

To our English-speaking readers

Editorial

A FORUM FOR DISCUSSION ON
THE FOUNDATIONS OF PHYSICS

This current issue of the "Annales de la Fondation Louis de Broglie" is the first to appear this year.

The editorial staff of the Annales would like to take this opportunity of presenting our best wishes to our readers for 1980, both for themselves personally, and for the science to which they have devoted their professional lives, and of expressing our apologies for the somewhat belated publication of this issue owing to circumstances beyond our control.

The advent of a new year and a new decade affords us the opportunity of assessing our activities over the last four years, of drawing lessons from them, and also of informing our readers of our plans for the short term future. With regard to the long term, our proposals will undoubtedly evolve in accordance with the criticisms or suggestions which our readers may express and which are always warmly welcomed by the editorial staff.

Indeed, we are more than relieved to have weathered the storms which invariably assail a new publication in its early years and wish to thank our readers for the confidence they have shown in our work as well as the contributors who have sent us their papers for publication in the Annales.

On reflection, however, we feel that the time has come for a reappraisal.

Among the numerous suggestions we have received over the years or more recently, there is one that has been particularly recurrent and which we assume must reflect the wishes of most of our readers. It has often been expressed that our issues should have a more homogeneous nature, that is to say that they should be centred on one specific topic (as, for example, number 2, vol. 3, devoted to the E.P.R. paradox, or number 1, vol. 4, on the commencement of Einstein year, both of which were warmly appreciated). Obviously, an issue composed of three or four papers dealing with completely unrelated topics does have a somewhat fragmented, and therefore less attractive character, and lacks, above all, the spark which fires the imagination and fosters a fruitful exchange of ideas. In actual fact, we have done little more than to follow common practice in publications of this kind, but we do not, however, believe that we should pursue this particular approach at all costs. We have therefore decided to aim much more than in the past at achieving a high degree of homogeneity in each issue (within reasonable limits, naturally) and this constitutes the first significant change in our overall policy.

However, further reflection seemed to indicate that the call for greater homogeneity in the content of each issue stemmed from a deeply-rooted concern among members of the profession.

Microphysics is currently going through a period of crisis of growing intensity : that is to say that the very foundations of established theories -such as quantum mechanics as well as statistical mechanics- are ever more frequently re-assessed, and even challenged, by those whose task it is to use them. The most optimistic of statements to the contrary can do little to change this state of affairs : to a greater or lesser extent, everyone is awaiting a re-assessment of values.

This was our belief when we founded the Annales in 1975 and we have grown all the more convinced of the fact since then. Initially, we felt that it was necessary, if not sufficient, first of all, to explore new ideas, clinging to the hope that the profusion of solutions put forward would lead to a convergence of opinions and promote an exchange of ideas. We should certainly rejoice at the response this aroused and express our gratitude to all those who have made novel contributions to the Annales. It may well be that, amongst all these, there lies the right one, as yet unperceived because it is incomplete or misunderstood. However, no-one could claim to have solved this problem once and for all.

Yet, we have not, up to now, witnessed any convergence of opinions or exchange of ideas. The lack of homogeneity in the topics of papers published, as referred to above, would seem to be the outcome, and not the cause, of this state of affairs, which, in our opinion, can be traced to the following causes.

Effects can only be cured by detecting their causes. If microphysics can be said to be going through a period of crisis, our initial concern (which does not preclude others) must be to analyse the crisis and shed some light on its causes. Quite obviously, any physicist who can propose a new path of enquiry has already undertaken his own study of the situation. Nevertheless, it is equally obvious, given the breadth of information to be considered, the wealth of intellectual experience available and the comparatively limited scope of information which an individual may have at his disposal, that the analysis in question will be all the more valuable if it is conducted jointly through discussions involving many participants.

What we aim to do, therefore, is to attempt, with the assistance of a variety of contributions, to highlight those aspects of existing theories which can be considered to be reliable together with those which, conversely, may be thought to be questionable. In our first issue, we stated that the task we had set ourselves was to collate ideas and to "ask questions". Now that we have, to a large extent, succeeded in achieving the former of these objectives, we should like to devote more attention to the latter.

We shall now turn to the practical aspects of our change in policy. In each issue of the Annales, in future, we shall submit a topic for discussion which is controversial in nature and likely to arouse considerable interest amongst physicists. There will be a short introduction from the editorial staff, aimed at highlighting the main features of the topic. We shall then invite a contributor^x to send us a critical survey of the problem, but not a solution^x, in the form of an article, drafted in the customary manner, expressing his point of view on the existing theory, whether it be to express agreement or disagreement. As soon as we shall have a sufficient number of articles, we shall devote the greater part of an issue to them, (in the proportion of 2/3 to 1/3 or 3/4 to 1/4), thereby publishing a fairly homogeneous

^xwhich, if it were proposed, would be better suited for publication among the usual articles of the Annales rather than in the forum for discussion.

issue. If too long a delay is to be avoided between the presentation of the problem and subsequent discussion, it would be advisable that contributors should send their articles within a period of six to nine months.

We must stress that it is in no way our intention to suggest fields of study to theorists. We wish merely to bring together within the same publication a number of papers on related subjects, to which contributors have devoted some attention.

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We shall, of course, continue, as in the past, to accept, in accordance with the same criteria as before, all original papers which contributors would like to submit on any aspect of microphysics which they have dealt with in the sphere of their own work.

We have no reason to believe that the publication of this second category of contributions will be delayed in any way. The new approach to our publication, if approved by our readers, will naturally only be implemented gradually. There should be ample time, therefore, in 1980 for publishing the various papers which have already been submitted to us. We wish to apologize to the contributors concerned for the present delay which is partly due to the fact that priority has been given to studies on Einstein and the publication of his memoirs (We thought it advisable to reprint these memoirs in the Annales as they are rarely available in the original publications). We sincerely hope to make up in 1980 for the backlog of papers submitted for publication.

If, however, any contributor who has sent us a long paper which has not yet been published, believes that he has a claim to priority, we would recommend him to send us a short (3 to 4 page) synopsis of his paper, preferably with only a minimum of technical data so as to ensure easy reading (kindly avoid the conventional summary as well as the "letter to the editor" style). We shall then publish the synopsis at the earliest opportunity and proceed with the publication of the complete manuscript, if approved, at a later date.

We sincerely hope that the forum for discussion in the Annales will be to our readers' liking and that many of them will contribute to it.

The Editors.