

## GENERAL SCIENCE

# International Look at Earth

Scientists from 39 countries, including Russia, will cooperate to make observations of the earth, its seas and air during the International Geophysical Year.

By ANN EWING

► SCIENTISTS FROM at least 39 countries, including Russia, are now making plans for coordinated research efforts during 1957-58 in a world-wide investigation of the earth, its seas and air.

The many-pronged attack, aimed at a better understanding of the planet we live on, is known as the International Geophysical Year, or IGY.

Such subjects as the aurora, air pollution, the rising level of the oceans, and radio waves and particles thrown off by the sun are but a few of the many areas of cooperative investigations planned for 1957-58.

At the present time, United States scientists have very little knowledge of how to live and operate in the Arctic or Antarctic although American expeditions have spent considerable time there. The English, the Australians and the Swedes, among others, have had much more experience in living in the ice and snow and perpetual midnight of the polar regions than have the Americans.

The icebreaker USS Atka has left for Little America on a five-month expedition to lay groundwork for the three stations to be manned there during IGY by the U. S. Twenty-one stations are now being planned for the bottom of the world.

## Cooperation "Unprecedented"

The world-wide cooperative program is "unprecedented," Dr. Joseph Kaplan told SCIENCE SERVICE. He is the University of California at Los Angeles physicist who is chairman of the United States National Committee in charge of plans for the International Geophysical Year. This committee operates under the direction of the National Academy of Sciences - National Research Council.

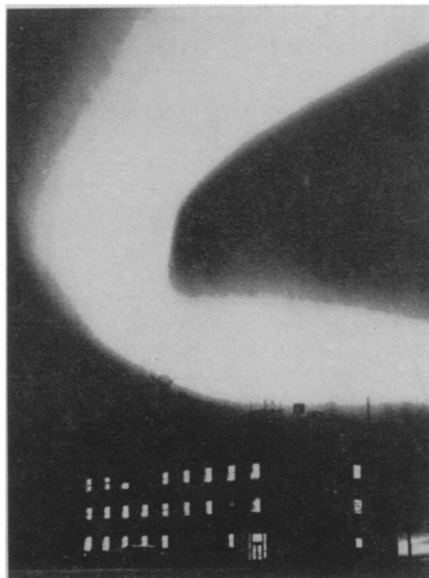
He has the final responsibility for smooth working of a program still two and a half years away. Plans must be made now, Dr. Kaplan said, "even if making such plans is itself a contradiction of the scientific method."

Some equipment, including the more than 30 Aerobee rockets the U. S. expects to launch from sites in New Mexico, Greenland, Canada and Alaska, has already been ordered.

Each rocket will carry a variety of instruments to measure such things as the earth's magnetic field, night and day airglow, ultraviolet light and X-rays, auroral particles and cosmic rays.

The U. S. has been alone in sending rockets high into our atmosphere, except for Russia, which is assumed also to be experimenting with them. During the IGY, however, the French, Australian and English will also be launching rockets as part of the coordinated effort.

Rockoons, small balloon-launched rockets, will be used in even greater numbers. Both the Rockoon and Aerobee rocket flights will yield data valuable to many of the special



**"NORTHERN LIGHTS"** — During the International Geophysical Year, scientists will study the aurora intensively in an attempt to learn the cause of these shimmering curtains of light and to understand how the aurora affects the earth's electrical weather. The photograph is a composite made by the Geophysical Institute of the University of Alaska.

programs, from meteorology to aurora to cosmic rays.

Congress has already appropriated \$2,500,000 for the project, and will be asked during its current session to put up another \$10,500,000.

Several hundred U. S. scientists will ultimately be involved in the project. Around the world, at least 4,000 or 5,000 scientists will be doing special studies as part of the 18-month IGY program, beginning in July, 1957.

Three pole-to-pole chains of stations will be set up along the meridians that run 10 degrees east, 140 degrees east, and 75 degrees west. Ground observations and upper air soundings will be made at these stations.

From such data, meteorologists hope to learn how fast the great storms move around the world, whether there is a mass transfer of air between the Northern and Southern Hemispheres, and the influence of the cold polar regions, particularly the Antarctic, upon the world's weather.

Another kind of weather, the earth's electrical weather, which has important effects on radio waves will be studied intensively.

Scientists hope to learn whether the great auroral displays, sometimes visible in this country, are extended southward from the normal auroral zone, or whether the whole zone itself simply moves south during a display.

