>Two-Year</i>
1921-22	852	55	329	250	930	
1922-23	806	29	254	189	992	
1923-24	748	25	240	202	584	
1924-25	731	22	180	231	621	
1925-26	765	47	139	257	528	
1926-27	708	31	79	254	648	
1927-28	691	24	142	286	725	
1928-29	652	31	157	259	676	
1929-30	709	26	106	311	782	14
1930-31	753	33	131	387	771	43

The suggestion that active publicity and organized recruitment was desirable appealed to Mann's reason but offended his sense of the proper duties of educational institutions. Good work, he thought, would be duly recognized without advertising. By December, 1928, however, he had been persuaded by trustees and members of his staff that this view was unduly conservative and somewhat unrealistic when other colleges were engaged in the process of formulating favorable public images.¹⁷⁰

In 1929 A. W. Gibson and Eric Peabody were given responsibility for increasing student enrollment. A number of communication media were utilized including county agents, Granges, and secondary schools. In the latter instance the recruitment campaign fortuitously coincided with the increasing concern for vocational guidance in the public schools. Work of lasting value was accomplished between 1929 and 1931 when high school students and teachers were informed about opportunities in professions related to agriculture.¹⁷¹

The effect of this campaign on the enrollment of students is uncertain. True, enrollment increased rapidly after 1928, with 1929 alone

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witnessing a 40 per cent increase in undergraduate admissions, but this development was probably due primarily to the effect of the business depression. The enrollment of graduate students, presumably unaffected by the recruiting effort, increased by 128 students in two years while the enrollment of regular undergraduate students increased only by 101. However, there was a relationship between the recruitment campaign and the proportion of students enrolling who had some farm experience. The proportion arriving with virtually no farm experience dropped from an average of 47 per cent for the period 1919-1928 to 35 per cent in 1929 due to increased recruitment in rural areas and the stress placed on acquiring some farm experience before coming to Cornell.¹⁷²

The two-year courses initiated in 1929 were of substantial value for students who had studied vocational agriculture in high school. Two years prior to the establishment of these courses 101 former vocational agricultural students were enrolled in the four-year program, and generally they had the lowest grades in the College, an outcome largely due to their inadequate preparation for courses taken during their freshman year in the College of Arts and Sciences.¹⁷³ An analysis of student records showed that 46 per cent of those enrolled in the four-year course since the beginning of the College of Agriculture did not graduate, yet 35 per cent of these went into professions in which the College gave some training.¹⁷⁴ The two-year courses were planned to meet the educational needs of students who were unprepared by education or motivation for the demands of the four-year program.

The four-year program was a recognizable descendant from the days of Professor Roberts. Although foreign language was no longer required, the freshman year still had heavy emphasis on English and the basic physical and biological sciences. In 1922 an orientation course was organized to instruct students in methods of study, acquaint them with the history and resources of the University, and discuss vocational interests.¹⁷⁵ Most of the agricultural student's program was composed of electives selected with the assistance of a faculty adviser. As much as seventy-five hours could be elected, with up to twenty of these permitted outside the College. The system of graduated residence credit was maintained in spite of a pro-

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nounced trend toward higher grades. Nearly 7 per cent of the graduates completed their work in less than four years.¹⁷⁶

The summer school had a substantial increase in enrollment of students interested in agricultural subjects. A decline of about four hundred students from 1922 to 1923 was due to transferring to the Cortland State Normal School work in physical education previously given at the request of the State Education Department. A summer school in biology which drew on the faculty of other colleges of the University was established in 1923.¹⁷⁷

Financial aid available to students increased only slightly. In 1929-30 fifteen scholarships were available for full-time undergraduate students; five of these were financed from the Roberts' fund, and ten were tuition scholarships for out-of-state residents. Twenty-one scholarships were available for students enrolled in the winter course. Industrial fellowships continued to be a principal source of aid for graduate students. In 1927-28 fifteen of these grants were received, making a total of sixty-one to that date. Twelve departments at various times had benefited, but a majority of the grants were for research in plant pathology.¹⁷⁸

The old problem of the impersonal relationship between students and faculty remained. The solution Mann envisioned to what he called "our greatest need" was for faculty members to entertain students in their homes at particular times.¹⁷⁹ While this idea was not widely adopted, a number of departments did have active clubs which met in faculty homes, of which Plant Breeding's Synapsis Club was one. For some faculty members this problem did not seem to exist. Professor Wing was a notable example. He was regarded as a friend by students, many of whom were on a first-name basis with him; he had, in the words of one student, "a certain irreplaceable spirit of leadership and helpfulness."¹⁸⁰ This was also true of Professor George Everett. In teaching the fundamentals of public speaking he bolstered the confidence of thousands of students; even when on occasion deflating pomposity, he was regarded by students as their friend.¹⁸¹

Under changing student-teacher relationships and in accord with the trend toward specialized functions, the college assemblies, then attended by only a handful of the faithful, came to an end in 1925.

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Even an appearance by Dean Bailey and his rousing address informing students that their interest in thrills was an attempt to escape the group-learning processes of the time did not alter the trend. To secure greater attendance the request of students to conclude the assemblies with a dance was granted in 1925 and before the year was over the attraction had swallowed the main event.¹⁸² The annual college banquet persisted for several years, but in 1928 this too came to an end.¹⁸³

Dean Mann was anxious to preserve at least one college-wide social event attended by both faculty and students. When it became evident that the annual banquet would not continue, he initiated a college barbecue in 1926 and in that year personally donated the steer which served as the principal attraction. A second barbecue was held in 1928, but apparently the event lapsed at that time until renewed in 1944 under the sponsorship of Ho-Nun-De-Kah, the senior men's honorary society.¹⁸⁴

Disintegration of the core of common interest in college assemblies, banquets, and athletic teams made it difficult for the Agricultural Association to secure the support of the student body. Maintaining an organization for all students had proved difficult earlier when assemblies and the annual banquet provided for the release of student energy and organizing talents. When these activities ended, no adequate substitutes were found; an annual dance initiated in 1926 called the "Barnyard Ball" did not become established. In 1927 the Agricultural Association was reorganized in order to coordinate student activities in the Colleges of Agriculture and Home Economics, but two years later it was again defunct.¹⁸⁵ Again it was reorganized, this time as the Agriculture-Home Economics Association, but reorganization could not substitute for objectives that would interest the student body.¹⁸⁶ On the other hand, groups organized around specialized activities continued successfully. Jugatae, for example, held its thousandth meeting on March 28, 1927.¹⁸⁷ The forestry students especially were a tightly knit group, due in part to the summer forestry camp, where they initiated new members in hunting "snipe," put dead animals under their colleague's blankets, and otherwise combined good fellowship with education.¹⁸⁸

In 1929 Ho-Nun-De-Kah was formed in a merger of two senior

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men's honorary organizations, Heb-sa, founded in 1910, and Helios, established several years later. Guided by Erl Bates, the Indian extension agent, the new group decided to depart from Greek tradition and have a thoroughly American name and ritual. Ho-Nun-De-Kah was named for a secret society among the Iroquois and the ritual adopted was also of Iroquois origin.¹⁸⁹

The most thorough study to date of what happens to students after graduation was completed in 1923 by A. W. Gibson in preparation for a college alumni directory. The study showed about 25 per cent of those graduating from the College engaged in farming, a slightly larger percentage in work not related to agriculture, and the largest group, about 40 per cent of the graduates, in activities related to agriculture—agricultural business, teaching, or research.¹⁹⁰ At that time fifty-five of the sixty-six farm bureau agents in the state were graduates of the College, and four years later, eighty-two graduates were teaching secondary agriculture in the ninety high schools offering the subject and in the six state schools of agriculture.¹⁹¹

After completing the alumni directory, Gibson undertook to determine why many of the students who started the four-year program failed to graduate. On the basis of over one thousand replies to his questionnaire, Gibson noted that about 35 per cent of those not graduating indicated economic difficulties as the principal reason. About 25 per cent stressed a change of vocational objectives during the course. Most surprising was that 11 per cent indicated poor health as the principal reason for dropping out. Additional confirmation regarding the significance of poor health was found by an analysis of college records which showed that more than twice as large a proportion of nongraduates had died since leaving college as graduates. Scholastic difficulties appeared to have been relatively unimportant.¹⁹²

After Roberts retired in 1903, members of the college staff, especially Bailey, Mann, and Rice, along with Jared Van Wagenen, Jr., and other alumni, tried to keep alive his memory as a link with a period when the College of Agriculture was a small group of students and faculty struggling for its place in higher education. After leaving Ithaca, Roberts maintained his interest in Cornell and was always glad to see students or old friends. His former associate, L. A. Clinton, found him at eighty-three "as keen and vigorous as most

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men are at fifty.”¹⁹³ On Roberts’ ninetieth birthday the *American Agriculturist* devoted an issue to his work, and at Cornell, President Farrand and the faculty and students of the College of Agriculture signed a scroll in appreciation of his contributions to agricultural education. The nearly 1,300 signatures reassured Roberts that, “after an absence of twenty years, my efforts are not forgotten.” “Those who contributed to the scroll,” wrote Roberts’ daughter, “cannot possibly realize what joy it has given him.”¹⁹⁴ Nearly five years later, on March 17, 1928, the first builder of the College of Agriculture was gone.

RELATIONS WITH CORNELL UNIVERSITY

The trend toward closer cooperation between the College and the University continued. The day-to-day working relations between college and university officers were much more cordial during the administration of President Farrand than during the time of the remote and somewhat olympian President Schurman. Again, as in the time of President Adams, the members of the Faculty of Agriculture found a sympathetic hearing in Morrill Hall. The appointment of R. A. Emerson as dean of the Graduate School was a radical and welcome departure from Schurman’s practice of not appointing the college faculty to University offices. The President’s wife, Daisy Farrand, even registered as a special student in the College, taking courses in home economics and floriculture.¹⁹⁵

In 1921 the trustees and state architect cooperated in developing a plan for the construction of a single university heating plant at East Ithaca which would sell heat to the state colleges on a metered basis, thus bringing to a conclusion the series of temporary boilers and costly inefficient heating plants that had plagued the College of Agriculture since 1907.¹⁹⁶ Another physical link was established in 1929 when an all-weather road was laid between the university library and the dairy industry building, passing through the College of Agriculture between a double row of red oaks planted in 1918.¹⁹⁷ An administrative link was forged in 1921 with the establishment of a university purchasing office. Conceived with the object of saving on purchases and eliminating much clerical labor at the department level, its benefits quickly compensated for any loss of departmental autonomy.¹⁹⁸

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When Home Economics was established in 1925 as the third state college at Cornell, the trustees replaced the separate college councils with the single State College Council. With this change the council was transformed from the informed group of supporters and advisers that Bailey had desired into an agency primarily concerned with state college-university relationships. Probably the expanding number of state institutions at Cornell made such a coordinating agency necessary at either the trustee or administrative level. The former was more acceptable at the time.

The College of Agriculture played a significant part in the development of sociology courses in the College of Arts and Sciences. Prior to 1926, general sociology was taught only in the College of Agriculture because Dean Robert Ogden of the College of Arts and Sciences and Professor Walter Willcox of the Department of Economics took the position that the science of sociology was as yet so poorly developed that there was no need to introduce courses in the field, but finally, in 1926, they agreed to have one man in the Department of Economics teach introductory sociology on a temporary basis.¹⁹⁹ When after one year this course was withdrawn, Dean Mann immediately announced that a similar course would be given in the College of Agriculture. When this action was protested, Mann replied that the course, "tentatively included in our program," would be withdrawn "as soon as the work is established elsewhere."²⁰⁰ It was under these conditions that introductory sociology was continued in the College of Arts and Sciences.

Dissatisfaction over the basic courses in chemistry was not subject to so simple a solution. In response to requests from the Department of Chemistry for criticism of its courses, the Faculty of Agriculture recommended that either a special course in organic chemistry be offered for agricultural students or that illustrative material in the general course be of a more biological nature.²⁰¹ The financial stringencies under which the College of Arts and Sciences operated made a separate course impossible; the second suggestion posed again the old question of how to make a general course meet the needs of specializing students. The professionally oriented students in forestry and hotel administration were especially insistent that general chemistry was a waste of time, an attitude they made so apparent

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to an instructor in chemistry that he asked Director Betten if there were not some way he could get rid of them. To break this unfortunate cycle, Betten suggested, faculty members might well work toward an improved attitude on the part of the professionally oriented student.²⁰²

INTERNATIONAL SERVICE

The activities of the faculty after the First World War were not in accord with what has been called America's retreat into isolationism. Contacts with professional colleagues in other countries and personal experience with conditions in other countries became more common. In May of 1924 alone, Professor Stocking was in Europe attending the World's Dairy Congress, Professor Reddick was conducting research in Europe, and Professor Emerson was returning from a five months' scientific expedition to South America financed by the USDA.²⁰³

A beginning was made in what later came to be called foreign assistance programs, although the term suggests a greater degree of organization than sometimes existed in the early efforts. In the spring of 1925 the College received a request from the Argentine government asking that someone be sent to aid in the development of a sanitary milk supply in Buenos Aires. Harold E. Ross of the Department of Dairy Industry accepted the opportunity, spending most of the following year in Argentina. On arriving he found that no plans had been made for the work he was expected to do, but once it was agreed to establish a laboratory to develop modified milk for feeding infants, he was given generous support.²⁰⁴

Professor A. M. Goodman of the Department of Rural Engineering worked in Puerto Rico between 1927 and 1929 with the International Health Division of the Rockefeller Foundation in coordinating drainage programs for malaria control and the more efficient use of land for agricultural purposes.²⁰⁵

From 1925 to 1931 the Department of Plant Breeding cooperated with the University of Nanking and the International Education Board in a pioneering project in the agricultural improvement of underdeveloped areas. The project aimed to develop improved crop varieties which might alleviate the famines that then reoccurred

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almost annually in China. Three members of the Department of Plant Breeding, H. H. Love, C. H. Myers, and R. G. Wiggans, each spent nearly two years at the University of Nanking directing the project, which was remarkably successful in spite of the political disturbances raging in China. A number of Chinese students were trained in genetics and plant breeding so they could carry on the crop improvement program for northeastern China which was established at the University of Nanking. Based on a small number of American technical experts working with a maximum number of Chinese, the project was an excellent model for later foreign assistance programs. At its conclusion a second project was established at the University of Nanking to train experts for plant breeding work in other areas of China, and H. H. Love was granted a three-year leave of absence from Cornell to act as its technical director. These projects were heartily supported by President Farrand, who insisted that the boundaries of Cornell were subject to no geographical limitations.²⁰⁶

The development of international contacts in the relatively new field of agricultural economics was aided by Leonard K. Elmhirst of Devon, England. This good friend and fellow classmate of Director Ladd financed the first International Agricultural Economics Conference held in Devon in 1929. In supporting a second conference, held at Cornell in August, 1930, Elmhirst was aided by a \$5,000 grant from the Carnegie Foundation for International Peace.²⁰⁷

The Graduate School of Tropical Agriculture was among the most promising of these ventures in international education. Established in Puerto Rico in 1928 by the territorial government, the school was expected to become, under the auspices of Cornell, a training center for teaching improved agricultural techniques to Spanish-speaking students from other Latin American countries. After visiting Puerto Rico in March, 1928, President Farrand, Dean Mann, and Professor Lewis Knudson were impressed with the educational opportunities and the strong support the project was receiving from a group of influential Cornellians on the island. However, the necessary funds could not be raised. Neither the United States government nor private foundations were willing to provide assistance during the

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financial uncertainties of the 1930's. The project continued at the proposal level until it became a victim of World War II.²⁰⁸

MEASURES OF SUCCESS

It remains to be asked how successful was the College of Agriculture during the decade. As to its impact on agriculture, the three criteria of success for the College accepted by Mann in 1921 were effectiveness in raising the farmers' standard of living, in making agricultural production more efficient, and in increasing the fertility of the soil.²⁰⁹ It need hardly be stated that, by these standards, the College was indeed successful. The selection of candidates for the award of Master Farmer by the *American Agriculturist* also gives some clues on what might be considered success in agriculture. In 1930 the principal bases for selection were net worth of farm operation (several applicants were rejected on this ground), size of operation, and degree of cooperativeness with others.²¹⁰ By these standards also the College was successful, for much resident and extension teaching was directed toward helping farmers in these respects.

The attractiveness of the institution to faculty and graduate students is a further measure of success. Some faculty members came to Cornell's College of Agriculture although offered a higher salary elsewhere, while many chose to remain at the College under the same circumstances.²¹¹ One of the most notable features of student enrollment during the decade was the substantial increase in graduate students at a time when undergraduate enrollment was declining. About one-third of those enrolled in the Graduate School of Cornell University were taking their major work in the College of Agriculture.²¹²

The experience of these graduate students after leaving Cornell provides some indication of the quality of their instruction. According to E. W. Allen, almost 85 per cent of those receiving the Ph.D. degree between 1908 and 1927 went on to important positions in colleges, experiment stations, and the U.S. Department of Agriculture.²¹³ Among those who later attained important positions in science and education were Eugene C. Auchter, Ph.D. '23, head of the Department of Pomology at the University of Maryland and

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Assistant Secretary of Agriculture during World War II; John Franklin Booth, Ph.D. '26, director of the economic division, Canadian Department of Agriculture; Howard C. Jackson, Ph.D. '20, head of the Dairy Industry Department, University of Wisconsin; W. E. Loomis, Ph.D. '26, the first with a major in the Department of Vegetable Crops, professor of botany at Iowa State University of Science and Technology and an outstanding plant physiologist; Julian C. Miller, Ph.D. '28, in charge of horticultural research in Louisiana since 1929; Keith A. H. Murray, Ph.D. '29, rector of Lincoln College, Oxford University, and since 1953 chairman of the University Grants Committee for the United Kingdom; Clarence V. Noble, Ph.D. '20, dean of the College of Agriculture, University of Florida; E. L. Overholser, Ph.D. '26, head of the Department of Pomology at Washington State University and later at Virginia Polytechnic Institute; A. L. Teodoro, who in 1928 received what was probably the first Ph.D. in agricultural engineering in this country, dean of engineering at Far Eastern University, Manila; and Ernest C. Young, Ph.D. '21, head of the Department of Agricultural Economics at Purdue University.²¹⁴ The list could be long extended.

A large element in the success of these and other graduates was, of course, personal qualities which, with the guidance of outstanding professors, were channeled toward the exploration of specific problems. The role George Warren played in graduate education has already been described. In the plant sciences a comparable role was played by R. A. Emerson. According to Marcus M. Rhoades, Ph.D. '32, and later professor of botany and head of the department at the University of Indiana, "Emerson was the spiritual father of his students and the impress of his personality was left in part upon all who studied with him. His contagious enthusiasm, his prodigious energy, his absolute integrity and objectivity were such that all who were intimately associated with him caught in some measure these attributes of the man."²¹⁵

The reputation of the College was further enhanced by three international congresses held at Cornell between 1926 and 1932: the International Congress of Plant Sciences in 1926, the Fourth International Congress of Entomology in 1928, and the Sixth International

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Congress of Genetics in 1932. The International Congress of Entomology, the first held this side of the Atlantic, had a registration of nearly seven hundred, one hundred and twenty from foreign countries. Thirty-eight countries were represented.²¹⁶ Positions of responsibility in these and other scientific organizations were held by many members of the Faculty of Agriculture.

The testimony of informed persons may also provide a measure of success. Former deans of the Cornell University Graduate School, J. E. Creighton and Ralph Keniston, and Dean Frank Thilly of the College of Arts and Sciences stated that the best scientific work in the University was being done in the College of Agriculture.²¹⁷ Henry A. Wallace, soon to become Secretary of Agriculture, was impressed by the quality of the extension work he observed on a visit in 1927, and thought the spirit of farmers toward the College was much better than that in many Western states.²¹⁸

Response to National Stresses, 1931-1940

NEW YORK agriculture escaped the full force of the nationwide depression until late in 1931; thereafter, until preparation for war brought about an upswing in the economy, practically every activity in the state was affected. Industry in New York had already received its impact; inventories had accumulated and laborers had been laid off. The College benefited from this industrial stagnation when construction of the agricultural economics and home economics buildings was speeded up by the need to provide work for the unemployed.¹ Otherwise, the depression had a disrupting effect on the College because of budgetary uncertainties. The newly established agencies of the New Deal also altered relationships the College had established with New York farmers over many decades.

CARL E. LADD

The extension work was affected most immediately by the federal agricultural programs. Dean Ladd and Lloyd R. Simons, who succeeded Ladd as director of extension in 1932, played a major part in protecting the Extension Service against encroachment by New Deal agencies, both in the state and, working through the Land-Grant College Association, in the nation. Dean Ladd's position in this contest was strengthened by his interpretation of the role of dean. Unlike Mann, who tried to maintain a substantial degree of independence from the pressures of organized agriculture, Ladd believed in providing active leadership, not only in education but in all spheres where he could advance the interests of the New York or north-eastern farmer.

In August, 1931, Mann became provost of Cornell University.

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While this new position had been under consideration for some time, the appointment was precipitated when Mann planned to accept the presidency of Bucknell University.² Dean Mann's easy working relationship with President Farrand and his interest in all matters pertaining to Cornell University made him well suited for the new position. The obvious candidates to succeed him as dean were Ladd and Cornelius Betten. Both men had great ability, but Ladd had the advantage of being known and well liked by officers of farm organizations and by authorities in Albany and Washington. For the several months between Mann's resignation and Ladd's return from service with the State Department of Conservation in October, 1931, Betten served as acting dean.³

The differences between the administrative methods of Mann and Ladd stemmed in part from differences in personality. Where Mann tended to be reserved, Ladd was "hail fellow well met," a person who attended shipboard Rotary meetings on a trip to England and ran into friends while sight-seeing in Westminster Abbey.⁴ Mann found relaxation difficult; Ladd was able to relax while supervising work on his farm near Freeville and joining with Editor Eastman of the *American Agriculturist* in writing articles about "the horse and buggy days."⁵ He shared Mann's view of the importance of agricultural history, but his own efforts at historical writing were fictional expressions of an inherent optimism that found farm life in the past more rewarding than many writers indicated. This optimism helped sustain him through the depression; in 1940 he confessed to greater confidence in the future of American agriculture than he thought some prophets of doom in the USDA possessed.⁶

Mann considered publicity techniques an unfortunate necessity; Ladd delighted in the phenomena of public relations and frequently corresponded with his Cornell classmate, Edward L. Bernays, often called the founder of the public relations profession. Ladd used the technique of providing "background material" to the Gannett press when he wanted to place views before the public without having them attributed to the College, and he was adept at calculating the effect his decisions might have on groups outside the College.⁷ Ladd tried to avoid controversy and emphasized a positive constructive approach in all material presented to the public. When contro-

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versy proved unavoidable, he was careful not to assume a defensive position.*

Diametrically opposite methods of handling conflicts characterized the two deans. Ladd was a master of conciliation, reducing tension by bringing conflicting parties together, talking over the differences, and securing more comfortable relationships based on understanding an opponent's problems and points of view. Ladd's talents as a conciliator were in demand outside the University both by the State Conservation Department and the USDA's Extension Service. He helped clarify and strengthen the relations between the federal Extension Service and the Bureau of Agricultural Economics.⁸ Mann's method was to depersonalize conflict. Concentrating on the issues, he sought the best solution by a careful analysis of the points of view involved and, with this solution established, required all parties to respect the decision. Each method had its advantages. Fortunately, neither man was so completely committed to one approach that the other was excluded. Ladd, however, tended to smooth over fundamental conflicts that perhaps should have been pressed to a solution. Mann's method put administration in the position of having the final word on what were, in part, academic matters.

Mann's contacts with politicians were largely limited to the period after they had attained public office. Ladd worked through both major political parties to promote public policies of benefit to New York agriculture and to place men in office who would carry out these policies. While more politically oriented than his predecessors, Ladd avoided any public appearance of political involvement. His frequent trips to Washington and Albany were not publicized and his strong opinions on major public issues were not generally known. After Roosevelt's election to the presidency, Ladd sent many letters to promote the appointment of Morgenthau as Secretary of Agriculture but found considerable opposition in the South and West to a New York Jew's occupying the position.⁹ Later he tried with no greater success

*After reviewing a 48-page booklet about the G.L.F. which Babcock had prepared to counter attacks by the *Rural New Yorker*, Ladd said, "I have challenged the statements sharply in my own mind to see whether you are putting yourself on the defensive in any way. I don't believe that you are" (Ladd to Babcock, Feb. 22, 1936, Ladd to Charles A. Taylor, June 10, 1937, Ladd Papers).

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to promote Robert Treman as Morgenthau's successor as State Conservation Commissioner.¹⁰ These failures, nevertheless, strengthened his contacts with men in a position to aid the College. Late in December, 1933, Ladd, as chairman of Governor Lehman's Agricultural Advisory Board, led a group of New Yorkers to Washington, where they expedited several projects involving federal aid to New York agriculture.¹¹ He corresponded with Mrs. Roosevelt about federal agricultural policies and, among the Republicans, had close contacts with publisher Frank Gannett and H. E. Babcock, who served as a GOP agricultural adviser.

Ladd prided himself on his knowledge of farmer opinion. In a letter to E. L. Bernays he once referred to his position at Cornell as "the crossroads of national agricultural sentiment." In the same letter he stated, "We are in very close touch with all the agricultural groups in all the states of the Union."¹² One of the few angry replies in Ladd's correspondence is addressed to a writer who suggested that the Dean's knowledge of agriculture came from an ivory-tower approach to the subject.¹³

The exercise of leadership in agriculture in the 1930's required close relations with the agencies affecting agricultural credit. Access to credit at interest rates which farm businesses could afford was, of course, a traditional problem of American agriculture. In the past, economic depressions had adjusted agricultural production to demand by eliminating those farm businesses with overextended credit. A function of agricultural educators was to teach farmers, bankers, and other businessmen to estimate the credit carrying capacity of a farm business and to encourage communication between borrowers and lenders. Prior to 1933, the College had performed this task well.* The educational process, however, worked too imperfectly to enable the mass of farmers to adjust their business operations to the rapidly

*Since Bailey's administration, the College had been promoting greater understanding between farmers and bankers. Often bankers were invited to the College during Farmers Week to discuss rural credit. The annual farm inventory and credit statements prepared by the College were recognized by the State Farm Bureau Federation as a sound basis for the negotiation of loans. In 1930 the Federation recommended that all banks require these statements from farmer borrowers (*President's Rpt. for 1929-1930*, App. VIII).

