

PHYSICS

4,900-Ton Atom Smasher Financed by Rockefeller

**\$1,150,000 Given to University of California
For Cyclotron To Produce More than 100,000,000 Volts**

THE ROCKEFELLER Foundation of New York City has given the University of California \$1,150,000 for the construction of a new and much larger cyclotron or atom smasher. In making this announcement, however, Dr. Robert G. Sproul, president of the University, called attention to the fact that to obtain this gift, the Berkeley institution will have to raise another \$250,000 from other sources.

The plans for the new cyclotron call for a mechanism, or a fine integration of mechanisms, that will produce energies in excess of 100 million volts, as compared with the 33 million volts produced by the University's present 60-inch cyclotron.

The weight of the new cyclotron will be 4,900 tons, or more than 20 times heavier and bigger than the present instrument.

The University's present cyclotron, largest in the world, is said to have permitted striking new advances in the knowledge of the atom and also in the fields of biology and medicine, particularly through its production of artificially radioactive substances and its potent neutron rays.

As compared to the 60-inch magnet of the present cyclotron, the magnet of the new instrument will measure 184 inches. It is hoped to produce a deuteron beam of 140 feet, as compared with the five-foot beam obtainable at present.

The new cyclotron will be 58 feet long and 15 feet wide and will have an over-all height of 36.8 feet, of which 11.8 feet will be underground. From the emplacement the superstructure will rise to 25 feet.

Estimated weight of the steel that will be used in construction is 4,500 tons, to which the copper windings will add 400 tons.

A feature will be the underground location of the control room, 150 feet from the cyclotron itself.

The new cyclotron will resemble the present medical cyclotron, but in details it is planned to be the most distinctive engine of its kind in the world. The

designers in the University's radiation laboratory state that, because it is the first of its size ever planned or even contemplated, its actual operation may compel changes that cannot be predicted at present.

Technically, the new cyclotron is expected to show, in a quantity sufficient for observation, the types of phenomena observed in cosmic rays. More simply, its primary objective is to study new regions in the atom, which itself is an infinitesimal planetary system. More simply still, it will endeavor to wrest from the atomic substances that make up all matter the secrets of the energies that make plants and animals grow.

At this stage its objectives are of a purely physical nature, with the structure of matter as the particular problem to be solved. However, as Prof. Ernest O. Lawrence, director of the radiation laboratory, points out, no one knows

what new objectives it may light up or what new problems it may produce or solve.

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GENERAL SCIENCE

Invasion of Denmark Endangers Research Center

GERMANY'S invasion of Denmark jeopardizes one of the world's important centers of atomic research, the laboratories of Prof. Niels Bohr in Copenhagen. In the troubled years since the rise of Hitler the laboratories have been more than once a place of refuge of scientists who have escaped, one way or another, from the Nazi blight.

Just a few days ago the Rockefeller Foundation annual report mentioned Prof. Bohr's work in biophysics on the border line between biology and physics as "only indirectly disturbed by the war." Prof. Bohr, a Nobelist, noted for his adaptaton of the bare quantum theory postulates of the early twentieth century to the problem of atomic structure, providing a foundation for present atomic theory, has visited America many times and he is widely known in this country.

In other Scandinavian areas much fruitful scientific research is underway in universities and scientific institutions all endangered by the German action.

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PATENTED

U. S. Commissioner of Patents Conway P. Coe and Mrs. Coe examine the patented flowers and fruit on exhibit in connection with the sesquicentennial celebration of the U. S. patent law.