

Plane Views Cornell's Land-Grant Mission

Cornell's responsibilities because of its designation as New York State's Land-Grant University fall on the entire institution not just the statutory units as has long been widely and incorrectly believed.

This was a major point offered by Robert A. Plane, chemistry professor and former provost, in a talk before a joint meeting of the Cornell University Board of Trustees and Cornell University Council last Friday. Plane is chairman of a presidential faculty committee which is looking at the University's land-grant responsibilities.

He pointed out that because of Cornell's designation as a land-grant institution, the University was given approximately one million acres of land. Through Ezra Cornell's wise handling of this land, the University eventually realized about \$4.5 million from its sale, and this became the bulk of Cornell's original endowment, Plane said. This was the basis for the endowed colleges at Cornell, he noted, because there were no statutory units until the Veterinary College was founded 29 years later.

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Students Alter Skyline



REGARDS TO BROADWAY — Architectural students explain details of a model of a skyscraper they designed during summer school. It is one of nine such projects which have been on display during the past month at Cornell's Herbert F. Johnson Museum of Art. The structures were designed for a two-acre site at the corner of 33rd Street and Broadway in New York City. From left are Conrad Wos '76, Eric Stevens '76, Thomas Fripstein '74 and their professor, Donald P. Greenberg.

Arecibo Observatory Celebrates Tenth Birthday

The discovery of mountains on Venus, thick dust on the moon, Mercury's spin, a new superdense form of matter, a number of pulsars and the nature of the ionosphere were some of the candles on the cake for the radio telescope at the Arecibo Observatory as scientists celebrated the instrument's tenth birthday Nov. 1.

Rising stark white and 565 feet in the air out of a blue-green jungle in the mountains of Puerto Rico, the concrete and steel structure has been a mecca for radio astronomers from all over the world, interested tourists and scores of graduate students, 28 of whom earned their doctoral degrees with the aid of

data gathered in observations at Arecibo.

The observatory is part of the National Astronomy and Ionosphere Center (NAIC), a national research center operated by Cornell University under contract with the National Science Foundation (NSF). The NAIC has a staff of 166 members in Ithaca and Arecibo. Harold D. Craft Jr. was recently named director of operations at the observatory.

The telescope itself, the largest of its kind, is indeed getting better and not older. Ten years of constant adjustments, improvements, additions and innovations have increased the

CORNELL REPORTS

VOLUME 8 — NUMBER 2

NOVEMBER — 1973

Corson Cites Changes in Education In Address to Trustees, Council

In his Oct. 19 address to the Board of Trustees and the University Council, President Dale R. Corson said that universities would be moving "onward and upward" in the face of internal and external pressures to change.

"The students themselves are changing," Corson said. Not only are today's teenagers more mature, both emotionally and physically, but they are demanding a more flexible college experience which may include time "to work, to experience a change of pace, to travel, to restore or enhance their motivation, or to sort out their educational and career objectives."

Corson cited new points of emphasis in subject matter and teaching techniques. These included reduced time required for a bachelor's degree and certain forms of professional education such as medicine, coupled with greater attention to vocational, technical and non-traditional education.

He encouraged the audience to give careful thought to the role the academy should play in dealing with social problems. Speaking

specifically of Cornell, Corson said that the University's land-grant mission "requires us to employ the methods and findings of scholarship and research to meet the problems of people at large, outside the University." He reiterated that this was a mission of the entire University, not a responsibility solely of the statutory colleges and cooperative extension programs.

The president also discussed a number of financial issues

which, he said, "threaten the survival of much of what we value most in higher education." He asked the audience to consider whether the University could afford to raise tuition indefinitely at a rate higher than the general inflationary rate in the economy, but pointed out that cutting back expenses might mean a sacrifice of "what we have come to regard as Cornell quality."

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Helps Open Army's Program

Woman Gets ROTC Scholarship

Eighteen-year old Marian Smith's plan to study Japanese language at Cornell indirectly resulted in opening the U.S. Army's Reserve Officer Training Corps (ROTC) to women at all colleges and universities where Army ROTC is offered.

As of this fall, Ms. Smith is a freshman at Cornell, and the nation's Army ROTC programs are now open to women on the same basis as to men for the first time in the history of Army ROTC.

What Ms. Smith had that other women ROTC aspirants lacked was a four-year, full-tuition Army ROTC scholarship one of 20 offered to women last year. Ms. Smith's scholarship pays for all her educational costs and provides her with a \$100 living allowance each month school is in session.

The Army's assumption was that Ms. Smith would use her scholarship at one of 10 universities opened to women's Army ROTC on an experimental basis last fall. But Ms. Smith, eldest of four children, wanted to attend Cornell, the only university in the country offering intensive Asian language training for

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Marian Smith

instrument's sensitivity a thousandfold. (See photo feature on Pages 4-5.)

"We can now map distances on Venus with accuracies better than the length of a city block," said Frank D. Drake, NAIC director and professor of astronomy at Cornell. "There are areas of the earth we don't know as well as that."

Described in the press as "the world's biggest eye," "the world's largest ear," "a spidery mechanism on a web of steel," the radio telescope at Arecibo can reach farther into deep space than any other instrument built by man. Its 1,000-foot reflector bowl has collected radio signals emitted by

quasars — mysterious star-like objects which appear to exist at the edge of the universe.

Radio signals, like light, are emitted by stars and galaxies, and can be bounced off the surfaces of planets in radar experiments. Unlike light, they can be observed right through clouds or dust with equal strength in daytime and nighttime. Radio energy from some sources requires more than 10 billion years to reach the earth. Celestial radio signals are so faint that all the energy collected in the 40-year history of radio astronomy is about equal to that released when a few

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Record-Breaking Year

Private Gifts Exceed \$30 Million

Cornell University was the recipient of a record \$30,614,000 in gifts from private sources in the 1972-73 fiscal year, the University Development Office has reported after auditing final records. The total surpasses the previous record of \$29,794,000 received in 1964-65, the final year of Cornell's Centennial Campaign.

Jansen Noyes, Jr. '39, chairman of the Trustee Development Advisory Committee, said, "This is particularly gratifying, since it comes at a time when we are not involved in a formal capital campaign. It is, I believe, a good indication of the high esteem private philanthropies, our alumni and friends hold for Cornell."

Noyes praised in particular the University's bequest program. In all, \$11,385,322 came in from bequests, according to Charles E. Treman '30, chairman of the Estate Affairs Committee.

In addition to this, as previously reported, the Cornell Fund received \$4,008,430, under the national chairmanship of Hays Clark '41. The balance was in restricted gifts from foundations, corporations and individuals, including life income agreements.

The 1973-74 Cornell Fund is

now underway and the early results are encouraging, according to Clark.

New appointments in the Fund organization this year are Franklin R. Winnert MBA '55, replacing John J. Meakem Jr. MBA '61 as chairman of the B&PA School Fund; Erik M. Pell PhD '51 replacing Burton C. Belden PhD '31 as chairman of the Graduate School Program; Robert S. Boas '45 replacing Patricia J. Carry '50 as Cornell Fund Board member for the Metropolitan New York Region; Robert A. Cowie '56

replacing David J. Palmer '54 as chairman of the Charter Society; George D. Rautenberg '45 succeeding William S. Field '51 as Board member for the New England Region; and Mr. and Mrs. Lowell C. Wallace of New York City as Parents Committee co-chairmen.

Trustees Choose Firm To Design Apartments

The Cornell Board of Trustees has approved the selection of the New York City architectural firm of Richard Meier and Associates to design a student apartment project on the old Country Club site, east of Triphammer Rd. and north of the North Campus playing fields, with expected occupancy of some units in September 1975.

