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UNCLASSIFIED- SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION

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SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION

Table of Contents

I. GENERAL

Soviet Geographers Honored

The Geographic Society of the USSR has awarded silver medals to the following outstanding Soviet scientist-geographers: V. P. Zenkovich, N. N. Urvantsev, I. D. Zhongolovich, P. V. Ushakov, and M. I. Belov. (Moscow, Izvestiya, 3 Jul 58)

Muscovites View Sputnik III and Aurora Same Night

Thousands of Moscow residents who were viewing the passage of Sputnik III and its carrier rocket on the night of 9 July were also treated on a display of northern lights. The aurora, which lasted more than a half hour, was of an intensity rare for these latitudes.

The occurrence was described by V. Lutskiy, a scientific associate of the Moscow planetarium. The aurora was caused, he says, by a very large group of sunspots which appeared on the central meridian of the Sun on 6 July. It was possible to expect the appearance of the aurora on 7 and 8 July.

Strong chromospheric flares were also recorded on the Sun. An especially strong flare with an intensity of 3 points (this is the most intensive flare) occurred at 1219 hours on 8 July. The beginning of the magnetic storm was successfully registered on 7 July by special instruments. It had particularly heightened by the morning of 8 July, and by the night of 9 July an ionospheric storm had also begun. This was the aurora viewed by the inhabitants of Moscow. (Moscow, Izvestiya, 10 Jul 58)

II. ROCKETS AND ARTIFICIAL EARTH SATELLITES

Soviets Report New Type of Radiation From Sputnik III Measurements

The day 15 July marked the end of the second month of Sputnik III's existence. During this time it had made over 800 revolutions around the Earth.

According to a Tass report, one of its correspondents was told by Prof S. M. Poloskov, member of the Soviet Committee for the Conduct of the IGY, that the experience of the past 2 months has proved that the complex apparatus on Sputnik III functioned normally, fulfilling its scheduled program of investigations.

The "Mayak" radio transmitter installed in the satellite is functioning reliably. In addition, when the satellite is in the region illuminated by the Sun's rays, the radio transmitter operates on its own solar batteries. It is possible to judge this according to the nature of the radio signals being received. The first experience of installing solar batteries in a satellite and their successful utilization are of great interest since such a source of energy is extremely promising for future artificial space ships.

The radio transmitter working on a frequency of 20.005 megacycles transmits radio signals in the form of telegraphic pulses with a 150- to 300-millisecond duration. The power of the transmitter ensures the positive reception of its signals at great distances even by the usual amateur receivers.

The call signals of "Mayak" are received in all the countries of the world. Thus the scientific data being transmitted by it become available to all scientists. It is interesting to note, Poloskov said, that these signals are also being received by scientists conducting IGY investigations in the Antarctic.

The scientific data received from Sputnik III are systematically gathered and deciphered. Preliminary processing of the observations in all the divisions of the scientific investigations is already being conducted. However, the detailed study of the scientific data with subsequent conclusions will require a long time.

In the short period of Sputnik III's existence, new and important information on the electrical properties of the upper atmosphere at very great altitudes, unobtainable by ground-based means, was successfully collected. Valuable data on the ion composition and structural parameters, pressure, and density of the upper atmosphere were also received.

Data concerning micrometeors, the smallest particles of solid interplanetary matter, were obtained for the first time. The intensity of their collision with the satellite on its flight through the cosmos is registered by special instruments and transmitted to the Earth.

Data concerning observations of cosmic gamma radiation which make it possible to form an opinion of the processes of electromagnetic radiations of great energy arising in the depths of terrestrial space are reported by the radio transmitter.

A sufficient amount of information on the composition of primary cosmic rays was gathered as a result of raising instruments into the stratosphere by means of balloons. However, it is impossible to obtain a whole series of data by conducting measurements in the stratosphere since even the small layer of matter present over the instruments changes the composition of the cosmic rays. Up to now it was not known whether cosmic rays contained an appreciable number of nuclei of elements heavier than the nucleus of iron.

