



Workmen begin installation of first steel girders in "model" tunnel.

University to Build Giant Synchrotron

By PAULETT E. CREYKE

The University and the National Science Foundation signed an \$11.3 million contract for construction of the world's largest electron synchrotron, it was announced Friday.

Construction will start within the next two months. It will be completed in two or three years.

The half mile around donut will give electrons 10 billion electron volts of energy, accelerating them to nearly the speed of light, roughly 670 million miles per hour. The electrons will weigh 20 thousand times their normal weight because of the relativistic effect at this high velocity.

The accelerator will be used to study subatomic particles and nuclear forces.

The 800 feet in diameter synchrotron, to be built under Upper Alumni Field, was designed by Prof. Robert R. Wilson, director of Cornell's Laboratory of Nuclear Studies, and his colleagues.

A heavy reliance on known methods of design will make this machine less expensive than less powerful ones previously built at Cornell.

"This contract represents the largest sum ever made available in a single action by the NSF to one university," said Dr. Randal M. Robertson, NSF associate director for research.

The action follows a recommendation by the Panel on High Energy Accelerator Physics made April 26, 1963 to an advisory committee to the Atomic Energy Commission and the President's Science Advisory Committee.

Nuclear Microscope

The synchrotron will be used like a high power electron microscope, according to Wilson, who is known to some as a sculptor and others as the author of the little paperback "Accelerators."

Since all particles also display wave properties, shooting a beam of electrons at a target can also be thought of as "shining light" on it.

The ability of a microscope to



Prof. R. Wilson

distinguish small detail depends on the wave length of the light used, the shorter the wave length, the finer the detail. An electron of a few thousand electron volts has a wave length some ten thousand times shorter than that of visible light.

The 10 bev electrons will be shot at a liquid hydrogen target to study the structure of protons. Cornell's 2 bev synchrotron has already revealed the charge distribution on the surface of the proton. With 10 bev electron, scientists will be able to look inside the proton. Perhaps this will reveal a nucleus inside the proton, just as the protons are within the nucleus of the atom, Wilson said.

Creates New Particles

Electrons at energies above one million electron volts not

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Keast Reports Released; Study Undergrad Years

By MARVIN L. MARSHAK

The end of national fraternity affiliations, a letter grading system and freshman and sophomore honors programs are included in the many recommendations made by eight of the nine faculty committees appointed last winter to study undergraduate education.

The committee reports "have no official status," according to a statement by University President James A. Perkins. These reports are being released "in the hope that they may be of use in our consideration of the future development of undergraduate education," he said.

The release of the report on the quality of instruction by the ninth of the committees organized by Vice-President for Academic Affairs William R. Keast is not expected before June.

Fraternity Recommendations

The proposal for termination of national fraternity affiliations was one of seven reforms of the fraternity system recommended by the Committee on the Educational Environment.

The committee explained its position saying, "Considering the kinds of institutions that are preponderantly represented in national councils and the types of individuals who are active in national organizations, the educational atmosphere is hindered rather than enhanced by such membership."

Explaining that fraternities are members of the Cornell environment and that all students

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Johnson Appoints Perkins to Comm.

President Lyndon B. Johnson has appointed University President James A. Perkins chairman of a new General Advisory Committee on Foreign Assistance Programs.

The committee has 14 members representing universities, industries and unions.

Johnson asked the committee, at its first meeting in Washington last week, to help make assistance programs for less developed nations more effective and efficient.

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East Germany Prohibits West German Bundestag Journey

Berlin (AP) — Communist East Germany last night barred West German legislators from crossing by land to West Berlin for a parliamentary meeting Wednesday.

The West Germans promptly declared the meeting will be held despite all Communist threats, and called a Cabinet meeting to be held in Berlin on the same day.

In a growing test of wills over the first Bundestag — lower house — meeting in West Berlin in seven years, the Communists earlier in the day turned back West Berlin's Mayor Willy Brandt at an East German border crossing.

Brandt, leader of West Germany's opposition Socialists, flew home later from Hamburg. The West German deputies not yet in Berlin presumably also will take planes to attend the parliamentary meeting Wednesday.