The trustee action came during the board's regular October meetings in Ithaca.

The trustees also appropriated funds to finance the cost of preliminary design,

site plan and cost analysis for the student apartment project. These designs, plan and analysis are expected by December, according to Thomas W. Mackesey, vice president for planning.

The trustees also heard a report from Mackesey on the feasibility of construction of three planned low-rise dormitories which were part of the original plan for the North Campus dormitory group but for which construction was deferred. In presenting the feasibility report, which was mandated by the Executive Committee of the Board of Trustees at its September meeting, Mackesey said, "On the basis of cost alone, it would not seem feasible to build the three deferred low-rise buildings at this time."

He said construction of the low-rise dormitories would be more expensive on a per-bed basis than would the contemplated garden-type student apartments for which the architect was selected.

After hearing the feasibility report, the trustees took action on the selection of Meier Associates and also voted "that the site south of Jessup Rd. (where the three low-rise dormitories would have been built) be held for student housing, parking and associated uses."

The Executive Committee had, in September, directed that the University administration proceed with a project to provide housing for up to 600 students. The project, as currently outlined, would be built in two phases of approximately 75 apartments per phase, Mackesey said.

Profs Emeritus Named

Twenty-one members of the Cornell faculty have been appointed professor emeritus by recent action of the University Board of Trustees. They are:

—Robert J. Ames, professor of communication arts, emeritus.

—Arthur H. Burr, Hiram Sibley Professor of Mechanical Engineering, emeritus.

—John C. Cain, professor of pomology and viticulture, emeritus.

—John F. Cornman, professor of turfgrass management, emeritus.

—Louise J. Daniel, professor of biochemistry, emeritus.

—Mario Einaudi, Goldwin Smith Professor of Government, emeritus.

—Helen H. Giff, professor of human nutrition and food, emeritus.

—Robert F. Holland, professor of food science, emeritus.

—James Hutton, Kappa Alpha Professor of Classics, emeritus.

—Vernon H. Jensen,

professor of industrial and labor relations, emeritus.

—Milton R. Konvitz, professor of industrial and labor relations and law, emeritus.

—John W. MacDonald, Edsin H. Woodruff Professor of Law, emeritus.

—James O. Mahoney, professor of fine arts, emeritus.

—Jean T. McKelvey, professor of industrial and labor relations, emeritus.

—Lyman G. Parratt, professor of physics, emeritus.

—A. Frank Ross, professor of plant pathology, emeritus.

—Lauriston Sharp, Goldwin Smith Professor of Anthropology and Asian Studies, emeritus.

—Evelyn Stout, professor of design and environmental analysis, emeritus.

—John C. Swan, professor of extension administration, emeritus.

—Harold H. Williams, professor of biochemistry, emeritus.

—Stanley W. Zimmerman, professor of electrical engineering, emeritus.

Wilson Receives Medal



THANK YOU, MR. PRESIDENT — Robert Rathbun Wilson, professor of physics on leave from Cornell, receives the 1973 National Medal of Science from President Nixon in a ceremony at the White House Oct. 10. Wilson, currently the director of the National Accelerator Laboratory in Batavia, Ill., is one of 11 men cited to receive the award, the government's highest for a distinguished achievement in science, mathematics or engineering.

This Summer's Program

CAU to View Nature, Beauty

"The Nature of Beauty and the Beauty of Nature" is the unifying theme for Cornell Alumni University 1974, which will be held July 14 through Aug. 10.

The first and third weeks of the program will emphasize the beauty of nature. Traditionally, man has taken three approaches to nature: he has worshipped her, he has studied her, he has opened his senses to her.

Nature is also a thing of beauty to man, to be explored and enjoyed, not only by the mind but by the senses. Modern man is still not able to put aside the centuries-old habit of approaching nature through his mind.

Discussing these topics will be Frederick G. Marcham, the Goldwin Smith Professor of English history, emeritus; Howard E. Evans, professor of veterinary anatomy; Jay Orear, professor of physics, and Joel H. Silbey, professor of American history.

The second and fourth weeks of Alumni University will be devoted to the nature of beauty. The architecture of the Cornell campus and the Ithaca community will play an important role in discussions of artistic values and their changes between the 19th and 20th centuries. A focal point of lectures and discussions will be the new Herbert F. Johnson Museum of Art. Besides art and architecture,

the music of Chopin and Beethoven as well as contemporary poetry and literature will be included.

Faculty lecturers for weeks two and four will include Jason L. Seley, professor of art, who is widely known for his use of automobile bumpers in sculpture; Theodore M. Brown, professor of history of art; Malcolm Bilson, associate professor of music and Susan J. Morgan, assistant professor of English.

In addition, University President Dale R. Corson is scheduled to give an informal talk on nature photography during each of the four weeks.

In addition to the Alumni University Program, several one-week intensive short courses will be offered by CAU in 1974. These will include Ornithology, Horticulture, Field and Natural History and Women's Studies.

In response to inquiries concerning prices for 1974, G. Michael McHugh, director of Cornell Alumni University, has indicated that CAU will hold the line at the 1973 levels, with only a modest increase in the price for the Youth Program.

Inquiries about Alumni University and the Short Courses may be directed to G. Michael McHugh, Director of Cornell Alumni University, 227 Day Hall, Ithaca, N.Y. 14850.

CORNELL REPORTS

Cornell Reports Vol. 8, No. 2, November, 1973

Published six times a year in October, November, February, April, May and July for alumni, parents of students and other friends of the University by the Office of Public Information, Arthur W. Brodeur, Director. Editorial Office: 110 Day Hall, Ithaca, N.Y. 14850. Editor, Randall E. Shew. Managing Editor, Kal M. Lindenberg. Photo Editor, Russell C. Hamilton.

Please send address changes to Alumni Records Office, 626 Thurston Ave., Ithaca, N.Y. 14850, preferably five weeks in advance of moving.

Second class postage paid at Ithaca, N.Y. and at additional mailing offices.



Deficit for Last Year Smaller Than Planned

Cornell came considerably closer to balancing its operating budget in the last fiscal year than originally forecast, and appears destined to balance it in the current (1973-74) year.

That was the substance of audited figures for the endowed colleges at Ithaca for the past year, which ended June 30, as presented by University Treasurer Arthur H. Peterson to the October Board of Trustees meeting in Ithaca. While a budget deficit of \$1.153 million had been forecast, the actual outcome was a loss in current funds of \$355,616. This amounts to less than half of one per cent of the gross total of current fund transactions.

That figure includes a withdrawal of \$287,000 from the Centennial Fund for use in the Morrill Hall renovation project. This amount was part of the 100th anniversary fund campaign conducted by Cornell in 1965. If the deficit is figured without considering this item, which does not relate to current operations, it would be some \$68,000. "The \$68,000 figure reflects the outcome of current operations," said University Treasurer Arthur H. Peterson, "although we are showing the \$355,616 amount as the bottom line in our financial report."

Commenting on the current year's finances, Vice President for Administration Samuel A. Lawrence said there is every reason to expect that it will be balanced, as projected.

In 1971, University Trustees embarked on a three-year deficit-elimination program. The progress in reducing the deficit is evidenced by the following year-end results: in 1971, \$1,856,000; in 1972, \$1,220,000; in 1973, \$356,000.

Economists Get Grant For Model

Cornell has received a grant from the National Science Foundation for development of an integrated U.S. and New York State econometric model. The project has been approved for two years, with \$82,000 granted for 1973-1974 and \$79,000 intended for 1974-1975.

The principal investigators for the project are Ta-Chung Liu, the Goldwin Smith professor of economics and chairman of the Department of Economics, and Sidney Saltzman, professor of policy planning and regional analysis.

