News of Science

IGY Communications System

A world-wide communications network for the International Geophysical Year, with its focal point at the National Bureau of Standards radio forecasting center at Fort Belvoir, Va., has been established and is ready to go into operation at the start of the IGY in July. Extending virtually from pole to pole, and combining the commercial and governmental communications facilities of 40 nations, this constitutes by far the largest such system ever set up.

During the 18-month IGY period, observations of conditions on the sun and soundings of the ionosphere all over the world will be coordinated daily at five primary regional stations—in the Netherlands near Amsterdam, and in Moscow, Tokyo, Sidney, and Anchorage. From these points reports will be sent to Fort Belvoir, where they will be combined and evaluated and a final decision made on whether or not a world alert is justified. If so, warnings will be sent to the IGY stations of the 40 cooperating nations to redouble observational efforts in anticipation of unusual activity of cosmic rays, northern lights, earth magnetism, and radio propagation disturbances.

The system has been organized so that IGY scientists, no matter where they are, can conduct their experiments simultaneously. Messages will be sent from Fort Belvoir at 11 A.M. each day (16 hours Greenwich time). Within 8 hours, the three tests held to date indicate, these will arrive at the remotest IGY outposts, with the possible exception of Antarctica, which can be difficult to reach under certain unusual circumstances. Australia can be alerted from Belvoir in a maximum of 2 hours, Moscow in 40 minutes.

Over-all solar activity is measured and predicted in terms of the 11-year sunspot cycle and the 27-day period of the sun's rotation as observed from the earth. Many solar phenomena, such as enormous flares, prominences, and activities of various solar regions, vary according to the same time cycles. However, there are occasional short-term spurts, lasting a few days or hours and usually quite localized on the sun's surface, which do not appear to be cyclic and which are associated with geophysical phenomena on earth.

The IGY warning agency will issue two types of warnings—alerts and special world intervals—when major solar-terrestrial disturbances are expected. It is not economically feasible for scientists to make intensive world-wide observations every day during the 18 months of the IGY program. Just the cost of film would be prohibitive for smaller observatories. Similarly, the warning system is essential to the rocket-launching program, for which a limited number of rockets is available.

After due consideration of conditions that are predictable far in advance, a series of regular World Days has been selected for detailed simultaneous observations all over the world. Because of the unpredictability of some factors, however, it has been necessary to supplement the World Day program with special "world intervals," periods of a few days of particularly favorable observing conditions.

The alerts sent out from Belvoir will notify observers that a special world interval may be called in a few days. There will be about 8 hours notice for such a period, which will only be scheduled when there is a strong possibility that a major solar-terrestrial disturbance will begin within about 24 hours after the start of the interval. The special observing period will end when the disturbance subsides, or in about 24 hours if it should not materialize. As the program is now organized, the sun will be under close observation throughout the 24 hours somewhere in the world, and there will be ionosphere soundings once every 3 minutes instead of about four times an hour as is the practice today.

In arriving at a decision on calling an alert, about 13 factors, as reported from all over the world, will be taken into consideration. Among the most significant of these, in addition to ionosphere soundings, will be the following: solar plages; surges, streams of material ejected high into the solar corona, and even into space, at speeds of the order of 500 kilometers a second; prominances, cloudlike bodies of glowing gas that appear above the sun's chromosphere; emission corona, very faint emissions from the solar corona in wave lengths of highly ionized iron, nickel, and other metallic elements; radio noise regions, radio emissions from the sun that differ notably for various regions on the solar surface; and geomagnetic disturbances.

For observation of these phenomena the Bureau of Standards maintains two stations, the one at Belvoir and one at Anchorage, Alaska. The world warning agency is headed by Roger C. Moore of the NBS staff.

Revised Chromosome Count?

Further information about the chromosome numbers in man [*Science* **125**, 542 (22 Mar. 1957)] has been made available by M. Kodani [*Proc. Natl. Acad. Sci.* **43**, 285 (Mar. 1957)]. In 16 out of 20 testes of Japanese adults, the chromosome number was 48 in the spermatogonia and 24 (bivalents) in the first spermatocytes; in the remaining four testes, the chromosome number in the spermatogonia was 46 and 23 (bivalents) in the first spermatocytes.

In interpreting his results, Kodani says: "A comparison of the chromosomes of first metaphases of the 46- and 48-chromosome types suggests that a pair of simple supernumerary chromosomes of very small size is present in the latter type and absent in the former. This presumed supernumerary was expected to occur singly in some Japanese. They should have 47 chromosomes in the spermatogonia and one univalent in addition to 23 bivalents in the first spermatocyte metaphases."

In confirmation, Kodani has obtained a testis with 47 spermatogonial chromosomes and is continuing the study of its first-metaphase chromosomes. According to Koldani, all three diploid numbers (46, 47, 48) probably exist in other human groups, such as whites and Negroes, "although the proportion of the three types may be different from group to group."

Europe's Most Powerful Telescope

A telescope for the Haute-Provence Observatory at Saint-Michel (Basses-Alpes) arrived in Marseille, France, on 21 Mar. When installed, it will be Europe's most powerful telescope and second only to the one at Mount Palomar, Calif. It will have an aperture of 6 feet and will be lodged in a special dome more than 65 feet in diameter and slightly less than 80 feet high. The telescope was built by the London firm of Grubb and Pasons.