The Nervous and Chemical Regulators of Metabolism (Lectures). By D. Noël Paton, M.D., B.Sc. London: Macmillan & Co., Limited. 1913.

It is the purpose of these lectures to consider the various factors which bring about the co-ordination and regulation of the metabolism of the different tissues and organs, and which thus determine the orderly growth of the body in early life, and the harmonious adjustment of the various activities after full development is reached. The influence of the nervous system, more especially as regards its effect on growth and metabolism, is dealt with, Professor Paton giving prominence to the part played by the terminal ganglia, being convinced that few people realise the extent to which emigration of neuroblasts to form the autonomic system goes on. The physiology of the structures yielding internal secretions, their mode of working and inter-relationship, as also their possible reciprocal action with the nervous system, are fully described and discussed. What are called internal secretions Professor Paton would have preferred to designate chemical regulators. Ductless gland he considers a misleading title, and he suggests instead endocrinous gland, i.e., an organ producing an internal secretion having some definite and specific action, not necessarily of the nature of excitation. The name of hormone, Professor Paton declares, cannot be employed to indicate all the internal secretions, as is the usage of some writers at present.

In considering the physiology of these various structures it has been customary to deal with them according to their
anatomical distribution in organs. But this seems to Professor Paton to have led to difficulties and complications, so he classifies them with reference to their developmental source—from the nervous system, buccal cavity, intestine, branchial arches, and mesothelium of the genital ridge.

It is shown how, in early embryonic life, the force of hereditary inertia is the dominating factor in controlling metabolism; that, later, the chemical regulations of the gonads, interrenals, and thymus (primary chemical regulators) come into play as modifying agents; and that still later the influence of the nervous system becomes more and more prominent, till finally it is itself further directed and controlled by the production of internal secretions from the chromaffin tissue (suprarenales and carotid glands) and the other neuro-chemical regulators (hypophysis cerebri, thyroid, parathyroids, pancreas, thymus, and gonads).

The inter-relationships of the endocrinous glands are fully gone into, and Professor Paton leans to the view that the interaction is primarily a chemical one so far as the production of the secretion is concerned, and not an indirect one through the nervous system. Compensatory hypertrophy and complementary action are also considered, but it is recognised that the knowledge we possess is all too inadequate to allow us to formulate with any precision the reciprocities of the various endocrinous structures with one another. Nevertheless, Professor Paton has reduced the probable inter-relations to the form of a series of charts or diagrams, which he is careful to state may well be a grotesque parody of what will ultimately be found to be the truth.

It is pointed out that the chemistry of only two of these internal secretions is known to us—iodothyreoglobulin and adrenalin. The evidence at our command would appear to indicate that these two bodies belong to that group of substances of which a certain minimum amount of each seems to be absolutely essential for the maintenance of the activities of the various tissues, and, further, that some proportion between the amounts of each must be kept up if the metabolism is to continue in its normal course. The mode of action of the other internal secretions is probably of the same kind. "Thus sugar cannot be properly stored in the absence of the internal secretions of the pancreas, while in the absence of the secretions of the chromaffin tissue, of the hypophysis, and of the thyroid, it is imperfectly mobilised. For the proper growth of bone, and for the development of the special sexual characters, small amounts of gonadin are
necessary. Without the parathyroids the stability of the spinal synapses is no longer maintained, while, on the other hand, for the normal responsiveness of these synapses the secretion of the thyroid is necessary. The fact that more than one of these organs may act in a similar manner allows of compensation being established after removal of one—as is seen in the case of the thymus and gonads.”

Such a conception, concludes Professor Paton, is more in accordance with facts than that of a series of hormones or excitors directly calling forth the activity of the various tissues.

It is interesting to note that this author advances arguments for considering the term mors thymica a misnomer, and believes that the condition of the thymus has probably nothing to do with the fatal issue in cases so diagnosed. That the disease in children known as tetany is due to injury or decreased functional activity of the parathyroids, he declares, is not definitely proved.

This is a lucid and succinct account of a difficult subject by one who has investigated for himself many of its aspects, and who has added considerably to our knowledge. And to those of us who take a pride in the Glasgow School it is especially gratifying and inspiring to find how frequently in his text Professor Paton alludes to original observations, confirming or upsetting dogma, by the band of workers he has attracted and directs. Thus, scattered through the book will be seen numerous references to researches, published and unpublished, conducted in his laboratory by W. Abel, J. D. Cameron, Cathcart, Drummond, L. Findlay, Fleming, Henderson, L M’Ilroy, Pollock, Taylor, and Watson. Long may Glasgow flourish by bringing ex tenebris lux—the motto that Professor Paton prefixes to this volume.

---

Manual of Human Embryology. Edited by FRANZ KEIBEL and FRANKLIN P. MALL. In Two Volumes. Volume II, with 658 Illustrations. London: J. B. Lippincott Company. 1912.

