# BOOKS



THE GROWTH OF PHYSICAL SCIENCE. By Sir James Jeans. 364 pp. The Macmillan Company, New York, 1948. $4.00.

Sir James Jeans, one of the most successful popularizers of modern physics and astronomy, revised the proofs of this last book of his shortly before his death in September 1946. Having exhausted the topics of modern science, he apparently believed that a popular book on the history of physics—including astronomy and mathematics—would serve the same purpose for early science as his other books did for more recent science. And, just as his other popular books were intended for the general reader rather than the trained scientist, this one is likewise offered to the "general educated reader," to "those who are beginning the study of physics, and possibly to students of other subjects."

The first hundred and twenty pages are devoted to the beginnings of science in Babylonia, the early and later Greeks, Alexandria, and the Middle Ages. A hundred pages suffice for the account of late sixteenth- and seventeenth-century achievements, followed by some sixty pages on "The two centuries after Newton," and a concluding seventy-page account of "The era of modern physics." From the point of sheer readability and intelligibility, the first half of the book is obviously better than the second: more space is available, and less happened. Toward the end of the book, we are presented with almost a dry cataloguing of facts, and with the introduction of a large number of names and technical terms which will surely lessen the reader's interest if he is not previously acquainted with the subject matter.

Like all of Sir James' books, this one makes entertaining reading. But it suffers by comparison to his other works in that he really knew something about the subjects of modern physics and astronomy, to which he had contributed notably. His approach to the history of science is, by contrast, that of the dilettante. The greater part of the book derives from secondary sources, whose contents are summarized without any saving, illuminating comment. Mediaeval figures—both European and Islamic—are frequently spelled in a fantastic way. The naivete of writing about Aristotle's "entirely homocentric view of the world, seeing man as the center of all creation," as if "homocentric" were a philosophical word, rather than the Greek for "having the same center" as applied to homocentric or concentric spheres, makes the occasional quotation in Greek seem to be misplaced pedantry. Neither science nor its historical interpretation is well served in such a fashion.

It is difficult indeed to conceive of anyone who is not already familiar with the subject of physics approaching this book and getting from it any true understanding of physical science. Since its value is limited to students who know some physics to begin with, it can hardly stand up in competition with such excellent, if limited, books as Crew's "Rise of Modern Physics" or Cajori's "History of Physics." The latter two books are as well written as Jeans' and they both have the additional merit of being written by men who knew both the subject of physics and the discipline of the history of science. Though they may be a little more difficult to read, they are that much more rewarding.

Although Jeans was a man of strong and frequently unorthodox opinions, as may be seen throughout the book, he ends with no conclusions about science in general, physics in particular, or the world in which we live. The final paragraph is devoted to the last work of Eddington, whose views Jeans neither accepts nor rejects.

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NUCLEAR PHYSICS IN PHOTOGRAPHS. By C. F. Powell and G. P. S. Occhialini. 124 pp. Oxford University Press, London, 1947. $6.00.

It is, perhaps, no exaggeration to say that the most striking work in physics in the last decade is the discovery of the heavy meson and its decay into a lighter meson, by C. M. G. Lattes, C. F. Powell, and G. P. S. Occhialini, at the University of Bristol.

Now Messrs. Powell and Occhialini have presented us with a book showing how varied are the phenomena that can be detected and studied by means of tracks of particles in photographic emulsions, the same method used for their discoveries. A worker in the same field may as well express his disappointment at the beginning that the book does not go into details of the many refinements in technique introduced by the Bristol workers, but the book was written with a different purpose, and the disappointment is only a disappointment, not a criticism.

The subtitle, "Tracks of Charged Particles in Photographic Emulsions," shows clearly the nature of the book. A collection of microphotographs is presented, consisting of examples of the principal nuclear phenomena recorded in photographic emulsions. Radioactive emission of heavy particles, interaction with atoms of the emulsion and disintegration of those atoms by primary particles, fission, disintegration "stars" produced by cosmic rays, mesons and the meson interactions, are some of the events shown in a series of photographs with an explanatory text both vivid and clear.

Tables of the dependence of range in the emulsion on the energies of protons and alpha particles and the procedure for processing the emulsions should help any one interested, and with good microscopic equipment and technique, to undertake studies of nuclear and cosmic-ray phenomena with this technique. Even with quite ordinary equipment, many of the phenomena can be easily repeated with the proper emulsions.

The book should be an invaluable supplement to any introductory course in nuclear physics, and the authors will have the gratitude of a public much larger than the specialists in nuclear and cosmic ray physics for their extraordinarily simple and readable work. Indeed, it ex-

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