

a map of small scale, to decide what details must be retained because they are essential to a grasp of its broad general structure, and what may be safely eliminated without impairing the comprehensive view. In the map now before us this end has been compassed with consummate skill. It bristles with detail, but there is nowhere crowding; the colours are well contrasted, and so transparent that they do not hide the topography, which is full and clearly printed.

The richness in detail of the strip of country between Cape Wrath and Loch Torridon marks one scene of the recent work of the Geological Survey. Then follows a broad band of "gneissose and schistose rocks not yet differentiated." A portion of this ground is occupied by the crushed and mangled-out complex of the "Moine schists," but a large part is yet imperfectly explored. To the south-east of the Great Glen we enter again on ground which has been largely worked out by the Geological Survey. We have here a group of various sedimentary deposits in a more or less altered condition, containing sheets of basic igneous rocks. The geological age of this series is not known, and they are provisionally classed as Dalradian.

The presentation of the results of the work of the Geological Survey in the north-west and central Highlands are the two most conspicuous novelties in the map; but during its use other corrections and additions, too small to catch the eye on a general view, become noticeable. In the explanatory notes we have a concise summary of the geology of Scotland, and feel that our thanks are due to the author for having put so much into so small a space without in any way sacrificing descriptive clearness. When the time comes for a new version of the map, may the same hand be with us to draw it up.

A. H. GREEN.

#### MEDICAL MICROSCOPY.

*Medical Microscopy.* A Guide to the Use of the Microscope in Medical Practice. By Frank J. Wethered. M.D.(Lond.), &c. With Illustrations. Pp. 412. (London: H. K. Lewis, 1892.)

THIS volume, one of Lewis's practical series, bears an ambitious title, and must necessarily traverse a wide and intricate field of medical work. Its appearance is justified by the distinct need existing at the present time for a manual dealing with the various microscopical methods so essential to diagnostic accuracy and rational treatment.

The subject-matter is arranged in twenty-four chapters; and as an indication of the scope of the book, we instance some of the headings. The earlier ones treat of the microscope and its accessories, the methods of hardening, decalcifying, embedding, section cutting, staining, and injection of tissues. Then follow others on the examination of tissues, urinary deposits, blood, expectoration, and the detection of micro-organisms, and cutaneous parasites; while the latter chapters deal with the examination of food, water, and with bacteriological methods. In fact, the book is almost an epitome of the course pursued by a student earnestly working with the microscope from the commencement to the end of his

curriculum. The tendency has been, by the specialized character of the primary examinations in late years, to sever in some degree the knowledge obtained in the earlier part of a student's career from the practical application of the same at the bedside. So much is this the case, that it has been deemed advisable in some quarters to introduce new courses of lectures, their aim being to indicate with precision to students those facts in anatomy and physiology which have a distinct clinical value. One of the chief merits of Dr. Wethered's book is that he has therein demonstrated the important relationship between histology and morbid anatomy, and has shown that any attempt at acquiring a knowledge of the latter is dependent upon a practical and searching training in the former.

Moreover, the book is worthy of more detailed criticism. Necessarily in a first edition there are some points omitted. In speaking of the microscope the author offers a cursory remark on the fine adjustment; no mention is made of the best pattern, and there are many of an inferior and useless description foisted on students; nor are there any directions for the precise use of this portion of the microscope. In the chapter on "Hardening and Decalcifying Tissues," on p. 35, are found some well-meant platitudes on the necessity of immediately labelling specimens; but at the same time the use of lactic acid as a decalcifying agent is omitted. We have succeeded in completely softening small pieces of bone in 4-7 days, and teeth may be cut with the freezing microtome in from two to three weeks.

With certain statements of the author we venture to disagree. In speaking of the celloidin method he advises that the specimen be placed in equal parts of ether and alcohol previously to being placed in celloidin. A mixture of four parts of ether and one part of absolute alcohol ensures more rapid and complete penetration of the embedding material. Also in using paraffin for this purpose we have found by extensive practice that sections containing a large amount of fibrous tissue are useless after being in the paraffin bath for three to five hours, even at a temperature of 48°C.; twenty to thirty minutes is ample, provided that the material is properly dehydrated. The chapter on staining is succinct and comprehensive, and we note the usual and indeed only rational classification of stains, as nuclear, general, and selective. Hæmatoxylin still holds the first place, and Delafield's, or as it is miscalled, Grenacher's, is undoubtedly the best formula. It is here stated that if the sections be overstained, and washing in acid-alcohol be necessary, the colour is not permanent. Our experience is that if after the acid they be washed thoroughly well with "tap water," a very clear nuclear stain results which remains unchanged for years. Gram's method of staining for micro-organisms, with Weigert's modification, is clearly detailed. But here we fail to observe any mention of the brilliant results obtained by the Ehrlich-Biondi method. The employment of rubin for actinomycosis may with confidence be recommended, and the same remark applies to the use of safranin in bringing out clearly the nuclear figures in karyokinesis. The chapter on mounting is somewhat tedious and the use of origanum oil in clearing celloidin-specimens is not advocated, although it has found general acceptance in Continental laboratories.