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changing economic conditions; many farmers were faced with foreclosures as the full depression hit rural New York.

One objective of the New Deal was to supplement the stabilizing process of education with economic planning by government. A number of newly established federal agencies engaged in the stabilization of agriculture without, in many cases, clear lines of demarcation between them. Of these, the most important to agricultural credit was the Farm Credit Administration (FCA), established during the first month of the Roosevelt administration as an independent agency, with its governor directly responsible to the President. To this position Roosevelt appointed Henry Morgenthau, Jr. When, in November, 1933, Morgenthau became Secretary of the Treasury, Professor William I. Myers succeeded him as governor of the Farm Credit Administration. Cornell men were closely associated with the Farm Credit Administration in the Northeast. Ladd became a district director in 1936 at the request of E. H. Thomson, general agent of the northeastern district and a former staff member in Agricultural Economics.¹⁴ George F. Warren and E. R. Eastman, editor of the *American Agriculturist*, were fellow directors. Professor Van B. Hart of the Department of Agricultural Economics served as first president of the Production Credit Corporation of Springfield, a division of the FCA.

The Roosevelt administration moved rapidly to hammer out a program which would provide relief for agriculture by establishing a mechanism for adjusting agricultural production to the requirements of the available markets. The result was the Agricultural Adjustment Administration (AAA) established by Congress on May 12, 1933. This legislation provided a production allotment to each farmer which he was induced to accept by benefit payments financed through taxes on the primary processors of agricultural products. Beyond this, the Department of Agriculture was given broad authority within which it could exercise discretion in selecting means for stabilizing agriculture.

In his attitude toward the AAA, Ladd followed Warren's view that the fundamental cause of the depression was not overproduction but a breakdown in distribution or exchange. "I do not think there is a particle of doubt as to the cause of the present business depression," stated Warren, adding that it was due to a world-wide demand

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for gold following the nation's adjustment to a high price level during World War I.¹⁵ Although the logic of drawing this conclusion from Warren's statistics was questioned by other economists, Ladd was confident about Warren's explanation; in a moment of enthusiasm he declared that Warren and his colleague, Frank Pearson, "are the first men to have developed the laws of prices just as previous scientists have developed the laws of physics and chemistry."¹⁶ Ladd suggested to Republican policy-maker Frank Gannett that "if our monetary ills are corrected, this in itself will correct most of our agricultural ills and possibly all of them."¹⁷ He believed that, in spite of its failure to provide a sound remedy for the nation's monetary ills, the AAA as a temporary measure might alleviate some agricultural distress; emphasis on production controls, however, made it unsuitable as a permanent program.

Toward economic problems Ladd took an ambivalent view; he was too much the humanitarian to accept the social consequences of an economy based on unrestricted competition and too much the believer in laissez-faire economics to accept the degree of central planning proposed by some New Dealers. "There is something between the two extremes," he wrote to Eleanor Roosevelt in 1936, "that is more efficient, more democratic, more effective and vastly more valuable in terms of human development."¹⁸ Ladd hopefully anticipated the time when the New Deal experiment should have run its course. "I believe and hope that there will ultimately be a reaction against this over-centralization," he wrote a friend in the New York Senate in 1935.¹⁹ His principles of "progressive liberalism," which he felt the Republicans must adopt if they were again to become a strong national party, illustrate his blend of economic security with old-fashioned virtue:

- 1) A balanced development of urban and rural enterprises in such a way as to stabilize business against disastrous depressions.
- 2) Preservation of a maximum of individual initiative and freedom and a minimum of regimentation and government control.
- 3) Application of government planning to meet our economic problems . . . with many people participating in the planning.
- 4) [Administration by competent persons.]
- 5) Security against sickness, unemployment, and old age without

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destroying individual freedom and initiative and without breaking down the habits of frugality and thrift so essential to democracy.²⁰

RELATIONS WITH FEDERAL AGENCIES

In the attempt to stabilize agriculture, the AAA needed continuing contact with the commercial farmers in the nation. There was in the Extension Service a trained staff of field personnel; thus, although the Assistant Secretary of Agriculture, Rexford Tugwell, objected that these men were too closely tied to the agricultural *status quo*, the urgency of the need made it necessary to utilize them in regulating agricultural production.²¹

The Executive Committee of the Land-Grant College Association was not consulted on the domestic allotment plan, and, as far as its members knew, others connected with the land-grant colleges were also ignored by the Washington planners.²² The state extension directors heard rumors from Washington about using county agents in the regulatory processes, but they were unable to agree on how to meet this situation. Southern directors generally favored assigning the county agent regulatory as well as educational functions. Northern directors wished to preserve separation between these functions but did concede that the agent might act as secretary to a county regulatory committee overseeing the individual farmer's compliance with his AAA contract.²³ This was Ladd's position. Although regarding the AAA program as economically unsound, he thought the colleges should cooperate wholeheartedly, both to alleviate the farmers' immediate distress and to preserve good relations with the Secretary of Agriculture, Henry A. Wallace, and Assistant Secretary Tugwell.²⁴

Before the Roosevelt administration had been in power a month, Ladd had drawn on his relationship with these officials to preserve the strength of the Extension Service. At that time a strong group in the Roosevelt administration, led by the Budget Director, Lewis Douglas, believed the essence of a sound economy was a balanced national budget. Roosevelt himself had traditional Tory views toward the subject. But to balance the budget required substantial cuts in government services, including the appropriations for extension. It was believed that Douglas proposed to lop off 50 per cent of these funds. After helping organize a campaign which placed some 40,000

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letters and telegrams in the White House protesting the proposed cuts in the Extension Service, Ladd, on behalf of the Extension Organization and Policy Committee of the Land-Grant College Association, conferred with Wallace and Tugwell, obtaining their promise to defend the extension appropriation. Roosevelt's interest in the Extension Service was well known, but Ladd feared, not without cause, that in the frantic activity of the "hundred days" the appropriation cut might be made without Roosevelt's knowledge.²⁵

Once the initial process of accommodation was completed, the AAA and the Extension Service worked well together until 1936, an accomplishment undoubtedly due to the emphasis placed upon decentralized administration following the acceptance of M. L. Wilson's suggestion for making the state extension directors the state AAA administrators.²⁶ In New York the county agents provided continuing training and supervision of local committees which carried out the various AAA programs and, at the same time, contributed to the effectiveness of the Farm Credit Administration, giving about a month each year to advising potential borrowers.²⁷ However, the dominance of the local units of the Extension Service in field operations of the AAA was contrary to the concept of central planning advanced by a group of Wallace's close advisers, including H. R. Tolley, A. G. Black, Hugh Bennett, and Tugwell. When Tolley took over the administration of the AAA in 1936, he set out to establish a direct line of administration from the federal agency to the American farmer.²⁸

The Soil Conservation and Domestic Allotment Act of 1936, while differing in method, was similar in objective to the Agricultural Adjustment Act of 1933, which had been declared unconstitutional by the Supreme Court in 1935. Acting under the new legislation, the Agricultural Adjustment Administration aimed to raise farm income by inducing farmers to plant soil-conserving crops—principally legumes—which did not form commercially burdensome surpluses. The inducement in this act was in the form of compliance payments made directly from the federal treasury. Although soil conservation was a secondary purpose attached to the act in order to take advantage of sentiment generated by the enthusiastic propagandizing of Hugh Bennett and the public reaction to the eastern skies, dust laden

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with sweepings from the western prairie, it opened the way for greater emphasis on land use planning. The machinery for coordinating the work of experts at the national and state levels with the interests of the farmers immediately concerned remained to be worked out.²⁹

Several years were required to hire and organize a corps of county conservation agents to carry out the new AAA programs. During 1936 the satisfactory arrangements of previous years were continued. At the beginning of 1937, as newly appointed AAA agents were placed as assistants to the county agents, it appeared that the responsibility for the AAA programs would remain with the state extension services.³⁰ At that time Tolley was willing to work out a different administrative arrangement for each state. In the arrangement for New York, the College, in cooperation with organized agriculture, controlled the AAA program. State AAA policies and programs were formulated by a five-member agricultural conservation committee paid from federal funds but appointed by the director of extension from lists furnished by the Conference Board of Farm Organizations.³¹ Professor Van Hart for several months acted as administrator of the program outlined by this committee. In the state, compliance payments were limited to practices which had long been recommended by the College and were felt to be entirely sound. Many farmers, Ladd noted, who had previously resisted a purely educational approach were induced to adopt these practices by the stimulus of cash payments.³²

Meanwhile, rivalry had developed at the national level between the AAA and the Soil Conservation Service (SCS), recently placed in the USDA with Hugh Bennett as chief. At the state level, considerable conflict developed between the land-grant colleges and the Soil Conservation Service, because that federal agency initiated research in the states without consulting the experiment stations and provided direct services to farmers without consulting the state extension services.³³ In New York, SCS pressed forward its research in much the same manner as had the Bureau of Plant Industry in Bailey's administration. Like Bailey, Ladd was in a sufficiently strong position to secure an agreement with SCS to clear all research projects with the State Committee on Soil Conservation Research, a special coor-

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dinating group which Ladd appointed from the staff of the Cornell and Geneva stations.³⁴ County conference committees, however, were the ultimate hope for protecting the county extension organizations against competition from the federal agencies. In 1937 each farm management specialist was working closely with the conference committees of two counties, and other departmental specialists cooperated as needed. Director Simons hoped to extend this work to all agricultural counties in four or five years.³⁵

As the 1938 federal programs for conservation and agricultural stabilization came up for examination in the summer and fall of 1937, it became evident that the Department of Agriculture intended to place greater reliance on the local and regional administrators of AAA and SCS in carrying out the national programs. "We will need very close coordination, both in the College and in the field," stated the county agent leader, Earl Flansburgh, "to ride the storm which I feel is already upon us."³⁶ Clearly, compromise between the federal agencies and the extension services in New York and other states was necessary, for an open clash would disrupt agricultural programs and endanger appropriations in Congress and in state legislatures. The compromise, called the Mount Weather Agreement, was arranged in July, 1938, at a conference at Mount Weather, Virginia, attended by two committees on relationships, one representing the USDA, the other the land-grant colleges. As chairman of the latter committee, Ladd received numerous compliments for his part in arranging the compromise but confessed in the midst of this praise to a sense of tragedy that a committee on relationships was necessary. The trouble could have been avoided he said, if Wallace, Tolley, Bennett, and Black had accepted the land-grant colleges as the responsible agents for the USDA work with farmers.³⁷

The essence of the Mount Weather Agreement involved the establishment of land use planning committees at the county and state levels, which would advise the administrators of the USDA action programs. At the county level, these committees included the county agent, who acted as secretary, at least ten farmers, and representatives of each federal agency working on agricultural matters in the county.³⁸ Unlike the county conference committees,

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which worked with the College primarily on planning the farm management phase of land utilization, the land use planning committees were set up to make recommendations for local administration of the federal programs. These committees offered an opportunity for the farmer, the administrator, and the technical expert to work cooperatively in spite of past antagonisms.³⁹

"In all states farmer-thinking should dominate the work" was Ladd's concept of ideal committee operation.⁴⁰ USDA officials wished to give at least equal voice to the expert and the administrator.⁴¹ Although the land use planning committees at both local and state levels were strictly advisory, Ladd insisted that in New York State the farmer members be given a weighted vote. "From the days of Liberty Hyde Bailey," he asserted, "it has been part of our guiding philosophy that decisions concerning matters of public welfare and decisions which affect the financial welfare of groups of farmers should be made by farmers themselves and not by scientists and others who are on public salaries."⁴²

In the USDA, responsibility for land use planning was assigned to the Bureau of Agricultural Economics. Under the aggressive leadership of H. R. Tolley, who was transferred from the AAA to become chief of the bureau, land use planning expanded rapidly. By 1940, 1,900 counties in the United States had adopted planning committees. In most states this work declined after 1940, a result of preoccupation with wartime activities, opposition by the American Farm Bureau Federation which feared that these committees would form the basis for a competing organization, and state opposition to the regional offices of the Bureau of Agricultural Economics.⁴³ New York, however, was an exception. Relations with both the State Farm Bureau Federation and the Bureau of Agricultural Economics were generally excellent. Farmer members of the planning committees acquired new interest as they realized that problems of land use extended beyond farm management to schools, roads, communications, and the conservation of nonagricultural resources. For a brief period after the war enthusiasm for land use planning flourished in the state.⁴⁴

The generally excellent relations between the College and the USDA, following the Mount Weather Agreement, were occasionally

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marred by the old issue of federal incursion on what the College regarded as its territory. In an exchange of correspondence in 1939, Bureau Chief Tolley insisted that agreement to clear work through state and county planning committees did not exclude cooperation with agencies in the state not connected with the College of Agriculture.⁴⁵ The following year Ladd protested against a research agreement between a USDA bureau and the School of Living located at Suffern as a precedent opening the door to cooperation between the Department of Agriculture and private organizations in the state.⁴⁶ A result of this position was to keep federally supported research and extension in the state within conservative bounds. Some administrators in the Department of Agriculture tended to be much more receptive to radical ideas—Ralph Borsodi's School of Living was an example—than the commercial farmers who dominated the extension and research program of the College of Agriculture.*

Another source of conflict between the land-grant colleges, especially those in the Northeast, and the USDA turned on whether federal agencies should work with farmers in meeting their immediate needs or whether the work of these agencies should be coordinated at the farm level through a long-term plan for the individual farm. For example, it was the policy of the SCS to confine farm forestry demonstrations conducted under the Norris-Doxey Cooperative Farm Forestry Act to those farmers willing to comply with a five-year plan for the development of their farms. The College agreed that these demonstrations should be conducted to illustrate improved forestry practices in relation to other farm practices, but objected to the requirement for an over-all farm plan. At one point in 1939, Director Simons found Milton Eisenhower, land use coordinator at the USDA, willing to compromise to the extent of recommending a straight forestry program in the Lake Champlain area of New York State. However, this gain proved to be more apparent than real when it became evident that Eisenhower's deviation from SCS policy would not be supported by other USDA officials. It was through dealing with these federal officials from a

*Borsodi's part in the subsistence homestead movement of the 1920's and 1930's is described in A. Schlesinger, Jr., *The Coming of the New Deal* (Boston, 1959), p. 362.

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position of strength established through the agency of the Association of Land-Grant Colleges and, within the state, by support from the Farm Bureau and other farm organizations, that the policy of forcing complete farm planning on New York State farmers as the price of federal aid was successfully resisted.⁴⁷ The refusal of the SCS to give personnel of the New York State Extension Service access to these farm plans where they were developed is an indication of the gap then existing between this USDA bureau and the College.⁴⁸

In June, 1939, a reorganization of federal agricultural programs placed the Farm Credit Administration within the Department of Agriculture. The previous September, Professor Myers had returned to Cornell to become head of the Department of Agricultural Economics, to be succeeded as governor of the FCA by Forrest F. Hill, a colleague from Warren's department who had already served as deputy governor. Hill continued Myers' policies of decentralized administration and operation without specific reference to other federal agricultural programs. However, his administration was not in accord with the ideas of Secretary Wallace; increasing friction between the two men led to Hill's resignation in December, 1939.⁴⁹

At Cornell it was feared that this move foreshadowed new policies which would destroy the effectiveness of local cooperative credit associations by tying government-financed farm credit to compliance with the USDA action programs. "I am convinced your fears are unfounded," President Roosevelt replied to Ladd's protest, adding that the objective of soundly financed agricultural credit would be secured to a greater degree through FCA coordination with other activities designed to improve the economic position of farmers.⁵⁰ That A. G. Black did not use his position as Hill's successor to implement his views on the coordination of federal action programs at the local level may be due as much to the strength of the existing FCA policies as to the counter pressure Cornell and the national agricultural organizations were able to apply. Governor Black did try his strength in Congress and found it wanting.⁵¹

Competition between the action agencies and the College was the price paid for placing strong men in positions of overlapping authority. To dwell on the areas of conflict, however, minimizes the

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flexibility of generally dedicated technical experts and administrators, who normally worked together in the pursuit of common goals. This cooperation was especially evident in emergencies. The severe drought that affected most of New York State in 1939 tested the capacity of national and state organizations to cooperate in common cause. The core of the problem was to secure the distribution of available feed supplies so farmers could carry animals through the drought and to restore the farmers' capacity to produce feed the following year by replacing drought-destroyed seedlings. A survey of the condition of corn and hay crops and the state of new seedlings was made through the offices of the county agents. The amount of hay for sale in each county and the price at which it was moving was determined. The AAA furnished free seed to over 15,000 farmers, and the Extension Service distributed information explaining seeding procedure under drought conditions. Special instructions were issued through county agents on emergency feeding, and application was made to the Farm Security Administration for emergency credit.⁵²

Milk marketing became perhaps the most significant area of cooperation with the AAA. In early 1933 the price to producers of this most important farm product reached a low ebb. Milk strikes occurred in several sections of the state, and farmers were presented with conflicting counsel by the agricultural press. In this crisis the legislature created the New York State Milk Control Board, which temporarily succeeded in raising the price to producers by establishing minimum prices for both consumers and producers. At the College this was recognized as a temporary expedient, for the milk supply of metropolitan New York came from several states and was beyond the control of an organization lacking interstate authority. In 1933 college personnel, working with a committee of eighteen representatives of milk producers, prepared a milk-marketing agreement which was submitted to AAA officials as the basis for federal control of the metropolitan milk market.⁵³ At that time, however, AAA lawyers insisted upon a greater degree of centralized authority than New York producers would accept.

In January, 1934, Ladd felt the effectiveness of the Milk Control Board was breaking down through inability to control out-of-state supplies. Hurrying to Washington, he secured a promise from AAA

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authorities to release a milk-marketing agreement quickly so that hearings could be held.⁵⁴ While this AAA agreement was not completely acceptable to New York producers, Ladd was optimistic about the possibilities of compromise. "We will take some steps," he declared, "to rally the constructive groups around the proposed license and to crystallize opinion in such a way that we get a few desirable changes in that proposed license."⁵⁵ These changes were not immediately forthcoming, yet each year the AAA officials and the groups of producers associated with the College moved closer together. Finally in September, 1938, a federal milk order brought stability to the New York market. With this order, pooling was initiated which guaranteed each producer a share of the fluid milk market. Thereafter college and AAA officials cooperated effectively in stabilizing milk prices in New York.⁵⁶

The Bankhead-Jones Act of 1935 was the most important national legislation relating to the land-grant colleges since the passage of the Smith-Lever Act. Not only were large appropriations involved—in 1935-36 federal appropriations for the College of Agriculture increased 36 per cent—but the scope of the legislation was broad. The largest part of the appropriation was allocated to the further development of extension work, but research and resident instruction also benefited. The phrase "to provide for research into basic laws and principles relating to agriculture" appears in the title of the act and indicates a growing awareness of the importance of fundamental research. Forty per cent of the total amount appropriated by Congress was designated a "special research fund" under the control of the Secretary of Agriculture. One-half of this was to be used for establishing and maintaining regional research laboratories.⁵⁷ It was under this latter provision of the Bankhead-Jones Act that the United States Plant, Soil, and Nutrition Laboratory was established at Cornell.

To meet the requirements of the act, a memorandum of understanding was arranged with the directors of the twelve northeastern experiment stations and the USDA. However, the actual basis for operating the laboratory was a personal understanding between Eugene Aucher, chief of the Bureau of Plant Industry, which administered the laboratory on behalf of the USDA, and L. A. May-

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nard of the Department of Animal Husbandry, who was appointed director. Within the framework of its objectives—to find ways for making food crops more nutritious to man—the laboratory was national in scope. Procedures were based on recommendations of an advisory committee of leading researchers in nutrition, many of whom had no connection with the land-grant colleges. The USDA gave Maynard practically a free hand.⁵⁸

The Mount Pleasant facilities for experimental study of pasture improvement were developed by the Bureau of Agricultural Economics in 1938 and later turned over to Cornell University. Consisting of abandoned hill land rather typical of the southern tier area of the state, it provided a convenient site for studies in the utilization of this type of land for livestock production. To reclaim this area for productive grazing, large quantities of phosphate were needed. This was supplied by the Tennessee Valley Authority in carload lots in the form of calcium metaphosphate, a new and more concentrated source of available phosphate than that currently in use.⁵⁹

Whatever the difficulties of the moment with USDA officials, agreement was likely in the long run. Outside the platoon of lawyers who staffed the lower divisions of the AAA, the staff of the College and the personnel of the USDA shared an element of experience as workers in the common cause of agricultural education. Many of the members of the national department had arrived there by way of the land-grant colleges. Many were associated in professional organizations with colleagues in the colleges. Ladd, for example, had great respect for Wallace's knowledge of agriculture and his abilities as an agricultural economist. Even when pressures on their organizations forced them to clash on matters of public policy, Wallace and Ladd still maintained friendly personal relations through the exchange of long letters on such favorite subjects as crossbreeding cattle and solving the problems of agriculture through the education of businessmen.⁶⁰ In the relations of the College to state and university officials this rapport was less in evidence.

RELATIONS WITH THE STATE

Ladd was fortunate, however, with respect to key personnel in the state government. Governor Lehman was deeply interested in

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education and gave it high priority in allocating the state's resources. Harlan H. Horner, appointed director of state college education in December, 1930, represented the State Education Department in its relations to the College of Agriculture. Dr. Horner was an informed and conscientious official who faced the problems of conflicting authority between his department and the Cornell trustees with considerable ability. During his first months in office he took a number of strong positions which protected the University's authority over the state colleges under its jurisdiction. However, Governor Lehman and Director Horner were controlled to a considerable degree by the bureaucracies they headed. A large element in the State Education Department insisted that the state colleges at Cornell should comply with the regulations affecting other state colleges. In the office of the budget director there was increasing pressure for requiring all state colleges to purchase supplies through the centralized State Purchasing Agency. "In a general way," said Mann in 1931, "I may say that we have largely retained our freedom, but that the battles to retain it increase in frequency and that the pressure toward centralization steadily grows."⁶¹ The determination of the farm organizations to prevent the College from being unduly hampered was its best counter weight to the centralizing forces.

