

OFFICIAL PUBLICATIONS OF CORNELL UNIVERSITY

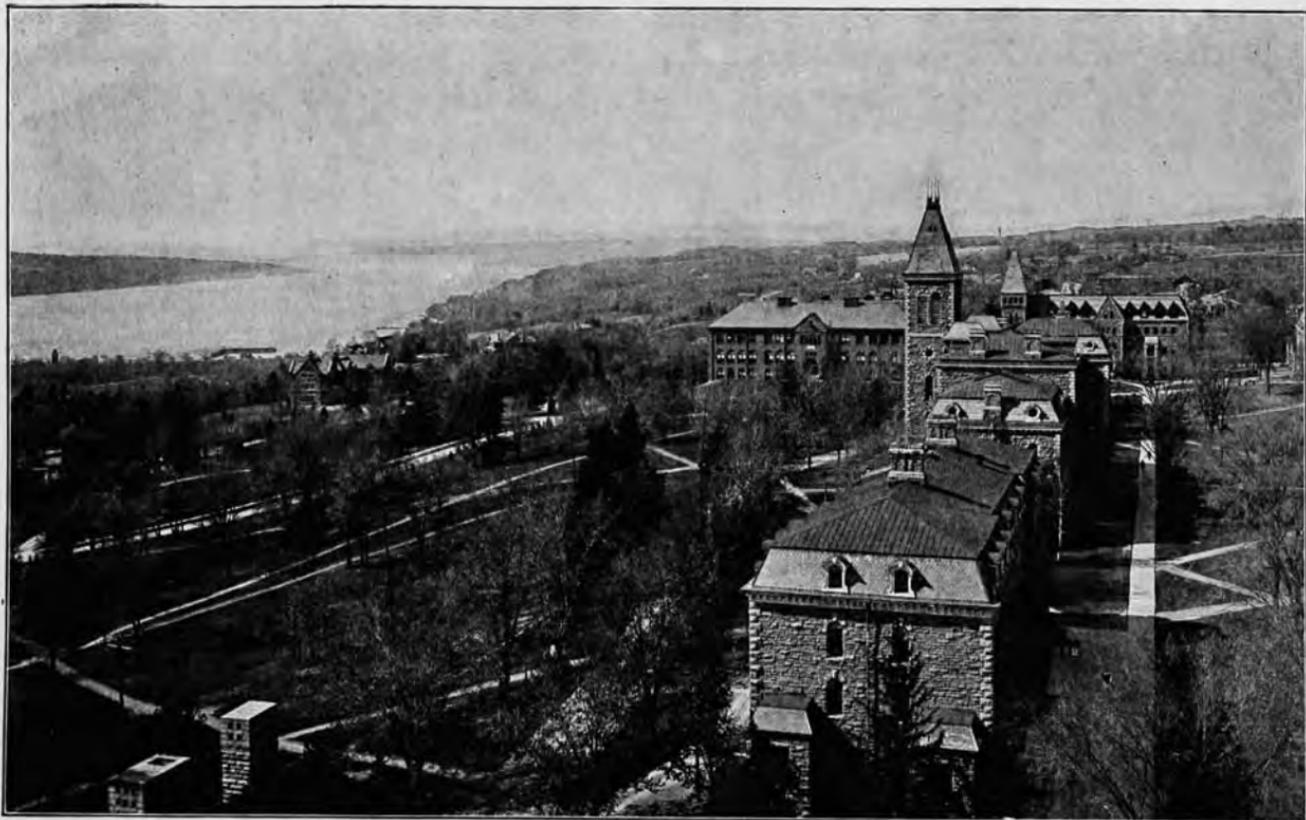
VOLUME V

NUMBER A

SUMMER SESSION
CORNELL UNIVERSITY
GEOGRAPHY AND GEOLOGY

EXCURSIONS
SPECIAL ILLUSTRATED LECTURES
DETAILED STATEMENT OF COURSES

FEBRUARY 15, 1914
PUBLISHED BY CORNELL UNIVERSITY
ITHACA, NEW YORK



CAYUGA LAKE FROM THE CAMPUS.
(Note: McGraw Hall is the building with the high tower.)

