



**NEW SOUND INTEGRATOR**—Rotating around a 500-type telephone set in an acoustic laboratory, the sound integrator measures the sound power and quality of the telephone's ring with calibrated microphones in the hemisphere. J. D. Hubbell of Bell Telephone Laboratories is monitoring the sound output.

## ASTRONOMY

## Solar Effects on Radio

► **ACCURATE PREDICTION** of the blackouts and other disturbances that hamper long-distance communication by short wave radio is foreseen, using a new method.

Its aim is to take the guesswork out of forecasting geomagnetic disturbances.

For the first time, scientists now have a theory on which to base their forecasts of the giant magnetic storms caused by the charged particles being shot at the earth from the sun. These magnetic storms not only cause blackouts of radio communications, but the brilliant displays of "northern lights," and erratic movements of compass needles.

The charged particles ejected by the sun are focused by magnetic fields above the sun's surface, suggest Dr. Jean-Claude Pecker and Dr. Walter Orr Roberts, director of the High Altitude Observatory, Boulder, Colo.

For the last two months, experimental forecasts have been made on the basis of the new theory. Results so far, Dr. Roberts said, have been "extremely promising."

The High Altitude Observatory scientists are cooperating with radio experts at the radio research laboratory of the National Bureau of Standards, the Central Radio Propagation Laboratory, also in Boulder. There, using the new theory, Standards scientists are also making experimental fore-

casts of geomagnetic activity to see how closely predictions made by two separate groups agree.

Agreement so far has been "encouraging," Dr. Roberts said.

There are two principal sources of the charged particles, or corpuscles, that bombard the earth. One is the active regions, where great sunspots are often formed. The other is the spicules, small gaseous jets that cover the sun's surface.

Corpuscles coming from the spicules and focused by far-distant active regions are the source of the magnetic storms that recur every 27 days. These storms are now predicted by radio experts of the Central Radio Propagation Laboratory by an empirical method, which depends somewhat on the personal experience of the forecaster.

The new theory should eventually result in an objective method, with forecasts being made by punched card machines.

Discovery of the importance of the spicules in producing geomagnetic storms resulted from looking at the white light of the corona, the giant pearly white halo of the sun so spectacular during an eclipse.

Drs. Pecker and Roberts report some of their work on the relation between solar activity and geomagnetic storms in *Science* (Oct. 29).

Science News Letter, November 13, 1954

## PSYCHIATRY

## Psychiatric Screening Works in Navy Program

► A **PSYCHIATRIC** selection program, in effect in the Navy since 1941, has proved effective in weeding out recruits likely to break down in service or to be too costly in behavior problems if accepted for Naval service.

"Stated more simply, screening works," four Naval medical officers report to the *Journal of the American Medical Association* (Oct. 30).

The four are: Capt. George N. Raines (MC) U.S.N., Comdr. Cecil L. Wittson (MC), U.S.N.R., Comdr. William A. Hunt (MSC), U.S.N.R., and Lieut. Comdr. Robert S. Herrmann (MSC), U.S.N.

"Military efficiency should be the determining factor in establishing the exact cutting point to be used in selection, since the task is to produce a military establishment that can win wars," they state.

"The final solutions must be economically sound and within the potentiality of the national economy. Thus in utilizing the marginally serviceable man it is necessary to keep in mind such factors as the added expense in training and maintaining him, and the subsequent drain on our national resources through the medical program of the Veterans Administration owing to the higher medical attrition rate among such marginal personnel.

"We have the beginnings of a psychiatric science of manpower," they declare. "A continuing research program investigating all aspects of psychiatric selection should provide scientific answers to the problems posed."

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## PUBLIC SAFETY

## Plastic Industry Should Consider Poison Hazard

► **THE PLASTIC** industry and the scientists concerned with industrial health are facing serious problems from potential poison hazards, Dr. Rex H. Wilson and William E. McCormick of the B. F. Goodrich Company, Akron, Ohio, charge in *Industrial Medicine and Surgery* (Nov.).

"If the sales potential of a new plastic does not warrant toxicological study, then the product should not be produced," Dr. Wilson and Mr. McCormick declare.

"No industry can endanger the health of its people by knowingly exposing them to toxic materials. It is not enough for research chemists to discover a chemical combination, which will create a new sales masterpiece. The industrial hygienist must also determine the toxicity of the chemicals involved and designate ways and means of handling them safely."

The two Goodrich scientists give in their report what is believed to be the first comprehensive summary of the poison potentials of plastics.

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