Frequently officials of the state were more concerned with manipulation of figures than with understanding what these figures represented. In 1934 assistants in the office of the budget director created what Ladd called a "serious situation" by reducing the appropriation for accessory instruction after noting that the tuition charged by Cornell was higher than that which Syracuse charged the College of Forestry or Alfred charged the College of Ceramics.⁶² An article in the February, 1937, issue of *New York State Education* repeated the old error of exaggerating the cost of instruction in the College of Agriculture by failing to consider that much of the state appropriation went for research and extension.⁶³ In 1939 Ladd noted that the whole situation was further complicated by the unfriendliness of certain members of the Board of Regents.⁶⁴

Regent Owen D. Young was not among this number. In 1936 he proposed to reorganize two of the state schools of agriculture, then having great difficulty attracting enough students to justify the con-

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tinuation of state support. At Young's request, Ladd agreed to support a proposal for making the school at Cobleskill a junior college of agriculture and the Canton institution a junior college of home economics. Although not without reservations concerning this proposal, Ladd thought that if these junior colleges were established they must be under the control of Cornell. In this frame of mind he drew up budgets for the proposed institutions and drafted changes in the education law for placing them under the authority of Cornell. The matter was then placed before the Board of Trustees. In 1937 the board was unwilling to accept responsibility for the two junior colleges although, according to a statement made by Regent Young three years later, "I felt sure that such a proposal would receive the unanimous support of the Board of Regents."⁶⁵ By 1940 the attitude of the trustees had changed to being "thoroughly receptive" to an early move to place all the state agricultural schools under Cornell University administration. Now it was the regents who were unwilling to act, for by this time the schools had experienced a revival through a broader curriculum and greater interest from their localities.⁶⁶

During the decade, the State Department of Education assumed responsibility for rationalizing the state's support of forestry and conservation education. In the spring of 1930, members of the Department of Forestry at Cornell realized that state policy was moving toward concentrating forestry education at Syracuse. Caught in the consequences of an institutional rivalry not of their making, with the continuation of their academic work in doubt and with their stake in the University community jeopardized, they set out to prove that continuation of professional forestry instruction at Cornell was a good investment for the state. Supporters attested to the high quality of the work done in the department; indeed, no less an authority than Dean Henry S. Graves of the Yale School of Forestry recommended establishing a research institute of forestry at Cornell which would permit concentration on research and instruction of graduate students.⁶⁷ This was substantially the arrangement adopted by the State Education Department and the Cornell Board of Trustees in February, 1933, although Horner, at the conclusion of a two-year study of the historical, political, and educational factors

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involved, had recommended that all instruction in professional forestry be immediately discontinued at Cornell. Research and graduate instruction continued, but without the official title which would stamp it as a permanent undertaking of the state. Undergraduates enrolled in the professional courses were permitted to complete their work, with the final class scheduled for 1935-36.⁶⁸ Horner explained why this decision was taken at the dedication of the forestry building at Syracuse, named to honor Louis Marshall, friend of former Governor Sulzer and trustee of the College of Forestry. Cornell, he said then and in his report to the Board of Regents, had resumed teaching professional forestry only after the work was already under way at Syracuse.⁶⁹

In the spring of 1934 the Joseph Slocum College of Agriculture closed its doors. In a letter to Ladd, its dean said he had been told that ending agriculture at Syracuse was connected with ending professional forestry at Cornell.⁷⁰

In a second report Horner dealt with the duplication of instruction and research in wildlife conservation between the College of Forestry and the College of Agriculture. He concluded that Cornell's conservation work had been more productive and that facilities for the work were superior to those at Syracuse.⁷¹ However, in this report, submitted May 15, 1936, he tied his recommendation for concentrating conservation education at Cornell to the implementation of his previous recommendation calling for concentrating all work in professional forestry at Syracuse. These recommendations were accepted as policy by the Board of Regents and by the trustees of the institutions involved, effective June 30, 1937. Extension forestry and courses in farm forestry—recognized by Horner as a legitimate part of the activities of the College of Agriculture—were continued by the Department of Forestry at Cornell.⁷²

The organization of the Graduate School of Education, established in 1931 as an agency for coordinating the education departments in the College of Agriculture and the College of Arts and Sciences, was also directly affected by the relation of Cornell University to other educational institutions in the state. The need for such coordination had long been recognized, and in 1926 a Division of Education was formed in the University. Its lack of administrative authority, how-

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ever, made this unit virtually ineffective.⁷³ In 1930 the University tried to secure state support for a school of education, but the bill to accomplish this did not pass the legislature. The usual strategy of introducing the bill again the following year was abandoned when Syracuse indicated an intention of seeking such a school from the state.⁷⁴ Consequently the Graduate School of Education was formed within the University in April, 1931, by associating the Department of Rural Education in the College of Agriculture with the Department of Education in the College of Arts and Sciences. Julian E. Butterworth was named director. Integration, however, was slight, for both departments retained their own administrative identities. Coordination on a day-to-day basis was achieved through Professor Butterworth, who served as administrative head of these units. In 1937, six years after its establishment, he noted that the Graduate School of Education was still a long way from being an effective professional organization.⁷⁵ It was not until 1940 that the College of Arts and Sciences transferred the budget of its Department of Education to the Graduate School of Education, in that year renamed the School of Education.⁷⁶ The term "graduate," attached in 1931 to assure the state teachers colleges that Cornell was not looking toward securing state funds for training secondary teachers, was no longer thought necessary.⁷⁷

State appropriations during the depression decade were not adequate for the work the College had undertaken. Not until 1942 did appropriations again reach the level of 1931. Moreover, activities were further reduced by adherence to a line-item budget. Dean Ladd estimated that 20 per cent more could be accomplished with lump-sum appropriations; in 1938 he listed greater flexibility in budgetary procedures as one of the three greatest needs of the College.⁷⁸ Instead, the tendency was toward more rather than fewer restrictions on the College. The approval of state budgetary authorities was required before positions could be filled and before any lump sums in the budget could be segregated by the college administration.⁷⁹ One area of flexibility, however, was provided by the salary classification system prepared for all the state colleges by Director Horner in 1931. In the College of Agriculture maximum and minimum salaries were established for all employees; the annual increment for profes-

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sors, assistant professors, and instructors was set at \$250 and additional salary was permitted for professors of unusual distinction.⁸⁰

After securing appropriations in 1930 and 1931 for an agricultural economics building at Cornell and a horticultural building and greenhouses at Geneva, the University found state authorities unwilling to make further major appropriations to enlarge the physical facilities for agricultural education. In 1931 Horner foresaw that if an appropriation for the library were to be obtained in the near future it would have to be secured in 1932, for conditions in the state were rapidly moving toward a situation which would preclude securing the building for another four or five years. Acting on this advice, Mann set out to obtain the library appropriation and then, if conditions were still favorable, go after the agricultural engineering building.⁸¹ This effort was in vain, for no additional buildings were authorized during the decade. Meanwhile the condition of the library deteriorated. In 1938 the budget for the college library was lower than it had been in 1920, although in the intervening years the graduate enrollment had more than doubled and the undergraduate enrollment had increased substantially. Library resources in the departmental libraries financed by departmental funds tended to be superior to the central library in Stone Hall.⁸²

However inadequate the state appropriations from the viewpoint of the College or farm organizations, they were sufficient to permit salaries and facilities superior to those in the endowed colleges.* University authorities, in attempting to balance appropriations between the state and endowed divisions, had restricted the activities of the College under Dean Bailey and were to do so again under Dean Ladd through refusal to allow the budget requests of the College. To secure funds for the programs worked out by the departments in cooperation with farm organizations, Ladd, with the support of the Conference Board of Farm Organizations, had recourse to

*The College also fared well in comparison to colleges of agriculture in other states. The state appropriation for Iowa State College was cut 27 per cent for the biennium 1933-1935. The state appropriation for Michigan State College in 1933 was 40 per cent less than that of two years before (Earle D. Ross, *A History of Iowa State College of Agriculture and Mechanic Arts* [Ames, Iowa, 1942], p. 363; Madison Kuhn, *Michigan State: The First Hundred Years, 1855-1955* [East Lansing, 1955], p. 341).

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special bills which provided appropriations outside the regular college budget.⁸³ Once the door of the legislature was opened to special appropriations, a number of bills were introduced which did not originate with the College or with major farm organizations. Each year Governor Lehman or Director Horner consulted Ladd on special bills relating to agricultural education; rarely did they become law without Ladd's approval.⁸⁴ A 1935 appropriation of \$5,000 for research at Geneva on the diseases of hops was an exception. A small group, anxious to revive the disease-stricken hops industry in the state, had sufficient authority in Albany to secure appropriations for research which both Ladd and Director Hedrick felt was useless. The yield of hops on the West Coast was so much greater that eliminating disease would not restore the industry in New York.⁸⁵

The excellent relations previously maintained with the State Department of Agriculture and Markets continued. In regulating the movement of agricultural produce, the department had increasingly used standards of quality established by the College. In seed certification, this relationship was established by law in 1932. Since 1924 it had been college policy to make all inspections for seed certification through the New York Seed Improvement Cooperative Association as a means of protecting growers prepared to produce quality seed and engage in honest merchandising.⁸⁶ A 1932 amendment to the Farms and Markets Law placed the authority of the state behind this arrangement by authorizing the commissioner of agriculture to promulgate certified seed grades after consultation with the College and to designate an agency which would certify on behalf of the Department of Agriculture and Markets that seed met these grades. The agency officially designated was the New York Seed Improvement Cooperative Association.⁸⁷

RELATIONS WITH CORNELL UNIVERSITY

During the 1930's there was a question of the willingness of some members of the Cornell Board of Trustees to cope with the increasingly crucial relations of the College of Agriculture with the state and federal governments. Some of the few trustees who had taken a special interest in the College of Agriculture were handicapped by

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having attained maturity at a time when the relation of the federal government to agriculture was relatively remote and insignificant. Trustee Frank Hiscock, for example, attended Cornell when Professor Caldwell was dean of the College of Agriculture, and J. DuPratt White graduated in the Class of 1890. It was natural that the dangers of federal control would loom larger to these men than the possibilities for useful technological and social change implicit in much of the complex research which could be financed most effectively by the federal government. These two trustees strongly opposed the principle of locating the federal nutrition laboratory at Cornell and were not prepared to authorize Ladd to negotiate for its acceptance by the University. It was President Edmund E. Day's strong support for the laboratory which probably proved crucial in securing the consent of the board.⁸⁸

Throughout most of the decade agriculture had two strong representatives on the board, M. C. Burritt and H. E. Babcock. Burritt was elected an alumni trustee in 1934 through the efforts of college alumni to secure a spokesman for the College. Sparked by Professor Rice and A. W. Gibson, an alumni committee succeeded in its second attempt to secure Burritt's election⁸⁹. Babcock served as Grange trustee throughout the decade. Unlike the usual Grange trustee, who served for only a short term and never became thoroughly familiar with trustee procedures, Babcock took an active part in decision making. In 1939 he became acting chairman, and in 1940 chairman of the Board of Trustees, after which he became a regular member.⁹⁰ During the time he served as trustee, Babcock was perhaps the most important figure in New York agriculture.

Since its establishment, Babcock had worked through the Conference Board of Farm Organizations to coordinate the activities of the College of Agriculture, the Veterinary College, and the Department of Agriculture and Markets for the purpose of eradicating mastitis, Bang's disease, and bovine tuberculosis, a long-term effort given public recognition in 1936 by his appointment as chairman of the Governor's Commission to Study the Problems of Bang's Disease and Mastitis.⁹¹ He consistently used the power of his position in the G.L.F. and his contacts with the farm bureaus to advance the interests of northeastern agriculture. He tried out new ideas on his

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farm, Sunnygables, which he publicized in a regular column in the *American Agriculturist*. He was an early and vigorous advocate of the home freezer, grass silage, rubber tires on farm equipment, and other innovations in agriculture. But when it came to the relationship of the federal government to the College of Agriculture, Babcock shared the blind spot of fellow trustees White and Hiscock.

In December, 1937, Babcock reported to the New York State Grange that the College of Agriculture was under "constant pressure from the Federal government" to give it greater control of agricultural research and extension. Pledging himself to work toward keeping the College free from direct and indirect federal influence, he concluded, "If necessary I am willing to see the State Colleges sacrifice federal funds and to curtail their work in order to maintain their position of independence."⁹² The dramatic treatment given Babcock's Grange report by the Associated Press caused Ladd considerable embarrassment, for he had no desire to alienate either Babcock or federal officials. Among what he referred to as "certain steps to protect the good name of the institution," Ladd wrote Governor Lehman assuring him that in the opinion of the administrative group at the College, "the federal Government had never attempted in any way to bring pressure on the research or teaching activities of the College."⁹³ Babcock's view that power to influence research in the hands of the G.L.F. was somehow more benign than in the hands of federal authorities was a paradox not entirely overlooked at the College.⁹⁴ Although in his public statements Babcock was rarely in accord with what he considered the Middle West-dominated Department of Agriculture, he was not completely inflexible in specific situations involving the department. At first opposed to locating the federal nutrition laboratory at Cornell, he eventually yielded to the arguments of Dean Ladd and President Day.⁹⁵

The Cornell Arboretum, later renamed the Cornell Plantations at Bailey's suggestion, also greatly benefited by assistance from a federal agency. The arboretum project began in 1924 with a gift by Henry W. Sackett for making the gorges adjacent to the campus accessible while preserving their natural beauty. Since the Faculty of Agriculture was most directly interested in developing an arboretum, Dean Mann appointed a faculty committee of four in 1928 to prepare plans.

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Little was accomplished until 1935, when a Civilian Conservation Corps (CCC) camp was located adjacent to the campus. By 1939 approximately 8,000 trees and 1,350 shrubs had been planted and 2.3 miles of road and 2.6 miles of trails constructed by the CCC unit on the 650 acres then comprising the arboretum, with an investment in labor and material by the federal government of approximately \$200,000. When the CCC unit was withdrawn in April, 1941, a basis had been laid for unifying the University's lands at Ithaca into "a definite, coherent, long-continuing educational program to the end that every field shall be accessible to students and the public."⁹⁶

In 1940 the Board of Trustees was reorganized to secure greater efficiency in the administration of the state colleges. A permanent Public Relations Committee was appointed to deal with the general problem of university relationships to the state and national government. The State College Council, which had been long bogged down in administrative detail to the detriment of discussion of fundamental problems, was abolished, to be replaced by separate advisory councils for each college. The new Agricultural College Council included the President of Cornell, the commissioner of agriculture, the commissioner of education, the Grange trustee, the State Agricultural Society trustee, the chairman of the Public Relations Committee of the Board of Trustees, two members elected by the board, the dean of the College, two faculty members, the dean of the Veterinary College, the director of the Geneva station, one representative from each member organization of the Conference Board of Farm Organizations, and three members at large.⁹⁷

Within the University, the relations with the College of Arts and Sciences were the most complicated. By 1934 the annual payment for accessory instruction had reached \$95,000, yet the faculty of the College of Agriculture had little opportunity to know what instruction their students were receiving for this payment. Many students were dissatisfied with particular courses, indicating that the College of Arts and Sciences was not meeting the needs of these students. "It seems to me," said Dean Ladd in 1934, "that the whole situation must inevitably result in the State Colleges building up more and more of the essential services for themselves."⁹⁸ Indeed, this was already occurring with the establishment of an introductory

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course in general psychology in 1930 and courses in elementary accounting in 1923⁹⁹. In part the problem was one of communication, for, even within the available finances and considering the diversity of objectives, greater accommodation might have been possible if the Faculties of Agriculture and of Arts and Sciences could have understood each other's needs and points of view. Toward this end the Faculty of Agriculture in 1938 considered asking the trustees to permit the election to its membership of members of other faculties which offered courses taken by substantial numbers of agricultural students. In 1941 this policy was actually adopted, and by June four professors in the College of Arts and Sciences had been added to the Faculty of Agriculture.¹⁰⁰

The 1939 decision that zoology would be supported by both the College of Agriculture and the College of Arts and Sciences was a compromise largely dictated by the availability of funds. The problems of coordinating university activities in biology were similar to those involved in coordinating the work in professional education. Like the Division of Education, the Division of Biology, created by President Farrand in 1925, was never an effective administrative unit and by 1933 had largely broken down as a coordinating agency.¹⁰¹ Within the College of Agriculture it was Dean Ladd's plan to form a school of conservation around the nucleus of zoologists in the Department of Entomology and Limnology, which included Professors A. H. Wright, W. J. Hamilton, J. G. Needham, G. C. Embody, and A. A. Allen. Part of this group, however, opposed the subordination of basic work in zoology to the more popularly oriented aspects of conservation.¹⁰² In 1937 the possibility was considered of transferring all zoology in the University to the College of Agriculture, as entomology had earlier been transferred, but funds were not available for this. Under the arrangement adopted in 1939 a Department of Zoology was supported by each college and housed in Stimson Hall, a building made available by the demise of the Ithaca Division of the Medical College. The members of the department supported by Agriculture were transferred from the Department of Entomology and Limnology.¹⁰³

The College of Agriculture also became more closely coordinated with other divisions of the University. In 1933 the University Faculty

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adopted a uniform numerical system for reporting student grades which made statistical comparison readily possible.¹⁰⁴ In 1935 the Faculty of Agriculture made possible advanced standing for entering students similar to that granted in the College of Arts and Sciences.¹⁰⁵ University student loan funds were awarded to students in the College; in 1938-39 over 11 per cent of the agricultural students secured loans averaging nearly \$120.¹⁰⁶ In 1931 the University adopted group insurance for all permanent employees, paying the cost above the individual's contribution.¹⁰⁷ Finally, in 1940, the long banishment of the extension staff from the Faculty of Agriculture was ended when the extension professors and Geneva staff were made voting members of the Faculty of Agriculture and nonvoting members of the University faculty.¹⁰⁸

INTERNAL ADMINISTRATION

During the decade five department heads selected by Dean Bailey retired. Professor Warren's successor, W. I. Myers, had been unofficially agreed upon at least five years in advance; but for Professors Lyon, Needham, Rice, and White, no such obvious successors were at hand.¹⁰⁹ The department heads who followed these men were certain to find their task difficult, for policies and methods of operation long established would not be easy to change. Those who had built up a constituency in the state left behind an element inclined to criticize departures from long-established policies. Dean Ladd had to locate suitable successors and persuade them to take up a task involving the coordination of research, extension, and resident instruction and the establishment of teamwork among diverse personalities while living in the shadow of a famed predecessor, sometimes in a building carrying his name. Ladd's problem of selection was complicated by the rapid changes in agricultural science. Such techniques as judging fowl, however worthy in the past, were no longer likely to advance agricultural science. Chemistry and statistics were increasingly vital tools, a situation which favored the selection of younger men. However, the immediate pressures on the Dean from within the departments and from their constituencies were likely to favor a senior member of the department whose personality was known and whose reputation in the department and in the state was established.

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In offering advice, Professor Warren recommended selecting men who were already at Cornell. He recalled for Dean Ladd the administration of Director Thatcher, which he thought rather typical of a USDA or a corporation manager's point of view which ignored the Cornell tradition of professorial independence. "It is really a different institution from most of the agricultural colleges," insisted Warren, "because we operate on a basis of the independence of each professor." Babcock later stressed public relations skills as necessary for effective teachers and department heads. "We need," he counseled Ladd, "three to four headliners *who are also good showmen*."¹¹⁰

Finding a successor to James Rice, who retired in 1934, was especially difficult. Professor Rice's tremendous enthusiasm for sharing his knowledge with others made him one of the founders of professional poultry husbandry in the United States. His ability to withstand skeptics like Dean Roberts, who before 1890 questioned giving poultry a place in the College of Agriculture, stood him to good advantage in early years but perhaps later made him somewhat deaf to suggestions that his department would benefit from greater emphasis on research.¹¹¹ His breezy contagious optimism and personal generosity disarmed critics but did not diminish the need for exploring genetics and chemical techniques as approaches to improving the poultry industry. Ladd wrote numerous letters of inquiry about a successor to Rice and received recommendations ranging from advocating a scholar skilled in research to avoiding placing a Ph.D. degree above personality and practical experience with poultry.¹¹² In selecting F. B. Hutt, a young expert in animal genetics from the University of Minnesota, Ladd chose to emphasize skill in organizing research.

In 1936 James Needham retired as head of the Department of Entomology and Limnology. The problem of selecting a long-term successor was postponed by elevating a senior member of the department, Oskar A. Johannsen, a man of considerable talent who began his career at Cornell teaching structural engineering from 1899 to 1909. In the two years before Johannsen's retirement Ladd sought a suitable successor. Under Professor Comstock the Department of Entomology had enjoyed a national and international reputation, but in recent years, so Ladd was advised, the department's prestige had declined, largely because departments elsewhere were newer and

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more modern. It was generally felt that a strong appointment would be required if Cornell were to regain lost momentum. This appointment, wrote California entomologist A. M. Boyce, is "without doubt the chief subject for gossip among entomologists in the whole country."¹¹³ In selecting Assistant Professor Charles E. Palm, Ladd made an unexpected choice. Although Palm had already attained great success in organizing field work in Oswego County to prevent the spread of a snout beetle that threatened the alfalfa crop of the state, his reputation in entomology was not comparable to that of other possible choices. However, his enthusiasm, his talents as a conciliator, and his ability to get to the core of research proposals, were recognized by Ladd, who chose in the conditions prevailing in the department in 1938 to give these qualities greater emphasis than seniority or established reputation.¹¹⁴ Palm's appointment was also a move in the direction of greater emphasis on the economic aspects of entomology.

Professor Lyon retired in June, 1937. "I have been studying the agronomy field for two years and have obtained suggestions from all sorts of sources," Ladd stated in early May, 1937. "It is astonishing to find the small number of first class men available." This comment was prompted by Ladd's disappointment at failing to secure Dr. Richard Bradfield, whom he considered a "most excellent young scientist" and a real find for Cornell. Ladd, however, ultimately succeeded. Although Ohio State made every effort to retain Bradfield, he became head of the department on July 1, 1937, bringing with him an established reputation in the field of soil science.¹¹⁵

The selection of a successor to Professor E. A. White, who retired in June, 1939, was complicated by the range of activities in the Department of Floriculture and Ornamental Horticulture and differences of opinion on the emphasis these activities should receive. As in the Poultry Department, research had been somewhat subordinated to the diffusion of information, and this unbalance Ladd was determined to correct. His solution was to move L. H. MacDaniels, who was broadly trained in botany and horticulture, from the Department of Pomology to head the Department of Floriculture and Ornamental Horticulture.¹¹⁶

Long before his retirement approached, Warren had been concerned about the reduced efficiency of departments due to the aging

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of department heads. In 1929 he proposed that the University adopt the policy that department heads retire from administrative duties at sixty unless reelected annually by the trustees.¹¹⁷ In 1933 he was prepared to apply this recommendation to his own situation, but the demand from Washington for the services of Professor Myers made this step impracticable. Warren continued to head the department under trying conditions. Younger faculty members frequently had to assume the responsibilities of senior members on temporary duty with government agencies. As a result, the department was unable to provide graduate instruction of the quality Warren desired. As Myers was preparing to take over as department head the tragedy of fatal illness struck Professor Warren.¹¹⁸ He died May 24, 1938.

Of the many tributes to Warren which dealt with his contributions to agriculture and agricultural education, that of C. W. Kitchen, acting chief of the Bureau of Agricultural Economics, best stands the test of time:

It is always difficult, especially when a career has just ended, to judge adequately the work of anyone whose influence was as extensive as that of Professor Warren . . . Yet when the passing of the years will have afforded opportunity to appraise more clearly the economic thought and events of the past several decades, it is possible that his greatest work will be adjudged to lie in his contributions as a teacher, especially through those who had the opportunity of personal contact with him in his classes and as he conducted their graduate work.

Many in the Bureau of Agricultural Economics had studied with Warren and many others, added Kitchen, had been influenced by his writings.¹¹⁹ A group of Warren's former students in the Genesee County Farm Forum—an organization of leading farmers with a common interest in agricultural economics and farm management—presented the portrait that was placed in the building bearing his name.¹²⁰

After the new department heads were appointed, it was necessary to make them known to the people of the state. This was accomplished through the Extension Service by scheduling them to speak before farm groups and over the radio. As a former director of extension, Ladd knew the importance of putting department heads in touch

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with farm people, since theirs was the final responsibility for coordinating research, resident instruction, and extension in each field. As dean, he was also concerned lest the extension phase of their duties loom so large that they would be unable to maintain or increase their prestige among fellow scientists.¹²¹

In 1931 the misleading name of Department of Vegetable Gardening was changed to Department of Vegetable Crops; in 1934 meteorology was transferred from agronomy to pomology, and in 1939 the name of the Department of Rural Social Organization was changed to Department of Rural Sociology in anticipation of the establishment of a department of sociology in the College of Arts and Sciences.¹²²

There were two major administrative appointments. In December, 1935, Ladd recommended the appointment of C. E. F. Guterman as professor of plant pathology and assistant director of experiment stations. Guterman had then been assisting Ladd for several years in evaluating and coordinating research projects. Previous to this appointment Ladd had traveled widely, visiting other experiment stations and talking to their directors; Guterman was, he thought, the best man among them.¹²³ In 1940 Betten resigned as director of resident instruction to give full time to his post as dean of the University Faculty, which he had held since 1931. He was succeeded by Anson Wright Gibson, who previously had been associated with Betten as professor of personnel administration.¹²⁴

By 1940 cooperation among departments was becoming as normal as competition had previously been. The retirement of some of the extreme individualists and the growing awareness that complex problems could be solved through interdepartmental cooperation contributed to this changed attitude. The potato project, which was calculated to preserve a share of the potato market for New York producers, was the first major exercise in cooperation. The general problem was attacked through disease control by breeding and manipulation of field conditions, through study of other conditions affecting production, and by the study of harvesting procedures, marketing procedures, and the taste and nutrition of the final product. "For the first time in our history," said Ladd in 1936, "we seem to have the best of generous whole-hearted cooperation between departments to attack the whole problem."¹²⁵ Cooperation by de-

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partment heads made possible a degree of flexibility in the internal administration of the College which had not been possible since Bailey's administration. There were, of course, occasional vestiges of competition which were most evident when a new and desirable position was to be fitted within the existing departmental structure.¹²⁶

The major interdepartmental controversy did not involve competition for funds or position; rather it centered around the conflicting views of Professor Warren and Professor Morrison of the Department of Animal Husbandry over whether farmers in New York could profitably produce meat animals. Since the 1920's it had been the policy of the college administration, following the recommendations of Warren, to discourage correspondents desiring the College to give more emphasis to meat animal production on the ground that there was no likelihood that this industry would be profitable in New York State.¹²⁷ Morrison was not convinced by Warren's evidence and took the position that the meat animal industry could be profitable, especially in the better hill areas of the state. By 1937 Governor Lehman was under considerable pressure from the Producer's Cooperative Commission Association of Buffalo and other beef and sheep enthusiasts to support an appropriation to Cornell for the purchase of a hill area demonstration farm and for research and extension information on beef and sheep production. Ladd was adamant in insisting that the financial data collected by the College showed that livestock production in these areas could not be profitable. "Even if an appropriation were offered," he wrote Governor Lehman, "I should not want the State College to accept funds to establish a demonstration farm in these poor land areas."¹²⁸ In this instance a compromise was arranged in cooperation with Kenmore Mills of Albany, New York. This corporation set up and operated an experimental sheep farm at Springwater, New York, on low-cost land secured from the Federal Land Bank.¹²⁹ Ultimately this experiment failed to confirm Morrison's conviction about profitably redeeming abandoned hill lands for livestock production, but since its scope was limited to sheep production on abandoned hill land, it did not quiet the demands of livestock producers for further extension work with meat animals. In 1943, at the urging of Dutchess County livestock

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breeders, the legislature set aside \$10,000 for extension work with meat animals and horses.¹³⁰

Morrison was a strong leader. Like Warren, he developed in the department a carefully considered combination of research, resident instruction, and extension. In the state he stressed working with farm groups; with the aid of a farmer advisory committee under the chairmanship of H. L. Creal, the appropriations for additional livestock and new barns were secured. Within the College his emphasis on effective classroom teaching contributed to increasing class enrollment in the Department of Animal Husbandry.* Also, like Warren, he established among the staff a strong feeling of identification with the department.¹³¹

The administration of research was greatly facilitated by adopting a standardized format for outlining research projects. By 1935 it was possible for the director of the Cornell University Agricultural Experiment Station to know what was being done in each department and to exercise, on the basis of this information, a degree of coordination that had been denied Director Thatcher.¹³² Where information was desired beyond that in the research project, or assistance was required in analyzing information, Ladd often consulted several members of the faculty. Dean Mann had also followed this practice, relying especially on Professors Lyon and Emerson, as Ladd later did on F. B. Hutt and Charles Palm.

Formal and informal lines of communication to and within the College made possible quick recognition, in the state's rapidly changing agriculture, of problem areas which were not being aided by the research program of the College. Yet the administration's capacity to make adjustments was limited by the rigid state budgetary practices. "One of the great needs of the College," Dean Ladd declared in 1934, "is for a fluid sum of considerable amount that can be reallocated at the beginning of each fiscal year."¹³³

Coordination of research between Cornell and Geneva was another area where much improvement was possible. Since the resignation of Director Morrison, the inclination toward independence on the part of the Geneva station had again become predominant. There was

*Credit hours taught by the department increased from 1,403 in 1929-30 to 4,226 in 1935-36 (Morrison to Ladd, Oct. 2, 1936, Ladd Papers).

