PB 131632-23

SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION

July 18, 1958

U. S. DEPARTMENT OF COMMERCE
Office of Technical Services
Washington 25, D. C.

Published Weekly from February 14, 1958, to January 2, 1959
Subscription Price $10.00 for the Series

PLEASE NOTE

This report presents unevaluated information on Soviet Bloc International Geophysical Year activities selected from foreign-language publications as indicated in parentheses. It is published as an aid to United States Government research.

SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION

Table of Contents

I. GENERAL

Fifth Assembly of Special Committee on IGY

An article by V. V. Belousov, Corresponding Member of the Academy of Science USSR, says that the Fifth Assembly of the Special Committee on the IGY will be held toward the end of July 1958 in Moscow. This is the first meeting of the committee to be held during the period of the IGY. The past four assemblies were held in Brussels in 1953, in Rome in 1954, in Brussels in 1955, and in Barcelona in 1956. These assemblies were concerned with the working out of programs of research and methodology.

The forthcoming Moscow Assembly will be able to present certain results concerning the IGY. The main theme will be the discussion of future scientific utilization of IGY results. The evaluation of the results of the IGY demands concerted coordination, new agreements on plans, determination of their role in the various international scientific unions, etc.

Belousov points out that it is important to solve the problems connected with the future work of world centers in the collection and dissemination of IGY data and to jointly publish the principal results of their research. It is likewise necessary to discuss problems concerning the future organization of the central organs, which will coordinate the work on the utilization of the material accumulated.

Each working group engaged in the program of the IGY will conduct in Moscow one or more scientific sessions in discussing the reports given. All national committees of the Moscow assembly will be required to present their preliminary results. Some 300 foreign scholars will be present in Moscow during this assembly.

At the same time there will be a session of the Bureau of the International Geodetic and Geophysics Union, a conference of the Special Committee on Antarctic Research, and a series of other scientific-organizational meetings. Immediately after the conclusion of the assembly in Moscow, the International Congress of the Astronomical Union will begin its work. (Vestnik Akademii Nauk SSSR, No 5, May 58, p 124)

Soviet IGY World Center B

A universal center which must collect the whole series of IGY data was created in the Soviet Union. World Data Center B is divided into two subcenters for simplification of its organization from the viewpoint of the states, the location, and methods of obtaining World Data Center materials.

Subcenter B_1 under the Scientific Research Institute of Aeroclimatology (NIIAK) collects materials on glaciology, gravimetry, meteorology, oceanography, latitude and longitude, and seismology.

Subcenter B_2 under the Scientific Research Institute of Terrestrial Magnetism, the Ionosphere, and Radiowave Propogation (NIIZMIR) must amass data on geomagnetism and earth currents, auroras and night sky illumination, the ionosphere, cosmic rays, solar activity, and meteors.

Both centers are independent units, the activities of which are coordinated by the Interdepartmental Committee for the Conduct of the IGY under the Presidium of the Academy of Sciences USSR.

With the Interdepartmental Committee also rests the control of the subcenter's activities. For direct operative supervision of the subcenter's activity, a council of Center B, consisting of representatives of the leading institutes, subcenters, and the Interdepartmental Committee of the IGY, was created.

The collection, storage, and reproduction and dissemination of the data according to appropriate departments enters into the function of both centers. For this the subcenters carry on direct communications with the National Committee, World Data Centers A and C, and all the institutions and investigators interested in obtaining observational materials from Center B. Subcenters B_1 and B_2 conduct their activities in close contact and give mutual aid in the solution of all problems connected with their activity. As the organizational system of the subcenters is approximately identical, only the activities of Center B_1 (USSR), organized under the Scientific Research Institute of Aeroclimatology (NIIAK) were described.

The functions of Center B_1 are performed by a specially created division of NIIAK, consisting of two departments: (1) calculation, storage, and dissemination and (2) duplication.

As already indicated, the responsibility for the processing and timely dispatching to the World Data Center according to division lies with the main institutions. For Center B_1, these institutions are as follows (according to division):

1. Latitude and Longitude

a. All-Union Scientific Research Institute of Physicotechnical and Radio Engineering Measurements, Committee on Standards Measures, and Measuring Instruments, Council of Ministers USSR (time and longitude).

b. Poltava Gravimetric Observatory of the Academy of Sciences Ukrainian SSR (latitude fluctuations and motion of the poles).

c. Main Astronomical Observatory of the Academy of Sciences USSR (irregularities in the Earth's rotation).

