

Quantum Electronics and Optics

The initiative to form a Quantum Electronics Division (QED) essentially started with K.P. Meyer's interest in establishing a European laser institute at his laboratory in Bern. He called a meeting of a steering committee for a future Division to discuss European collaboration. It took place in Bern in February 1968, and a remarkably complete range of possible activities was scrutinized. An interim steering committee to promote further action chaired by Meyer was nominated, with national societies being invited to put forward delegates. The

The Chairmen of the Divisions of EPS photographed at the Council Meeting in Paris in February 1970. Left to right, K.P. Meyer (Quantum Electronics), S.F. Edwards (Condensed Matter), A. Kastler (Atomic Spectroscopy), C.J. Gorter (Low-Temperature Physics), and B. Lehnert (Plasma Physics).



original committee was mainly drawn from the European representatives on the programme committee of the 5th *International Quantum Electronics Conference (IQEC-5)* held in Miami in 1969 as the American partners wanted a more clear-cut European body with which to coordinate the future meetings (IQEC had stayed mainly in the USA but was seeking to go abroad more often). Consequently, S.A. Ramsden

from Hull wrote to the Chairman of the Joint Council on Quantum Electronics in March 1969 on behalf of the interim committee to ask if the future QED could help. It was not until the March 1974 Council that Ramsden, who had been elected the first Division's Chairman in 1971, could report that the QED had been asked to organize the 1976 IQEC. The Division had meanwhile started its own meeting, passing the 100 participants barrier at the third meeting in 1971. A new series of annual Divisional conferences (the *European Quantum Electronics Conference, EQEC*) was started in 1988, and its schedule began to be coordinated with that of IQEC in 1989.

In 1991, the QED took over the activities of the Optics Division (formed in 1982) when the Optics Board resigned upon the creation of the European Optical Society. Members voted for a name change (Quantum Electronics and Optics Division) to reflect the natural inclusion of optical physics. The Division is presently heavily engaged in organizing the fifth EQEC (in Amsterdam next August) as a "back-to-back" meeting with a European version of the Optical Society of America's very successful *Conference on Lasers and Electro-Optics (CLEO)* to be called *CLEO-Europe: European Conference on Lasers and Electro-Optics*.

P.G. Boswell

Constituting the Divisions

Two years after the official inauguration of EPS, Laurens Jansen, the Secretary, wrote: "It is probably not to be exaggerated to state that a large part of the European community of physicists judges the desirability of joining EPS first and foremost on a professional basis." He echoed what had been said from the outset, when one of the working groups at the Pisa meeting in April 1966 envisaged the creation of specialist groups to carry out the Society's work. But combining professional motivations with the desire to create a European community active in all aspects of physics was not going to be straightforward.

At its January 1968 meeting, the Steering Committee to form EPS received reports that *ad hoc* groups for solid-state physics under S.F. Edwards and for quantum electronics under K.P. Meyer had already started informal discussions, while a 35-member strong Plasma Physics Group chaired by P.C. Thonemann had even gone so far as to collect membership fees. L. Cohen, the Secretary of The Institute of Physics and The Physical Society (IPPS) in London, felt the EPS Constitution needed "to give subject groups a sort of legal status within the Society" as this would provide "the most useful possibilities for their operation". He then raised some of the obvious questions. Should EPS take the initiative to form groups or wait for a "spontaneous demand"? How were the groups to be financed, organized and represented in view of his own society's experience that they need not be permanent? Participation in publishing activities was a concern, and Cohen was no doubt worried that interesting possibilities could drift away.

H. Curien from Paris proposed that the principle criterion for the choice of topics at the Inaugural Conference being planned for 1969 should involve the promotion of specialized groups. Bernardini argued this could be done without

excluding any field of physics by having the sessions focus on the points at which fields "were growing in a more promising manner as this would allow existing groups to promote the formation of new ones".

Within the By-Laws

The list of potential candidates was enlarged at the Steering Committee's next meeting in May 1967 by the inclusion of groups that had formed independently of the moves for an EPS (notably, the European Group for High Pressure Research — EGHPR — and the Groupement Ampère). Secondly, J. de Boer from Amsterdam and his colleagues had circulated a letter seeking support for the formation of a low-temperature physics group, with a main task of organizing a general low-temperature physics conference ("group" having been chosen to emphasize close relations with other branches of physics, whereas the term "division" would "break the unity of physics"). However, it was Edwards who went to the heart of the matter by urging the setting up of several Divisions "charged with the business of acting as a continuity in European conferences, and having the interactions with EPS defined within the context of the Society's By-laws".

