

The Physics Department Cyclotron

In 1954 the Physics Department put into operation a 37-inch cyclotron which had been constructed by Department personnel during several years preceding.

The idea that Oregon State might have a cyclotron was conceived by Dr. James J. Brady and the late Dr. Richard Dempster, who received their Ph.D. degrees from the University of California. While there, Dr. Brady had worked with Dr. Lawrence's group on the original cyclotron. Members of the Radiation Laboratory at the University of California encouraged the construction of a cyclotron at Oregon State and offered cooperation and the gift of the steel parts for the magnet. In order to facilitate U.C.R.L. advice and help in the design, Dr. Brady and Dr. Dempster were made consultants to the Radiation Laboratory.

The Physics Department, through the efforts of Dr. W. Weniger, Dr. Brady, and Dr. Dempster, obtained a grant of \$5000.00 from the Research Corporation with which to get started. The Radiation Laboratory at the University of California machined the heavy steel castings into yoke and pole pieces and shipped them to Corvallis. On the strength of the start already made, Dr. Yunker, who had become Chairman of the Department, with Dr. Brady and Dr. Dempster, presented to President Strand a plan for a cyclotron at Oregon State and requested financial support. A grant of State funds was made.

Using the State funds as matching money a grant for additional funds for construction was obtained from the U. S. Atomic Energy Commission which also continued yearly grants for construction and later for research. While the total of funds available was considerable in an absolute sense it was not large in terms of what it costs to build or buy a 37-inch cyclotron.

One of the interesting features of the construction of the O.S.U. Cyclotron is that it was built on a very low budget. In order to save money great use was made of war surplus supplies and equipment and gifts from many sources. Whenever a suitable gift or war surplus item was obtained it would be designed into the construction and work would go ahead. At the time that it was needed, copper was difficult to obtain, and it was only from the Atomic Energy Commission that it was obtained.

The lifting of the magnet steel and the assembling of the Butler hut to house the machine was done by the Physical Plant. Some welding on the dee tank was done by the Aluminum Corporation of America, but later the Physics Department bought a 700 ampere inert-gas welder and did the rest of the welding. The Hyster Company of Portland machined the dee tank and the Albina Engine and Machine works turned the large steel covers

for the dee tank. A 90-ampere 220-volt motor-generator set was donated by the Eugene Water Board to be used to excite the magnet. The design for the oscillator was given by the Radiation Laboratory, which also gave advice and technical assistance in other ways. All other design and construction was carried out by Physics Department personnel.

The Physics Shop, under Mr. Jerry Filz built hundreds of parts for the machine.

The committee in charge of the design and construction, and financial and other aspects of the machine, consisted of Dr. Brady, Dr. Dempster, Dr. Yunker, Mr. Filz, and later, Dr. David Nicodemus.

The Physics Cyclotron has operated over the years almost free from breakdowns or major difficulties. After over twelve years of dependable operation it is now (1966) being modernized and raised in power.

It was, and still is, the only cyclotron in Oregon and gives the highest energy of any particle accelerator in the State.