Weigert's method of preparing and staining nerve-tissue is given, but with one important detail left out, viz., that on removing the specimen from Müller's fluid or chromic acid solution it should have a brown, and not a green colour. The preparation of individual tissues and organs is well dealt with in chapter xii., but in the succeeding one on the examination of tumours there are such evident signs of hasty composition as to render it of small intrinsic value. On the other hand, the important subjects of urinary and excrementitious matters receive ample treatment; and we have a clear *résumé* up to this date of all that is taught on these subjects. As an example we note with pleasure the account of Dr. Delepine's work on "sable intestinal." The bacillus of Asiatic cholera and the methods of its detection are described on p. 228; and the diagnostic points between it and that of cholera nostras are found on the next page. A large amount of space is necessarily devoted to the examination of sputa. Dr. Wethered's experience at the City of London Hospital for Diseases of the Chest enables him to speak with the voice of authority on the signification of the presence or absence of the tubercle bacillus. Physiologists will find their side of the question well considered in the observations on blood; on Dr. A. Garrod's authority we are told that the blood of the Londoner has not yet been found to contain its true proportion of hæmoglobin. Eosinophile cells are not omitted; but for more detailed information on this point we commend to the notice of pathologists the article by Dr. A. Kanthack in the *British Medical Journal* of June, 1892.

Medical microscopy as a subject is exceedingly elastic, and we believe Dr. Wethered has stretched it to its widest limits when he finds space for describing the examination of various kinds of cereals, also of water. Even the homely tea-leaf has not escaped his notice. A few instances of clerical errors are to be found, thus Hartnach for Hartnack, on p. 122, Richert for Reichert. At the term "collodionization" we venture to express our distaste. A growing practice exists of introducing ungainly expressions of doubtful expediency into scientific works.

We have read this book with considerable attention, and are convinced that it has a most distinct *raison d'être*, and justifies on the whole, by the merit of its execution, the ambition of its title. It treats of the matter in hand with much ability, and in a manner that evidences considerable experience on the part of the author as a pathologist, physician, and teacher.

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#### ODOROGRAPHIA.

*Odorographia: a Natural History of Raw Materials and Drugs used in the Perfume Industry.* By J. Ch. Sawyer, F.L.S. (London: Gurney and Jackson, 1892.)

CONSIDERING the importance of the subject of perfumes both from a scientific and a commercial point of view, it is somewhat surprising that a really good and authoritative book dealing on the matters encompassed by "Odorographia" has not before been attempted. The delay in the appearance of such a work

is probably due to the fact that but few persons possess the requisite knowledge to treat the subject in a thoroughly satisfactory manner in all its bearings, such as the origin and production of the numerous products, whether animal or vegetable, and the chemical aspect of every substance and its commercial value, which are points that could scarcely be expected to be mastered by one mind. In the "Pharmacographia" of Flückiger and Hanbury, two master minds on the subject of drugs were brought into co-operation, with the result that a most satisfactory and standard work on medicinal plants was produced. That this book was in the mind of the author when he compiled his "Odorographia," and selected its title, is quite apparent, and we are bound to say that on the whole he has done his work remarkably well, though we wish that he had adhered more strictly to the lines of his pattern. Mr. Sawyer, however, at the very commencement of his preface, is so modest as to say that "an endeavour has here been made to collect together into one manual the information which has hitherto been only obtainable by reference to an immense number of works and journals, English and foreign, in many cases inaccessible to readers interested in the subject," and that he is thoroughly well acquainted with all that has been written is apparent not only from a glance through the pages, where numerous references occur, but also from the "List of Principal Works referred to." Besides this the author has, as he tells us, obtained information first hand from some of the largest perfume-plant growers and manufacturers of Grasse, Nice, and localities in the Straits Settlements and West Indies. The difficulties attending the compilation of a work of this nature have, no doubt, been very great, because scraps of information are so widely dispersed, and even when found oftentimes very confusing. The botany alone of the subject must have occupied a considerable amount of time in looking up, the plants yielding perfumes being natives of various parts of the globe, and consequently described in the several floras appertaining to those special countries, besides which the chemical and commercial aspects occupy a large portion of the book.

Though we are grateful to Mr. Sawyer for giving us a book that was really wanted, we regret, as we said before, that he has not followed more closely the plan of the "Pharmacographia" and arranged his matter under distinct heads, such as History, Botany, Cultivation, Chemistry, Commerce, &c. Practically he has done so to a certain extent, but the paragraphs are not sufficiently distinguished to enable one to turn at once to that upon which information may be specially sought. The arrangement of chapters, in which the most important and marked odours, such as those of musk, rose, violet, the citrine odours, &c., are brought together, is good, but the principal plants in each of these groups might have been treated as we have described, the least important ones being given as they are at the end of the chapters.

Returning to the botany of the book, we cannot but think that the author might well have spared much space by the omission of numerous varietal names and synonyms, many of which are scarcely ever heard of now, and which often only tend to confusion. Under Violet, for instance (p. 104), half a page is given to a list