duction by Professor Eckardt, are in French, with English summaries. Each paper is supplemented by a transcript of the discussion by participants in the symposium and by a bibliography which ranges from 2 to 120 titles, with a median of 20 titles.

"Eco-physiology" is defined broadly as the study of "all relationships existing between living beings and their physical and biotic environments." It comprehends studies of structural and functional features that link the organism to its specific environment as well as studies of all aspects of energy transformation and transfers of energy and mass concerned in ecosystem dynamics. The breadth of this definition is reflected by the variety of topics covered in papers included in the volume. Emphasis is placed on the description and comparison of techniques of analysis and instrumentation, although details of hardware are sparse. Some papers are strictly reviews of research approaches to measurements of well-defined physiological or environmental parameters; others are reports on specific research projects and contain original data.

The papers are grouped in three sections. In the section on environmental factors (21 titles, 187 pages), radiation, wind, atmospheric and soil water, dew, interception of precipitation (which seems more appropriate to the third section of the volume), and lysimetry are considered. Measurement of precipitation is considered only incidentally in papers on interception.

Topics covered in the longest section, "Physiology of Plants Considered Individually" (26 titles, 225 pages), include leaf temperatures, transpiration, internal water dynamics, drought resistance, dew utilization, carbon dioxide exchange, stomatal characteristics, heat resistance, and plant chamber techniques. The third section, the shortest, "Physiology of the Plant Cover" (10 titles, 97 pages), is devoted to methods of determining evapotranspiration losses, dry matter production, and to the heat, water, and the carbon dioxide budgets of vegetated areas.

The book is well printed and typographical errors appear to be minimal. Occasionally, in the discussions, homonyms seem to have been transcribed, but these are not likely to mislead a reader familiar with English. In general, the discussions are well edited and, in many cases, add to the comprehension of the original papers.

Many papers in this volume presume too much background to serve as introductions to their subjects, and most do not treat their subjects intensively enough to be of great or lasting value to one involved in research. However, as a collection they complement one another and thus can be of value both to the novice and the researcher. The price of the volume probably will restrict its purchase by individuals.

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Fifth International Thyroid Conference

This symposium volume represents an attempt to bring together the diverse fields of thyroid research ranging from the most basic to the clinical. **Current Topics in Thyroid Research** (Academic Press, New York, 1965. 1247 pp., $42), edited by C. Cassaro and M. Andreoli, present a massive number of short communications of varying quality, rather than critical reviews by a few experts. A number of the papers represent the presentation of little more than one experiment, and in some instances this is only a single statement in the text.

Another feature that must be criticized is the fact that the organization of the various subsections is rather arbitrary. Calcitonin has little in common with iodine metabolism in the hyperplastic hamster thyroid, but they are treated together.

The most useful parts of the book are the closing remarks at the end of each session in which a designated individual attempts to critically review the proceeding contributions. These vary in detail and orientation, but in general each one provides enlightenment as well as a few critical and thoughtful remarks.

This compendium is certainly not intended for the uninitiated, but for interested research workers who are seeking a critical evaluation of current trends in thyroid research. It may be of some value to those who are working in the field in keeping them abreast of what others are doing. But even these individuals will find it difficult to assess much of the information presented. The volume does not live up to the expectations expressed by Cassano in his opening address, for he hoped it would indicate that the study of the thyroid gland is in the forefront of modern endocrinology.

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Entomology

A Handbook for the Identification of Insects of Medical Importance [British Museum (Natural History), London, ed. 4, 1965. 340 pp., £3] by John Smart, with chapters by Karl Jordan and R. J. Whittick, is the fourth edition of a very useful work that was published in 1943 and considerably revised in 1948. When it first appeared there was a need for a volume that would aid in the identification of insects capable of transmitting disease in the war theaters. The military needs greatly stimulated the study of insects of medical importance—the result has been a continued interest in the organisms involved. It was quite evident that the book must be revised if it was to be republished, and because it was one of the best textbooks on the subject, a new edition was highly desirable. It is unfortunate that it was not possible to completely rewrite the work, incorporating the large quantity of new information gathered during the last 15 years, but that was evidently too costly a procedure. Instead we have a photolithographic reproduction of the second edition (1948) with changes made without altering the format or typeface, plus three pages of addenda and corrigenda provided by the author, and four pages (in two parts) on mosquitoes by Dr. Mattingly. That a considerable amount of time lapsed between the preparation of the addenda and the publication of this edition is shown by the statement that the third volume of Oldroyd's *Horseflies of the Ethiopian Region* was in press. As that work was published on 6 March 1957, and the present edition of Smart's *Handbook* appeared December 1965, it seems that more than 8 years passed while the volume was awaiting publication. Much has happened in the field of taxonomic medical entomology during that time, not the least of which

were the volumes on the Simuliidae, Hippoboscidae, and Phlebotominae in Lindner's *Die Fliegen der Palaearktischen Region.*

For those not familiar with the earlier editions of this work, I will summarize its contents briefly. It is primarily devoted to descriptions, keys, and excellent illustrations that are intended to aid in identifying the insects of medical importance in the Old World. There is also considerable information on the relation of arthropods to disease transmission. An introductory chapter on insect structure, ontogeny, biology, taxonomy, and zoogeography precedes five chapters devoted to Diptera, four chapters devoted to other insects and arthropods, and an appendix on collecting and preserving techniques. The volume is still very useful, although the rather sketchy character of the addenda is a bit disappointing.