Photo. by Cable

SUMMER SESSION—CORNELL UNIVERSITY

DEPARTMENT OF GEOGRAPHY AND GEOLOGY

FACULTY

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EXCURSION CLASS IN ENFIELD GORGE.

EXCURSION CLASSES

Cornell has long enjoyed the reputation of being the most favorably situated of universities in the eastern part of the United States for the study of the natural sciences. Louis Agassiz, who taught at Cornell in the beginning years of its history, was enthusiastically of this opinion and his early declaration has been echoed by many other outdoor scientists and nature lovers since that time.

Especially does this encomium apply with respect to the opportunity that the environment offers for the study of Geography and Geology. The Campus itself occupies a small "plateau", at the base of higher hills to the east and south, yet enjoys many miles of unbroken vista to the north over the surface of Lake Cayuga. To the west and southwest, also, there open out ever widening panoramas of valley and hills. Under the bottoms of the valleys and forming the mass of the hills are many thousands of feet of layered rock, dating from the earliest geologic ages, while the surface features of the land are everywhere moulded by the action of the Continental glaciers of the Pleistocene, the geologic epoch just preceding the present. The older rocks are rich in fossil remains and their strata have been made accessible to the geologist by the deep gorges that have been cut through them by many streams that tumble, in an endless succession of rapids and falls, from the hills and plateau to the valley below. These gorges in turn owe their existence to the glaciation of the Pleistocene and are the delight of the physiographic geographer as they illustrate many phases of valley formation. They not only illustrate these phenomena but also delight the eye with their scenic beauty. The Campus is bounded on both the north and south by such gorges, indicating clearly their accessibility to the student. These two gorges contain dozens of waterfalls from ten to fifty feet high, while one cascade measures over two hundred feet from its top to the pool at its base. Nor is the human element lacking. Over the broad plain of the valley bottom is spread the city of Ithaca, confronted with problems of transportation and water supply, and favored by opportunity for water power development, because of its hill and gorge environment. Again, the position of Ithaca at the head of Lake Cayuga makes it one of the southernmost terminals of the New York State barge canal system and thus gives it a timely interest from the commercial geography viewpoint. Furthermore, the development of salt and cement industries along the shores of the lake offer opportunity for first hand study of industrial geography; and the occurrences of the raw material on which these industries are based present type phases of economic geology relations. Of glacial phenomena, a wide variety are found within a very narrow area, illustrating differential erosion, hanging valleys, oversteepened valley sides, truncation of spurs, morainic and outwash deposits. To enumerate all the minor features of geographic and geologic interest that the region affords would make a list wearisomely long. In short, the environment of Cornell is extraordinarily rich in a wide variety of phenomena illustrating both sciences.

Moreover, many famous names are associated with the study and interpretation of these local phenomena. The reference to Louis Agassiz, in the opening paragraph of this announcement, is particularly happy in that it affords opportunity here to call attention to the fact that, while Agassiz is popularly famous



LOOKING DOWN FALL GREEK GORGE.

Photo. by Troy



SUMMER SESSION EXCURSION PARTY AT FOOT OF TAUGHANNOCK FALLS.

because of his work in biology, his greatest, or at any rate, most far-reaching in application, contribution to science was his Theory of Continental Glaciation, now almost universally accepted in explanation of the diverse surface phenomena of the "Drift" in northeastern North America and northwestern Europe. Practically every phase of the evidence on which Agassiz based his conclusions in regard to the glacial origin of the "Drift" is illustrated in the Cornell region. Grove Karl Gilbert, dean of American geologists, particularly famous for his theory of laccolithic uplift and work on the earlier higher levels of the Great Lakes, has studied the old shore lines and glacial features of the Cayuga Valley. The life work of R. S. Tarr, author of several series of very widely used geographies, whose lamented death occurred only recently, was done among these scenes and many of his original contributions to science are studies of the local phenomena. J. C. Branner, present president of Leland Stanford, studied geology at Cornell, as did, also, Professor J. F. Kemp of Columbia University; and a great number of the younger geographers and geologists have either studied or taught in the same field. At a very early date the studies of James Hall made the Cornell section of Paleozoic rocks classic in American paleontology. His work was ably continued later by H. S. Williams, by Prosser, and others. The Geological Society of America was organized at Cornell in 1888, another evidence of early enthusiasm for geological studies in the Cornell region. The ideal development of joint planes shown in the Cayuga Palisades has served as an illustration of this phenomenon in nearly every text-book of geology and physical geography.