A working group on the constitution under E.G. Rudberg was asked to take up the task of drafting By-laws that would be adopted by the first Council. A working draft was ready for the Society's plenary meeting held immediately before the inauguration at CERN on 26 September 1968, but it was incomplete as only the rules relating to individual membership had been agreed. This situation naturally invited further discussion. De Boer questioned the need for specialized divisions, continuing to feel there was some truth in the literal meaning of the word "division". How this view was to be reconciled with his community's interest in organizing a conference was unclear.

J. Friedel from Paris argued that EPS should move quickly to define its main divisions based say on categories of materials, with sub-divisions

covering specialized matters to mirror some national structures. This approach was too *dirigiste* for many, while other models, notably IUPAP, discriminated against existing groups.

The Executive Reports

B.P. Gregory, CERN's Director-General, who had chaired the Steering Committee's first meeting and as the host was in the chair for the plenary meeting, questioned if any body other than Council could decide policies in this area. The conclusion was therefore to ask groups already sufficiently well organized to send information. The interim Executive Committee elected at the plenary meeting would then carry out an analysis for discussion by Council.

Rudberg, who had been elected the Vice-President, summarised the Executive's views in a report submitted shortly before the first Council meeting in April 1969. He stressed that one should not impose rules to prevent Divisions from having different characteristics. He came down more on the side of fixing a prearranged Division framework by recommending a "sectorial" structure (*i.e.*, each Division would combine theory, experiment and applied aspects) with restructuring to handle evolution. More importantly, because it defined how the Society would function, Divisions should run their own activities with central organs facilitating coordination and handling aspects that were clearly not covered otherwise. The scheme offered two powerful advantages which have stood the test of time. First, the EPS context provides the authority Divisions need *vis-à-vis* outside bodies; and second, the Divisions themselves ensure high quality within their fields. Finally, Rudberg indicated that some geographically based groups, and groups without clear-cut specializations, should be considered as national society or group members under Article 4b) of the Constitution.

Council to Decide

The Inaugural Conference in Florence in April 1969 took as its title *The Growth Points of Physics* in reflecting Bernardini's ideas. As was hoped, there seems to have been much discussion on possible Divisions. For instance, the model advocated by Friedel was taken up by A. Kastler, who spoke of 6-7 large Divisions while talking about a possible initiative to form a Division for optics, atomic physics and quantum electronics. But it was up to Council to decide, and Bernardini indicated to the first session of Council held during the conference that it was being asked to establish a basic policy for Divisions. In particular, should a broad structure be put in place, or was there be "a large number of specialized divisions at the outset?"

While agreeing with most of the Executive's recommendations, Council was reluctant to tackle the fundamental issue right away. It decided to discuss policies and general rules for Divisions at the next meeting at the IAEA in Vienna in July before considering applications.

Meyer had meanwhile sent in a formal application for a Quantum Electronics Division following rules laid out in the By-laws as they stood in January 1969. There was also an informal request in writing before Council for a Low-Temperature Physics Group. It stemmed from discussions at a conference in St. Andrews in August 1968 triggered by the letter from de Boer and colleagues. The international steering committee chaired by Edwards indicated that it would seek approval for a Condensed Matter Division, and a detailed report covering structure and future activities followed soon after. Finally, the Plasma Physics Group had indicated that it wished to be



The October 1970 Council meeting at the Grand Hotel in Budapest. Seated along the top are (third from the left to the right): G. Szegedi from Budapest (Vice-President, 1974-75), the President of the Eötvös Roland Physical Society which hosted the meeting. Then comes L. Etienne (Executive Secretary, 1969-73), E.G. Rudberg (President, 1970-72), L. Jansen (Secretary, 1968-72), and L. Cohen (Treasurer, 1968-73). To the lower left is I. Kovács from Budapest, Chairman of the Molecular Physics Section from 1972 to 1979.

combined with astrophysics and fluid dynamics in any future Division.

As if all this were not enough to bring pressure on the embryonic Society to resolve the constitutional aspects of future Divisions, there was a tentative approach from D.W. Sciama from Cambridge who recommended a section for astronomy, cosmology and relativity. Moreover, the EHPRG Chairman had indicated that his Group could be interested in establishing contacts, as was the International Committee for Molecular Jets of High and Low Energies which aimed to organize its second symposium in July 1969. Finally, W.E. Burcham from Birmingham wanted to know how the Nuclear Physics Sub-committee of the IPPS could participate in an EPS Division.