## Auroral Shift

They also expect to learn whether aurora occur simultaneously over both the north polar and south polar zones. One "especially exciting experiment," according to Dr. Lloyd V. Berkner, will be an attempt to identify simultaneous auroral arcs in the Northern and Southern Hemispheres, using the earth's magnetic field as a giant lens.

Dr. Berkner is president of Associated Universities, Inc., which runs Brookhaven National Laboratory for the Atomic Energy Commission, and vice-chairman of the Special Committee on the International Geophysical Year, which coordinates the programs of all 39 nations now participating in the program.

A geophysicist, Dr. Sydney Chapman of Queen's College, Oxford, is chairman of this committee, composed of representatives of the six international scientific unions sponsoring the IGY.

Dr. Chapman hopes that observations made in 1957-58 will show whether or not his theory that there is an invisible band of electricity circling the earth's equatorial region 12,000 to 16,000 miles in space is true.

## To Study Sunspots

Particularly complete and continuous studies of solar activity will be made during the 18-month period, since 1957-58 was selected for the IGY because the sun will be approaching maximum in its 11-year sunspot cycle. There will not be another maximum until about 1970.

Sunspots, which indicate a highly active sun, are known to be closely associated with the aurora, changes in the earth's magnetic field and the ionosphere.

Plans for the world-wide programs for observations, synoptic networks and expedi-

tions were made final last summer at various international meetings.

A joint international effort to collect geophysical information about the earth was made in 1882-83. It was known as the First International Polar Year and, during it, the first Arctic auroral, meteorological and magnetic observation stations were set up.

### Seen in Narrow Zone

From data collected, the aurora was removed from the realm of folklore and fancy, and recognized as a beautiful display of nature tied in somehow with the earth's magnetic field. The scientists learned that the "northern lights" are regularly seen only within a narrow band known as the auroral zone.

This band is now the area where the U. S. must have its first line of defense. Since the aurora forms an electrical mirror in the sky, it could affect the sensitive electronic instruments that are so vital to our defense.

The Second International Polar Year, 1932-33, followed the first by 50 years. Studies of the earth's ionosphere during this special period, and following it, by English and American scientists led to the discovery of radar. Radar not only was a powerful weapon in helping the Allies to win World War II, but it will be used in the coming IGY to learn more about our atmosphere.

The 1957 effort far surpasses in scope either of the two previous efforts. It was first suggested by Dr. Berkner. The amount of information scientists will gather will be several times that of either of the two previous international years.

Rockets, radiosonde equipment, ionospheric recorders, auroral spectrometers and electronic computers are all devices, just recently available, that will be used to learn more about the earth, its seas and air during 1957-58.

Science News Letter, January 15, 1955

### ZOOLOGY

## Gophers' Homemaking May Be Control Answer

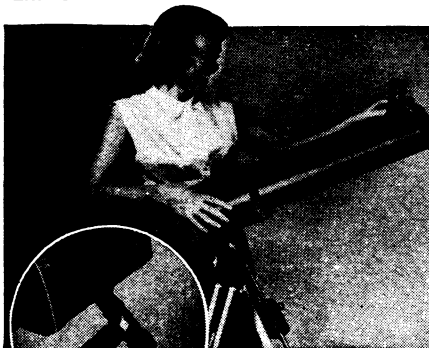
► THE HOMEMAKING practices of the pocket gopher may provide the answer to its control, Dr. Walter E. Howard of the University of California reported at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

A seven-year study of more than 1,000 pocket gophers, California's most serious field rodent pest, made at the San Joaquin Experimental Range, O'Neals, Calif., showed that neighboring and young gophers quickly reoccupy burrows abandoned by other gophers that have been killed or trapped.

This behavior, Dr. Howard stated, may make it possible to develop improved methods of control, in which an entire population is held in check by placing a new kind of bait in only a small proportion of the burrow systems.

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# OPTICAL BARGAINS



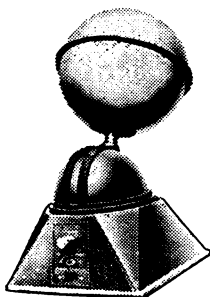
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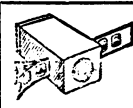
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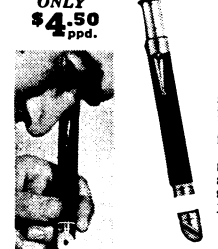
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