telescope at the Observatory's Agassiz Station, and work on a twenty-five-foot parabolic reflector antenna and on housing for the necessary electronic and control gear is already in progress. Radiation from the hydrogen clouds (at a wavelength of 21 cm) was first discovered in 1951 by one of this year's Nobel prize winners, Edward M. Purcell of the Harvard physics department, and by Dr. Ewen, now a research associate at the Observatory. A short time later confirmation was provided from Holland, where J. H. Oort and C. A. Muller detected the same radiation during observations made at the Kootwijk Radio Observatory. The Dutch scientists are reported to have in operation apparatus with which they have begun to trace the spiral structures in the remote parts of our galaxy. Similar research is also being carried out at the Radio Physics Laboratory in Sydney, Australia.

The rarified hydrogen clouds, which emit no light and can therefore not be seen through optical telescopes, emit energy, quantum by quantum, whenever the single electrons of their constituent atoms reverse their spin. Such a phenomenon occurs only about once every four hundred years in an individual atom, but because of the great numbers of atoms involved the radiation is continuous and can be received as a radio signal with the appropriate equipment.

The Harvard radio telescope, a comparison radiometer that can be tuned to any frequency between 300 and 1650 megacycles, will be mounted parallel to the Earth's polar axis, thus permitting it to be focused on one spot in the sky for relatively long periods simply by moving it in one direction to compensate for the Earth's rotation. Although small compared with the British radio telescope being constructed at the Jodrell Bank Experimental Station near Manchester (see *Physics Today*, June 1952, p. 26), it is reported that the Harvard instrument will be sensitive enough to pick up radiations of less than 10^{-15} watt in power. The new program has been aided by a $32,000 grant from the National Science Foundation and by an anonymous gift from a friend of the Observatory.

Nobel Prize in Physics

1952 Award Shared by Bloch and Purcell

Two nuclear physicists who in 1945 discovered independently the phenomenon that is referred to either as "nuclear induction" or "nuclear magnetic resonance absorption" have been named to share this year's Nobel Prize in physics. Felix Bloch, professor of physics at Stanford University, and Edward M. Purcell, associate professor of physics at Harvard, were selected by the Swedish Academy of Science on November 6th to receive the award in recognition of their contributions to an improved understanding of the structure and forces of atomic nuclei.

The research method developed by Bloch and Purcell is essentially one of observing, in solids, liquids, or gases, the effects accompanying the reorientation of the nuclear magnetic moment of a substance to which is applied a strong and steady magnetic field at right angles to a simultaneously applied alternating electromagnetic field. The effects, either those of the absorption or of the dispersion of electromagnetic waves, can be detected in the radio wave region with the help of appropriate electronic circuits. Information obtained from a knowledge, for different substances, of the critical frequencies at which peaks appear in the radio-frequency signal has led to the precision measurement of the gyromagnetic ratios, the spins, the signs of the magnetic moments, and the magnitudes of the moments of a variety of nuclei.

Dr. Bloch was born in Switzerland, studied at the Federal Institute of Technology in Zurich, received his doctorate in physics at the University of Leipzig, and carried on research at several other European laboratories before coming to the United States in 1934, when he was invited to join the Stanford faculty. During World War II he worked on the Manhattan Project until 1944, at which time he joined the radar project at Harvard's Radio Research Laboratory.

Dr. Purcell, a native of Illinois, graduated from Purdue University in 1933 and received his PhD at Harvard in 1938. During the war he was on leave of absence from the Harvard faculty and served as a staff member of the Massachusetts Institute of Technology Radiation Laboratory to work on the MIT radar program.

The co-winners of this year's Nobel Prize in physics will share a cash award of 171,134 Swedish crowns, which amounts to approximately $16,518 for each scientist. Formal presentation of the awards will be made on December 10th at Stockholm.

Franklin Institute Awards

Thirteen Scientists Honored

Wolfgang Pauli, professor of theoretical physics at the Physikal Institut of Eidgenossische Technische Hochschule in Zurich, Switzerland, has been awarded this year's Franklin Medal for his formulation of the exclusion principle as related to atomic structure. Awarded annually by the Franklin Institute to the scientist whom the Institute considers to have done most to advance the knowledge of physical science or its application, the medal was accepted by M. J. Rohrbach, Swiss Consul in Philadelphia, on behalf of Dr. Pauli, who was unable to attend the October 15th presentation ceremonies.

Twelve other 1952 medals of the Institute were awarded for work in physics, mathematics, chemistry, metallurgy, and engineering. Physicists John Bardeen of the University of Illinois and Walter H. Brattain of the Bell Telephone Laboratories received Stuart Ballantine Medals "in recognition of their contributions to the theory of surface states in semiconductors and of their invention of the point contact transistor, a device foreshadowing a notable advance in the means of electromagnetic communication." The Elliott Cresson Medal, awarded for discovery or original research, was presented to Edward C. Molina, lecturer in mathematics