the recovery of man's dominion over Nature by the discovery of her secrets and her mechanism and their application for the relief of man's estate.

Emphasis on the neglect in appreciating Bacon's great aim goes, perhaps, a little too far, because Bacon has suffered little loss of reputation in the treatment accorded to his memory by historians of science, who have not failed to give him full credit for his vision of Solomon's House, which inspired the founders of the Royal Society, and to recall his brilliant advocacy of the application of scientific knowledge, which gave to the Society in its early years so much of its practical interests and empirical outlock. Happily, the historians of science cannot be called to account for what the philosophers and the historians of philosophy have said of one whom Prof. Farrington rightly calls "this very original and unorthodox figure", but a sounder and integrated judgment is here presented on Bacon's whole work.

Bacon wrote following upon an age that had known the writings of Biringuccio, Agricola and Palissy, and had witnessed remarkable developments in mining and metallurgy and the rise of a printed technological literature; and thus, almost from his boyhood, he was inspired with a contempt for Plato and Aristotle and Scholasticism and with the great vision of an alliance between, on one hand, the 'new philosophy', that is, the study of Nature by experiments, and, on the other, what we would now call technology, by which alliance the material conditions of life would be improved and transformed. So far as his new method goes, none can now be found to praise him; for no man ever discovered anything by the working of that cumbersome logical mill. Yet the great vision that makes him one with the moderns remains and is possibly being at last realized in our time. The development of Bacon's thought seen against the background of his times, together with the details of his interesting life and of his many works, are well summarized in this well-written short study. A reprint of Bacon's description of "Solomon's House" from the "New Atlantis" is appended. D. MCKIE

RECENT DEVELOPMENTS IN PROTEIN CHEMISTRY

Advances in Protein Chemistry

Edited by M. L. Anson, John T. Edsall and Kenneth Bailey. Vol. 6, with Cumulative Subject Index for Vols. 1-5. Pp. xi+549. (New York: Academic Press, Inc., 1951.) 9.50 dollars.

HIS sixth volume in a valuable series will be of particular interest to physical biochemists (or chemical biophysicists-what is in a name ?) because of two splendid articles. The first, by R. W. G. Wyckoff, is concerned with the electron microscopy of biological macromolecules, and in it are reproduced a number of the beautiful micrographs we expect from the author. It is fascinating to see the beginnings of a new subject, for molecular cytology is certainly that. Wyckoff's own statement is strangely moving and sticks in one's memory : "It is impossible at this time to perceive more than the broadest outlines of this visual chemistry or even to be sure of the directions in which it will most actively develop, but that such a chemistry will inevitably arise and that it will yield exciting new prospects over the way living matter functions is certain beyond doubt".

A complementary method of studying large molecules is afforded by the measurement of the intensity of light scattered by their solutions at different angles, and the molecular weights of more than twenty proteins have now been determined by this means. The other noteworthy article is that on "Light Scattering in Protein Solutions", by P. Doty and J. T. Edsall, which covers much more ground than its title suggests. It embraces a discussion of the fundamental theory of the scattering of light by liquids and by systems of two or more components, as well as a useful assessment of experimental techniques. The method is particularly suited to the study of the reactions which proteins undergo in solution, and considerable advances in this field may be expected in the future. This scholarly and stimulating article must be considered indispensable reading for the physical biochemist.

Much may be learnt about the structure of proteins from the consideration of the simpler polypeptides that can be synthesized artificially, and the account by E. Katchalski of the poly- α -amino-acids assembles a great deal of useful information about these interesting compounds.

The remaining five contributions are of a more biochemical, or even clinical, character. Egg proteins are reviewed by H. L. Fevold, and iodoproteins, both natural and artificial, by J. Roche and R. Michel. There can be very little work of interest that has been omitted from mention in these two comprehensive summaries. An unusual feature of the article by J. Bjorksten on "Cross Linkages in Protein Chemistry" is the large number, 278 in all, of descriptive references to patents.

Considerable interest is now centred on the role of a particular amino-acid, glutamic acid, in normal and abnormal metabolism of the brain, and the review "Glutamic Acid and Cerebral Function", by H. Waelsch, is therefore timely. Finally, there is the very full account by H. Pollack and S. L. Halpern of "The Relation of Protein Metabolism to Disease" which, it is to be hoped, will be read and acted upon by the medical advisers to the Ministry of Health and, perhaps what is more to the point, to the Ministry of Food. D. P. RILEY

PHYSICS OF CREEP IN METALS

Creep of Metals

By L. A. Rotherham. (Physics in Industry Series.) Pp. 80+2 plates. (London : Institute of Physics, 1951.) 15s. net.

THE earliest observations on the creep of metals were generally made by physicists. The study was not energetically pursued until it became technically important, when it was taken up by metallurgists and engineers endeavouring to produce alloys more resistant to creep. They employed empirical methods and were gradually successful. However, developments by the empirical method are laborious, and to-day one seeks for guidance from the theory of the plastic deformation of metals that has been developed during the past twenty years. In this search physicists have joined. The wheel has now come full cycle with the publication of this book dealing with creep, which is written by a physicist albeit one with first-hand experience of technical creep—and published by the Institute of Physics.