2. Glaciology

Institute of Geography of the Academy of Sciences USSR.

3. Oceanology

a. Institute of Oceanology of the Academy of Sciences USSR (region of work, Pacific Ocean).

b. All-Union Scientific Research Institute of Fish Economy and Oceanography (Norwegian, Greenland, and Barents seas).

c. State Oceanographic Institute (North Atlantic).

d. Marine Hydrophysics Institute of the Academy of Sciences USSR (Middle Atlantic).

4. Seismology

a. Institute of Physics of the Earth of the Academy of Sciences USSR (seismicity of the Earth).

b. Central Institute of Forecasts (tripartite microseismic observations).

c. Moscow State University imeni Lomonosov (standard microseismic observations).

5. Gravimetry

Institute of Physics of the Earth of the Academy of Sciences USSR.

The leading institutes had already begun sending data into the permanent services and Centers A, B, and C at the time of this information. The Main Administration of the Hydrometeorological Service is the leading institution for meteorology: by its commission, the data of synoptic and dynamic meteorology are collected and transmitted by the Scientific Research Institute of Aeroclimatology.

At the time, material for July 1957 was being transmitted to Center C, and data for August 1957 were being readied for forwarding.

The inflow of the first data from the Soviet Union was somewhat delayed by difficulties arising from the newness of the centralized collection of the large volume of materials. Now the forwarding of data is done regularly. The Soviet center expects to obtain data from other centers and the permanent services.

The leading institutions bear full responsibility for the contents and timely sending of IGY data to the centers. It is desired that all data be typed on typewriters having black ribbons or written with black ink. Original samples must be sent to Center B1. This is necessary for the high-quality reproduction and long term retention of the text. At the time 37 countries had expressed their desire to transmit data to Center B. Of these 37 had already done so.

On the whole, the material received is clear, legible, and easily reproduced. A complaint is made concerning the receipt of penciled reports and reports which are folded and wrinkled. More care in transmission is requested; for example, it is suggested that tables be protected by placing them between sheets of cardboard.

All data entering into a center are arranged according to a scheme: the discipline, region, station, type of observation, year, and month. Registration is done by cards according to a general scheme of filing. Thus the amount of material received can be calculated according to the time of observations.

Together with the registration cards, an information catalogue is complied, the form of which was developed jointly by the Institute of Aeroclimatology and NIZMIR. This catalogue makes it possible to issue at any time a manual of the data on hand, and after the end of the IGY, for materials obtained during the entire period. All the information is arranged in the manual according to the accepted scheme of classification: scientific discipline, region, station, type of observation, year, and month.

Every 6 months, photocopies of the manual will be sent to CSAGI (Comite Special de L'Anne Geophysique Internationale) Centers A and C and to all the leading institutes of the Soviet Union. This must be done not later than 2 months after the end of each such period. A manual for the first 6 months of the IGY (June-December 1957) was prepared at the time of this information.

The reproduction and dissemination of the data of IGY observations are necessary in conducting the study of geophysical phenomena on a world-wide scale. This material is of great value and interest to the scientists of all countries. These services comprise the other part of subcenter B1's activity.

The most economical method of reproducing data having small distribution is microfilming. This method is already widely used in Subcenter B. Other methods of reproduction are used -- analog computers, offset printing, and the usual photocopying.

Observational data on special forms, submitted from Soviet meteorological stations, are transferred onto punch cards. This makes it possible, first, to create a mass of punch cards for the mechanized processing of IGY data and, secondly, to facilitate transferring the data on special BMO forms, of which it is proposed the print one copy and after microfilming to forward it to the meteorology section of Center C. In the future punch cards will be used mainly for processing.

All the rest of the data will be reproduced on microfilm as it comes in . Three tipes of microfilm are produced: (a) negative (not to be reproduced); (b) double negative (used for filling requests by means of preparing positive copies); and (c) positive microfilms (for use in everyday work with data within the center itself).