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little that Dean Ladd could do to secure greater coordination. As Director Hedrick noted in his last report to the President of the University in 1937, almost all the increases in the station's budget during his administration had come through special appropriations by the legislature. Much to Ladd's dismay, these appropriations were written in a way which required their direct assignment to Geneva.¹³⁴ Temporary fellowships and grants of aid from commercial companies and funds from the USDA for cooperative research projects were additional sources of support. Although the receipt of funds in these cases was based on memoranda of understanding which Ladd had to approve, his approval was almost a formality; failure to do so would have affected the morale of the staff who had worked to secure the agreements and would have prevented research of benefit to New York agriculture.

The elevation of Percival Parrott, professor of entomology, from vice-director to director of the Geneva station in January, 1938, was a step toward coordination of the two institutions. The appointment of this senior staff member—his service at Geneva began in 1900—was popular both with members of the Geneva staff and with growers in the state. Unlike his predecessor, Parrott set out to work closely with Ladd and to encourage his staff to comply with college policies, a long-term project among scholars who had become accustomed to operating independently.¹³⁵

EXTENSION

By the 1930's the recommendations of the Extension Service were accepted with what Ladd called "almost embarrassing confidence."¹³⁶ Farm organizations like the Dairymen's League and the Empire State Potato Club worked closely with the College. Many individual farmers consulted the county agent or college extension specialists about their farm plans almost as a matter of course. Farm organizations sometimes took the aid of the College for granted. When, for example, the Dairymen's League appointed an escrow committee in the early 1930's as part of a membership drive, they simply informed Professor Leland Spencer that he was a member along with his colleagues, Dean Ladd and Professor Warren.¹³⁷ In 1935 Ladd found great difficulty in ending the agreement with the Holstein-Friesian

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Association under which an extension professor served as secretary of the association on a split salary. Although the agreement impressed Ladd as poor administrative procedure and contrary to college policy, he responded favorably to association appeals for renewal of the agreement.¹³⁸ The Empire State Potato Club also tended to disregard the independence of the College; in 1923 Dean Mann had protested the plans of its general manager to place extension personnel on an organization committee to enlarge the organization.¹³⁹ However, the close relation of this organization to the College proved useful in securing appropriations from the legislature to support the potato project and also facilitated the research and extension activities involved in the project.¹⁴⁰

Although the predominant orientation of farmers and farm organizations was toward utilizing the help of the Extension Service, there were pockets of disaffection in the state. In some cases this was expressed through local Granges. In 1932 the Pomona Grange of Yates County opposed continued county appropriations for the Extension Service, and in Wayne County, Grange leaders signed a document addressed to the supervisors questioning the work in agricultural extension.¹⁴¹ Alienation was widespread in the North Country, where many farmers were located on poorly drained land, far from markets, without adequate transportation, and with little access to capital. The College had little to offer farmers operating under such conditions; indeed it was college policy that the public interest would be served by the removal from agriculture of farms which would not provide their operator a decent living. Many of these farmers joined the Dairy Farmers Union, founded in 1936 at Ogdensburg through the activities of Archie Wright. This organization blamed what it called "The Old Farm Gang"—a foursome which included the Dairymen's League, the G.L.F., the *American Agriculturist*, and the College of Agriculture—for most of the economic difficulties of its members.¹⁴² The charge contained an element of truth, for these organizations did encourage an efficiency these farmers could not hope to achieve but which further handicapped them when achieved by others. The Dairy Farmers Union found a powerful ally in John Dillon of the *Rural New Yorker*. While Dillon rarely attacked the College of Agriculture directly, he did

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attack the G.L.F., the Dairymen's League, and the farm bureau-extension service relationship, all of which, from the point of view of the College, were of vital importance to the prosperity of New York agriculture.¹⁴³

Other attacks came from the opposite flank occupied by those who insisted that the College did not do enough to help them. This was the position of the meat animal producers, who denounced the College for not pushing meat animal production. It was also the position of farmers wanting help in the control of animal diseases. In this the Extension Service was particularly weak, since such help seemed to fall within the responsibility of the Veterinary College, which had not been anxious to cooperate with extension in doing what seemed an infringement on the work of the professional veterinarian. However, incidents like the formation of a "Knockers Club" among Dutchess County poultrymen to condemn the Veterinary College and the Poultry Department for not helping control poultry disease unquestionably led to greater cooperation between the Veterinary College and the animal industry departments of the College of Agriculture.¹⁴⁴

In spite of the efforts of John Dillon, the link between the farm bureaus and the Extension Service was not in jeopardy in New York State during the decade. There was within the state some dissatisfaction with national farm bureau policies, but, instead of fostering reaction against the farm bureau-extension link, this resulted in dissension within the farm bureau organization itself. When, in 1938, St. Lawrence County withheld its dues of fifty cents per member from the national organization, national President Edward O'Neal asked Dean Ladd to adjust the situation as best he could.¹⁴⁵ By 1940 American Farm Bureau Federation policies were so out of step with the interests of northeastern agriculture that Ladd anticipated that the State Federation might withdraw from the national organization. At that time he wrote to another agricultural college administrator about the possibility of forming a northeastern federation, should the withdrawal of the New York Farm Bureau Federation be consummated.¹⁴⁶

One result of the depression was public pressure on county boards of supervisors to reduce taxes, a desirable step which unfortunately

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required the reduction of public services. In view of this pressure, it was a tribute to the agricultural extension work that so few counties chose to discontinue the county agricultural agent. Only four counties dropped the agricultural agent, and by 1937 an appropriation for farm bureau work had been restored in each. The home economics organization in the counties was less fortunate. Appropriations for home demonstration agents, which were dropped by eight counties between 1931 and 1933, were not restored in all these counties until 1951.¹⁴⁷

The method of program planning at the county level underwent a major change during the decade from the project type of planning to the commodity or type-of-farming approach. The former emphasized farm improvement techniques of wide applicability such as those dealing with use of lime, culling chickens, and production of alfalfa; the latter emphasized a farm management approach by concentrating on the relationship between production factors on the individual farm. Following this approach, county programs were developed by commodity committees composed of leading farmers who concentrated on the production of a particular commodity working in cooperation with subject matter specialists from the College.¹⁴⁸ More efficient education resulted as farmers, county agents, and extension specialists approached individual farm problems in relation to the total operation of each farm.

The change in method of programing was an accommodation to increasing specialization. Farmers concentrating on particular commodities wanted the information they received from Cornell channeled toward the production and marketing of those commodities. Meetings of a general type were no longer useful to them. Also involved was a growing awareness of the value of a management approach to the farm business. Efficient farmers anxious to maintain their competitive position recognized the importance of evaluating production options in relation to marketing forecasts made available through Cornell and the USDA. This awareness had been developing gradually. The commodity committees organized in the 1930's were institutionalized forms of what already existed in some counties.¹⁴⁹ It was on the basis of demonstrated value that the program was established on a statewide basis.

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In some counties the new method of programing was slow in developing, because of a lack of leadership among farmers and because some county agents found it difficult to adjust to the requirements of the new approach. Under the project method the county agent could, and sometimes did, run a one-man show. Although it was desirable for the agent to consult with county committeemen in order to enlarge his own point of view and make local people part of the planning process, it was not vital for carrying out the extension objectives of the departments at the College. The use of lime and other improved practices could be demonstrated whether or not local farmers took part in planning the project. This was not possible under the commodity approach to the county program, for here teaching began with the condition of the farmer.

Earl Flansburgh, county agent leader, contributed to the adoption of the new program approach by stressing a capacity for leadership in the selection of new agents and, of equal importance, providing on-the-job training for the present agents. Much of this was done informally. Flansburgh had an excellent knowledge of conditions in the counties, and agents understood that his door was always open and that he was there to help them. Agent education of a more formal nature occurred through conferences at the College, scheduled increasingly on a regional basis, which brought together agents with common problems. Within the college extension organization, Professor Montgomery Robinson served as a liaison officer to coordinate the activities of the extension subject matter specialists with the program requirements of the counties. He played a key role in encouraging and facilitating the transition from a highly specialized departmental form of extension to the commodity approach.¹⁵⁰

College policy required extension specialists to work through the county agents. This arrangement strengthened the position of the agent in the counties and was a workable procedure for most of the departments. The Department of Rural Social Organization was an exception. The members of that department received few calls from county agricultural agents, who as a group were not aware of the possibilities of improving rural living through other means than increasing farm income. The efforts of the department's extension specialist to work directly with Granges and parent-teacher organi-

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zations were opposed by college administration as a departure from generally sound policy.¹⁵¹ This impasse was broken in 1932 when the recently appointed department extension specialist, R. A. Polson, worked with county agricultural agents in improving rural fire protection through the formation of fire districts. In the long run, improvement in the relations between the department and the county agricultural agents came about as county agents acquired a broader understanding of their educational function and as organizations desiring the services of the department's extension specialists learned to schedule these services through the county agents.¹⁵²

The number of serial publications issued by the College increased during the decade with the number of extension bulletins keeping pace approximately with the issue of experiment station bulletins. This increase dated from the time Ladd became dean and may well reflect Professor Warren's philosophy, expressed at a moment when he had just received a "vigorous complaint" from the Bureau of Agricultural Economics charging that his department published material piecemeal: "Apparently they would like to hold everything until the world is completed," Warren commented. "We like to *use* the material *quickly* and *widely*."¹⁵³ Even this speed was insufficient to satisfy producers who kept in close touch with experiments in progress and who frequently urged researchers to make recommendations before they were ready to do so. A vegetable grower, asked by the Dean if he paid any attention to published results, replied that by the time the publications were available, the growers had the recommendation in practice for two or three years as a result of seeing the experiments and discussing them with members of the staff.¹⁵⁴

The faculty required little persuasion to prepare experiment station bulletins, although E. W. Allen had earlier noted a "frequent tendency" among individual workers to delay summing up research for digestion and publication.¹⁵⁵ Extension bulletins were another matter, for the extension staff was often occupied giving talks, which the farmers preferred to have and the extension staff preferred to give. The efficiency of extension work could be greatly improved, Professor Van Hart suggested in 1932 while serving as acting director of extension, if farmers were trained to read research bulletins while they were undergraduates in college.¹⁵⁶

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Membership in 4-H clubs increased from about 20,000 in 1930 to over 31,000 in 1940, while the number of 4-H agents increased from thirty-five to sixty-two, and the volunteer club leaders from about 1,700 to over 3,300. Unlike many other states where the agricultural agent supervised 4-H clubs, it was the policy in New York to carry on the work with separate agents, and in 1934, nearly 23 per cent of all the 4-H agents in the United States were located in New York. About twelve counties employed two 4-H agents, one trained in agriculture, and the other in home economics. The proportion of time the extension staff (including 4-H agents, agricultural agents, home demonstration agents, college specialists, and extension administrators) devoted to 4-H in 1935-36 was about 27 per cent, a figure close to the national average.¹⁵⁷

Farm and Home Week during Dean Ladd's administration was an elaborate presentation designed to acquaint farm people with the work of the Colleges of Agriculture and Home Economics. By 1934 the number of events exceeded five hundred and in 1940 the program, of regular bulletin size, contained fifty-six pages describing the week's events.¹⁵⁸ Some effort was made to entertain visitors with contests, motion pictures, musical programs, and travelogues—in 1938, 3,000 people watched Archie Lobdell win the wood-chopping championship of New York State by severing a ten-inch beech log in 38.3 seconds—but the core of the week's activities was solidly agricultural education. It was this emphasis, Ladd believed, which attracted increasing numbers of visitors to Farm and Home Week.¹⁵⁹ In 1938 registered attendance reached a high point of 14,111. In that year also, the Veterinary College, which had had a small part in Farm and Home Week since the event was established in 1908, set up its own program, and in 1940 the Veterinary College events were listed in the regular Farm and Home Week announcement.¹⁶⁰

Other meetings of a more specialized nature were held yearly at the College. Training conferences were sponsored by departments for county agents and others interested in particular topics. Other meetings involved interdepartmental or intercollege cooperation and frequently lasted several days. Perhaps the most significant of these were the school for town highway superintendents and the nutrition school for feed manufacturers and distributors. The former

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grew out of studies of local government by Professors M. P. Catherwood and T. N. Hurd in the Department of Agricultural Economics and Farm Management. First offered as a four-day course in 1938 by the Colleges of Agriculture and Engineering, the initial effort was so successful that the New York State Association of Town Superintendents of Highways requested another school the following year. Thereafter the school became an annual event.¹⁶¹ By providing instruction in technical skills which few town superintendents of highways brought with them to their elective positions, the school met a need Bailey had noted in 1904. The nutrition school for feed manufacturers and distributors, first held October 26-28, 1937, provided an opportunity for the Cornell staff engaged in the study of animal nutrition to present research results useful to feed manufacturers. This replaced a nutrition school started by the Department of Poultry Husbandry in 1934 for farmers and feed manufacturers. It had become evident that the interests of these groups were too diverse for joint instruction and that the manufacturers were also interested in larger animals. As established in 1937, the school was under the joint sponsorship of the Departments of Animal and Poultry Husbandry.¹⁶²

A similar conference bringing together the manufacturers of spray materials with staff members from the Departments of Plant Pathology and Entomology was started in 1938 through the initiative of Professors Palm and L. M. Massey. Like the nutrition school for feed manufacturers, this conference proved so valuable that it became an annual event. In view of the past animosity of some members of these groups toward the College, these conferences were a remarkable achievement and indicated that the manufacturers recognized the soundness of college recommendations.¹⁶³ The cooperation between manufacturers and college researchers led in turn to further changes in the extension work of the College. As manufacturers accepted college recommendations in formulating their products, the college recommendations for use of these products were carried to the consumer by the manufacturer's salesmen. Thus extension personnel in the counties, gradually released from the need to keep up to date on rapidly changing technical information, were able to concentrate on a business management approach to the needs of their constituents.

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Meetings at the College also served to promote communication and cooperation between farmers and business interests supplying what the farmer consumed. This was an area in which Ladd was deeply interested. In 1938 he sent out numerous personal invitations to the second conference in the nation between farmers and the Agricultural Committee of the National Association of Manufacturers, held at the College, March 16-17. At the conference of the previous year at Ames, Iowa, farmers had been so antagonistic to the manufacturers that the secretary of the Agricultural Committee found it difficult to adjust to his reception at Ithaca. Ladd was pleased with the outcome of the conference in spite of the insistence by this official that the farmers of New York must be concealing their hostility toward the manufacturers.¹⁶⁴ The previous week a similar conference had been held at the College between executives of utility companies and leaders of New York farm organizations.¹⁶⁵

The Extension Service played a key role in introducing the artificial breeding of dairy cattle, a technique that has been called "perhaps the most revolutionary of all developments in the history of dairy cattle breeding."¹⁶⁶ By 1930 the selection of superior bulls by dairymen was based upon the quality of the bulls' offspring rather than the entries in their pedigrees. An important part of the work in animal husbandry had been assisting farmers in keeping production records, which furnished a means by which sires of proved transmitting ability could be located. After 1930 the formation of associations for the cooperative ownership of bulls was encouraged by the Extension Service so that maximum use could be made of these proven sires. The speed with which dairy herds could be improved was limited of course by the nature of the reproductive process.

Artificial insemination offered the possibility of increasing the rate of dairy herd improvement. In December, 1935, Professors Maynard and Sydney A. Asdell attended a conference on artificial insemination at Chicago where English and Russian methods were discussed. The techniques were regarded as primitive by the Cornell professors, yet the possibilities for improving the dairy industry through the use of artificial insemination were so great that extensive research quickly led to the development of effective and somewhat standard-

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ized methods.¹⁶⁷ On September 16, 1939, the Pioneer Cooperative Dairy Breeding Association was formed at a meeting held at the College. This, the second artificial breeding association in the country, resulted from the careful field work of Professor S. J. Brownell and the county agents in Tompkins, Seneca, Cortland, Broome, Tioga, and Cayuga counties. Forty-one dairymen pledged over three hundred cows.¹⁶⁸ By 1940 fifteen more breeding associations had been formed in the state. That year these associations combined into a state-wide association which maintained all the sires on a central farm near Syracuse. By the following spring over 14,000 cows were served through this association.¹⁶⁹

The artificial breeding associations offered a means for increasing farm income through soundly demonstrated techniques. Another agency which the Extension Service supported had neither accepted techniques nor an immediate relationship to incomes. It functioned primarily on hope and dedication and by 1940 was defunct. This was the Tompkins County Development Association, founded in July, 1934, as a planning and action agency designed to make "this county the best possible place to live."¹⁷⁰ The initial support for the association came from the New York State Temporary Emergency Relief Administration (TERA), which designed work projects to take labor from the relief rolls. The seven-member Agricultural Advisory Committee of TERA, of which Dean Ladd was chairman and L. R. Simons and George Warren fellow members, gave the project a broader scope from the beginning. By June of 1935, seventy citizens of the county were working through an executive committee and sixteen separate subcommittees to develop an integrated plan for land use, highway systems, electric lines, school districts, health units, and recreational groups.¹⁷¹ When emergency relief funds were cut off in October, 1935, the project was financed by the County Board of Supervisors and the Extension Service. This cooperation continued until 1938, when the Board of Supervisors refused to make further appropriations.¹⁷² Thus the board responded to widespread local opposition to social planning. But, in spite of its ignominious end, the experiment marked a significant effort in directing the resources of the College to surveying, planning, and relating various aspects of social activity within a defined political area.

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RESEARCH

Increasing efficiency in agriculture through lowering the cost of each unit of production continued to be the principal object of research. Although the disposal of agricultural surpluses was a pervasive national problem, it was to the economic advantage of the individual producer to contribute to that surplus as long as he could do so at a profit. As the margin of profit became narrower, the efficient producer was induced to adopt new techniques for increasing production in order to maintain income while the inefficient producer was forced out of agriculture. Thus agricultural research at Cornell and Geneva contributed, as it had since the 1880's, to a situation where a declining number of farmers produced an increasing agricultural output. A solution to the problem of agricultural surpluses was thought to lie either in national planning and controls or in expanding the internal market for agricultural products.

Toward this latter objective, increasing the consumption of food, much new research at Geneva and Cornell was directed. New forms for packaging food, particularly freezing and dehydration, were developed to be commercially feasible, and new containers were created to preserve these foods and make them attractive to the customer. Ladd pushed the development of the frozen food industry in the state. In 1933 and 1934 he encouraged representatives of the somewhat reluctant canning industry to explore the possibility of developing the freezing process in their factories. "We should be glad through the College of Agriculture to cooperate with any group of businessmen in doing this," he wrote the secretary of the Association of New York State Cannerymen.¹⁷³

Research at this time was characterized by interdepartmental cooperation; only by this means could problems be approached that demanded a variety of specialized skills. Artificial breeding research for example, involved at least eleven staff members from the Departments of Animal Husbandry, Dairy Industry, and the Veterinary College. Research on crop improvement required cooperation between the Departments of Agronomy, Botany, Plant Breeding, Plant Pathology, and Vegetable Crops.

Unlike the early part of the century, when farmers could directly

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apply college recommendations in mixing their own spray materials, feeds, and fertilizers, or, to take a somewhat different example, build their own milk coolers, the nature of these products had become so complex that farmers could no longer assemble them. Moreover, there was no need for them to do so, thanks to the G.L.F. and other distributors that provided farm supplies based on the recommendations of the agricultural experiment stations and the USDA. Consequently, much of the research during the 1930's was directed toward the manufacturers of farm equipment, feeds, insecticides, and fungicides and toward artificial breeding associations, poultry breeders, and others who supplied services to producers.

In raising the efficiency of the poultry industry, the major problem was no longer improving the management skills of the producer but rather developing stock to stand up under the strain of high production, itself the result of earlier research in nutrition, artificial illumination, poultry house construction, breed selection, and incubation procedures. F. B. Hutt's work in genetics gave the Department of Poultry Husbandry a world-wide reputation in the field. His success in breeding for resistance to leukosis, a malignant type of growth in laying hens and the largest single cause of mortality, was especially significant.¹⁷⁴

Under the leadership of G. W. Salisbury, now head of the Department of Dairy Science at the University of Illinois, Cornell led institutions in the United States in the investigation of artificial breeding. It contributed an improved method for diluting semen and investigations on the best way of storing semen. The use of artificial breeding techniques, in turn, called attention to the problem of sterility in dairy cattle. With carefully controlled experiments, S. A. Asdell demonstrated the need for caution in the use of hormones in treating dairy cattle sterility.¹⁷⁵

A study of longevity in animals under the direction of Clive McKay, L. A. Maynard, and S. A. Asdell challenged the concept of a fixed life span and the view that a rapid increase in size and weight in the early stages of development contributed to longevity. This series of experiments showed the advantage of certain restricted rations and laid a basis for determining the optimum nutritional requirements for longevity and physical well-being. Asdell was less fortunate in

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determining how varying levels of reproductive rate affect longevity; on the 667th day of the experiment with rats, as the critical stage approached, the air-conditioning plant delivered live steam, all but wiping out the colony. It was twenty-five years later before he had the opportunity to continue this work.¹⁷⁶

The difficulty under which another phase of his research was conducted has been described by Professor Asdell:

During the depression the small amount of money available for large animal work, entirely derived from federal funds and a grant from Swift & Co., had to be put into animals. When work was in progress on the basic reproductive phenomena in dairy cattle no funds for labor were available and the college abattoir could only be used by the research staff at night. It was usual to slaughter the experimental animals in the evening. The graduate student would immediately take the reproductive tract to the laboratory in another building for study while it was fresh. The professor skinned and cut up the carcasses and carried out the offal. All-night sessions were frequent.¹⁷⁷

Methods for improving the quality and reducing the cost of production of orchard and field crops were studied in the principal soil and climatic regions of the state. An effort was made to breed crops for disease resistance, special attention being paid to developing potato stocks immune or resistant to the blight. Development of controls for insects harmful to agriculture was greatly increased after 1937. Studies on the relation of soils to success in fruitgrowing in the state were important for farmers about to plant orchards. Orchard planting, in contrast to field crops, was a costly process which did not permit mistakes. Among feed crops, bird's-foot trefoil received much attention. It was found that this legume, under certain growing conditions, was a more efficient source of animal nutrients than alfalfa. Field balers and hay crushers were then new implements; although they are accepted as commonplace today, at some point researchers had to determine if farmers were paying for the increased efficiency in handling hay with a final product that was less palatable or nutritious.¹⁷⁸

Beginning in Tompkins County, the utilization of land was examined on a county basis during the decade. By 1940 the land in fourteen other counties had been classified as to present and potential uses; five classes were employed, the lowest numbered being con-

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sidered the poorest for agricultural purposes. These detailed studies, accompanied by maps, were useful not only to farmers but to public agencies and private businesses. Utility companies, bankers, and other businesses extending credit as well as agencies involved in allocating public resources for school and highway construction were informed that investments in land classes one and two were poor risks when this land was to be used for agricultural purposes. Another series of studies indicated what management practices were related to success in the major types of farming in the state, and a third series investigated the transportation and marketing of milk and other agricultural products produced in the state.¹⁷⁹

The mobility of farm people, especially of farm youth to urban areas, had been viewed with concern since the late nineteenth century; the hope that agricultural extension would contribute to social stability in rural areas was involved in early state appropriations for this work at Cornell. However, the significance attached to the problem declined during the period of urban prosperity preceding 1930. In the face of renewed urban unemployment, the capacity of rural areas to support rural youth again became a matter of concern. By the 1930's techniques in rural sociology had so developed that accurate information could be obtained on the activities of farm people. Studies by W. A. Anderson provided information on the residential and occupational mobility of farm people in New York, on the interests and activities of rural youth, on the transmission of farming as an occupation, and on the characteristics of farm people on relief.¹⁸⁰

Funds for agricultural research at the College included appropriations to the states under acts of Congress plus federal moneys appropriated on the basis of memoranda of understanding between the College and agencies of the federal government. About one-third of the total state appropriation for operation and maintenance was allocated to research throughout the decade.¹⁸¹ In addition, farm and corporate interests supported research, either through short-term grants in aid or fellowships or through research agreements extending over a number of years. During the mid-1930's the Empire State Gas and Electric Association supported a Cornell research program in rural electrification by assessing each of its member companies ten

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cents for each farm customer served.¹⁸² In December, 1933, General Motors began supporting an index of world prices prepared by Professor Frank Pearson. Other organizations providing grants for research included the G.L.F., American Cyanamid Co., Anheuser-Busch, Inc., Beacon Milling Co., Texas Gulf Sulphur Co., Freeport Sulphur Co., Borden Co., Kraft-Phoenix Cheese Co., the Boyce Thompson Institute for Plant Research, and the New York Florists Club.¹⁸³

Other studies were supported by the Rockefeller Foundation. A grant of \$5,000 in 1934 supported Professor R. A. Emerson's work in the genetics of maize, and in 1936 an additional grant of \$42,500 extending over six years supported studies by Professors C. M. McKay, L. A. Maynard, and S. A. Asdell on the longevity of animals.¹⁸⁴

Facilities for research in the plant sciences at the College were substantially augmented by Liberty Hyde Bailey's donation of his herbarium to the University in 1935. A gift mutually advantageous to the donor and the recipient, it made possible increased financial support from the College for Bailey's scientific work, and for the College it meant receiving over 125,000 mounted sheets of plants and over 3,000 books that Bailey had collected over his lifetime.* Since this was a new type of scientific undertaking dealing with the systematic classification of cultivated plants, Bailey coined the word "hortorium" to describe this collection of domesticated plants.¹⁸⁵ The establishment of the Liberty Hyde Bailey Hortorium at Cornell had the additional effect of renewing Bailey's contacts with the faculty, which had been rather few since he retired as dean.† He had not over the years lost the ability to dramatize problems in education. Many faculty members were stimulated by his breadth of vision after he resumed a closer connection with the University.

*The College had given financial assistance to Bailey's scientific work since 1928 (Mann to C. D. Bostwick, Nov. 28, 1928, Mann Papers; Ladd to Farrand, Aug. 2, 1935, Ladd Papers; *Ann. Rpt. of the N. Y. State Coll. of Ag.*, 1935, pp. 15-16).

