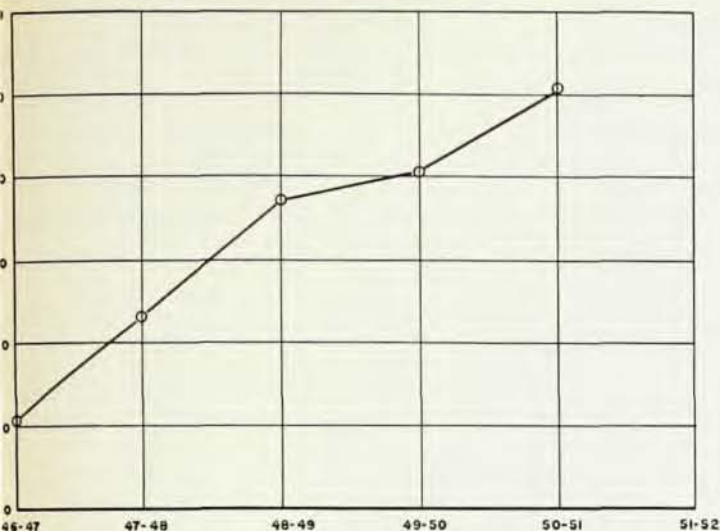


DOCTOR'S DEGREES GRANTED TO PHYSICS MAJORS



number of bachelor's degrees granted will also drop sharply in the next few years and that there will be a levelling off and gradual decline of graduate enrollment in physics. In spite of the present decrease, the total enrollment of both undergraduate and graduate physics students is enormously higher than the pre-war figures in these categories.

The number of degrees at the master's level granted to physics majors was expected to reach an all-time high during the academic year just completed. It is likely that this number will continue to increase next year, but should decline thereafter. The number of doctorates granted in physics is also increasing rapidly, and in view of the larger number of master's degrees it is to be expected that the number of doctor's degrees will continue to rise for several years. A fact of some significance to the American Institute of Physics and to the professional physics societies, Professor White points out, is the continued growth in the production of physicists at the master and doctorate levels. While the societies have all grown substantially in recent years, it is clear that their growth has not been entirely comparable to the production of new physicists.

Last November the Office of Education of the Federal Security Agency issued a statistical circular (No. 281) reporting over-all enrollments in more than eighteen hundred higher educational institutions at the opening of the 1950 fall sessions. According to the report, total enrollment represented a drop of six and one-half percent as compared with the previous year. Advance estimates of the situation next fall have been made by the Central Association of College and University Business Officers, who conclude that 1951-52 enrollments will be eighteen percent lower than last fall's figures. The Association's predictions are based upon a nation-wide survey of approximately five hundred colleges and universities.

NEW LABORATORIES

AT THE UNIVERSITY OF CHICAGO

Dedication of new laboratories at the University of Chicago for the University's three major research institutes took place during ceremonies held last May 16th. The total capital cost of the Institute for Nuclear Studies, the Institute of Radiobiology and Biophysics, and the Institute for the Study of Metals has been set at eleven million dollars. The new Research Institutes building, which houses the three groups, will cost more than five million dollars. The accelerator building, in which Chicago's synchrocyclotron and betatron are located, cost another one and one-half million. The synchrocyclotron is the University's most expensive single piece of equipment with a total cost of two and one-half million, although a large part of the necessary funds were supplied by the Navy and the balance was provided by the University's Cancer Research Foundation. The annual research budget for the more than one hundred staff scientists and technicians has been set at approximately two million dollars, about one-third of which is provided by twenty-six industrial firms in support of the Institute's long-range programs of fundamental research.

The Institute for Nuclear Studies, directed by Samuel K. Allison, is engaged in theoretical and experimental research programs studying the physics and chemistry of the atomic nucleus. Related programs are concerned with artificial radioisotopes and other radioactive materials, cosmic ray studies, and with x-ray studies of crystal structure. The Institute's recently completed four hundred and fifty million volt synchrocyclotron is now set up, according to University spokesmen, to produce meson beams with energies between eighty and three hundred million electron volts for studies of meson-nuclei interactions. About fifteen percent of the eventual working time of the beam will be spent in biological experimentation, and it is planned that clinical facilities will be set up in the accelerator buildings for such researches. The one hundred million volt betatron has already been used to establish that nuclear fission of bismuth can be produced through bombardment with x-rays. Other experiments have studied the effects of the capture of gamma rays by copper and manganese nuclei, the subsequent emission of neutrons and protons, and the study of fast neutrons produced by copper in such reactions. Recent experiments have demonstrated the existence of radioactive phosphorus-33, with a half life of twenty-five days produced with gamma rays from the betatron. Since this radioactive phosphorus has a longer half life than the radioactive phosphorus used at present for "tagged" biological experiments, the discovery gives investigators in the biological sciences a new tool for longer-term biological studies.

