LIBRI NOVI

LEWIS, G. M., HOPPER, M. E., WILSON, J. W. & PLUNKETT, O.A.: An Introduction to Medical Mycology. Fourth edition, 453 pp. Extensively illustrated. 1958. Year Book Publishers, Inc. 200 E. Illinois St., Chicago 11. Price $ 15. —

The first edition of this text appeared 18 years ago. When a text reaches its fourth edition in this relatively short span of time, there must be a basic reason for its popularity. The text alone how clear and concise it may be, does not account for this fact. There are quite a number of texts available in medical mycology in English, many quite superior to this text, which never have reached this popularity. It seems to be worthwhile to undertake a thorough analysis and to find out where the great shortcomings of the text lie and what are the roots and reasons for its unusual popularity.

The text covers in 41 chapters the whole field of human mycoses, superficial and systemic. In this edition the clinical and laboratory phases are not separated as it was the case in the previous editions. The senior author invited two new collaborators, J. W. WILSON and O.A. PLUNKETT. The former rewrote the chapter on deep mycoses, the latter contributed the chapter on contaminants.

The cooperation of mycologists with broad botanical background and of dermatologists with thorough mycological training is absolutely necessary in creating such a text as we are going to analyse. It is a true cooperation and not an overlapping endeavor. The mycologist with botanical background may know everything about taxonomy, physiology, biochemistry (nutrition) of dermatophytes. Yet he can never evaluate the etiologic-pathogenetic significance of fungi recovered upon or in human or animal tissues. The decision whether a fungus is etiological significant and the pathogenic agent in a given case remains the full responsability of the mycologically trained clinician. Thus, the staff of a mycological laboratory never can interpret microscopical and/or cultural findings as to their etiologic and/or pathogenic significance. The situation is similar to that in a serological laboratory. The serologist's reading of the result of a test is always correct. He reports what he had found. But the evaluation of his findings rest with the clinician alone.

The analysis of this text may consider several features: the part dealing with superficial mycoses, the discussion of deep-seated, systemic mycoses, the purely mycological contribution of a noted botanical scientist and the all important illustrative material.

To write any text which should carry the critical summary of

existing knowledge at the given time to the uncomming youth, is a grave responsability. It presupposes the thorough knowledge of the field as far as humanly possible, the unbiased presentation of the material, the intellectual honesty and scientific integrity of the authors and the proper critical evaluation of the material to open up the flood gate for newer, better, more advanced research.

In the critical review of this text we may follow a reverse order to that mentioned above.

The chapter on Contaminants contributed by the noted mycologist, O. A. PLUNKETT is unqualifiedly excellent. The beautiful photographs of the giant cultures as well as those of the microcultures (slide cultures) and the clarifying schematic drawings are most instructive for the student of the material and contribute a great deal to broaden the knowledge of the wonder world of forms and structures of fungi. The accompanying text is clear, concise and sufficient.

WILSON'S contribution on deep-seated (systemic) mycoses is the usual standard presentation of the subject. In this field there are no problems which would strain the diagnostic acumen of the author. Etiology and pathogenesis of systemic mycoses were settled long ago.

The substantial part of the presentation what is quite natural deals with the practically more important superficial mycoses. Here the text has most serious deficiencies for which the responsability may rest mainly with LEWIS. He reveals a detrimental inborn bias toward and an absolute scotom for new facts. The collaboration of WILSON did not alleviate but probably did aggravate the etiologic-diagnostic confusions and omissions in this area. HOPPER and PLUNKETT are not responsible for the failures and errors in this field, they rest exclusively with the clinicians, LEWIS and WILSON.

LEWIS and WILSON consistently and obstinately avoided to consider the newer etiologic and pathogenetic concepts which brought great clarification in the hodge-podge of superficial mycoses, concerning, in particular, "tinea pedis", "onychomycosis", "candidiasis". Their presentation gives a completely distorted idea to the inexperienced students concerning the field of superficial mycoses to the great detriment of the patients whom their former students will treat with a defective knowledge of dermatomycology, thirty years behind their time.

