stantial amount of mathematics and abstract theoretical physics, and on sending future theoreticians into the laboratory. With the exception of those who later will be doing research in mathematical physics, for most, mathematics and abstract theoretical physics is the baggage for life that they assembled by the time they got their diploma. This abstract formation has the disadvantage that the people who received it are less immediately efficient than those which will already have practised a lot in their future field of specialization, but it has at least the tremendous advantage of being much more time resistant. Mathematical theorems remain true even after twenty years and someone who has got into the habit of discerning the basic structures of existing theories will have a much easier time recycling himself, because he will be able to extract the basic features of the theories which are going to emerge in his subsequent work.

If it is agreed that an abstract and mathematical formation becomes obsolete more slowly than other training, the question may then be asked : why not only pure mathematics ? This could be envisaged, but there is a big difference between pure mathematics and mathematical physics, and that difference lies in Nature. The abstract theories of physics are not allowed to be only pure constructions of the mind, like mathematics. They ultimately must represent a model of the world, or at least some classes of phenomena which, up to a given approximation can be fitted to experiment. Mathematics is, in any case, a must for every education. It belongs to culture in exactly the same way as the ninth symphony, or Hamlet but it is, in addition, the language of science. Mathematical physics on the other hand cannot be taught at all levels. Only for future mathematicians and physicists (whatever their future field of specialization might be), can it be allowed to become a dominant part of the curriculum.

Mathematical Physics and Creation of Scientific Communities

We now come, to the reasons why we believe that mathematical physics can make a useful contribution to the creation and development of scientific communities in less favoured regions of the world. There is, first, a question of "market". Mathematical physics is not fashionable, and the number of people working in the field is small ; a few hundreds only are really active in the whole world. That means that there is a great deal to be done and new-comers have a fair chance of reaching really international level. The second point is that those who are working very far from the main research centres, are not placed at any real disadvantage. All that they need is a decent library and a good mail system. If furthermore they can attend one conference or school in the year, they will not feel discriminated against in respect to others. The situation is very different for phenomenologists. The field is very crowded, and you have no chance, if you are not in direct touch with the big laboratories, of being aware of any development before it actually appears in the literature. A third point is the relative cheapness of the investments needed. A first class library can be obtained at a total cost of about one million dollars and its yearly running costs for acquisitions are of the order of magnitude of 50,000 dollars. Such a library can also be used with very little supplements for the whole field of physics. The rest of the costs are only salaries and building and maintenance of simple office rooms. Big computers are not an absolute must, even if they sometimes can be useful. Apart from mathematics, one cannot have any cheaper science. Finally, one has to realize that mathematical physics is a good departure point for further developments. There is a continuous passage from the most abstract mathematical consideration to very concrete phenomenological study and also to definitely applied problems. An extension to neighbouring fields is therefore relatively easy to perform, especially if there are highly competent people who are continuing in the more abstract domains.

Conclusions

We believe that these arguments are sufficiently strong to make out the case that mathematical physics can be useful in the development of science, especially where it has not yet established itself. It has nevertheless to be stated that this is not an attempt to position it at the top of some scale of values. We do not think that mathematical physics is in any way more important or more interesting than other ways of looking at physical problems. We only think that it is a convenient place to make a start ; but to stop there would, of course, be a pity.

Conference Report

Pluridimensional Radiative Transfer

The solar atmosphere shows convective and magnetic structure on scales down to the observational resolution ($\approx$ 200 km). The radiative transport in the small structures, cannot be adequately treated by means of one dimensional radiative transfer in mean models, describing the thermodynamic and magnetogasdynamic parameters as a function of one spatial coordinate only. In recent years, several astrophysicists in Europe have become engaged in problems involving pluridimensional radiative transfer (PDRT) and the committee preparing the establishment of the Solar Physics Section of the Astronomy and Astrophysics Division, supported a plan to bring these people together in a workshop, i.e. an informal meeting of participants invited of rather restricted numbers upon application.

The Workshop was organized in the Osservatorio Astronomico di Capodimonte in Naples, 14-16 September, under the tittle : "Pluridimensional Radiation Transfer — Theory and Application to Structures in Stellar Atmospheres". The meeting, sponsored by the EPS and supported by the Consiglio Nazionale della Recerche, was attended by 15 participants.

The Workshop was arranged in three stages :

1. Each participant summarized the PDRT problem which arose in his work by indicating the astrophysical background, the physical and geometrical simplifications, the mathematical methods, and results obtained and/or problems encountered. These

contributions were then critically discussed.

2. The invited expert, A. Skumanich, reviewed some general aspects of PDRT theory, and discussed some recent unpublished results.