Two other accelerators are contained in the Research Institutes building. One is a Van de Graaff generator which produces a proton beam of two million electron volts; the other, now under construction, is a six hun-

dred thousand volt kevatron, a less powerful but more easily varied and controlled producer of ion beams. It will be used in studying the nuclear transformation of deuterium, lithium, beryllium, and boron.

W. F. Libby's carbon-14 dating techniques are also being developed at the Institute for Nuclear Studies. His results have proved of considerable interest to archaeologists and anthropologists and have already succeeded in establishing, among other things, the date of the first known human inhabitants of this continent as being in the neighborhood of ten thousand years ago. In a somewhat related vein, H. A. Urey has developed a method for detecting the temperatures of ancient climates by analyzing oxygen isotopes obtained from sea shells.

The Institute of Radiobiology and Biophysics was organized in 1945 to provide a continuity of the work on the biological effects of radiation carried out during the last war and to help provide a fundamental basis for the interpretation of the vast amounts of data accumulated since that time. The studies range from the effects of radiation on the living cell to new uses of radiation, both clinically and as a research tool. Considerable emphasis is given the study of ways of preventing and treating physiological effects of excess radiation. At the same time, the methods of the physical sciences have been applied to problems as diverse as measuring nerve impulses and the study of the mechanism of photosynthesis in green plants.

The Institute for the Study of Metals, under the direction of Cyril S. Smith, is concerned generally with studies in the physics and chemistry of the solid state in an effort to develop a "fundamental and systematic theoretical basis" for metallurgy and related fields. A number of research projects are currently in progress to examine the structure and behavior of metals when subjected to high pressures or to extremely low or extremely high temperatures. The Institute's research facilities include an extensive metallographic laboratory, a shop where special alloys are processed, an x-ray laboratory for studying the atomic structures of metals, a well-equipped cryogenic laboratory for low temperature work, an analytical and spectroscopic laboratory, and a high pressure laboratory where pressures up to 300,000 pounds per square inch can be produced. The low temperature laboratory has equipment for liquefying fifty quarts of hydrogen per hour at temperatures of 423 degrees below zero (Fahrenheit) or ten quarts of helium per hour at 460 degrees below zero.

HOUSTON'S MAGNETIC OBSERVATORY

The recent establishment of a magnetic observatory at the University of Houston brings the total number of such stations in the United States to three. Knowledge concerning the behavior of the earth's magnetic field over specific areas is of considerable importance to oil and mining industry geophysicists who use magnetic methods in their work, and the same information is essential to the communication services and to those who must maintain accurate navigation maps for sea

and air travel. The earth's magnetic field varies each day, with frequent strong variations (magnetic storms) which apparently are caused by sun spot activities.

The two previous magnetic observatories, one located at Cheltenham near Washington, D. C. and the other at Tucson, Arizona, were too far away to give reliable information for most of the Texas area. Discussions between representatives of the Coast and Geodetic Survey Division of Geomagnetism and Seismology and the Ruska Instrument Corporation of Houston led to a proposal for a magnetic observatory in Houston. The University of Houston agreed to furnish the site and buildings and to operate the station under the auspices of the Coast and Geodetic Survey, while the Ruska Corporation built and donated the necessary instruments. The observatory staff is headed by R. W. Long of the University of Houston.

GRANTS AND AWARDS

AEC FELLOWSHIPS

Selection of fellows to be sponsored by the Atomic Energy Commission for the 1951-52 academic year has been completed, and the individuals concerned were notified of their selection early in April. The fellowship awards, which are not to be announced in detail until all clearance procedures are final, are for research in the predoctoral physical and biological sciences and in the postdoctoral physical, biological, and medical sciences. Fellows may carry out their research and study in the university of their choice, provided the university accepts them for graduate study. A total of 287 fellows were chosen, of whom 156 will do predoctoral work and 30 will do postdoctoral work in the physical sciences. Thirty-one alternates in the physical sciences were also named in case budgetary provision could be made for their appointment or in case some of the appointees withdrew.

The fellows were chosen by a nine-man board of national scientific leaders under the chairmanship of George B. Pegram, vice president emeritus of Columbia University. Other members are George H. Boyd, dean of the University of Georgia graduate school; Robert G. Brode, professor of physics at the University of California; Detlev W. Bronk, president of Johns Hopkins University; Leland J. Haworth, director of Brookhaven National Laboratory; Warren C. Johnson, chairman of the department of chemistry, University of Chicago; Homer W. Smith, chairman of the department of physiology, New York University School of Medicine; Elvin C. Stakman, chief of plant pathology and botany, University of Minnesota; and Douglas Whitaker, dean of graduate studies at Stanford University.

ESSAY CONTEST ANNOUNCED

The Gravity Research Foundation, New Boston, New Hampshire, will award eight cash prizes on November 23, 1951, for short essays on the application of gravity to practical uses. A first award of \$1000, a second, third, and fourth award of \$400, \$200, and \$150 re-