The umbra, however, will just graze the earth's atmosphere, barely touching it along the Antarctic coast, near Halley Bay, where a British expedition is located. Scientists there will be able to take advantage of this opportunity for some unique observations, if the weather is clear; if it is not, the eclipse should still be useful.

One important phase of the IGY program is concerned with the ionosphere, the layer of the atmosphere that reflects radio waves back to the ground, and is affected by the sun's radiation. When the moon cuts this off, important observations are expected.

Without traveling to Antarctica, anyone who can see the evening skies in October will be able to see another eclipse—not once but several times. This will be of the star called Algol, in the constellation of Perseus, the champion, which is seen in the northeast, just above Auriga.

Algol, also known as beta Persei, is the second brightest star in this constellation; the brightest is Mirfak, a little to the left. Ordinarily, Algol is of magnitude 2.06, while Mirfak is 1.80, or about 25% brighter.

Below Algol (under the letter P in Perseus) is the star called epsilon Persei, of magnitude 2.88, and Algol is about twice as bright.

However, if you look at these stars at about 9:07 p.m. on the evening of Oct. 18, you will find that their order of brightness has changed, and epsilon is about 50% brighter than Algol, which is now only a third as bright as it is normally. On the evenings of Oct. 19 and 20, Algol will shine with its normal brightness, but on the 21st, 2.87 days after its previous diminution in brightness, it will again have faded.

Actually, Algol is not a single orb, but consists of two stars revolving around the center of gravity of the pair. There are many binary stars of which this is true, but with an eclipsing binary the plane of revolution is nearly in line with the earth, and one star is much fainter than the other.

Thus, every 2 days 20 hours 49 minutes, the dark component of Algol passes partially in front of the bright one and produces an eclipse, which dims its light. It takes about ten hours for the complete passage of the dark star.

### Celestial Time Table for October

| Oct. | EST | |
|---|---|---|
| 5 | 12:00 noon | Jupiter behind sun. |
| | 5:00 p.m. | Moon farthest, distance 252,200 miles. |
| 8 | 4:42 p.m. | Full moon (Hunter's Moon). |
| 13 | 3:30 a.m. | Algol at minimum. |
| 16 | 12:19 a.m. | Algol at minimum. |
| | 8:44 a.m. | Moon in last quarter. |
| 18 | 9:07 p.m. | Algol at minimum. |
| 20 | 7:00 a.m. | Venus passes Saturn. |
| 21 | 8:00 a.m. | Moon nearest, distance 224,400 miles. |
| | 5:56 p.m. | Algol at minimum. |
| 22 | 11:43 p.m. | New moon; total eclipse of sun, visible from Antarctica. |
| 25 | 10:47 p.m. | Moon passes Saturn. |
| 26 | 10:17 a.m. | Moon passes Venus. |
| 30 | 5:48 a.m. | Moon in first quarter. |

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, September 28, 1957

GEOPHYSICS

# "Hams" Track Satellites

➤ RADIO "HAMS" and other volunteers have been asked to help track the earth satellites to be launched next spring as part of the International Geophysical Year, or IGY.

The U. S. National Committee for the IGY said the amateur radio tracking program will be known as "Moonbeam." The visual tracking program by volunteers is known as "Moonwatch."

Under the Moonbeam system, amateur radio groups will locate the satellites as they circle the earth some 200 to 1,500 miles from its surface and will receive scientific data transmitted from them. The Naval Research Laboratory heads the project, with assistance from the University of California's Jet Propulsion Laboratory.

The American Radio Relay League, to which most "hams" belong, supports the program. Moonbeam volunteers will use a simplified version of the primary Minitrack system. Both systems, developed at the Naval Research Laboratory, involve tuning in on the radio signals broadcast from the satellites at 108 megacycles for tracking and recording scientific data.

The simplified version is known as Minitrack Mark II. The Jet Propulsion Laboratory has developed a second system, Microlock, for receiving the radio signals.

Cost of both systems is expected to be within reach of interested amateurs.

Information turned in by Moonbeam volunteers will be of particular importance in detecting small deviations in the satellite's orbit due to local irregularities in gravity and in recording scientific data that might be telemetered from the satellite at the time of a solar flare.

The main Minitrack stations, all of which are expected to be in operation by the end of September, will stretch along a line from Blossom Point, Md., to Santiago, Chile, except for one in Australia and one in California. Each is estimated to cost about $120,000, not including personnel.

Moonbeam teams may also make important contributions to the IGY program by helping to locate the satellites initially; by providing additional data on the effects of the ionosphere, the electrically charged layers of the upper atmosphere, on radio signals; by providing time and position checks for the primary recording of data from certain satellite experiments; and by providing data if the satellite is seriously damaged, should this occur.

Requests for information concerning the Moonbeam program should be addressed to the Satellite Office, IGY Committee of the National Academy of Sciences, Washington, D. C.

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*Lithium*, a silvery-white metal which reacts with air, is about half as dense as water; its compounds are used in high-temperature greases, ceramics, metallurgy and atomic energy work.