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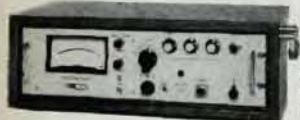
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ical chemistry which might be relevant to biological membrane phenomena. As the book is written, it is not likely to be of interest to physicists since it consists mainly of a long recitation of research by many chemists and physicists without giving a sense of emphasis on what is, or is not likely to be important. There is no detailed account of what are the biological problems, nor are the results cited applied in any detail to specific problems. Some of the topics discussed are the formation and transformation of micelles, membrane transformations, and the structure of membranes. It is possible that there is much material of ultimate value in this volume. However, the author presents only plausibility arguments rather than experimental verification to support his arguments, and these are not likely to be too convincing without detailed confirmation.

Strong Interaction Physics. A Lecture Note Volume. By Maurice Jacob and Geoffrey F. Chew. 154 pp. Benjamin, New York, 1964. Cloth \$9.00; paper \$4.95. Reviewed by John E. Mansfield, Harvard University.

As one would surmise from the title, this is really two sets of lecture notes, both of good quality and up to date.

Jacob presents phenomenological aspects of pion-nucleon interactions on an elementary level. The basics of helicity amplitudes are given briefly, as are isospin and the phase-shift analysis. A clear and orderly collection of facts on the multipion resonances makes the book a good one to have on the shelf.

Analytic properties of scattering amplitudes are stated and some phenomenological applications of dispersion relations are given. The calculation of the pion-nucleon coupling constant is described. Mention is made of subtracted and spin-flip dispersion relations. Some arguments leading to peripheral models are presented.

Chew's half of the book is on bootstrap dynamics. He defines maximal analyticity of the first degree (all singularities are those of the analytic continuation of unitarity) and of the second degree (absence of CCD poles). These are illustrated in a simple non-relativistic model. The bootstrap pro-

gram is described very well; partial wave calculations are done in the strip approximation, and there is a page devoted to the not inconsiderable successes of the approach.

An index is supplied, covering both articles. The book, especially Chew's article, is designed to be read and not worked through. Yet it contains all that is necessary to put one on the doorstep of the literature.

Electromagnetic Fields and Interactions. Vol. 1, *Electromagnetic Theory and Relativity*. By Richard Becker. Fritz Sauter, ed. 439 pp. Blaisdell, New York, 1964. \$9.50.

Electromagnetic Fields and Interactions. Vol. 2, *Quantum Theory of Atoms and Radiation*. By Richard Becker. Fritz Sauter, ed. Transl. by Ivor De Teissier. 403 pp. Blaisdell, New York, 1964. \$9.50.

Reviewed by D. B. Lichtenberg, Indiana University.

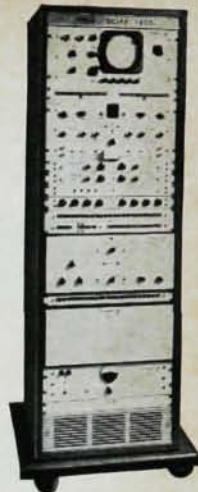
The first of these volumes is a translation of the sixteenth German edition of 1957; the second is a translation of the eighth German edition of 1959. A new third volume, subtitled *Electrical and Magnetic Phenomena in Matter*, is promised, but was not available at the time of this writing.

It is useful to compare Volume 1 to the much earlier English edition of Abraham and Becker, *Classical Electricity and Magnetism*. This work is by now a classic, and Sauter wisely made few essential changes in the newer version. The major addition is the incorporation into Volume 1 of a section on special relativity, which a number of editions ago appeared in Volume 2. This beautiful treatment of relativity rightly belongs in the volume devoted to the classical theory. Its addition makes this book a very suitable graduate text in electromagnetic theory.

Volume 2 has not been previously translated. It is primarily an exposition of certain aspects of the quantum theory of electrons and radiation which are relevant for a modern treatment of electromagnetic interactions in matter.