The rich heritage of the work of all these famous men is particularly available to students of the Summer Session at Cornell, because the director of the session and the faculty of the Department of Geography and Geology both fully realize the value of studying the phenomena these men wrote about on the site of their occurrence. For this reason special emphasis is put upon the excursion side of the work. In half-day, all-day, and two-day excursions, practically all the points of interest are visited under the guidance of instructors thoroughly familiar with the various localities and their geographic and geologic interpretation. As the excursions are open to all students in attendance at the Summer Session, whether registered for other work in the Department or not, a large number are usually present for each excursion, and this makes it possible to secure special trains (as is done on two excursions) and to charter steamers for the lake trips. Over 300 went on the Watkins Glen special train excursion in 1913. All those in attendance on the trips are required to follow the directions of the instructor in charge. A special outline is furnished students registered for credit in the Excursion course. This may be purchased at the Co-op store.

A detailed announcement of the different excursions is printed on another page. Special bulletins will be posted during the Session giving details as to registration, time and place of meeting, and cost of the separate trips.

SPECIAL ILLUSTRATED LECTURES

Early in the Session (1914) an illustrated lecture: "Earth History of the Cornell Region" will be given by Assistant Professor von Engel. This lecture will be open to everyone and will serve as a general introduction to a scientific



START FROM CAMPUS FOR FREEVILLE EXCURSION.

appreciation of the scenery of the Cornell region. The many lantern slide illustrations will serve, further, to put newcomers in touch with the points of special interest worth visiting, whether as members of the excursion classes or on individual trips and walks.

In addition to this lecture the faculty of the Department usually gives a series of three illustrated lectures (also open to the public) on subjects of popular geographic interest. The exact dates are announced during the Session. The titles and speakers for 1914 follow:

"The Dayton Ohio Flood of 1913, Its Cause and Consequences."

By Professor von Engeln.

"The New Géography of Old China."

By Professor Carney.

"Man and Evolution."

By Professor Perrine.

ROUND TABLE CONFERENCES IN GEOGRAPHY AND GEOLOGY

The systematic instruction offered by the Department during the Summer Session is planned primarily to meet the needs of teachers in these subjects. Supplementary to the regular course work, along this line, are the several Round Table Conferences usually held during the Session. These are led by one of the professors in the Department (Professor Carney in 1914) and consist of informal discussions by all those present of important general topics relating to the teaching of geography and geology. Sources of materials, methods, texts, ideals and scope of the subjects are some of the topics that have been considered.

Attendance at these conferences on part of the student is wholly voluntary, but all students of the Department are invited and urged to be present. The free interchange of views among teachers throws much light on the educational problems the subjects present. Teachers are asked to write to the Department in advance of the Session suggesting topics for discussion, etc.

COURSE WORK

The Lecture Room and Laboratories of the Department are in McGraw Hall. The course work for credit embraces lecture, laboratory, and field instruction in physical, regional, industrial, and commercial geography; and in mineralogy, lithology, structural and historical geology and paleontology. An attempt is made to meet the specific needs of teachers in grammar schools, high schools, normal schools, and colleges, as well as to provide courses of practical and cultural value to college students interested in these subjects and in the related subjects Political Economy and History.

The Department is well equipped with apparatus and illustrative material for class instruction and research. As such may be enumerated teaching and reference collections of minerals, rocks, fossils, maps, photographs, models, and more than five thousand lantern slides.