The Soviet government and the East Germans have warned in notes to the Western powers that the session could lead to serious international complications.

There was no immediate comment from the Western Allies — the United States, Britain and France — on the East German ban. The three powers had agreed with West Germany in authorizing the meeting.

About half of the 499 parliamentary deputies already have arrived in Berlin by commercial airliners.

However, one ranking member said the Western Allies

would be ready to transport any stranded lawmakers in military planes in the event of an emergency.

Communist harrassments began four days ago with slowdown tactics by East German border guards on the Berlin Autobahn, a 110-mile superhighway linking Berlin and West Germany. A West German lawmaker enroute to West Berlin was stopped Friday.

Basketball Team Honored

DeLuca Named Cage Captain

By RONALD S. HARRIS

Junior Bob DeLuca was named captain of the varsity basketball team for the 1965-66 season at a dinner held last night at the Valley House honoring this year's basketball team.

DeLuca, an All-Ivy first team selection this year, succeeds senior Marv Van Leeuwen, captain of this year's squad.

A gathering of 110 people was on hand to honor what was called by many the greatest basketball team in Cornell history. The club set numerous records including most consecutive wins—15, most points in a game—110, most field goals in a single game—45 and several other scoring marks.

The dinner, which is hoped to become a regular fixture at season's end, was also the scene of several award presentations.

Bill Scott, president of the

Cornell Club of Ithaca, presented a citation to each of the seniors on this year's squad. Recipients were Van Leeuwen, Dave Bliss and Jim Maglisceau.

Coach Sam MacNeil also had several presentations to make. Five awards were given out by the coach.

Bliss received the Roger Chadwick Memorial Award for those attributes which best exemplify the best in a Cornell Athlete. Chadwick was a teammate of coach MacNeil when he was a player at Cornell in the early 1950's. Bliss was named to the second team All-Ivy by the league coaches.

Junior Steve Cram received the Coaches' Award for being the Most Improved Player. Cram led the team in scoring and was the center on the coaches' All-Ivy first team.

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Bob DeLuca

Synchrotron Contract Signed; NSF Awards \$11.3 Million

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only "see" finer detail, but also have high enough energy to create other new particles.

Previously scientists thought there were three fundamental particles — electrons, protons, and neutrons. However, with the advent of high energy particles, new particles, such as anti-proton, positrons, nucleons and a host of mesons, were created.

The present synchrotron can create electron-positron pairs and some of the mesons. Hopefully, the 10 bev synchrotron will create in addition, anti-protons.

The synchrotron will be built by digging a circular half mile tunnel at the edge of Cascadilla Creek 50 feet under Upper Alumni Field. Requests for bids will go out April 17. The tunnel will take six to nine months to build, the the synchrotron itself will be fitted into it. The laboratory building will be built into the side of the gorge.

The synchrotron needs only be built 15 feet underground to prevent danger from atomic radiation, but will be 50 feet below so the athletic field will not be disturbed.

Model Tunnel Built

A 100 foot long full scale model of the synchrotron is already under construction. This prototype section is being built to assure designers the final design is correct.

Two fields will be used to boost the electrons' energy: a radio frequency electric field to accelerate them and a magnetic field to keep the beam in its circular path.

The heart of the accelerator is a nine foot in diameter tube. Within this is the electron beam path guide, a rectangular space about one by two inches within the magnets which focus the beam.

The path guide will rest on 100 steel girders weighing a ton each. Each girder must remain in line with the next to within several thousandths of an inch to maintain the accuracy of the beam path.

The synchrotron will actually be shaped like a race track, with long straight section without magnets between curved sections. Targets being studied will be placed in one of the six straight sections. Such straight

sections were first used by Cornell in an earlier synchrotron.

Another design technique pioneered by Cornell is a method of focusing the electron beam, known as strong focusing. This method was first applied by Cornell in the 1954 1.4 bev synchrotron.

Strong Focusing

Strong focusing means sections of magnets, which focus horizontally, are alternated with sections which focus horizontally. This will focus the electrons into a beam a fraction of an inch in diameter even though the particles travel over one thou-

sand miles in the course of being accelerated.

