

38. COMMISSION POUR L'ÉCHANGE DES ASTRONOMES

PRÉSIDENT: M. F. J. M. STRATTON, *Gonville and Caius College, Cambridge, England.*

MEMBRES: MM. Yu-Che Chang, Danjon, Minnaert, Pearce, Platzeck, Rosseland, Shajn, Struve, Swings, Unsöld, van den Bos, Witkowski, Woolley.

1. *Introductory.* In the report of the Commission to the General Assembly in 1948 details of the grants placed at the disposal of the Commission for 1947. 1948 were given and a list of approved recipients. The present Report is being written in 1950 and can only give further details for two years. No grants are made until the money has been definitely allotted to the Commission and there is necessarily in many cases a delay of some months arranging details before an applicant is able to travel to a foreign country; in consequence, the accounts for successive years get necessarily blended. A truer picture of the work of the Commission will be given by details of the grants received from the beginning in 1947 up to 1950 and of the various recipients of the grants than by limiting the Report to a period of two years only.

2. *Grants Received.* In 1947 a grant of \$2000 was received from U.N.E.S.C.O., in 1948 a grant of \$3000 was received from U.N.E.S.C.O. and provision was made by the General Assembly of the I.A.U. at Stockholm for an annual grant of 12,000 gold francs or \$3919 from Union sources. In 1949 the U.N.E.S.C.O. grant was raised to \$4000 and approval was given for the transfer to the Commission of the sum of \$1087, the sum not taken up by various countries to which it had been allotted to assist young astronomers to attend the General Assembly of the Union at Zürich, in 1948. In 1950 a grant of \$4000 was made by U.N.E.S.C.O., and in 1951 a further grant of \$4000 was received from I.A.U. sources.

The sums expended were as follows: 1947, \$300; leaving a balance of \$1700; 1948, \$2790; leaving a balance of \$1910; 1949, \$3726; leaving a balance of \$3271, all committed and subsequently spent; 1950, \$3406; leaving a balance of \$3865. The large balances carried forward at the end of each year are the result of the position that many of the grants made in one year are not paid until the following year owing to the delays involved in arranging the details of a visit to a foreign observatory. It will be noted that the special grants authorized by I.A.U. were not taken up, the generous grants from U.N.E.S.C.O. meeting all applications.

3. In the following cases grants were made by the Commission:

- (1) a Polish astronomer for work at St Andrews Observatory, Scotland;
- (2) a Chinese astronomer at Arosa, Switzerland;
- (3) a Finnish astronomer at Delft, Netherlands;
- (4) an Italian astronomer at the Warner and Swasey Observatory, Cleveland, U.S.A.;
- (5) a Polish astronomer at the Yerkes Observatory, U.S.A., and other observatories;
- (6) a Chinese astronomer at Greenwich, Edinburgh and Cambridge, Great Britain,
- (7-11) an exchange between two Netherlands astronomers at Paris and at Haute Provence, France, and three French astronomers at Utrecht, Netherlands;
- (12) a Belgian astronomer at the Vatican Observatory. Vatican City State;
- (13) a Belgian astronomer at Victoria, B.C., Canada;
- (14) a Netherlands astronomer to Jungfrauoch, Switzerland;
- (15) a French astronomer to Leiden, Netherlands;
- (16) a Polish astronomer to Saltsjöbaden, Sweden,
- (17) a Turkish astronomer to Arosa, Switzerland;
- (18) a German astronomer to Cambridge, England, and other observatories;
- (19) a British astronomer to Arcetri, Italy;
- (20) an Italian astronomer to various observatories in the U.S.A.;
- (21-2) two French astronomers to the McDonald Observatory, Texas, U.S.A.

Altogether twenty-two astronomers from ten countries were enabled to work in nine countries. During 1951, up to the time of completing this Report, six more astronomers

have received grants to work away from home and four others have made applications, which are being considered. Whenever possible other sources were looked for to cover part of the expenses involved in the visits to foreign observatories; grants from the Commission enabled astronomers to accept Fellowships by meeting the travelling expenses involved: or where travelling charges could be met from other sources but money could not be transferred for subsistence owing to currency restrictions, grants made the visit possible. Exchange of astronomers between two observatories was on occasion made possible by a grant. The average grant works out at \$500.