This is perhaps the first time that an econometric model for a state is developed in an integrated manner with a national econometric mode. The integrated model for the nation and New York will be used to make forecasts for such national variables as the gross national product and its various components (consumption, investment, etc.), various price levels and wage rates, employment, profits and their counterparts in the state. It will also be used for making policy recommendations on economic stabilization and growth.

Liu, assisted by E.C. Hwa, has developed a monthly econometric model of the national economy with the support of the National Science Foundation during the past three years. The model

The Board of Trustees has named two University facilities in honor of the fathers of two recent graduates and two others have been named in memory of Jeremiah J. Wanderstock, professor of hotel administration who died in 1972, and Clifford H. Grippen '50, a long-time Cornell employee who died last fall.

The classroom laboratory B-11-N in Statler Hall of the Hotel School has been named for Wanderstock who died of a

has now been enlarged from about 100 equations last year to 140 equations now to cover the economy in more detail. It will be ready for making current forecasts by the end of this year.

Liu, a fellow of the Econometric Society, is an authority on econometric model construction of the U.S. economy in 1955, a quarterly model in 1963, and a preliminary monthly model in 1969.

By Panel of Experts Universities' Problems Examined

A panel of leading thinkers in the field of higher education took over the stage at Alice Statler Auditorium for the joint Trustee-Council meeting Oct. 19 to explore some of the problems in the field.

Austin H. Kiplinger, Cornell trustee, editor of the Kiplinger Washington Newsletter and publisher of Changing Times Magazine, was chairman of the panel.

Theodore E. Hollander, deputy commissioner for higher education of the University of the State of New York, said the issues before higher education today "are far less complex than the crises of the past decade."

He also said that he is "fearful that as private colleges become increasingly dependent on federal and state governments, they may give up for those funds some of the independence from public control that they enjoy now."

Francis Keppel, former U.S. commissioner of education, chairman of a recent

Governor's Task Force on Higher Education and chairman of General Learning Corp. in New York City, said "private institutions have shown themselves to be of such great importance that governments are constantly increasing their support of them."

In the field of government

aid, Keppel said he favors having the money going to the student rather than in direct aid to institutions. This, he said, "is much more likely to result in institutional independence."

Sol M. Linowitz, Cornell trustee, senior partner in the law firm of Coudert Brothers and former ambassador to the Organization of American States, said "universities cannot escape accountability. They have to be accountable to society to help meet the needs of society."

He said universities "must train our young people to do what the computer cannot. We must let our students know that a good liberal education is the most relevant education for them today. Where we are and how we got here are particularly relevant."

Dr. Robert S. Morison, professor of biology and the Richard J. Schwartz professor of science and society in the Program on Science, Technology and Society, said he learned some important things during the serious problems of the universities and the society in the past few years.

"One," he said, "is that the notion of equality of opportunity throughout this country turned out to be more of a slogan than a fact."

He said he also discovered that many people felt that more knowledge just for the sake of more knowledge is not necessarily a good thing.

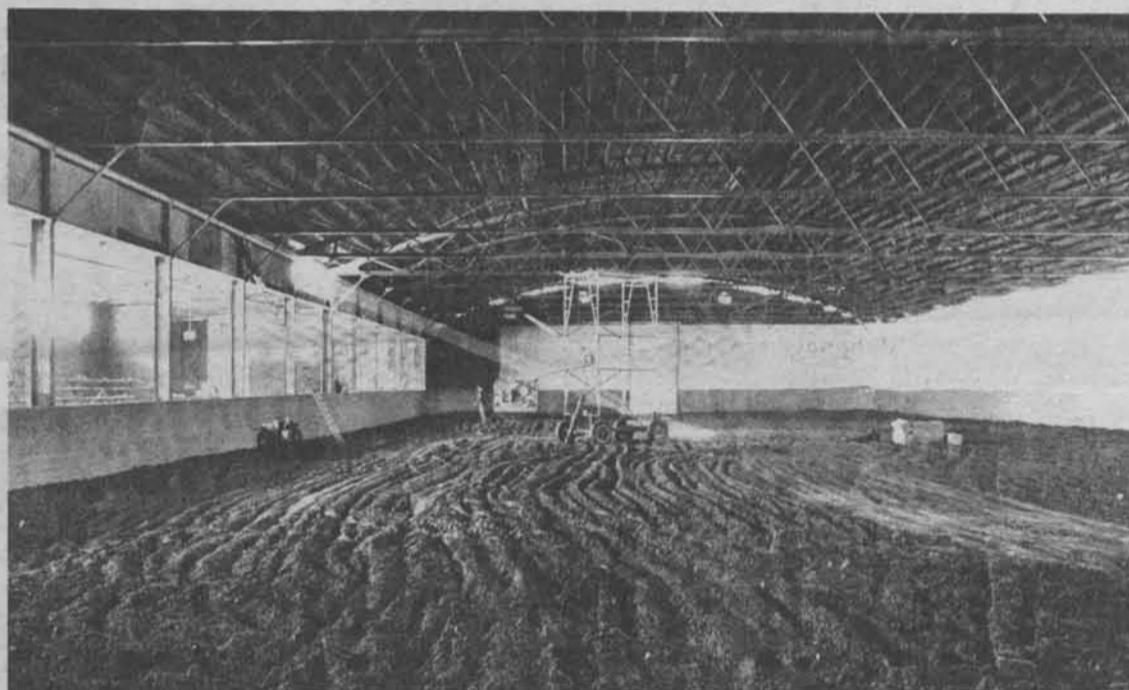
Senate Votes For Employee Trustee Plan

The Cornell University Senate passed by a two-vote margin Oct. 9 a proposed constitutional change permitting employee-election of an employee to the Board of Trustees.

The amendment must win simple majority approval 1. in a referendum of all registered students together with all Cornell employees excluding faculty; 2. of a meeting of the University faculty and 3. a meeting of the Board of Trustees before it takes effect.

The amendment reduces from four to three the number of persons from outside the University to be elected by the Senate for four-year terms and provides for one employee to be elected by the employees for a two-year term.

In Honor of Cornellians, Friends 4 University Facilities Named



EQUESTRIAN ENCLOSURE — Work is proceeding on the John T. Oxley Polo Arena, located on Route 366 on the Cornell campus. The riding hall has been extended 50 feet and is getting a new roof and new wall surfacing.

heart attack at the age of 52. A member of the Cornell Class of 1941, Wanderstock joined the Cornell faculty in 1945. He was recognized world-wide as an authority on meat, poultry, fish and menu planning.

The office of Cornell's 150-pound football team in Schoellkopf Hall was dedicated Saturday, Oct. 13 — Homecoming Day — in memory of Grippen. Nearly 200 persons attended the noon-hour ceremony.

