

CARY MODEL 31 ELECTROMETER

leaving out any major field of physics is a real challenge, and it is remarkable that the author has succeeded to a pretty good extent, thanks to a dense, concise, and excellently organized exposition. The general approach is semiquantitative. As was to be expected, many a topic had to be dealt with rather briefly (e.g., kinematics, capillarity, statistical mechanics) or simply mentioned (results and theorems mentioned without proof). Magneto-hydrodynamics is omitted. The book follows an original pattern of exposition and adds up to a remarkably coherent whole. The various topics are presented from a unified and resolutely modern point of view, based on the atomic structure of matter. The presentation is intermediate between the abstract form of many French books and the more concrete approach usual in similar American books. The main body of the text is somewhat abstract, but numerous applications to practical problems are mentioned (although generally not fully developed) and give a permanent physical feeling of the topic under consideration. Quite a few exercises are proposed, which convey an additional idea of numerical values and actual applications.

The book contains a wealth of information. Unfortunately, in conformity with an all-too-frequent practice in French-language literature, no subject index is provided, so that the better part of the information is practically impossible to retrieve unless the reader is familiar enough with the subject matter to know where to look for what he needs.

Medical Biometeorology. Weather, Climate and the Living Organism. By S. W. Tromp, 991 pp. American Elsevier, New York, 1963. \$45.00.

Reviewed by Joseph G. Hoffman, University of Buffalo.

The first item in this book to catch my attention was an entry in the table of contents on Causes of Slow Scientific Progress in Biometeorology. I found in Chapter 5, section 1, a discussion of the following: (1) The biological responses in man to weather are highly variable (2) The weather and the responses it elicits cannot be easily correlated, and (3)

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meteorologists, geophysicists, and physicians have not cooperated and moreover spurious results have been hidden under statistical analyses. As causes of Slow Progress these are disappointingly familiar; all scientists have the usual problem of keeping many variables under control, and interdisciplinary cooperation is not easily achieved.

Biometeorology is the study of man in relation to climate. The author (he is not listed as editor) with 26 contributors has compiled an encyclopedic review of every phase of human medicine as affected by climate, ranging from town planning to space ships to cancer. It is documented by no less than 4400 references and includes the most tenuously associated ideas. The kind of material given is seen, for example, in the 15-page review of the effect of air ions on man, which is a difficult subject. The author does not state whether or not he believes the results reported. This is also true of the brief allusion to the possible effect of magnetic fields on living things.

Since the subject matter is interdisciplinary, the general reader will find something to his liking. One major section, called Important Physiological Processes in Man, is a concise review useful to scientists generally. The anecdotal summaries of many of the numerous technical papers cited also have a general appeal. Basically, however, the book is a reference text for medical practitioners and bioengineers. The excellent format makes it useful to have on hand.

The Theory of Interacting Fermi Systems. By P. Nozières. Transl. from French by D. Hone. 370 pp. Benjamin, New York, 1964. \$13.50.
Reviewed by M. E. Rose, University of Virginia.

The development of methods for treating the many-body problem, as it appears in nuclear physics, solid-state physics, and plasma phenomena, is one of the brightest spots in the history of theoretical physics of recent years. As the author points out, this beautiful structure is the work of essentially the past decade. While rapid progress has been made, there are, no doubt, many unsolved problems. Despite this

fact, during the past five years, almost a dozen treatises on the subject have been published. This is presumably a manifestation of what may be called the "printing press explosion" which we have been witnessing during these past years. Nevertheless, a good book is always welcome and, on balance, this work of Dr. Nozières should be judged so. It is not an attempt to cover the broad spectrum of many-body theory but, as the title suggests, it is concerned solely with a class of many-body problems. The discussion of this class of problems is sufficiently general as to enable the reader to cope with problems outside the domain under consideration. The first two chapters are largely phenomenological in scope, being concerned with the Landau theory and with external excitations. From chapter three onward (that is, over eighty percent of the book), the Green's-function field-theoretic methods are the primary objects of discussion. The exposition is lucid, with emphasis on physical interpretation. Indeed, the author makes no claim to mathematical rigor. The chief objection, so far as this reviewer is concerned, is the intense preoccupation with formal theoretical development. The book is concerned with the question of how to calculate and not with the results of calculation. A search for specific results, with which experimental data are to be confronted, yields slim pickings.

Le Signal du Sourcier. By Y. Rocard. 1st ed., 136 pp., 1962; 2nd ed., 197 pp., 1964. Dunod, Paris, 20F.
Reviewed by D. J. Montgomery, Michigan State University.

A scientist builds a rectangular coil, 0.5 meter by 1.0 meter, and sends a current through it to get a known magnetic field, 4 milligauss at the center. A meter or so away a detector tells him whether or not charge is flowing in the coil. You surely couldn't care less. Or could you? For the detector is a dowser, a human being equipped only with a divining rod, and the scientist is an established physicist, author of numerous articles and several books, director of an eminent laboratory, recipient of international honors.

Professor Rocard, professor of the Faculty of Sciences at the University of Paris, and director of the Laboratory of Physics at the Ecole Normale Supérieure, describes such an experiment. He assures us that the gift of dowsing is widely distributed. A good half of his students, for example, have managed to receive the message from the divining rod, he tells us in *Le Signal du Sourcier*, a title which I render less mellifluously as *(The Nature of) The Dowsers' Response*. (A note on derivations: Latin *surgere*, rise, led to Old French *sourdre*, spring forth, and thence to modern French *source*, well or spring, and *sourcier*, a person who finds a well; no matter what you might think, *sourcier* has no connection with modern French *sorcier*, which came from Latin *sors*, chance, allegedly by way of *sortarius*, diviner.)

In sum, Professor Rocard gives his evidence that a significant fraction of people can be trained to move in a magnetic field and by proper manipulation of a forked stick detect spatial inhomogeneities of the order of 1 milligauss per meter. These gradients are a hundred times greater than those commonly encountered in geomagnetic prospecting, and are comparable with those around an automobile or other such ferromagnetic mass. The connection with waterwitching is through the magnetic fields set up by electrofiltration currents, a phenomenon familiar to the physical chemist. The last link in the scientific chain, namely, identifying the detecting mechanism in the body, remains to be forged. Professor Rocard locates its site in the elbows, and wonders if nuclear magnetic resonance can be the physical basis.

Nothing whatsoever of the occult exists in Rocard's approach. He is *not* talking about the Ouija board for recalling the departed, the divining rod in medical diagnosis, or the pendulum swung over aerial photographs to locate mineral deposits. He is simply looking for a physical explanation for the physiological action of the dowser in the field; he thinks it is magnetic. Anyone who has sought to establish the existence or nonexistence of biomagnetic effects knows