Instruments for recording the nuclei of heavy elements which are installed in Sputnik III make it possible to answer this important scientific question. It is now possible to tell of new and interesting data concerning the total intensity, variations, and composition of cosmic radiation obtained with the aid of the satellite.

"Thanks to the instruments installed in Sputnik III a new phenomenon in science was discovered, a special type of corpuscular radiation which up to now had not been observed in the composition of cosmic rays. Specialists are now engaged in puzzling out this phenomenon."

A general assembly of CSAGI (Special Committee for the IGY) will be called at the end of July in Moscow. Specialists of many countries will take part in it. A symposium will be conducted during the assembly in which preliminary results of the investigations conducted with the aid of rockets and artificial earth satellites will be discussed. (Moscow, Izvestiya, 15 Jul 58)

Sputnik III

With the launching of Sputnik III, observatory stations in the southern part of the USSR went into operation. The first reports were obtained as early as 16 and 17 May from Abastumani and Tashkent observatories, from the Chernovtsy and Ashkhabad universities, and from the Ashkhabad Institute of Physics and Geophysics of the Academy of Sciences Turkmen SSR.

Special apparatus used in photographing the satellite and its carrier rocket is now installed in 25 photographic stations. This apparatus is reported to have been built in a very short period of time in one of the plants.

Radio signals from Sputnik III's "Mayak" transmitter are constantly recorded by USSR radio clubs at 29 designated points. As of now, about 300 rolls of magnetic tape bearing the satellite's signals have been received in Moscow. Twenty-three kilometers of such tape has been received from radio amateurs in Arkhangel'sk and 15 kilometers from Khabarovsk.

In the 2 months of its existence, Sputnik III has traveled over 78 million kilometers. As a result of atmospheric braking, the orbital parameters of both the satellite and its carrier rocket have decreased. During this time Sputnik III's orbital period has decreased by 0.75 minute and is now 105.2 minutes. Its apogee has decreased from 1,880 to 1,810 kilometers. The average daily decrease in orbital time is 0.75 seconds.

The carrier rocket's orbital parameters show a more substantial decrease. The orbital period decreased by 2.4 minutes and on 15 July it was 103.5 minutes. Its apogee decreased to 1,645 kilometers. The average daily change in orbital time is 2.4 seconds.

At 1800 hours on 16 July, Sputnik III had completed 841 revolutions of the Earth. (Moscow, Pravda, 13, 16 Jul 58)

Kiev Observatory Conducts Photographic Observations of Sputnik III

A station for regular observations of Sputnik III has been created in the Main Astronomical Observatory of the Academy of Sciences Ukrainian SSR in Kiev. It is headed by A. Korol', Candidate of Physicomathematical Sciences, an astronomer. The station is equipped with the newest optical instruments with photographic apparatus.

In addition to visual observations, photographic observations of Sputnik III are conducted. For this purpose the station has a special powerful camera, created by Soviet designers. Photographing is done at precisely fixed intervals. M. Fedchun, scientific associate of the observatory, has already made a number of very successful photographs. These photographs make it possible to determine the movement of the satellite and its carrier rocket and the evolution of their orbits with great accuracy.

While observing Sputnik III and its carrier rocket, the astronomers at Kiev have also witnessed other rare phenomena in the night sky.

Fedchun reports that one night in June the flight of a bright bolide over the city was registered. Less than an hour later in the northeast sector of the sky, another bolide flashed in the manner of lightning. Its light was so bright that objects on the ground cast shadows. Approximately 2 seconds later a dull boom was heard. There are reasons to believe that the celestial body fell somewhere nearby. A search for it is being conducted.

In addition to the station headed by Korol', observations for Sputnik III and its carrier rocket are being conducted in various points in the country by separate groups of observers. These groups systematically fix the passage of the satellite and its carrier. (Moscow, Izvestiya, 15 Jul 58)

New Radiotelescope in Armenia

The assembly of a large radiotelescope which has a mirror area of 4,500 square meters has begun on the slopes of Mt Aragats near the Astrophysics Observatory of the Academy of Sciences Armenian SSR. (Moscow, Izvestiya, 16 Jul 58)

Electrophotometric Device for Automatic Recording of Night Sky Radiation

An article by A. N. Otto of the Leningrad State University describes a device for recording night sky radiation.

