to enumerate here, but some idea of the contents can be given by saying that the topics are those in which there is considerable interest at the present time. The book gives a general impression of the rapid development of physics in many different directions.

This development has introduced the usual difficulties in keeping the subject-matter up-to-date, and in the preface the editors express some concern about their success. They need not have worried; most physicists would be only too delighted to keep within hailing distance of the amount of physics in this book.

In fact the main criticism of the book is that it does not seem clear about its own purpose. In the preface the editors imply—but do not clearly state—that they regard the contents as "What every physicist ought to know". Surely the claim is outrageous? There can be very few people who have the mental capacity for absorbing all this material; and it is questionable whether such people would best serve physics by spending the time needed for its absorption.

In our opinion, the main purpose of the book is to serve as a work of reference for the expert who has occasion to wander into a field related to his own but unfamiliar to him. He will find the general principles authoritatively and clearly set out, and will be able to see the types of mathematical approaches that are used. He will not usually find experimental details—except for occasional chapters on such subjects as experimental stress analysis, and vacuum technique—since the book is essentially theoretical.

The mathematical part of the book is perhaps the least satisfactory. It contains some elementary material such as logarithms, which seems out of place, and some, such as the theory of probability, which is likely to be of more use to biologists than to physicists; on the other hand, the theory of errors is not treated. Nevertheless, the main content is extremely good and well set out.

The book is beautifully printed and produced, and we have noted only very few misprints and mistakes. Unfortunately, the very high price—which is quite reasonable for the amount of material contained—will probably rule it out for most individual physicists. It should nevertheless be in every library and, more important, every physicist should know of its existence.

H. Lipson
S. G. Lipson

REACTION KINETICS

Some Problems in Chemical Kinetics and Reactivity, Vol. I

By N. N. Semenov. Translated by Michael Boudart. Pp. xii+239. (Princeton, N.J.: Princeton University Press; London: Oxford University Press, 1958.) 36*s*. net.

THIS is the second English translation of the first volume of Prof. Semenov's book on "Some Problems in Chemical Kinetics and Reactivity" to appear in the past few months. Reading it, one is immediately struck by the strength of the author's grasp of the fundamental issues of reaction kinetics, and by his ability to marshal the evidence in a subject where the experimental results are often confused, and their interpretations conflicting.

The volume under review has no pretensions to being a text-book, and is in fact an extended version of an introduction to a symposium held in Moscow: it thereby retains a certain freshness and is notable for the provocative and stimulating points of view which it takes. It begins with a classification and account of reactions of monoradicals (no nonsense about 'what is a radical?'), a chapter which is to be commended for its discussions on bond energies and the relation of energy of activation to heat of reaction, and for the cautious but telling way in which the relation of structure to reactivity is dealt with. The next section is on competition between monoradical reactions, and here a clear account of the role of peroxides in oxidation of hydrocarbons is to be found: a great deal of modern Russian work of value, much of it unfamiliar to this reviewer, is dealt with here. The mechanism of chain decompositions of hydrocarbons is discussed.

In dealing with diradicals a distinction between the physical concept (triplet state, paramagnetism) and the chemical concept (absence of activation barriers, tending to dimerize, weakness of the second bond) is exemplified at the outset, although there is a general coincidence. The chemical aspects, as would be expected, are stressed.

After this survey, the second (and final) part of the volume deals with chain initiation and termination. This is divided into chapters on dissociation of molecules and recombination of radicals (essentially by homogeneous processes), initiation by ions of variable balance, and the influence of the walls of the reaction vessel. All these are excellent, the last being particularly recommended. It leads to some interesting speculations on the processes of heterogeneous catalysis.

The standard of production of the book is not high, the typescript being rather unsatisfactory, with an irritating and unnecessary symbol for the chlorine atom. The translation is quite good, although marred by a few words like 'organicist', and expressions such as "the 'ion-impact' method imagined by V. L. Tal'roze . . .". For a physical chemist, however, this book of Semenov's should be compulsory reading.

T. M. Sugden

CHEMICAL OCEANOGRAPHY

Apparatus and Methods of Oceanography

By Dr. H. Barnes. Part 1: Chemical. Pp. 341. (London: George Allen and Unwin, Ltd., 1959.) 40*s*. net.

THE special methods of analysis used in chemical oceanography and marine biology are to be found in a great many different publications, some of which have limited circulations. There is a need for a collection of working methods, preferably with some guidance for the inexperienced. The need is very competently met by this book. Although suitable for the experienced analyst, it is also explicitly intended to help biologists with less chemical knowledge, and to be useful to those with small libraries. The author has therefore devoted the first quarter of the book to three chapters on colour comparators and photometric analysis, to errors and precision, and to the calculation of results. It is difficult to judge the value of this part of the book. It is well done; indeed, it is admirably clear, but much of it