and research is constantly adding other instances. It is a question, however, whether there is any use in making this distinction. The word "catalyst," coined with the laudable intention of providing a term for an important class of phenomena, fell somewhat into disrepute, because often used as cover for ignorance, but it is now rescued from such condition, and may take its place among the reputable terms of science. An effort was made to set aside a termination as an indication of the catalytic function, namely, the use of the syllable "ase." Falk does not seem to be in sympathy with this for he speaks of "emulsin," "trypsin," etc. This is in accordance with the custom of many authors of chemical and physiological text-books, but it is to be regretted that the simple nomenclature has not been generally adopted. Falk does, however, use the termination in some cases, speaking of lipase, lactase and other similar substances. The spelling "sulfuric" and cognate forms, that has been a feature of the publications of the Chemical Catalog Company, is retained, but it is unfortunate that the other and even more useful reforms, suggested years ago by the Chemical section of the A. A. S., have not prevailed, and that American chemists, pharmacists and physiologists seem to have got cold feet on the issue of simplifying English spelling.

A special chapter is devoted to the "Chemical Interpretation of Life Processes." This is the most fascinating and important phase of human study, but while the chapter contains a large amount of information and shows a diligent and appreciative study of the literature, with ingenious interpretations of the phenomena, it does not seem that the secret of life is disclosed. The organic catalysts (enzymes, of our author) have some resemblances to living matter, and the present reviewer, many years ago, suggested that they may be considered as the connecting link between the non-living and living forms. They require certain conditions for actions and may be restrained by conditions that do not seem actually to destroy them.

The closing chapter, on "Contact Catalysis," presents an elaborate discussion of effects that have extensively applied in industrial chemistry, such as the action of platinum in the manufacture of sulphuric acid, and of some metals in the hydrogenation of oils. The latest developments of physical chemistry have been brought to bear in the elucidation of these phenomena. The work is a most valuable contribution to the literature of a subject that, in spite of the extensive investigation to which it has been subjected, seems yet but superficially developed. Each research but indicates more problems:

"Hills peep o'er hills, and Alps on Alps arise."

HENRY LEFFMANN.

THE OUTLINE OF SCIENCE. A Plain Story Simply Told. Edited by J. Arthur Thomson, M. A., Regius Professor of Natural History in the University of Aberdeen. 296 pages, 40 colored plates and 800 illustrations, 4to. In four volumes; volume one. G. P. Putnam's Sons, New York, 1922. Price \$3.75 per volume.

"Boy, page Mr. Bryan." Surely the great American Commoner, who is going up and down the land denouncing Darwin and all his works, should read this book, though it is not likely he would be convinced of the error of his ways, notwithstanding the immense array of data in support of evolution

which it presents. This is the first of a series of four elaborately prepared volumes, intended to bring to the public at large a knowledge of the results and theories of modern science. The author is capable of the task, as shown by his previous work, and as well exemplified in the text at hand. The bulk of the present volume is taken up with a presentation of the theory of evolution of organized beings, the author being evidently an implicit believer in the same. The first fifty pages are devoted to a summary of the modern investigations in astronomy, after which nearly two hundred pages are devoted to an exposition of the nature and causes of evolution. Man's poor relations are owned without hesitation, and as the present storm of opposition to the teaching of evolution in schools and colleges is most intense in reference to the "descent (or ascent) of man," Professor Thomson's views lead to the storm-centre. Mr. Bryan has said that he would have no particular objection to the teaching of the principles of evolution as applied to rocks and plants, but for the danger that such views would be extended to the higher organisms. Scientists may smile at such statements, and the reviewer may be criticised for deeming them worth notice, but, as a matter of fact, a large mass of the public, even the somewhat enlightened public, is easily aroused by charges that a scientific doctrine may threaten prevailing faiths, and Mr. Bryan is a powerful speaker, who has an immense vogue throughout the United States. An act, which he actively advocated, to forbid the teaching of "Darwinism, atheism, agnosticism, and evolution as applied to man" failed by only one vote in the lower house of the Kentucky legislature, and the propaganda is going on continually.