To obtain more precise data on the radiation intensity of the night sky, the problem of automatic recording of the sky radiation has become of utmost importance. In the installation described the multiple type of photomultipliers was used (electrophotometer developed at the Laboratory of Photometering of the Scientific Research Institute of Physics of Leningrad State University.)

The general construction of the device is as follows: At the input end of the photomultiplier a camera shutter is placed to control the zero value of the photocurrent. This shutter is kept open during recording of the event and is closed every 10 minutes for a period of 40 seconds by means of a clock-actuated relay. For sensitivity control, every 60 minutes the clock mechanism connects a calibrated tube having a light filter similar to one used in measuring the night sky radiation. The filament potential of the calibrated tube is controlled by a potentiometer. The electronic potentiometer EPD-09 serves as a registering device. The current consumption of the relay group is about 0.6 a.

To decrease the dark current of the photoelectron device (PED) and fluctuation of current, the device is placed in a special solution-cooled cover. To prevent the shutter and filter from freezing, an ebonite insert with a circular bore was used.

During the expedition of 18 July 1956. the maximum intensity of night sky radiation was of an order of one micro which lasted about 5 minutes.

A maximum of night sky radiation intensity was observed previously, but not in such a pronounced fashion. (Pribory i Tekhnika Eksperimenta, No 1, Jan-Feb 58, pp 130-131)

Effect of Corpuscular Radiation on Upper Atmosphere

An article titled "The Effect of Corpuscular Flows on Dynamic Disturbances in the Upper Atmosphere," published in Fizika Korpuskulyarnykh Potokov i ikh Vozdeystriye na Verkhnyuyu Atmosfery Zemli, Akademii Nauk SSSR (Physics of Corpuscular Flows and Their Effect on the Upper Atmosphere of the Earth, Academy of Sciences USSR), 1957, pp 273-275, 275-276, by L. R. Rakipova, gives the following information, according to an item in a Soviet abstract journal.

A series of vortical perturbations, alternated according to symbols from layer to layer, is developed in accordance with a hydrodynamic scheme on tropospheric perturbations (cyclonic or anticyclonic) which was previously proposed by the author (Trudy Glavnaya Geofizicheskaya Observatoriya, No 28, 1951). The layers specified are as follows: 25-50, 50-100, and 100-250 kilometers. The scheme makes it possible to explain the passage of perturbations not only upward, but also in the opposite direction. The author goes on to say that additional heating in any layer must lead to an increase of dynamic perturbations in them and, in connection with this, to the strengthening or weakening of corresponding disturbances in the troposphere.

Drawing from the proposed scheme, Rakipova concludes that if the corpuscular flows reaching the E and F layers cause a heating effect in them, then the auroras (E Layer) must be accompanied by a strengthening of the anticyclonic activity, and the magnetic storms (F layer), the cyclonic activity, and the corresponding changes of pressure and temperature near the Earth's surface. A number of facts established by different researchers are presented in support of these conclusions.

According to the author, convective flows of heat, corresponding to the stated dynamic processes, are cuased by the downward-moving impulses only in one or two orders below the average values of tropospheric convective flows. Therefore, the effect of solar activity on dynamic processes in the troposphere must be detected not only in statistical investigations but also in separate cases on days with strong solar outbursts of ultraviolet or corpuscular radiation.

In answer to questions presented during a discussion period, the author in particular reported that, according to his calculations, in a concentration of corpuscles equal to 10^3 in one cubic centimeter and with a velocity of 1,000 kilometers per second, through inelastic collisions heating of the air by 10-30 degrees centigrade can occur.