There are several types of microfilm readers, both portable and stationary. In the Soviet Union stationary-type readers are produced by the Moscow Cineelectromechanical Plant. In the GDR, Zeiss-Jena produces stationary tpes and Falz Werner-Leipzig produces portable types.

Center B1 is amply equipped with readers and it is possible to work directly from microfilm in the center's reading room.

All the copying work is done directly in the center. A special copying laboratory was built for this purpose. This laboratory will do work very important as to value, and very great as to volume, both during the IGY and after it ends.

The total data which should arrive in subcenter B1 are expected to be 1,200.000 tables or texts (size 210 x 300 millimeters). About 100,000 meters of 35-millimeter film will be processed in microfilming.

The following information is requested by Center B from all intereted institutions and departments:

1. The IGY data desired, according to division and type of observation.

2. The territory or region.

3. The quantity and in what form.

This information is necessary to the center not only for planning its own work but also for the timely circulation of data, not yet obtained from Center B_1, in other centers and permanent services.

The center can send out any of the data on hand and in any quantity. In addition, the center is ready, in exchange for data obtained from national committees, to send free of charge on request an equivalent quantity of any of the other data received in Center B_1.

All IGY publications published in the Soviet Union are concentrated in the center. A bibliography of these publications is also compiled. The leading institute corresponding to each division of the IGY program must send, one by one, copies of all publications. In addition, the center expresses the wish that leading institutions also send foreign publications, and in the absence of any copies to present their own copy for reproduction. Furthermore, the center considers it expedient to organize between centers and permanent services the direct exchange of bibliographic manuals and publications. (Mezhdunarodnyy Geofizicheskiy God, Informatsionnyy Byulleten', No 4, 1958, pp 17-23)

Sputnik III Observations Continue

In the little more than 5 weeks from the launching of Sputnik III on 15 May 1958 to 25 June, as a result of atmospheric braking, the orbital parameters of both the satellite and its rocket carrier have changed from their original values. The Sputnik III apogee has decreased from 1,880 to 1,737 kilometers. The orbital period of the rocket carrier has changed more substantially. On 24 June it was 104.5 minutes. With respect to this, the rocket carrier's apogee has decreased to 1,731 kilometers. The average daily reduction in the orbital period of Sputnik III is 0.7 second, and of the rocket carrier, 2.1 seconds.

The considerably larger decrease in the orbital period of the rocket carrier is explained by its smaller cross-sectional loading, that is, its smaller weight per unit area of its cross section. As a result, the rocket carrier undergoes relatively more braking in the upper atmosphere than the satellite and leads to a more intensive shortening of the orbital period.

At 0600 hours on 25 June, Sputnik III had completed 554 revolutions of the Earth.

A report from the German ADN news agency in Izvestiya says that associates of the Scientific Research Station at Rodewisch, in the region of Auerbach-Vogtland, photographed the Sputnik III rocket carrier at 0157 hours on 23 June. Special photographic apparatus was used. The rocket carrier was observed for the first time over this station at 0322 hours Central European Time on 22 June.

A report from Ashkhabad gives some details on Sputnik III observations being conducted in that city. Two stations conduct optical observations for artificial earth satellites -- one in Turkmen University and the other in the Astrophysical Laboratory.

Sputnik III was seen in Ashkhabad on the same day it was launched, 15 May. The rocket carrier passed over Ashkhabad in the evening. As to brightness, "...it exceeded the brightest stars of the sky." It was noticed that the rocket carrier's brightness varied owing to its "rotation" [tumbling]. The next day it was twice successfully photographed in the Astrophysical Observatory. The "period of rotation" was equal to 7.5 seconds. On this day the brightness of the rocket carrier changed from the second stellar magnitude, i.e., by a factor of 100. The rocket-carrier was bright despite the fact that it passed Ashkhabad at a distance of 2,000 kilometers. The rocket carrier preceded the satellite. The latter was not as bright, being visible as a star of the fourth magnitude. It moved at a greater height that the rocket and therefore more slowly.

From 12 to 18 June was the period of "morning visibility" of Sputnik III. During this time good observations were made of it, and the rocket carrier was photographed three times. Its color was yellow because it was tinted by the rays of the Sun passing low in the atmosphere.

Results of all the observations of the Astrophysical Laboratory are quickly passed on to Moscow.

Radio signals from Sputnik III continue to be heard in Ashkhabad sufficiently well.

Observations are constantly conducted in both the laboratory and Turkmen University.

A report from Kiev says that in the 40 days of its existence Sputnik III passed at a distance suitable for radio monitoring 160 times.

Astronomers conduct regular observations for the satellite and its rocket carrier. As reported in the observatory of the University imeni T. G. Shevchenko, whose duty it is to determine the accurate coordinates and the moment of passage of the satellite, the last time it was seen was on 21 June. Profiting by clear weather, associates of the observatory using special apparatus photographed the rocket carrier, which was seen against the dark background of the sky with the naked eye. Through equal time intervals, measured in seconds, it flared up brightly and then died down. This was caused by its "rotation" [tumbling].

Kiev astronomers on 18 June began to transmit their data on visual and photographic observations to "Moscow-Cosmos." Up to this time, the work was limited to radio monitoring in view of the fact that the satellite passed the vicinity of the city during the day. Radio signals from Sputnik III together with the signals from the observatory's astronomical clocks were recorded on magnetophone tape.

Now Sputnik III can be seen with the naked eye as a star of the third magnitude; this greatly facilitates observations. Material registered by the observatory on the exact coordinates and motion of the "small moon" is transmitted to Moscow for processing.

The optical station in the Yerevan Astrophysical Observatory of the Academy of Sciences Armenian SSR conducts continuous observations for Sputnik III to establish the precise coordinates and the moment of its passing.

Scientists of the observatory have already observed the satellite three times. They have improved the registering of the moment of its passage and obtain very accurate data. Mounted on the optical tube of the telescope is a unique sight which considerably facilitates observations. (Moscow, Pravda, 25 Jun 58; Izvestiya, 24-25 Jun 58)

III. UPPER ATMOSPHERE

Soviet Studies of Night Sky Illumination

L. G. Bol'shakova, Yu. N. Georgievskiy, A. N. Otto, and S. F. Rodionov present the following information in an article titled "Electrophotometric Investigation of Night Sky Illumination."

The necessity of obtaining detailed data on variations of night sky illumination with respect to time, in particular in its daily variation, arose in connection with the work of the IGY.

This problem forced the automatization and conversion to continuous recording apparatus for studying the illumination of the night sky. This apparatus has been used for several years by Leningrad University (photometric laboratory) together with the Elbrus expedition of the Academy of Sciences USSR.

A schematic of the electrophotometer with self-recorder is given. Its system can be described as follows. In the opening of the FEU photomultiplier, a shutter (for controlling the zero value of the photo current) is located in the working opening. Each 10 minutes the shutter is closed for 40 seconds by means of a relay system worked by a clock mechanism. The clock mechanism of an ordinary thermograph is used for this purpose. For control of the sensitivity of the instrument, a standard lamp with a light filter is switched on, also by clockwork, every 60 minutes. Its filament voltage is controlled by a potentiometer. A self-recorder, EPP-09, is used as a registering instrument. Using the capsule from a ball crank handle, the self-recorder can change the intermittent recordings into a continuous one. For decreasing the dark current and its fluctuations the FEU is placed in a cooling mixture.

For example, a recording obtained on 18 July 1956 showed a sharp increase of the radiation of the night sky (in the wavelength region of about one micron) and it lasted only about 5 minutes. Without a self-recorder such a phenomenon cannot be observed. Maximums of the intensity of night sky illumination were observed earlier (S. F. Rodionov and Ye. N. Pavlova, Doklady Akademii Nauk SSSR, Vol 66, No 6, 1949), but were not as strong.

In the summer and autumn of 1956 parallel measurements of night sky illumination were organized in the Elbrus region at altitudes of 2,200 and 3,900 meters above sea level. These showed that the curve of daily variation, registered at 3,900 meters, is much smoother than the curve for an altitude of 2,200 meters which discloses irregular variations.

The latter are obviously caused by chances of transparency in the lower layer of the atmosphere. The layer between 2,200 and 3,900 meters weakens night sky radiation in the range of λ = 1 micron on the average from three fifths to two thirds.

By the autumn of 1956, the infrared radiation of the night sky was successfully registered, not with the aid of light filters but with an M-1 monochromator, made by the experimental shops of the Physics Institute of Leningrad State University. It has a lens power of 1:4.5 and dispersion of about 250 A per millimeter in the range of one micron; with a slit width of 1.5 millimeters, the signal from the sky reached 15×10^{-9} amperes, with dark current fluctuations of about 7×10^{-9} amperes. It can be expected that with an increase in the lens power of the spectral system and with more complete cooling of the photocathode the spectral method will be better than the use of filters. (Mezhdunarodnyy Geofizicheskiy God, Informatsionnyy Byulleten', No 4, 1958, pp 58-59)

Soviets Use Phase Method in Study of Ionospheric Heterogeneities

An article, "Investigation of Large Scale Heterogeneities in the Ionosphere by the Phase Method," by S. F. Mirkotan and L. A. Drachev, presents the following information.

The phase method, registration of variations of the phase path reflected from the ionosphere fields at three separate points on the Earth's surface, was used by the Physics Faculty of Moscow State University (MGU) during investigations of the fine structure of the ionosphere. This method has certain pre-eminent characteristics in comparison with exciting methods of investigating large-scale heterogeneities and their movements (for example, with the measuring of group retardation). The essential characteristic of the phase method is the increased accuracy of the registration of the phase path, making it possible to take a statistical approach in calculations of drift velocities from observations of large-scale heterogeneities. In addition, a comparison of phase methods with other methods of investigating the fine structure of the ionosphere is of interest.

Participating in the work of the IGY program, the Chair of Propagation, Radiation, and Channelization of Electromagnetic Waves of the Physics Faculty of MGU began the simultaneous registration of phase differences at three separated points. The points are located as follows: in MGU (Moscow, Lenin Hills), Chashnikova, and Krasnaya Pakhra (Scientific Research Institute of Terrestrial Magnetism, the Ionosphere, and Radiowave Propagation -- NIZMIR). The distance from MGU to Chashnikovo is 43 kilometers and from MGU to Chashnikovo is 43 kilometers and from MGU to Krasnaya Pakhra is 29 kilometers. The main coordinating point is located in MGU. The pulse power of the transmitters is 2-2.5 kilowatts. Synchronization of the system's operation (time of giving signals, special control signals) and communication between the indicated points is accomplished with the aid of multichannel decimeter communication.

An illustration shows a movie film recording of phase difference in the form of a row of "saw teeth" with variations in their pitch. Also visible are the minute time signals. Each "tooth" corresponds to a change in the phase of the reflected signal by 2 π (the illustration shows the development of the phase). The film speed was 3 centimeters per minute.

In the first part of 1958 it was proposed to place in operation a more powerful modernized phase apparatus which would permit combining amplitude and phase measurements in three separated points and to conduct synchronous studies at several frequencies simultaneously. This, in particular, will make it possible to obtain information concerning the high-altitude relationship of the parameters of a heterogeneous ionosphere.

At present special attention is given to a method of investigation, which is important namely, for the investigation of large-scale heterogeneities from the viewpoint of the statistical approach. (Mezhdunarodnyy Geofizicheskiy God, Informatsionnyy Byulleten', No 4, 1958, pp 56-57)

Polish Astronomers Participate in IGY

"Participation of Polish Astronomers in the International Geophysical Year," by Jan Mergentaler, gives the following information.

Three Polish astronomical observatories will conduct heliophysical observations according to the IGY program. These are as follows: Torun, radio observations on meter waves; Kracow, observations on decimeter waves; and Wroclaw, photographic observations of the photosphere for investigation of rapid changes in sunspots and photometric, photographic, and photoelectric observation of sunspots, and visual and photographic observations of prominences. Photoelectric observations of night airglow will also be conducted in Wroclaw. (Urania, Vol 28, No 4, 1957, pp 97-100; from Referativnyy Zhurnal -- Astronomiya i Geodeziya, No 2, Feb 58, Abstract No 810)

IV. LONGITUDE AND LATITUDE

Conference of East European Countries on Problems of the Determination of Time, Latitude, and Longitude

At the first conference of East European Region Countries, held in Moscow 20-25 August 1956, it was decided to call a regional meeting on the theme "Latitude and Longitude."

