

## A Radio Message

### From Iowa to Virginia, Via the Moon

In present long-range radio communications, the ionosphere, an electrically charged layer of the upper atmosphere, is used as a reflector for radio waves. The occurrence of occasional ionospheric storms sometimes interrupts long-range communications, however, and it has been suggested that the effects of these radio storms might be circumvented if a dependable system employing ultra-high frequency radio waves reflected from the surface of the moon could be developed for emergency use. Last winter some encouraging results in this direction were obtained during a cooperative experiment conducted by the National Bureau of Standards and the Collins Radio Company. Ultra-high frequency signals were transmitted after reflection from the moon. A twenty-kilowatt transmitter located in Cedar Rapids, Iowa was used to send in Morse Code the historic message "What hath God Wrought!" at an operating frequency of 418 megacycles to a receiver at the NBS field station in Sterling, Virginia.

To verify that the signal was in fact reflected by the moon, the Bureau of Standards reported, the actual transmission delay was compared with the theoretical value determined from the relative positions of transmitter, moon, and receiver and the known speed of radio waves. The 2.5-second time interval that was measured proved to be in approximate agreement with the theoretical value. Those participating in the experiment were P. G. Sulzer, G. F. Montgomery, and Ross Bateman of the NBS central radio propagation laboratory and I. H. Gerks of the Collins Radio Company.

## Research Corporation, 1951

### Grants in Aid to Science and Education

Grants in aid totalling \$875,000 were made by Research Corporation in its 1951 fiscal year according to the foundation's president, Joseph W. Barker. The sum was distributed in the form of 288 grants to educational and scientific institutions in forty-one states, the District of Columbia, Hawaii, Canada, Formosa, India, Lebanon, and the Philippine Republic. In the annual report covering the foundation's 39th year of operation, Dr. Barker notes that Research Corporation's fields of disbursement are being strongly influenced by the indirect effects of government sponsored research on the smaller educational institutions. The huge research programs sponsored by defense and other agencies in the larger American universities and technical institutions, on top of these schools' usual educational programs, create a need for additional scientists who frequently are recruited from the smaller institutions.

In the face of this competition, the smaller colleges find it harder and harder to keep together the staffs needed for science teaching and independent research projects, according to Dr. Barker. To support research in such colleges, Research Corporation last year distributed through its Cottrell grants program over

\$350,000 to the smaller colleges of liberal arts and sciences. The principal aim of this program is the support of work by younger researchers and teachers who are training a new generation of scientists. An additional \$225,000 was given to universities and scientific institutions through the foundation's general grants program which fosters pioneering research, mainly in the physical sciences.

Since its founding in 1912 by Frederick Gardner Cottrell, the foundation has distributed grants amounting to nearly \$7,000,000—primarily in the fields of physics, chemistry, engineering, mathematics, and nutrition. Further information may be obtained from C. H. Schauer, Director of Grants, Research Corporation, 405 Lexington Avenue, New York 17, N. Y.

## Oceanography

### Research Awards Offered by Texas A & M

The Texas A & M Research Foundation Fellowship in Physical Oceanography, available to an outstanding graduate in physics for the 1952-53 academic year, has been announced by the college. The fellowship carries a stipend of \$1500. Texas A & M is also offering assistantships in physical oceanography, as well as in the fields of biological, geological, chemical, and meteorological oceanography, providing \$900 to \$1500 each. Fellows and assistants in physical oceanography take standard curricula leading to the MS or the PhD degree, together with additional graduate work in physics and in the basic sciences or in engineering. In the assistantships, duties with the department of oceanography will consist of aiding in the program of oceanographic research sponsored by various government agencies and by industry. Further information may be obtained by writing to the Head of the Department of Oceanography, Agricultural and Mechanical College of Texas, College Station, Texas.

## RCA Fellowship at NYU

### New Award in Electrical Engineering

A predoctoral fellowship in electrical engineering to be known as the David Sarnoff Fellowship at New York University has been established by the Radio Corporation of America. The fellowship provides an annual grant of \$2700 and will be administered jointly by NYU and the RCA Education Committee. Other RCA resident fellowships are available for outstanding graduate students in electrical engineering at Princeton, Caltech, and the University of Illinois; in physics at Columbia University; and in engineering physics at Cornell University.

## GE Fellowships

### Education Program Expanded

Following a two-year survey made by the General Electric Company in review of its educational assistance program, GE has announced its decision to in-