In a virtuoso performance, J. S. Griffith contributes a succinct chapter on electron spin resonance in certain biologically important iron compounds and a fascinating one on information theory and memory.

The overall effect of the book is that of a delicious smorgasbord. It is unfortunate that the cost of the menu ($19.50) will limit the number of diners at this restaurant. Isn't it time for all of us to recognize the fact that the future belongs to the mass-produced journal and to the mass-produced textbook rather than to a group-written reference book with inarticulated contributions and a limited press run and sale? The material in this book deserves a far better fate; I hope that those parts which have not yet been published in journals will eventually appear in a more accessible form.

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Animal and Human Nutrition Series

More than 800,000 Americans die each year from diseases of the heart and blood vessels, and millions more who struggle to do their daily work are handicapped by afflictions of the cardiovascular system. Many of these mortalities occur when the individuals are at the peak of their productive powers and in the age range of 35 to 65 years. The two diseases that account for most of the cardiovascular deaths are coronary heart disease and high blood pressure. In the past both were regarded as inevitable consequences of an aging population, but today a new and dynamic approach considers them the result of factors in the human environment that interact in susceptible individuals. The key causative environmental factor is the food that man eats. In the past, deficiencies of food produced disease. Today, overconsumption of certain foods and food additives are believed causative of many cardiovascular disorders.

Eörs Bajusz's book, **Nutritional Aspects of Cardiovascular Diseases** (Lippincott, Philadelphia, Pa., 1965. 264 pp., $12), is concerned with the role of nutrition in the genesis of cardiovascular disease. Bajusz appropriately stresses two dietary ingredients: (i) fatty foods derived from animals (saturated fat and cholesterol) that are important in the causation of coronary heart disease, and (ii) minerals in the diet that are significant in the problem of high blood pressure. The author, an adherent of the Selye school of thought, interweaves dietary mineral intake with stress and hormonal output from the adrenal gland as related factors in the causation of heart disease.

A classic example of his discussion might be the man with coronary heart disease who dies suddenly while shoveling snow from his driveway. This man has had circulatory impairment for years. Large atherosclerotic plaques in the coronary arteries impede the flow of blood that supplies the heart muscle with nutrients and removes the end products of metabolism. Two problems exist in such cases: the atherosclerotic plaques that are presumably derived from a lifetime of excessive intake of animal food, and the cardiac standstill or necrosis which occurred during snow shoveling and which led to sudden death. Bajusz suggests that both problems are preventable. Human atherosclerosis may be prevented by a reduced intake of animal food and a change in the amount of fat consumed. Particular emphasis is placed on the electrolyte imbalance that occurs in heart muscle cells. Perhaps the stage was set for sudden death by a previous high dietary intake of sodium and a low intake of potassium, ions most important in determining the cellular levels of potassium. Other dietary minerals important in cardiac disease may be magnesium and chloride.

The hypotheses put forth in this book are supported by a wealth of experimental data, many derived from the author's own investigations. The evidence that dietary factors causes atherosclerosis and coronary heart disease in man is strong and well supported by data from both animals and man. The evidence that dietary minerals cause cardiovascular disease in man is more circumstantial and is derived largely from animal experiments. As the author states, "the most conspicuous weakness of the present volume is its failure to present . . . data" providing direct proof that dietary changes in sodium and potassium would prevent certain heart diseases in man. Such investigations should be done in the future, just as there are now many human trials of altered dietary fat and cholesterol content aimed at changing coronary heart disease mortality. Bajusz has offered a refreshing challenge.

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Mammalian Genetics

In this book, **Genetics of the Norway Rat** (Pergamon, New York, 1965. 814 pp., $30), Roy Robinson has performed a useful service in bringing together an impressive bibliography on rat genetics, with chapters on pelage and color, growth and metabolism, reproduction, endocrinology, skeleton and viscera, sense organs, nervous system, hematology and immunogenetics, pharmacogenetics, disease resistance, tumorigenesis, learning and behavior, chromosomal variations, named unit genes and inbred strains, changes during domestication, and failure of attempts to prove acquired inheritance. The longest chapter (168 pp.) is concerned with psychogenetics, the second longest (57 pp.) with growth and metabolism.

Some of the information, particularly certain studies of growth, reproduction, and susceptibility to dental caries, and recent studies of behavior, has come from carefully designed and performed genetic experiments. These are paraphrased fully and faithfully. Other information has come as a by-product of the use of laboratory rats of varying genetic origin in a wide variety of experiments and assays. Robinson has located and recorded an amazing number of entries of this second type. Some of these are of great potential value—for example, as evidence of genetically controlled metabolic differences disclosed in biochemical and pharmacological experiments. Others are only of anecdotal interest. Both types are reported through brief summaries, frequently lacking in sophisticated genetic insight. However, where original findings appear to conflict, good attempts are made to reinterpret and collate.

A chapter mistitled "Cytogenetics" provides a check list of gene symbols, including mutants at 34 genetic loci plus 15 antigenic differences representing alleles at an unknown number of loci. In this same chapter there is a list of 57 established inbred strains, with brief descriptions of rec-

ognized characteristics. Four genetic linkage groups are recognized.