For entrance credit ($\frac{1}{2}$ unit) in Physical Geography, a student is required to attend, complete all required work, and pass the examinations in courses: A, H, and J.



GETTING ON BOARD FOR TAUGHANNOCK, 1913.



LEAVING THE SPECIAL TRAIN, WATKINS GLEN.

LECTURE AND RECITATION COURSES IN GEOGRAPHY

A. Physical Geography. An introductory course in physical geography covering most of the subjects treated in the modern texts, but touching more fully on the general concepts and the theoretical side of the subject than is possible in a high school book. Some of the topics treated are the general form of the earth, origin and distribution of relief features, processes and progress of the physiographic cycle and the resultant development of land forms, configuration of the ocean basins, nature and effects of the continental glaciation, and the bearing of these various phenomena on life relationships. If time permits the meteorological side of the subject will be touched upon, also, but students interested are advised that special courses in meteorology are offered in the College of Agriculture, Summer Session. See regular announcement.

The lectures in physical geography are fully illustrated by lantern slides, wall and globe maps. Students registering in this course are advised to take also the related courses, H, and J. M T W Th, 9. Geological Lecture Room. Assistant Professor VON ENGELN. Credit, two hours.

B. Industrial and Commercial Geography. Adapted to the needs of teachers in high and grammar schools. This course includes a brief consideration of the history of commerce, the causes underlying the growth of industry and commerce, and a discussion of the distribution of the leading commercial products. A larger amount of time will be given to the leading facts of the industrial and commercial geography of the United States, the British Empire, Germany, France, Russia, China, Japan, Argentina, and Brazil. Each member of the class will make a study of some one selected topic and submit a report. Local excursions will be made for the purpose of studying certain industries at first hand. Museum materials and lantern slides will also be employed.

M T W Th, 8, Geological Lecture Room, with additional time for conferences and excursions to be arranged. Professor CARNEY. Credit, two hours.

C. Geography of North America. This course is designed to give teachers of regional geography and others a broad conception of continental evolution and the geographic adaptation of North America for human occupation. The structure, physiographic history, topographic expression, climate, and natural resources of the different geographic provinces are considered in their relation to exploration, development, history, relation to industry and agriculture and to the location and growth of cities and routes of commerce. Needs, opportunities, and methods of conservation and reclamation are treated in their geographic relation. References and reading assignments to the literature of the subject on particular topics are given special attention. The course is fully illustrated with lantern slides, maps and models.

M T W Th, 10, Geological Lecture Room. Assistant Professor VON ENGELN. Credit, two hours.

D. Aims and Methods in Geography. Primarily for normal school and grade teachers. Lectures and discussions on such topics as Home Geography; the earth as a planet; Mathematical Geography; placing the emphasis; the plan and purpose of reviews and tests; thought, memory and drill work; the making and studying of maps; visual instruction; field lessons; supplementary reading; employing and directing children's geographical interests; the inter-relations of

physical geography and human geography; the claims of commercial and of regional geography.

M T Th, 11, Physical Geography Laboratory. Professor CARNEY. May be taken for one hour credit.

LECTURE AND RECITATION COURSES IN GEOLOGY

E. Elementary Geology. A general introductory course. Some of the topics discussed are: general features of the earth; the earth in space, its origin and relation to other heavenly bodies; igneous, sedimentary and metamorphic rocks; geologic structure, the geologic evolution of continents and ocean basins, the great periods of geologic history with special reference to the development and evolution of type life forms. Emphasis will be put on the evolution idea as exemplified in geological science by the origin of the earth and the appearance, development, and extinction of various organic forms. An appreciation of these things is of fundamental importance in a knowledge of nearly all modern science. The lectures are fully illustrated by lantern slides, models and specimens. Students are advised to take also the related courses, F, I, and J.

M T W Th, 11, Geological Lecture Room. Professor PERRINE. Credit, two hours.

