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.

WILLEM J. LUYTEN
Department of Astronomy, University of Minnesota

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.

G. DE VAUCOULEURS
Lowell Observatory, Flagstaff, Arizona

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 nuclear 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