The Sun Is Hissing at Us

By MARTHA G. MORROW Science Service Astronomy Writer

The sun is hissing at us in a high-pitched voice. And we on earth are just beginning to listen to find out why—and how.

The sun is constantly radiating vast amounts of energy of one sort or another. Light and heat are those with which are most familiar.

As we use higher and higher frequencies in our scramble for radio space, energy reaching the earth in the radio frequency bands becomes of increasing importance.

The general public thru its radio receivers makes use of radio waves about a quarter of a mile long, and radio hams communicate on waves about the length of a city lot; experimental scientists are using still shorter waves to explore the sun.

STEADY HISS

Solar noise, which interferes with radio reception at ultra-high frequencies, is a steady hiss. Upon this are often superimposed "puffs" and "swishes" lasting but a second or less. When the swishes overlap, a grinding noise results.

Solar static comes to us on the same frequencies as those used for FM, television and radar. Giant "mirrors" 10 to 25 feet across are being installed to explore outbursts from the sun.

Two of these enormous mushrooms are being set up at the National Bureau of Standards' radio propagation laboratory at Sterling, Va. Originally Giant Wurzburgs, a type of radar used by the Germans, these instruments have been converted to record solar noise. Brought back to this country by the Army Signal Corps, their steel mesh mirrors are 25 feet across.

SECOND NEARLY READY

A small antenna in the center of the basket-shaped mirror receives solar static, which is carried by cable to the electronic equipment in an adjoining building. One saucer is already at work on the 480 to 500 megacycle band; the other will begin collecting static within a few months.

With these instruments Grote Reber, in charge of the Bureau of Standards' project, hopes to discover:

- Frequencies on which the solar noise is strongest.
- If the static varies with the seasons.
- Whether or not there is a long-term fluctuation.

'RADIO TELEGRAPH'

At Cornell University, W. E. Gordon prefers to call his instrument a "radio telescope." Director of the Microwave Astronomy Project sponsored jointly by the university and the Office of Naval Research, he pictures the saucer-shaped radio antenna as the mirror of the telescope. Its wire surface collects radio waves an inch or so in length while the minute light waves slip thru. A radio receiver replaces the usual eyepiece.

Designed to study static at several wave lengths, the instrument can follow the sun automatically in its daily rising and setting. An audible rather than a visible picture results.

Not screens, but solid metal disks are used at the Naval Research Laboratory, Anacostia, to collect the sun's radio waves. The two instruments, designed to record energy at wave lengths of 10 centimeters or less, are each 10 feet across and painted black to cut down the heat, which otherwise would be focused at the antenna.

