

RADIO

2,000 Mile Short-Wave

See Front Cover

► TELEVISION, RADAR and ultra short-wave radio transmissions over 2,000 miles, and faster data for forecasting the weather, may all result from studies being conducted by the Navy at an abandoned Army air base at Gila Bend, Ariz.

Under the sponsorship of the Navy's Bureau of Ships, scientists from the Navy Electronics Laboratory, San Diego, Calif., are working on a \$500,000 project for studying the effects of weather changes on high frequency radio transmission.

Dr. John B. Smyth, who heads the scientists on the project, predicts that the study of weather conditions may extend the range of ultra short-wave radio and radar transmissions, and ultimately television, as much as 2,000 miles. Ultra short-wave radio transmissions are now limited to 150 miles.

Scientists on the project will not admit that weather forecasting from radio transmissions is yet likely, but the project has already used this system to detect atmospheric changes ahead of the best meteorological instruments.

Based on the suspicion of scientists that the wide variation in the range of

high frequency radio waves is due to weather conditions such as the temperature, air pressure and humidity, the studies were started early in 1945 to determine what frequencies would send out transmissions best under different weather conditions.

The extended range for high frequency waves is expected to result from data showing which frequencies should be used for various conditions of weather.

Three 200-foot towers have been constructed at the former \$2,500,000 Army air base at intervals of 25 miles. The Gila Bend tower has transmitters that can be raised and lowered to vary the height of transmissions sent at frequencies ranging from 170 to 24,000 megacycles. Other towers at Datelan and Sentinel contain receivers, while each tower has a complete set of weather instruments.

Weather instruments set along the course keep records of the temperature and humidity at the time of transmissions and stationary kyttons (kite balloons) chart the weather above the towers.

Similar experiments have been conducted over water using towers at Point Loma and San Pedro, Calif.

The Gila Bend project has brought visiting scientists from Great Britain, Canada and Australia, and the University of California and the University of Texas are using the project's facilities for related research projects.

The picture on the front cover of this SCIENCE NEWS LETTER shows Dr. John B. Smyth and assistant explaining features of the radio transmitters to visiting British scientists at the Gila Bend tower.

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BIOCHEMISTRY

Corn Cob Mixture Blasts Carbon Off Engine Parts

► CARBON that forms in the engine of your car can now be blasted off with a mixture of ground corn cobs and rice hulls in an ordinary sand-blasting machine instead of the tedious scraping job used in most garages.

At the first showing of the new process, carbon-covered cylinders and other automobile engine parts were quickly

brought to a shine with the soft grit blasting. Developed by the Bureau of Agricultural and Industrial Chemistry at the Department of Agriculture Laboratory at Peoria, Ill., the blasting mixture uses 60% ground corn cobs and 40% ground rice hulls.

Discovered during the war, the soft grit blasting was first used on airplane engines by the Navy, and a plant at Bloomington, Ill., produced the new blasting material for Naval use.

Sand-blasting machines are used for the process, but ordinary sand blasting would damage the part being cleaned. The corn cob and rice hull mixture removes the carbon and grease without damage to the surface of engine parts.

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Official U. S. Navy photograph
200 FEET UP—A close-up of the steel tower at Gila Bend showing the elevator with transmitter being hoisted to the top.