

at any time, such a feeling was not surprising. But the meeting will be held; and the Western members will see that it is a success. As last year the program may be shortened to two days, but the interest and enthusiasm will not be lacking.

The meeting at Salt Lake City will be the farthest East that the Pacific Coast Oto-Ophthalmic Society has ventured. But it is an organization that has proved strikingly successful in gathering together the isolated special workers of the extreme West; and with a President and Secretary residents of the place of meeting, everything will be done to make it a success. The trip between Denver and Salt Lake should be thought of as an added attraction, for those who will have the opportunity to make it; and the summer railway excursion rates from Eastern cities will be available for the whole trip, and as much additional vacation as one may be able to take.

E. J.

### PROPRIETARY DRUG NAMES.

The medical profession has decried "patent medicines." But the registered names under which such drugs are advertised and sold are the property that yields the manufacturers their millions. Such proprietary names are also used for the new synthetic compounds with long unwieldy chemical names that are prescribed by the medical profession. Most of these have from time to time emanated from Germany, with a kind of literature that has proved an effective and profitable variety of propaganda; but which will henceforth be regarded with more skepticism.

The present impossibility of dealing with the German manufacturers of these drugs has forced the United States Government to intervene and recognize other names under which the same drugs are now being sold. The letters of Professor Puckner and Professor Stieglitz, published in this number under "Correspondence," call attention to some of these names under which we can now obtain drugs

of especial importance in ophthalmic practice.

The time is auspicious for breaking away from the habit of using one set of these names that have been helping to draw heavily from the wealth of this country for the benefit of Germany. But a radical change in the laws regarding the proprietary rights attached to the registered names of drugs will be necessary, before the grave evils that have grown up around this practice can be wiped out.

E. J.

### BOOK NOTICES.

Robert Henry Elliot, Lieut.-Colonel I. M. S. (retired). **GLAUCOMA. A Textbook for the Student of Ophthalmology.** London: H. K. Lewis & Co., Ltd. 136, Gower Street, W. C. 1918. Price 21s.

Elliot's monograph, which represents much labor and is written with remarkable clearness and power, should be read by every ophthalmic surgeon. In an introductory chapter it is insisted upon, that the word "glaucoma" is a convenient label for a large group of pathologic conditions, which have in common a rise in the intraocular pressure, upon which every sign and symptom of the disease depends. At the same time Elliot is emphatic upon the point that the glaucomatous process, however different it may appear clinically, is in root one and the same.

Chapter II takes up the subject of intraocular pressure and the tension of the eye. The physical conditions regulating that pressure and the bearing upon intraocular pressure of the continuous flow of fluid which occurs throughout life through the chambers of the eye are considered, together with those changes in the chamber pressure characteristic of certain forms of glaucoma.

He summarizes his conclusions as follows: (1) It is essential to bear in mind that in dealing with the physical conditions which govern the behavior of the intraocular fluid as it passes into and out of the eye, we have to do with

a body of moving water, and that the laws to which we must appeal are those of hydrodynamics, and not those of hydrostatics. (2) There are distinct tho slight differences of pressure at various points in the mass of fluid within the eye; the highest pressure probably lying at the area of production of the fluid, and the lowest, certainly, where it is excreted. (3) The above conclusions are borne out by the teachings both of physiology and of pathology. (4) The question whether the intraocular fluid is poured out by an act of secretion, or by a process of pressure filtration is still undecided. Probably the action is a combined one, pressure and secretory activity each taking a part therein. Fortunately, the interest involved is academic, rather than practical.

As regards the relationship of systemic blood pressure to intraocular pressure it may be said, speaking broadly, that the two rise and fall together. It would nevertheless be a mistake to suppose that the latter servilely follows the vagaries of the former. It is only by giving due weight to this point that we are able to reconcile the contradictory results obtained in experiments with amyl nitrit, adrenalin, strophanthus, and some other drugs. Elliot throws out the suggestion that in trying to estimate the importance of the part played by increased intraocular blood pressure, in affecting the pressure of the intraocular fluid, "we must look to the venous and not to the arterial end of the system." The author's conclusions as regards the systemic blood pressure and the intraocular pressure, and the relation between the intraocular blood pressure and the intraocular fluid pressure outside the vessels, are as follows:

