

Career Outlook for Physicists in Europe

At its meeting on 20 November 1981, the Executive Committee of the EPS accepted the report from the special "EPS Seminar on the Career Outlook for Physicists in Europe" that took place in Erice in June. The Executive also agreed to instruct its Advisory Committees to prepare proposals for implementing the recommendations that are included in the report.

The Seminar which was organized by the Advisory Committee on Physics and Society following the request made by the EPS Executive Committee at its meeting in Budapest in March 1980, was held at the Ettore Majorana Centre with as organizing committee:

H. van Regemorter (chairman), P. Averbuch, L. Cohen, F. Schneider, M. Sunjic and E. W. A. Lingeman (secretary).

It was financed partly by the Centre itself, which via A. Zichichi, offered free stay to all participants, and partly by the contributions to travel expenses and printing costs made by the European Communities, SHELL, the Netherlands' Foundation for Fundamental Research on Matter, IBM-Europe and the Industry Committee of the German Physical Society. Attendance was limited to about 30 persons so as to encourage free discussion.

Fifteen invited papers from 13 different European countries, comprising analyses of the career outlooks in specific areas, were prepared and sent to all participants one month before the Seminar. These were discussed at the opening session and then three groups were formed to concentrate on freely chosen subjects. From their reports the recommendations to the Executive Committee were formulated. These are summarized below.

Manpower

The present number of physicists is adequate for Society's needs but the average age is steadily increasing which could have serious repercussions on research and teaching. Some steps are being taken to counter the problem in the universities by schemes such as the Heisenberg programme in the Fed. Rep. of Germany but the problem is general and calls for remedial action at several levels (see below) including:

— *Wide publicity for the problem and a wide exchange of views and experience gained in solving it.*

The problem is also related to the broader problems of the interaction between industry and the universities and the general mobility of scientists.

Student Training

It is quite clear that in the future the majority of career possibilities will lie in industry and we need to adopt policies and practices to recognize this, starting with the student. To encourage the smooth translation from higher education to industry, a number of measures are recommended:

— *Topics of special interest to industry e.g. data processing, materials science should be included in courses.*

— *Notions of economics should also be included to give physicists some understanding of the boundary conditions within which they will work.*

— *Students should be encouraged to spend, on a voluntary basis, a minimum of six months in industry during their studies. EPS should assist in making this operate on an international basis.*

Maturer Physicists

It is generally believed that the longer a physicist remains in the academic environment, the more difficult he finds it to transfer to industry. This should be recognized in post-degree work so that:

— *The normal period for acquiring a Ph. D. following a degree is three years.*

After the student period, the interaction between industry and the institutes of higher education should not be allowed to die. In this context, again a number of specific measures are recommended.

— *Promotion of the practice of post-doctorates occupying temporary positions in industry for periods of one or two years.*

— *Promotion of the practice of sabbatical years being spent by university professors in industry and industrial physicists occupying temporary positions in institutes of higher education.*

Recycling

In the second part of the last recommendation, one method of putting into practice the off-repeated need for recycling is identified. Other methods put forward are:

— *Encouraging the practice of appointing consultants on a two-way basis between industry and universities.*

— *Providing, on a regular basis, up-dating courses for physicists in both industry and teaching.*

Penetrating the Smaller and Traditional Industries

Whereas larger industries have a complete career structure with a progression from the laboratory into other sections of

the company, smaller industries need to recruit from outside. They have particular difficulty in finding scientists with both R & D experience and management training. To satisfy this need and encourage the transfer of mature scientists from the universities and government-funded laboratories (so leaving openings for younger scientists):

— *Management training should be given to established scientists, aimed at widening their career prospects.*

Reference is made above to the self-sufficiency of large advanced industries. These can, in effect, resolve their own problems. There are also small advanced industries which can largely fend for themselves as they are aware of opportunities and look after their channels of communication. The most important sector in need of attention is traditional industry and:

— *Means should be studied of persuading traditional industries to become interested in recruiting physicists and in persuading physicists in their turn to take an interest in employment in such industries.*

Role of National Societies

In all these areas it is urged that the physical societies become active and the plea is made that:

— *Societies be transformed from the learned societies fashioned on the pattern of the 19th Century to modern centres of action, welcoming an industrial membership.*

— *Societies take up their responsibility for informing, lobbying and publicising physics, not only as a scientific discipline in its own right, but also in its impact on technology and the economy.*

Need for Facts

Finally the Erice Seminar has made a plea for assembling data on the comparative situations in different countries. In some, there is already a consciousness of the value of such data and in a few, the means for collecting it and analysing it. The practice however needs to be both more generally accepted and coordinated internationally. At the present moment we do not even know the total number of physicists in Europe. More specifically the recommendation is made that:

— *Basic statistics are collected on:*

- a) present number of physicists (per head of population)
- b) the number of physicists being trained per year
- c) the projected number of physicists in the coming years
- d) a break-down of present employment into industrial, academic and teaching
- e) a break-down by activity into research, management, production, and so on.

The *Proceedings* of the Seminar are available, up to the limit of present stocks, at the EPS Secretariat, price Sw.Fr. 40.—.