Schneeberg and argues in favor of the arsenical genesis, which he applies also to the nickel refinery workers of Wales and to smokers. From my figures on Joachimsthal (inaccurately quoted by Smith), it appears that the miners had a lung-cancer mortality of 9.77 to 10.90 per 1000 person-years, as compared with 0.34, the highest value in the 1930's for a male population of the same age groups. Thus, as pointed out by Korteweg (Netherlands) and Clemmesen, environmental conditions may lead to a considerable further increase of lung-cancer mortality in the future.

Kennaway and Maisin (Belgium) mentioned that nuns (who do not smoke) are free of lung cancer, while Steiner and Stewart pointed out that infants do have lung cancer, although they do not smoke. (In my opinion, cancer in infants and children, whether in the lungs or elsewhere, whether leukemia, carcinoma, or sarcoma, is a response to cancerogens that the fetus received via placenta from the mother.)

A large part of the 4-day session was devoted to the question of whether the material collected proves smoking to be the main factor in lung-cancer endemiology, and what should be recommended for further research on causative factors, on anatomical classification, on case histories of respiratory cancer, and on the minimum amount of information in statistical reports. It is a very informative symposium.

SIGISMUND PELLER

New York, N. Y.

Chemistry of Carbon Compounds: Alicyclic Compounds, vol. II, pt. A. E. H. Rodd, Ed. Elsevier, Amsterdam–Houston, 1953. 487 pp. Illus. $12.50

This is the second volume of a series designed to present a systematic discussion of organic compounds, intermediate in size between the great encyclopedias, such as *Beilstein* and *Elsevier,* and the shorter, essentially instructional text books. This particular volume is devoted to the alicyclic compounds exclusive of terpenoids and steroids, which are to appear later as volume II, part B.

There are many ways in which the editor and contributing authors might have selected and organized the material for such an intermediate work. Actually about 20 percent (about 90 pages) of the book describes generalizations and theoretical concepts, whereas the remainder is concerned essentially with the methods of preparation and properties of individual alicyclic compounds. The main weakness of this and similar books is that there is not adequate space for either a complete discussion of the basic principles or a complete presentation of the factual data. The principal merit of this book is the excellent organization of the material.

The various ring systems are discussed in order—three-membered rings, four-membered rings, and so forth—and then for each ring system the functional derivatives, such as halogen derivatives, alcohols, and amines, are discussed in the same sequence. Frequent tables have been used to present data efficiently and to facilitate comparisons. The most valuable part for most investigators will be the extensive references, which cover the chemical literature through 1952.

Special features are the liberal use of illustrative structural formulas and a very complete index (about 4300 entries, mostly individual compounds). The physical aspects, paper, binding, and type, are all very satisfactory; also, I noticed very few errors in either the formulas or the text material.

All the volumes of this series will undoubtedly be welcomed by organic chemists and investigators in related fields, first because of the greater rapidity with which pertinent references to the original literature may now be located, and second because this kind of reorganization of scientific knowledge frequently furnishes the inspiration for many new advances by bringing into juxtaposition facts and ideas that were formerly isolated.

RODERICK A. BARNES

School of Chemistry, Rutgers University

Electroanalytic Chemistry. James J. Lingane. Interscience, New York, 1953. 448 pp. Illus. $8.50.

This book gives a more complete coverage of the various divisions of electroanalytic chemistry than any other recent book. The first seven chapters discuss in a rather classical manner the fundamental aspects of the measurement and interpretation of the emf of galvanic cells, *p*H and its measurement, and the various types of potentiometric titrations. Chapter 9 covers conventional conductometric analysis in a similar fashion, together with a short section on high-frequency methods. The author states that he made no attempt to make these chapters, which comprise the first 160 pages, all-inclusive of their several subjects. Instead, they present the fundamentals of these more classical branches of electroanalytic chemistry, so that a better understanding of the newer developments can be accomplished.

The remainder of the book consists of short chapters on automatic potentiometric titrations, internal electrolysis, and electrographic analysis, in addition to extensive chapters on the theory, methodology, and recent developments in the various types of controlled potential electrolysis, in controlled potential coulometry and coulometric titrations at constant current. These latter chapters are well documented by numerous references to the recent literature (to about May 1953), together with a critical appraisal, in many cases from the author's own experience.

An examination of only the first 160 pages might suggest that this book gives a rather superficial coverage of some of the older aspects of electroanalytic chemistry. However, on closer study, it is difficult to find specific omissions. Where the coverage is brief or applications are omitted completely, adequate references to more complete treatises on the subject are given. The latter part of the book is quite complete in its coverage and represents the first authoritative appraisal of these subjects. There are, however, sev-

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.

CLARK E. BRICKER
Department of Chemistry, Princeton University

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.

L. C. BIRCH
Zoology Department, University of Sydney, Australia

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: