

foundation's endorsement of the plan helped the acceptance of page charges by research institutions.

When all member-society and AIP journals were unified in one publishing system in 1933, the charge was

raised to \$3 a page. It remained there for 14 years, although costs continued to rise. Journals offset deficits by charging more for reprints to authors whose papers were not supported. By 1947 income was inadequate again; the charge was raised to \$4.

Page charges increased along with

costs as the volume of research and publication increased; *The Physical Review* now charges \$60 a page. Page charges as a fraction of total research cost apparently have remained stable, however, at about 1% from the 1930's to the 1960's, according to AIP figures.

Army Nuclear Lab Dedicates 15-MeV Tandem in Maryland

The Army's 15-MeV tandem Van de Graaff accelerator went into operation during October at the Nuclear Defense Laboratory at Edgewood Arsenal near Baltimore, Md. A team of civilian and military physicists runs the machine, and arrangements for shared use are being worked out with half a dozen universities in the area.

The machine and its new building were dedicated 25 Sept. Final tests were to be completed by the end of October and the accelerator formally accepted from High Voltage Engineering Corp. It was the first time High Voltage had acted as general contractor for a complete installation.

Delays were encountered after the machine was ordered in October, 1964; some consultants criticized a lack of planning when the completed machine was stored in Massachusetts while a building was erected at the arsenal (*PHYSICS TODAY*, July 1967, page 85 and October, 1967, page 9). Ground was broken 5 July 1967 and the pressure vessel moved in through an open wall last 17 Jan. The first beam was achieved in September.

The accelerator's mission is that of the entire NDL: study of initial and residual effects of nuclear weapons and evaluation of shielding. The work is aimed at protecting both soldiers in the field and civilians at home. NDL

has had a 750-keV Cockcroft-Walton generator since 1960. Some 150 persons are assigned to NDL, about 100 of them scientists.

The tandem accelerator staff numbered 16 (about half with PhD's) at the time of dedication and was to be expanded to 25 (keeping the same ratio of PhD's) when the machine and all experimental apparatus were in operation. Directing the entire NDL staff is Donald Eccleshall, formerly head of the accelerator team. Eccleshall had been scientist-in-charge of the tandem accelerator at the Aldermaston Research Centre in England before coming to Edgewood.

In an interview just prior to the dedication, Eccleshall told *PHYSICS TODAY* the tandem arrangement was "remarkably good" in preventing spurious scattering. The neutron target room has been designed to eliminate as much spurious scattering as possible. It is 24 by 24 meters; targets and counters can be suspended from a steel frame 12 meters above the floor. The walls on three sides are of very thin plastic supported by a spidery skeleton, also designed to reduce neutron scattering.

The beam is pulsed to aid in computation of times of flight. Neutrons have a flight path of 10 meters before encountering detectors.

A second experiment hall, for charged-particle studies, is heavily shielded in the usual fashion. An interlock prevents the machine from working unless shielding doors are closed.

Stainless-steel beam-transport tubing and use of ion pumps should minimize noise from the build-up of impurities on the targets.

Virtually all of the research performed with the accelerator will be reported in the open literature. The machine will be available to scientists in other parts of NDL, throughout the Department of Defense and to universities. Eccleshall said contacts had been made with Johns Hopkins, the Universities of Maryland and Delaware, Drexel Institute of Technology and Catholic University. Negotiations are under way with the National Academy of Sciences to establish a postdoctoral associateship program.

Films on Fluid Mechanics Can be Rented or Bought

Fluid mechanics films of significant research data are available through the Engineering Societies Library, 345 E. 47th St., N. Y., N. Y. 10017. At present, the library has about 80 films in stock which can be either rented or purchased. With each film comes a "scenario" describing the conditions and parametric values for each scene. A catalog containing all the scenarios and describing library operations and typical costs is also available at \$8.00 per copy.

Oak Ridge Plans Nuclear Centers For Development Of Arid Lands

Nuclear reactors at the edge of a sea could provide the water and electrical power to meet the industrial and agricultural needs of 100 000 persons, according to a study published by Oak Ridge National Laboratory.

The study was aimed at develop-



ARMY ACCELERATOR. Donald Eccleshall, left, director of the Army's Nuclear Defense Laboratory, and Edwin H. Bouton, associate director, chat next to the beam transport of the lab's new 15-MeV tandem accelerator, dedicated on 25 Sept.