eral techniques used in analysis that involve electrochemistry: namely, electrochromotography, ionography, electrophoresis, and ionic membrane potentials, which are not mentioned.

The size of type, general format, and well-written text make this an easy book to read and study. It should be invaluable to all chemists interested or engaged in some aspect of electrochemistry.

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The Biology of the Cryptic Fauna of Forests. R. F. Lawrence. A. A. Balkema, Capetown–Amsterdam, 1953. 408 pp. Illus. 50s.

The subject of this book and a more precise title would be "Some features of animals found in humus in South African forests." To be sure, the author apologizes for his somewhat misleading title in the very first paragraph, so perhaps it is a little unfair to criticize on the basis of what might have been anticipated from the title. Nevertheless, the student of animal ecology and population ecology will be quite disappointed that a book on such a promising subject and with such a promising title does in fact leave out so much.

This account of the fauna of humus has been written from the point of view of the field naturalist and museum collector and with an eye to anatomical features that may indicate physiological adaptations of this specialized group of animals. There are lists of animals found in the forest floor in South Africa. Similarities in color and form of diverse groups are expounded upon. One chapter deals with the sense organs of these creatures of the dark, another with weapons of offense.

The closest we get to physiology is in a chapter on movement and one on respiration, but both accounts are primarily from the anatomical point of view. The ecologist is interested in feeding habits and numbers of animals. A chapter on food is largely concerned with specialized mouth parts and such generalizations on feeding as can be made from rather scanty observations. More on this subject is to be found in the European literature than the chapter suggests.

Regarding the numbers of animals in the forest floor, this is barely touched upon. This is a pity in view of the important work along these lines by Bornebusch and others following him. The section on methods for extracting animals from humus is quite out of date. Nor is there any reference to the quantitative study of the fauna in terms of energy transformation.

The author has simply concentrated on the particular aspects of the biology of these animals that he happens to find of intriguing interest. The result is disappointing for the ecologist and physiologist. But although the book misfires with this audience, it will serve the purpose of stimulating the interest of naturalists and systematists in a relatively little known but diverse group of animals, and their interest will be held throughout. Sometimes it is won at the cost of rather questionable analogies (such as the analogy between the cryptic fauna and amphibians on page 138) or on odd emphases such as the emphasis on the virtual exclusion of the Onycophora from all environments save the forest floor.

Not all groups of animals found in humus are included. The rotifers are omitted on the grounds that "if such semi-microscopic and mainly aquatic groups as Rotifers are to be included in an assessment of the forest-fauna, more refined techniques for collecting them will have to be devised than the Berlese funnel." But the Berlese funnel was never designed to extract rotifers. They can be collected with techniques no more elaborate than washing leaves in water in a separate funnel and drawing off the rotifers through the tap after they have settled to the bottom.

It is not true to say that the free-living nematodes "are wholly confined to the forest habitat" (p. 36). Some of the best quantitative work on free-living nematodes has been done on bare slopes and grass fields in Denmark.

Despite omissions and misleading statements such as those mentioned, this book contains a lot to interest the biologist and the student of the fauna of the forest floor. The reading is made interesting by excellent illustrations, and the quality of the production of this publication is exceptionally good. But it cannot be regarded as an up-to-date review of the biology of the cryptic fauna of forests.

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Synthetische Artbildung. vols. I and II. *Grundlinien einer exakten Biologie.* Heribert Nilsson. Verlag CWK Gleerup, Lund, Sweden, 1953. 1303 pp. Illus. Paper, Kr. 225; cloth, Kr. 250.

The thesis of this elegantly printed two-volume opus is somewhat as follows.

> The concept of evolution as a continuously flowing process can be proved only on Lamarckian lines, since "evolution and Lamarckism are inseparable because they include the same fundamental ideas." There is no proof from the data of genetic recombinations or mutations to support the generally accepted concept of evolution; therefore, evolution is not occurring at this time. Nor does it seem to have occurred in the past, since the fossil record is the result of the piling up and preservation of world biota during the periods when the nearness of the moon induced tremendous tidal action (the "Tethys sea") and freezing at high latitudes because of the pulling of air toward the equator hastened such preservation. During these revolutionary periods there was resynthesis of the entire world biota by gene material or gametes along the same basic lines (hence, there is no point to phylogenies, since the similarities of organic life are due to the synthetic activity of similar "gametes"); this process is termed "emication."