(Referativnyy Zhurnal Geofizika, No 4, Apr 58, Abstract No 3062, by A. A. Petrov)

Ionospheric Perturbations Classified by Soviet Scientist

Ionospheric perturbations according to the data of the middle-latitude stations (Leningrad, Moscow, Sverdlovsk, Irkutsk, and Alma-Ata) are discussed by N. V. Mednikova. According to an abstract of her article "Ionospheric Perturbations in the Middle Latitudes," in Fizika Korpuskulyarnykh Potokov i ikh Vozdeystriye na Verkhnyuyu Atmosfery Zemli (Physics of Solar Corpuscular Flows and their Effect on the Upper Atmosphere of the Earth), Academy of Sciences USSR, 1957, pp 183-244, 245, Mednikova presents a classification of disturbances by different types in relation to the symbol and value of variations of the critical frequency of F2 ($f^{o}F2$) from the sliding median values (Δ pert. $f^{o}F2$)

Four types of perturbations are distinguished: (1) single phase negative (D-), during which a lowering of $f^{o}F2$ is observed; (2) single phase positive (D+) with a rise of $f^{o}F2$; (3) two phase type D+ - (where a lowering of $f^{o}F2$ precedes the rising); and (4) a mixed type, when the alternation of positive and negative peaks is observed. The perturbations are divided, according to intensity, into large (with a duration of more than 48 hours and a maximum Δ pert $f^{o}F2$ of more than 40%, medium (with a duration of 24-48 hours, maximum Δ pert $f^{o}F2$ of more than 30% but less than 40%), and small (with a duration of 10-20 hours, maximum Δ pert. $f^{o}F2 \sim \pm$ 25%)

The statistical distribution of the beginning and ending of the perturbations is presented.

It was discovered that the perturbations almost never began during daylight hours.

The relationship of the duration of "forbidden" periods of the beginning of the perturbations to the time of year is considered.

The duration of different types of perturbations in relation to the number of factors is analyzed.

The diurnal variation of intensity for the different types of storms according to the season and the different years of solar activity is presented and their characteristic properties are discussed.

It is shown that aperiodic disturbed variations (D st Δpert $f^{o}F2$) are constant during the perturbations. The probability of the appearance of active (the most disturbed) hours have a clearly seasonal variation with two equinoctal maximums and a summer minimum in the years of maximum solar activity. In the years of that same minimum, the probability of perturbed hours is maximum in the winter. The average curves obtained are compared with actual measurements of $f^{o}F2$ during different perturbations.

The bibliography contains 21 titles. (Referativnyy Zhurnal--Geofizika, No 4, Apr 58, Abstract No 3094, by L. N. Lyakhova)

Diurnal Variation of Earth's Electromagnetic Field Linked to Ionospheric Changes

According to an abstract of the article, the following conclusions on the diurnal variation of the appearance of short-period perturbations of the Earth's electromagnetic field are made by N. P. Ben'kova in an article titled "The Daily Variations of Short-Period Perturbations of the Earth's Electromagnetic Field" (Trudy Nauchno-Issledovatel'skogo Instituta Zemnogo Magnetizma, Ionosfery i Rasprostraniya Radiovoln, No 12 [22], 1957, pp 209-213).

Perturbations of the first type (with fluctuation periods of 10-40 seconds) were observed for the most part during daylight hours, local time in the upper and middle latitudes; during the night hours of the middle and lower latitudes. To consider this scheme completed, it is necessary to investigate diurnal variations of short-period perturbations in the Western Hemisphere.

Assuring that the sources of short-period perturbations occur beyond the limits of the ionosphere (electrical currents or the motion of charged particles), the author links diurnal variations of short-period perturbations with local changes of the structure of the ionosphere in time, which cause variations of its attenuating and amplifying effect. (Referativnyy Zhurnal--Geofizika, No 4, Apr 58, Abstract No 3099)

Soviets Link Magnetic Disturbances to Universal Time

The dependence of the diurnal variation Sa of magnetic activity to local and universal time is investigated by V. M. Mishin. On the basis of theoretical calculations and the processing of K-index data from 20 observatories, the author concludes that the component Sa exists and that it depends on universal time. A method of separating Sa into different components is shown and their geographic distribution is given.