First Decisions

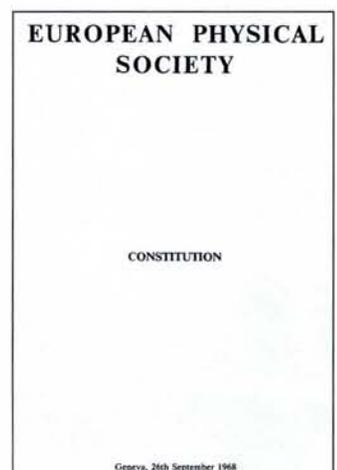
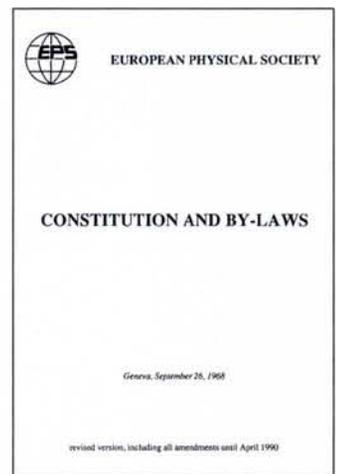
Council in Vienna saw a lively discussion of the *General Rules for Specialized Divisions* drafted by the Executive Committee. Concerning membership: there continued to be a hard core of delegates who refined the "no Divisions" argument to mean that Divisions should have no members. This issue was quickly resolved and Council moved on to details. The minutes say that the proposal to restrict membership to Individual Ordinary Members (IOM's) as individuals (Category 4a) or through their member societies (Category 4c) was "misunderstood". Perhaps so. But the real issue was whether or not members of national societies affiliated to EPS (Category 4b group or society members) could be Division members. Council decided that these individuals, or "society members", could participate in Division activities and would receive information through their national societies. But it was out of the question for them to become members of a Division.

The draft of the rules had not foreseen the involvement of individuals who were not 4a) or 4c) members so Council then decided that the affairs of a Division should be conducted by IOM's, and by delegates of Category 4b organizations. The majority view that membership of a Division would not involve an additional fee also carried the day, primarily because the main activities would be conferences and these should be self-supporting. There remained the problem of funding active participation in other activities, including essential things such as Board meetings. Bernardini's suggestion to try to survive the initial stages without start-up funds was approved. This meant another modification to the draft since the Executive had hoped to be able to support a secretary for each Division. Finally, the secretariat's role would be to distribute information, to arrange committee meetings, and to act as an international banker.

Setting in Place

On the central question of whether a Division framework should be completed before accepting

The booklet *Constitution and By-Laws of the European Physical Society* and the original Constitution (lower). The Constitution has been amended a few times in order to create a new membership category (the Associate Members) in 1988, to appoint Division Chairmen as *ex officio* Members of Council (in the late 1970's), and to allow greatly flexibility in the election of the President (the first amendment along these lines being in 1974). Amendments are instigated by Council, formulated by the Executive Committee, and voted on by Council. They come into force if there is no formal objection by members of the Society.





A. Strzalkowski from Warsaw (Chairman, Nuclear Physics Division, 1978-80) and J. Friedel (EPS President, 1982-84), on the right, at the opening, in Wiesbaden in October 1972, of the 2nd General Conference. Under the title *Trends in Physics*, the conference took on its established format of highlighting the latest developments in physics with a series of plenary lectures and parallel sessions.

applications, Council formulated a compromise. It decided to give temporary approval to applications sent in with the backing of active groups of scientists, pending a review after two years to see if a Division would be better incorporated as "Sub-Division" or in some other way. By now there were before Council formal applications to form two Divisions (quantum electronics, condensed matter) and three Groups (atomic spectroscopy, low-temperature physics, plasma physics). All were accepted and four were announced as Divisions in *Europhysics News*, with the European Group for Atomic Spectroscopy (EGAS) keeping its designation. However, EGAS and the Quantum Electronics Division were encouraged to consider forming a larger Division for atomic physics, optics and quantum electronics, presumably reflecting Kastler's influential opinion.