This meeting, reported by V. D. Yakovlev, was convened 16 April 1957 in Pulkovo (Leningrad). It was held on the premises of the Main Astronomical Observatory of the Academy of Sciences USSR from 16 to 18 April 1957.

Countries of the region, conducting longitude and latitude observations under the IGY, took part in the conference. These were The German Democratic Republic, the Mongolian People's Republic, Poland, the USSR, and Yugoslavia. Present at the conference as guests were representatives of the observatories and institutes of Moscow, Leningrad, Tashkent, Kitab, Poltava, Khar'kov, Kazan', and other cities.

The principal problem of the conference was the explanation of the state of preparation for latitudinal and longitudinal observations in the countries of the region. Together with this, other important problems were discussed, in particular, problems of the forms for the presentation of the materials of observations to World Centers and Problems, the storage and publication of the results of observations.

The conference was opened by Yu. D. Bulanzhe, Doctor of Physicomathematical Sciences, the regional secretary, who welcomed those gathered and stated the basic problems of the conference. A telegram of welcome from Academician I. P. Bardin, chairman of the Soviet Committee for the Conduct of the IGY, was read. A. A. Mikhaylov, Corresponding Member of the Academy of Sciences USSR and director of the Main Astronomical Observatory of the Academy of Sciences USSR, welcomed those present in the name of the Pulkovo Observatory and its associates. A telegram from Professor Chekin, director of the International Latitude Bureau, was received and read during the conference.

Representatives of the countries taking part in the conference presented reports on the state of preparatory work for latitude and longitude observations according to the IGY program.

Professor Reicheneder of the German Democratic Republic reported that latitude and longitude observations under an expanded program will be conducted by the Potsdam Geodetic Institute and the Babelsberg Observatory. At that time the number of time determinations which are conducted in the

evening and morning hours will be considerably increased. In the problems of "standardized" time and time checks, collaboration with the USSR has been established. According to an agreement with Japanese scientists, precise time signals will be received in the Tokyo Observatory and special signals from Oyama (near Tokyo) will be received in Europe. Receivers operating on different wave lengths are available for the reception of the signals. The number of signals received during the IGY will be considerably increased.

Much work will be conducted according to other divisions of longitude and latitude observations, in particular on the problem of studying irregularities in the Earth's rotation, joint determinations of time and latitude, and others. Speakers also reported on new apparatus which will be used during the IGY period.

Ninzhbadgar, Candidate of Physicomathematical Sciences from the Mongolian People's Republic, said that the Mongolian Committee for the IGY is doing preparatory work for the organization of a latitude station in Ulan Bator. The necessary financial allotments were made by the Mongolian government for the construction of the station and the acquisition of equipment and instruments.

Professor Rajecki, chairman of the Polish National Committee, said that in Poland during the IGY latitude and longitude investigations will be conducted by the Astronomical Station of the Polish Academy of Sciences in Borowce (near Poznan) by the astronomic station of the Warsaw Polytechnic and the Palaty Astronomic Station of Weights and Measures (near Warsaw). Observations will be conducted in two stations by the Institute of Geodesy and Cartography. A prominent place in the report was given to the description of new equipment and instruments which Polish scientists will use during the IGY period for latitude and longitude observations.

A. A. Mikhaylov presented a report concerning the preparatory work for longitude and latitude observations to be conducted by the USSR during the IGY. He noted that in connection with the IGY new stations in Irkutsk and Blagoveshchensk will enter into service. The number of observatories will be brought up to seven during the IGY. Some stations in the USSR will be equipped with the new zenith telescope. Longitude and time will be determined by 12 time services equipped with 14 transits and one zenith telescope (according to Singer's method). A list of 600 stars was compiled for observation during the period of the IGY and their apparent location was calculated. These materials will be distributed to all time services.

Professor Shevarlich, speaking for Yugoslavia, said that during the IGY observations will be conducted in accordance with the declared Yugoslav program. He said that the determination of time and coordinates will be conducted continuously by the Astronomical Observatory in Belgrade, the Astronomic Station of the Engineering Faculty in Zagreb, and certain other scientific research institutions.