4. *Reports from Recipients of Grants.* It is not proposed to give in full the reports received from the twenty-two astronomers mentioned in the previous section, but some extracts are given which will enable the value of the services rendered by the Commission to be judged.

(1) A young astronomer carried out practical astronomy of a nature not readily possible in his own country and was in the end appointed as an assistant in a University Department of Astronomy.

(2) An astronomer who had been in poor health was enabled to work in a high-altitude observatory in Switzerland under conditions very favourable to his health and carried out valuable work on spectrophotographic and polarimetric observations of the sky in the zenith. The plates obtained were being reduced at the time of his last report.

(3) An astronomer having worked on solar hydrodynamical problems for a year with the aid of a grant from the 'Delftsche Hogeschoolfonds' supplemented by a grant from the Commission has had his first grant renewed for a second year to continue work of proved value.

(4) A somewhat more senior astronomer with the aid of grants from an American observatory, from his own national research Council and from the Commission was enabled to work for three months at an American observatory and visit a number of other observatories in the States. He published several papers as a result of his work and has now been appointed Director of an observatory in his own country.

(5) A woman astronomer was enabled to visit three American observatories and to carry out a number of valuable observations; she also visited a number of observatories and returned home with enough material to occupy her for two years and also with widely increased experience which could not have been secured in her devastated homeland.

(6) A second woman astronomer worked for the space of two years at various observatories in Great Britain—the second year with the aid of a grant from The British Council. She has returned home with greatly increased knowledge in a wide range of subjects in which there was no opportunity of gaining experience in her own country.

(7–11) Grants from the Commission enabled an exchange to be effected for six months between two Netherlands astronomers, who worked in France on radio-astronomy, spectra of the night sky and details of the hydrogen spectrum of the Sun, and three French astronomers, who carried out investigations in the Netherlands on radiative transfer in stellar atmospheres, on the structure of lines in stellar spectra, on the ultra-violet spectrum of the Sun and on molecular lines in the solar spectrum. There can be no doubt of the great value of these exchanges carried out as they frequently can be at very small expense. Such exchanges are often, however, not possible without financial help from some source such as the grants available from the Commission.

(12) An astronomer visited a foreign observatory to arrange participation in work between two observatories. The result was successful and will lead to a close linking-up of individuals and institutions in two countries as well as to a useful share in a larger scheme of international co-operation.

(13) A second (senior) astronomer is using a small grant from this Commission to extend a visit to the United States on to Canada so that he may discuss, with the Chairman of a sub-commission of the I.A.U. on molecular spectra, the details of a scheme adopted by the I.A.U. for an atlas of molecular spectra.

(14) A Netherlands astronomer worked along with a Belgian astronomer using a Belgian photo-electric infra-red spectrograph, at the high-altitude station at the Jungfrauoch,

on the solar spectrum in the infra-red, studying mainly the lines of hydrogen and also those of several other elements.

(15) A French astronomer visited a Netherlands observatory to discuss with the Director the results from some work that he had previously carried out there during a stay of some months, made possible by a grant from the Government of the Netherlands.

(16) A Polish astronomer worked for some months at a Swedish observatory on a number of theoretical and observational problems, both solar and stellar, in the hopes of following up the work with widened experience on his return home. He also visited several other Swedish observatories.

(17) A Turkish astronomer worked at two Swiss observatories, visiting a number of observatories in Switzerland, Italy and Germany. He was planning solar observations to be secured in Turkey in connection with an I.A.U. international scheme organized in Switzerland.

(18) A German astronomer visited several observatories in Great Britain, comparing photometric work carried out in Germany with the corresponding investigations in Great Britain.

(19) A young British astronomer spent two months at the Arcetri Observatory in Italy working with the installation of solar instruments there.