The accelerator will be available for use in training graduate students and for use by scientists outside the University. Outside scientists are assured of time if their proposed projects are of comparable merit to Cornell's scientists'. Selection of outside projects will be made by Wilson.

Other professors concerned with the design and construction of the synchrotron are Profs. J. W. DeWire, D. A. Edwards, R. M. Littauer and B. D. McDaniel, all of the physics department.



Foreman adjusts one of three jacks which will help maintain alignment of steel girder sections of the accelerator.

New Broadway Play Titled For Cornell Drinking Song

By RICHARD B. HOFFMAN

Special to The Cornell Daily Sun
New York — The refrain of a

Cornell drinking song will brighten the boards of Broadway when Evan Hunter's comedy "A Race of Hairy Men!" opens here April 29.

Backstage at Henry Miller's Theatre, Hunter, who wrote "The Blackboard Jungle," "Strangers When We Meet" and a long series of detective stories under the name Ed McBain, explained the derivation of his new play's title.

"My twin sons kept singing the song when they came home from camp. They must've had a counselor from Cornell," Hunter, who attended Cooper Union and Hunter College, confided. Obviously the tune made an impression upon their father, who adopted it for the play's title last week.

Brandon DeWilde, remembered for his performances in "Member of the Wedding" and "Blue Denim," who was rehearsing backstage for the play's first preview April 17, plays the role of a Cornelian.

In the four-character play, two undergraduates (the Cornelian and one from City College) visit two girls on New York's First Avenue for purposes which need no further elaboration.

"One of the boys profits from his experience, showing more maturity and adult attitudes, while the other emerges more or less unchanged," Hunter remarked. "Unfortunately, I suppose, the Cornell boy is the one who doesn't change," he said.

According to Hunter, there is

not much specific reference to Cornell in the play's dialogue itself, although the Big Red's representative now and then reminisces about Ithaca, which he calls "the wilderness."

Strangely enough, Hunter has found it difficult to locate the name of Cornell's song which ends:

"Princeton is for pretty boys
And drunkards go to Penn,
But far above Cayuga
There's a race of hairy men!"

Hunter explained he and his agents, Scott Meredith Literary Agency, are still trying to find out the song's real name, along with its origins. He added that he had consulted the University Alumni Office, without success.

Communists Down Jets

Tokyo (P) — The Communists claimed North Vietnamese units shot down 37 U.S. and South Vietnamese warplanes in a series of raids yesterday on North Viet Nam.

U.S. officials in Saigon declined to say how many planes were lost because of search operations.

"First reports said that Saturday and Sunday 37 enemy planes were shot down and many others damaged," said Peking's New China News Agency in a broadcast heard in Tokyo.

In Washington, the Defense Department said yesterday air strikes against three highway and railroad bridges in the last two days "inflicted serious damage to Communist North Viet Nam's only major north-south line of communication."

The statement, which appeared intended to counteract the negative impact of the U.S. air losses in the first such combat of the Vietnamese war, gave no details of the losses beyond what was released by U.S. officials in Saigon.

Bliss, Cram Get Awards

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The Outstanding Rebounder Award went to another junior, Garry Munson, who led the club in this department with 231. He was one of the league leaders in rebounding.

Sophomore Blaine Aston got the Foul Shooting Award for leading the team with a 86.7 percentage, in one stretch making 28 in a row.

VanLeeuwen received the Captain's Award.

Before this, toastmaster Sam Woodside presented coach MacNeil a trophy on behalf of the committee that arranged the dinner, for the fine job he had done this season.

Coach MacNeil thanked all those who helped make the season a successful one. He introduced all the members of the team and had each of the seniors say a few words to the large crowd.

The opening speaker was Director of Athletics Robert Kane. Kane thanked the team for giving him so many great moments this season.

The featured speaker was Ed Peterson '48 who played varsity ball for Cornell from 1944-48. Upon graduation he joined the Syracuse Nationals of the National Basketball Association and played in the league three seasons.

Undergrad Education Reports Out

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are members of the University community, the Committee suggested that "every undergraduate who wishes to join a fraternity have a guaranteed place found for him."