The approach is partly historical. First, the theory of the electron is treated by classical principles. Then the development of the quantum theory is sketched from Planck's radiation

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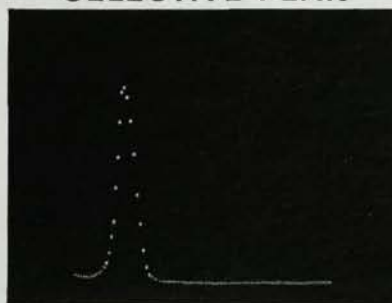
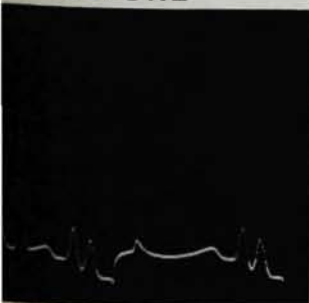
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law and the Rutherford-Bohr model of the atom to the Heisenberg and Schrödinger formulations of quantum mechanics. Later, brief discussions of such topics as linear and angular momentum are given, and approximation methods are outlined. The treatment of angular momentum is particularly sketchy, with not even a mention of Clebsch-Gordan coefficients. Applications are given to atomic problems involving one or more electrons, including the interaction of electrons with the electromagnetic field. Finally, there are sections on the classical and quantum theory of radiation and on the Dirac theory of the electron.

The book is clearly written and most of the applications are well-chosen. Unfortunately, either the number of topics treated is too large, or the book is too small. The result is that a number of topics are not gone into deeply enough for my taste. But the student may be encouraged to look for further details elsewhere (perhaps in the forthcoming Volume 3).

From the foreword to Volume 2, it is apparent that this volume owes more to G. Leibfried and W. Brenig than to Sauter. It is a pity that their names do not appear on the cover with the names of Becker and Sauter. De Teissier's translation is generally good.

The Atomic Adventure. Its Political and Technical Aspects. By Bertrand Goldschmidt. Transl. from French by Peter Beer. 259 pp. (Pergamon, Oxford) Macmillan, New York, 1964. Paper \$4.50.
Reviewed by L. Marton, National Bureau of Standards.

The literature abounds in semi-popular books on atomic energy and the use of it, and until now the one which I liked best was Allibone's. I was not acquainted with the original French version of Goldschmidt's book, but I must congratulate Pergamon Press and the Macmillan Company for releasing a translation in English. It is not that the technical information is very much different from other similar presentations, but that it is written from a different viewpoint. As the subtitle indicates, it lays more emphasis on the political aspects than previous books which I have read, and at the same time does not

neglect the technical aspects. Another rather important characteristic of this book is that it represents, contrary to all other books which I have seen, the French viewpoint.

The French viewpoint is manifested in two different aspects. One is the emphasis on the early French accomplishments in the discovery of fission, and all the circumstances surrounding it. Almost all textbooks and other publications devote a few lines to the contributions of Joliot-Curie and his wife, as well as some of the other French contributors of the same time. These contributions are much better presented here and more space is devoted to them; however, not an undue amount. Fortunately, the writer is very objective and thoroughly familiar with his subject, having been one of the contributors ever since the initiation of nuclear work through its development. A second aspect of the French viewpoint is that he explains very lucidly the recent work leading to the French nuclear program and nuclear armament. This I hadn't seen before, and the presentation certainly helps to understand what were the considerations leading to the present intensive effort toward possession of nuclear and hydrogen bombs.

The presentation is not only lucid, but also as objective as it can be under the circumstances. The author has apparently definite western sympathies, which do not prevent him from sketching very adequately the efforts of Soviet physicists. His remarks on the work done in Soviet Russia as compared with the US effort make very good reading. The translation is excellent, and I can recommend the book very warmly.

Anaxagoras and the Birth of Scientific Method. By Daniel E. Gershenson and Daniel A. Greenberg. 63 pp. Blaisdell, New York, 1964. Paper \$1.45.
Reviewed by David A. Katcher, Institute for Defense Analyses.

Philosophers like order and scientists like explanation and if you reverse or confuse the priorities you can get into trouble. I fear this is what has happened in this little book. An attempt has been made by a team comprising a classical scholar and a