(20) A supplementary grant made to an Italian astronomer enabled him to extend a visit to the States so as to attend a symposium on galactic structure at Michigan and to visit a number of other observatories. He gathered a considerable amount of material to bring back to Italy.

(21-2) Two French astronomers were enabled to work with the 82-inch telescope of the McDonald Observatory in Texas, U.S.A. They took with them a quartz spectrograph from Paris with auxiliary apparatus and were able to extend (to fainter stars than can be reached with European instruments) a spectrophotometric investigation of different groups of stars started in Switzerland at the Jungfrauoch and continued in France at St Michel. A technique and auxiliary apparatus not previously used in the U.S.A. were used with large telescopes not available in Europe.

It must be recognized that the visits and interchanges described above as made possible by U.N.E.S.C.O. grants placed at the disposal of the Commission by no means present the whole story of astronomical exchanges. Thus Mount Stromlo Observatory in Australia has been arranging an exchange with the Dominion Astrophysical Observatory at Victoria in Canada to further radial velocity measurements of southern stars; also various funds and institutions have means of arranging the complete expenses of astronomers wishing to work for some months at a foreign observatory. But in many cases the exchanges and visits are only possible with some outside aid and that is where the U.N.E.S.C.O. grants-in-aid have been so valuable.

5. *Change of U.N.E.S.C.O. directives.* It is all the more unfortunate that a change of directives as to grants-in-aid available from U.N.E.S.C.O. has excluded, from 1951 onwards, such grants as the I.A.U. has been receiving for Commission 38 from that source.

The Commission will be asked to support a motion for a grant from I.A.U. of \$2000 a year for the three years 1952, '53, '54 so that the present scheme of aiding exchanges and supplementing other grants when necessary may be continued. The reports above indicate clearly the increase in international goodwill and the gain to astronomy that has followed the work of the Commission and it is hoped that under any new arrangements the work of the Commission will not be unduly hindered or weakened.

F. J. M. STRATTON
President of the Commission

Report of the meeting. Monday. 8 September 1952

PRESIDENT: Prof. F. J. M. STRATTON.

SECRETARY: Dr R. V. D. R. WOOLLEY.

The President presented a supplement to his Report, as follows:

(1) Members: the name of Unsöld, co-opted in 1952, should be added.

(2) Additional to the matter in para. 1 of the main Report, he mentioned that a welcome addition to the list of fellowships for visiting astronomers in the preceding report of the Commission (*Trans. I.A.U.* 7, 414) was the following:

Observatory	Type of Post	Application to be made to
Dunsink, Eire	Research Fellowship for one or two years. £350 per annum	The Registrar, Dublin Institute for Advanced Study.

(3) Details of the additional astronomers to whom grants have been made in 1951 and 1952 are as follows:

23. An Australian astronomer for continued work in Cambridge, England.
24. A British astronomer to Haute Provence, France.
25. A British astronomer to Lick Observatory, California.
26. A British astronomer to Yerkes Observatory, U.S.A.
27. A Danish astronomer to various observatories in the U.S.A.
28. A Japanese astronomer to Cambridge, England.
29. A Greek astronomer to the Paris Observatory at Meudon.
30. An Italian astronomer to the Institut d'Astrophysique, Paris and to Haute Provence.
31. A Greek astronomer to the Norman Lockyer Observatory, Sidmouth, England.
32. An Argentine astronomer to Leiden Observatory, Netherlands.
33. A Yugoslav astronomer to the Institut d'Astrophysique, Paris.

The total grants paid in 1951 reached the figure of \$4658. One further grant has been promised and inquiries have been made by the Director of an Observatory in one fresh case.

(4) Reports on the work carried out in these more recent cases have naturally not been received as yet but the following indications may be given of the use to which the grants have been put.

