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The Education of Ophthalmic Surgeons

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THE EDUCATION OF OPHTHALMIC SURGEONS.

By Freeland Fergus.

The training of ophthalmic surgeons is a matter that has recently come into prominence. At present the whole thing requires reorganization and revision, and it is gratifying to know that steps are being taken in connection with some British universities to have the matter put right. As it presently stands, anybody who has money enough to buy a set of trial lenses can start in practice and call himself an ophthalmic specialist. I have no wish whatever to limit the practice of anybody, but I have for many years thought that ophthalmic surgeons should be specially trained, just as dentists are, and this has become all the more urgent because the State is now very properly insisting on ophthalmic work being done in our schools and in other departments of public life. I am of opinion that men should be prepared for ophthalmic work just as carefully as they are prepared for work as medical officers of health. My interest in this subject dates back to the time when the late Professor Leishman was Dean of the Medical Faculty in the University of Glasgow, for I tried to get him to take some action in regard to it, but unfortunately without success.

Were I forming a curriculum for ophthalmic surgeons I would, in the first place, insist upon every ophthalmic student knowing several parts of elementary mathematics, with which the ordinary medical student is often unacquainted. Thus, he certainly should have a good working knowledge of plane trigonometry to the solution of triangles, and he ought also to know logarithmic arithmetic. Without these he will not be able to study angles of squint and deviations. Then I think he ought also to know the use of rectangular co-ordinates. I invariably explain the phenomena of diplopia in terms of ordinary rectangular co-ordinates, and I find that junior

students, after it is explained to them, grasp the facts much more easily in that way than in any other. Perimeter tracings, moreover, are an example of polar co-ordinates. I think it is desirable, although perhaps not necessary, that a student who is going to be a specialist in ophthalmology should know the elements of the differential calculus. The foregoing remarks apply only to preliminary education and not to professional.

As regards professional education, I would see to it that it was very thoroughgoing. No man should be allowed to begin ophthalmic practice without a medical qualification. I imagine the majority of dentists begin their work without that, but ophthalmology is so intimately related to many pathological conditions which are systemic and not local that I would not allow a man to practice ophthalmology who had not obtained the ordinary M.B. degree or something equivalent. Further, an ophthalmic practitioner ought to know the technique of modern surgery.

I would look on a special ophthalmic qualification as an extension of the medical curriculum, and in this respect it would be very much like a public health qualification; it must be equally thorough. To begin with, there are certain parts of anatomy which ought to be more fully studied than they are by the ordinary medical student. I would lay special stress on the anatomical arrangement of the contents of the orbit, the exact position of the several muscles, the various ligaments supporting the eyeball and also checking the action of the muscles, which ligaments are not mentioned, so far as I have observed, in the ordinary text-books of anatomy. Then the histology of the eyeball itself and the lymphatics draining it are of great importance. Very considerable new light has been thrown on that subject quite recently. It is unnecessary to say that the nerve arrangements to control the action of the external and internal muscles and giving the presence or absence of binocular vision are immensely important. The student, moreover, should have a fairly

good knowledge of the anatomy of the brain, and especially of those parts connected with vision, for that information will help him immensely in the work of localization.

In the second place, there ought to be a special course of physiology. The subjects which this should take in are very numerous; the whole phenomena of colour perception, of light perception, of binocular vision, of the field of fixation and field of vision should be discussed in a special physiological course arranged for ophthalmic students, and along with this there should be a certain amount of laboratory instruction.

I regard as of primary importance the subject of physics. Personally, I spent three years in a physical laboratory working at light, and although perhaps this was an excess of zeal, I have found that it has served me in good stead ever since. The ordinary course for a medical student who is going to be an ophthalmic practitioner should be extended from three months to six months, and there ought certainly to be laboratory practice. In addition to that, the ophthalmic student should take a good course in geometric and physical optics, also accompanied with laboratory work. He ought to have a thorough knowledge of the properties of lenses, of mirrors and of prisms. He should have a working acquaintance with the spectrometer, the spectroscope and the optical bench, and he also ought to be familiar with the various methods of calculating indices of refraction. Without knowledge of this kind a man cannot even read the standard books on ophthalmology, such as that of Helmholtz, and without it he can never be anything more than a rule-of-thumb practitioner.