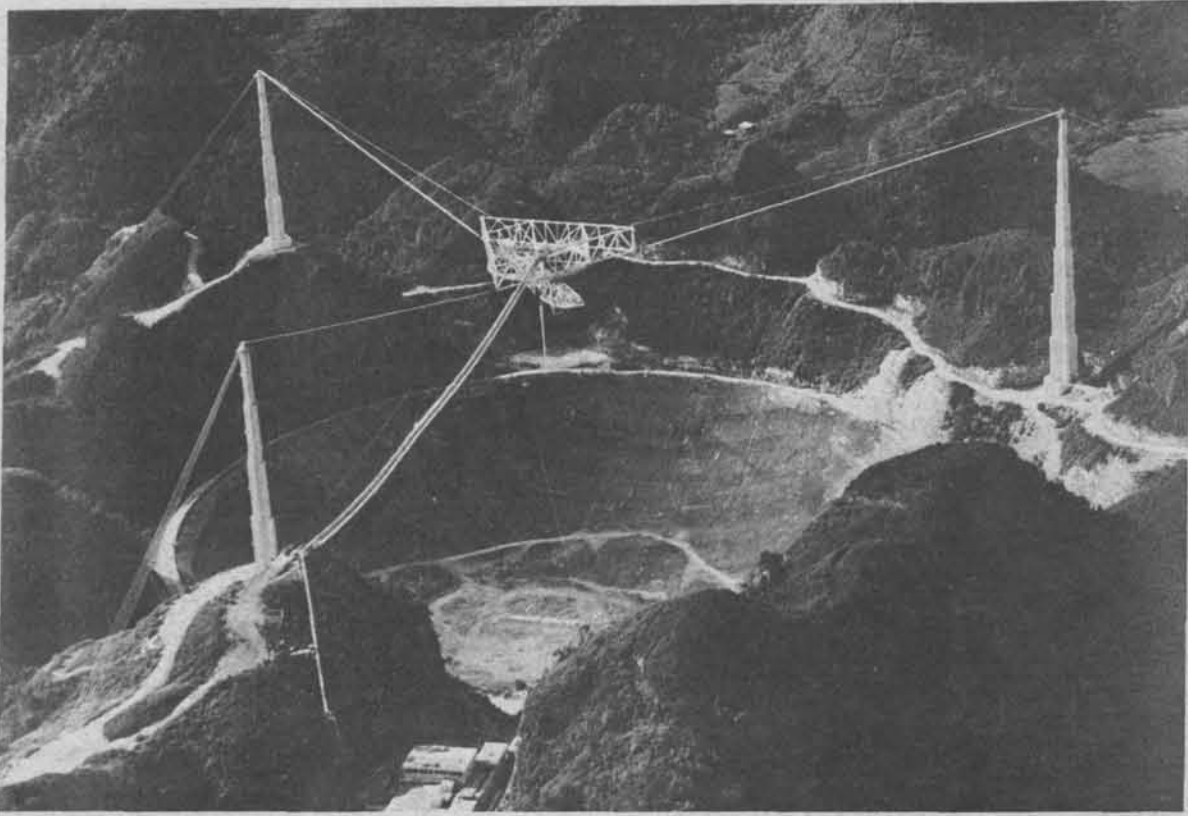
Grippen, who played on the 1948 and 1949 150-pound teams, was an avid fan of the team through the years. The team's new office is furnished with funds donated by Grippen's widow, Ann, who took part in the dedication conducted by Robert L. Cullen, head coach of 150-pound football.

The office, on the first floor of Schoellkopf Hall, is the first unshared headquarters for the team since its inception in 1937. The room will be known as the "Cliff" Grippen

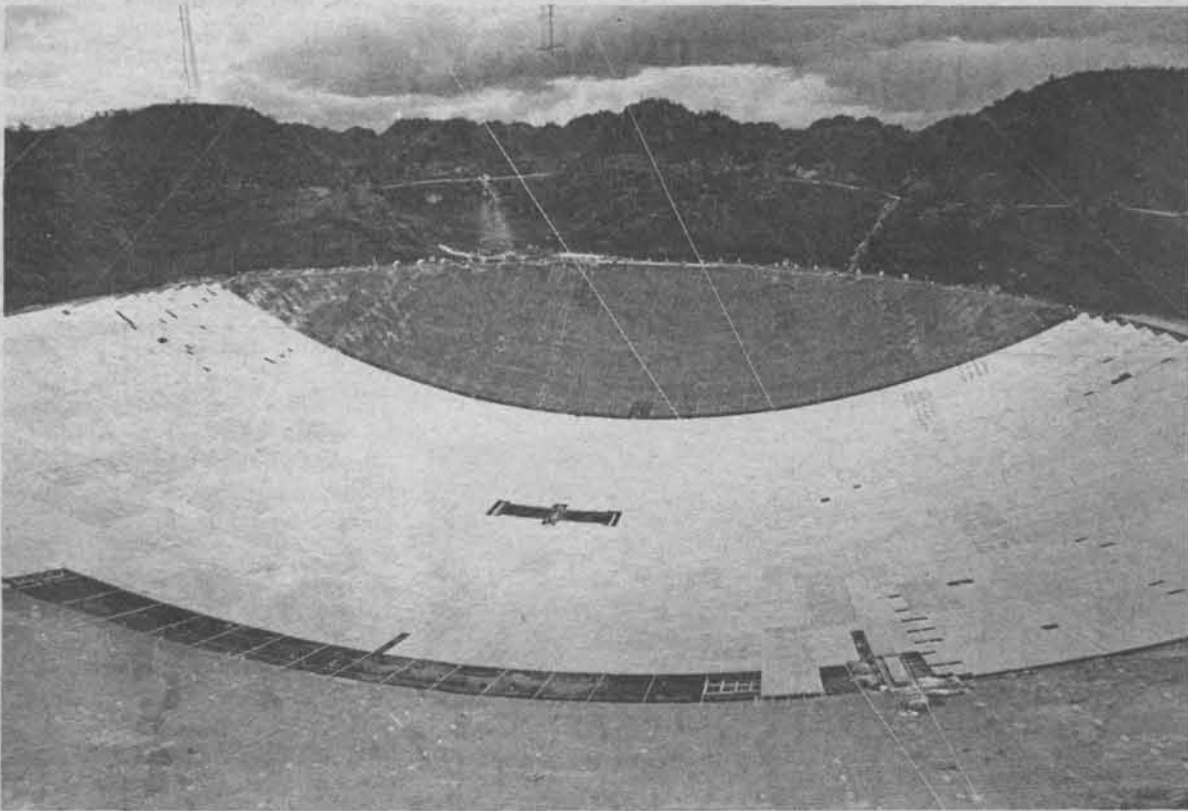
Memorial Room. Grippen who died Nov. 3, 1972 after a lingering illness, received his bachelor's degree in 1950 and master's degree in 1952 from the New York State College of Agriculture and Life Sciences at Cornell. He worked in Dairy Records in Morrison Hall for 22 years.

In other action by the trustees at their October meeting on campus, the Cornell Riding Hall, now under renovation, was named the John T. Oxley Polo Arena and the stable adjacent to the riding hall was named the Orthwein Stable in honor of Adolph B. Orthwein of St. Louis.

Oxley, of Tulsa, Okla. and Boca Raton, Fla., and Orthwein have contributed funds towards the renovation work now under way. Oxley's son, Thomas, is a member of the Cornell Class of 1966 and Orthwein's son, Peter, is a member of the Cornell Class of 1968. Both were outstanding polo players while at Cornell.



Nestled in the hills of northern Puerto Rico, the Arecibo Observatory boasts the world's largest radio telescope. The observatory is part of the National Astronomy and Ionosphere Center (NAIC), a national research center operated by Cornell under contract with the National Science Foundation (NSF).