In the early years of medical mycology CAZENAVE dismissed the etiologic significance of fungi in human pathology as the "phantasy of microscopists". Eight decades later, fungi became so popular that everything turned into a "fungus disease" where fungi settled in the detritus masses of disorders of an entirely different etiology. The correction of this spirit will take a very long time. We find proof enough for that in medical history. Hundred years ago the "cause" of puerperal fever was universally taught by authorities of the first rank to be a "celestial-terrestrial-miasmatic" unknown. Just hundred years ago IGNATZ SEMMELWEISS published

the result of his investigations demonstrating that the sole cause of puerperal fever was the *streptococcus*. Nonetheless, it took three more decades while mothers were dying all over the world until his life-saving discovery was "accepted". In biology, it is a sad fact, there is no forum like in the physical sciences, to call on the man to stand up to be counted.

In the etiologic and pathogenetic presentation of superficial mycoses LEWIS and WILSON failed as dermatologists. That holds true above all concerning "tinea pedis", manyfold source of all evil, among others the prime source of "id" eruptions. It is common knowledge that there are no superficial mycoses whose primary lesion is a deep-seated, sago-grain-like blister, embedded in the normal, not inflamed skin. They failed here also as mycologists. They assumed that any fungus found in and cultured from the detritus of a lesion has an etiologic and pathogenetic significance. They follow the line of those clinicians and mycologists who for decades cultured a host of the most different fungi from the scaly lesions of "pinta", until HERREJON came along and showed mycologists that pinta is a spirochaetosis.

Similarly they failed on both account concerning the diseases of the nails. They should have known that there are at present only three cases of true fungus infections of the nails, those published by STÜHMER years ago. From his findings we know that the nail plate and the nail matrix are never destroyed in true fungus infection of the nail. What LEWIS and WILSON call "onychomycosis" has nothing to do with fungi. The primary lesion in these instances is a deep-seated pustule, hematogen-endoparasitic in origine, which destroys the matrix up to complete cessation of the production of nail material. LEWIS and WILSON neatly assign a number of hyphomycetes and *Candida albicans* (!) to this process and they even know which type of fungus will cause which type of destruction! Among their therapeutic suggestions we find the "evulsion of the nail" as a "useful" method to clear up the nail conditions. They again omit their readers the better and greater experience of many others who observed that the nail after evulsion is growing back just as crookedly.

As "candidiasis" well established clinical and etiologic entities are presented which have nothing to do with *Candida albicans*.

Every chapter has its own fairly extensive bibliography. However, from foreign literature only the oldest ones are considered. Probably due to language difficulties the modern French, German and Italian literature is hardly considered. Its knowledge would have helped the authors to avoid serious mistakes and omissions.

One remark concerning prescription writing is in order. On page 239 there are three prescriptions which show the inconsistency of present day prescription writing. First of all, if the authors do not know Latin, they should not use it. The word petrolatum is neutral and the adjective to it is not "alba" but "album". Secondly, the

authors mix languages, the prescription is half (bad) Latin and half English. Since our students do not know Latin and do not learn how a classical prescription should be written, the best is to write the prescriptions in plain English.

Between a pleasing hard cover zenith and nadir seldom met with such sharpness and consistency. But suffice now dealing with the nadir. The zenith is HOPPER's work, the uncomparable illustrative material. The clinical cases are well selected, the photographs of the giant cultures as well as the most representative features in micro-cultures are superb. In black and white, nothing can improve on them. Mention should be made also of WILSON's drawings which are outstanding in the concept of presentation of the details and have a great didactic value.

The Year Book Publishers deserve the highest praise for the most careful production of this text, the physical appearance of which is pleasing in every respect. The typography is excellent, the black and white illustrations and the color plates (there are two of them) are outstanding.

Due to the excellence of the illustrative material and its unique presentation this text will hold its popularity despite the most serious drawbacks in the text.

TIBOR BENEDEK

Plant Physiology, a Treatise. Vol. II. F. C. STEWARD, ed. Academic Press, Inc., New York, 1959, 758 pp.

