ON MEDICAL OPHTHALMOLOGY.

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The student of medicine at a date early in his clinical training is introduced to the necessity for the cultivation of thoroughness in his examination of the patient, the motive of this exhortation being twofold, namely, (1) that he may gain a complete knowledge of the individual patient as the only sure ground of correct diagnosis, and (2) that he may so develop his own powers of observation as to acquire the ability to distinguish between the evidences of disease on the one hand and conditions consistent with health on the other; in other words, to know both positively and negatively the clinical facts and to judge whether these do or do not mean the presence of pathological change. To encourage this completeness of method it is common to find in clinical guides that the body is divided into "systems", in each of which, often in great detail, observation is to be pursued. Experience probably teaches that a plan eminently suitable and even necessary for a beginner becomes, at least in part, burdensome and unnecessary for the trained observer, and the early drill is modified to meet the practical calls of daily work. Still it remains true that without some fixed and more or less routine plan or method of clinical examination there is a risk of mistakes due to oversight, and these are probably the order of mistakes, most frequently made in medical examinations. As the position has been defined, it is by not-looking rather than by not-knowing that medical practitioners most commonly fall into error.

Obviously, in the practice of thoroughness in examination the interest of the patient is immediately engaged, for only as his condition—positive and negative—is known can he be wisely guided and advised. Not less is the interest of the physician concerned, as such a practice or habit is essential in order that his powers of observation can be maintained and developed, and that he can reach a position to be able to say definitely, here is evidence of disease, or to decide, on the contrary, the large negative conclusion that no such evidence exists. The distinction between these two positions is not in practice as clearly and confidently defined as it reads on paper, for, as every practitioner knows, the separation between the two is not drawn by a straight line. That is, the normal or physiological is not an absolutely constant and consistent clear-cut picture; it has a range of possible variation, the limits of which can be judged only by experience. In other words, it is by repeated and continual observation of the normal or commonplace that is achieved the ability to recognize slight departures from this level, and to judge whether such departures must be marked as individual peculiarities on the one hand or confident signs of disease on the other. The issue, that is, for medical judgment is by no means always between white and black; rather it lies not very infrequently in an area where the tint is grey, and where a secure interpretation is open only to experience and may sometimes tax even those best equipped with this quality. In short, what is urged and impressed on the student when he is introduced to the "systems" applies equally, at least in principle, to the practitioner—namely, (1) the need in the interest of the patient to know positively and negatively all parts of the body as this can be obtained,

and obtained only, by systematic examination, and (2) to practise such examination as a routine measure in order that the observer's individual ability to distinguish between the limits of health and the evidences of disease may be maintained and developed. More briefly, the practice of thorough and systematic examination is needed not only for the protection of the patient but also for the education of the physician.

Among the "systems" of clinical medicine to which the student is introduced the cardio-vascular, the respiratory, the digestive and the nervous system has each its appropriate place. But not infrequently, only an imperfect measure of recognition is given to the "visual system", and the suggestion here to be made is that clinical practice might well be amended in this respect. The corresponding anatomical apparatus and its physiological operations are just as available for clinical observation as are those of the other "systems", and such observation frequently yields facts of high diagnostic significance and importance. One of the consequences of this relative clinical neglect of the visual system is an acceptance of the view that all visual and ocular disturbances fall into a "special" department where none but the highly expert may dare to venture, while a more immediate result is that in individual instances, no appropriate examination being made, facts which had they been known would have afforded valuable diagnostic or prognostic help receive no clinical consideration, and erroneous or imperfect diagnostic conclusions are the consequence. It is, of course, true, that there are pathological changes in the visual apparatus which are of purely local importance, and it is true also that there are conditions which can be detected or interpreted only by clinicians of large experience. But exactly the same comment applies to every other "system". In all parts of the body, that is, there occur more or less infrequently peculiarities either in structure or in function which fall outside the limits of average experience and the identification or interpretation of which may need the knowledge or skill of a practitioner who has restricted the range of his professional vision while cultivating special opportunities for observation in a particular clinical field. No one, however, would use this admitted possibility as an argument against fullness of observation by practitioners who cultivate a more general outlook. When the general fails there is occasion for the particular, and in face of such an event highly expert knowledge and skill may be gladly welcomed. This, however, is not to admit that the possessors of rare and special experience are the only competent observers and judges in any given field; they have their value admittedly, but it is not a monopoly value. On the contrary, as the practice of medicine as a practical expression of action is the care of the individual patient, and as the acceptance of this responsibility must at least in the first place be undertaken by an individual adviser, it is in the interests of the patient and of efficient medicine that advice from the outset should be based upon a range of knowledge as comprehensive as possible, even though, as may sometimes happen, the immediate conclusion needs must be that a more expert or more experienced judgment ought to be prayed in aid. Indeed, one of the pleas for a complete method at the outset is that it means an early recognition of the existence of conditions which require a more experienced review, while to the original (primary) observer it carries the assurance that by such experiences his capacity for interpretation will become wider and the need for reference to any court of appeal correspondingly infrequent.