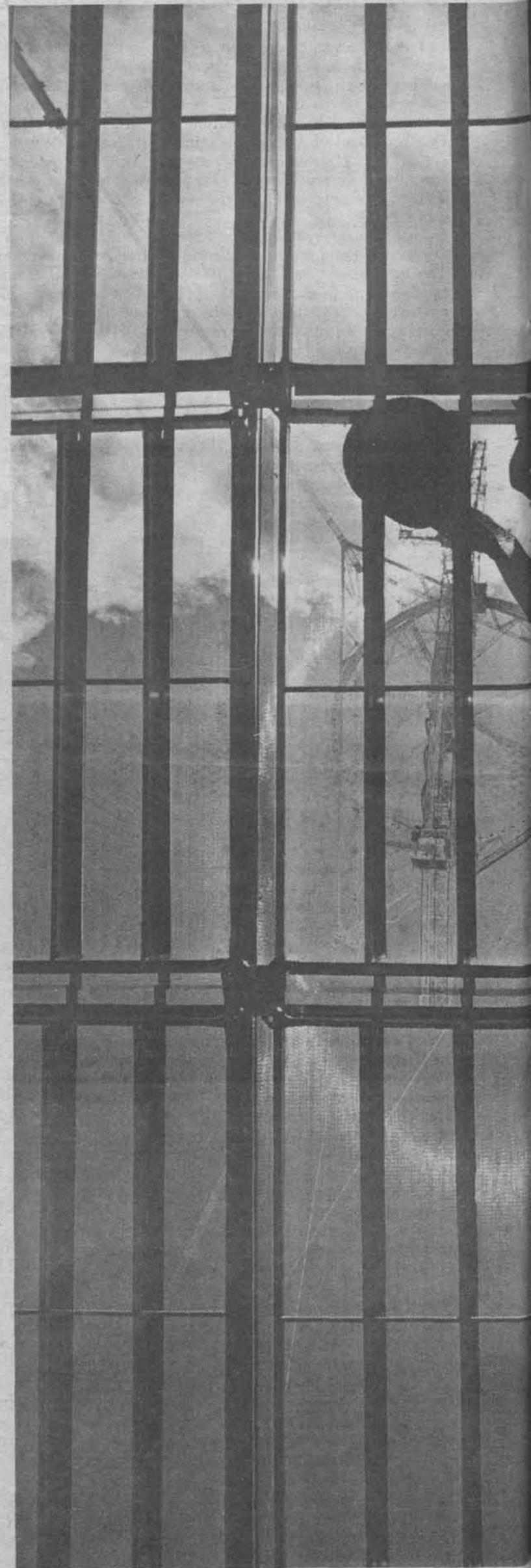


In 1972 the NAIC began a mammoth upgrading of the Arecibo facility. Above, the replacement of the original wire mesh reflector surface with aluminum paneling is nearly half finished.



The rugged terrain of the area makes overland trucking of large objects difficult, so the aluminum panels are assembled in a factory right at the telescope site.

Upgrading Proceeds

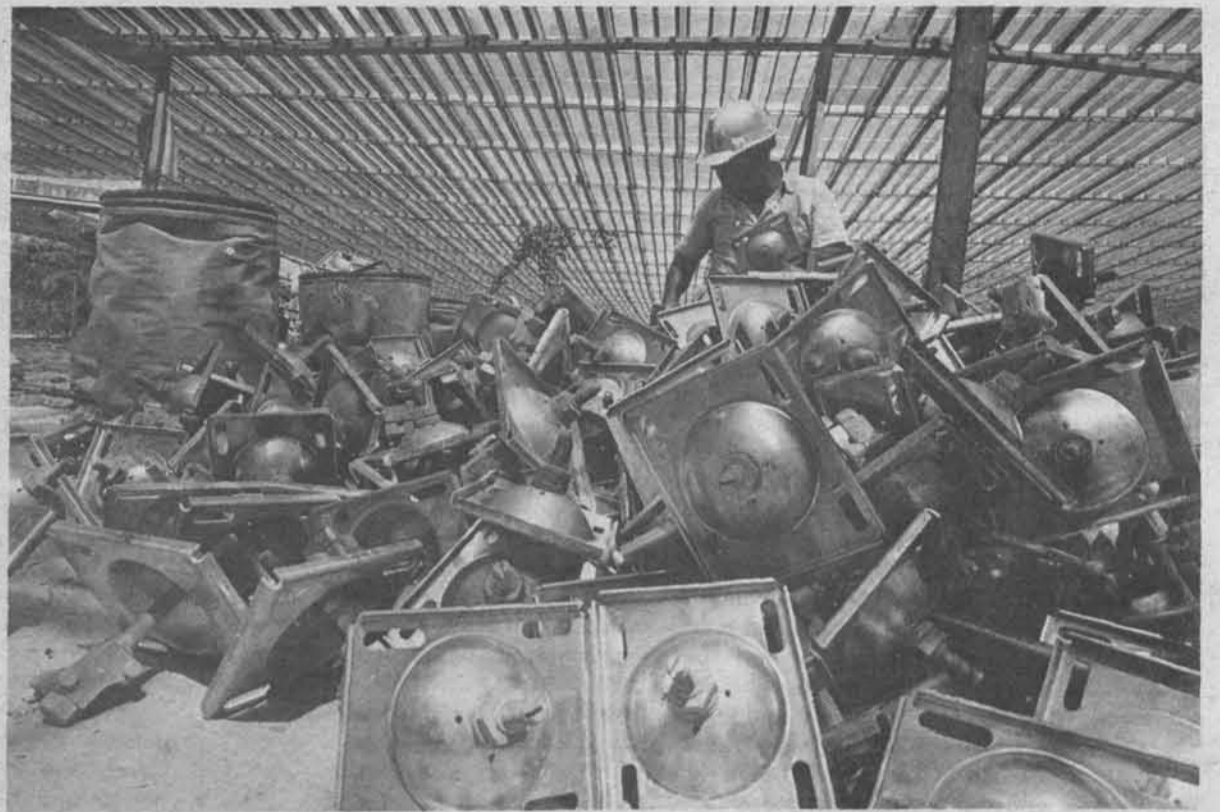


Specially engineered plastic and rubber footpads help work new aluminum surface.

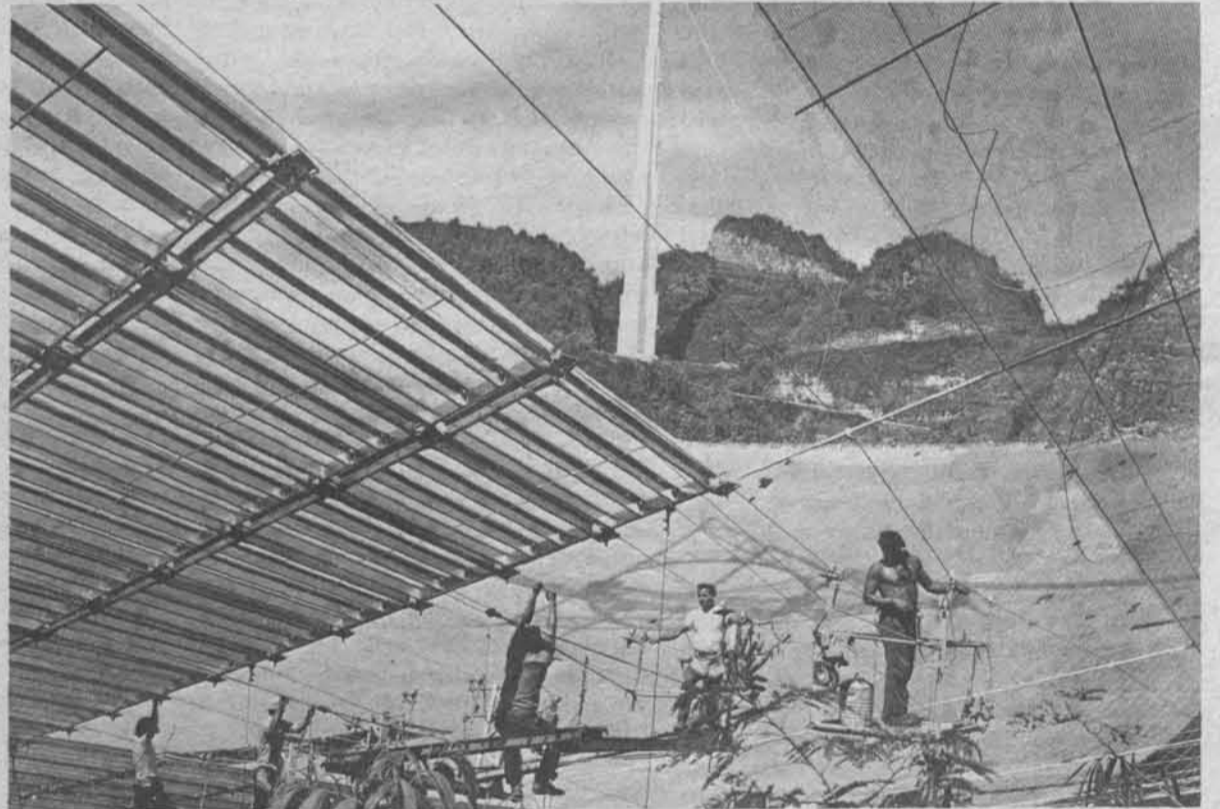
s at Arecibo, Danby



distribute their weight when they must walk on the delicate



Standing under the spherical reflector dish, a workman is surrounded by the junction plates which secure the new panels (38,700 of them) to the cable supports and to each other.



