

needed to cope with the notion of a vacuum that is totally populated. The only way we can talk about the vacuum today is as the lowest state of energy and what we measure in a system is the energy with respect to this lowest state, but new semantics have to be invented.

3) Is Quantum Electroweak Dynamics correct? The introduction of the Higgs mechanism which allows originally massless vector mesons to acquire a mass, as massless scalar mesons disappear, introduces uncomfortable consequences when gravity is introduced. It is difficult then to avoid Einstein's cosmological constant which has been proved not to exist.

4) Why have the fundamental constants the values they have? Why for example should the ratio between the masses of the proton and electron — the basis of all matter and life — be about 1836?

5) Why should almost the whole Universe be able to operate with only simple quarks? Are we being unnecessarily complicated in introducing other variants with such whimsical names?

6) Alternatively is there any end to the quantum numbers that are necessary to describe our Universe?

Salam declined to provide simple answers to these questions and instead addressed himself to the evolution of our concept of charges and the prospect of a unification of the electronuclear charge with gravitational charge, and what could be expected from experimentation at higher energies. On the very far horizon was the Planck mass of 10^{19} GeV equivalent to a distance of 10^{-33} cm where space is so curved that our classical concepts of space and time are bound to fail.

Our more modest experience with current accelerators had allowed us to take a firm step on the road to unification and led us to formulate strategies for the immediate future based on the success of symmetries and gauge interactions. A crucial test will be to check on the existence of the W boson which mediates the weak interaction, and the Z^0 boson, and these should be revealed by the proton-antiproton experiments now under way at CERN.

By the end of the century it can be expected that centre of mass energies of 10^4 GeV will have been reached and beyond that, laser accelerators with a capability of 2GV/m could push the energy to 10^5 GeV. At these energies, the lepton transformation of the proton could be observed if the life time of the proton is under 10^{32} years. On the other hand, grand unification theory indicates that it is not until 10^{14} GeV that all the coupling parameters will have come together and have the same strength. At this point all matter will be the same. It seems improbable nevertheless that along the way to this energy Nature will not have new surprises in store.

Salam from his special position as Director of the International Centre for Theoretical Physics in Trieste had also a clear message to give on the need to help the less fortunate countries, to build up their skills and their confidence. His concern with unification does not end with theoretical gauge theories, but extends to symmetries that we hope to establish in our own physical world.

Council

In reviewing the progress of the Society during the past months, the President reported on the steps that had been taken to enlarge the Society's contacts with other organizations concerned with physics in Europe and the world at large. EPS was recognized as one of the most successful societies for the promotion of scientific collaboration in Europe.

External Relations

Both IUPAP and the European Science Foundation had expressed a wish to support our activities. For example, the ESF was mainly concerned with identifying areas where collaborative programmes in science could increase the efficiency of research. This is done by bringing dispersed groups together and promoting a rational use of research facilities. It was interested in drawing on the expertise that was assembled within the EPS Divisions and in a collective approach towards promoting multi-national projects in physics. Although the ESF was not itself a fund granting agency, it had an efficient system for mobilizing the resources of the main western European funding organizations.

In the past, the notion of a world physical society had been put forward, but the complexities and costs of such an enterprise seemed prohibitive and present thinking lay more in the direction of an informal collaboration between the big physical societies. Encouraging exchanges had already been held with the American Physical

Society and these would be pursued as a pilot operation which could be followed by comparable links with the Japanese and other major regional physical societies.

In an initial phase one could envisage an exchange of privileges between members of EPS and APS, for example in the sponsoring of papers at conferences (see below) and in charges for certain publications. The *European Journal of Physics* has already been offered in the USA at the same prices that were charged to European physicists and the APS had offered *Rev. Mod. Phys.* to EPS members at the US rate. Other exchanges could follow in the future.

Another move that has been proposed, and which Council approved, is that a new category of membership should be created which would allow members of the APS, not resident in Europe, to become members of the EPS for an annual subscription approximately equivalent to five unit fees — the logic being that this was equivalent to the total income to the Society from a 4 C Member. This would require a change in the Statutes and the Executive Committee will be formulating a specific proposal in time for Council to take a formal vote at its next meeting on 1-2 April 1982 in Geneva.

Discussions were continuing with the various optical societies in Europe, notably with the International Commission of Optics of IUPAP and the European Optical Committee, and it could be hoped that within a few months, European optical

EPS Travelling Lecturer

The accolade of 1982 EPS Travelling Lecturer has been awarded to Professor Isaac F. Silvera from the University of Amsterdam. Awarded as a sign of recognition of outstanding achievements in physics, it also provides, through a lecture tour, a means for communicating new results in physics in a number of EPS countries.

The very interesting results recently obtained by Professor Silvera on atomic hydrogen and deuterium at high pressures make such a tour particularly appropriate.

Professor Silvera has undertaken to visit a number of countries, including Scandinavia, France, Switzerland and Italy in the Spring of 1982.

physicists could be drawn within the fold of the EPS. One could also note the growing relations with UNESCO — for example the seminar in Istanbul (see page 11) and a seminar for editors and publishers of physics journals in Europe that would take place next January. There was also to be a meeting in Trieste on 24-26 September at the ICTP on science transfer, at which EPS would be represented, particularly in the round table session on the role to be played by societies such as ours.