And this proposition, true in general, certainly finds many illustrations when the visual system is brought systematically within the practice of routine clinical examination.

The meaning of the term medical ophthalmology requires, perhaps, a little consideration, more especially as there is a rival in the field in the shape of the phrase "ophthalmic medicine"—a phrase, moreover, which enjoys an authoritative recognition in the form of a diploma that guarantees to its holder skill and competence in "ophthalmic medicine and surgery". In the interpretation of the latter term there is obviously no difficulty; it means the application of the art and craft of surgery to a particular part of the body, and may well be cultivated and practised quite apart from the application of the art to other parts of the body; it covers, in short, the skill and values of the ophthalmic surgeon in his selected field or region, the assumption being that by methods other than surgical the patient is known to be suitable for the local treatment proposed. So much for "ophthalmic surgery", but what is "ophthalmic medicine"? In actual practice, medicine is the care of the individual patient, and for efficiency and success in this responsibility there must be fullness of knowledge based on completeness of examination. Can the practitioner of "ophthalmic medicine" escape this demand? If not, in what respect does he differ from the practitioner of "medicine"? If there is no difference, why should he be marked with a particular diploma? It is true that in the examination of the visual apparatus there may be discovered facts which are mainly or largely of importance because they announce the existence of some disease in remote organs or of disease affecting the body generally. But surely visual complications or facts do not, when occurring in association with other clinical disturbances, alter the essential diagnostic or therapeutic position. There is not, for example, one group of renal diseases which require the application of "ophthalmic medicine" because hæmorrhages or exudates are found in the retina and another group of renal diseases which, being unattended by these visual events, fall into the department of "medicine". In one and the other the needs of the patient and the responsibility of the practitioner are identical, just as they are identical whether renal disease produces œdema of the eyelids or œdema of the ankles.

It is, of course, true, that in the eyeball or other part of the visual tract there may exist local changes which have a purely local significance, and some of these may be effectively treated by mechanical or surgical measures; these afford the opportunity for the application of the art and craft of ophthalmic surgery. But once pass outside this topical limitation and face conditions in the visual apparatus which are not of mere local significance, then such conditions are part of the general body of clinical medicine and their existence calls for the comprehensive examination and therapeutic methods which "medicine" demands and practises. And the ultimate sanction of this claim is that medicine, like the great republic, is one and indivisible, because it is essentially concerned less—much less indeed—with the tissue distribution of pathological change than with the care and needs of individual patients. Medicine in its area and responsibility cannot be divided, for the very sufficient reason that the patient cannot be divided.

Perhaps it may be said that certain modern developments seem to challenge this declared unity of medicine and to establish particular departments of practice under such titles as neurology, cardiology, gastro-enterology, endocrinology and the rest. These and their allied terms it is true imply limitation and so far fall

short of the comprehensiveness of medicine as directed to the complete claim of the individual patient; they announce deliberately a cultivation of particular experiences in the departments they severally indicate, and in practice provide judges of appeal in doubtful and difficult issues. On their own confession, it may be said, such terms, and the clinical fields they severally represent, do not pretend to cover or include the patient although admittedly he is the central point of every clinical enquiry. But for the present—happily as is here suggested—we have no diplomas in neurological or cardiological or other limited “medicine”, and the practitioners whose names are associated with the departments mentioned above would be the first to affirm that no limited survey is an adequate basis for practice, and that the processes of pathology do not accommodate themselves to an artificial and imposed scheme of professional titular distinctions. Further, admitting the existence, or even the convenience or necessity, of the cultivation of particular sections of clinical study in the interests alike of scientific medicine and of the public, these various groups or divisions do not provide a precedent for “ophthalmic medicine”, for while each of them confines its outlook to the pathological disorders and developments in a defined and related series of organs, pathological changes in the visual apparatus boast no such limitation. On the contrary, it is notorious that these changes though localised in situation are related not to a particular “system” but to diseased conditions of almost all orders and degrees—to cardio-vascular, nervous, renal, blood diseases and the rest. That is, what is called “ophthalmic medicine” is either medicine pure and simple or it is an artificial, unreal and misleading grouping. There is no more need to distinguish non-surgical conditions of the visual apparatus by a particular title and diploma than there is to suggest that non-surgical affections of the tongue may be dignified as “lingual medicine”, or non-surgical affections of the limbs as “orthopædic medicine”. The existing diploma appears to confer the title of “Ophthalmic physician”, but personally, we are inclined to adopt the “tremendous and memorable words” of Betsy Prig relative to the fabulous Mrs. Harris, when, at a critical moment, she exclaimed, “I don’t believe there’s no sich a person”.