Vegetation growing wild under the dish figures significantly in holding down the topsoil in which the cement cable anchors are rooted. The new surface will let in considerably less sunlight — about as much as reaches the surface of the planet Mars.



Another part of the NAIC is the radio telescope at the Danby Observatory not far from the Cornell campus. It too is being upgraded. This spring a vinyl coated nylon cover was blown up over the reflector dish to protect the surface from the winter ice and snow and the dramatic daily changes of temperature.

Arecibo Observatory Celebrates Tenth Birthday

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snowflakes fall on the ground.

Instead of lenses, the radio telescope uses a huge mirror antenna plus a radio receiver to gather signals. The receiver is connected to a recording device such as a magnetic computer tape which stores the information. The depths of the universe are alive with noise; a loudspeaker hooked up to the Arecibo receiver plays static and hiss from distant points in the sky.

Of the more than 3,000 radio sources the telescope has heard, only about 100 have been identified optically, including the sun, the moon, some planets, the Milky Way and other galaxies, as well as many nebulae and quasars.

The telescope can also transmit radar pulses at a given frequency and then measure the return signal. This radar capability has been used to map the moon and Venus, and to study the composition of the ionosphere — a region of charged particles in the earth's atmosphere extending from about 50 to 500 miles above the ground. The special properties of this region (i.e., it reflects radio waves) make long-distance radio communications possible.

The telescope was built under the leadership of William E. Gordon, formerly professor of electrical engineering at Cornell. Its cost — close to \$9 million — is one of many "gee whiz" statistics describing the observatory.

The total collecting area of the dish is 18.5 acres, which is about equal to the combined collecting area of all the telescopes built since 1610 when Galileo invented the instrument.

The suspended structure weighs over 600 tons — nearly three times the weight of the Statue of Liberty.

The spherical bowl could hold approximately 357 million boxes of corn flakes. Really.

To Drake and his colleagues, however, the scientific information gleaned by Arecibo is far more impressive. The telescope's early years were largely devoted to detailed studies of the ionosphere. Much of this work was supported by the U.S. Air Force.

In 1964, radar signals which pierced the dense cloud cover of Venus determined the planet's period of rotation with unprecedented accuracy and also confirmed the theory about its retrograde rotation. (Venus spins on its axis in a clockwise direction. Earth and all the other planets spin counter-clockwise.) Later studies revealed the phenomenon of "earth lock," whereby

Venus turns the same face to the earth each time it swings by.

Early radar maps of the moon produced at Arecibo revealed thick layers of dust which would have posed a hazard for astronauts landing there. It was Tom Gold, John L. Wetherill Professor and director of Cornell's Center for Radiophysics and Space Research, who first proposed that the younger craters were still relatively clean and therefore made safer landing sites.

Astronomers at Arecibo found in 1965 that Mercury, the closest planet to the sun, did not always keep the same face to the sun as it made its 88-day orbit. Textbooks and encyclopedias which had stated that the sun's tremendous gravitational pull had stopped the planet's free rotation had to be revised accordingly.

In 1966 a team of astronomers which included David L. Jauncey, adjunct associate professor of astronomy at Cornell, developed the technique of long-baseline interferometry for use in radio astronomy. The process makes use of two widely separated radio telescopes to measure extremely small angles, such as those associated with the size and rate of expansion of very energetic explosions in very distant quasars. In some instances the telescopes are stationed at almost opposite sides of the earth. For these contributions, the four-man team later received the American Academy of Arts and Sciences' Rumford Award for 1971.

When a British graduate student picked up a mysterious pulsing signal from outer space in 1967, speculation ran high that an intelligent life form from another world was trying to contact us. By zooming in on the source of the signals with the Arecibo antenna, scientists were able to kill the rumors and develop new theories while they discovered new "pulsars."

In 1968 Arecibo scientists identified the pulsar in the Crab Nebula — the still-glowing remnant of a supernova, or stellar explosion, which was observed and recorded by the Chinese in 1054. Drake rejected the idea that the pulses were an intelligent signal because they were coming in over all frequencies (an inefficient way to communicate) and they were extremely intense (trillions of times greater than all the electrical energy generated on earth).

Very careful measurements (accurate to millionths of a second) timed the arrival of pulses from the Crab and led to the conclusion that pulsars are actually fast-spinning neutron stars.

This idea was first proposed by Gold. The finding of a pulsar in the Crab Nebula fully confirmed his view, as well as a previous suggestion by Franco Pacini of Cornell, that a rotating neutron star could provide the energy for the activity in the Crab and other supernova remnants. Neutron stars, which were known only in theory before this time, are giant stars which have collapsed into a dense ball a few miles wide because of the depletion of their nuclear fuel. Crushed together under tremendous pressures, the atoms become a compacted mass of neutrons with an estimated weight of as much as 10 billion tons per cubic inch. An explosion of the magnitude assumed to produce the Crab could well result in the formation of a neutron star. If Cayuga Lake were compressed to the density of neutron star matter, it would be the size of a sugar cube — and bore a hole right through the earth.

Theoretical work on pulsars continues today, as does the discovery of new pulsars, other exciting objects known as X-ray sources (because they are sources of X-ray emissions) and the search for a black hole — the densest material possible; a body whose gravitational attraction is so great that nothing, not even light, can leave its surface.

The long-range upgrading project began in 1970. The old wire mesh surface was ripped off its cable supports piece by piece to be replaced with specially designed aluminum panels which give the dish a more perfectly spherical shape. This phase of the work is due to be completed by the spring. Other aspects of the upgrading are a new, more powerful radar transmitter and modifications in the cable support system to keep the suspended structure from swaying in the wind. The unique "feeds" which collect the energy focused by the reflector are designed and built by L. Merle LaLonde, NAIC senior research associate.

As the upgrading proceeds, work in radio astronomy continues. The workmen and scientists have arranged their schedules around the orbits of the planets so that valuable observing time is not lost. In the course of the whole project, the telescope will actually shut down for a total of about two weeks.

1970 saw a dramatic experiment performed on the ionosphere at Arecibo. Scientists heated up thousands of cubic miles of the region with a radio beam to learn more about the behavior of the various layers. As the artificially heated gases expanded, the motions of the electrically charged particles, the

temperature changes and the chemical reaction rates were studied under controlled conditions by radar techniques.

Also in 1970, the Arecibo radar was used to map a portion of Mercury, showing the planet's surface to be rougher than Venus but not quite as rough as the moon. (Arecibo produced its first radar map of Venus in 1968).

Then in 1972 astronomers achieved a radar triple bounce between the earth and the moon. This experiment opened the way for radar studies of the earth by earth-based scientists working as though they had a radar telescope placed on the moon — 238,000 miles in space. Radar studies performed aboard the Skylab are now amplifying and supplementing these data.