The present volume is the first to appear (although numbered Vol. II) of a series of six volumes planned as a "synthesis of current knowledge" of the physiology of plants, written by authorities on each of the topics covered. While going far beyond the textbook exposition of the subject, both in critical depth and in references to experimental evidence and original literature, the series nevertheless will constitute a less voluminous survey, at a more moderate price, than the 18 volume "Handbuch der Pflanzenphysiologie" being published under the editorship of W. RUHLAND. The present volume consists of articles on permeability and transport through membranes by R. COLLANDER, water relations of cells by T. A. BENNET-CLARK, behavior of stomata by O. V. S. HEATH, absorption of inorganic salts by F. C. STEWARD & J. F. SUTCLIFFE, translocation of inorganic solutes by O. BIDDULPH, and transpiration and water economy of plants by P. J. KRAMER. These articles are admirably comprehensive and are made especially useful by the liberality with which experimental data have been included and the excellence with which halftone illustrations have been reproduced, for example BIDDULPH's elegant radioautographs demonstrating redistribution of mineral elements within plants, on pp. 568—570. The 225-page article by STEWARD & SUTCLIFFE verges on the encyclopedic, covering and illustrating matters as

diverse as the internal anatomy of higher plants, isolated cells in plant tissue cultures, and relations of intracellular and extracellular fluids in the animal body.

Naturally this volume has relevance largely to higher plants, some of the topics (e.g. stomata) pertaining only to them, while with others our knowledge of phenomena in lower plants — particularly fungi, for the readers of this journal — is rather fragmentary. However there are, for example, extensive treatments of permeability and active transport in the yeast cell and in bacteria, and information such as this can be readily found with the help of the carefully prepared organism and subject indices to the whole volume. In some areas, such as water relations, treatment of the behavior of lower organisms such as fungi and lichens might have made an interesting contrast, as well as providing a broader picture of plants in general. The intent in the remaining volumes does seem to be to cover important aspects of lower plant physiology, such as chemosynthesis in Vol. IB.

While no critical reader will, of course, find everything dealt with to his satisfaction , and I for example would like to have seen the basic concepts used in treating osmosis derived explicitly, and the rates of water movement in plants considered from a more quantitative point of view, yet all the articles seem to be extraordinarily rich in information while still unusually interesting to read. Some quaint editorial practices, such as the appearance, within the articles, of comments by the editor as footnotes, and the inclusion of introductory editorial "preambles" to the articles, can be noted. It is likely that these volumes will come to serve as valuable guides to the areas covered, and as invaluable sources of illustrative material in teaching.

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VINCENT W. COCHRANE, *Physiology of Fungi*. John Wiley and Sons, Inc., New York, London. pp. xiii, 524, 79 text figures, 29 tables. 1958. $9.75.

The growing importance of biochemical processes based on the chemical activities of fungi is emphasized by the appearance of this third *Physiology of Fungi* in seven years, fourth book on fungus chemical activities in ten years. The book is well printed, with a minimum of typographical errors. Occasional digits in reference numbers may be transposed as the citation to HALL on page 358 which should read 124 instead of 214.

Each of the 14 chapters ends with a list of references, so that if each reference were cited only once 4,480 books, papers and reports would have formed the basis for this book. The chapter on nitrogen nutrition and metabolism lists 630 references, the introduction to carbon metabolism only 21.

Organisms considered in this treatment are the Fungi and Actinomycetes. The yeasts are generally omitted because "Professor FRANK DICKENS once spoke in a seminar to the effect that for the purposes of biochemistry the yeasts are to be considered animals." If the yeasts had been included, as well as the Myxomycetes and the Actinomycetes, in as great detail as those fungi which are considered, the book would have been much longer.

Subjects which are considered include cultivation and growth, composition of fungus cells, carbon nutrition and metabolism, respiration, nitrogen nutrition and metabolism, inorganic nutrition and metabolism, vitamin requirements, reproduction, spore germination, and the actions of physical and chemical agents. Some of the chapters or groups of chapters are ended with a concluding section summarizing the data presented and indicating points where additional work is required.

Throughout the book it is apparent that a critical need exists for more work to elucidate the concepts of mutants and heterocaryotic segregates. It seems to this reviewer that concepts based on the parasexual cycle in imperfect fungi need fuller explanation in the light of various kinds of biochemical work in recent years.