On the other hand, the study of physiology provides *inter alia* a knowledge of the working of the visual apparatus, and some of the facts included in this knowledge form a basis for the interpretation of clinical disturbances in the visual system; that is, within the general body of scientific ophthalmology there are facts which are of service to the art and practice of medicine. These facts may be usefully acquired by the medical practitioner and, leaving other sections of ophthalmology aside, may be appropriately grouped as that part of ophthalmology which is related to medicine or, in a word, medical ophthalmology. A section or division of a body of scientific knowledge may be separated from its context to lend aid to some particular craft or art, but medicine for reasons already shown, cannot be thus divided. And again, the clinical examination of certain anatomical parts or organs may at times demand specialized or highly expert experience or skill, but whether this is so or not there remains ever the need for the examination of the patient. Within such examination, in order that it may be complete, a knowledge of the facts of the visual apparatus must be included, that is medical ophthalmology takes its place as a part of the diagnostic scheme which it is the duty and purpose of “medicine” to complete and apply in order to protect and promote the interests of the individual patient.

The argument here set forth would, at least as doctrine, be justified even were the contribution to diagnosis by clinical facts observed in the visual apparatus

only scanty and occasional. But such a limitation is not in accordance with experience. On the contrary, occasions are by no means infrequent in which on the positive side such a contribution is of high and decisive importance, and many are the instances in which, equally, negative findings are decidedly significant. Further, the more frequently this part of the clinical field is investigated as a routine procedure the more frequently is this observation found to be of value. How, for example, are the position and outlook modified by the discovery of exudation at the optic discs in the presence of such symptoms as headache, neuralgia, vomiting or giddiness, and not a few instances could be quoted of convulsive seizures, regarded even for months as manifestations of idiopathic epilepsy, having to undergo a much more serious interpretation when the ophthalmoscope has recognized conditions of the optic discs which in the circumstances can hardly mean other than intracranial tumour. Or again, a condition which has been content with the label "anæmia" takes on a much more definite aspect when hæmorrhages are detected in the retina, for such an observation is almost, if not quite, incompatible with any anæmia that may be named "simple" or "secondary"; among "anæmias" it is the essential blood diseases, particularly pernicious anæmia, which are marked by the presence of hæmorrhages in the retina. And as a third example, a debate on a case of fever of obscure causation with such decisions as tuberculosis, enteric fever, paratyphoid and septicæmia in issue, is practically concluded in favour of the last mentioned when retinal hæmorrhages are part of the clinical picture; while a similar observation, when with temperature disturbance there are evidences of arthritis, banishes rheumatic fever as a diagnosis and emphasizes the probability of septic infection. Perhaps pernicious anæmia should be mentioned here also, for unexplained fever is occasionally one of its manifestations, and yet again in the same disease when the blood examination is indecisive ophthalmoscopic facts may be highly significant. Other illustrations of the same order could be multiplied indefinitely, but those just quoted are ample to emphasize the claim that any diagnostic enterprise neglects an opportunity if it does not include a knowledge of the existing conditions of the visual system, and while positive results have a special and perhaps decisive weight negative findings are by no means without value.

The claim here advanced is further strengthened when it is recognized that pathological conditions, even of relatively gross degree, may be present in one or both eyeballs and yet the patient be quite free from any sense of disturbance in his visual efficiency. Thus exudation at one or both optic discs is quite consistent both with a full standard of vision to the ordinary tests and with the patient's assertion that he suffers neither discomfort nor defect; and the same is true of retinitis and of hæmorrhages or of exudates into the retina. Obviously such events, though of high clinical importance, may readily fail of recognition, with corresponding prejudice to the diagnosis, if the scheme of routine examination does not include as an essential feature systematic observation of the visual apparatus; and equally, non-inclusion of such observations cannot be justified on the plea that the patient's vision was of full standard and that his symptoms carried no suggestion of disturbance in this direction.

It is common to hear or read, especially in relation to ophthalmoscopic examination, that this should be practised in "suitable" or "suspicious" cases, meaning, presumably, in cases either where the symptoms indicate visual defects or where there are facts in the clinical survey which are apt, more or less notoriously, to be associated with pathological conditions in the visual apparatus. No one,

however, suggests similar teaching in other departments of clinical practice; that is, no one suggests that the heart or the lungs or the urine or the knee-jerks should be examined in "suitable" cases. On the contrary, the student—and equally the practising physician—is continually and rightly urged to make such examinations in every case and for the perfectly sound reason that by this method, and by this method only, can mistakes be avoided and a high level of clinical efficiency be maintained. To examine only diseased hearts is, as everyone recognizes, no adequate training for clinical cardiology, or diseased nervous systems for clinical neurology; and the same principle is not less true of clinical ophthalmology. Here, as elsewhere, it is by the systematic and routine use of all opportunities that clinical judgment is raised to the level where a confident distinction can be drawn between appearances which are definitely pathological and those which do not transgress the limits of the normal.

