around the world. They will scan the sky according to a well-practiced plan.

If the satellite's radio does not fail, the "picket fence" of radio-tracking stations, and ham operators throughout the world, will be able to listen to its broadcasts.

Once the "moon's" position is determined, a schedule of its future path will be predicted by high-speed electronic computers and given the widest possible publicity.

The computations will be based on the satellite's position as found from visual Moonwatch observers, radio broadcasts and precise cameras.

At dawn or sunset, the satellite can be seen from places where it passes nearly overhead.

Learning From the Satellite

One reason for the precise tracking systems is that the earth's shape, the distance between continents and air density at great heights can be learned from position measurements of the satellite, even without instruments in it.

Since the satellites will carry instruments, however, much more than this can be learned from them. Choosing which experiments to do was a difficult job, and more than 30 suggestions were seriously considered. Four were finally chosen as "hard core" experiments.

They were chosen on the basis of their simplicity, how far developed the instruments needed to do them were, the importance of the results to be expected, the ease with which the information could be transmitted and interpreted, and the experience of the agency proposing the experiment.

The four hard core experiments concern:

1. Measuring the sun's ultraviolet radiation, which is completely absorbed in the upper atmosphere above 50 miles and which has a profound influence on long-range radio communications and on the earth's heat balance.

2. Determining the kind and frequency of primary cosmic rays, the atomic bombardment coming not only from the sun but from other stars.

3. Measuring the earth's magnetic field from very high altitudes.

4. Determining the total radiation from the sun to the earth and that reflected back from the earth.

More Tests and Experiments

In addition to these experiments, several other tests can be made with very little added weight for instruments. These include measuring the temperature of the satellite's surface, expected to vary from 80 degrees below zero to 200 degrees above; finding out how much the satellite surface is eroded by tiny particles of meteoric dust; recording any punctures of the satellite's shell by meteorites, and noting the frequency with which the skin is hit by meteorites too small to puncture it.

Information gathered by a particular satellite will be stored on a tape recorder about the size of a postage stamp. Every time the satellite passes over one of the radio-tracking stations, it will be commanded to "speak up" and tell what occurred during its previous trip around the world. The satellite will then play back its recorded data.

The present program calls for six test vehicles to be tried, one of which could be an "accidental" earth satellite. These are intended to test the various rocket stages.

Following the tests, of which two have already been held, at least six fully instrumented satellites will be shot toward space. All may not be successful.

To learn more about the earth's atmosphere in the region between 10 miles and 300 miles above the surface, many nations have scheduled rocket firings during IGY. The U. S. will launch approximately 200, mostly from Fort Churchill, Canada.

These rockets will be aloft only minutes. In this relatively short time, experiments with them will yield information from a different atmospheric level than that of the satellites.

Scientists will learn more about the structure and the composition of the atmosphere. They will measure the Lyman alpha radiation sent out by the sun. They will find out about why the air is fluorescent during auroras. They will study the nature and numbers of solar particles bombarding the atmosphere to cause auroras. They will determine how much of an electrical charge the atmosphere picks up during auroras and how this electrical charge varies with the altitude above the earth.

Science News Letter, July 6, 1957

PSYCHIATRY

Restrict Antihistamine Sales to Public

➤ AN ANTIHISTAMINE drug available in drug stores throughout the country without a prescription has turned out to be a tranquilizer in disguise and has just been removed from "over-the-counter" sales.

The drug, called phenyltoloxamine or "PRN" for short, was tested in over 275 cases of various types of serious mental illness and gave results similar to reserpine except for the notable absence of the older drug's toxicity and undesirable side effects.

The study was reported by Dr. Anthony Sainz, Marcy State Hospital, to the Mohawk Valley Neuropsychiatric Society in Marcy, N. Y.

In a group of 72 middle aged and elderly patients who had all been institutionalized for more than ten years PRN gave "good" or "fairly good" results in about 76% of the cases.

The drug's freedom from side effects is particularly important since the toxicity and serious side effects of other potent tranquilizers like reserpine and chlorpromazine have hampered their extensive or continued use, Dr. Sainz said.

As an antihistamine drug, the compound has been available for some time on a non-prescription basis. Although the recommended dosage of the drug when used for allergies is well below that used in the mental hospital study, the drug's producer, Bristol Laboratories, Inc., Syracuse, N. Y., has decided to remove it from over-the-counter sales.

Science News Letter, July 6, 1957

SOCIOLOGY

Social Insects Evolve Toward a "Mosaic Mind"

➤ THE BEHAVIORAL evolution of a colony of social insects, such as ants, is toward one integrated entity—what may be called a "mosaic mind," Dr. Caryl P. Haskins, president of the Carnegie Institution of Washington, told the American Philosophical Society meeting in Philadelphia.

Since the time of Darwin the evolution of the social insects has been of a curiously compound nature. In part, this evolution has followed a course like the general one of related solitary forms.

But, in addition, there has been a pronounced trend toward social integration at the family level into an entity like that of a single many-celled organism.

Scientists have given particular attention to the physical organization and specialization of the social insects, as into reproductive and non-reproductive workers.

Less attention has been paid to the evolution of the social insect colony as a behavioral unit. Recent research, however, has shown what degree of information interchange is characteristic of some social insects and in the subtle symbolism mvolved.

It would be interesting, Dr. Haskins suggested, to study the social insect colony in the light of recently developed theories of information flow.

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