MANPOWER IN ASTRONOMY IN EUROPE

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The European Science Foundation has recently published a 24-page Report* on the distribution of manpower in astronomy in the countries represented by the E.S.F. It is the result of a letter of inquiry from the Astronomy Committee to E.S.F. Member Organizations sent in January 1977. On the basis of the replies received further and more specific information was sought. The Report as published was then approved in May 1978.

No definition of the field of astronomy was included in the letters of inquiry with the result that different countries defined a working astronomer differently. These differences arise from many reasons. Standards of academic qualification may vary from one country to another; some replies included a broader range of scientists as astronomers than others, while the question of national scientists working at international institutions (e.g., E.S.O. or E.S.A.) might have led to some duplication.

In spite of these problems it is held that the final results of the study represent the correct numbers of astronomers “of PhD or equivalent competence working actively . . . . in a field of astronomy” to within 10–20%.

The total number of astronomers in the 16 countries included is 2,372 which is greater by a factor of almost 2 than the number in the U.S.A. The number per million head of population is 6.5 as compared to 5.9 for the U.S.A. This mean figure however embraces a very large variation from country to country. The U.K. has both the largest total number of astronomers and the largest number per million head of population with 724 and 12.9 respectively. Germany and France come second in terms of total number with 430 each but are fifth and sixth in terms of number per head of population (8.0 and 7.0 per million respectively). Ireland has 5.1 astronomers per million head of population, somewhat below the mean. Bottom of the list are the Iberian astronomers with 1.3 per million in Spain and 0.6 per million in Portugal.

It is the age distribution of these scientists that deserves the greatest attention. Almost half of European astronomers are between the ages of 30 and 40. This of course is related to the general upswing in science during the 60’s and early 70’s. The distribution in the U.S.A. has an even sharper peak in this age-group with a very pronounced peak between 30 and 35 years of age containing 1/3 of the total.

Although the growth rate in science has undoubtedly slowed of late, the mean rate of increase in the number of European astronomers (i.e., the number of PhD’s being awarded) is still running at 9% of the total community per annum. With this in mind the Report has attempted to investigate where the very large number of scientists will find employment.

The number of vacancies arising from retirement of older astronomers is likely to be of the order of 20–25 per annum over the next 15 years. We can add to this an estimate of the number of new posts likely to be made available in that same period. Given the present economic climate and the general drift away from the physical sciences it is hardly necessary to add that the number of new posts will not be large.

* The Report is entitled “A Study of Manpower in the Countries Represented by the E.S.F.”, published by the E.S.F., 1 Quai Lezay-Marnesia, 67000 Strasbourg, France. No price indicated.
Manpower in Astronomy

Best estimates would indicate that a total of 50 European-based PhD’s per annum will find permanent employment in astronomy. When this is compared with a total production of PhD’s in astronomy of about 220 per year it becomes obvious that most newly qualified astronomers must seek employment outside the science.

The Report draws attention to the very considerable regional differences within Europe in the plight of the astronomer who must move out of research. In Italy for instance out of 150 astronomy PhD’s surveyed 27% were still engaged in astronomical research, only 4% were employed in industry and a massive 69% were school teachers. By way of contrast Germany reported 60% of her astronomy PhD’s were still occupied in astronomical research, 27% in other fields of research, 10% were employed by the public service and a mere 3% in teaching. Private industry appeared in Germany not to employ astronomy graduates. Yet the U.K. report stressed the fact that industry liked the high level of technical competence achieved by most astronomy PhD’s (in the fields of computing and electronics for instance).

It would thus appear that in spite of an adverse employment situation within the science, astronomy remains a popular choice with students. The results of the Report underline however the necessity to inform potential students that they are unlikely to continue in employment in astronomical research and also of the importance of “keeping their options open” for as long a period as possible, so that on graduation they do not find themselves out of a job.

The fact that up to 80% of PhD’s in astronomy will eventually be forced to take up employment outside the science also places a duty in the hands of educators to ensure that courses studied are of as broad a nature as possible.

Another question which is briefly dealt with in the Report is that of technical back-up. With the increasing complexity of modern observational methods, the astronomer cannot be expected to cope with the technical problems himself. A mean ratio of 0.9 technical support staff to astronomers for Europe as a whole appears quite reasonable (technical support excludes administrative staff). Both the U.K. and Ireland fall well below this figure, however, both having a ratio nearer 0.5. My own experiences at the South African Astronomical Observatory and at Boyden Observatory have made me aware of this problem. At S.A.A.O, a very excellent back-up staff were often stretched by conflicting requirements of routine maintenance and of instrumental development work. At Boyden the situation was much worse and as a result the astronomer himself often had to service his equipment in addition to his nights’ observations.

In their assessment of future growth, the E.S.F. conclude that the rate of funding and of instrumental growth is likely to be adequate for foreseeable growth in the community of scientists. They point however to the fact that attractive facilities (e.g. the A.A.T.) are frequently oversubscribed by considerable factors and that account should be taken of this fact in planning future facilities.

So all in all there is much food for reflection in the Report and even if some of the conclusions reached are a bit tentative due to lack of data, it has been very worthwhile preparing it. Future reports will be awaited with considerable interest and the E.S.F. should be given every encouragement to publish them on a regular basis.

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