Cornell astronomers observing Saturn in 1972 with the telescope found a level in the planet's atmosphere where temperatures are suitable for life of the kind found on earth.

An instrument like the Arecibo telescope, with its giant ear serving as a kind of "cosmic listening post," could conceivably pick up a communication from another world. Perhaps the reception of that message will be Arecibo's next contribution to scientific knowledge.

Weather or Not



RAINDROPS KEEP FALLING — Last year, Risley Residential College had two outdoor fairs rained out. This October's "Rain Fair" took no such chance; this "rainmaker" provided the weather.

Land-Grant Mission

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Plane reviewed the Morrill Land Grant Act, passed in 1862, and its provisions. The bill states that proceeds of sale of federal lands to "at least one college (in each state) 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 of life."

Prior to that, Plane said, American universities were "finishing schools for young gentlemen." He said the expanded student bodies, to include the "industrial classes," and the expanded curriculum to include practical subjects "are the basis of the greatness of the American system of higher education."

He said his committee is

looking at several questions concerning the University's future role as a land-grant institution.

One problem, he said, is that not all past benefits will continue as future benefits. For example, he said, universities "must bear some responsibility for the pollution effects of intensive, scientific agriculture and industrialization. Do we have a continuing obligation here, if we started it?"

Another obligation is to continue increased access to

higher education, Plane said. The committee is asking what groups are not being served and how to reach them. He said the committee is interested, for example; in groups beyond normal college age.

He said committee members are asking themselves if there are any subjects Cornell should be teaching that it is not now to help meet needs of society. "For example," he said, "I've heard much more of an emphasis on what I would call applied social sciences and

applied humanities within the committee, comparable to the applied science that gave birth to engineering a hundred years ago."

The faculty committee, chaired by Plane, was appointed by President Corson over the past summer, and includes a broad cross-section of faculty representation. Charged to examine Cornell's land-grant mission and responsibilities, the committee expects to complete its study and issue a final report by next spring.

Fall Sports Roundup

Three Crucial Questions Remain

As the fall sports season rolled into its final month at Cornell, three crucial questions remained to be answered:

Would the football team be able to come back from its mid-season troubles to salvage at least a share of the Ivy League title?

Would the soccer team get its third straight bid to the NCAA post-season tournament and could it win its first Ivy League title?

Would the lightweight football team finish the season with its best record ever?

By the time Election Day came in Ithaca, only one Cornell sports race had been decided: Coach Jack Warner's cross country team had posted another winning season. Warner's harriers, the least noticed of any of the fall sports teams, were upset by Colgate in the first race of the year. They came back, however, to defeat Syracuse, Army, Harvard and Yale for a 4-1 season.

As usual, the biggest crowds were turnout out on Saturday afternoons to see Coach Jack Musick's football team. With the season two-thirds completed, the Big Red stood 3-2-1 overall, 2-2 in the league and first on the key injury list.

Before the first game was ever played, four lettermen were out for the season. The defense lost end Jim Moretti, tackle Dan Lombardo and halfback Noah Magee. The offense was without tight end Dana Williams.

By the end of game No. 5 against Yale, eight more starters or potential starters had been felled for substantial periods of time. The offense



SAVED! — Jon Ross, Cornell's starting soccer goalie, makes a save in the 5-0 rout of Columbia which tied a Cornell record for most shutouts at 8, set last season. The booters still had three regular-season games to play at that point.

lost split end Dick Holtzman, tackle Pat Knuff, guard Jim Popeilinski and tailbacks Dan Malone and Don Fanelli. The defensive losses were end Bruce Bozich, tackle Steve Horrigan and back Tom Santone.

One stable element through the taxing season was quarterback Mark Allen. After six games the senior had set or tied seven passing records.

Musick also could smile over the defensive play of two All-America candidates on defense, captain and linebacker Bob Lally and middle guard Mike Phillips.

The winningest fall coach was Dan Wood with the soccer team. With three games remaining on the regular

season schedule, the Big Red booters were 7-1-2 and atop the Ivy League for the first time in history. The team was a prime contender for an NCAA playoff spot that could lead to the same trip to the NCAA semi-finals in Miami that Cornell made last year.

The booters were sparked by one of the tightest defenses in the nation. After 10 games, Cornell had racked up eight shutouts, tying the school record set a year ago.

Razzle dazzle offense and a stingy defense gave Coach Bob Cullen's 150-pound football team a 3-1 record with two games to play. The lightweights won with relative ease over Columbia, Princeton and Rutgers.

Corson

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Another question he raised on this subject was, "Should everyone in our diverse population attend a college or university?"

The president predicted a decline in college enrollments beginning at the end of the 1970s due to a declining birthrate and a saturation of the market. This condition will force institutions of higher learning to operate in a "steady state" after some 25 years of unprecedented growth and expansion. The transition, he fears, will be difficult.

Corson spoke of the wide discrepancy between tuition costs at public and private institutions, estimating an additional annual cost of \$4 million to public treasuries should tax-subsidized competition of public colleges and universities force the failure of private institutions. On a similar theme, Corson

expressed concern that adequate help for private institutions may not be forthcoming from public sources.

Corson went on to talk of drastic changes in federal policy with regard to graduate education, which have slowed the pace of university-based research.

"Research ... is a vital component of the university mission, essential to the education of students in addition to its own intrinsic worth," he said. In these days of mission-oriented research, the president said, most people are disenchanted with expensive basic research which produces no clearly evident results.

"What tends to be forgotten, however," he said, "is that the visible results of the future depend on the laborious and unheralded fundamental research of yesterday and today."

ROTC Scholarship

(Continued from Page 1)

academic credit through its year-old FALCON program. Cornell was not among the 10 institutions then offering Army ROTC to women.

What made a high school senior decide to challenge the U.S. Army? "I wanted to study Japanese at Cornell and the only way to do that was to get a scholarship, because most public colleges do not offer Japanese. Without a grant, I would have had to change my major subject. Therefore, the Army scholarship became a necessity."

Seeing the Army as "a very real career possibility" she said she "would have applied to other military services but the Army was the only service offering four-year scholarships to women."

Ms. Smith, who lives in Brooklyn, did not become somebody special to the Army until after her family had written letters to their U.S. Congressman, New York State Assemblyman and U.S. Senator Jacob Javits, asking that she be allowed to use her ROTC scholarship at Cornell. Her assemblyman, Vincent Riccio, wrote members of the U.S. House Armed Services Committee and eventually letters reached the Department of the Army.

Ms. Smith was notified in mid-May that Army ROTC had made an "exception" in her case

Appointments Made To Posts at Cornell

A number of appointments to administrative positions have been announced recently at Cornell.

Charles Howard Dick has been appointed to the newly-created post of vice president for public affairs at The New York Hospital-Cornell Medical Center. He has overall responsibility for public affairs activities.

Bernard Goodman and *Margaret C. Unsworth* have been named assistant deans of the College of Arts and Sciences. Both advise students, and Ms. Unsworth also coordinates the college's teacher preparation programs. *Barbara B. Hirshfeld*, an assistant dean since 1964, has also been named to the new post of director of the college's Academic Advisory Center.

William A. Jenkins has been named business manager of the Division of Campus Life.

J. John Keggi has been appointed director of management programming at the Extension Division of the New York State School of Industrial and Labor Relations at Cornell.

Thomas Luten has been appointed coordinator of minority career placement and assistant director of Cornell's Career Center.

Julian C. Smith has been named associate director of the School of Chemical Engineering. He assists Kenneth E. Bischoff, the director, and is working to expand the activities of the school in the areas of faculty development, research programs and graduate studies.