F. Minerals and Rocks. An elementary course leading to an acquaintance with the properties and more important uses of the substances forming the earth's crust. Emphasis is laid upon the laboratory work, to which a large portion of the time will be devoted. Each student will be given seventy-five minerals and a smaller number of rock specimens for identification by means of their physical properties. Some time will be spent in examining the large University collection of these same substances. It is thus possible to become familiar with the more common types by actually handling many specimens of each. Arrangements may be made with the instructor in charge for the purchase of a set of the minerals and rock specimens for school or private study.

Lectures T Th, 10, General Geology Laboratory. Laboratory practice, W, 2-5, F, 9-12. Professor PERRINE and Mr. MONNETT. Credit, two hours.

G. Field Research and Teachers' Course in Geology. This course is designed first, for those who desire to do field work in making contoured geologic maps, or in collecting and identifying fossils from the region about Ithaca; second, for advanced students wishing to do research work in fossils, etc.; third, for teachers who wish to become familiar with the literature of geology, especially of their home regions, or to outline courses adapted to schools in their home regions. Hours to be arranged to suit the individual's needs. Professor PERRINE. Credit, one or more hours.

LABORATORY AND EXCURSION COURSES IN BOTH GEOGRAPHY AND GEOLOGY

H. Physical Geography, Laboratory Course. The members of this class will make a systematic study of the Physiographic Regions of the United States using contour maps, models and the experimental laboratory of the department in a laboratory study of the subject. By such study the topographic, regional, and

life relationships (human, animal and plant) of the geography of the United States will be correlated and presented as an orderly whole. The course will prove of worth to grade teachers of geography who wish to obtain a broader basis for their work in the subject, as well as for those who expect to teach geography in the high schools.

A laboratory fee of \$1.00 must be paid to the Treasurer at the beginning of the session to cover laboratory maintenance. T Th, 2-4. Physical Geography Laboratories. Mr. ELSTON. Credit, one hour.

I. Elementary Geology, Laboratory Course. In this course a laboratory study will be made of the most common rocks and minerals comprising the main mass of the earth's outer shell; of geologic structure as shown by contoured geologic maps and models; and of the life forms developed in each geologic period. Short field excursions will be made to collect specimens, especially fossils, from various horizons near Cornell University, where the rocks are especially rich in such remains.

A laboratory fee of \$1.00 must be paid to the Treasurer at the beginning of the Session to cover laboratory maintenance expenses.

T Th, 2-4, General Geology Laboratory. Professor PERRINE and Mr. MONNETT. Credit, one hour.

J. Geography and Geology, Field Course. This course should be elected by all those registering in course A or E, and is required of all those desiring university credit in those courses and also of those who desire entrance credit in physical geography. With courses A and H it affords a comprehensive course in physical geography; with courses E, F and I it will give a similarly broad training in elementary geology, as the dynamic phases of geology are emphasized on the excursions. Mimeographed outlines of the excursions are to be secured by each student desiring credit.

Students not registered in the course or department are invited to attend these excursions but must conform to the directions of those in charge. Those desiring University or entrance credit must take field notes and hand in written reports. Excursions 1-6 are required of all students in the course, and in addition they must make either two of 7, 8 or 9; or one of 10 and 11 for one hour's credit.

Meeting place and time announced in mimeographed outlines or by bulletin. Meet for first excursion Monday, July 6th, (1914) at Geological Lecture Room McGraw Hall 2:30 P. M. Excursions 1-6, Monday afternoons; 7, 8, 9, all day Saturday; 10 and 11 Friday and Saturday.

The longer excursions will be under the general charge of Assistant Professor von Engeln with the co-operation and assistance of the other members of the instructing staff. The afternoon excursions will generally be led by one of the three professors with such assistance as may be necessary. On the excursions stops will be made at points of interest, explanations made, questions asked and discussion invited.



WATKINS EXCURSION—THE TROLLEY PARTY.



WATKINS EXCURSION, 1913, AT ENTRANCE TO GLEN.

