rance of the structure of coal and the researches of Thiessen, Turner and the reviewer have made clear what was previously a dark subject. The writer has made full use of the American work on coal and his treatment is most appreciative.

The work is divided under a number of headings, namely, "Classifications of coals," "The macroscopic structure of coal and its origin," "The microscopic structure of coal and its origin," "The petrographic constituents of coal," and "The participation of the various substances of the plant and animal body in their organization." The volume contains 271 pages and 80 illustrations, the most of the latter original or from very recent sources. A particularly commendable feature is a large amount of attention given to the micro-chemistry of coal, a subject which the author has made particularly his own and which is of great importance. Naturally, his father's views are treated at considerable length and with respect, but the author nevertheless shows a highly commendable open-mindedness on many subjects. This book will be indispensable to all geologists, chemists and botanists who are interested in the subject of coal.

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Out of the Valley of the Forgotten, or From Trinil to New York. By JOHN EDMISTON BAUMAN, head of the Biology Department, Augustana College, Sioux Falls, South Dakota. Two volumes. Published by the author.

A MOST unique work is Bauman's "Valley of the Forgotten," which may be briefly described as an encyclopedia of deductions from evolution.

The poetic title is thus explained by the author:

> It is intended among other things to show that in the forgotten days of man's early evolution, he went grievously astray in his ideas, falling into progress—and initiative—stupefying superstitions on the one hand and into many irrational ways of looking at the universe in general, and into a not only utterly irrational, but debasing and brutalizing notion of intimate sexual concerns, being shameful and indecent, on the other.

Accepting the known and rationally implied facts of orderly change, termed evolution, which he gives with much care and general accuracy, Professor Bauman sets out to show the relation of evolution to human conduct in all its varied phases. In this he shows broad reading and good judgment, though somewhat disposed to "lay down the law" in disputed questions. He repudiates "fundamentalism," with all its cumbersome traditions, while insisting on his right to be a Christian. He argues for "immortality" on scientific data as well as for the "existence of God." He has much to offer on sex problems, not all of it likely to be generally accepted. His discussions range from the regulation of restaurants, the use of proper nasal sprays and the sins of St. Augustine to bacteria, wicked and benign, to woman's dress, to the abolition of war and to the purification of religious belief. Amidst very much that is true and wise, and as varied as human interests, we stumble on one sentence: "The whole drift of human evolution would be a meaningless and sinister affair if there were to be no future existence."

> I ask for nothing; let the balance fall,
> All that I am or know or may confess
> Swells but the weight of mine Indebtedness!

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE PREPARATION OF PROTOZOA FOR CLASS USE

THE rapidity of movement of protozoa makes their study a matter of great difficulty for the beginner, particularly if he is getting acquainted with the use of the microscope at the same time. Identification and careful study likewise are rendered equally trying for the more experienced student. The time-honored method of partially immobilizing the organisms in a viscous medium such as a gum solution or by means of cotton fibers is of great assistance and has the advantage of permitting a study of the living organism. The use of the surface tension, as developed by the microdissectionists, is not feasible for class use unless perhaps as a means of demonstration.

Attention is called to the following method because of the rapidity with which the common protozoa and algae may be prepared for class use. The method is not by any means new, but does not appear to have received the attention it deserves. The material is collected from the aquaria or other source of protozoans by means of a pipette and placed in a centrifuge tube. A hand centrifuge will throw down the organisms within a minute at most, and immediately after the removal of the tube from the centrifuge the greater portion of the superlatent water is pipetted off. A few drops of 1 per cent. osmic acid solution are added so that the resulting solution of osmic acid is about one half per cent. Two cubic centimeters of such a strength of osmic acid will fix a cubic centimeter of precipitated organisms, so that the expense of the reagent is negligible. A few drops of distilled water are added and the material is ready for class use. For continued study a glycerine solution is better. The common fresh water protozoa—