†Mann had tried many times previously to persuade Bailey to take an active part in college activities. "My course here has run," Bailey replied in 1920. The following year he stated: "Of itself my life took a different course. I am now far on the other journey; I cannot turn back; the years are too few to be retraced" (Bailey to Mann, May 20, 1920, Aug. 31, 1921, Mann Papers).

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RESIDENT INSTRUCTION

The enrollment of regular and two-year students increased steadily from 1931 until 1940, when the establishment of stiffer entrance requirements and the operation of the Selective Service Act combined to effect a decline in enrollment. Graduate enrollment in the College followed the course of graduate enrollment in the University, declining from 1931 to 1934, then increasing from 1935 to 1939.¹⁸⁶ Enrollment figures for 1931-1940 show these changes:

<i>Year</i>	<i>Regular</i>	<i>Special</i>	<i>Winter</i>	<i>Graduate</i>	<i>Summer</i>	<i>Two-year</i>
1931-32	840	49	126	487	880	63
1932-33	881	31	101	439	782	56
1933-34	954	31	123	368	691	79
1934-35	1,003	41	115	329	816	137
1935-36	1,051	37	128	373	780	169
1936-37	1,105	47	123	445	920	211
1937-38	1,236	43	96	468	878	234
1938-39	1,320	33	126	510	929	261
1939-40	1,368	31	124	488	935	252
1940-41	1,324	32	103	439	1,038	212

Dean Ladd viewed resident instruction, as he did other parts of the college operation, in terms of its service to agriculture. Students with a farm background and a sincere interest in agricultural training were rarely refused admission, at least to the two-year course, while city students were rejected in large numbers as the decade progressed unless their records indicated a sincere desire for agricultural education. City students could demonstrate this interest by working on farms or in other jobs related to their proposed curriculum before applying for admission. About one year of such experience was required for admission to the two-year program.¹⁸⁷ Ladd had little sympathy with Bailey's position that the College should be open to all qualified students seeking education through agricultural subjects. He was not prepared to welcome those enrolling to take advantage of free tuition even when their vocational aim was a public-service-oriented profession like teaching science at the secondary level.¹⁸⁸

At the beginning of the decade the need to increase enrollment

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took precedence over maintaining admissions requirements with the result that a number of students were admitted who ranked substantially lower in mental ability tests than the student body of the University. In courses with students from other colleges, they received lower grades.¹⁸⁹ Since many faculty members in the University, understandably enough, were more interested in maintaining "standards" than in accommodating their teaching to the level that could be assimilated by their students, the drop-out rate was high. It was, admitted Dean Ladd, "a rather serious situation."¹⁹⁰ However, as the decade progressed an increase in applications made greater selectivity possible. In 1934 only 15 per cent of those applying for the four-year program were rejected; each year this percentage increased until it reached 36 per cent in 1939. Some of those rejected who had farm experience were admitted to the two-year course, which explains the sudden increase in the two-year enrollment in 1934-35.¹⁹¹

The academic qualifications of students entering the four-year program increased steadily after 1934, when only 69 per cent of those admitted were in the upper two-fifths of their high school class. Each year the proportion of the entering class falling within that range increased until, in 1939, 84 per cent were in the upper two-fifths.¹⁹² In that year a faculty request for a further increase in admissions requirements for the four-year program included the rejection of all applicants ranking below the third fifth of their high school class. Without making further changes in admissions policy, the faculty at that time laid down clearer guidelines for admissions officers. Since college records supported the conclusion that students from farms desiring preparation in technical agriculture did better in their courses than city students concentrating on these fields of instruction, greater academic preparation was expected from city students planning to enter the courses in technical agriculture. Students wishing to concentrate in the basic sciences were expected to be in the upper two-fifths of their high school classes. The difficulty of placing graduates was also recognized as a factor to be considered by admissions officers.¹⁹³

The proportion of students entering the College with substantial farm experience increased through the decade, as farm families became aware that college education in agriculture not only con-

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tributed to success in farming but also opened numerous opportunities in occupations related to agriculture. In 1931, according to a study conducted by Professor R. M. Stewart, relatively few farm boys then in high school were preparing to enter college.¹⁹⁴ Thereafter vocational guidance by parents and counselors and the school visits of Professors Gibson and Peabody laid the basis for increased enrollment of students with farm backgrounds. In 1936, 40 per cent of the students entering the College for the two-year or four-year programs were farm reared, a higher proportion than at any previous time.¹⁹⁵

Resident instruction remained the most loosely organized of the major activities of the College. Shortly before leaving the directorship of resident instruction, Betten reflected that the organization of the College, while strong on other counts, was weak in that there was no staff on which the director could count as mainly interested in teaching. Furthermore, except for the small Bankhead-Jones teaching fund, the director of resident instruction had no control over money that could be used as an inducement to more effective instruction. Only when faculty members came to him for Bankhead-Jones funds, Betten noted, could he learn specifically what they proposed to do in resident teaching. This loose organization, permitting a maximum degree of freedom for each teacher in his classroom work, was justified by the assumption, traditional at Cornell University, that he would use his freedom wisely. There were cases, however, where the improvement of teaching lay outside the control of the individual staff member. As in research and extension, coordination was needed between members of various departments in solving particular educational problems. In resident instruction the chief problems concerned the vocational objectives of students. "A most insistent need," declared Betten in June, 1940, "is that of defining the purposes of the College in terms of the types of students it means to train."¹⁹⁶ Science teachers and farmers presumably required different curricula; farm practice was of questionable relevance to all vocational objectives.

In 1927 Directors Ladd and Betten had recommended that departmental practice fitting into the vocational objectives of students be substituted for the general farm practice requirement.¹⁹⁷ In 1931 the Educational Policy Committee included this recommendation in a report which was approved by the Faculty of Agriculture. Groups of

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staff members whose work was related to the vocational aims of the students were to be appointed by the director of resident instruction to "have power to determine the nature and amount of practice required of students taking the major portion of their work in the area in which the staff group functions."* These groups were also to develop curricula which would meet the specific vocational objectives of students. Although thoroughly sound as educational theory and a parallel development to what was occurring in research and extension, the coordination of faculty groups across departmental lines for resident instruction was not aided, as was coordination in research and extension, by pressures outside the College. Betten began by calling together members of departments having some relation to a possible curriculum in dairy farming but after several meetings found it impossible to persuade these strong-willed individuals to function as a group. A similar attempt to develop a curriculum in poultry farming was unsuccessful. Thereafter Betten concentrated on the faculty advisers chiefly to develop more rational student programs.¹⁹⁸

Although the original justification for the large number of electives in the four-year program had been based on a strong advisory system which would assist the student in choosing wisely from the broad offerings of the College, advising students had become over the years a generally undesirable chore, often shifted to someone else by capable advisers. Student programs with no central objective were a result of the unskilled and sometimes disinterested advising. By concentrating on teachers who were interested and competent in advising students, Betten and his colleague, Professor Gibson, did secure greater stability in the role of adviser. These advisers were encouraged to consult colleagues in their departments.¹⁹⁹

Except for a brief decline between 1933 and 1935, the enrollment of graduate students remained stable throughout the decade. Faculty members who had established a national reputation for the quality of their research and graduate teaching attracted outstanding graduate students from all parts of the country. During the 1930's Dwight

*Also included in the recommendations of the Educational Policy Committee was a statement highly critical of the existing farm practice requirement. This recommendation was not accepted by the Faculty of Agriculture (Faculty of Ag. Minutes, VII, 28-32).

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Sanderson's work in rural sociology placed him in this category. Among his students were Howard Beers, Ph.D. '35, at present head of the Departments of Sociology and Rural Sociology at the University of Kentucky, who helped in introducing the study of rural sociology into India and Southeastern Asia; William G. Mather, Jr., Ph.D. '36, an outstanding teacher who became head of rural sociology at the Pennsylvania State College; Mark Rich, Ph.D. '37, head of the rural activities of the Baptist Church and leader in the movement to consolidate rural churches in the United States; and Irwin T. Sanders, Ph.D. '37, head of the Department of Sociology at Boston University and consultant on the organization of rural development programs overseas.²⁰⁰ Other outstanding students who received their doctorates during the decade include: Emil Chroboczek, Ph.D. '32, chairman of the Department of Vegetable Crops at the College of Agriculture, Skierniewice, Poland, described by Professor H. C. Thompson as "the leading vegetable scientist in Poland"; Thomas K. Cowden, Ph.D. '37, dean of the College of Agriculture at Michigan State University; Earle Crampton, Ph.D. '37, professor of nutrition at McGill University, who contributed to the refinement of statistical methods as applied to nutrition; George K. Davis, Ph.D. '37, director of nuclear sciences at the University of Florida, who was the first to carry out studies on farm animals with radioactive isotopes; John T. Emlen, Ph.D. '34, professor of zoology at the University of Wisconsin and a leader in the study of animal behavior; James E. Kraus, Ph.D. '40, dean of the College of Agriculture at the University of Idaho; Harold H. Williams, Ph.D. '33, head of the Department of Biochemistry at Cornell University; and Harold G. Wilm, Ph.D. '34, commissioner of conservation for New York State and formerly associate dean of the New York State College of Forestry.²⁰¹

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THE COLLEGE IN WORLD WAR II

COLLEGE involvement in the national defense and war effort from 1940 to 1945 was far greater than in World War I. Director Lloyd R. Simons, determined to avoid the confusion he had witnessed in Washington in 1917 in connection with federal efforts to mobilize food production, took the lead in the spring of 1940 to prepare New York farm organizations for wartime conditions. Acting on his initiative, the Executive Committee of the Conference Board of Farm Organizations, meeting in Ithaca, June 22, 1940, formed the New York State Emergency Agricultural Defense Committee.¹ Similar organizations were formed by farmers at the county level. Unlike the USDA action agencies, which found it difficult to shift from limiting food production to increasing output, the New York State Extension Service was well suited by experience and emergency organization to respond to the national call for increased productivity.

Farm labor became the most crucial factor in agricultural production, as full-time farm workers were drafted into the armed services and the seasonal labor supply on which much of New York agriculture depended was reduced by competition from war factories and the armed services. Efforts to overcome the labor shortage took several forms—the importation of foreign labor, primarily from the Caribbean area, and the maximum utilization of machinery. Almost full responsibility for operating the federally financed farm labor program within the state fell on the extension personnel.² Housing for the farm laborers had to be located, food supplies arranged, and schedules prepared for allotting their services to farmers. Farm machinery clinics were held where tools were repaired and farmers

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instructed in proper maintenance. In addition, extension carried on its regular service of transmitting information to farmers, in some cases using short "how to do it" booklets, which explained the use of substitutes for items made scarce by wartime conditions.³

In addition to their regular duties, the county agricultural agents served as secretaries to the USDA war boards and aided in the administration of the selective service system as it affected agriculture. This latter responsibility was particularly demanding; much time was involved in investigating each request for deferment and much soul-searching in recommending who should remain outside military service.⁴

In World War I it was college policy to protect current research, especially that of a fundamental nature, from wartime pressures, and to the end of the war research was carried on virtually without disruption.⁵ This was not possible in World War II. By 1943 almost all research was directed toward finding means for maintaining agricultural production. New recommendations for feeding, fertilizing, and controlling disease and insects had to be developed as military requirements affected the availability of materials currently in use. In 1943, for example, several research groups were trying to find substitute sources for protein in livestock rations.

As new problems arose, groups from the staff were brought together with representatives of manufacturers and others interested in finding solutions; the urgency of helping the producer adjust to new situations did much to bring together research and extension staff members across departmental boundaries.⁶ One of the most dramatic of these problems was to locate a domestic source for natural rubber, formerly obtained from tropical countries. Milkweed was regarded as a possibility, so Boy Scouts and 4-H members were sent out to collect the weed, and a large part of the research staff spent several hopeful months considering the problem.⁷ In the end, however, no commercially feasible process was developed through this research.

The number of students enrolled held up surprisingly well until the last two years of the war, when enrollments dropped to about half of those registered in the fall of 1942. As in World War I, the armed services assigned students to the College for instruction in

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particular subjects having military application.⁸ Members of the Department of Floriculture and Ornamental Horticulture, for example, gave courses in military camouflage.⁹

As the end of the war approached, college officials planned to avoid a repetition of the 1918 fiasco, when discharged veterans occupied abandoned farm lands during what turned out to be the last flush of agricultural prosperity. By 1945 a Farm Location Service was in operation to help discharged veterans and released war plant workers find farms offering the possibility of successful operation.¹⁰

NEW YORK AGRICULTURE

From the perspective of long-term trends, there was little that was new about postwar agriculture. In terms of the rate of movement along existing dimensions, the postwar period was marked by considerable change. The number of farms in the state continued to decrease (to about half the prewar total by 1959), and the remaining farms continued to increase in acreage. Significant changes also occurred in the types of farms remaining, as is shown by the number of farms of selected types in New York State during these years:

<i>Type of farm</i>	<i>1939</i>	<i>1944</i>	<i>1949</i>	<i>1954</i>	<i>1959</i>
General farms	17,700	10,900	5,900	4,700	2,400
Dairy farms	57,900	56,400	55,400	49,200	39,100
Poultry farms	13,000	13,700	9,200	7,000	3,700
Vegetable farms	5,200	6,300	3,500	2,300	1,700

Specialization was the keynote of New York agriculture in the twenty years after 1939. General farms in that period decreased from 15 per cent of all farms classified by the U.S. census in 1939 to 4 per cent in 1959. Dairy farms during the same period increased from 49 per cent to 71 per cent of the total farms classified.* A fifty year study of farms in the Town of Dryden in Tompkins County illustrates the relation between specialization, mechanization, and the capital

*A general farm was defined by the U.S. census as one where no single group of products accounted for as much as 50 per cent of the total sales; 1939 data is used as reclassified in the 1945 census of agriculture. I am indebted to Professor S. W. Warren for tabulating this data.

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required for a farm business. Although limited to a single township, the trends illustrated were fairly typical of New York agriculture:*

	1907	1917	1927	1937	1947	1957
Number of farms	206	159	118	111	70	65
Total acres per farm	132	148	152	147	191	225
Per cent of cash receipts from milk and other dairy products	46	52	57	64	73	82
Pounds of milk sold per cow	No record	4,412	5,716	5,718	6,927	8,493
Cows per farm	11	10	10	14	25	35
Man equivalent per farm	1.7	1.8	1.7	1.8	2.0	1.9
Capital investment per farm	\$6,400	10,300	10,700	9,400	23,100	46,000

Although the number of specialized farms held up until about 1950, general farming was a victim of the war and the immediate postwar period. The increasing cost of farm machinery made it economically unsound for farmers to purchase expensive machinery that could be used only on the small acreage usually associated with general farming. These difficulties were compounded by rapid technological change, which reduced the value of farm machinery even while it stood in the tool shed. After 1950 the specializing farmer was also caught in a decreasing margin of profit. He could escape by giving up farming, as many farmers did, or increase his output without increasing his cost per unit of production. This was accomplished by a number of means but primarily by cutting labor costs through mechanizing farm operations requiring extensive labor and through introducing more powerful and versatile machines in areas already mechanized. This was the decade of widespread adoption of barn cleaners, egg washers, automatic poultry feeders, and specialized harvesting machinery. The result was to increase greatly the capital

*Only farms with at least 200 man-work units and a full-time operator are included (*Farm Economics*, March, 1959, pp. 5749-5752; interview, S. W. Warren, Dec. 5, 1960).

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invested on each farm. Moreover, the nature of the new machines frequently forced farmers to adopt them sooner than the economics of their operation would justify. In the dairy industry, for example, the pipeline milker was a sound method for saving labor but this device made little sense if connected at the outflow end with the traditional forty-quart milk can. Refrigerated bulk tanks, therefore, were needed with pipeline milkers. But these tanks in turn required bulk tank trucks to pick up the milk from the farm. By 1960 these tank trucks were cutting into the business of operators who picked up milk in forty-quart cans, thereby gradually forcing the less efficient operator out of business. As this occurs, the farmers using milk cans have to convert to bulk tanks in order to maintain their milk market. The phenomenon is comparable to the break-up of threshing rings in the early 1930's by the introduction of a small number of combines; but, unlike the grain farmer, the dairyman cannot stay in business by hiring a bulk tank for a few days a year.

The expansion of farm businesses in New York State was accompanied by greatly increased need for operating capital. Debt, once regarded by the farmer as a disgrace to be quickly paid off, became an accepted part of farm management. To spread the risk, arrangements were adopted from other businesses operating on borrowed capital, which included renting arrangements, partnership agreements, and vertical integration with manufacturers of farm supplies. The Extension Service adjusted to this increased emphasis on the business aspects of farming, which it had helped to promote, by counseling farmers individually on management problems and by facilitating the movement of capital by advising agencies in a position to finance farm operations.

Other approaches to improving the economic position of the farmer were to seek new uses for agricultural products and to develop orderly marketing procedures enabling the farm products to flow smoothly from producer to consumer without disabling fluctuations in price. These approaches to the problem of stabilizing postwar agriculture lay behind the passage of the Agricultural Research and Marketing Act of 1946. This act declared it to be the policy of Congress "to promote a sound and prosperous agriculture and rural life as indispensable to the maintenance of maximum employment and national

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prosperity. It is also the intent of Congress to assure agriculture a position in research equal to that of industry which will aid in maintaining an equitable balance between agriculture and other sections of our economy.”¹¹ This legislation reflected the hope that in time solutions would be found through research to the problems arising from an agricultural surplus. Meanwhile, Congress relied on the USDA action agencies to carry out its policy of maintaining balance between agriculture and other sections of the economy.

The wartime price guarantees of 90 per cent of parity for agricultural products terminated at the end of 1948. However, the Agricultural Act of 1948, which replaced this legislation, also relied on a parity formula. In this act and in additional legislation passed the following year, parity was generally set at close to the 90 per cent level.¹² This legislation was not in accord with the views of officials of the College of Agriculture, who reflected what was probably the dominant opinion among northeastern farmers—that market price should be the principal guide in determining the kinds and levels of agricultural production. Since the Northeast was not primarily an agricultural region or a major producer of the basic surplus crops, it was not in a strong position to influence the formation of national agricultural policy. Once policy was established, however, the College could and did play an important role in the formulation of administrative decisions affecting New York and, in some cases, northeastern agriculture. In hearings on milk-marketing orders, for example, staff members offered expert testimony which furnished a basis for setting prices adjusting the supply of milk to the anticipated demand. In some cases before the order was drawn up, staff members brought together groups interested in milk pricing in order to secure a workable compromise which could serve as the basis for the milk-marketing order.

RELATIONS WITH USDA ACTION AGENCIES

Preparation for defense and war mobilization disrupted relationships between the state extension services and the USDA action agencies — agencies also working directly with farmers — which had been stabilized after the Mt. Weather Agreement. The redistribution of power tended to follow its normal course in wartime toward

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concentration in the national government. There was, in New York and other states, a strong determination to oppose this concentration of power as applied to agricultural mobilization. Officials of the state extension services believed, with good reason, that their agencies offered the most efficient medium for helping farmers increase production. The possibility also that the action agencies might permanently preempt extension's responsibility under the justification of war emergency was not entirely overlooked by extension officials.

The relationships between the Extension Service and the USDA action agencies were complicated by attitudes and issues having little relation to agriculture. Both parties found themselves in uncomfortable alliance with administrators who held doctrinaire views about the centralization of power and decided issues involving the vesting of authority on this basis. By stressing elements of ideology in what were essentially practical affairs, the doctrinaires made the normal process of accommodation between the USDA and state extension officials more difficult. Usually, however, they were held in check by those who subordinated doctrine to expediency in the decision-making process. By making decisions dependent on the movement of events, expediency, too, threatened standing relationships by giving undue weight to pressures of considerable intensity but short duration. This was the case in the winter of 1941, when members of the party in power held the land-grant colleges responsible for farmers voting the Republican ticket in the campaign of 1940. "The situation has become so bad," wrote Thomas Cooper, the secretary-treasurer of the Association of Land-Grant Colleges, "that our strong friends in Congress are reluctant to take up prospective legislation."¹⁸ In spite of the tendency of doctrinaires and those steering by political winds to drive them apart, agricultural college and USDA officials usually were able to reach an accommodation on a personal basis; as in former years, Dean Ladd and Director Simons took an important part, not only as officials of the College of Agriculture but also as representatives of the Association of Land-Grant Colleges.*

The alliance between the American Farm Bureau Federation and

*Ladd had been a member of the Executive Committee since 1938. Simons was a member of the Committee on Extension Organization and Policy and its chairman in 1941.

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the extension services of the land-grant colleges was another source of friction between USDA and college officials. The operation of this alliance is illustrated in the organization of the wartime farm labor program. In March, 1943, responsibility for farm labor was assigned to the newly established Agricultural Labor Administration in the Department of Agriculture.¹⁴ The issue of how this authority would be administered was then threshed out. Director Simons, who had already worked through the farm organizations in New York State to secure an emergency appropriation for farm labor from Governor Dewey, hurried to Washington to press for decentralized administration of the national farm labor program through the state extension services. In doing this he had the strong support of the American Farm Bureau Federation and fellow extension directors in other states, particularly C. E. Brehm of Tennessee, P. O. Davis of Alabama, and T. B. Symonds of Maryland.¹⁵ The question of decentralized administration turned on one word in the congressional appropriation for the farm labor program. Director Simons testified before both the Senate and House Appropriations Committees in favor of a stipulation that about one-half of the total appropriation "shall" be appropriated to the states on the basis of need. The acceptance of this word placed the operation of the program within the country on a decentralized basis.¹⁶ Responsibility for the recruitment of foreign laborers remained with the Agricultural Labor Administration.

The American Farm Bureau Federation gave strong support for the decentralization of other agricultural programs through the extension services of the land-grant colleges. On specific issues like the farm labor program, the national federation usually supported the position of the land-grant colleges. This relationship had, of course, existed long before the USDA action agencies were established and was a situation these agencies had to live with. USDA administrators, however, did not view with equanimity a resolution passed at the December, 1940, meeting of the American Farm Bureau Federation calling for transferral of the extension services of the land-grant colleges authority for administering the USDA action programs at the state level. Their resentment at the lack of confidence expressed in their work was compounded by the belief that the resolution had been inspired by representatives of the land-grant colleges.¹⁷ The

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resolution in question followed so closely the content of a speech made at the federation meeting by Director C. E. Brehm of Tennessee that USDA officials had strong ground for this suspicion.¹⁸ The method of accommodation in this instance was described by Dean Ladd in a letter to the chairman of the Executive Committee of the Association of Land-Grant Colleges, who had called upon Ladd to help repair the breach:

I have been in close touch with the situation in Washington for the past three weeks. Director Simons has been in Washington several times and while there has been in daily contact with me by telephone. He has done an exceptionally fine job in maintaining fine personal relationships with the men in the Department, and he tried with some success to bring a little more harmony and understanding to the whole situation. He has worked closely with Creel and has had a long and frank conversation with Wickard. Meanwhile, several Department representatives have been in my office and talked frankly about the whole situation.*

The American Farm Bureau resolution may well have suggested to the officials of the USDA action agencies that it was time to strengthen their organizations at the local level. In May, 1941, the regional office of the Agricultural Adjustment Administration moved to dismiss Earl Flansburgh, the county agent leader, as state administrator of the AAA program and replace him with a full-time chairman responsible only to the AAA. "Although the change is somewhat camouflaged," Ladd wrote to Secretary of Agriculture Wickard, "I am convinced that the real aim is to divorce the agricultural conservation program entirely from the Extension Service and the College."¹⁹ In reply, Acting Secretary Paul Appleby stated that the desire to "develop responsibility, leadership, and understanding of the program among farmers themselves" did not preclude cooperation with the Extension Service.²⁰ By 1941 the AAA was a powerful national organization. The strength of the New York State Agricultural College and the State Extension Service was no longer sufficient to prevent the AAA from developing organizations within New

*Cecil Creel was Washington representative for the Association of Land-Grant Colleges; Claude Wickard was Secretary of Agriculture (Ladd to Walton, March 11, Walton to Ladd, March 11, 1941 [telegram], Ladd Papers).

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York State independent of extension, as it had already done in many other states.

The years immediately following the separation of the AAA and the Extension Service in New York were marked by conflict at both the county and state level until extension and AAA agents learned to work together on common agricultural problems from positions of separate authority.²¹ When, at the end of the war, continued congressional appropriations for the Agricultural Adjustment Administration and the Soil Conservation Service became a political certainty, the danger which the Extension Service posed to their continued existence became less serious. The security this knowledge provided, together with a growing mutual respect between USDA and extension personnel, facilitated greater cooperation in this state. By 1948 the Dean of the College of Agriculture could point to a "happy relationship" between the College and the action agencies. The heads of these agencies in the state and personnel of the College were, he asserted, personal friends.²² Personal contacts between the staff of the Extension Service, the AAA, and the SCS were supplemented at the state level by quarterly meetings held to coordinate the activities of public agencies which directly affected New York agriculture.*

SEPARATION OF FARM BUREAU AND EXTENSION SERVICE

Close ties between the American Farm Bureau Federation and the land-grant colleges were both a source of strength and a handicap in promoting their mutual interest in decentralization of government activities relating to agriculture. Any action enlarging the authority of the state extension services tended to strengthen the state and national farm bureau organizations. Under these circumstances it was difficult to persuade other national farm organizations to support steps for the decentralization of USDA functions through the land-grant colleges. It was with the object of securing some unity among

*An outgrowth of the USDA War Board, representatives of these and other public agencies, including the State Department of Agriculture and Markets and the State College of Forestry, have met since the war under the name of USDA Council (Simons, *Wartime and Other Emergency Activities*, p. 46).