OUTLINE OF EXCURSIONS—Course J

Monday Afternoons

1. **Campus and Vicinity.** To study the action of streams and the progress and form of valley development. Visiting Alumni Field, upper Cascadilla Gorge and Goldwin Smith Walk.

2. **Eagle Hill.** To become acquainted with the lay of the land about Cornell, to learn the place names of the broader physiographic features, studying, enroute, processes of weathering and, at the summit, the maturely dissected plateau. The top of the hill is a vantage point from which a good view of the lake and the land for miles to the north, east, and west may be had.

3. **Fall Creek and Deadhead Hill.** To study the origin and nature of sedimentary rocks, also processes of erosion, transportation, deposition and cementation. An intimate view of one of the large gorges and its especial features, particularly Ithaca Falls.

4. **Shore of Cayuga Lake.** Expense \$.15 to \$.20. To study shore line phenomena, joint planes, bedding and stalactite formation. A walk for several miles along the east shore of the Lake. Probably return by trolley.

5. **Portland Point by Trolley.** Expense \$.50 to \$.75. To study rock structure and kind, fossil content, residual soil, glacial striations. A visit to a large cement rock quarry at a point where the rocks have been locally broadly upfolded.

6. **Six Mile Creek.** To study the effect of glaciation on a stream course. Relations to water supply and power development. A climb into and walk through one of the gorges in Six Mile Creek and an interpretation of its complicated physiographic history.

All-Day Excursions

7. **Cayuga Lake, Taughannock Gorge and Falls.** By boat. Expense about \$.75. To study the Inlet Plain, its reclamation, the Barge Canal terminal, the position and succession of the Devonian strata along the lake shore and the deep gorge and falls of Taughannock. A sail along the west shore of the lake and a walk through the great gorge to Taughannock Falls, one of the highest straight falls east of the Rockies. Luncheon at the base of the falls.

8. **Enfield Gorge and Falls.** By wagon. Expense about \$1.10. To study the relations of preglacial and hanging valleys and the post glacial and interglacial gorges, their origin and features. Joint plane guidance of stream courses. A ride to the head of the gorge, climb through it to the crest of Lucifer Falls. Enfield is perhaps the most picturesque and wildest of the gorges in the Cornell Region.

9. Two distinct and separate excursions constitute No. 9:

A—Freeville. By wagon. Primarily for geography students.

B—Union Springs. By boat. Primarily for geology students.

These two excursions may need to be conducted on the same day, but it is usually possible to go to Freeville on Friday and to Union Springs on the Saturday following.



ENFIELD, LUCIFER FALLS, LOOKING OUT AND DOWN FROM THE CREST.



ENFIELD, LUCIFER FALLS FROM BELOW.

(Photo. by Cable)

A—Freeville. Expense about \$1.10. To study the mature upper Fall Creek valley and its glacial deposits primarily those due to outwash from the melting ice and to note the bearing of these on agriculture. A drive along the course of Fall Creek. In the afternoon a visit is usually made to the George Junior Republic. In charge of Professor Carney (1914).

B—Union Springs. Expense about \$1.10. To study the Silurian and Devonian rock exposures along the shores of Lake Cayuga; collection and interpretation of fossils from the various horizons and a study of the stratigraphy in its relation to economic geology. In charge of Professor Perrine (1914).

Longer Excursions

10. Niagara Falls and Gorge. By special train and trolley cars. Expense between \$8.00 and \$10.00. Over night at Niagara Falls.

All the important scenic features of Niagara Falls and Gorge are visited and their physiographic history interpreted. As a whole these phenomena constitute a striking record of some of the most interesting chapters in the geologic and physiographic history of North America. Before the trip a special meeting of those interested will be held in the Physical Geography Laboratory when the relations of the different places will be explained and illustrated by large scale relief model of the Niagara Region. Students are advised to send to Director, U. S. Geological Survey, Washington, D. C., for a copy of *Niagara Folio*, No. 190, in octavo form, cost \$.50 in coin or money order.