23. An Australian student working at Cambridge on the theoretical side of radio astronomy was enabled to complete one line of study of the radiation processes involved in the intense solar radio noise observed when sunspots are present on the Sun, and to advance fresh lines of study.
24. A British astronomer was enabled to get long series of plates giving the spectral changes in several variable stars.
25. A British astronomer was enabled to get further experience in photo-electric photometry at the Lick Observatory and to visit other American Observatories.
26. A British astronomer was given the opportunity of working with high-dispersion spectra at the Yerkes Observatory.
27. A Danish astronomer was able to prolong a stay in the United States to study electronic calculators and the use of punched-card machines at New York, Yale and Washington.
28. A Japanese astronomer is studying the photometry of spectral lines by interferometric methods at Cambridge.
29. A Greek astronomer is continuing research work at Meudon where he had been working previously under the late M. Lyot. He is now working on the micro-photometry of solar granules.
30. An Italian astronomer is working on cepheid variables at the observatory at Haute Provence and on solar coronal problems at the Institut d'Astrophysique.

31. A Greek astronomer is staying on at the Norman Lockyer Observatory to complete some work on galactic clusters.
32. An Argentine astronomer working on a short-period cepheid will work at Leiden along with a Dutch colleague who has studied the same star at a South African observatory.
33. A Yugoslav astronomer has been enabled to prolong his stay at the Institut d'Astrophysique at the laboratory of radio-astronomy to complete some work on solar emission and radiations from the Galaxy.

(5) A number of papers have been published by the earlier recipients of grants on work carried out during their visits to foreign observatories and acknowledgments have been made to the grants from U.N.E.S.C.O. that made the work possible. Several reports indicate that useful co-operation between two institutions has developed from the visits aided by grants. A notable case is that between the Institut d'Astrophysique de Liège and the laboratory at Castel Gandolfo in the matter of molecular spectra and molecular constants.

After the President had presented his Report, Prof. Minnaert said that he wished to congratulate the President. He thought that very remarkable results had been achieved with the expenditure of very little money. The Report was adopted on the motion of Prof. Minnaert, seconded by Prof. Rosseland.

The President said that he would welcome suggestions about how to proceed in the future in view of the reduction in the amount of money available. He asked whether the meeting agreed that the best use to make of the money was the payment not of full support but of grants in addition to awards made elsewhere: part expenses only to be paid by our Commission. It was agreed that the best policy was to help rather than to offer complete support and it was agreed that exchanges should be assisted where the observatories concerned carried the main stipends while the Commission defrayed incidental and travelling expenses.

The President then called for a resolution concerning the financial grant to be sought from the Executive. His report named a sum of \$2000 to be sought for each of the three years 1952, 1953 and 1954. It was moved by Rosseland and seconded by Abetti that this sum be asked for. Dr Shapley then said that in his opinion a larger sum be asked for, and asked whether, as he himself was not a member of the Commission, any member would move an amendment. Prof. Rosseland then moved an amendment that \$4000 be sought for each of the three years. Minnaert seconded the amendment.

The amendment was carried *nem. con.*

The motion as amended that the Executive be asked to provide \$4000 for each of the three years 1952, 1953 and 1954 was carried *nem. con.*

Dr Platzek said that a new Argentinian observatory was to be constructed in -47° latitude. He hoped that it would be possible to arrange for visiting astronomers to go there.

W Kourganoff said that some schemes for visits and for exchange necessitated residence of a whole year. In his experience a period of three or four months was sufficient to secure most of the benefits of a visit. Could the Commission arrange for Universities to make appointments of short duration, and could the U.S. astronomers persuade the Fulbright authorities to make appointments for less than one year?

Several speakers said that there was a tendency for Fulbright awards of shorter period than a year.

W Kourganoff then said that exchange of stipend did not wholly cover expenses, as a visitor was certain to incur more than a regular inhabitant. He said that there was a danger of waste of time and opportunity through people getting side jobs to make ends meet.

Prof. Minnaert said that this was true to a certain degree, but that not much money was required to make up the difference to the visitor. The President said that the Commission grants might be expected to do this, and, there being no further business, he adjourned the meeting.