GEOPHYSICS

Test Run for IGY

Scientists the world over are about to begin an 18-month investigation of the earth, its seas and the atmosphere, known as the International Geophysical Year.

➤ JUNE is practice month for the International Geophysical Year, or IGY, a world-wide probe of the earth, its seas and atmosphere that starts officially on July 1.

From then until Dec. 31, 1958, thousands of scientists from 70 countries will take millions of scientific readings on just about everything from earth satellites to ocean tides. The result will be not only a much more complete understanding of the earth as a planet, but of practical benefit such as improved weather forecasts and radio communications.

Total cost of the world-wide program is estimated at $500,000,000, of which the United States is spending some $39,000,000, not including Defense Department support for the satellite launching and Antarctica expeditions.

During June, the entire IGY program will be given an advance trial, primarily a test of the communications network by which scientists around the globe are alerted to redouble their efforts.

Focal point of the world-wide network is at Fort Belvoir, Va., where the National Bureau of Standards maintains a radio warning service. From this point, IGY scientists everywhere will be flashed warnings that unusual geophysical activity is expected.

The 18-month period for the IGY program was selected because the sun is now approaching a peak in its 11-year cycle of activity. Besides light, the sun throws off all sorts of radiation, from cosmic rays to X-rays. At times giant flares erupt from its surface. (See p. 346.)

To insure greatest use of all information collected during the IGY, three world data centers are being established, one each in the U.S., U.S.S.R. and Western Europe. All data in every field will be sent to one of these centers, where they will be duplicated and forwarded to the other two.

For the U.S., the data center will actually consist of 12 archives at institutions with a long history of interest and research in the field. They are:

Instrumental aurora at the University of Alaska, College, Alaska.

Visual aurora at Cornell University, Ithaca, N.Y.

Airglow and ionosphere at the Central Radio Propagation Laboratory, Boulder, Colo.

Cosmic rays at the University of Minnesota.

Earth satellite at Smithsonian Astrophysical Observatory, Cambridge, Mass.

Geomagnetism, gravity and seismology at the U.S. Coast and Geodetic Survey.

Glaciology at the American Geographical Society, New York.

Latitude and longitude at the U.S. Naval Observatory.

Meteorology at the National Weather Records Center, Asheville, N.C.

Oceanography at Texas A. and M., College Station, Tex.

Rocketry at the State University of Iowa.

Solar activity at the University of Colorado.

Science News Letter, June 1, 1957

TECHNOLOGY

Produce Materials Harder Than Steel

➤ A NEW FAMILY of materials, made from glass, which are harder than steel, lighter than aluminum and 15 times as strong as plate glass has been developed by scientists at the Corning Glass Works in Corning, N. Y.

Named Pyroceram by Corning, the new materials will find their first use in radomes, the nose cones for guided missiles.

Claiming the new material is a major contribution and advance in glass technology, the Corning scientists described its production as a "revolutionary manufacturing process" in which non-crystalline glass is turned into a hard, nonporous crystalline material.

Dr. William H. Armistead, vice-president and director of research and development, claimed the following for the new materials:

1. It can be tailor-made with thermal expansions ranging from slightly negative to high enough to match those of heavy metals.

2. It can have electrical insulating properties superior to those of the best commercial dielectric ceramics.

3. It can be opaque or it can be transparent and is the first polycrystalline material ever to exhibit this optical property.

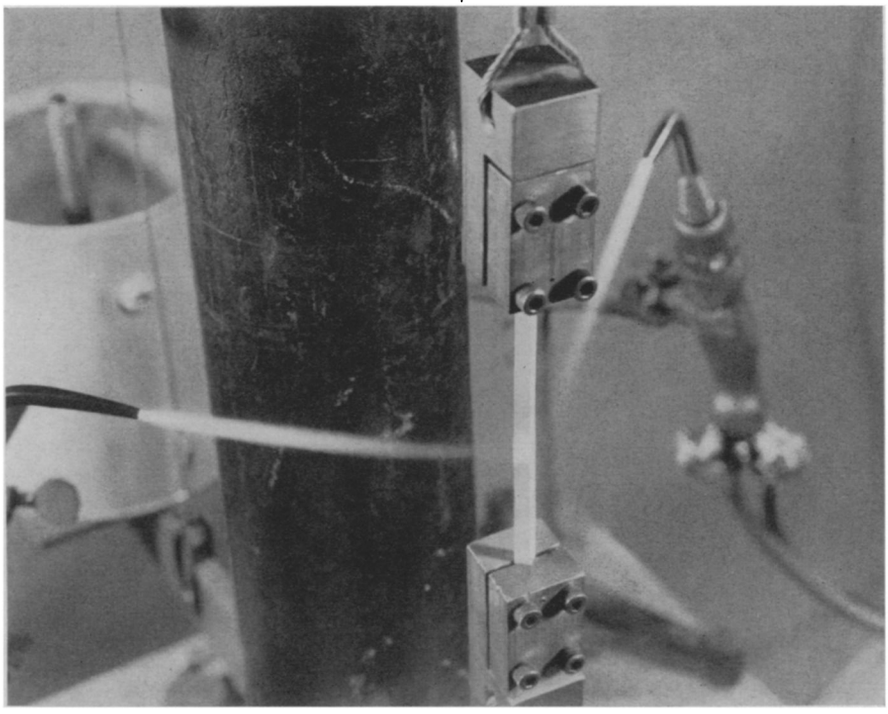
4. Certain types of the material keep their strength at temperatures as high as 1300 degrees Fahrenheit.

5. It can be made into large or complex shapes by any of the known glass-forming techniques.

Used as the material for radomes, the cone of Pyroceram protects the sensitive directional instruments in the nose of the missile from the sudden high temperatures experienced in hypersonic flight. The softening point of this type of the new material is 2460 degrees Fahrenheit, which is above the melting point of some stainless steels. It also has, says Dr. Armistead, a flexural strength of 40,000 pounds per square inch.

The entire family of new materials was invented by Dr. S. Stookey, manager of the company's fundamental chemical research department.

Science News Letter, June 1, 1957



PYROCERAM—The rod of Pyroceram shown in the photograph can withstand the heat of two acetylene torches, with weights pulling at each end, and maintain its strength indefinitely. Flexural strengths as high as 80,000 pounds per square inch have been measured on some varieties of Pyroceram.