According to an item in a Soviet abstract journal, Mishin's article, "Basic Components of the Diurnal Variation of Magnetic Activity," appeared in the book Fizika Korpuskulyarnykh Potokov i ikh Vozdeystriye na Verkhnyyu Atmosfery Zemli (Physics of Corpuscular Flows and Their Effect on the Upper Atmosphere of the Earth), 1957, pp 277-286. (Referativnyy Zhurnal -- Geofizika, No 4, Apr 58, Abstract No 3097, by M. A. Belousova)

New Soviet A-22-III Radiosonde Much Improved

The apparatus and operation of units of a new radiosonde (A-22-III) are described in "Basic Characteristics of Radiosonde A-22-III," by V. A. Usol'tsev and K. N. Manuylov, Trudy Nauchno Issledovatel'skogo Instituta Gidrometeorologicheskogo Priborostroyenyye, No 5, 1957, pp 3-16. The instrument was developed in the Scientific Research Institute of Hydrometeorological Instrument Building.

The new radiosonde was built on the code principle. Rotation of the radiosonde's propeller is transmitted to a coding drum. The drum is a thin metallic cylinder with a grooved surface. On the latter's track, the Morse alphabet is recorded by the alternation of the insulated and conducting layers. During the rotation of the coded drum, the needles of the points of pressure, humidity, and temperature alternately make contact with this or any track of the coded record and Morse signals are transmitted. A spiral bimetallic ribbon is used as a temperature sensing element, the two ends of which are wound in opposite directions and are fastened to the frame. A needle is fastened to the center of the cylinder. In connection with the small thickness of the bimetallic spiral (0.10-0.15 mm), the heat inertia and radiation error of the temperature element is less that that of the same element in the "peak-type" radiosonde, RZ-049. Two variants of pressure points are described. In the first version, membrane compartments made of the special alloy N 41KhT, having a low coefficient of thermoelasticity, are used. In the second, membrane compartments made from phosphor bronze and provided with a bimetallic compensator are used.

A semiautomatic recorder which registers signals on a tape in the form of curves forms variations of the meteorological elements on the tape.

The new radiosonde is intended for temperature and wind soundings in a wide network of stations. It has smaller instrument errors and considerably greater accuracy than the RZ-049 "peak-type" radiosonde used at present. (Referativnyy Zhurnal--Geofizika, No 4, Apr 58, Abstract No 2797, by S. I. Nepomnyashchiy)

New Soviet Book on Techniques of Atmospheric Research in Printers

Sovremennaya tekhnika issledovaniya atmosfery (Contemporary Technique of Investigating the Atmosphere) by A. F. Maklakov, published by Gidrometeoizdat, describes the layout and the operating principles of meteorological rockets, new types of radiosondes and cloud meters, radars, radiotheodolites, automatic radiometeorological stations and installations, land-based and ship remote meteorological and hydrometeorological stations, and other contemporary meteorological instruments and apparatus. Data are given on the accuracy of measurements of meteorological elements. A separate section is devoted to the artificial earth satellite. The book is illustrated and is intended for a wide group of readers interested in problems of investigating the atmosphere and contemporary meteorological instruments and apparatus. It also will serve the purposes of students of hydrometeorological teckhnikums and pupils of upper grades. (Novyye Knigi, No 28, 12 Jul 58, p 48)

V. OCEANOGRAPHY

Ob' in Montevideo

The Soviet oceanographic ship Ob' has arrived at the port of Montevideo, Uruguay. The Ob' is conducting complex oceanographic investigations in the Antarctic according to the International Geophysical Year program. (Moscow, Pravda, 7 Jul 58)

Soviet Geophysical Expedition Begins Work in Pacific

The Pacific Ocean Complex Geological and Geophysical Expedition of the Institute of Physics of the Earth, Academy of Sciences USSR, arrived in Petropavlovsk-Kamchatskiy. Detachments of scientifc workers have already sailed. (Moscow, Izvestiya, 16 Jul 58)

VI. GRAVIMETRY

Shortcomings in GAK-3M Gravimeters

An article by P. F. Shakin, entitled "Nonlinearity in the Scale of the GAK-3M Gravimeter," reveals that in the calibration of the GAK-3M by the inclination method nonlinearities in the measuring scale were discovered in several of these instruments. This, says Shakin, can be one of the reasons for the appearance of systematic errors.