These courses should be arranged by the professor of physics, and the laboratory work done under his supervision. I think there might be a reasonable arrangement between him and the teacher of ophthalmology as to the extent and scope of the courses. I am also quite clear that the would-be ophthalmic practitioner should

have a good working knowledge of bacteriology, especially of conjunctival bacteriology. If, during his medical studies he has acquired that knowledge I perhaps would allow him to forego any further instruction provided he showed himself efficient; but I would allow no man now to practice ophthalmology who has not got a thoroughly good working knowledge of conjunctival bacteriology. Almost every case of conjunctivitis that comes into my clinic is examined bacteriologically either by myself or by my chief assistant, and I am glad to know that my introduction into ophthalmic practice of the bacteriological testing of eyes before operation has been of enormous benefit to ophthalmic patients. If a student did not satisfy me that he had a good practical knowledge of this subject I would insist upon his going back to the bacteriological laboratory until such time as he acquired it.

The new questions that have been raised by the pathologists as regards immunity and other things, I am not quite sure about. I think the information now given, both in the class of pathology and in that of the practice of medicine on this subject might suffice. The thing is yet in its infancy, and I am not in a position to speak definitely about it. Both the ophthalmic practitioner and the ordinary medical man should know the views that are current on this subject, but I do not see any special need for giving an ophthalmic student more information on the subject than is given, or ought to be given, to the average medical student for purposes of diagnosis and of treatment. I think, however, that bacteriological work is of immense importance, and nobody should be allowed to call himself an ophthalmic surgeon or to be in charge of an ophthalmic clinic who is not acquainted with conjunctival bacteriology.

As regards the strictly professional part of ophthalmic work, I would make the student, in addition to attending some advanced lectures, attend for at least two years an ophthalmic clinic, taking care that the man who conducts

that clinic is himself fairly conversant with the modern scientific side of ophthalmology. There ought to be an abundance of clinical material, for I have found during years of long experience that the proportion of cases suitable for higher instruction of students is limited. A very few weeks will teach a student the ordinary run of practice, and will teach him to recognize the ordinary external conditions; but those cases which are of special interest in the higher parts of ophthalmology are, comparatively speaking, rare, if we except errors of refraction, which, of course, are very common. We do not frequently see cases of diplopia nor persons affected with diminished range of convergence or diminished range of latent convergence, or defective light sense. If a clinic is to be used for ophthalmic instruction it must of necessity be a very large one, so that on the average a fair number of suitable cases may be available for instruction.

Of course, in teaching elementary students almost anything will do. I have often, at the Glasgow Eye Infirmary, as many as 40 new cases in an afternoon. For the first six weeks of their course I can use almost any patient there for the instruction of students, but certainly most of them are quite unsuited for advanced teaching. On the average, if we get about two patients, out of about 30 or 40, suitable for higher work, we have done fairly well. A small clinic would simply mean that higher teaching would dwindle down into the hearing of lectures and not into actual work, and that, of all things, is to be deplored. It is no good taking students and placing them on benches and telling them that the patient has this, that or the other thing; the only way in which you will get students to learn ophthalmology is by making them in a painstaking way examine patients for themselves. That all along has been my method. I have taught entirely by making students from the very first investigate cases, helping them on the subject when they come to a standstill. That is clinical work. Placing students on benches and showing a patient at a distance

of a classroom with a small something wrong with his eye and telling them what it is will not make ophthalmic surgeons. A student from the moment he enters my clinic is made to take fields of vision and visual acuteness and to examine and report upon eyes. At first, of course, he does it very badly, but I am bound to say that before the session is done the elementary student can perfectly clearly recognize the ordinary lesions, and I am thankful to say, so far as I know, I have not for years had a student leave my clinic unable to use an ophthalmoscope, and, roughly, to diagnose an error of refraction.

Moreover, some parts of the modern subject of experimental psychology should undoubtedly be studied in an ophthalmic course. The psychologists have done an enormous amount of important work on the investigation of the colour sense and light sense. These researches are by no means of purely academic importance, but of great value from a practical and clinical point of view. In how very few clinics is the light sense ever examined, and yet by neglecting it the practitioner often deprives himself of useful information.

The training necessary for an ophthalmic specialist ought to last for about three years, and the names of those who have taken the special course should be placed on a special register.

In conclusion, I wish again to state that I would not for a moment prevent anyone who has a medical qualification from practising ophthalmology. The old system, or rather want of system, has produced very many eminent and good men. Mackenzie, Bowman, Nettleship and Argyll-Robertson were all men of the first rank, born, not made. At the same time, every man who has money enough to buy a trial case is not necessarily a genius, and the above suggestion if carried out would distinguish those who have had a specialist's training from those who have not.