Dissenting Opinion

This and two other recommendations drew a dissenting opinion from one of the group members, Richard E. Weitzman '64, who was previously Academic Affairs chairman of the Interfraternity Council. Weitzman noted that such a ruling would undermine the responsibility of the fraternity to its own members.

In making its proposals on fraternities, the committee, chaired by Prof. Andrew Hacker of the government department, warned that "in no way should our recommendations be construed as first steps toward eventual abolition."

Besides fraternities the educational environment committee reported on student-faculty relations, problems of the sex ratio, student housing, libraries and the Campus Store.

Grading System Report

Committee VI on the grading system, chaired by Prof. G. P. Fisher of the engineering school, opened its proposals with a recommendation that a University-wide A, B, C, D and F system be instituted.

The committee explained that "the essence of its proposal is two-fold: uniformity across the entire University and improved communication of student performance."

The committee noted much faculty controversy on whether "plus" and "minus" qualifications to the letter grading system should be used. Its majority opinion, however, advocated reliance on the simple letter system.

The grading committee also suggested the allowance of "satisfactory" and "unsatisfactory" grades for graduate students and special undergraduate courses such as physical education. It also suggested the use of the "S" and "U" system for all midterm grades.

The group supported its decision noting that the only purposes of midterm grades are to check on course registration and identify those students who seem to be in difficulty.

Honors Work

The Committee on Honors Work, chaired by Prof. Scott Elledge of the English Department, advanced a two-pronged proposal for underclass honors.

After a survey of existing programs, the committee advocated freshman group tutorials or seminars and a substantial increase in the number of honors courses or sections open to well-qualified freshmen and sophomores.

"To many freshmen and sophomores Cornell is a disappointment," the report noted. "Often the courses in the high schools our students come from are more intellectually stimulating and rewarding than much of the required course work of the first two years in college," the report continued.

The report did not consider upperclass honors programs, the committee said, since these are initiated and maintained on a departmental level. But, the report added, a well-organized and well-financed underclass program would certainly motivate improvement on the more senior level.

Other Reports

The other committees whose reports were released today are Articulation of Undergraduate Studies With Secondary Schools,

Entrance Standards, Intercollege Transfers, Orientation and Advising, and the Dropout Problem."

Committee I on "Articulation" noted that the major problem in its field is that "the freshman year at Cornell is an unsatisfactory academic experience." Its recommendations closely paralleled those of the Committee of Honors Work.

Noting that present entrance standards shut out students from those schools which have curricula different from the large Eastern high schools, the committee in this field advocated "recommended" rather than "required" standards.

Transfers Committee

The Committee of Intercollege Transfers said the major segment of the transfer problem concerns students who switch from Engineering to Arts either directly or through the Division of Unclassified Students.

The committee advised the establishment of a common program for students unsure of a preference for science or engineering to ease such transfers. The Committee added that such a program would attract talented students who do not come to Cornell for fear of transfer barriers if they change their minds.

To promote a general ease of intercollege transfers the committee recommended consideration of common admission standards for all divisions of the University.

The impediment to such a reform, the group reported, is that some colleges would have to reject almost half of the students they now admit. The committee suggested that imposition of a common "literacy" standard would be a more realistic move.

Tomorrow: The report on Educational Environment

Newspaper Strike Threat Increases

New York (P) — The threat of a New York City newspaper strike grew stronger yesterday while one of the nation's longest newspaper strikes appeared near an end in Youngstown, Ohio.

Union printers, who threatened and then put off a strike against one or more of seven New York City dailies last Wednesday, reset a strike deadline for anytime after 3 a.m. today following a breakdown in talks.

Meanwhile, a settlement agreement was reached yesterday in the Newspaper Guild's 220-day strike against the Youngstown Vindicator.

Johnson Appoints Perkins to Comm.

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He also asked the group to see that every potentially useful idea is examined and that the U.S. is making the best use of every potential resource for assisting the development process.

Johnson said foreign assistance is now primarily a loan program aiming at self-help. He called it one of the most important elements of our foreign policy.