The extensive presentation on psychogenetics demonstrates that interest in the genetics of the rat has centered largely on its learning abilities and emotional characteristics; 32 pages are devoted to emotionality, 61 to cognitive ability. In these areas Robinson has if anything over-reported early noncritical work, but has also done an excellent job of bringing the reader up-to-date on recent experiments.

The book suffers from a prolix style; one suspects it could have been 100 to 150 pages shorter. Interpretation of many studies—for example, those on tumorigenesis and tissue transplantation—show deficiencies in the author's familiarity with general principles established through work on other species. Nevertheless, the reader who brings to this book his own specialized analytic capacity will find here a source of extremely useful information, clear summaries of experimental protocol, and considerable common-sense deduction. It is a valuable reference work for all workers concerned either with the laboratory rat or with mammalian genetics.

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Entomology

The Humicolous Fauna of South Africa: Pselaphidae and Catopidae (Coleoptera) [*Memoir 15*, Transvaal Museum, Pretoria, South Africa, 1964. 261 pp.], by R. Jeannel, is a taxonomic treatise on two families of beetles that primarily inhabit the humus of the forest floors of South Africa. Ten new genera and 104 new species in the Pselaphidae and two new genera and 12 new species in the Catopidae are described. Where necessary all new genera and species are integrated in keys. The monograph is copiously illustrated; of especial value are the figures of aedeagei. The work should prove to be indispensable for those who are studying these families in the area covered. Of great service to such workers are the redescription and illustration of species briefly described by other entomologists many years ago.

Many of the collections suggest that quite a few species are altitude-dependent. Where distribution is discussed, Jeannel has incorporated the data on taxa into a web of southern dispersal routes. According to Jeannel, the faunas of Africa and Madagascar were once in a connected part of Gondwanaland in the Secondary, and various stocks reached austral Africa from South America by a South Atlantic land bridge in the Tertiary. This bridge, according to the author, could have been part of a large Paleoantarctic continent which incorporated Australia, New Zealand, austral Africa, and austral South America.

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Botany

Underlying the extension of geographical range for any species is some means of dispersal. It is fortunate for the biological world that C. T. Ingold has been so keenly interested in the varied mechanisms of dispersal displayed by fungi and bryophytes. His concern has culminated in this recently published, scholarly, and extremely readable volume, **Spore Liberation** (Oxford University Press, New York, 1965. 220 pp., $5.60).

The treatment is based on the premise that fixed organisms must rely on detachable units for dispersal and that essentially nearly all spores are dispersive units. The discussion is divided into eight sections: seven devoted to fungi and one to bryophytes. Neither subject represents a revision of earlier publications by the author. Each is an up-to-date presentation, well documented by references, and the author frequently calls attention to areas that need more investigation.

Ingold's discussion begins with a general account of fungus spores, the role of size, general principles of air transport, and the relation of shape to dispersal. Water-relations in terrestrial fungi and rhythms of spore liberation are treated in separate sections. From general aspects of fungus spore liberation, the author proceeds to the particular. The Mucorales, Sordaria, the toadstools (*sic*), and the Gasteromycetes are given individual consideration. Structurally similar forms may have quite different liberation patterns, as Ingold illustrates strikingly in the case of the Mucorales. In the discussion of the toadstools it is heartening to see basidia illustrated in their proper position. In considering the means by which basidiospores of the ballistospore type are released, Ingold mentions a theory recently proposed by L. S. Olive. A mention of D. B. O. Saville's subsequent extension of this theory might have been appropriate because no single theory seems satisfactory as an explanation of this phenomenon. Ingold sees the structural development and spore liberation patterns of the Gasteromycetes as ecological adaptations to climate. Among their five types of spore release, one, the splash-cup method, is unique among fungi, although it occurs in a lichen, several bryophytes, and angiosperms. It was first described by G. W. Martin in 1927. Later it was studied in elaborate detail by A. H. R. Buller and H. J. Brodie, as Ingold relates.

In the final discussion on bryophytes, Ingold points out mechanisms common to them and some fungi. He concludes the discussion with a comparison of the display of brightly colored tissues in a coprophilous moss and a Gasteromycete, which is suggestive of entomophily in higher plants.

In sum, this book is impressive for breadth of material and careful detail; the illustrations, most of which were prepared by the author, are excellent. The book represents a significant contribution which is especially commendable for its lucid account of highly specialized devices.

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Animal Viruses

Thomas M. Bell's book, **An Introduction to General Virology** (Lippincott, Philadelphia, Pa., 1965. 292 pp., $7.50), provides general information on the aspects of virology that deal chiefly with animal viruses. The title of the book is misleading in that it does not emphasize plant, insect, and bacterial viruses. Hence, the title should be "An Introduction to Animal Virology."

The author has provided a book that will meet the needs of those who work in the allied field of health sciences and desire a background in virology. The book will also serve the graduate student in biological sciences as an adequate supplement to the different types of textbooks that are available.

The aim of the book is served because it provides sufficient, but not detailed, information on the general prin-