The challenge is made in the title of chapter V, "The Ascent of Man." Darwin's "Descent of Man" is credited with practically closing the discussion in favor of a direct relation between human beings and apes. It is not necessary to take up the arguments in detail. They have been before the world for many years and set forth in many phases. Professor Thomson, in common with most naturalists, emphasizes the *resemblances* of the existing apes to man, while the opponents of the evolutionary view emphasize the *differences*. It is, therefore, difficult to bring the disputants to a common ground. The discussion has been complicated by some leading naturalists making rash statements. Such are claims for restoration of heads of primitive man in which it is to be feared that the artist has been allowed too free play.

Turning to the book in hand, one notes at once a sumptuous make-up that will go far toward securing popularity. This is a wise plan; the general reader must be drawn to scientific literature by attractive setting. If the propaganda is to be conducted by lectures, these must be well illustrated by experiments or lantern demonstrations; if by books, these must be well supplied with pictures. The high development to which both ordinary illustrations and those in color have been brought in late years, renders it easy to cater to the popular desire. The present work meets all requirements in this respect. The illustrations are numerous and of high type. One can almost read the book by looking at the pictures. The type is large and clear, making it easily read, and the printing and paper first-class. The text is well written, shows a large amount of research, and an earnest desire to present the facts, though it is not possible to overlook the evidence of the

author's bias towards the most advanced of the modern views. He is not to blame for this, for contact with organized structures, especially in their natural associations, leads an analytic and enfranchised mind in only one direction, namely, that a "blood relationship," so to speak, exists between them. Evolution does not necessarily involve the belief that all living organisms are of common ancestry; there may have been independent origins of life, but the similarity of plan seems to have no other explanation that the scientist can accept except the influence of heredity modified by environment.

In reading books of this type, the question arises as to whether they accomplish the purpose for which they are produced. There is a demand for them on behalf of a limited portion of the public, but the masses remain untouched by the methods and results of science. A part of the effort at the popularization of science is due to the desire to make the path of the research worker more easy, to secure a wider interest in his labors, and to justify the appropriation of public money for purely scientific investigation. Yet, even the most valuable results do not influence the minds of the great mass of the community, which clings obstinately to its folk-lore and superstitions. It is interesting to place Doctor Thomson's book alongside of the recent work of Seligman on the "Evil Eye," in which several hundred pages are devoted to setting forth the distribution both in space and time of this terrible superstition. The truth is that the mass of scientific research flows over mankind with about the same effect that the water of a stream flows over the pebbles scattered along its channel, disturbing a few, smoothing and rounding others, but leaving the general conditions comparatively unchanged. "Constant dropping will wear away the stone," but investigation shows that turbid water is most effective in this respect, and writers of fiction and poetry can swerve men more easily than can the scientist. Nevertheless, books of this class have their value, and the one now in hand is one of the best of the recent efforts to give the "man in the street" some knowledge of the accomplishments and theories of modern science.

HENRY LEFFMANN.

DYES CLASSIFIED BY INTERMEDIATES. B. R. Norris Shreve, in collaboration with Warren N. Watson and A. R. Willis, Chemists, U. S. Tariff Commission. 631 pages, including a glossary of dye-names, formula index and a key-list to Schultz numbers, 8vo. The Chemical Catalog Company, New York, 1922. \$10.00 net.

The dye problem is the most complex one in the relations of chemistry to economic conditions. The enormous growth of the industry along comparatively narrow chemical methods, and yet the great variety and importance of the products make a comprehensive statement of even the leading features very difficult. The war brought to the notice of the world, and indeed, to some nations, very forcibly and painfully, the wide field that the applied chemistry of the tar-products covers. The prominence that colors and explosives have had of late years has thrown into the shade the other derivatives of the cyclic compounds, especially the medicines. While it is unfortunately true that a great many of the so-called synthetic medicines that Germany poured onto the world during the past quarter of a century were of little real