THIRD EXPANDED PLENUM OF THE COMMITTEE ON METEORITES OF THE ACADEMY OF SCIENCES UKRAINIAN SSR

- USSR -

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The Third Expanded Plenum of the Committee on Meteorites of the Academy of Sciences Ukrainian SSR took place in Kiev in 1959.

The principal tasks of the Plenum were the following:

1) To summarize the work of the committee and to develop perspectives for further research on the conditions for the falling of meteorites and on their material composition.

2) To inform the scientific workers of astronomical observatories, higher educational institutions and natural science (regional) museums of the Ukraine of the latest achievemants in meteorics.

3) To popularize the achievements of Soviet meteorics among the population with the aim of gaining its active participation in gathering meteorites.

In order to attain the objectives more successfully, members of the Committee on Meteorites of the Academy of Sciences USSR and the leading specialists of the Academy of Sciences Ukrainian SSR in the field of meteorics and allied sciences were invited as speakers at the Plenum.

Also participating in the Plenum were scientific workers of astronomical observatories of the Ukraine and other republics, as well as workers of higher educational institutions, museums, and planetariums.

The Plenum was opened by the head of the Committee on Meteorites of the Academy of Sciences Ukrainian SSR, corresponding member Ye.S. Burkser, who briefly described the work of the Committee from the day of its founding (1939) to date.

Survey reports were then given on the minerologic-petrographic composition and structure of stone meteorites, their age and physical properties.

In the report "Minerologic-Petrographic Characteristic of Stone Meteorites", candidate for geologic-minerologic sciences L.H. Kvasha (Moscow, KMET) examined the structure and minerological structure of chondrites and achondrites and their different forms, she characterized the vectorial diagram constructed by her on the chemical structure of achondrites and the silicate portion of some chondrites with various contents of metallic iron. The report compares the minerologic-petrographic structure of stone meteorites and erupted rocks.

The report of O.O. Yavnel' "Some Questions on the Chemistry of Meteorites" is devoted to the examination of the average chemical composition of meteoric matter, the regularities in chemical composition, and the distribution of elements between the phases of meteoric matter. The report examined the problem of the chemical composition of the individual classes of meteorites, the distribution of elements between the individual minerals in the meteorites, and the content of radioactive elements in meteorites. The five concepts on the age of meteorites were first described. The combined data on the composition, structure and various properties of meteoric matter, together with data on astronomy, geology and other sciences, permit the author to draw some conclusions on the nature of meteorites and the phenomena connected with them.

The scientific secretary of the Committee on Meteorites of the Acad. Sci. USSR Ye.L. Krinov gave a report "On the Question Concerning the Fragmentation of Meteoric Bodies," in which he presented the results of his investigations of diverse forms of fragmentation of meteoric bodies in the earth's atmosphere, and defined and fixed the limits of the concept of meteor, meteorite and cosmic dust. The report also contained a definition of micro-meteorites.

Corresponding Member of the Acad. Sci. UkSSR Ye.S. Burkser gave an interesting review on the determination of the age of stone and iron meteorites. The report analyzed all the existing data on this question and the following conclusions were drawn:

1. The most credible age of stone meteorites should be considered as about 4.5 billion years.

2. There are no promising data in existence at this time concerning the age of iron meteorites. The lead-helium method gives evident errors with respect to the production of He^3 through cosmic rays. The author of the report thinks that it is expedient to use the rubidium-strontium or the rubidium-osmium methods in determining the age of iron meteorites.

The report of candidate of geol.-min. sciences K.M. Aleks'eyev contained experimentally obtained data on the physical properties of iron meteorites. The work was carried out at the Institute of Geologic Sciences, Acad. Sci. UkSSR under the directorship of corresponding mem. of the Acad. Sci. UkSSR Ye.S. Burkser. A complex of the physical properties of stone meteorites and certain magmatic rocks was studied. A comparison of them was made and some conclusions were made regarding the origin and evolution of meteoric matter.

In the report "The Origin of Meteoric Craters" (I.S. Astapovych, Odessa Observatory) the peculiarities of structure are examined of 15 meteoric craters and some conclusions are made on the regularity of the direction of meteorite flights.

The last report in this cycle was the survey made by P.I. Syshchyts'kiy "Meteorites of the Ukraine," after which there was an excursion to the Geologic Museum of the Acad. Sci. UkSSR, where the participants of the Plenum became thoroughly acquainted with its collection of meteorites.

The second cycle of reports was devoted to the origin and evolution of small bodies of the solar system, to which meteorites also belong.

The report of Prof. S.K. Vsekhsvyats'kyy gave the author's views on the ways of origin of comets and other small bodies of the solar system. The author believes that the latter were created from planetary bodies through vulcanic eruptions, and also indicates that the study of short-periodic parabolic comers and other small bodies of the solar system can help to decipher the basic stages of the evolution of the solar system and to explain the cosmic history of the earth and its present status.

The viewpoint held by Prof. S.K. Vsekhsvyats'kyy on the origin of comets was supported by docent of the Kiev Politechnic Institute V.I. Cherednychenko in his report on "Destruction of Cometary Ice in the field of the photonnic and corpuscular radiation of the sun." V.I. Cherednychenko analyzes the chemical composition of comets and comes to the conclusion that the latter supports the position regarding the origin of comets from the products of a vulcanic eruption on the surface of planets and their satellites.

Corresponding member of the Acad. Sci UkSSR A.O. Yakovkin gave a very interesting report. The speaker pointed out that in our time -- the time when a human being is going to enter the cosmos -- the study of meteors and meteorites takes on a specially great significance.

The cycle of astronomic reports was completed with an excursion to the Main Astronomic Observatory of the Acad. Sci. UkSSR, where the participants of the Plenum acquainted themselves with the principle astronomic instruments as well as with the methods of astronomic investigation.

A majority of the participants in the Plenum took part in the discussions on the reports. After discussions on the reports communications were heard from the floor, speeches of scientific workers of astronomic observatories and museums.

The resolution of the Plenum formulated the basic objectives of the observatories and museums with regard to observing meteors and bolides, collecting meteorites, and popularizing information about meteorites among the population.

The necessity was pointed out for the giving of assistance to regional museums and certain observatories by the Committees on Meteorites of the Academy of Sciences USSR and UkSSR in the form of delivering specimens of the Sikhote-Alin'skyy meteorite, plaster casts of meteorites, and illustrated materials.

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