The symposium was the second one on cosmical gas dynamics, the first one having been held at Paris in August 1949. Of the 63 participants from nine countries (35 from outside the U.K.), 41 were astronomers or astrophysicists and 22 were aerodynamicists or physicists. Altogether 37 papers were given in eight sections dealing with the following main topics: observational data, physical conditions of the interstellar gas, shock waves and collision problems, turbulence and magnetic fields in a compressible gas, formation of cosmic clouds and galaxies, accretion problems, and gas and dust in the interstellar medium.

From the papers it can be seen that a huge amount of work has been done between the two symposia, and some problems are beginning to look more tractable. The emphasis has shifted to a large extent to a discussion of shock waves in astrophysics. Unfortunately while most aerodynamical research is concerned with relatively small Mach numbers, in astrophysics one is dealing with large Mach numbers, and it seems unlikely that the results from aerodynamics can be applied to astrophysical problems. Another problem that is again very open is that of the origin of galactic magnetic fields, while the old problem of the distribution of angular momentum among cosmic bodies remains as far as ever from a solution.

Since this book contains the text of the discussions and papers delivered at a symposium, relatively few detailed and quantitative calculations are given, but from the discussion one can obtain an impression of the activities going on in this modern branch of astrophysics, and the volume should be very stimulating to astrophysics research workers who were not at the conference, just as the symposium itself must have stimulated those who were fortunate enough to be present.

D. TER HAAR

St. Salvator's College,
St. Andrews, Scotland

Einführung in die Energetik und Kinetik biologischer Vorgänge. W. Bladergroen. Wepf, Basel, 1955. ix + 368 pp. Illus. F. 28.

Discussions of the energy changes and kinetics in biological systems have formed parts of several excellent works in recent years written on the subjects of proteins, enzymes, and metabolic processes in the organism. A number of these works reviewed, in their respective chapters, the physical and physiochemical methods that concern every research worker engaged in problems of enzyme mechanism and enzyme kinetics.

Important as these reference books are for the researchers in the immediate field, too few works are available for the use of scientists in fields closely related to the afore-mentioned subjects. Workers in biology and medicine who are not directly dealing with problems of enzyme kinetics, for example, nevertheless need the general knowledge and approach of this rapidly expanding field.

This is one of the reasons that Bladergroen's concise book closes a gap. It is both an easily readable and a useful book for those who, while lacking the time to examine the problems in detail, nevertheless want to acquaint themselves with such topics as oxidation and reduction without having to equip themselves with the full mathematical knowledge of thermodynamics.

To be concise and still include all the necessary material is a problem that authors face eternally, and Bladergroen's book is no exception. To illustrate the working of physical laws in biological systems with numerous examples cannot be recommended enough in this type of treatise. The very ardor of the author to do so might lead, however, to the inclusion of too many such examples, which then cannot be explained in the necessary detail. To illustrate the role of the phosphate bond in biological systems, Bladergroen adequately employs such examples as acetylation, carboxylphosphates, and ATP and its role in muscle contraction and choline acetylation. The citric acid cycle is included too, and the half-page of text devoted to it can hardly explain it to those who do not already know more than is described there. To cover all sides of the problems in an introductory book is hardly possible, and perhaps fewer examples in greater detail would serve the purpose equally well. It should be mentioned here that the numerous and well-chosen references at the end of the individual chapters facilitate the gaining of further information for those interested in following up the presented material.

Bladergroen takes special care to use only the most necessary equations for ease of understanding without sacrificing clearness or usefulness. In this task he succeeds remarkably well. Of the 17 chapters in the book, the first five are concerned with the thermodynamic principles and relate them to practical problems in biological systems. Five other chapters deal with enzymes (in general terms) and coenzymes and catalysis with respect to kinetics and energy changes. Inhibition, activation, enzyme-substrate binding, and temperature and *p*H effects are briefly and clearly summarized in these chapters. One chapter on the principles of kinetics includes such subjects as bimolecular reactions and energy of activation. A theoretical chapter examines the possible implications of quantum physics in biology. Other chapters discuss photosynthesis and energy relationships in metabolism; one mentioned in a preceding paragraph deals with the phosphate bond; and, on the practical side, there is a chapter on energy in nutrition. The book is a useful compendium for students and research workers alike.