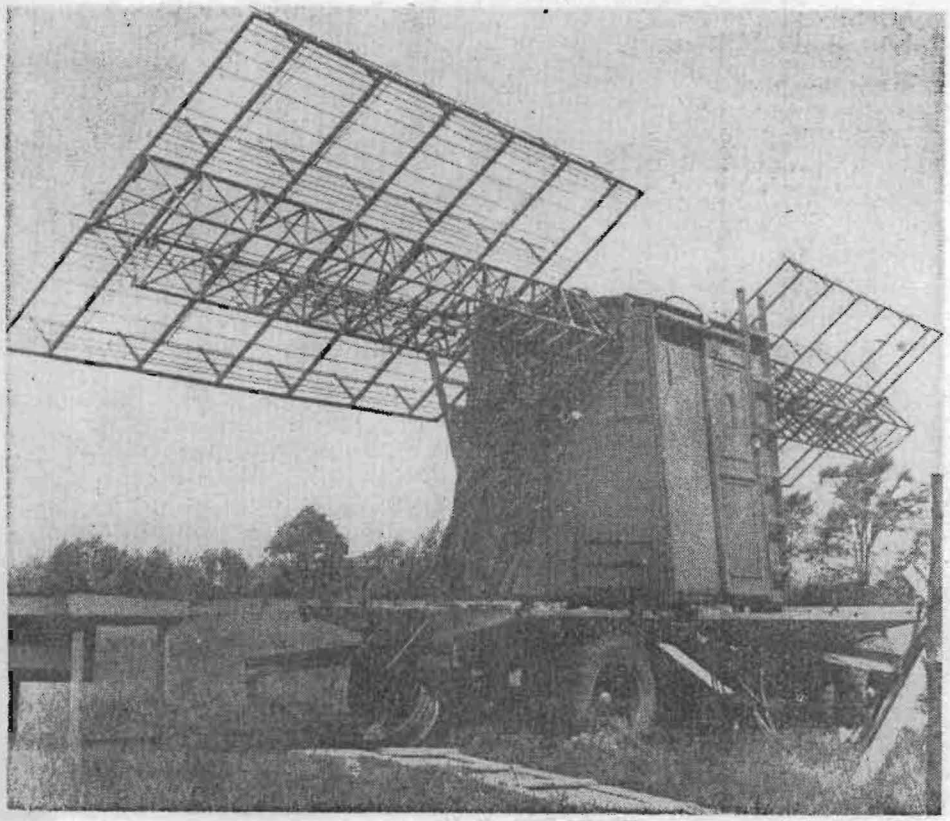
MORE THAN WE SEE

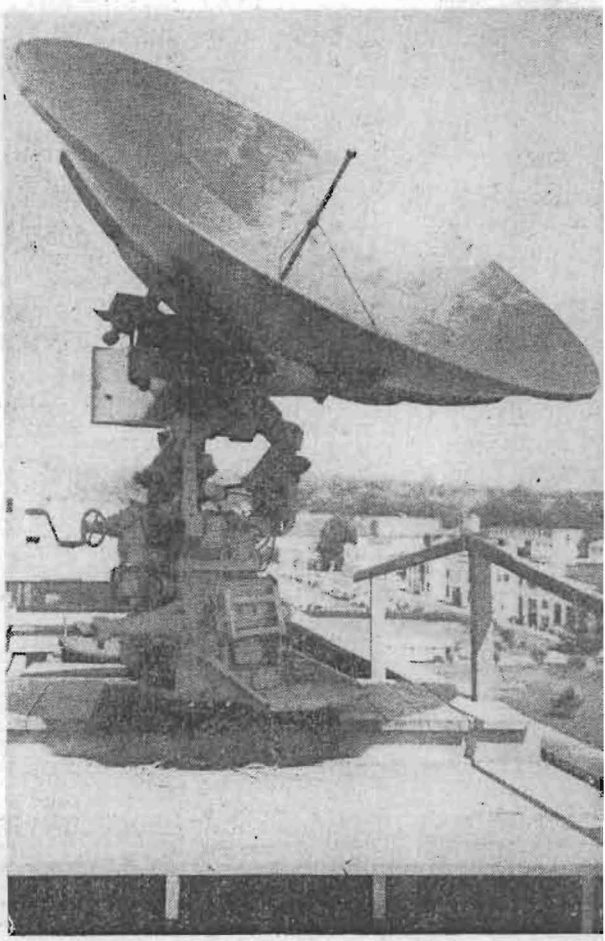
The sun explored by radio waves is slightly larger than that seen visually. We see energy originating in the bright photosphere; we hear waves coming from the sun's outer surface or corona. Thus science has a new tool for estimating the temperature of various layers of the sun. And radio waves show a much hotter solar atmosphere than its fiery disk indicates.

Sunspots sometimes can be found by radio a day or so before they are carried far enough around the sun's edge to be seen visually.

Thus we are beginning to learn much about the sun, source of our heat, light and other energy. Hisses from the sun are attracting the attention of an ever-increasing number of radio engineers, astronomers and others anxious to use this new means of exploring our nearest star.

Giant radar mirror, above, at the Bureau of Standards radio propag tion laboratory at Sterling, Va., is used for study of ultra-high fr quency radio noise generated by the sun.





Solid metal discs, above, are used at the Naval Research Laborator Anacostia, to collect the sun's radio waves.

A "mirror" is needed for the mount, at left, before Cornell Un versity's "radio telescope" will be complete.