Chemical formulae, reaction sequences, metabolic pathways, and structures of compounds are given in considerable number and detail. Growth curves and tabular data are redrawn, compiled or summarized from original published data to conform with a style imposed by the author to obtain as much quantitative information as possible about the various types of processes considered.

Occasional statements may be questioned within a broader context than that in which they are made. The relationship between reproduction and spore germination and the dew point of the habitat of various strains of powdery mildews is ignored in discussions of water relations and of optimum temperatures for these phenomena. Laboratory experimentation tends to ignore the many facets of a natural environment so that the effect of vitamin or hormone-like substances produced by one fungus in a soil or other substrate on its neighbor may be overlooked or minimized..

On the whole, this book provides a ready reference volume for the student of biochemical physiology of fungi. While some physical aspects of fungal physiology are mentioned, this is usually in a chemical context. As the chemical aspects of this type of study become established, possibly more and more work can be carried out on physical aspects of nutrient transport, protoplasmic streaming, transpiration, cell wall structure, fruit body construction, spore discharge mechanisms, and many other similar problems which might complement and supplement the chemical processes toward the development of better knowledge of the fungi.

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A Guide to the Identification of the Genera of Bacteria, 1st Edition, V.B.D. SKERMAN, University of Queensland, Brisbane, Australia: The Williams and Wilkins Company, Baltimore 2, Maryland 1959. 217 pp., $5,50.

The subject matter of this book is as follows: A Comprehensive Key to the Genera of Bacteria, Digest of Genera, Methods, A Guide to Study and the Index. The key is essentially the same as that in BERGEY'S Manual of Deterative Bacteriology, 7th edition, except that the author has included certain genera which were omitted from the Manual or appeared in the literature after the manuscript had gone to press. Also the material has been annotated more freely than in the previous key. Where certain information is controversial, care has been taken to present both sides of the issue.

The use of the Manual is often times considered awesome because of the necessary complexity of such a volume. The "Guide" obviates this problem considerably since by consulting this brief informative resume one can, in an orderly fashion, eliminate much of the laborious preliminary work of taxonomic studies. Then too, the author gives many valuable tips on coping with inherent problems. The reasonable price of the "Guide" will place a copy in the hands of many students and others who would not purchase the more complete but expensive Manual for their own library.

Preceding the comprehensive key to the Genera of Bacteria, the author explains the use of the key in an admirably simple manner and includes definitions of such things as a unicellular organism, a cell, a filament, a chain, a sheath, a capsule, etc. Under the Digest of Genera, the annotated "General Notes" contain useful gems of information culled from the author's rich experience and from other sources as well.

By way of a criticism, in the Digest of Genera covering *Actinomyces*, the author in discussing "Differentiating Characters" uses the term "free-living". Then later in the same description comments that the true habitat is unknown but that from sites of infection and history of cases all species probably occur in the soil or are normal inhabitants of body cavities. Several workers, whose papers have appeared over the last twenty years or more, have shown this organism to be a normal inhabitant of the mucous membranes of the mouth of man, swine and cattle. (E. EMMONS, T. ROSENBURY, J. SLACK, A. HOWELL and E. MEYER, to name only a few.) It has not been isolated from natural substrates as vegetable matter or other debris in the soil and those of us who have worked with this fastidious organism doubt that it ever will be. Probably the author, who has graciously elicited criticism from readers, will consider these suggestions in later editions.

In "Methods" the author points out that, in the interest of a more uniform approach to investigative work he has selected methods from many sources most of which have been tested in his own laboratory. Although these methods are not to be regarded as standard,

everyone agrees a clearer picture can be obtained when there is uniformity in the materials and methods employed in various laboratories. One cannot over-estimate the value of this section for it will save considerable time and effort for many. Preceding the index, there is a "Guide to Study" which is a brief, helpful compilation of selected groupings of bacterial genera.

In the opinion of the reviewer "A Guide to the Identification of the Genera of Bacteria" makes a significant contribution to the field of bacterial taxonomy.

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