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fields fifteen were physical scientists or engineers. Of particular interest to physicists are the notices of W. Pauli, O. W. Richardson, M. Saha, and L. Prandtl, who, in addition to being internationally famous, were personally well known in the United States and had many friends here.

Each biography is accompanied by a photograph and a complete bibliography. For the most part the notices have been prepared with care and sincere dedication. In general the emphasis is on the professional accomplishments of the subject, but nearly all articles provide some insight into the personal and social characteristics as well. One can often learn a good deal from the hobbies of famous scientists.

Some vital statistics may be of interest. The average age of the subjects of these memoirs was 77. Eight of them attained the age of 80 or over, and one lived to be 100, the third fellow of the Royal Society in its whole history to have achieved this distinction. This rugged individual was the engineer, Sir James Swinburne, whose active career spanned much of the development of the electrical industry of Great Britain.

The reading of these memoirs should prove a great stimulus to the preparation of full-scale scientific biographies of many whose names will live forever in the annals of science.

Space Flight. Vol. 1, Environment and Celestial Mechanics. By Krafft A. Ehricke. A volume of the Principles of Guided Missile Design series, edited by Grayson Merrill. 513 pages. D. Van Nostrand Co., Inc., Princeton, N. J. \$14.50. Reviewed by R. E. Street, University of Washington.

THIS volume, together with forthcoming Vol. 2 on dynamics and Vol. 3 on operations, covers within the broad field of space flight what is essentially the mechanics of flight under central force fields. It is a combination of astronomy and celestial mechanics text intended for the astronautical scientist and engineer. For these students, its motivation is better than the classical books written for physicists and astronomers.

After a brief, but very interesting, discussion of the history of the development of the rocket engine, a short chapter on the utility of space flight is devoted to the reasons why we should develop space flight. Anyone who knows the author, has heard him speak, or read his papers, knows, of course, that he is an avid proponent of man's exploration of space. It is good to have his views interestingly presented in this permanent form.

With Chapter 3, the author figuratively gets to work. This chapter is a thorough discussion of the solar system in which all of the known facts of the sun, the planets, their moons and other bodies are succinctly presented. The treatment is quantitative with innumerable references. Similarly, Chapters 4, 5, and 6 on the central force field, orbits in space, and perturbations, respectively, serve as an excellent introduction to the mathematical aspects of celestial and planetary mechanics. All of the many numerous equivalent forms of