3. Selected problems that had arisen in the first two sections were discussed at some length. Some general conclusions for future work were formulated.

Pluridimensional effects in radiative transfer are important in structures which are neither optically thin nor effectively thick. A neglect of lateral transfer may easily introduce errors in the source function of a factor of two or more. The critical horizontal structure sizes range from 100 km in the deep solar atmosphere to several Mm in the higher layers. This is precisely the range of sizes of the smallest features observed. The art has yet to be developed to the level where specific observations can be analysed in terms of PDRT, incorporating non-LTE, partially redistributed line formation in a magnetic field. Moreover, this presupposes magnetogasdynamic models that supply the distribution of thermodynamic parameters throughout the atmosphere. For most structures, no satisfactory models are yet available, partly because in the construction of these models, PDRT enters in the energy balance and, indirectly, in the momentum and mass balance. At present a fairly adequate treatment is possible only for some problems, like the continuum radiation from magnetic structures in the deep atmosphere. For the rest there remains a great need for studies of PDRT problems in simplified models, to blaze the trail towards more realistic models.

A test problem was formulated for comparing speed and accuracy of various approaches to the PDRT problem.

The three-stage division of the workshop proved to be a useful scheme for a first meeting of a small number of workers with different experience in the field. The pleasant informal atmosphere created by the Neapolitan hosts stimulated lively discussions and thus ensured its success. The participants L.E. Cram, C.J. Durrant and F. Kneer from Freiburg (GFR) prepared a report on the Workshop and an exhaustive bibliography on PDRT. These documents are available upon request from B. Caccin, Osservatorio Astronomico di Capodimonte, Via Moiariello, 16, I-80131 Napoli.

C. Zwaan

Society News

I.O.M. Delegates

With a return of over 40 % from the Individual Ordinary Members, the four candidates gaining the most votes, and who consequently will serve as delegates to Council for three years, replacing the four delegates retiring (H.B.G. Casimir, B. Giovannini, E. Minardi and G. Szigeti) are in order of voting :

E.A. Mueller, Geneva

H. De Waard, Groningen

J. Friedel, Orsay

J. Fischer, Prague

Fifth in order, was J.J. Goldberg, Haifa, who is, therefore, the first reserve.

Executive Committee

The results of the elections for the Executive for the year 1977/78, held during the Council meeting are as follows :

President	:	I. Ursu (R)
Vice-President	:	W. Martienssen (D)
Secretary	:	M. Guenin (CH)
Vice-Secretary	:	L.A.A. Thomas (GB)
Treasurer	:	O.S. Heavens (GB)
Vice-Treasurer	:	A.R. Mackintosh (DK)
Members	:	S. Kapitza (USSR)
		A. Loesche (DDR)
		P. Radvanyi (F)
		Z. Wilhelmi (PL)
		A. Zichichi (I)

Advisory Committees

The Executive Committee approved the following new appointments as Advisory Committee chairmen :

ACAPPI
J.P. Hurault in place of L.A.A. Thomas

Conference Committee
W.J. Merz in place of P. Radvanyi

Physics and Society
L.J.F. Broer in place of G. Diemer

Publications
E.R. Dobbs in place of J. Depireux

Europhysics Journal

The Executive Committee approved the proposal of the Publications Committee that the Polish Journal *Acta Physica Polonica* should be accepted as a Europhysics Journal.

Divisions

The Chemical Physics Section of the **Atomic Physics Division** and the Quantum Chemistry Group of the University of Uppsala, Sweden, on the occasion of the 500th Anniversary of the University, are jointly organizing a Colloquium on Chemical Physics of Surfaces, Catalysis and Membranes at the Humanist Centrum, Uppsala, 29-31 August 1977. Recent advances in the fields of surfaces and catalysis, and essential new insight regarding biomembranes render an interdisciplinary meeting of physicists, chemists, and researchers from the biosciences timely and desirable. Just prior to the Colloquium, two meetings on biosciences will take place (Copenhagen and Helsinki), and the Colloquium will be followed by a Symposium organized by the Quantum Chemistry Group of Uppsala University.

National Societies

The new chairman of the **Finnish Physical Society** is Professor Jorma Routti of the Helsinki University of Technology.

The new chairman of the **French Physical Society** is Professor E. Schatzman of the Paris Observatory at Meudon.

From the beginning of this year the official organ of the **German Physical Society** is *Physikalische Blätter* in which all the official communications of the Society are published.

Editor : E.N. Shaw

Meetings Compilation : W.S. Newman

Editorial Board :
G.J. Béné, B. Giovannini, B. Hauck, G.R. Macleod, J. Muller, J.A. Schwarzmüller

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