

Letter to the Editor

Sir,

Reflecting on the EPS conference held on the splendid Magurelle campus near Bucharest it again occurs to me that the public session on 'Physics and Society' has left us with many questions. It is out of place, of course, to resume the discussion in these columns and try to formulate the questions left open. The matter is truly too complex for a single person to tackle. However, with the increasing lapse of time since September, a birds eye view becomes possible and, in the following lines, I shall try to sketch it.

I remember a remark, made by Casimir I believe, that some scientists had asked for conferences in specialised fields rather than for conferences with 'general trends' as their main theme. Now, in this respect, Weisskopf's beautiful lecture, in which (a.o.) fundamental understanding was contrasted with real understanding, has its weight. Those scientists, who believe that 'general trends' are not that important, have somewhere lost sight of the very limitations of science Weisskopf enlarged upon. Weisskopf

stressed that fundamental understanding, which is the essence of all science, brings with it a pretention of completeness, a sense of absoluteness that may be called the prejudice of clinging only to arguments pertaining to the rational and materialistic realms. It is true, of course, that we live in a rationalistic and materialistic world and it turns out to be that way more every day. In an interesting volume, called "Man and Computer", I have recently read some articles on exactly this problem, or rather: this problematique, which may be called 'the human face of society' in our technological era. Science can help to liberate us to make this face truly human; this is progressive science. But, indeed, science may also be repressive, be the cause of this human face eventually turning out to be the face of a man-made robot. I think this is a theme to awake every scientist, as the battle to keep and to develop the human face of society is by no means finished. On the contrary, it has only just started and the dangers vividly pictured by Kafka become manifest in our days.

In relation to this the second proposition Diemer put on the blackboard during the physics and society meeting can be the starting point for a renewed discussion. However, "A deeper philosophical understanding of the inner motives of physics...", as mentioned in this proposition, was not touched on, although the interruptions were many. And yet it seems that here lies the root for an understanding not only of physics, but also of the physicists and of many (all too optimistic) a view on trends in modern society. Here also lies the point of departure from what was called in Diemers fourth proposition "... that progress in terms of purely material advance should be transcended by other aims, especially the development of a scientific culture".

In what way could the discussion on this 'fundamental' item be renewed and continued in our next conference? Is there any relation to what may be called 'the challenge for a new style of life'?

J.W.R. Fennema
Hilversum

2 new reference books

Optical Properties of Solids - New Developments

edited by B.O. SERAPHIN, Optical Sciences Center, University of Arizona, Tucson.
1976 980 pages US \$116.75/Dfl. 280.00

During the past four years, much research has been carried out in a number of sub-fields of solid state optics. This new book, a companion volume to Abelès' "Optical Properties of Solids" (1972), provides a thorough and up-to-date account of the new developments which have taken place.

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Atomic Energy Levels and Grotrian Diagrams

Volume I: Hydrogen I - Phosphorous XV

by STANLEY BASHKIN and JOHN O. STONER JR.,
Department of Physics, University of Arizona, Tucson.
1976 606 pages US \$62.50/Dfl. 150.00

Energy-level and transition diagrams have been indispensable since their first appearance in the literature of atomic structure. The pioneering work by Grotrian was so important that his name has since been associated with pictorial representations of electronic transitions. In the years following the publication of Grotrian's books, the growth of information was so rapid that subsequent compilations were restricted to special cases such as transitions of interest to astrophysics, or transitions within a given range of wavelengths.

The book summarizes all the recent information on the electronic structures of monatomic species, as well as the optical transitions which have been seen, and complete quantum descriptions of the levels are given. This is the first work, since that by Grotrian himself, to provide such a detailed compilation of the present information. The arrangement permits the user to see at a glance the entire set of energy levels and the transitions between levels. Where the information is dense, separate diagrams have been prepared, for example, in displaying doublets, quartets and sextets of a single stage of ionization. In addition, inter-combination Grotrian diagrams have been prepared so as to show transitions from one type of structure to another.

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