The author of this imposing work (there are 43 pages of references) is aware of the objections that will be raised against his theory:

I will be asked: "Do you seriously want to make such a statement? Do you not see that the consequences of such a theory are more than daring, that they would be nearly insane? Do you really mean to say that an orchid or an elephant should have been instantaneously created out of nonliving materia?"

Yes, I do. And, please, reflect, because now *I* am going to put a question: Is the elephant of today "ready-made"; does it not originate from gametes? You must admit the truth of the latter statement. Why, then, assume that the f i r s t elephant appeared as the fully formed animal? He was created as a gamete, unicellular, a monocyte.

For those who may be inclined to side with Lyell and against Cuvier as far as the major premises of this argument are concerned, it must be said that there is a great accumulation of information about genetic processes and the biochemical nature of chromosomes in these two volumes of fact and fancy. Such works also serve another useful function (in addition to keeping printers employed): they challenge us to tighten our own arguments, for up to the point where the author takes his flier into paleontology, his criticism of evolutionary theory is philosophically respectable.

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The Size and Growth of Tissue Cells. Joseph G. Hoffman. Thomas, Springfield, Ill., 1953. xv + 102 pp. Illus. $4.

A century of investigation has left the basic questions regarding specific cell sizes in a most unsatisfactory state. Characteristic shapes and, to a lesser extent, size and staining qualities still constitute the major criterions of recognition. Pathologists long ago disagreed on the question of size alone as a characteristic of malignancy, yet the author of this small monograph wishes to reexplore the phenomena of volume increase and volume ratios from the point of view of cancer research. In his introduction he states that it was undertaken "in the belief that proper measurements and analysis of the sizes of cell parts can ultimately yield information about growth." Maybe so, but no proof is given.

It is unfortunate that so much of the book is taken up with background explanations of the importance of the problem and so little is devoted to its solution. Two short chapters discuss variations in intermitotic time periods and inadequacies of mitotic index values. In the final chapter an interesting conclusion is that the nuclei of mouse *dbr* tumor cells may grow linearly, while the cytoplasm grows exponentially. No effort, however, was made to discuss the importance of factors such as aneuploidy or fixation shrinkage. Most students of the cell will be disappointed by the volume. The real key, which biologists still lack, is a fundamental theory of the cell nucleus.

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New Books

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The Biochemistry of Clinical Medicine. William S. Hoffman. Year Book Publ., Chicago, 1954. xx + 681 pp. Illus. $12.

General Chemistry. P. W. Selwood. Holt, New York, rev. ed., 1954. xii + 657 pp. Illus. $6.

Economic Activity Analysis. Oskar Morgenstern, Ed. Wiley, New York; Chapman & Hall, London, 1954. xviii + 554 pp. $6.75.

American Thought. A critical sketch. Morris R. Cohen. Free Press, Glencoe, Ill., 1954. 360 pp. $5.

World Geography: An Introduction. Loyal Durand, Jr. Holt, New York, 1954. vii + 372 pp. Illus. $5.25.

The Giant Cactus Forest and Its World. A brief biology of the giant cactus forest of our American southwest. Paul Griswold Howes. Duell, Sloan & Pearce, New York; Little, Brown, Boston, 1954. xxv + 258 pp. Illus. + plates. $7.50.

Bilder zur Qualitativen Mikroanalyse Anorganischer Stoffe. Von Wilhelm Geilmann. Verlag Chemie, Weinheim/Bergstr., 1954. 120 pp. Illus. DM. 20.80.

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Reports on Progress in Physics. vol. XVII (1954). A. C. Stickland, Ed. Physical Society, London, 1954. 280 pp. Illus. £2 10s.

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Elements of Statistical Mechanics. D. ter Haar. Rinehart, New York, 1954. xix + 468 pp. Illus. $8.50.

Tables Numériques de Physique Nucléaire. Charles Noël Martin. Gauthier-Villars, Paris, 1954. 258 pp. Paper, $5.15; cloth, $6.79.

Mathematical Thinking in the Social Sciences. Paul F. Lazarsfeld, Ed. Free Press, Glencoe, Ill., 1954. 444 pp. $10.

Heat Transmission. William H. McAdams. McGraw-Hill, New York–London, ed. 3, 1954. xiv + 532 pp. Illus. $8.50.

Les Constantes Physiques des Composés Organiques Cristallisés. J. Timmermans. Masson, Paris, 1953. 556 pp. Illus. F. 5200.

Beyond the Germ Theory. The roles of deprivation and stress in health and disease. Iago Galdston, Ed. Health Education Council, New York, 1954. viii + 182 pp. Illus. $4.