

the masses of seven more white dwarfs are used, and described as *known*. I must admit to a feeling of unreality about theories "proved" in this manner.

The final chapter is frankly labeled "speculations," but the argument given to test the hypothesis that all bright stars evolve into white dwarfs is so oversimplified as to be no more than the proverbial straw man—put up to be knocked down.

Being primarily an observational astronomer, I feel that the main lesson to be drawn from so excellent a summary of our present theoretical knowledge is that observations of all kinds are urgently needed to put a firm foundation under the quicksand of astrophysical theories.

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**The Planet Jupiter.** Bertrand M. Peek. Macmillan, New York, 1958. 283 pp. Illus. \$8.50.

Bertrand Peek has been for over 35 years an assiduous observer of the planet Jupiter and has served for 15 years as director of the Jupiter Section of the British Astronomical Association. In this book he summarizes the accumulated knowledge of the visual phenomena exhibited by the cloudy atmosphere of the planet, principally the motions and periods of rotation of the various belts and of the spots observed in them. In this respect this is an excellent "digest" of the wealth of material accumulated over half a century by an active group of British observers whose work is an outstanding example of the type of activity where amateur astronomers can make their best contribution. The professional astrophysicist may well feel somewhat disappointed by the rather sketchy nature of Peek's account of the more elaborate physical studies—spectroscopic, radiometric, radioelectric, and theoretical (and there is nothing at all on polarization)—but he cannot fail to learn a great deal about the basic superficial phenomena of the planet that he has seldom occasion to study for himself in any detail.

The British observers of Jupiter have been alarmed in recent years by a regrettable decrease in the number of amateurs actively engaged in the basic type of observation involving the timing of transits of spots across the central meridian of the planet. Peek's work is to some extent an appeal and a guide to younger amateurs to carry on the good work. He gives fairly complete instructions on how to observe most usefully the visual phenomena of Jupiter and how to reduce the data—a simple and straightforward

process. The role of photographic observations is rather summarily dismissed (in five pages); this certainly does not do justice to the excellent and fairly continuous series of photographs secured over the past 50 years at the Lowell Observatory. Nor does Peek seem aware of the important physical investigations based on this photographic material of the general circulation of the Jovian atmosphere. He completely ignores the considerable visual, photographic, and polarimetric work of the French astronomers and the photometric studies of German and Russian astronomers. The brief section on the satellites and their phenomena gives next to nothing on their physical aspects. In this respect Peek's work definitely suffers from an excessively "insular" outlook.

Another serious deficiency is the almost total lack of bibliography, apart from the many references to the *Memoirs* of the British Astronomical Association, from which are extracted a good many drawings and sketches illustrating the main visual phenomena discussed in the text. There are also a number of Lowell, Pic-du-Midi, Mt. Wilson, and Palomar photographs, but little is said of the phenomena observed in blue, violet, and ultraviolet light.

Nevertheless, this is a useful and serious work by a serious amateur, and the book has obviously been prepared with the loving care of a dedicated observer; it gives a good and convenient summary of a tremendous amount of observational data, and the phenomena described—the complicated laws of motions of the spots—will long stand as a challenge to the theorist. This book fills a notable gap in the astronomical literature, and it will be consulted with profit by any astronomer, whether amateur or professional, who intends to take up Jovian studies, but it will have to be supplemented by reference to other sources.

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**The Industrial Challenge of Nuclear Energy.** Research uses, social problems. Papers given during the Second Information Conference on Nuclear Energy for Management, Amsterdam, 24–28 June 1957. Organisation for European Economic Co-operation, Paris, 1958. 301 pp. Illus. \$3.50.

The Organisation for European Economic Co-operation includes the development of nuclear industries among its several spheres of international activity. Under the leadership of its newly created European Nuclear Energy Agency, cooperative programs are being planned in all major aspects of nonmilitary nu-

clear development, including such matters as the planning of nuclear test reactors, the construction of chemical processing facilities, and the international operation of demonstration power reactors. In addition, as an aid to industrial management generally, two conferences were held during 1957, the first in Paris in April and the second in Amsterdam during June. The papers which were presented over a period of several days at the latter conference comprise this volume.

A wide variety of material is covered, ranging from a general survey of nuclear energy in Europe, by L. Nicolaidis of Greece, to radioactive waste discharge problems, by M. d'Hont of Belgium. Authoritative descriptions of the ambitious British and French nuclear power programs are given, respectively, by G. C. Duckworth and Y. Teste. Other papers include discussions of nuclear research centers in Europe, reactor research, uranium supplies, and the manufacturing and processing of nuclear fuel elements.

Some of the material will, of course, become quickly out of date. For example, P. Huet, now director of the new European Nuclear Energy Agency, spoke of some of the plans of the OEEC to create this agency, now a reality. Cost estimates, such as those given for fuel costs for nuclear ship propulsion, are bound to change as the technology advances. But most of the material presented is of a fundamental character and will continue to be accurate, useful, and thought-provoking; moreover, it is described with a clarity which only experts can achieve. The book should therefore be in the library of those who are studying the general aspects of industrial nuclear development.

Furthermore, it is becoming obvious that the European requirements for expanding and cheaper sources of fuel for electric power will accelerate the development of a nuclear power industry. In addition to the well-publicized plans of the British, France alone is visualizing 8 million kilowatts of installed nuclear capacity by 1975. Italy, too, is moving rapidly with plans for at least three large atomic power plants, which are expected to be under construction within the next year. Europe will, therefore, become a major proving ground for the nuclear industry, and the United States will have much to learn. The lessons will be pertinent not only to our constructive participation in the European program but also to the development of our own nuclear industry.

