for sober reflection. We are at present only on the threshold of medical philosophy. Our greatest want is an accumulation of reliable facts, and our greatest evil in the past has been rapid and rash generalization from a too limited number of facts, and these too often of unreliable character.

PROGRESS IN OPHTHALMOLOGY.*

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GENTLEMEN,—Great as has been the progress in various branches of Medicine within the past half century, in none has it been more marked than in Ophthalmology, which bids fairly to be classed amongst the exact Sciences. Three great names are associated with this advance. That of Helmholtz, who by his marvellous invention, the Ophthalmoscope, has opened up the hidden depths of the eye for our inspection; that of Donders, whose great work on Refraction has reconstructed physiological optics on a mathematical basis; and that of Von Graefé, who has done for ocular surgery what the others have accomplished in less practical branches of the art.

Previous to the invention of the ophthalmoscope, under the mystifying names Amblyopia and Amaurosis, which my friend Landolt defines thus—"Amblyopia, where the patient sees nothing and the surgeon sees something; Amaurosis, where neither surgeon nor patient sees anything"—lay hidden diseases, which are now as patent to us as the noonday sun. The various affections of the lens, vitreous, choroid, retina and optic disk, have been recognized, classified and traced to their sources; some as purely local affections, others as manifestations of constitutional taints—such as syphilis, tubercle, rachitis, albuminuria and various affections of the brain or spinal cord. Since its invention, the instrument has undergone many changes. What a difference between the plane mirror of Coccius and the perfected ophthalmoscope in our hands to-day! The number of new patterns is simply infinite. Those of Loring and Cooper, Landolt and De Wecker are considered the best. I prefer one made by Ferriere, of Camberwell, a cheaper modification of which has been brought out by Mr. Jeuler, of St. Mary's Hospital. All, in addition to the perforated, concave mirror, possess a set of refracting lenses (plus and minus) enclosed in a revolving disk. These lenses serve a double purpose. They enable us to examine the fundus, by the *direct* method, securing thereby a clearer and more highly magnified image than by the indirect; and at the same time, by their help, we can estimate the patient's refraction — thus abolishing the tedious test-type examination — which is found often, more especially in the case of children, misleading, if not impracticable. To estimate refraction by means of the ophthalmoscope, it is necessary to have the accommodation of both patient and surgeon in abeyance. This may be secured by atropine, or the use of a thoroughly darkened room on the one hand, but can be gained only by practice on the other. All errors, whether myopic, hypermetropic or astygmatic, may be noted and their amount estimated in this manner. I regret that I cannot go more into detail.

A new application of the mirror has been found in Keratoscopy, a process of testing refraction, through the production of retinal shadows on the cornea. Light is reflected into the patient's eye, from the surgeon's perforated mirror, at a distance of one to three feet. The appearance and movements of the shadows produced, as they traverse the cornea, indicate the patient's refraction. Provided with a spectacle frame and a set of test lenses, we may correct, whilst in situ, any amytropic condition discovered. This process originated in the clinique of Dr. Galezowski, in Paris, and is now being extensively tested in the great ophthalmic hospital at Moorfields.

The use of the Perimeter has greatly assisted the ophthalmoscope in the physiological and clinical study of the human eye. By it we are enabled to map out the visual field and so determine any morbid changes in the retina. By visual field we mean all the space which vision embraces when directed towards one central object. The instrument consists essentially of an arc of a circle, of the value of a semi-circumference, is made of metal, and revolves upon a pivot. In turning, its apex describes a hemisphere, at the centre of which is found the eye under observation. The limits of the visual field are determined by moving white or colored disks, along the arc, adjusted to different meridians, till the object is perceived by

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