ABEL LAJTHA

Department of Pharmacology,
New York State Psychiatric Institute

Materials for Nuclear Power Reactors. Henry H. Hausner and Stanley B. Roboff. Reinhold, New York, 1955. 224 pp. Illus. $3.50.

In his historic report, *Atomic Energy for Military Purposes,* H. D. Smyth commented on the troubles encountered in sheathing or canning the uranium rods for the Hanford reactors. He said, "Strangely enough, this 'canning problem' turned out to be one of the most difficult problems encountered in such piles." Today, a decade later, it is still true that the major obstacle to successful nuclear reactor design is the choice of materials and methods of construction. It must be admitted that the character of the problem has changed. Whereas the Hanford reactors operated at low temperature and produced but little power in unit volume, the current trend is toward ever higher temperature and greater specific power. As a result, the materials problems have become more varied and more difficult to solve, and aid is badly needed.

This book by Hausner and Roboff is the first unclassified one that is devoted entirely to materials for power reactors, but unfortunately it will be of little help to hard-pressed reactor designers. The authors offer it as a guide for two very diverse kinds of readers: scientists and materials engineers in one group, and investors, insurance men, lawyers, executives, and students in the other. Clearly, it is not possible to serve both groups adequately, and the book appears to be slanted toward the latter. It is a highly readable pocket-size primer that devotes considerable space to an elementary explanation of the fission process, reactor types, and radiation hazards and the remainder (equivalent to about 50 full-sized pages) to its main subject of construction materials. The general nature of the problems is outlined, as well as possible methods of approach to their solution. Quantitative data are meager and there are notable gaps. Some of this dearth of detailed information is undoubtedly attributable to security restric-

tions, but the Atomic Energy Commission has declassified a wealth of useful information; perhaps a more comprehensive bibliography would have been helpful.

The book is timely and should be of interest to newcomers to reactor design and to others who want a broad and general survey of the subject.

MORRIS KOLODNEY
Department of Chemical Engineering, City College, New York

Practical Medical Mycology. Edmund L. Keeney. Thomas, Springfield, Ill., 1955. 145 pp. Illus. $4.50.

The publishers do themselves little credit by decorating the jacket of this small volume with claims for an extensive coverage of the field of medical mycology. Keeney's book is essentially a handbook of the pathology and therapy of mycotic infections. As such, it should be useful to the clinician concerned with the treatment of diseases of fungal origin. For the mycologist or microbiologist interested in fungi of medical importance, it contains very little information.

Fourteen of the 16 chapters comprising *Practical Medical Mycology* contain charts describing the life-history, course of infection, related clinical findings, and something of the morphology and cultural characteristics of the fungus that causes the mycosis under discussion. The supporting texts give brief statements about the taxonomy of each fungus, a terse history of the recognition of its role in the etiology of the disease, and somewhat detailed considerations of the pathology and the treatment of the infection. Those portions devoted to treatment are compact, and their documentation accounts for the majority of recent references to be found in the bibliography of the book.

LANE BARKSDALE
Department of Microbiology, New York University College of Medicine

Geography of the Northlands. George H. T. Kimble and Dorothy Good, Eds. Wiley, New York; Chapman & Hall, London, 1955. x + 534 pp. Illus. $10.50.

More than 25 years ago, The American Geographical Society of New York made a notable contribution to knowledge of the Arctic and Antarctic by publishing *The Geography of the Polar Regions* as No. 8 in its series of Special Publications. The volume reviewed here is No. 32 in that series and so, in a sense, provides an up-to-date compendium of the kinds of information that made the earlier volume so generally useful.