Shakin gives formulas for calculating the constants and their errors in using nonlinear scales. Formulas for processing field observations and evaluating the effect of the error of scale graduations are also given.

Shakin concludes his article by saying that problems of methods and programs of observation for calibrating GAK-3M gravimeters are still insufficiently developed. Careful investigations of errors in determining the values of gravimeter graduations by the method of inclination in longitudinal and transverse directions and also by the method of calibration at points with known values of gravity acceleration are particularly necessary. These investigations must serve as a basis for the development of the programs specified in paragraphs 85 and 91 of Instruktsii Po Triangulyatsii 1, 2, 3 i 4 Klassov (Instructions for Class 1, 2, 3, and 4 Triangulations) published in 1956. (Geodesiya i Kartografiya, No 3, Mar 58, pp 16-23

VII. ARCTIC AND ANTARCTIC

Some Achievements of Soviet Antarctic Research Summarized

The Academy of Sciences USSR has summarized some of the achievements of the Soviet complex expeditions in the Antarctic conducting research under the IGY program.

In 1956-1957, the Soviet expedition undertook measurements of the ice cover in the sector of Antarctica adjoining the Indian Ocean and extending over 375 kilometers from the south to the coast. It appeared that in most places along this route the glacier bed was below sea level. As regards the thickness of the ice sheet, it was found to be about 1,000 meters at the 27th kilometer, 1,500 meters at the 100th kilometer, 2,250 meters at the 200th kilometer, and about 3,500 meters at the 375th kilometer. It was discovered that the settlement of Mirnyy was not on the mainland, but on an island near the actual coast, which is somewhere near the 400th kilometer south of this island.

Preliminary research results on the antarctic ice cover have aroused questions as to whether Antarctica is actually a continent or an archipelago. Scientists have not yet obtained a final answer to this question. There is no doubt, however, that if the continent exists, its dimensions and outlines differ considerably from those of the ice cap which covers it. The continent is probably much smaller that the area indicated in current geographic literature.

Even now it is possible to make one important and interesting conclusion, which would considerably change the estimates made by Professor David, one of the oldest explorers of Antarctica. Early in the 20th Century, he wrote that if the entire glacial cover of the continent, which was estimated to be about 550 meters thick, were to melt, the ocean level on the entire face of the earth would rise 15 meters. At present, this figure would probably be at least three times as high.

The Soviet expedition has conducted extensive aerometeorological research on the sea, on the coast, and at interior stations, which has made it possible to obtain data on the atmospheric circulation in Antarctica, governing the peculiarities of climate and weather in the Southern Hemisphere.

By drawing comparisons with different points of the Northern Hemisphere, it appears that in the summer the total amount of solar heat reaching the surface of Antarctica is almost twice as high as that in temperate zones. These data disprove the opinion that in the summer the total radiation in polar regions is less than that in temperate zones.

Some interesting data on the temperature regime of Antarctica have been gathered. For example, on 10 May 1958 the air temperature at the Soviet stations was as follows: Mirnyy, minus 13 degrees centigrade; Oazis, minus 8 degrees centigrade; Pionerskaya, minus 40 degrees centigrade; Komsomol'skaya, minus 58 degrees centigrade; Vostok, minus 65 degrees centigrade; and Sovetskaya, minus 79 degrees centigrade. On 19 June, an even lower temperature was registered in the area of Sovetskaya -- minus 81.2 degrees centigrade. No human beings have lived before in such cold temperatures as are being registered at Vostok and Sovetskaya.

The zoologists of the expedition have made interesting observations of animals inhabiting the narrow strip of the coast; they studied the natural laws governing the distribution of birds and animals, including the Adelie penguins, the antarctic and emperor penguins, the silvery-gray storm petrel, the sea leopard, and various kinds of seals. It was discovered that the total number of animals and birds in some parts of Antarctica is very large. On Haswell Island, there are about 20,000 birds in one square kilometer.

On the basis of aerial photographs taken between the 40th and 166th degrees eastern longitude, which is about one third of the whole antarctic coastline, the first authentic maps of this area are being compiled. A geological map of the ice-free areas has been prepared.