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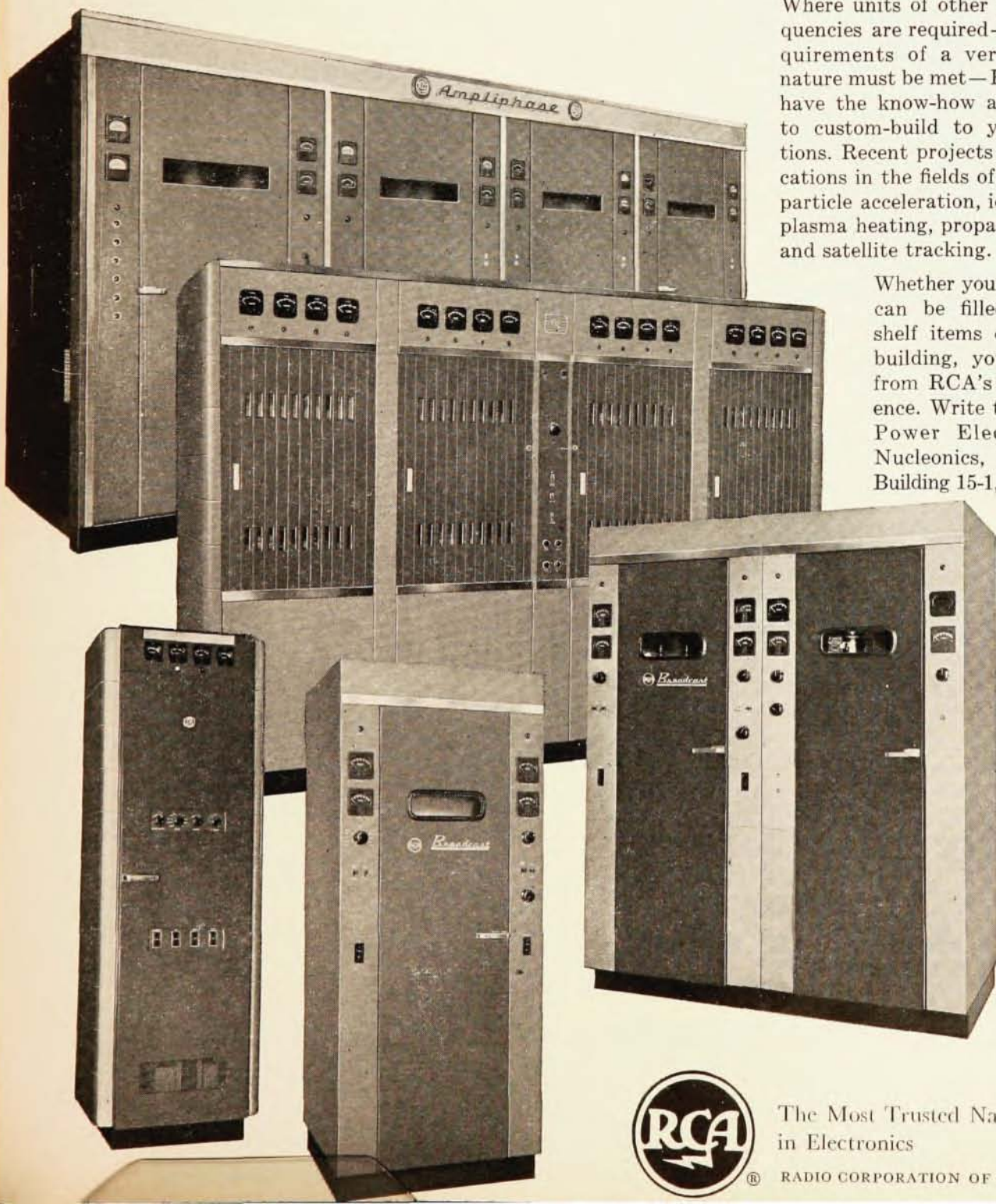
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writing out the equations of orbits are derived, as are the transformations from heliocentric to geocentric coordinate systems. There is a discussion of the various units of time, the determination of orbits and the calculation of an ephemeris. The treatment of perturbations is intentionally an introduction. Everywhere numerous references enable the serious student to pursue the subject as far as he wishes. Many tables and graphs help in the presentation.

Although the number of problems presented is small, the book will serve as a good text for a course in astronautics, since the instructor can certainly add as many more problems as he sees fit. The only difficulty in using the book as a text is its somewhat high cost, especially if the student is required to acquire all three volumes.

Photographie corpusculaire II. Edited by Pierre Demers. 463 pp. Les Presses Universitaires de Montréal, Montréal, Canada, 1959. \$10.00. Reviewed by M. W. Friedlander, Washington University.

COLLECTED here are the papers presented at the Second International Colloquium on Particle Photography, held in Montreal in 1958. The range of topics is wide, spanning the fundamental photographic process, the preparation, sensitization, and processing of emulsions; measurements, apparatus, and applications. The discussions which followed the papers are reproduced, too. There is much here of interest, and those concerned with this field will find this a useful reference.

Well printed and bound, this is a more substantial volume than most conference reports, which gradually disintegrate with use. Perhaps in this way the delay in publication is offset against the greater availability; it is most annoying to find references to conferences whose proceedings are kept a close secret among the participants. It is unusual, though, to find here the papers all presented in French, and not in the language in which they were originally presented.

Nuclear Technology for Engineers. By R. Hobart Ellis, Jr. 284 pp. McGraw-Hill Book Co., Inc., New York, 1959. \$9.50. Reviewed by Raymond L. Murray, North Carolina State College.

CONFIDENCE must be an abundant asset of the author who sets out to write a technical book that the reader will like. Dr. Ellis has been justified in his ambition, since his informal and imaginative style, along with a good choice of graphs, diagrams, and photographs, makes for comfortable reading.

About two thirds of the book is devoted to radiation sources, detection and uses, with the last third to a description of fission and fusion. With such a disposition of material, the book might better be entitled "Nuclear Radiation". The reviewer cannot quarrel with the choice of subject matter, since radioactivity and nuclear particles constitute the main feature that dis-