

RADIO ASTRONOMY

National Radio Telescope

► THE BIGGEST RADIO TELESCOPE in the United States, a 140-foot "dish," will be located in a mountain-ringed valley in southeastern West Virginia.

The most favorable site of 29 surveyed, the Green Bank area, about 35 miles south of Elkins, W. Va., is convenient both to the East and Middle West. The valley's main advantage is a very low level of radio interference over a frequency range of 10 to 35,000 megacycles.

When built, the 140-foot dish-shaped antenna will be second in size only to the 250-foot radio telescope now being completed in Manchester, England. Installation of a 600-foot instrument in the same valley is planned for the future.

Both instruments will be built with funds administered through the National Science Foundation, which has earmarked \$3,500,000 for the 140-foot radio telescope.

Although the site location is settled, the question of what organization or group should manage activities at the radio observatory is still being debated.

The Foundation is forbidden by law from engaging in research directly. Asso-

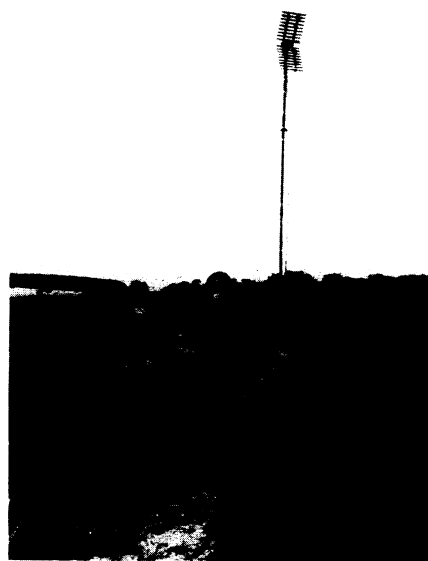
ciated Universities, Inc., which operates Brookhaven National Laboratory, Upton, N. Y., is a strong contender for operating the facility. The State of West Virginia and other southern states are also bidding for the management.

Radio waves received from planets, stars and other celestial objects provide a new "window" through which scientists can study the universe. Because radio wavelengths have a different frequency and cover a considerably wider band than visible ones, radio astronomers can record much information hidden to the optical astronomer.

For the lower part of the range from 10 to 35,000 megacycles, the interfering noise level is nearly uniform over the entire country because of scattering in the atmosphere. At higher frequencies, there is serious man-made interference from electrical machinery and appliances.

The only protection is found in mountain-surrounded valleys in thinly inhabited localities, where few aircraft fly over, and where high-voltage power lines are not in the radio telescope's line of "sight."

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RADAR RULER—Two separate jeep-portable radar stations, one at each end of the distance to be measured, constitute the system developed by the Army's Signal Corps Engineering Laboratories at Fort Monmouth, N. J., for surveying great distances when long-range and speed are essential. Using it, 50 miles can be measured to within a few feet.

GEOPHYSICS

Mysterious Radio Waves

► THE SUN may be the source of mysterious low-frequency radio signals, the American Meteorological Society meeting in Boulder, Colo., was told.

Instruments to detect the puzzling signals must be located in isolated areas to get away from interference caused by power lines and other sources of radio noise, Dr. James M. Watts of the National Bureau of Standards' Radio Propagation Laboratory, also in Boulder, reported.

Radio waves of a frequency so low that they are audible can be grouped according to their sound, he said.

Lightning is now known to produce one group of semi-musical sounds called "whistlers." The whistling radio waves travel along the earth's magnetic force lines, reaching a height above the equator of nearly 8,000 miles.

Other sounds can also be traced to distant lightning, Dr. Watts said. Some audible radio waves, however, appear to be related to the arrival in the earth's atmosphere of charged particles thrown out by the sun during a gigantic explosion.

Dr. Watts explained a theory to account for the solar origin proposed by Dr. Roger M. Gallet of the National Bureau of Standards and Dr. Robert Helliwell of Stanford University in California.

At the University of California in Los Angeles, Dr. Robert Holzer has extended the study of audio-frequency radio waves to signals considerably lower than those

associated with lightning. These signals, beyond the audio range, must be detected by large coils rather than antennas.

An antenna hooked to an amplifier is sufficient equipment to tune in on the lightning-caused sounds, but scientific studies of them require more elaborate instruments.

Whistlers will receive special attention during the International Geophysical Year, which starts next July 1. A network of observing stations will use them as convenient natural probes of space in the thin atmosphere beyond the height reached by man-made satellites.

Science News Letter, August 4, 1956

GENERAL SCIENCE

Tobacco Journal Published Soon

► A SCIENTIFIC JOURNAL on tobacco, providing an international outlet for technical articles on all phases of tobacco production and processing, will become part of the trade journal *Tobacco*.

The journal will be put out under the auspices of the U. S. Department of Agriculture, the Land Grant College Association and the tobacco industry.

Called *Tobacco Science*, the new publication will include reports on tobacco in the fields of chemistry, physics, engineering, botany, agronomy and soils.

Science News Letter, August 4, 1956

BIOLOGY

New Hormone Hints At New Insecticide

► A POTENT new insect hormone, extracted for the first time, holds promise of an insecticide against which pests cannot develop resistance.

The hormone prevents metamorphosis, the process by which insects change form, as when caterpillars change into butterflies. Scientists have been able to prevent metamorphosis only by transplantation of living cells. The hormone is extracted from the abdomen of an adult male *Cecropia* silkworm. Extracts of this hormone created freak insects that soon died.

Reporting in *Nature* (July 28), Dr. Carroll M. Williams of Harvard University states the hormone extract was applied to the outside of an insect in the pupal stage of development. The result was an insect, part pupa and part adult, that soon died.

Flies, cockroaches and other pests have developed resistance to virtually every insecticide developed by scientists.

Since it is unlikely an insect can evolve resistance to its own hormones, Dr. Williams says, the newly extracted hormone will probably be an effective permanent insecticide after it has been identified and produced in the laboratory.

Dr. Williams conducted his experiments at the Zoological Laboratory, University of Cambridge, England.

Science News Letter, August 4, 1956