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Mathematics

A First Course in Partial Differential Equations: With Complex Variables and Transform Methods [Blaisdell (Ginn), New York, 1965. 458 pp., $12.50], by H. F. Weinberger, is designed as a text for a 1-year course in partial differential equations at the undergraduate or first year graduate level. The differential equations are emphasized from the beginning; the tools for their solution are brought in as needed. General properties of the solutions, such as maximum principles, properly posed problems, characteristics, and domains of dependence, are clearly stated. There are also sections on general orthogonal expansions and on the Sturm-Liouville theory for ordinary second-order equations. Green's functions are introduced in connection with both ordinary and partial differential equations. The book is more than a collection of methods for solving equations, although the standard methods of solution are presented.

By way of preparation, the student should have had a course in advanced calculus and should be familiar with the elementary theory of limits, differentiation (including partial differentiation), and integration, with vector field theory including the divergence theorem, with the theorems on the uniform convergence of sequences and series, with improper integrals, and with the elementary properties and methods of solution of ordinary linear differential equations, mainly those with constant coefficients.

The author begins with a careful derivation of the equations of motion of a vibrating string. The linearization of the resulting equations yields the one-dimensional wave equation which is treated in some detail in the remainder of the chapter, using the customary solution in closed form.

In chapter 2, linear operators are defined and the principle of superposition is shown to hold for such operators. Linear differential equations of the second order are classified as elliptic, parabolic, or hyperbolic.

The maximum principle is established for certain elliptic equations, and uniqueness theorems are proved for elliptic and parabolic equations in chapter 3.

The method of separation of variables is introduced in chapter 4 and leads naturally to a discussion of general orthogonal expansions which are later specialized to trigonometric series. The Riemann-Lebesgue lemma for the general expansions is used to obtain simple proofs of the pointwise and uniform convergence theorems. Series solutions are obtained for many problems.

Chapter 5, which deals with nonhomogeneous problems, begins with a study of second order ordinary differential equations in which Green's functions are introduced to handle the nonhomogeneous term. The Green's function method is carried over to certain partial differential equations along with series solution methods.

Multiple Fourier and other series are used to treat certain problems in higher dimensions in chapter 6.

Chapter 7 begins by developing the Sturm-Liouville theory for second order ordinary differential equations. Special orthogonal sets of functions, such as Bessel functions, Legendre functions, and spherical harmonics are introduced and used to solve additional boundary value problems.

The standard elementary theory of functions of a complex variable is presented in chapter 8, and the general theory is applied to the evaluation of definite integrals in chapter 9.

Brief but fairly inclusive theories of the Fourier and Laplace transforms, including inversion theorems and theorems concerning convolutions, are presented in chapters 10 and 11. A few applications are given to boundary value problems.

The book concludes with a discussion of numerical methods including finite difference methods, iteration methods, and the Ritz method. The question of stability is discussed in connection with the finite difference methods.

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Traité de Zoologie

These two fascicules, part 2, Némathelminthes (Nématodes) and part 3, Némathelminthes (Nématodes, Gordiacés, Rotifères, Gastrotriches, Kinorhynques) (Masson, Paris, 1965. 1497 pp. Set, paper, F. 320; cloth, F. 344), the second and third parts of volume 4 of the **Traité de Zoologie**, edited by Pierre-P. Grassé, are paged consecutively, and of the 1497 pages, 1200 are devoted to the nematodes. The authors involved are L. de Coninck, A. G. Chabaud, M. Ritter, J. Théodoridès, and V. Nigon. The first 586 pages concern the anatomy, reproductive biology (157 pp., by Nigon), natural history, and parasitism of nematodes. The systematics of nematodes occupies pages 586 to 1200. The Nematoda are considered a class, and two subclasses are recognized: Adenophorea (= Aphasmidia), and Secernentea (= Phasmidia *auct.*). The treatment is thorough, reasonably up-to-date (with the exception of some recent electron microscope studies), and will be invaluable to all who work with nematodes, although many zoologists will feel that there is much more here than they need to know about nematodes. This elaborate and detailed treatment is in sharp contrast to the remaining groups of Nemathelminthes (= Aschelminthes) treated in the concluding part of the last fascicule. There is a short treatment of Gordiaceans by A. Dorier, a 150-page chapter on Rotifers, and somewhat perfunctory chapters on Gastrotrichs and Kinorhynchs by Paul de Beauchamp. It is unfortunate that this treatment of lesser groups is in such contrast to the exhaustive treatment of nematodes; certainly the Rotifers should be given more thorough consideration.

The pretty colored diagrams that