There may be opportunity for such part of the class as is interested primarily in industrial and commercial geography to see something of the power development at Niagara and for the stratigraphic geologist to collect fossils from the great Niagara Gorge section but the main portion of the class will devote its attention to the dynamic geology and physiographic interest of the region.

11. Watkins Glen. By special train. Expense about \$2.00.

Watkins Glen is considered one of the most beautiful in the country. It has been secured for a state park by New York and all parts of it made accessible. The excursion party will study the gorge, its pot holes and falls in detail; and consider its relations to the Seneca Lake Valley in comparison with the conditions at Ithaca as referred to the Cayuga valley. Train ride across the dissected upland country to the south and west between Ithaca and Watkins.



PART OF SUMMER SESSION PARTY AT NIAGARA, 1913 AFTER
CAVE OF WINDS TRIP.



MAID OF MIST. HAD CORNELL PARTY
ON BOARD, 1913.



ON THE MAID OF MIST TRIP, 1913.

SUMMER SESSION 1914
Department of Geography and Geology
Daily Program

Hours	8-9	9-10	10-11	11-12	12-1	2:30-4:30
Monday	B—Industrial and Commercial Geography	A—Physical Geography	C—Geography of North America	E—Elementary Geology D—Aims and Methods in Geography		J—Monday Afternoon Excursions
Tuesday	B—Industrial and Commercial Geography	A—Physical Geography	C—Geography of North America F—Minerals and Rocks	E—Elementary Geology D—Aims and Methods in Geography		H—Physical Geography Laboratory Course I—Elementary Geology Laboratory Course
Wednesday	B—Industrial and Commercial Geography	A—Physical Geography	C—Geography of North America	E—Elementary Geology		F—Minerals and Rocks Laboratory Practice
Thursday	B—Industrial and Commercial Geography	A—Physical Geography	C—Geography of North America F—Minerals and Rocks	E—Elementary Geology D—Aims and Methods in Geography		H—Physical Geography Laboratory Course I—Elementary Geology Laboratory Course
Friday		F—Minerals and Rocks Laboratory Practice				
Saturday	J—All Day Excursions to Taughannock, Enfield, Freeville, Union Springs, Watkins, and Niagara.					



THE UNIVERSITY OF CHICAGO

OFFICIAL PUBLICATIONS OF CORNELL UNIVERSITY

Issued at Ithaca, New York, monthly from July to November inclusive, and semi-monthly from December to June inclusive.

[Entered as second class matter, August 31, 1910, at the post office at Ithaca, New York, under the Act of July 16, 1894.]

These publications include

Catalogue Number (containing lists of officers and students), price 25 cents,
Book of Views, price 25 cents,

Directory of Faculty and Students, Second term, 1913-14, price 10 cents,
and the following informational publications, any one of which will be
sent gratis and post-free on request. The date of the last edition of
each publication is given after the title.

General Circular of Information for prospective students, February 1, 1914.

Announcement of the College of Arts and Sciences, May 15, 1913.

Announcement of Sibley College of Mechanical Engineering and the
Mechanic Arts, January 1, 1914.

Announcement of the College of Civil Engineering, February 15, 1914.

Announcement of the College of Law, April 15, 1913.

Announcement of the College of Architecture, June 1, 1913.

Announcement of the New York State College of Agriculture, June 15, 1913.

Announcement of the Winter Courses in the College of Agriculture, July 1,
1913.

Announcement of the Department of Forestry, July 15, 1913.

Announcement of the Summer Term in Agriculture, April 15, 1914.

Announcement of the New York State Veterinary College, April 1, 1914.

Announcement of the Graduate School, January 15, 1914.

Announcement of the Summer Session, March 15, 1914.

Annual Report of the President, November 1, 1913.

Pamphlets on scholarships, fellowships, and prizes, samples of entrance and
scholarship examination papers, special departmental announcements, etc.

Correspondence concerning the publications of the University should be
addressed to

The Secretary of Cornell University,
Ithaca, New York.