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national farm organizations on the issue of decentralization that Babcock held a conference in his office in February, 1942, attended by Ezra Taft Benson, secretary of the National Council of Farm Cooperatives; Albert Goss, master of the National Grange; James Patton, president of the Farmers Union; President Edmund E. Day of Cornell University, and Dean Ladd. During the meeting Mr. Goss demanded, evidently as a price of unity, that the favoritism shown farm organizations in some fifteen states be eliminated. On the basis of this meeting and other observations, Babcock said that only by placing the county agent work on a 100 per cent public basis could enough support be garnered among farm organizations and in Congress to decentralize USDA functions through the land-grant colleges. In the same letter Babcock reported the reaction, privately expressed, of the American Farm Bureau Federation president, Edward O'Neal, to Mr. Goss's demands: "Mr. O'Neal agreed that Mr. Goss had sound grounds for his objections and repeatedly said in our conferences that he would like to see the so-called partnership between the Farm Bureau and Extension Service in certain states broken up."²³

The separation of the farm bureau and state extension services, made mandatory by order of the Secretary of Agriculture, Ezra Taft Benson, in November, 1954, did not come at the request of groups in New York State; rather it was forced by groups in other states over the wishes of New York farm organizations and officials of the College. In the twelve years between Babcock's conference and the Secretary's order, the groups raked over the old charges about misuse of franked mail for farm bureau purposes, turning over extension dues to pressure groups, and competition with private business by merchandising agencies of the farm bureaus. Little new evidence was presented which favored separation.

When the order requiring separation was issued, it came from what a student of the subject has called "the Secretary who was as close to agreement with Farm Bureau policy as any occupant of that office had ever been."²⁴ Regardless of the public position of farm bureau officials in the intervening years, it would seem that Babcock's reasoning in 1942 provided the rationale for separation. The long delay was to allow time in those states with close farm bureau - extension service connections to prepare for separation.

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During those years the relationship between the farm bureau and the extension service was ended in one state after another until, in 1950, only two states remained with these organizations in partnership—New York and Illinois. It was evident to Director Simons and E. S. Foster, executive secretary of the New York State Farm Bureau Federation, that separation in this state would eventually be required, either by executive or congressional action or by court decision, as had occurred in Kansas. Together they set out to prepare New York farm bureau members, who were generally satisfied with existing relationships, for an adjustment to external pressures that could not be avoided.²⁵

A subcommittee on reorganizing the New York State Farm Bureau Federation reluctantly recommended separation from the State Extension Service in May, 1951. This was accepted by the directors of the State Farm Bureau Federation but did not become organization policy at the time. It was not until the spring of 1954, when it was known that Secretary Benson planned to release an order requiring separation, that representatives of the State Farm Bureau and the Extension Service agreed on procedures for separation. There was opposition to separation from other farm organizations in the state which feared that relationships to their constituency would be disrupted if the Farm Bureau were released from its ties with the Extension Service. However, separation was accomplished early in November, 1954, at a conference of the State Farm Bureau Federation. The following week Secretary Benson issued his order requiring separation.²⁶

INTERNAL ADMINISTRATION

The twenty years between 1941 and 1960 witnessed great changes in college personnel. Few among those charged with major administrative responsibilities held their positions throughout this period. Dean Ladd's often expressed plans to relax on his farm at the end of the war were not to materialize. He died on July 23, 1943. His successor was William I. Myers, then head of the Department of Agricultural Economics. Professor Myers brought to the position vast experience as an administrator and invaluable personal relationships with leaders of farm organizations and other men in positions to

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affect public policies toward agriculture. In 1954 L. R. Simons retired after serving forty years as an extension worker, twenty-two of these as director of extension. He was succeeded by Maurice C. Bond, then a professor of marketing, who had held major responsibility for the extension work of the Department of Agricultural Economics. In 1957 Professor Charles E. Palm succeeded C. E. F. Guterman as director of research and director of the Cornell University Agricultural Experiment Station. In this position he acquired larger administrative experience and additional contacts which served him well on his appointment as dean in 1959, following the retirement of Dean Myers. Palm was succeeded as director of research and director of the Cornell University Agricultural Experiment Station by Wilbert Keith Kennedy, professor of agronomy. In 1960 A. W. Gibson retired after twenty years as director of resident instruction and was succeeded by Thomas C. Watkins, professor of economic entomology. Also in 1960 Professor Arthur J. Heinicke retired after eighteen years as director of the Geneva Experiment Station. His successor, Professor Donald W. Barton, had been head of the Vegetable Crops Department at Geneva. In the departments, only A. J. Heinicke, head of the Department of Pomology since 1920, and J. H. Bruckner, appointed acting head of the Department of Poultry Husbandry in 1940 and head in 1942, served throughout the twenty-year period, 1940-1960.²⁷

Most of the expansion in the work of the College between 1941 and 1960 occurred within existing administrative units. Several new units were created, however, in order to bring together similar work being conducted in separate departments and to lay a basis for larger appropriations from the state. Perhaps the most important new unit was the School of Nutrition, established in 1941 to coordinate research and teaching in nutrition, then being carried on in the Veterinary College and in the Colleges of Agriculture, Home Economics, and Arts and Sciences. The purpose of the school, declared its director, L. A. Maynard, was "to blanket the study of nutrition from the soil to the consumer's table and assess the results in health and performance."²⁸ Its establishment was primarily due to H. E. Babcock. Deeply interested in research in nutrition, he promoted the idea of a separate school of nutrition and was active in obtaining

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financial support.²⁹ Closely related to the School of Nutrition was the Department of Biochemistry.

The importance of more rapid development in biochemistry at the University was recognized in the mid 1930's, and in 1937 the university Division of Biology recommended the establishment of a department of biochemistry in the College of Agriculture. A beginning in this direction was made in October, 1941, when the work in biochemistry in the Department of Zoology of the College of Arts and Sciences was transferred to the Department of Animal Husbandry under the administrative direction of Professor Maynard.³⁰ Maynard wished to augment this small staff, headed by Nobel prize winner James B. Sumner, and in August, 1942, he submitted a memorandum indicating an urgent need to make biochemistry a separate administrative unit. At a conference that December, Professor Maynard, Dean Ladd, and Directors Gibson and Guterman decided that this department should be established "as soon as possible."³¹ It was not until 1945, however, that Dean Myers was able to secure an appropriation from the legislature.³² Unquestionably, his efforts were aided by the decision of the G.L.F. to subscribe \$200,000 for a building to house the new department. In making this gift to the University, the G.L.F. Board of Directors recommended that the building be named Savage Hall in honor of Professor E. S. Savage, the originator of the "open formula" feeds, which had played such an important part in the early success of the organization.³³

In 1948 a special appropriation by the legislature made possible the long-desired Department of Conservation. Work with fish, wildlife, and farm forestry was transferred from the Departments of Zoology, Entomology and Limnology, and Forestry. At that time forestry was disbanded as a separate department. Gustav A. Swanson was appointed head of the new department.³⁴

The enlarged scope of the Department of Dairy Industry, recognized in 1960 by the new title, Department of Dairy and Food Science, had been developing gradually since 1945, when the New York State Canners and Freezers Association asked the College to establish a four-year program in food science. This development coincided with a period of rapid change in the dairy-processing industry, as technological improvements reduced the number of

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employees needed in the industry and financial considerations led dairy manufacturers to branch out into processing and marketing other food items. The four-year curriculum in food science was established in 1946, with administrative control vested in an interdepartmental committee under the chairmanship of Director Gibson. A teaching staff of a single professor paid from lapsed salaries and housed in the agricultural engineering building carried the program with the assistance of Professor B. L. Herrington and others from the Department of Dairy Industry. Finally in 1959 an appropriation was secured to establish an effective program in the Department of Dairy Industry.³⁵

The titles of two departments were altered; in 1942 the Department of Agricultural Economics and Farm Management shortened its name to Department of Agricultural Economics, and in 1948 the Department of Biochemistry added "and Nutrition" to its name.³⁶ Neither title indicated a change in activities. Biochemistry was renamed to convey some idea of the department's scope, since biochemistry was then a technical term of limited usage. However, public interest in the basic sciences increased greatly in the 1950's, and in 1960 it was considered appropriate to change back to Department of Biochemistry.³⁷ In 1949 the work in meteorology was transferred to the Department of Agronomy, following the retirement of Professor R. A. Mordoff, who had taught courses in the field since 1917.³⁸

In 1945 a new Department of Extension Teaching and Information was established jointly in the Colleges of Agriculture and Home Economics with both teaching and administrative functions. To the new department was assigned responsibility for the press, radio, and audio-visual services of the two colleges, the preparation of manuscripts for publication, and instruction in extension teaching and journalism. Professor William B. Ward was appointed head of the department.³⁹

In 1958 the Office of Farm Practice and Farm Superintendence was abolished. Administration of the farm practice requirement was placed under the director of resident instruction, and administration of the university farms was placed in an Office of Farm Services responsible to the director of research.⁴⁰

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RELATIONS WITH THE STATE

The College achieved greater flexibility in its operations between 1941 and 1960, while at the same time the authority over the College of university administrators and of administrators in Albany increased. This paradoxical situation arose as administration was rationalized in both the University and the state government. It was the policy of Deane W. Malott, president of Cornell since 1951, to emphasize the unity of the University. In addition, the increasing number of state-supported units—the School of Industrial and Labor Relations was added in 1944—made it desirable to assure through the University's administration continued coordination of these colleges in relation to the state government. Since this relationship has primarily concerned financial matters, the principal agent performing this coordinating function has been the university controller. At the state level, the legislature belatedly recognized that the most efficient return on the state's investment in higher education was not secured as long as it controlled all aspects of the operation of educational institutions through line-item appropriations. However, in allocating a large part of the college budget to "maintenance undistributed," the legislature did not thereby transfer control over this portion of the College's budget to the University, for these appropriations could be segregated only with the permission of administrative officials in Albany. In the last twenty years this approval has usually been forthcoming, due to mutual confidence between university and state administrators.⁴¹

Although methods of administration which prove satisfactory over a period of time acquire resistance to change as they become buttressed by tradition, this point had not been reached by 1960 in the relationships between university and Albany officials. The freedom of operation which had been granted university officials in their administration of the College of Agriculture could, with a change in state or university personnel, be placed in jeopardy. The element of instability in the relationships between Albany and Cornell officials has been, to a degree, counteracted by the Council for the College of Agriculture. The members of the council were selected merely to advise on behalf of the interests in agriculture, in agricultural busi-

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ness, and in agricultural education which they represented, but it was natural that they would become involved in supporting the educational program they recommended. This support has not taken the form of lobbying; rather it has been primarily in the realm of informing the public about the plans and activities of the College of Agriculture.⁴² By providing information that has promoted a continued expression of public confidence, the members of the council have generated diffuse pressures for continued support of the College which have been difficult for public administrators to resist arbitrarily. The council's recommendations concerning the annual budget of the College have been incorporated by the Agricultural Conference Board into its annual statement of the needs of New York agriculture and presented to the Governor and legislative leaders shortly before each session of the legislature.

The establishment of the State University of New York in 1948 and the incorporation of the state colleges at Cornell into its decentralized structure did not, from a legal standpoint, clearly increase the authority of state officers over the College of Agriculture. Under the new legislation, the general supervision of the State Colleges was transferred from the Board of Regents to the Board of Trustees of the State University. This grant of authority "subject to the general supervision and authority of the board of regents" for "over-all central administration, supervision, and coordination of state operated institutions and statutory or contract colleges" represented a reallocation of authority as broad and as vague as that formerly possessed by the Board of Regents in its own right.⁴³ For Cornell University and the College of Agriculture, the immediate disadvantage in the new arrangement lay in the disruption of personal relationships with the Board of Regents, which by 1948 had developed to the general satisfaction of Cornell. Prior to that time the Board of Regents had agreed, on the basis of personal understanding, to submit the college budget intact, an arrangement under which the regents restricted themselves to commenting on provisions in the budget that they questioned. The officials of the State University have, on the other hand, used their power to remove and reduce items in the college budget, the extent of these reductions and the manner in which they were made depending on the person who held the position of liaison

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officer between the State University and the state colleges at Cornell. Generally, however, these reductions have been modest.⁴⁴ Although the State University is one more administrative level through which the college budget must pass, the opportunity for higher education which the State University opened to the people of New York made this a small price for the College of Agriculture to pay.

The authority to grant increases in salary was another area in which, over the years, the legislature relinquished power to administrators. The Salary Classification Act, which became effective in March, 1945, authorized Cornell University to classify all positions in the College of Agriculture and at the Geneva Experiment Station within the services and grades specified in the act and to recommend annual increments within the range specified. Unlike previous legislation, this act permitted the University, with the permission of the director of the budget, to appoint persons in the professional service above the minimum salary, thus making it possible to compete with other institutions for outstanding persons without securing special authorization from the legislature.⁴⁵

Only twice between 1941 and 1960 has the state appropriation for operation and maintenance been reduced below the level of the previous year, the only substantial reduction coinciding with the beginning of the administration of Governor Dewey in 1943. Since that time, with the single exception of 1950, appropriations for operation and maintenance have steadily climbed from slightly below two million dollars in 1944 to nearly 7.8 million dollars in 1959. Except for the war years, when funds for the federal farm labor program were carried in the college budget, the state's portion of the college budget for maintenance and operation has ranged between 65 and 70 per cent of the total.⁴⁶ Relative to appropriations made by other states, New York stood second in the amount appropriated for agricultural research in all but three of the years between 1945 and 1959. During the same period, however, New York dropped from first to fifth in the amount appropriated for agricultural extension.⁴⁷

Four major buildings, approved by the Board of Regents in 1943 as part of its postwar building program, were completed at the College and the Geneva Experiment Station. Other buildings, also

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approved by the regents and the New York State Postwar Public Works Planning Commission, but not started by 1960, included an agronomy building, an entomology building, and a new series of greenhouses with attached headhouses.⁴⁸

The building program at the College was part of a state plan to use public works as a means for alleviating the effects of a depression which, it was anticipated, would follow in the wake of World War II. In 1945 an initial appropriation of \$1,529,000 was made for the library building. The following year \$1,116,000 was appropriated for an agricultural engineering building and \$430,000 for a food science and technology building at Geneva. Thereafter the state administration sat back to await the beginning of the depression. As the years passed without a break in the postwar prosperity, pressure developed to authorize the construction of the buildings that had already received initial appropriations from the legislature. In October, 1949, construction at last began on a building to house the combined libraries of the Colleges of Agriculture and Home Economics.⁴⁹

Although plans for this building had been prepared since the spring of 1945, there was still a group in the faculty which favored integrating the college library within a new university library. In 1948 this step was called "the only satisfactory permanent solution to the library problem" by the Library Committee of the Faculty of Agriculture. This position was not supported by the faculty, which was aware of the University's inability to secure funds to finance its share of the central library at that time. To the majority it seemed wiser to construct a building for which an appropriation had already been made than to wait out the uncertainties of university fund raising.⁵⁰ Space was incorporated in the new building to house the Bailey Hortorium, the Wiegand Herbarium, and other facilities of the Department of Botany, which in the 1930's had been slated to occupy a separate structure. A wing connecting the library with Warren Hall also provided accommodations for the Department of Rural Sociology and the Biometrics Unit. In the fall of 1952 the new building was completed. The staff, budgets, and books of the two college libraries plus some departmental libraries were consolidated in the new building, appropriately named in memory of Albert R.

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Mann.⁵¹ For the first time in its history, the College of Agriculture had adequate library facilities.

The agricultural engineering building, first requested in the ten-year plan prepared by Acting Dean Webber in 1910, appeared in proposals for the expansion of the physical facilities of the College submitted in 1920 and in 1930. Construction of the building actually started in 1953 after the legislature made additional funds available.⁵² The new building, occupied in February, 1956, was named Riley-Robb Hall in honor of Howard W. Riley and Byron B. Robb, the professors who guided the early development of agricultural engineering at Cornell.

Construction of the food science and technology building at Geneva was also slow in getting under way. Although a number of the annual reports of the station for the years after the first appropriation was made in 1946 contain the hopeful statement that construction was about to begin, it was not until March, 1958, that ground was actually broken, the delays being due to the Korean War and the desire of state officials to give priority to the construction of a central heating plant.⁵³ The new building, dedicated in 1960, contained laboratories, storage facilities, and a two-story pilot plant for large-scale investigation of food-processing operations.⁵⁴

Frank B. Morrison Hall, occupied in the summer of 1961, gave the Department of Animal Husbandry the most extensive physical facilities of any department on the upper campus. Unlike Wing Hall, which was planned primarily for resident instruction, the new building was designed for research and extension activities as well. It contains over three hundred rooms including five teaching laboratories and six lecture rooms, one of which has seating capacity for over 300 persons.⁵⁵

Two buildings, constructed almost exclusively for research, incorporated facilities permitting control over the environment in which experiments are conducted, thereby enabling investigators either to maintain a constant environment necessary for increased accuracy in some experiments or to use such environmental factors as temperature, humidity, and the composition of atmosphere as experimental variables. In previous decades much was learned without such rigorous controls, but with the increasing sophistication of research

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techniques, specific knowledge of the effect of environmental conditions in experimental situations became increasingly important. The Poultry Biology Laboratory, completed in 1961, contained chemistry laboratories (none was included in Rice Hall when erected nearly fifty years earlier), a food technology laboratory, where detailed bacteriological analyses could be made and new poultry products developed, and air-conditioned animal rooms.⁵⁶ For the further perfection of a technique developed by Professor Robert Smock for preserving apples in storage by reducing their rate of respiration, a cold storage building was erected in 1953 which included equipment for modifying the atmosphere in the storage rooms. The building, making possible large-scale research on a technique already proved commercially significant, was financed by a loan from the University, which was repaid from the sale of orchard products.⁵⁷

Service to organized agriculture and agricultural business was for Dean Myers, as it had been for Dean Ladd, a primary objective of the College. Departments at the College continued to work closely with farm organizations, some, like the Department of Animal Husbandry, having advisory committees composed of leading farmers. Through representation on the Agricultural College and Experiment Station Council, farm and farm-related organizations advised on the formation of policy and programs in the College and, through the medium of the Agricultural Conference Board, aided in securing the appropriations for the College. Dean Myers' reliance on this approach to the legislature replaced the lobbying methods which Deans Bailey, Galloway, and Mann had used to obtain appropriations.⁵⁸ However, there was in the College, as there had been since Bailey's administration, a point of view which opposed tying the development of the College so closely to the practice of agriculture. Those who took this position found support in census estimates that by 1959 the proportion of the state's population engaged in agriculture was below 3 per cent. On the occasion of his retirement in 1959, Dean Myers spoke directly on this point:

There are some who have come to the College in recent years who would play down agriculture and emphasize other fields. I believe we would do that at our peril. I think the basic factor should be the philosophy of service

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to agriculture *and* to the public *and add* other related work, but not weaken the service for which this College was established and for which it has been supported.

INTERNATIONAL SERVICE

The influence of the College between 1941 and 1960 has been extended to many countries in connection with programs to increase the productivity of agriculture. Federal agencies and private foundations interested in agricultural development called for the services of staff members. Their most singular effort toward improving foreign agriculture was based on a contract between Cornell University and the University of the Philippines. Originally financed by the Mutual Security Agency and the Philippine government, the contract provided for Cornell's assistance in strengthening the teaching and research program of the College of Agriculture at Los Baños. The challenge was substantial; in effect, it was necessary to resolve issues in a few years which in the Cornell experience had required some five decades. Nevertheless, effective steps were taken toward basing teaching on research and toward relating research problems to the nation's agriculture. In 1954 the contract, then under Foreign Operations Administration auspices, was broadened and extended further in time.⁶⁰ When the Los Baños project finally ended in June, 1960, thirty-five members of the faculty had served in the Philippines. Also during that period sixty-seven young faculty members of the College of Agriculture at Los Baños came to the United States for advanced study; of these, twenty-four attended Cornell.⁶¹

The Inter-American Institute of Agricultural Sciences, established under the auspices of the Pan American Union in 1942 at Turrialba, Costa Rica, met the need for a center for the study of tropical agriculture. Dean Mann and President Farrand had emphasized this need in 1928 when soliciting support for the Graduate School of Tropical Agriculture in Puerto Rico.⁶² Among those of the college staff who have served at the Institute are H. C. Thompson, Ora Smith, and Howard E. Conklin. After retiring from Cornell in 1951, Professor Thompson was head of the Department of Plant Industry for three years, the last two of which he was also director of research and education. Ora Smith spent six months there during 1946-47, conduct-

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ing and directing research, mainly on weed control. For the next two years he continued to direct research by correspondence, spending a month each year at the Institute. Howard E. Conklin conducted research and lectured on the appraisal of agricultural resources during 1955-56.⁶³

Since the war, staff members have participated in foreign assistance programs in almost all the Latin American nations, several countries of Africa including Libya and Uganda, India, and the countries of Southeast Asia. While most of the overseas service has been in the so-called underdeveloped areas, teaching and research has also been done in universities and corporations in Japan and Western Europe. For example, Frank V. Kosikowski of the Department of Dairy Industry worked at the Cheese Research Laboratory at Versailles, France, for six months in 1955, assisting in the improvement of French Roquefort, and in 1959 helped establish a research program in dairy science at University College, Cork, Ireland. During January to September, 1957, William K. Jordan helped develop new dairy machinery at the Wedholms Manufacturing Company at Nykoping, Sweden, and at the same time Dr. B. L. Herrington lectured on dairy chemistry at the Royal College of Veterinary Medicine and Agriculture in Copenhagen, Denmark, while holding a Fulbright award. The following year, also on a Fulbright grant, H. W. Seeley occupied a chair in bacteriology at the University of Reading in England.⁶⁴

Richard Bradfield's participation in planning and directing the foreign agricultural activities of the Rockefeller Foundation has been noteworthy. In 1941 he was one of three eminent agricultural scientists who studied possibilities for the improvement of Mexican agriculture. This study was followed by an intensive program to improve the plant varieties and agronomic practices in Mexico while also training workers from Mexico and other North American countries. From 1947 to 1954 Bradfield was a member of the Rockefeller Foundation's Board of Consultants for Agricultural Activities, and in 1956 he served as regional director for agriculture in the Far East. The following year he became a trustee of the foundation, succeeding Dean William I. Myers.⁶⁵

While each technique developed by research workers for the improvement of agriculture in foreign countries was a step toward

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increased productivity, the attainment of this objective involved the formidable task of securing acceptance of these techniques by the persons who worked the land. Experience with New York State farmers was only partially relevant, for in many foreign countries adoption of new techniques turned on such considerations as the attitudes of villagers toward strangers, the influence of religious leaders, and the reluctance of persons with formal education to engage in manual labor. A new approach to the varying problems faced by agricultural extension workers overseas grew out of a program in extension education established by J. Paul Leagans in the Department of Rural Education in 1949. As the first full-scale program at any university leading to an M.A. or a Ph.D. degree in extension education, it was necessarily a pioneering venture. Although established initially as a means for upgrading American extension workers, it soon attracted foreign students and turned toward the consideration of extension work overseas. Students in the program were expected, in turn, to train extension workers in other countries. Aided by a \$500,000 grant from the Ford Foundation in 1955, techniques in cooperative extension were explored, and by 1960 the program had become a sound combination of course work, special seminars and lectures, supervised field study, thorough exposure to the methods of the New York State Extension Service, and appropriate social occasions. The publications on comparative education prepared in connection with the program have proved to be of world-wide interest.⁶⁶

EXTENSION

Since 1946, except for the Korean War years, government agricultural policy and the pressures of the marketplace have combined to force more efficient practices upon those who would remain in farming. Farmers have turned to the Extension Service for help in maintaining and analyzing farm records and in cutting the cost of production. As the margin of profit declined, there was an increasing incentive to analyze production situations with greater refinement in order to find means for further cutting costs. Electronic coding and computing machines have made technically feasible this more sophisticated analysis of the numerous variables making up production situations.

One effective way of reducing costs is to adjust plant and animal

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feeding to the production desired. By 1960 the Extension Service could make feeding recommendations for the individual cow, the individual orchard, and the individual field crop. The Dairy Records Processing Center provided cooperating farmers with the information on which individual feeding could be based. By 1960 the center was calculating, printing, and returning to farmers on a monthly basis production records on about 100,000 cows.⁶⁷ In making recommendations for fertilizer applications, the Agronomy Department used coding and sorting machines to study the relationship between soil groups and past fertility management. In pomology, it was found that a combination of leaf and soil analysis, together with information on soil type, leaf symptoms, tree growth, and condition of crop, was required to make accurate recommendations for the individual orchard. Beginning in 1956, this analysis was provided to growers on a limited basis, the growers paying a fee as they had done in the past for soil analysis.⁶⁸

The scope of extension programs in agriculture broadened to incorporate activities previously limited to a relatively small number of counties. Much greater emphasis has been placed on helping producers develop stable and profitable marketing methods. There has also been a tendency to move into areas of general education formerly considered outside the province of the College, such as extension work with nonfarm people. In the early development of agricultural extension work it had been college policy not to restrict its application to farm people; indeed, Dean Bailey strongly advocated unrestricted access to the benefits of agricultural education. His favored Department of Landscape Art by no means confined its work to farm families. Although this phase of college operation was restricted because of pressure from state officials, it remained an important part of the extension program in certain urban counties. In Westchester, for example, ornamental horticulture — the care of home grounds, lawns, and golf courses — was the basis of agricultural extension in 1942.⁶⁹ Since the war the number of persons who can afford to own land for recreational purposes has greatly increased. In upstate New York and on Long Island many areas which were rural before the war were rapidly occupied by suburbs, and in the back country abandoned farm lands were reoccupied for their recreational

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value. In 1954 a full-time assistant was employed in Broome County to help nonfarm people make wise use of their land. Five years later several other counties employed agents skilled in landscaping and floriculture to advise homeowners.⁷⁰

Since, by 1960, solutions to many of the important problems of agriculture were determined by units of government dominated by nonfarm people, it seemed desirable for the Extension Service to help farmers by contributing to the public's knowledge of agricultural problems, for it was evident that the public was not well informed on the relations of local, state, and national government to agriculture. In an exploratory program in the public problems of agriculture conducted in 1960, the interests of agriculture were approached from a broad perspective. Instruction in the financing of local government, based on research done by the Department of Agricultural Economics, was given around Ithaca.⁷¹ With this project, that department joined the Department of Rural Sociology in exploring the field of extension work in general education.