The appearance of the second, and concluding, volume of this Manual has been delayed owing to the arrangements regarding the writing of certain of the sections having had to be altered.

The volume contains chapters on the development of the
nervous system, sense-organs, digestive tract and organs of respiration, the blood and vascular system, and the urogenital organs. The development of the nervous system, by Dr. G. L. Streeter, is considered under four headings. Beginning with the histogenesis of nervous tissue, a detailed account is given of the origin, so far as known, of the neural elements, neuroglia, neuroblasts, spinal ganglia, and myelinization of nerve fibres, and wherever sufficiently early material has not been available this fact is clearly stated and information given as to the source of the embryos which have been observed. The development of the central, peripheral, and sympathetic nervous systems is then taken up, and here also there is evidence of the same careful handling of the subject. The work of the most recent observers is very fully referred to, and the text is furnished with many illustrations.

A special chapter is devoted to the development of the chromaffin organs and the suprarenal bodies, and is the work of Zuckerkandl, of Vienna. Here the various views as to the origin of chromaffin organs are critically considered, and the relationship of chromaffin bodies to the sympathetic system and to the suprarenals is given in great detail.

In the chapter on the development of the sense-organs Professor Keibel, after some general considerations, gives an excellent résumé of work done on touch-cells, lamellate corpuscles and touch-corpuscles, and a very full account of the development of taste-buds. In the section on the olfactory organ he discusses the question as to the relative position of the olfactory and optic nerves. This is followed by a description of the development of the nose and nasal fossae, in connection with which Jacobson's organ receives a good deal of attention. Keibel looks upon it as "a portion of the olfactory organ which possesses special functions in many animals, but has become rudimentary in man." In the development of the eye the writer firstly draws attention to the essential difference between the eye of invertebrates and vertebrates, and then gives an extremely detailed account of the development of the human eye, followed by that of the ear.

The next chapter, on the digestive tract and organs of respiration, is written by Grosser, Lewis, and M'Murrich. It is marked by the same features as the rest of the work—careful description of what has been observed in man, and attention drawn to the facts of comparative anatomy as helping to fill the gaps.
The blood, the vascular system, and the spleen are considered in a chapter which is the joint work of Minot, Evans, Tandler, and Sabin; and Felix contributes a long chapter on the development of the uro-genital organs. Keibel concludes the work by a chapter on the interdependence of various developmental processes, in which he supports the view of His and Hertwig that the development of each part is dependent on the development of the whole. This chapter is furnished with some of the tables from the Normentafel of Keibel and Elze.

It would be difficult to overestimate the value of this Manual to English students. Its chapters have been written by specialists in the various departments of embryology, and the plan whereby personal observations are combined with references to those of other investigators undoubtedly adds to the worth of the work. Although intended as an account of what is known regarding human embryology, there are many references to the development of vertebrates generally; but in no case are these allowed to confuse the reader.

English anatomists are greatly indebted to the publishers of the Manual for placing in their hands these handsome volumes, which will, we venture to think, occupy the position of a classic among works on human embryology.

A System of Surgery. Edited by C. C. Choyce, M.D., F.R.C.S.; Pathological Editor, J. Martin Beattie, M.D. In Three Volumes. Vol. II, with 18 Coloured Plates, 8 Black and White Plates, and 375 Illustrations in the Text. London: Cassell & Co. 1912.

This volume of the System is concerned with the surgery of various organs and regions of the body. Beginning with the breast, we have a very good article by Handley. In it the various lesions of the mamma are taken up. Naturally a very large amount of space is devoted to cancer of the organ, and here the author sets forth the results of his investigations on mammary cancer which are already so well known. Benign tumours and other conditions are, however, by no means neglected, and this section of the volume leaves little to be desired. It is followed by an article on the spleen, in which C. Gordon Watson presents us with a readable account of the various surgical conditions affecting this organ. Malformation of the face, lips, and palate, by C. A. R. Nitch,
are treated of in a manner befitting their importance to surgeons, and diseases of the tongue, by W. H. Clayton-Greene, are also carefully described. Ivor Back contributes a good article on affections of the salivary glands and floor of the mouth; in it we would specially mention "mumps" and salivary calculi.

The oesophagus, by H. A. Rigby, and the stomach and duodenum, by J. Sherren, are both ably dealt with, and in the succeeding section A. Miles gives in considerable detail an account of lesions of the intestines. The appendix, that much discussed subject, has fallen to P. Sargent, and his account of inflammation of this organ gives a very fair statement of what is known regarding it. The same author writes the section on the peritoneum, which again is followed by such subjects as hernia (M'C Gavin), the rectum (Clogg), and the liver and gall-bladder (Turner).

The affections of the genito-urinary system (Walker, Howard, and Bonney) are described in the concluding sections of the volume.