Associate Members

There was a general desire to see more attention being paid to our associate mem-

Unit Fee

By 29413 votes in favour and only 1555 against, Council approved an increase in the unit fee from January 1982 to Sw.Fr. 9.—. This means that individual members in the 4A category will pay as annual subscription Sw.Fr. 126.— and those who are members of a member society will pay Sw.Fr. 36.—.

bers. Whereas the very big companies could look after themselves to a great extent and would sponsor EPS as a general investment in physics as a whole, there were many small companies who had a physics component that could be strengthened to both their advantage and that of the individual physicists. ACAPPI has this very much in mind.

EPS Conference Contributions

After long deliberations at past meetings, Council was able to agree the essentials of a new policy concerning contributions to conferences organized in the first instance by the Plasma Physics Division. In future, papers may only be submitted by Members of the EPS, members of its Member Societies or employees of Associate Members. Authors who are not in any of these categories (or in a society with whom a mutual exchange has been arranged) must submit them through an authorized member. After a suitable trial period, Council will decide whether it should extend the rule to all EPS conferences.

Atomic and Molecular Physics

This was not an occasion when major divisional reports were submitted, but advance notice was given by the Atomic Physics Division that in view of the large molecular content in the scope of the Division it would be more appropriate to change its name to the Atomic and Molecular Physics Division. General support for this proposal was evident and the matter will be taken up by the Executive Committee according to usual procedure.

Europhysics Letters

Progress was noted in the study of the proposals that had been received for a physics letters journal to be launched under the editorial supervision of EPS. Specific but independent offers of sponsorship had been received from the French and Italian Physical Societies involving the discontinuation of existing journals, and proposals for financial and marketing help as well as collaboration on contributions had been received from the UK Institute of Physics. In addition, the Eötvös Lorand Physical Society of Hungary had expressed a wish to participate in the production and the marketing to eastern European countries. There was general agreement that the study should be directed towards a general letters journal of the highest quality with minimum publication delay. Negotiations were taking place regarding the means, and market surveys would be made through the Divisions and other channels.

the future was in the coordination and encouragement of summer schools. This had also been discussed in the context of the seminar on physics in the developing countries of Europe (see p. 12).

3) Scientific Exchange. One of the objectives of the EPS was to increase the mobility of young scientists and provide the prospect of a stable future in physics that in turn would encourage the brightest students to come into the subject. We had the Student Exchange programme that should be developed and the Teaching Abroad scheme was at the pilot project stage. For more mature physicists there were the Erice scholarships which were now well established, and we had also designated the second EPS travelling lecturer (see p. 3). Members acclaimed the progress that had been made to establish closer relations in the first instance with APS and the contacts that were growing with other bodies (see Council report).

Scientific Freedom

As physicists we are all concerned with the personal and scientific freedom of our colleagues. Motivated by a number of letters sent to the President, alleging violations of fundamental rights, and the absence of any response to the letters of enquiry from him addressed to Member Societies, notably the USSR Academy of Sciences, Council had decided that a new Advisory Committee on Scientific Freedom should be set up, which Professor J. Charap (Chairman of the High Energy and Particle Physics Division) will chair. This Committee will collect and evaluate information and make recommendations to the Executive Committee where appropriate.

The precise method of working had not yet been defined, in order to allow Members the opportunity to express their opinions. It was evident that the investigation of complaints was regarded as an essential activity but no simple solutions were offered. The new Chairman stated that he was entirely aware of the delicacy of his task and the need for complete objectivity, and expressed the hope that the many connexions of EPS and its Members would enable his committee to arrive at the facts of any case, whatever the country involved. Particular concern was expressed at the meeting over the present position of Academician A.D. Sakharov, in view of the statement that had been made in Council (EN 11 (1980) 4) which seemed not to be consistent with his present situation. The delegate from the Soviet Academy replied that when this statement was made, it was correct and that there was nothing that could be added.

One basic principle which would be guiding the Society's actions would be Rule 32, which states explicitly that the venue of EPS meetings should be so chosen that there is no restriction on the attendance of members from anywhere. If it

General Meeting

The General Meeting opened with a review by the President and discussion by the Members of the state of the Society, with emphasis on three aspects of our activities:

1) Publications. The President drew attention to the need to consolidate the initiatives that had been taken in regard to *Europhysics Conference Abstracts* and the *European Journal of Physics*, and the study now under way of a *Europhysics Letters Journal* (see also Council report). Members were of the opinion that if we launch a new letters journal, we must be very sure that it would be a success, as the credibility of the Society would be heavily involved. Fears were expressed that the compression of budgets and the restrictions on library funding created a difficult financial climate and it would not be easy to insert a totally new journal into the existing pattern. At the same time it was recognized that the simultaneous discontinuation of two journals was a significant aspect of current proposals and this would provide a base from which operations

could begin. On the other hand, members wished to be assured that all possibilities of including or extending existing publications in Europe were explored, particularly as in certain fields of physics, both contributors and readers were satisfied with their quality. It was noted that the sales price of journals in the USA was greatly helped by the application of page charges, but so far in the Society, we had adopted the principle with the *Europhysics Journals* that equal access required that no page charges should be applied. Moreover there were a number of important institutions in Europe which specifically prohibited money granted to universities, or for research projects, from being used to pay such charges. The ad hoc Committee set up by Council to study the project and the Publications Committee would be taking these factors into account.

2) Conferences. This is probably the most successful activity of the Society which had led to a major transformation of the situation in Europe. An area to which perhaps more attention should be paid in