

22. COMMISSION DES ÉTOILES FILANTES

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The past few years have witnessed a great increase in the amount of work done on meteors and in the number of observers. At several observatories programmes of work have been undertaken in the hope of solving specific problems. Several countries now have flourishing meteor societies, or sections of larger astronomical societies, devoted to this field. To solve the problems that have arisen the help of other scientists, especially in physics, geology, and meteorology, has been enlisted to the mutual benefit of all. Historical research, particularly in Asia, has added much to our knowledge of meteor showers for the past thousand or more years.

However, this very activity makes it more difficult to select the most salient facts which should appear in this report, necessarily a brief one. In Europe, we find meteor research as one of the chief activities at the Sonneberg Observatory, Germany; at Tartu Observatory, Esthonia; at the National Observatory of Prague, Czechoslovakia; and at several of the Russian observatories. In Great Britain, the Meteor Section of the British Astronomical Association are carrying out regular observations, and publishing the chief results. There seems to be commendable activity by at least some observers in Belgium, Denmark, and France, but only sporadic work, if any, in other countries. Canada and New Zealand both are doing their share, and Japan has come forward with renewed energy. But at present Africa, Australia, and South America, so far as known, have only a few occasional observers. The United States has now several national societies and numerous local ones devoted to meteors. The newly organized "Society for Research on Meteorites" has started out well and should fill a real need as a connecting link between geology and meteoric astronomy. Harvard College Observatory has for some years devoted part of its energies to the solution of special meteor problems; numerous publications have shown the important results. Flower Observatory, as the headquarters of the American Meteor Society, continues to act as a depository and clearing-house for information. Its staff is actively engaged in certain problems dealing with meteors. The David Dunlap Observatory, Canada, is also rapidly becoming a centre of great meteoric activity.

Mention should also be made of the combined programme of work on hourly rates in connexion with the Second Antarctic Expedition of Admiral Byrd.

It is quite impossible to attempt any real review of the various investigations recently carried out by so many different people. Among the subjects that have attracted interest are: the determination of the velocity of meteors by several methods, the study of daily and annual variation, the application of the spectro-scope on a larger scale, photographic experiments of many kinds, the determination of the velocity and direction of train drifts, the determination of heights of hundreds of meteors, the mathematical study of the reality of radiants, systematic study of telescopic meteors, and the investigation of brilliant fireballs. More falls are being investigated, and hence the meteorites are being more promptly found. The outstanding events of the last three years were the splendid Draconid shower of 1933,

October 9, and, on the negative side, the failure of the Leonids to furnish respectable, much less great, showers in either 1932, 1933, or 1934.

The following suggestions have been made for consideration by the Commission and approved for inclusion in our final report.

(1) In every country there should be established an organization or directorship for meteor work. A list of those existing, with full addresses, should be drawn up and published as soon as possible.

(2) Cordial co-operation between such central stations or directors in different countries should be cultivated and maintained, in particular by a complete exchange and distribution of reprints.

(3) The organisation of special investigations requiring international co-operation should generally be undertaken by such central stations or directors.

(4) Special efforts should be made in all countries to secure active co-operation of the equivalent of the Hydrographic Office of the United States Navy and of the National Weather Bureau in the reporting of fireballs. The aid of officers of the mercantile marine could also be enlisted through the various shipping companies.

(5) We again most respectfully urge upon the Government of France the great importance of a prompt rediscovery and study of the Chinguetti (Adrar) meteorite, and upon the Government of the Union of Soviet Socialist Republics the importance of further study of the region of the great Siberian fall of 1908.

(6) Further experiments in meteor photography, including photographs of long-enduring trains and spectrograms, are desirable. If anyone has success with a particular type of lens or plate, prompt announcement should be made. Negative results should also be made known.

(7) Further work with present known methods for finding the velocities of meteors is most important. The application of new methods should be constantly attempted. Attention is called in this respect to the methods introduced by Prof. Svoboda.

(8) As meteors at present furnish the only means for certain studies of the upper atmosphere, no trouble should be spared in securing data. Of particular value are determinations of beginning, end and drift of long-enduring trains, studies of changes of brightness of meteors, and determinations of retardations of meteors. The stratum between seventy-five and one hundred kilometres and that near fifty-five kilometres are of particular interest in these connexions.

(9) The causes of long-enduring meteor trains should be further investigated.

(10) It is to be regretted that no recent work has been done at Meteor Crater, Arizona. It is highly desirable that the exploration there be completed.

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