Movement in this direction was slow and tentative, for pressures to keep extension work closely related to the technical problems of agriculture were intensive. Not every promising beginning was consolidated into a permanent program. Although considerable interest was expressed in a rural music project conducted by the Department of Rural Sociology from 1940 to 1942 under a \$20,000 grant from the Rockefeller Foundation, there was no further development after the grant expired.⁷²

To increase the stability of marketing, extension personnel worked increasingly with those who handled farm products after they left the farm — the buyers, jobbers, retailers, and consumers. This form of extension work started in 1955 in the Buffalo and Rochester areas. Training schools for both wholesalers and retailers were held in these cities. The response from agricultural businessmen was excellent; at their request the schools were repeated.⁷³ After 1957 special marketing agents who worked exclusively with food handlers were employed in New York City, Buffalo, and Rochester.⁷⁴ Price and supply information and suggestions for wise buying were distributed to encourage consumers to adopt orderly purchasing practices.⁷⁵ In the poultry industry, where a narrow margin of profit was associated with dis-

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rupting crises of over-production, orderly marketing early received attention. By 1955 the *Poultry and Egg Market Report* was issued every two weeks to 1,100 people who were in a position to assist in stabilizing the flow of poultry and poultry products from producer to consumer.⁷⁶ Work with dealers was not accepted readily by some farmers who found it hard to believe that the College could serve their interest while working with their traditional enemies – the middlemen.⁷⁷

New methods of communication were adopted for the marketing programs and other phases of extension. To reach consumers, weekly releases were sent to professional workers who wrote for homemakers. Dealers in farm supplies and teachers of vocational agriculture were used by the Extension Service to get college recommendations to farmers.⁷⁸ Television was used to channel information to both producers and consumers. In the year prior to July, 1957, over five hundred regularly scheduled programs were presented by about 120 members of the extension staff. A television service was established to provide technical assistance in preparing these programs.⁷⁹

Rapid changes in the poultry industry led to an observation about extension teaching only slightly less applicable to other types of farm operations: "Competition for the time of the producer is extremely keen, and a program must be designed to make available to him the maximum amount of information and help, with the least expenditure of time on his part. As the trend moves to fewer producers handling operations of increased size, the level of teaching must be upgraded."⁸⁰ The well-informed large operator required information fresh from the experiment station pertinent to his particular business. Other farmers could benefit from instruction given at county meetings or over television. In the winter of 1960, 1,400 persons enrolled in a six weeks' television farm management course given by Professor L. C. Cunningham, in which the farm records of those enrolled were utilized in preparing "homework" for the course.⁸¹ Within the counties, agents secured more time for farm management work with individuals by instructing farmers to take over such time-consuming routine matters as the interpretation of soil tests.⁸² Long-term planning was also viewed as a means for securing greater efficiency in county extension programs. In 1961 each agent was expected, with

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the aid of his county committees, to prepare a five-year program for agricultural extension in his county.⁸³

In 1956 a study was initiated to determine the factors related to success as a county agricultural agent, but as of 1960 the information secured was not yet being applied to the selection of new candidates. Certain basic technical skills, skills in communication, and a pleasing personality are fundamental requirements, but the measurement of these qualities has remained highly personal. Communication skills tended to receive greater emphasis than formerly, since candidates generally had a command of technical agricultural information. In the 1950's few complaints came from the field regarding weaknesses among the agents on this score.⁸⁴ Through the Department of Rural Sociology a major effort was made, beginning in 1953, to improve the county agents' understanding and appreciation of leadership. In 1957 alone, 114 leadership training conferences were held, including a two-and-a-half-day session for county agents.⁸⁵ Undergraduate students planning to enter the Extension Service were given special counseling in addition to their courses in methods and organization of extension work.⁸⁶

Following the war, the county agents desired to apply scientific procedures in developing new programs and evaluating existing programs. In 1947 they requested help in setting up informal studies, preparing questionnaires, and determining sampling methods.⁸⁷ In 1958 the Office of Extension Studies was established under the administrative control of the director of extension, to serve as the research arm of the director, the state leaders, and the county agricultural, home demonstration, and 4-H agents.⁸⁸ The establishment of this research division outside existing departments reflected a flexibility in college administration much greater than before the war. Coordination with rural sociology was provided by giving the head of this office, Professor Frank Alexander, a joint appointment in that department.

Generally the authority of department heads over the extension activities of the College was increasing. Traditionally, the departments and department heads had controlled the subject matter of extension, but by 1959 they had also acquired a voice in determining the circumstances under which the subject matter would be pre-

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sented. Under the new memoranda of agreement with the USDA regulating extension activities, a provision was included which required that both subject matter and program go from the director of extension to department heads for their approval.⁸⁹

In May, 1946, the trustees, at the request of the Faculty of Agriculture, upgraded the status of the extension staff by dropping "Extension" from their titles.⁹⁰ In this belated move, the University recognized that the standards of extension teaching were not so different from resident instruction that the members of the extension staff required a special designation.

In 1960, as in 1915, the county agricultural agent was regarded by the college administration as the representative of the College in the county. All college activities in the county were to be cleared through his office, a requirement often regarded as a nuisance by research personnel and sometimes by the agents themselves. The concept of the county agent as representative of the College was brought into question by a controversy in Madison County in the winter of 1960, the same county where local interests had made wild charges about Cornell domination forty years before. The issue was precipitated when the director of extension, M. C. Bond, found a poorly qualified 4-H agent appointed by the county extension association to be unacceptable to the College. In the process of resolving the issue, an opinion was secured from State Attorney-General Lefkowitz, who ruled that the county extension association had final power to hire and fire extension agents.⁹¹ While of some significance legally, it is doubtful whether this decision will have much effect on the work of the Extension Service. This case was an exception to the usual cooperative relationship between college officials and county extension associations. If such conditions were widespread, the basis for a cooperative extension service would not exist.

In 1959 the county agricultural agent staff in the fifty-six counties supporting agricultural extension contained 163 persons, and nearly one million dollars was appropriated for their work by boards of supervisors. The county membership organizations, formed after the separation from the farm bureaus, raised another \$235,000 from dues.⁹² Within the counties, the agricultural extension staff was usually divided on the basis of subject matter areas. In Tompkins

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County, for example, the assistant agent was responsible for dairy and livestock, the associate agent for poultry, field crops, and the county extension periodical, and the agent for administration, public relations, relations to public agencies, and the farm management program.⁹³

Some problems facing the county agent in 1960 were in decided contrast to those of 1915. He no longer had to impress the public with the value of his services; rather, he had to choose between legitimate activities and learn to refuse with grace individuals and groups who could not be accommodated. The portion of his time devoted to acquiring information increased over the years as rapid change in agricultural technology increased the difficulty of keeping recommendations up to date.* County-wide commodity meetings, once a valuable extension medium, decreased in value. It became more difficult to communicate useful information to these groups because the persons who came varied widely in their ability to assimilate and apply the information presented.

Other problems were not unlike those of earlier years. Membership recruitment remained important, for boards of supervisors tended to inquire about this although the services of the extension agents were not limited to those who were formally members of the county association.† The relation of agricultural to home economics extension, a complexity of problems in 1915, remained so in 1960 and will undoubtedly continue to be so in the future.⁹⁴ Also many members of the executive committees of county agricultural associations remained unclear about their role relative to that of the agent in planning and administering the county agricultural programs.⁹⁵

*In Tompkins County, Agricultural Agent Ernest Cole estimated that in 1959 about 25 per cent of the time of the three men engaged in agricultural extension was spent acquiring information (interview, Dec. 7, 1960).

†New York, it may be noted, was the only state in which county extension organizations after separating from the Farm Bureau were permitted to charge membership fees (W. J. Block, *Separation of the Farm Bureau and the Extension Service* [Urbana, 1960], p. 222). Nominal fees were desired by both college administrators and a large number of New York farmers on the ground that those who had a financial stake in the organization were likely to take a continuing interest in its activities (Simons, "Extension Service Partnership," p. 80; E. O. Moe, "New York Farmers' Opinions on Agricultural Programs," *Cornell Ext. Bull.* 864, 1952).

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Short schools and conferences held under college auspices became of even greater importance after the war. In 1955 the school for highway superintendents had an attendance of 369, in 1960 of 398. Beginning in 1952 technical assistance to town highway superintendents was provided on a year-round basis; by 1955 results of research on road building and maintenance conducted by the Department of Agricultural Engineering was extended to this group by a full-time extension engineer and assistant. The annual meeting of bankers to discuss agricultural credit, which started in the Bailey administration, continued as a five-day session under the name, Banker's School of Agriculture.⁹⁶ The Eighteenth Annual Insecticide, Fungicide, and Pesticide Application Equipment Conference, held in 1957, was attended by nearly five hundred, while the Eighteenth Cornell Nutrition Conference, held in Buffalo in 1954, attracted 652 feed men from thirty-two states, Canada, England, Holland, and Belgium.⁹⁷ In 1950 an annual conference was established for fertilizer producers, and the following year a similar conference was organized for lime producers.⁹⁸ An annual meeting for seed and fertilizer dealers was initiated in 1948, at which the results of new research in agronomy were presented and the annual revision of *Cornell Recommends for Field Crops* was released. A five-day short course for beef cattlemen was initiated in 1952 and the following year was attended by one hundred persons from thirty-two New York counties and eight other states.⁹⁹ A sheepmen's short course was started in 1958. In that year a short course for commercial florists, an annual event since 1930, had an attendance of over three hundred.¹⁰⁰ Numerous other conferences were held but, in most instances, on a less regular basis.

Farm and Home Week was adapted to changing means of communicating information. By 1960 the education imparted by the lectures and exhibits did not appear to justify the disruption of the regular work which the week's activities involved. That year Farm and Home Week was reduced to three days and the following year was further streamlined under the name of Agricultural Progress Days. However, the decline in Farm and Home Week as an educational session for adults coincided with its development as an educational experience for young people. In 1958 during Farm and Home Week about five hundred high school science students and teachers

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attended special lectures and demonstrations presented by the Department of Botany. By 1961 eleven departments were participating in an educational program attended by young people from all parts of the state. By this means high school students were acquainted with the opportunities available through agricultural education.¹⁰¹

During his long lifetime it was the practice of Professor Simon Henry Gage to read the annual report of the College of Agriculture. "As a born farmer knowing something of the difficulties which farmers have to face," he stated in 1943, in the ninety-second year of life, "I appreciate what the College of Agriculture has done and is doing to help that necessary element of the state."¹⁰² A measure of the success of extension was the substantial reduction in the time required to secure almost complete acceptance of new crop varieties. In 1958 improved alfalfa had reached the same level of acceptance in eight years that hybrid corn reached in twenty-eight years.¹⁰³ Wheat varieties developed by Professors Love and N. F. Jensen predominated as far away as Michigan. Extension also played a large part in helping New York farmers offset reduced acreages of basic crops and a lower price per bushel with increased yields per acre. "This," reported the Dean, "is efficient farming."¹⁰⁴ Perhaps the most significant single contribution of agricultural extension lay in the continued development of artificial breeding. In 1944 the state, at the urging of dairymen, appropriated \$46,000 for research and service work in artificial breeding. In that year also, it was decided to move the headquarters of the New York State Artificial Breeders' Cooperative from Syracuse to new buildings to be constructed adjacent to the campus on Judd Falls Road. This convenient location, which has greatly facilitated the breeding research of the Department of Animal Husbandry, was made possible by an unusual arrangement by H. E. Babcock wherein ownership of these buildings on Cornell University land was vested jointly in the Cooperative and the State of New York.¹⁰⁵ Since 1945 training schools, sometimes as many as four in a single year, have been held at Cornell for artificial breeding technicians.

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RESEARCH

Fundamental research received greater emphasis than at any time previously. If not the American public, at least their representatives in Washington recognized that the maintenance of national security and an expanding standard of living required national support for basic research; funds for this purpose from federal agencies other than the Department of Agriculture have been increasingly important since 1950, as the number and amount of grants from two federal sources in selected years will show:¹⁰⁶

<i>Federal Sources</i>	<i>1950-51</i>		<i>1954-55</i>		<i>1959-60</i>	
National Science Foundation	—	—	—	—	7	\$129,000
Public Health Service	1	\$6,000	5	\$41,000	32	\$387,000

Additional support for basic research became available in 1958 through contract agreements with the U.S. Atomic Energy Commission and divisions of the Department of Defense. In the year 1959-60 contracts were signed with the U.S. Air Force, Atomic Energy Commission, Army Medical Research and Development Command, Army Corps of Engineers and Office of Naval Research for research totaling over \$164,000.¹⁰⁷ The faculty employed on state funds experienced less pressure to confine research to the practical. It was the policy of both Director Guterman and Director Kennedy to encourage all members of the faculty to follow problems beyond practical solutions to the study of underlying causal relationships.¹⁰⁸

The increased emphasis on basic research was in addition to, rather than in lieu of, research on practical problems of agriculture. In some respects, research in the latter area was more important than ever since the advantage New York farmers possessed by proximity to markets was reduced through the decline in markets for unprocessed farm products. Fresh local produce was supplanted by products canned, frozen, dried, or packaged in plastic out of the state. Moreover, other states had efficient colleges of agriculture which helped farmers capitalize on what were, in many instances, natural advantages in climate and soil.

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It is well that over the years the public gradually acquired confidence in the value of agricultural research, for appropriations would be seriously impaired if the public insisted on understanding how funds allocated for this purpose were being spent. Specialization in science resulted in a communication barrier between the scientist and even the well-informed layman. Yet some degree of communication continued to be necessary, for the public's representatives rightly insisted upon being partially informed before allocating funds. To bridge this gap between the scientist and layman, Dean Palm and Director Kennedy developed project-presentation notebooks combining carefully chosen words and photographs to explain the objectives and financial requirements of major research proposals.

Increased communication occurred between agricultural scientists and fellow scientists and between agricultural scientists and those interested in technical applications of their research. From the halting efforts of agricultural researchers to establish formal lines of communication in 1871, a complex network had evolved through the efforts of scientists to secure a maximum of information in readily usable form and from the desire of those interested in technology to reduce the time lag between research and its economic application. The Department of Entomology and Limnology, for example, achieved

closer communication with entomologists in the Bureau of Entomology of USDA and at all of the State Agricultural Experiment Stations; with chemists and regulatory men in the U.S. Food and Drug Administration and corresponding state agencies; with industry through the National Agricultural Chemicals Association, the National Pest Control Association, and the Chemical Specialties Manufacturer's Association. Closer liaison with the regional and national plant boards and with entomologists in other countries was also established.¹⁰⁹

Interdepartmental coordination and cooperation between departments of the College and state and federal agencies engaged in research had become a matter of course. In 1960 seven departments conducted research under cooperative agreements with the Agricultural Research Service of the USDA; fully a third of the research projects under way that year were based on interdepartmental cooperation or cooperation with public agencies.¹¹⁰ At the request of

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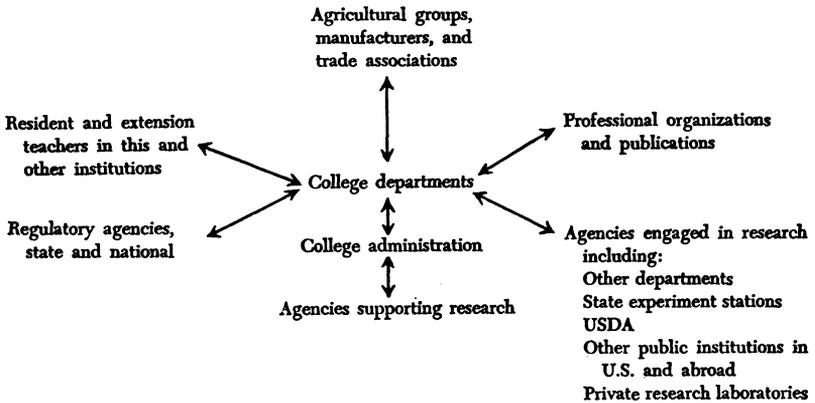


Chart 5. Lines of communication in research.

the College, the State Experiment Station Division of the USDA began evaluating all research—state and federal—in 1959. Comprehensive reviews of the research activities of individual departments were also conducted under the auspices of this division. These reviews, voluntary on the part of the departments, were made by reviewing teams drawn from the division, other colleges, and industry, and were of three to four days' duration.¹¹¹

In 1957 the Cornell Pesticide Residue Research Laboratory was constructed with a state appropriation supplemented by a grant from the United States Public Health Service. This facility was intended to advance investigations already under way in the Department of Entomology and to serve as a testing laboratory for assisting New York farmers in complying with federal tolerances for poisonous residues. Although the danger from residue of poisonous sprays had been recognized since the 1920's, when persons in England died from cider contaminated with arsenic, it had not been a matter of great public concern until the 1950's when mass circulation magazines suggested, often without scientific basis, that residues from insecticides and fungicides were present in such quantities as to pose a threat to public health.¹¹² Information based on sound methods of investigation became of critical importance, not only as a means of protecting public health but also to quiet those who exaggerated the danger.

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Cooperation between public and private organizations provides the basis for the operation of the Cornell Ornamentals Research Laboratory, established in 1948 at the Long Island Agricultural and Technical Institute at Farmingdale. The USDA and the Departments of Plant Pathology and Floriculture and Ornamental Horticulture provide the staff members who work in the laboratory; the greenhouses were donated by the New York Florists Club and New York State Flower Growers, Inc. The institute, once so antagonistic to college activities on Long Island, was selected as a site for the laboratory since it is in an area where about half the nursery business in the state is concentrated.*

The coordination between the Cornell and Geneva experiment stations anticipated by the legislation of 1923 was finally achieved in the years that Professor Arthur Heinicke was director. Heinicke's appointment in 1942 was no sudden decision; in 1938 he was considered the person to bring about satisfactory coordination between the two institutions.¹¹³ This was no easy task. The beginning of his administration coincided with the decision, taken at the insistence of Albany officials, to concentrate research on dairy cows at Ithaca. This action confirmed the suspicions some Geneva businessmen already had about Cornell's motives.† Director Heinicke's attempt to establish good relations with the Geneva Chamber of Commerce early in 1943 did not satisfy a group of Geneva businessmen who protested to Governor Dewey about the subordination of the station to the interests of the University.¹¹⁴ These feelings, cultivated by former Director Hedrick as a protective measure, were slow to die out, but

*The New York State Flower Growers, Inc., was organized in 1945 "to enable florists to further research in floriculture at Cornell" (*Pi Alpha Xi Newsletter*, Aug. 1, 1945 [Cornell University, mimeo.], p. 11; J. G. Seeley, *Coll. of Ag. Historical Notes*, 1962).

†The maintenance of dairy herds at both Cornell and Geneva had long been attacked by budgeting officials in Albany. Although President Day promised the commissioner of education, Frank Graves, in 1937, that the question of the dairy herds would be settled "within the works" before the next budget, the settlement was not accomplished until six years later. Ending an established area of activity in an educational institution is often difficult (Day to Graves, Nov. 9, 1937, Ladd Papers; *President's Rpt. for 1942-1943*, App. XIII).

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as the years passed it gradually became clear to Geneva people that coordination with the College of Agriculture did not diminish the importance of the Geneva station.¹¹⁵ This importance was recognized by state officials who approved increases in the station's budget for operation and maintenance and provided major additions to the physical facilities.

RESIDENT INSTRUCTION

With the exception of the war years, undergraduate enrollment in the regular and two-year programs remained quite steady, in decided contrast to colleges of agriculture in other states, where enrollments declined during the postwar period.* This stability of undergraduate enrollment in the College of Agriculture was the result of conditions both within and outside the University. Students were attracted by new courses in the biological sciences and agricultural business and by the large number of electives they could take outside the College of Agriculture. The absence in New York State until recent years of publicly supported institutions offering college level instruction in general education has also been a factor. Until the establishment of the State University, the state colleges at Cornell came closest to providing the kind of public education associated with state universities elsewhere. These same conditions also affected the enrollment of graduate students, which increased in the 1950's to almost twice the prewar level. As was true in earlier years, about one-third of the graduate students took their major subject in the College of Agriculture. Another noteworthy feature of the enrollment pattern was the increase in foreign students. In 1949-50 they composed 2.2 per cent of the undergraduate student body of the College; by 1958-59, 4.5 per cent. Difficulty in financing their education at Cornell prevented a more rapid increase in their numbers. In the late 1950's about eight to ten foreign students at the College were financed by the federal government, while others were supported by their own governments.¹¹⁶ As would be expected, the over-all percentage of farm-

*Aside from Cornell, only the agricultural colleges in North and South Dakota, Wyoming, and Delaware were able to maintain enrollment (*Proc. of the American Association of Land-Grant Colleges and State Universities*, 1959, pp. 159-160).

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reared students declined rapidly in this period from about 40 per cent in the years from 1946 to 1948 to less than 30 per cent in 1950-51.¹¹⁷ Student enrollment for the College of Agriculture, 1941-60, was as follows:

<i>Year</i>	<i>Regular</i>	<i>Special Graduate</i>	<i>Summer</i>	<i>Two-year</i>	<i>Winter</i>	
1941-42	1,214	54	367	758	190	49
1942-43	1,058	29	276	640	128	
1943-44	553	21	258	217	25	
1944-45	443	60	264	363	58	
1945-46	772	236	544	329	133	
1946-47	1,284	138	672	624	234	
1947-48	1,318	69	696	717	230	
1948-49	1,407	70	807	849	218	
1949-50	1,484	69	760	799	223	
1950-51	1,462	86	788	792	199	
1951-52	1,465	62	781	735	192	
1952-53	1,384	48	719	556	176	
1953-54	1,391	56	784	451	174	
1954-55	1,371	69	780	395	184	
1955-56	1,329	67	805	500	200	
1956-57	1,411	71	856	412	174	
1957-58	1,425	78	895	511	159	
1958-59	1,372	77	906	595	198	
1959-60	1,373	71	975	600	205	
1960-61	1,448	57	943	560	195	

Undergraduate students in the College of Agriculture continued, as a group, to rank in academic achievement below students in other large colleges at Cornell.¹¹⁸ Due to the flexible admissions policy required in a public institution committed to serve the diverse needs of agriculture, agricultural science and education, and agricultural business, it was impossible to give the same emphasis to academic potential (as measured by standardized tests) as did units of the University having a less direct commitment to interest groups in the state. As a long-term approach to raising the level of academic performance, the College in 1959 undertook an accelerated recruitment program designed to emphasize the wide range of vocations that

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could be approached through "a university education in agricultural science."¹¹⁹ However, since it was recognized that an additional four hundred students could be accommodated in the College, the raising of admissions requirements was postponed until a substantial increase in enrollment could be achieved.¹²⁰ Construction of new university dormitories for women, under way in 1960, offered one means of increasing the number of highly qualified students. Although applications from women had increased substantially in the 1950's, a quota based upon availability of dormitory space had restricted their number to 190.¹²¹

In the fall of 1958, 127 students received scholarships.¹²² Eighteen were financed from a fund collected in memory of Dean Ladd. The Sears Roebuck Agricultural Foundation provided fifteen scholarships for farm-reared students; eight scholarships were established by the New York Lime Association, while other individuals and groups provided one or more scholarships. Although nearly three times the number of scholarships were available in 1960 as in 1940, these were not sufficient to meet the need for financial assistance. In 1959 a special committee was appointed to secure at least fifty additional scholarships.¹²³

Few major changes in admissions requirements occurred between 1940 and 1960. The two-year course remained both a terminal program and a means by which inadequately prepared but highly motivated students could, at the end of two years, enter the four-year program. Approximately one-third of those entering the two-year course from 1952 to 1954 took this step, and for those students a full transfer of credit was possible.¹²⁴ In 1945 a motion to give credit to students transferring from the New York State agricultural institutes lost by a faculty vote of sixteen to eighteen, but two years later, on the basis of the good records of those already admitted, it was decided to allow thirty hours of advanced standing to two-year graduates of the institutes.¹²⁵ Effective in the fall of 1959, the Scholastic Aptitude Test of the College Entrance Examination Board was made an admission requirement, the results from this test being incorporated with other information available to admissions officers in determining a candidate's chances for success in his chosen field of study.¹²⁶

Prior to 1957 there had not been, in spite of the efforts of Dean

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Mann and Directors Betten and Gibson, a concentrated interest in resident instruction on the part of the faculty. Although there were always a few teachers who were primarily interested in resident instruction, the large majority preferred to concentrate on research or extension. In this context the decision of the Faculty of Agriculture, taken in November, 1957, which called for the appointment of an *ad hoc* committee to study the problems of resident instruction, was a radical departure from the established pattern. This committee, to consist of one representative from each department offering undergraduate instruction, was to make "a thorough review and study of the policies of the College relative to recruitment, admissions, curriculum, requirements for graduation, farm practice, and such other factors affecting the training of future leaders in agriculture and science."¹²⁷ Changes in the farm practice requirement and a new program for the recruitment of students resulted from the work of this committee.

As in previous years, the farm practice requirement was widely viewed as a deterrent to the recruitment of students whose occupational interests were not related to the practice of farming. "It is our opinion," stated the Executive Committee and officers of the Alumni Association of the College in 1958, "that practice requirements must be viewed intelligently . . . [if this] is not to hold back this building of a great biological and agribusiness college."¹²⁸ Effective for students entering in the fall of 1960, this long-standing requirement was practically abolished. The forty units of practice previously required were reduced to from thirteen to twenty-five, depending on the student's field of specialization, and in all areas of specialization acceptable professional experience could be substituted for farm practice.¹²⁹ This step was taken over the protest of a group of faculty members who strongly favored a requirement which would bring students in direct contact with farm phases of agriculture.¹³⁰

Perhaps the most valuable contribution of the Ad Hoc Committee was the impetus it provided for the individual faculty member to examine and improve the quality of his resident teaching. For the first time in many years resident instruction was examined with the care that previously had been given to research and extension. Although observers like H. E. Babcock earlier complained that some

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of the college faculty were guilty of sloppy teaching, there was little that could be done under Cornell's philosophy of individual responsibility, especially if those in question were effective in research or administration.¹³¹ By contributing to a feeling of responsibility for quality resident teaching, the Ad Hoc Committee significantly increased the over-all efficiency of the College.