But if examination of the visual apparatus, including the use of the ophthalmoscope, is a necessary part of a complete clinical enquiry it follows that in not a few instances the examination will have to be repeated, possibly on several occasions and particularly in cases where the symptoms are of doubtful significance and difficult of interpretation. A single observation with a negative result does not guarantee a negative result for all time, and the absence of exudation at the optic discs on a given date does not guarantee that such exudation will not be present at a later date. If, however, these methods of clinical examination are to be marked off as invariably demanding some special and highly developed skill it is manifest that their frequent repetition will, other considerations apart, be forbidden in a practical sense by economic objections; the special skill and the special fee have indeed their values, but there are limits to the one if not to the other. In other words, the full opportunity of securing knowledge of considerable diagnostic importance will be utilized only if and when clinical examination of the visual system is cultivated and practised in the same fashion and degree as clinical examination of other parts of the body is cultivated and practised. A single temperature record, a single blood examination, a single application of the stethoscope, a single series of chemical tests are—often or even generally—admittedly inadequate, and the same is true of a single observation of the fundus oculi and other parts of the visual apparatus. From this follows the conclusion that to be of maximum service medical ophthalmology must be included in a routine procedure which is within the reach of ordinary skill and practice, while recognizing that here, as in other clinical fields, positions may present themselves where a judgment based upon a more specialized experience may be advisable or even necessary.

The relation of the examination of the visual apparatus to the practice of diagnosis may be presented from a different and, as it were, from an opposite point of view. If symptoms or signs of disease in any part of the body claim an examination of this apparatus, equally, optical and visual disturbances in their turn demand a complete and comprehensive examination of the patient. Thus an ocular palsy, a hemianopia, or an optic nerve atrophy is just as much an example of nervous disease as is the presence of wrist-drop, or of hemiplegia or hemianæsthesia, and all with one and the same emphasis indicate the need for an inclusive clinical investigation; retinal hæmorrhages again propose the same clinical enquiry as do

attacks of epistaxis or of purpura; an embolus in the retinal artery is a clinical parallel to an embolus in the middle cerebral or indeed in any other artery; and retinitis is as frequently part and parcel of a general constitutional state as is pleuritis or pericarditis. The visual conditions, equally with the non-visual conditions, are all part of the general body of clinical medicine, and in the interests alike of scientific knowledge and of the patient's welfare no separation between them can be allowed. Any one of them claims that examination of the patient upon which alone opinion and advice can be safely rested. Moreover, the emphasis in this respect is strengthened by the fact that not a few ocular or visual disturbances which at the outset appear as isolated occurrences are proved by the lapse of time each to be the first event in the unrolling of a widespread clinical series. For example, an ocular palsy may be an early note of tabes dorsalis or of disseminated sclerosis; the same is true of an isolated optic atrophy; and hemianopia as an individual clinical occurrence may well be the first evidence of vascular degenerative changes within the skull. Further, any such single and apparently uncomplicated condition may long precede in order of time a more generalized picture of the symptoms of the disease of which it forms a part, and as a typical illustration of this statement may be quoted retro-bulbar neuritis in relation to disseminated sclerosis where the interval between the local event and the appearance of the other evidences of disease may extend over years, while, in the meantime, the patient may have recovered from the original visual disturbance. It follows that any of the events here mentioned (and others might be added), even when the general clinical examination is otherwise negative, casts a definite suspicion upon the integrity of the patient's nervous system and demands at frequent intervals a complete survey of the whole position. In short, a pathological development in the visual apparatus, like a pathological event in any other part of the body, while in individual instances of mere local importance, is very frequently an index of existing or impending disease either in some remote organ or generally throughout the body, and it requires a recognition of the claims which are here stated. What nature has joined together the clinician cannot safely or justifiably put asunder.

In summary, therefore, clinical ophthalmology may be presented as including:—

1. A knowledge of the anatomy, physiology, and pathology of the structures concerned; of the optical relations of the eyeball and of the ophthalmoscope; and of the correspondences between the several parts of the visual pathway and the related areas of the visual fields—all of which fall within the earlier studies of the medical curriculum.
2. The systematic use of the ophthalmoscope and of the methods of testing the visual fields and the musculature of the eyeballs as a routine and essential part of clinical medicine—that is medical ophthalmology.
3. Ophthalmic surgery including the localized diseases of the eyeball and of its related parts, and minor and major operative procedures. The estimation and correction of errors of refraction may be described as surgical in so far as the treatment required is topical, and medical seeing that such errors may be the cause of disturbances other than visual.