Unfortunately, there is much of the story which is not covered in this book, partly because of the specific coverage which was planned and partly because the story is so large. Nevertheless, this

volume will occupy an important place on the library shelves of those in the United States who wish to familiarize themselves with the foundation which is currently being built to support a nuclear industry in Europe.

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**The Pattern of Asia.** John E. Brush, Shannon McCune, Allen K. Philbrick, John R. Randall, Herold L. Wiens. Norton Ginsburg, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1958. xiv + 929 pp. Illus. \$11.65.

This is a long-awaited volume, welcome yet perhaps a little disappointing. Six specialists, with a combined background of many years in Asia, have cooperated in writing it. This gives the book authority, but the resulting style is heavy; so, too, is the volume itself.

A reviewer is under some handicap when the authors are personal friends, and especially when the book in question is in competition with one of his own. Equally, only those who have wrestled with the problem of evaluating so large and diverse a continent as Asia can appreciate the difficulties of generalization and the merit of the result.

*The Pattern of Asia* presents a broad picture of the major divisions of the "Asiatic Crescent," as the authors term the lands of "Asian Asia," from Turkey to Japan. Japan is discussed in 70 pages, while over 100 pages are devoted, respectively, to China, the Southeast, and the Southwest. South Asia—namely, India, Pakistan, Afghanistan, and Ceylon—is described in 256 pages. There is also a brief consideration of Central, or High, Asia, and there are two chapters on Soviet Asia.

This is not a volume to which one will turn for definitive statistics or penetrating interpretation; rather, it is sound regional description. For example, there is no critical evaluation of China's population, or of India's Five-Year Plan.

Most chapters close with a list of a dozen references, accompanied by helpful comments. Geographers should view with chagrin the small number of references to geographic literature per se. As a measure of the authors' previous work on Asia, it is interesting to note references to a combined total of 15 articles and one book by them, most of these by the senior author.

There are 161 photographs, many of them excellent but too often poorly reproduced, with an over-all grayness which loses important detail. Especially valuable are several aerial photographs of cities, with explanatory diagrams on

facing pages. Captions are unusually long but should have been written in terms of the halftones rather than on the basis of the original photographs, for some distant landscape features referred to are scarcely visible.

The 38 maps are one of the poorest aspects of the book. If "a gentleman is known by the company he keeps," then a geographer may be judged by his maps. Many of the maps are cluttered and unclear; most lack artistry. In going through the book I early turned to the chapter on Pakistan. On page 632 I found a reference to map 26; curious about its coverage, I first thumbed through the next few pages and then counted back for 191 pages until I came to map 26. This proved to be the wrong reference; map 27, on pages 460–1, was apparently meant. This is exasperating, as is the attempt to locate the 20 tables or five plates. The composite climatic graphs seem unsuccessful. More than the usual number of typographical errors are present.

The treatment of India is perhaps the most successful, doubtless due to the long residence there of Professor Brush; in the treatment of some other areas there is an inadequate feel for the people or landscape. Students of Arab lands will be interested to find that discussions of Israel (7 pages) and Lebanon (3 pages) are combined in the same chapter.

The preface states that the theme of the volume is "a more basic understanding of the processes of change which are so radically transforming the Asian landscape," but one might read through the book without being aware of such a motif. Communism, technical assistance, land reform, and economic planning receive but passing mention. The preface goes on to remark that the treatments of the several authors have led to considerable diversity in emphasis, a problem which the senior author has resolved well.

This is a splendid contribution to our understanding of Asia, but one wonders whether the authors would "do it again" this way if they had not signed contracts years ago.

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### **The World of the Electron Microscope.**

Ralph W. G. Wyckoff. Yale University Press, New Haven, Conn., 1958. xiii + 164 pp. Illus. + plates. \$4.

This is not a book written for the specialist in electron microscopy, but rather an exposition for both scientist and layman of the development of a very rapidly expanding instrumental specialty.

As Wyckoff points out, electron microscopy is not unique in its pattern of development, and it provides a convenient example for illustrating certain characteristics of the growth of instrumental specialties. Thus, progress in electron microscopy has often been dependent on what may seem to be trivial improvements in specimen preparation. The growth of electron microscopy in the field of cell structure, following on the development of suitable techniques of fixation, embedding, and microtomy, is an impressive example of this kind of sequential development.

The book is well written and makes enjoyable reading. It is illustrated with 16 plates of high-quality electron micrographs and has a relatively brief but adequate index. Wyckoff adopts a philosophical note in the concluding chapter, and one must sympathize with many of his views, particularly with his appeal for more basic research in this country.

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**Social Class and Mental Illness.** A community study. August B. Hollingshead and Frederick C. Redlich. Wiley, New York; Chapman & Hall, London, 1958. xii + 442 pp. \$7.50.

Every research monograph has its inevitable quota of limitations and imperfections, and this volume is certainly no exception. What makes the present book exceptional is the new ground it sowed and the reapings it now contributes, both to the healing professions and to the behavioral sciences.

A sociologist and a psychiatrist here collaborate to examine two sets of seemingly discrete phenomena: (i) mental illness and (ii) the socio-economic class system of the urban American community. Their purpose is to determine the effects of the social class system on the availability and character of the psychiatric treatment of patients. From intensive investigations in New Haven, Connecticut, of a large patient population and its therapeutic facilities, Hollingshead and Redlich demonstrate for the first time that who comes for and secures treatment, how he is referred, where he is treated, what kind of therapy is administered, what the frequency and duration of the treatment program and the costs and charges for a given time unit of treatment are, all hinge to a significant and unexpected degree on who, in terms of class position, the patient happens to be.

At the very least, the authors give us a fully documented case study of the American social class system in action,