During the past quarter-century interest in the northern lands has increased enormously, and there is now a demand for accurate geographic information about them far beyond the comparatively limited circle familiar with the 1928 publication. For example, there are many colleges and universities offering courses in arctic subjects, and the military services include them in training programs. For these reasons *Geography of the Northlands* is apparently designed as a textbook for the college course, while also serving as a reference volume.

The list of contributors is impressive, most of them being associated in one way or another with McGill University, Montreal, or the Arctic Institute.

Following an editorial introduction, the 27 chapters fall into two groups—"Systematic studies" and "Regional studies." The former covers the arctic and subarctic region topic by topic, from physiography to politics and strategy. The chapters on the natural sciences are, in my opinion, more authoritative than those on the social sciences. The chapters on population and resources are particularly weak and betray the lack of geographical training of the authors.

Among the regional studies, several are outstanding, particularly those by J. Brian Bird on "Eastern Canada" and "Iceland" and that by Svenn Orvig on "Svalbard." The chapter on "Greenland" is woefully inadequate, and much of it is, in fact, invalidated by part of an earlier chapter on "The wealth of the northlands." Six chapters on as many regions of the Soviet Union by Bogdan Zaborski are an admirable contribution to our all too sparse knowledge of this extensive part of the northland.

From internal evidence, it appears that some parts of the volume were prepared several years before publication, and a number of maps have been made obsolete by the passage of time. A noteworthy example is a map of weather stations in the northlands, used to illustrate the concluding chapter. Although it is undated, it appears to have been prepared 7 or 8 years ago, before some of the far northern stations in Canada existed.

Despite the apparent long delays in publication, there are, nevertheless, a number of cases of editorial oversight, the most striking of them being the use of a photograph of a corner of a defunct marble quarry in northwest Greenland over a caption referring to the well-known cryolite mine at Ivigtut.

Geography of the Northlands is the only book available that covers comprehensively an area of rapidly increasing significance. If only for this reason, it deserves wide distribution, despite its rather high price. The editors should, however, take the earliest opportunity to reinforce the weaker chapters and to bring the whole of the text up to date.

TREVOR LLOYD
Dartmouth College

The Colloid Chemistry of Silica and Silicates. Ralph K. Iler. Cornell Univ. Press, Ithaca, N. Y., 1955. xii + 324 pp. Illus. $5.50.

The title of this book might seem restrictive at first glance, but one must recall that, although colloid chemistry is merely one branch of physical chemistry, it is a complex one. Furthermore, as the nine chapter headings suggest, the subjects discussed overlap or extend into other fundamental areas, such as biochemistry and plant physiology, with respect to the last chapter, and structural crystallography and the mineralogy of clays with respect to Chapter VII. Other chapters discuss the silica-water system, soluble silicates, silicic acids, their esters, colloidal silica, amorphous silica gels, and surface chemistry. Both author and subject indexes are included.

"Colloidal Silicates," Chapter VII, is a major one. Here an attempt is made to summarize much of what is known about silicate minerals, chiefly the clay minerals, without reference to many original works. In discussing the crystal chemistry and structure of montmorillonite, for example, the hypotheses of Hofmann, Endell, and Wilm, of Edelman and Favejee, and of McConnell are not mentioned directly. Several structural diagrams are taken from F. H. Norton's *Elements of Ceramics,* a book that suffers from similar deficiencies in the evaluation of recent mineralogic and crystallographic concepts. A minor blemish is the misspelling of Norrish's name.

This series of the Baker lectures, under the auspices of Cornell University, surely must have been a real stimulus to those who heard the lectures, if one can judge by the provocative information contained in the printed record. Brief, but frequent, mention of the practical application adds interest and gives the book a readability that is not often obtained in works of this type.

Iler has gone far beyond the conventional approaches of colloid chemistry and has discussed in nine chapters what might readily occupy as many large volumes. Graduate students should find inspiration here, but they should recognize that no scientific book can be considered as a final authority—particularly, not one on such rapidly advancing topics.

DUNCAN MCCONNELL
Department of Mineralogy, Ohio State University