contains a complete and thorough treatment of Fresnel diffraction phenomena. One also finds interesting discussions of optical paradoxes such as those bearing the names of Poisson, Rayleigh, and Gouy on inverse interference effects and on anomalous propagation of spherical and cylindrical waves in the neighborhood of a focus. The last part is devoted primarily to the diffraction theory of aberrations.

An English translation would be welcome. However, the addition of a number of problems and exercises, as well as a chapter on the exact theory of diffraction, would be desirable in an English version of the book.

Modern Aspects of the Vitreous State. J. D. Mackenzie, ed. 226 pp. Butterworth Inc., Washington, D. C., 1960. $9.50. *Reviewed by Stuart A. Rice, Institute for the Study of Metals, The University of Chicago.*

THIS short book is an excellent survey of our current understanding of the structure and properties of glass, interpreted from a molecular point of view. Each chapter is authored by a different investigator, expert in the particular field. Structural studies are represented by chapters on x-ray diffraction, nuclear-quadrupole-resonance spectroscopy, and infrared spectroscopy. The emphasis in these reviews is on the attempt to understand local structure and to relate this to the long-range structure. The physical properties of glasses are interpreted in two lucid articles dealing, respectively, with crystallization kinetics and glass formation, and the nature of the glass transition. These articles strike an excellent balance between physical insight and a necessary minimum of mathematical formalism. Finally, there are chapters dealing with the constitution of glasses, structural models, and conductance and viscosity studies at high temperatures.

The Atom and Its Nucleus. By George Gamow. 153 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1961. Paperbound $1.95, clothbound $3.75. *Reviewed by William F. Meggers, National Bureau of Standards.*

GEORGE Gamow wrote *The Atom and Its Nucleus* for the lay reader and we have only our crude culture to blame if most people read rubbish rather than exciting science delightfully presented by a famous physicist whose outstanding talents for the popularization of science earned him the Kalinga Prize awarded by UNESCO in 1956. The subject is presented in 10 chapters: The Atom in Philosophy and Chemistry; The Electric Nature of Particles; The Quantum of Radiant Energy; The Bohr Atom; Wave Nature of Particles; Natural Radioactivity; Artificial Nuclear Transformations; The Structure of the Atomic Nucleus; Large-Scale Nuclear Reactions; and Mystery Particles.

Democritus, twenty-five centuries ago, believed that there are four elementary substances: air, water, stone, and fire, all formed by a very large number of very small particles called *atoms*, i.e., "indivisibles" in Greek.

2,000,000 AMP
7,000,000 AMP
3,000,000 AMP
2,000,000 AMP

just a microsec, mister...

...and you can have 2 million, 7 million...25 million amperes. In about one millionth of a second. Name your figure, and it's yours, with multiple banks of Cornell-Dubilier N-R-G® low-inductance energy storage capacitors.

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Almost all scientific information about atoms has been accumulated during the past two centuries, and knowledge of the divisibility of atoms into elementary particles belongs almost entirely to this 20th century. Many educated people probably know that nature has provided some 90 species of chemical atoms, but how many know what these atoms are made of? Besides electrons, protons, and neutrons, the first elementary particles to be discovered in atoms, evidence has been found for mesons, muons, pions, several kinds of hyperons, neutrinos, and anti-particles of nearly all kinds, so that instead of three elementary particles there are now nearly thirty! Is this all there is to learn about atoms and particles?

"One may say that the present opinion that elementary particles will really bear out their name (as the atoms did not) is due to our comparatively slight familiarity with their properties, and that all of them will be found in future to be as complex as grand pianos. It may also be that this will not be the end of the road and that years later much smaller subelementary particles will be discovered. There is no way to predict the future, and the question whether Democritus' original philosophical concept of indivisibility was right or wrong will never be answered by empirical means. But, somehow, many scientists, including the author, feel happier with the thought that, in the study of matter, things will come to an end and that the physicists of the future will know all there is to know about the inner structure of matter. And it also seems quite plausible that the elementary particles of modern physics really deserve their name, because their properties and behavior appear to be much simpler than could ever be said about the atom." (P. 147.)

Biographical Memoirs of Fellows of the Royal Society, Vol. 6 (1960). 295 pp. The Royal Society, London, 1960. 30s. *Reviewed by R. Bruce Lindsay, Brown University.*

THE labors of the science historian are being materially lightened by the appearance of these annual volumes of biographical memoirs of fellows of the Royal Society of London, of which this is Volume 6 of a new series started in 1955. It contains brief sketches of the lives and scientific achievements of seventeen Fellows and Foreign Members who died between 1958 and 1960. Each is accompanied by a photograph and a chronological bibliography. Of the individuals described, six were biological scientists and ten physical scientists. The one remaining describes the American philanthropist John Davison Rockefeller, Jr., who was elected as a Fellow (not as a Foreign Member, as is usual in such cases) in 1939 because, in the words of Statute 12 of the Society, he "had rendered exceptional service to the cause of science".

Of the five physicists memorialized in this volume, the most celebrated were Jean Frederic Joliot, Max von Laue, and C. T. R. Wilson. In 1933 Joliot received jointly with his wife, Irene Joliot-Curie, the Nobel