Dr. Charles E. Stevens has been elected chairman of the Department of Physiology, Biochemistry and Pharmacology in the New York State Veterinary College at Cornell.

Henry A. Wadsworth Jr. has been appointed associate director of Cooperative Extension at Cornell.

California Trip to Highlight Big Red Wrestlers' Schedule

Cornell's 1973-74 wrestling schedule will be highlighted by a trip to California during intersession in January, according to wrestling coach Jimmy Miller.

The Big Red will be in California from Jan. 9 to Jan. 17 and will be in four meets during that time. Cornell meets the University of California at Berkeley on Jan. 11, Stanford and UCLA at Stanford on Jan. 12, Cal Poly at San Luis Obispo on Jan. 14 and San Francisco State on Jan. 15.

"We still need some alumni support to go with the fund raising efforts of the team in order to make this trip a reality," Miller said. "We're thrilled at the opportunity and thank the people who are supporting us. We look forward to meeting many Cornellians in California."

Miller has a number of outstanding wrestlers back from last year's team that had an 11-5 record overall and 5-1 in the Ivy League. Cornell and Princeton tied for first place in the league.

and that she would be allowed to pursue her studies at Cornell.

"Just a few days later," she said, "the Army announced it was opening Army ROTC to women nationally at every university offering the program."

Army Col. Robert L. Chamberlain, professor of military science at Cornell, felt Ms. Smith's determination to use her scholarship at Cornell had an effect on the national policy change this spring.

"Army ROTC, in opening 10 schools to women last year on a trial basis, envisioned it would remain that way for several more years while the Army conducted a study to decide what occupational specialties could be opened to women," he said.

However, "evidently that study was expedited because women didn't want to wait."

Ms. Smith's scholarship is identical to that offered to 1,000 men each year, according to Army Capt. Robert B. Brown, visiting lecturer of military science. Like them, she is "required to seek a commission through the Army ROTC program as an adjunct to her other Cornell academic requirements," Capt. Brown said.

Her Army ROTC training will be the same as that for her male classmates, except for her exclusion as a woman from combat jobs and training.

Morrill Hall Rededicated

Morrill Hall, Cornell University's first building, which was recently refurbished with a \$1 million gift from California financier Jerome K. Ohrbach, was rededicated during ceremonies Saturday, Oct. 13, in front of the 106-year-old structure.

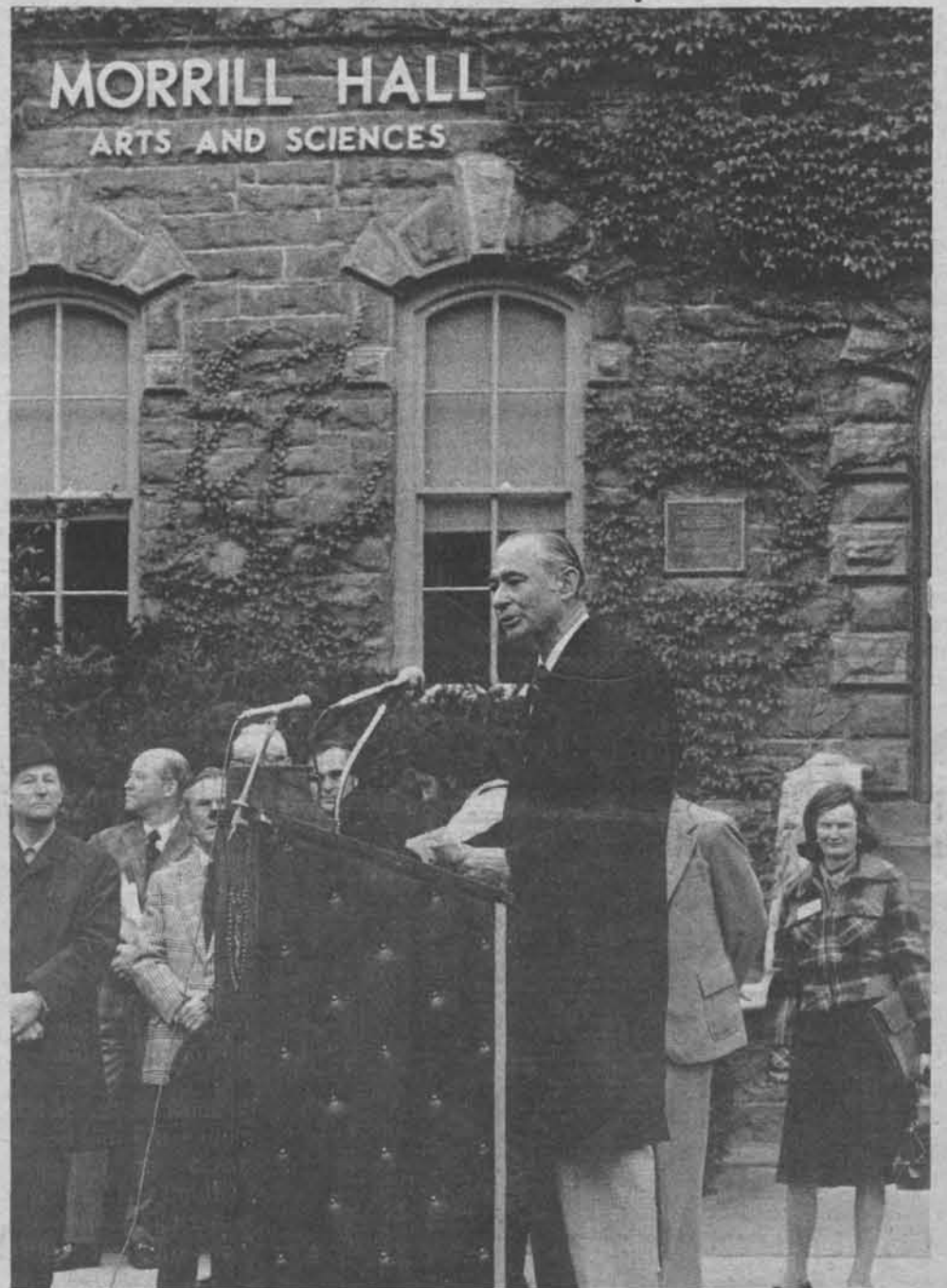
Ohrbach, a 1929 graduate of the College of Arts and Sciences at Cornell, presented the renovated building to Robert W. Purcell, chairman of the University Board of Trustees, who accepted it on behalf of the University. President Dale R. Corson presided.

Alfred E. Kahn, dean of the College of Arts and Sciences, discussed the building's new function as headquarters for the University's Department of Modern Languages and Linguistics and its contribution of additional general classroom space to the Arts College.

Extensive renovation of the building, which was declared a national landmark in 1966, was completed earlier this year.

Ohrbach has long been an important benefactor of the University. His gifts have been specifically aimed at supporting the aesthetic and cultural atmosphere of the University and include a number of rare first editions and paintings. He has served terms as a member of the Cornell University Council and the Library Fund Committee.

After graduation, Ohrbach joined the family retailing operation of Ohrbachs Inc. in New York City and served with the company from 1930 to 1962. In 1947, he went to Southern California where he started the first Ohrbach store on the West Coast. Presently he serves on the boards of several California companies and is now a limited partner in the investment firm of Weiss, Peck and Greer. He was also active in the formation and development of a number of companies, including the investment firm of Dreyfus and Co.



Jerome K. Ohrbach '29 (left) is greeted at the dedication ceremony by University President Dale R. Corson, Arts College Dean Alfred E. Kahn and Board of Trustees Chairman Robert W. Purcell.

Ohrbach, whose \$1 million gift made Morrill's renovation possible, presents the building to the University.

CORNELL REPORTS

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