The next Council, at the CNRS in Paris in February 1970, was to loosen further the restrictions on participation by deciding that a Division was free to invite others to become involved in activities. However, affairs should be conducted by individual members, meaning that Board members, for example, should be IOM's, fellows, or delegates of 4b) members — a policy that remains to this day. Some Divisions, notably the future Nuclear Physics Division, planned Boards drawn up on a regional or national basis, with nominated delegates coming from the extensive network of nuclear physics sections in national societies. The argument was that this type of representation would permit the Division to provide the central cohesion which the community lacked. But the idea of national delegates met stiff resistance from Italian members of Quantum Electronics and from Low-Temperature Physics as it smacked of federalism, which many disliked. Further discussion on the issue could be expected. Some second-order questions were settled, principally that an individual member could be a member of more than one Division, or none at all.

A Survey

After so much discussion, Council felt it wise to ask for a survey among the Divisions and Member Societies to establish "a framework of operations". A questionnaire drafted by Rudberg was sent out in August 1970, and the Executive formulated *General Statutes for EPS Divisions* based on an analysis by Rudberg and Jansen. There was also a clarification on the legal status of a Division by P. Lalive who had reviewed the Constitution and By-laws. His conclusions (that a Division was in effect legally part of the Society and had no separate legal existence) were discussed, together with guidelines, by the Division Chairmen with the Executive in January 1971.

The main recommendation was that Division funds should be administered centrally in Geneva. (Several years later, in 1974, H.G.B. Casimir, who was then the President, was to assure Divisions at Council that the funds were "strictly earmarked".) Another recommendation was that a more-or-less token, but "psychologically important", 1 SFR per member should be paid into Division accounts. Owing to financial constraints, Council in March 1971 at the IPPS, London, declined to take this step right away. The arrangement was eventually introduced in 1979, but stopped after two years because some Divisions were not using their funds and membership of several Divisions presented complications.

Concerning membership, Divisions were urged to consult members when preparing election lists for Boards, a procedure that would still allow delegates to be proposed. Harkening today's discussions, Council asked the Executive to look

into the changes to the Constitution and By-laws needed to allow members of national societies to become members of Divisions.

The guidelines were published in the April 1971 issue of *Europhysics News*, shortly after individual members had been asked to indicate to which of the eight existing Divisions they wished to join. Division business, more-or-less along the lines we know today, could start albeit still with a provisional Divisional structure.

Back to the Divisions

By Paris, the existing Divisions were well on the way to becoming formally constituted. The Condensed Matter Division (CMD) chaired by Edwards had nominated a Board; discussions had started on a possible Europhysics conference and feelers were being put out to see if several Sections could be formed in the spirit of the original CMD proposal. Atomic Spectroscopy (or more correctly EGAS), Low-Temperature Physics, and Quantum Electronics had elected provisional boards and were busy organizing conferences. Plasma Physics had already taken over the organization of the *European Conference on Controlled Fusion and Plasma Physics* and had formulated its policy that there should be no large European events in the year the main international event came to Europe.

The Paris Council approved applications to form a High Energy and Particle Physics Division and a Nuclear Physics Division. The nuclear physicists had proposed a joint Division, leaving the final decision to Council. But Council decided on separate Divisions, reports simply saying that a combined one would be "too large". The idea to include astronomy in EPS had been around since the very beginning, and it was E. Schatzman from Paris who presented a proposal to the October 1970 Council in Budapest for an Astronomy and Astrophysics Division (Council's preferred title of Physics in Astronomy was not durable).

The next Division to be formed was Atomic Physics following discussions initiated by G.W. Series from Reading for an Atomic and Molecular Physics Division (which was to emerge several years later). Owing to overlap with other Divisions, the Executive asked for a reformulation in January 1971. Discussions ensured there would be no conflict between Divisions, and Council accepted a revised proposal in March. By September, the Chairman (H. van Regemorter from Meudon) reported on a Sectional structure, the name "Section" having been recommended instead of the mathematical sounding "Sub-Division" following Rudberg's survey.

By 1971, the Society had tread the long and tortuous path of reconciling specialized professional interests, national inclinations, and the Society's wider goals. And yet it had still achieved its founders' aim of integrating into the life of the Society a reasonably limited number of major Divisions spanning physics. Possibly the most important lesson is that it had done this from the base with what one now calls a bottom-up approach. The Society also had the good fortune not to discourage initiators too much with rule-making by defining organizational and constitutional aspects along the way.

The story continues, of course. Low-Temperature Physics agreed to become a CMD Section in 1972, and Optics was formed and then merged into Quantum Electronics. And there was the formation of the six Interdivisional Groups, starting with Computational Physics in 1972.

P.G. Boswell
Geneva

The EPS Secretariat, Petit-Lancy, has remained virtually unchanged since this photograph was taken in 1975.