Prof Yu. D. Bulanzhe, the regional secretary, presented a report containing information on the arrangement and forms for presenting the materials of the observations by the countries of the region to IGY World Data Centers. The problem of the publication of observation material in the countries of the region was discussed.

In its own work the conference allotted much space to the exchange of experience and information in the field of scientific research work conducted on the subject of latitude and longitude observations. The following reports were heard and discussed at the conference: Prof N. I. Pavlov's reports on "The Observation of a List of Stars by the Time Services During the International Geophysical Year" and "Latest Results of Photoelectic Observations of the Time Service of the Pulkovo Astronomic Observatory"; Prof Ye. P. Fedorov and Prof N. I. Panchenko, "Selection of a Method of Determining Polar Coordinates According to the Data of Latitudinal Observations During the International Geophysical Year"; and Professor Shevarlicha (Yugoslavia), "Investigation of Systematic Errors in Observations With the Bamber Transit at the Belgrade Astronomic Observatory" and "Concerning the Possibilities of Determining Human Element Equations from Observations on the Bamberg Type Transit."

The delegates and guests of the conference were shown the new equipment of the Pulkovo Astronomic Observatory which is to be used in observations during the IGY period. (Mezhdunarodnyy Geofizicheskiy God, Informatsionnyy Byulleten', No 4, 1958, pp 105-107)

V. ARCTIC AND ANTARCTIC

Role of Soviet Aviation in the Antarctic

With the close of 1957 the basic tasks of the Soviet Antarctic flight squadron were successfully completed. The flyers of the squadron transported geologists, glaciologists, geophysicists, and hydrologists to regions of the Antarctic where no man had been before. Landings with airplanes and helicopters were occasionally made on uninvestigated ice fields with jagged shining cracks, on icebergs, on islands, and in fjords. Landings were also made on Mount Amundsen, Barr-Smith Strathcona, and Sandow, areas which had previously been considered inaccessible to airplanes. This and other information on the participation of Soviet aviation appear in an aviation periodical article by P. Moskalenko, commander of the Antarctic flight squadron, and T. Paliyevskiy, senior navigator.

Flight operations were continued uninterruptedly throughout the year regardless of the severe operating conditions with weeks of severe snowstorms. Exploration of glaciers was conducted to a distance of 700 kilometers from

the shore line. Of particular significance was the fact that the aviators guided the diesel-electric ship Ob' to the settlement of Mirnyy. Aerial photographing of the cost line and adjacent areas was conducted continuously. Regular investigations were performed with a specially equipped flying laboratory. This aircraft often flew at altitudes up to 5 kilometers.

The role of aviation in the opening of the new scientific stations Komsomol'skaya and Vostok was of particular importance. As early as March 1957 scientists reached the station Komsomol'skaya while another group of researchers was compelled to winter 230 kilometers from the station Komsomol'skaya. Here the station Vostok-1 was organized, and scientists conducted observations according to the program of the station Komsomol'skaya. During the polar night period the aviators transported the workers of Komsomol'skaya to Mirnyy.

In November, with the onset of Antarctic spring, Treshnikov, Hero of Socialist Labor, headed a tractor sled train into the continent to reopen and resume operations at the stations Komsomol'skaya and Vostok. The task of the flight squadron was to provide supplies of diesel fuel along the route of the sled train. This project required complete mobilization of all forces and equipment, including the Il-12 with wheel-type gear. Four crews were used in flights which made parachute airdrops of drums of diesel fuel. It was necessary for one crew without a copilot to perform flights for more than 12 hours a day in completely adverse conditions. From January to November, 3,000 hours were logged and approximately 700,000 kilometers were flown. Over 100 tons of freight was delivered to Vostok-1 alone.

Members of the flight squadron (in addition to the authors) were pilots Dmitriyev, Min'kov, Stekol'shchikov, Yerokhov, and Groshev; navigators Dolmatov, Sherpakov and Starkov; flight engineers Anan'yev, Gladkov, Mezhevhkh Komirnyy, Miroshnikov, Borisov, Maksimov, and Leshchenko; and radio operators Boyko, Aleksandrovskiy, Pivovarov, and Pavlov. (Grazhdanskaya Aviatsiya, No 1, Jan 58, p 21)

* * *