It is not possible here to take up in detail all or any of the sections. We have, however, perused most of them at greater or less length, and we find that throughout the volume a high standard of excellence is maintained. This applies not only to the text, in which there is evidence that the various authors are, in their different subjects, well abreast of present-day knowledge and opinion; but the illustrations also, with which the volume abounds, are of great interest, and are, as a rule, good representations and well reproduced.

The volume appeals to a wide circle, and will be fully appreciated by all who may consult its pages. It is handsomely got up, and reflects credit on its editor and its publishers.

The Difficulties and Emergencies of Obstetric Practice. By COMYNS BERKELEY, M.A., M.D., B.C.Cantab., F.R.C.P.Lond., M.R.C.S.Eng., and VICTOR BONNEY, M.S., M.D., B.Sc.Lond., F.R.C.S.Eng., M.R.C.P.Lond. London: J. & A. Churchill, 1913.

This is a beautifully printed and well illustrated text-book which has been issued as a practical guide to practitioners who may encounter any of the numerous difficulties to be met with in obstetric practice.

The physiology and the management of normal pregnancy,
labour, and puerperium have been purposely omitted, yet the volume is sufficiently bulky. Little of any importance seems to have been omitted; indeed, the authors by writing in a crisp style, and avoiding any semblance of padding, present their readers with much valuable information.

The opening chapter deals with the difficulties in the diagnosis of pregnancy, then follow thirteen chapters devoted to disorders of the various bodily systems and organs, including those of the pelvis, which may complicate pregnancy. The article on insanity is from the able pen of Dr. Hubert Bond. These chapters form one of the best parts of the book, the prognosis and treatment being in accord with present opinion and experience, and therefore to be specially recommended to the practitioner.

The rest of the book is concerned with the various difficulties, emergencies, and complications of labour and the puerperium, with obstetric operations, and with the diseases and injuries of the newborn child.

The authors state that the views expressed and the methods advised are chiefly founded on their own personal experience; but these views are not infrequently at variance with those generally accepted, even allowing for the fact that experts invariably differ.

The statement that the urine in cystitis is alkaline, as a rule, is contrary to fact, and will mislead the practitioner. It is well known that the commonest form of cystitis in women is due to B.C.C., in which case the urine is acid.

The hæmorrhages receive adequate description, and we note that the authors favour the bag method as against version in the management of all varieties of placenta praevia. Statistics show that in the hands of experts there is little to choose between these methods as regards results; but it has to be remembered that the practitioner does not always carry a de Ribes' bag, whereas he requires no apparatus beyond his hands to perform version.

The Rotunda treatment by tamponade is advised for accidental hæmorrhage, but as regards the concealed variety the authors are contradictory. They rightly state that the uterus is so inert that it is doubtful if plugging can have any effect, yet they recommend its use in a following paragraph.

The authors are in direct conflict with expert opinion when they say that compression of the aorta in post-partum hæmorrhage is a "singularly unscientific proceeding." Momberg's method is not mentioned. There is also no advice as to the treatment of cases so anæmic that the uterus cannot
respond to local stimulation by douching or to ergot, the first duty being the arrest of hæmorrhage, the second the rallying of the patient.

The terms “sluggish” and “exhausted” are used for “primary and secondary inertia or atony,” and they might well replace the older nomenclature as they so adequately express the true condition of the uterus; at the same time, the reader accustomed to the more familiar terms will look in vain in the index for either “atony” or “inertia,” and may think them omitted. The same applies to “tonic contraction,” which is not mentioned in the index, as it is considered as a subdivision of “hyperactivity of the uterus.”

In malrotated face cases it is stated that delivery may be attempted by forceps, dangerous advice when the birth of a full time living child is not possible. Schatz’s method of conversion in face cases is recommended. Have the authors ever succeeded with this method which is only applicable to mento-anterior positions? The better Thorn’s method is not mentioned, and it also often fails. The Prague method of delivering the after-coming head is described and illustrated, a method so dangerous to the child that we were under the impression it was no longer taught or advised.

In the chapter devoted to flat pelvis the mechanism of delivery described is not that usually seen except in generally contracted flat pelvis, and no mention is made of the hanging-leg position during delivery. No distinction is made between anterior and posterior parietal presentation, a point of great importance to the practitioner, as in the latter presentation version is preferable to forceps, which interfere with the normal mechanism and invariably slip off. Enough has been stated to show wherein differences of opinion may exist; but after all, these only affect a small proportion of a textbook which is likely to prove useful to practitioners.

Mistakes are few in number, but we specially note epidermic (page 78) for epidemic, Langhan’s for Langhans’, a common error, and metastasises (page 189).

Figs. 57 and 58 should not show the cord, as post-partum hæmorrhage occurs after delivery of the placenta. Fig. 129 shows the right blade of the forceps being applied first. This is a serious error.