The geomorphological research on the ocean bottom conducted by Soviet scientists has resulted in new data which tend to confirm the former theory regarding the existence of the ancient continent of Gondwana, formerly connecting East Antarctica with Africa and West Australia. (Moscow, Pravda, 25 Jun 58)

Some Soviet Observations Made During 1958 in the Antarctic

According to observations conducted at the Station Mirnyy, one of the chief characteristics of the current year is an extreme "drought." During the first half of 1957, the amount of precipitation on the coast of Davis Sea was several times as great as during the same period of 1958. There has also been an unusually strong development of the zone of sea ice surrounding the continent. During May, the width of the ice belt exceeded 500 kilometers.

The observatory is collecting and collating material on the intensity of interlatitudinal air exchange, and ways are being sought to discover relations between weather anomalies of the Northern and Southern hemispheres.

The magnetic observations made by M. Ostrekin, chief of the geophysical detachment, on the island Bezymyannyy ("Nameless") turned out to be very interesting. This island was recently explored for the first time by a group of Soviet scientists. The coordinates of the island are 55-58 S and 99-21 E. The magnetic declination at this place was much lower than indicated on the maps.

The glaciologists are continuing to explore the continental seismic sector begun by previous Soviet expeditions. It has been determined that at a distance of 245 kilometers from the coast the ice sheet is 1,410 meters thick, at 325 kilometers the thickness is 1,980 meters, and in the vicinity of Pionerskaya, 1,900 and 2,000 meters.

During 1958, aerial ice reconnaissance has been expanded. Flights have been made over parts of the ocean which have never before been seen by man during the winter period.

For the first time this year, observations on atmospheric electricity were begun. It was learned that even on normal days, the intensity of the electric field of the atmosphere is 2-3 times as high as on other continents -- Yevgeniy Tolstikov, chief of the Third Soviet Antarctic Expedition (Moscow, Izvestiya, 2 Jul 58)

Station Vostok

The station Vostok was established 6 months ago. The geophysical research on the ionosphere, terrestrial magnetism, and auroras has made it possible to assert that the region of the geomagnetic pole is subjected to intensive, corpuscular radiation. This is confirmed by the abundance of ionospheric-magnetic disturbances, accompanied by auroras.

In Central Antarctica, the human organism is exposed to the influence of a whole complex of unaccoustomed meteorological factors, such as the low atmospheric pressure, which drops to 450 millimeters in the area of the station; extremely low temperatures; and oxygen deficiency. All this makes it necessary for humans to adapt themselves to the existing conditions. The most noticeable changes are felt in the activity of the heart and vascular system and the respiratory organs, and the blood pressure is considerably lowered. Despite all this, the staff members are in good spirits and well able to work.

During the night of 15 June, the air temperature in this area dropped to minus 81 degrees centigrade. Four days later a purga [snowstorm] began to blow, which continued for 3 days. -- Vasiliy Sidorov, chief of station Vostok (Moscow, Izvestiya, 2 Jul 58)

At the Cold Pole

The station Sovetskaya is located in the region of the "pole of inaccessibility." Its exact coordinates are 78-24 S, 87-35 E. This is the "cold pole." Several times during June the temperature dropped to minus 81 degrees. On 19 June, the lowest temperature on the earth was registered at this spot -- minus 81.2 degrees centigrade, with a wind velocity of 4 meters per second.

Despite severe weather conditions, the work is continuing according to plan. Even on the coldest day, a radiosonde was launched and theodolite observations were made.

From 15 to 24 June, the station staff conducted more frequent radiosonde launchings to high altitudes. Low temperatures have been recorded at Sovetskaya since the beginning of the winter. Thus, in April the average monthly temperature was minus 60.5 degrees centigrade, and in May, minus 62.2 degrees centigrade. On the "warmest" day of the last 3 months, the thermometer registered minus 42.9 degrees centigrade. -- Vitaliy Babarykin, chief of station Sovetskaya (Moscow, Izvestiya, 2 Jul 58)

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