More effective cooperation with departments of the College of Arts and Sciences in which a large number of agricultural students enrolled occurred after 1940, in part through the efforts of administrators in both colleges, in part through an increase in common professional interests among the faculty of the two colleges. At the request of the Dean of the College of Arts and Sciences, committees in the College of Agriculture were appointed in 1946 to consider the needs of agricultural students in chemistry, English, and social studies.¹³² Of these, chemistry presented the most difficult problems. "The Chemistry Department," stated an indignant student determined to get at fundamentals, "is paid to teach chemistry and not to bust students."¹³³ In 1947 the Faculty of Agriculture recommended the establishment of a one-year terminal course in the Department of Chemistry for regular students and the establishment in the College of Agriculture of a terminal course in agricultural chemistry for two-year and other special students.¹³⁴ The adoption of these recommendations, while most helpful to the student meeting a chemistry requirement for graduation, was of little consequence to the student seeking basic introductory instruction in chemistry. The latter area remained critical.

One approach to improving student performance in chemistry was to assist students inadequately prepared in mathematics. In 1949 the faculty asked Dean Myers to appoint a special committee to study the relationship between inadequate preparation in mathematics and success in certain college courses. On the recommendation of this committee an experimental course was introduced in 1952 to help correct poor preparation in mathematics. This course proved to be very successful. At the expiration of the experimental period in 1955, it was made available regularly as part of the students' orientation to college work.¹³⁵

In December, 1952, combined courses were established with the

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College of Engineering and the Graduate School of Business and Public Administration. To enter the five-year program in professional agricultural engineering, the student had to meet the entrance requirements of the College of Engineering. Those completing the program were awarded the degree of Bachelor in Agricultural Engineering. By registering in a joint program in agricultural management with the Graduate School of Business and Public Administration, the ambitious student could earn both a Bachelor of Science and a Master of Business Administration or a Master of Public Administration at the end of five years.¹³⁶

In line with the trend toward serving organizations involved in the processing, distribution, and marketing of agricultural products, the College, in cooperation with the National Association of Food Chains and the Graduate School of Business and Public Administration, established an executive training program for workers in the food industry in 1958. Built around a nucleus of courses in food distribution, the program offers a wide range of optional courses appropriate to the needs of the individual students, all of whom are expected to have substantial experience in some phase of the food industry. By exposing future executives to current economic ideas and by encouraging them to relate their own experience to the overall process of food distribution, the program contributes to giving industry executives a broader point of view.¹³⁷

This and other programs designed to prepare students to assume significant roles in organizations related to agriculture represent recent steps in a process initiated by Dean Bailey when he established a special program for students intending to teach nature study. Reliance on electives as the best means for meeting the educational needs of the individual student, also emphasized by Bailey, remains the basis of resident instruction. There was, however, an element basic to Bailey's concept of resident instruction which is not always part of a Cornell student's education, in spite of Bailey's considerable efforts while dean, and it was to this he returned during a talk in 1945. Discussing the concept of horizon, he called attention to the value of Turkey Hill, an elevation overlooking the campus and the southern end of Cayuga Lake, as a piece of educational apparatus useful in determining the limits of one's mental outlook. "I went

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to the crest," he said, "and I visioned the developing of a sentimental idea whereby every student going through a four year course would once in his course go to the top of Turkey Hill and get a horizon. Most persons," added the eighty-seven year old teacher, "have no idea of a horizon of landscape let alone a horizon of life."¹³⁸

Conclusions

TO select from among the forces operating on the College of Agriculture over nearly one hundred years those elements which were primarily responsible for making the institution a leader among colleges of its kind is, of course, a somewhat speculative procedure. It seems clear, however, that ranking high among them are the persons responsible for infusing purpose and vigor into an institution which began poorly. To Roberts, Bailey, and President Charles Kendall Adams, New Yorkers owe a special debt, for it was they who ended the groping and false starts of the earlier years and established the College as an effective force in New York agriculture and a model for colleges of agriculture elsewhere.

While we may regret that, on his arrival at Cornell, Roberts felt himself in an alien atmosphere, we may delight in his faith in the future of agricultural education and the knowledge and self-assurance which enabled him to affect the shape this future would assume. Invaluable though it was, Roberts was not limited to that "knowledge born of experience" from farming in New York and Iowa; he also engaged in agricultural experimentation and was a vigorous supporter of the experiment station movement. Much credit is due Roberts also for his cautious constructive extension of experiment station results to farmers. Communicating techniques for the improvement of agriculture to audiences at once highly critical of advice and uninformed about the natural processes underlying farm operations required teachers of Roberts' caliber. New York was fortunate in finding, only five years after beginning the search, a first-rate teacher who could advance agricultural education with little outside support until other men and other conditions made possible the era of Deans Bailey, Eugene Davenport, and T. F. Hunt.

To Charles Kendall Adams, that almost forgotten figure among Cornell's executive officers, must go credit for throwing the weight

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of his office behind Roberts' efforts to make the College of service to New York's largest occupational group. Much has been written about the land-grant concept of service to all the people of the state. At Cornell it was Adams who assumed responsibility for giving reality to the concept as far as agricultural education was concerned.

Bailey, that genius whose capacity to lead surpassed the ability of others to follow, encompassed agricultural education, divided it into its components, and entrusted the further development of these parts to promising young people to whom he allowed the utmost freedom, leaving it to others to impose order on the educational ferment he had encouraged. The divisions of agricultural education he laid out did not, of course, develop with equal success, in part because of variations in strength of the persons to whom they were initially assigned, in part because of variations in the value attached to these subjects by the public and its representatives in Albany. Obviously, the public has sometimes been wrong. Consider, for example, the number of uninspired farm buildings and yards which today dot the New York landscape; Bailey's Department of Landscape Art might have helped. In other respects the public and its representatives have caught up to Bailey, although in some instances it required nearly half a century for them to do so. Few today would take exception to the statement that it is not the primary purpose of the College to train farmers; few today would deny that the courses in the College are science courses.

The beginning of graduate study in the agricultural sciences largely coincided with Bailey's tenure at Cornell. To him must go a large share of credit for attracting outstanding graduate students and for making Cornell the first institution in the nation to award the Ph.D. degree for study in agricultural subjects.

Credit for advancing a dynamic concept of education which places the educator in the vanguard of social change is also due Bailey. He used the power his circumstances provided to direct agricultural education into areas which, in his analysis, met the needs of the time. Other deans of the College have shared Bailey's view of the educator's relation to social change, but efforts to implement their views have been less dramatic and narrower in scope. Probably the opportunity for exercising leadership in agricultural education has not

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decreased since Bailey's administration, but the complex structure through which it must be exercised has increased the time lag between stimulus and effect and has complicated the determination of responsibility for the result. Another concept important to Bailey—the development of unity among the diverse elements of higher education—has become even more difficult to implement. What Roberts achieved by small classes, what Bailey achieved by College assemblies and courses in farm management and rural economy, has since been largely eclipsed by the increasing size of the institution and changing attitudes toward education, which are quite beyond the capacity of administration to control.

However important the guiding and coordinating functions of the deans and directors, the ultimate success of the College has rested on those conducting research and teaching resident students and the people of the state. Throughout its history the College has had a good proportion of faculty members who can be called outstanding—persons effective in research, resident teaching, or extension, or a combination of these activities, who, in the process of advancing their work, frequently served to encourage good work in their colleagues.

Although there have been occasional exceptions, both faculty and administration have generally benefited from favorable working conditions. As an examination of page 247 will show, funds available for the work of the College have increased quite steadily, thereby enabling the College to avoid extensive salary cuts or wholesale dismissals highly destructive to faculty morale. The buildings and equipment of the College, while not always what the faculty desired, have, since 1906, been among the best at agricultural colleges in this country. In accord with the Cornell tradition, a large element of freedom has been permitted each faculty member. Political interference has been rare, and the right of the faculty to take unpopular positions has been protected. Other benefits members of the Faculty of Agriculture have had through association with Cornell University have included stimulation and cooperation from the other faculties as well as the services which the parent institution provides to facilitate scholarship and ensure personal security.

Benefits to agricultural students from association with the Uni-

CONCLUSIONS

versity have been less clear-cut. For those adequately prepared for study in the endowed colleges, an educational opportunity has been available such as few other land-grant universities present, since frequently the liberal arts have been badly neglected in these institutions. On the other hand, students admitted to the College of Agriculture for training in fields not requiring a high degree of verbal or mathematical skill have often regarded courses in the endowed colleges as irrelevant to their needs or abilities. However, the opportunity for these students to receive instruction relevant to their situations has increased in recent years as a considerable number of professors in the endowed colleges have taken seriously the University's obligation as a land-grant institution to provide instruction for students with diverse backgrounds and objectives. Although accessory instruction within the University has consisted primarily of state college students taking courses in the endowed colleges, this has been by no means a one-way relationship. College of Agriculture courses in biology, genetics, and the philosophy and methodology of education, have attracted many students from the endowed divisions.

Association with a land-grant institution has been of great benefit in obtaining access to federal funds, which have been significant not only in a quantitative sense but in terms of the purposes for which they were allocated. During the 1880's, when the development of experiment stations was of critical importance to many agricultural scientists, a response from Congress was secured with the aid of the U.S. Department of Agriculture at a time when Cornell University limited its support of agricultural education largely to the receipts from the university farm. The Hatch Act made possible the hiring of Bailey and the initiation of new lines of investigation; later, with Adams Act funds, Webber and T. L. Lyon were added to conduct fundamental investigations in the breeding and nutrition of plants. In 1914, when the extension of information produced by the experiment stations was important to agricultural college leaders, the passage of the Smith-Lever Act enabled the College to have direct and continuing contact with farmers at a time when state appropriations permitted extension work of only an intermittent character.

The cooperation which marked the relationship of the colleges of

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agriculture to the U.S. Department of Agriculture in obtaining appropriations from Congress for agricultural research and extension contrasted with the conflict between the colleges and agencies of the Department of Agriculture over authority to provide direct services to the American farmer. In New York State, the College of Agriculture dealt with these conflicts from a position of strength based on close ties with organized agriculture in the state. Since World War II, cooperative relationships between the College, divisions of the USDA, and other agencies involved in agricultural education have been based on an acceptance of the permanency of these institutions and recognition that the national and international problems of postwar agriculture demand the coordination of all talents.

Although resident instruction, research, and extension have each been dominant in the thinking of agricultural educators at particular times, the pattern at Cornell since 1869 has been one of approximately equal emphasis on these phases of agricultural education. Before 1900 Roberts, Bailey, Caldwell, Comstock, Wing, and Law performed all these functions, thereby initiating the close relationship existing between them today. Teachers, experience in the College has indicated, benefit by close contact with research while, in turn, researchers benefit from acquaintance with the problems faced by those who grow, process, and distribute the products of the farm.

Notes

CHAPTER I

1. The following sources have been used in preparing the description of New York agriculture in 1850: *Census of 1850*; *Patent Office Report, 1849-1851*; *American Agriculturist, 1845-1851*; *New Genesee Farmer, 1847-1851*; *Transactions of the New York State Agricultural Society, 1845-1851* (hereafter referred to as *Trans.*), especially John Delafield's survey of Seneca County published in 1850, pp. 356-564, and Gurdon Evans' survey of Madison County published in 1851, pp. 659-777; Andrew J. Downing, *Rural Essays* (New York, 1853); Paul W. Gates, *The Farmer's Age: 1815-1860* (New York, 1960); Ulysses P. Hedrick, *A History of Agriculture in the State of New York* (Albany, 1933); Percy W. Bidwell and John I. Falconer, *A History of Agriculture in the Northern United States 1620-1860* (Washington, 1925).

2. *Cornell Countryman, March, 1908*, p. 208.

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4. Downing, *Rural Essays*, pp. 397-398.

5. George A. Works and Barton Morgan, *The Land-Grant Colleges* (Washington, 1939), pp. 19-20; Francis Wayland, *Thoughts on the Present Collegiate System in the United States* (Boston, 1842).

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14. *Trans.*, 1848, p. 193.
15. *Ibid.*, 1859, p. 157.
16. *Ibid.*, 1860, pp. 337-338.
17. Gates, *Farmer's Age*, pp. 237-240.
18. George W. Swift Notebooks, 1846-1848.
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20. *Transactions of the Society Instituted in the State of New York for the Promotion of Agriculture, Arts, and Manufactures* (New York, 1792), p. vii (hereafter referred to as *Trans. of the Society*).
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23. *Ibid.*, 1794, pp. xxxiii-xlv.
24. The best source of Mitchill's contribution to agricultural science is the *Medical Repository* (New York, 1797-1800).
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26. *Ibid.*, 1798, p. xxxix.
27. Letter from Elkanah Watson, Dec. 1, 1825, in *Memoirs of the Board of Agriculture of the State of New York*, III (Albany, 1826), 524 (hereafter referred to as *Memoirs*).
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36. *Ibid.*, 1851, p. 200.
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38. *Trans.*, 1849, pp. 294-296, 602-735.
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43. J. W. Chickering, Jr., to William H. Brewer, Feb. 1, 1857; William H. Brewer to W. T. Hewett, March 11, 1894, Brewer Papers, MF.
44. William H. Brewer to W. T. Hewett, March 11, 1894, Brewer Papers, MF.

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46. M. R. Patrick to William H. Brewer, Jan. 16, 1860, Brewer Papers, MF.
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70. Bailey to L. A. Clinton, Feb. 15, 1913, Bailey Papers.
71. Bailey to E. W. Barnes, Jan. 27, to Floyd S. Barlow, March 25, 1913, Bailey Papers.
72. Bailey to Lloyd Tenny, March 20, 1913, Bailey Papers; L.R. Simons, *The Beginnings of Extension Programs and Their Development Through Local Leadership* (Cornell University, June, 1959, multilith), p. 1-2.
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74. Bailey to W. A. Riley, Nov. 4, 1912, Bailey Papers.
75. Mann to Cornelius Betten, April 21, 1930, Mann Papers.
76. Bailey to Warren, April 10, 1912, Bailey Papers.
77. Bailey to Lyon, May 17, Willard Beahan to Bailey, Oct. 8, 1912, Bailey Papers.
78. College of Agricultural Historical Notes, 1962.
79. See page 247.
80. F. V. Coville to Schurman, April 29, 1914, Galloway Papers.
81. Rice to C. H. Royce, Dec. 29, 1913, Rice Papers.
82. Bailey to Eugene Davenport, April 17, 1912, Bailey Papers.
83. Stocking to Bailey, July 31, 1914, Bailey Papers. The administrative papers of Stocking form a single unit with those of Bailey.
84. Burritt to H. W. Collingwood, July 31, 1913, Box 45, Mann Papers.
85. Mann to J. H. Barron, July 15, 1913, Bailey Papers, Royce to Schurman, April 10, Schurman to Royce, April 13, 1914, Selection of Director Papers.
86. Royce to Schurman, April 30, 1914, Selection of Director Papers.
87. H. L. Russell to Schurman, Jan. 27, 1914, Selection of Director Papers.
88. Galloway to Schurman, March 12, 1914, Galloway Papers; Schur-

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89. William A. Taylor to Bailey, March 26, 1913, Bailey Papers.

90. L. C. Corbett to Schurman, April 28, L. O. Howard to Schurman, April 29, Frederick V. Coville to Schurman, April 29, J. A. Holmes to Schurman, May 2, Erwin L. Smith to V. A. Moore, April 28, 1914, Galloway-Schurman Correspondence.

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93. Selection of Director Papers.

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102. Rough notes of meeting, March 7, 1916, Galloway-Schurman correspondence.

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105. Galloway to Schurman, March 27, 1915, Galloway-Schurman Correspondence.

106. Galloway to Jared T. Newman, May 22, 1916, Galloway-Schurman Correspondence.

107. Matthews to Jared T. Newman, Feb. 20, 1915, Galloway-Schurman Correspondence.

108. Matthews to Galloway, Jan. 22, 1915, Galloway-Schurman Correspondence.

109. Galloway to Schurman, May 28, 1914, Galloway-Schurman Correspondence.

110. "Statement Regarding Expenses, Budget Plans, Etc.," June 17,

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112. *Ithaca Journal*, June 8, 1916, p. 7; Galloway to Needham, June 9, 1916, Galloway Papers; Galloway to Schurman, June 22, 1916, Galloway-Schurman Correspondence.

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118. Bailey to Tuck, Nov. 28, 1911, Bailey Papers.

119. Tuck to Bailey, May 28, 1913, Bailey Papers; *22nd Ann. Rpt. of Pres. Schurman, 1912-1913, App. VIII.*

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204. Mann to Burritt, May 19, 1919, Mann Papers.
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265. Webber to Bailey, Nov. 20, 1912, Bailey Papers.
266. Whetzel to Bailey, April 28, 1913, Bailey Papers.
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274. J. C. Marquis to Mann, Jan. 24, 1911, John G. Gudmundsen to Mann, May 18, 1921, Mann Papers.
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291. Lowell to Mann, Jan. 10, 1917, Mann Papers.
292. Mann to J. C. Marquis, Jan. 22, 1917, Mann Papers.
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297. George R. Van Namee to C. H. Treman, Dec. 3, 1919, Mann Papers.
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133. *Cornell Countryman*, Jan., 1946, p. 16.
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135. *Ibid.*, XI, p. 168; XII, 86; XIII, 95; XIV, 52.
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APPENDIX A

*Membership in Agricultural
Departments of County
Extension Associations,
1914-1960*

1914 - 3,592	1930 - 39,072	1946 - 79,697
1915 - 10,055	1931 - 40,111	1947 - 86,860
1916 - 13,681	1932 - 36,067	1948 - 87,686
1917 - 29,784	1933 - 25,891	1949 - 89,599
1918 - 45,012	1934 - 28,668	1950 - 89,082
1919 - 67,618	1935 - 30,789	1951 - 83,345
1920 - 57,958	1936 - 32,460	1952 - 82,171
1921 - 49,605	1937 - 40,631	1953 - 80,578
1922 - 42,059	1938 - 42,718	1954 - 77,606
1923 - 34,529	1939 - 42,895	1955 - 73,724
1924 - 28,398	1940 - 45,536	1956 - 70,631
1925 - 29,388	1941 - 46,975	1957 - 70,125
1926 - 28,476	1942 - 52,793	1958 - 69,711
1927 - 29,213	1943 - 58,466	1959 - 69,368
1928 - 30,431	1944 - 68,320	1960 - 68,333
1929 - 34,493	1945 - 76,441	

APPENDIX B

*Administrative Officers
of the College of Agriculture*

DEAN

George C. Caldwell, 1868-1874
Isaac P. Roberts, 1874-1903
Liberty H. Bailey, 1903-1913 1888
Beverly T. Galloway, 1914-1916
Albert R. Mann, 1917-1931
Carl E. Ladd, 1931-1943
William I. Myers, 1943-1959
Charles E. Palm, 1959-

ACTING DEAN

Herbert J. Webber, 1909-1910
William A. Stocking, Jr., 1913-1914
Albert R. Mann, 1916-1917
Cornelius Betten, 1924-1926, 1931

DIRECTOR OF THE CORNELL UNIVERSITY AGRICULTURAL
EXPERIMENT STATION

George C. Caldwell, 1879-1886
Isaac P. Roberts, 1888-1903
Liberty H. Bailey, 1903-1913
Beverly T. Galloway, 1914-1916
Albert R. Mann, 1916-1923, 1928-1931
Roscoe W. Thatcher, 1923-1927
Frank B. Morrison, 1927-1928
Carl E. Ladd, 1931-1942
C. E. F. Guterman, 1942-1957
Charles E. Palm, 1957-1959
W. Keith Kennedy, 1959-

DIRECTOR OF THE NEW YORK STATE AGRICULTURAL
EXPERIMENT STATION (since 1923)

Roscoe W. Thatcher, 1923-1927
Frank B. Morrison, 1927-1928
Ulysses P. Hedrick, 1928-1938
Percival J. Parrott, 1938-1942

APPENDIX B

Arthur J. Heinicke, 1942-1960
Donald W. Barton, 1960-

DIRECTOR OF EXTENSION

Albert R. Mann, 1916-1923
Maurice C. Burritt, 1923-1924 (Vice-Director, 1917-1923)
Carl E. Ladd, 1924-1931
Lloyd R. Simons, 1931-1954
Maurice C. Bond, 1954-1962
Alvin A. Johnson, 1962-

DIRECTOR OF RESIDENT INSTRUCTION

Cornelius Betten, 1923-1940 (Vice-Dean, 1920-1923)
Anson W. Gibson, 1940-1960
Thomas C. Watkins, 1960-

DIRECTOR OF FINANCE (for all state colleges at Cornell University)

Ralph H. Wheeler, 1945-1951
Arthur H. Peterson, 1951-1961
Robert L. Walsh, 1961-

STATE LEADER OF COUNTY AGRICULTURAL AGENTS

Lloyd Tenny, June-Dec., 1913
Maurice C. Burritt, 1914-1916
Howard E. Babcock, 1916-1920
Jay Coryell, 1921-1928
Lloyd R. Simons, 1928-1931
Earl A. Flansburgh, 1931-1943
Fred B. Morris, 1943-1958
Clifford R. Harrington, 1958-

LIBRARIAN

Willard W. Ellis, 1916-1946
Whiton Powell, 1947-

DIRECTOR, L. H. BAILEY HORTORIUM (since 1935)

Liberty Hyde Bailey, 1935-1951
George H. M. Lawrence, 1951-1960
Harold E. Moore, Jr., 1960-

HEADS OF DEPARTMENTS

During the evolution of the department headship in the Bailey administration the term "department head" was used under varying circumstances. Consequently, some of the dates listed before 1913 contain an element of personal judgment. In one instance I have not recorded a date where the case for several choices seemed equally persuasive. Acting heads and the

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heads of subdepartments are not listed. The names of departments are those used most recently.

AGRICULTURAL ECONOMICS

George F. Warren, 1909-1938
William I. Myers, 1938-1943
Forrest F. Hill, 1944-1954
Glenn W. Hedlund, 1954-

AGRICULTURAL ENGINEERING

Howard W. Riley, 1907-1944
Byron B. Robb, 1946-1947
Orval C. French, 1948-

AGRONOMY

Thomas F. Hunt, 1903-1907
Thomas L. Lyon, 1921-1937
Richard Bradfield, 1937-1955
Nyle C. Brady, 1955-

ANIMAL HUSBANDRY

Henry H. Wing, 1903-1928
Frank B. Morrison, 1929-1945
Kenneth L. Turk, 1945-

ANIMAL INDUSTRY AND DAIRY HUSBANDRY

Henry H. Wing, 1891-1903

BIOCHEMISTRY

Leonard A. Maynard, 1945-1955
Harold H. Williams, 1955-

BOTANY

Karl M. Wiegand, 1913-1941
Lewis Knudson, 1941-1952
Harlan P. Banks, 1952-1961

CONSERVATION

Gustav A. Swanson, 1948-

DAIRY AND FOOD SCIENCE

Raymond A. Pearson, 1903-1908
William A. Stocking, Jr., 1908-1924
James M. Sherman, 1924-1955
Robert F. Holland, 1955-

DRAWING

William C. Baker, 1908-1919

APPENDIX B

ENTOMOLOGY AND LIMNOLOGY

John H. Comstock, -1914
James Needham, 1914-1936
Oskar A. Johannsen, 1936-1938
Charles E. Palm, 1938-1957
Herbert H. Schwardt, 1957-1962
George G. Cyrisco, 1962-

EXTENSION TEACHING AND INFORMATION

Charles H. Tuck, 1907-1916
William B. Ward, 1945-

FARM CROPS

George F. Warren, 1907-1909
Edward G. Montgomery, 1913-1921

FARM PRACTICE

John L. Stone, 1907-1919

FLORICULTURE AND ORNAMENTAL HORTICULTURE

Edward A. White, 1913-1939
Laurence H. MacDaniels, 1940-1956
John G. Seeley, 1956-

FORESTRY

Walter Mulford, 1911-1914
Ralph S. Hosmer, 1914-1942
Arthur B. Recknagel, 1942-1943
Cedric H. Guise, 1944-1948

HOME ECONOMICS (to 1919)

Martha Van Rensselaer and Flora Rose, 1907-1919

HORTICULTURE

Liberty Hyde Bailey, 1888-1903
John Craig, 1903-1912

LANDSCAPE ART

Bryant Fleming, 1906-1915
E. Gorton Davis and Ralph W. Curtis, 1915-1922

METEOROLOGY

Wilford M. Wilson, 1909-1925
Richard A. Mordoff, 1925-1930

PLANT BREEDING

Herbert J. Webber, 1907-1912
Rollins A. Emerson, 1914-1942
Harry H. Love, 1944-1949

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Sanford S. Atwood, 1949-1953

Royse P. Murphy, 1953-

PLANT PATHOLOGY

Herbert H. Whetzel, 1907-1923

Louis M. Massey, 1923-1950

George C. Kent, 1950-

PLANT PHYSIOLOGY

Benjamin M. Duggar, 1908-1912

Lewis Knudson, 1912-1913

POMOLOGY

Charles S. Wilson, 1913-1916

William H. Chandler, 1916-1920

Arthur J. Heinicke, 1920-1960

Melvin B. Hoffman, 1960-

POULTRY HUSBANDRY

James E. Rice, 1907-1934

Frederick B. Hutt, 1935-1940

J. Herbert Bruckner, 1942-

SOILS

Elmer O. Fippin, 1907-1909

SOIL TECHNOLOGY

Thomas L. Lyon, 1909-1921

RURAL ECONOMY

George N. Lauman, 1909-1919

RURAL EDUCATION

George A. Works, 1914-1927

Paul J. Kruse, 1927-1931

Julian E. Butterworth, 1931-1944

Rolland M. Stewart, 1944-1946

A. Leon Winsor, 1946-1958

Frederick H. Stutz, 1958-

RURAL SOCIOLOGY

Dwight Sanderson, 1918-1943

Leonard S. Cottrell, 1945-1948

Robert A. Polson, 1950-1957

Olaf F. Larson, 1957-

VEGETABLE CROPS

Paul Work, 1913-1918

Homer C. Thompson, 1921-1951

Henry M. Munger, 1951-

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