(1) Whilst the systemic blood pressure tends, as it rises and falls, to exert a corresponding influence upon the intraocular pressure, this influence may be masked, or even wholly neutralized, by a number of other factors. (2) The high blood pressure of general arteriosclerosis is not necessarily, or even usually, associated with a high intraocular pressure, and is emphatic-

ally not a factor in the causation of glaucoma. (3) The venous exit-pressure thruout the eye must always be a little in excess of the intraocular pressure, if the circulation of blood is to be maintained. It is therefore very difficult to assume that the pressure in Schlemm's canal can be below that of the intraocular pressure, and that the channel is held open against a negative pressure by the rigidity of the structures which surround it, unless the same assumption is extended also to the veins which lead out from it. (4) It seems probable that osmotic action plays a large part in the transference of fluid from the anterior chamber into the canal of Schlemm and the iris veins, and that this action is strongly reinforced during the waking hours by the pump action described by Professor Arthur Thomson. The author, by the way, gives considerable prominence to the last named theory.

A chapter of upwards of sixty pages is devoted to the etiology of glaucoma. The author's endeavor has been to deal with the subject clearly, giving to each worker the fullest credit, but showing favor to no one. Priestley Smith's views are accorded the utmost deference. A feature of this chapter and of some others are the microphotographs taken by Mrs. Elliot. All the factors which have from time to time been cited as causes of glaucoma may ultimately be classified under one or other of two headings: (1) Those which influence the balance of secretion and excretion of the intraocular fluid, and (2) those which directly or indirectly determine a change in the vascular conditions within the eye.

Speaking of the pathologic anatomy Elliot does not lay any great stress upon the changes in the vortex veins described by Birnbacher and Czermak, and he regards evidences of vascular disease generally as more likely to be the result rather than as the cause of an increase of intraocular pressure. As to the cavernous atrophy of the optic nerve described by Schnabel, he points out (1) that it is met with in eyes that have never been subject to an increase in internal pressure, and (2) that no

signs of its existence are to be found in many, if not in most, glaucomatous globes. The most important piece of evidence that glaucomatous cupping is due to increased intraocular pressure lies in the fact, pointed out by Holth, Axenfeld, and Butler, that after the reduction of ocular tension by means of operation, the glaucoma cup may level up or completely disappear. In this connection it may be noted, too, that Lange has seen a diminution in the depth of glaucoma cups after the employment of miotics.

Fibrosis of the pectinate ligament as a factor in causation may be one of the causes predisposing to glaucoma, since it may tend to upset the balance normally held between the secretion and the excretion of fluid from the eye. Beyond this cautious statement Elliot is evidently not prepared to go. To Fischer's theory of the production of glaucoma by the action of acids or alkalies on the tissues of the eye Elliot opposes the fact that no anatomic evidence has yet been brought forward to prove such a change (edema) as he assumes. Neither has the result of treatment based on Fischer's theory always proved successful. In discussing the part played by closure of the filtration angle, the work of Leber, Knies, and Weber is spoken of, and a handsome tribute is paid to that of our own countryman Priestley Smith.

Chapter IV deals with the diagnosis of glaucoma. It insists upon the importance of a surgeon being on his guard; and teaches that while great difficulties undoubtedly occur, the majority of cases of glaucoma are readily diagnosed. Elliot considers that the term prodromata of glaucoma is a bad one, and that from the moment the earliest premonitory signs appear the eye should be regarded as definitely glaucomatous.

There are objections to the use of the term "absolute" as applied to glaucoma. For the purposes of the present book it was decided to adopt a classification into: (1) early glaucoma, (2) established glaucoma, and (3) late glaucoma. The scheme is at least useful, expressive, and logical. The signs

and symptoms of glaucoma as it affects each structure of the eye are taken up in turn. On page 165 Elliot figures a very ingenious paper folding device intended to explain the edge of a glaucoma cup and the apparent alteration in the direction of the vessels as they emerge on the plane of the retina. The device should be found useful by students, who often misunderstand the apparent discontinuity in the course of the vascular trunks.

A most important section of chapter IV deals with the visual field in glaucoma, in the course of which the advantages and disadvantages of large and small test objects are discussed. To employ large objects is of no advantage, since it does not increase the size of the field, whilst it lessens the accuracy of the observations made. By reducing the dimensions of the object, we find that even in normal subjects the size of the field mapped out is considerably reduced, until when working with a 1 mm. object at a distance of 2 m. the field extends to about 20 mm. all round. From such a chart features of great value may be gathered which do not appear if a larger object be employed.

Elliot employs Sinclair's useful method of stating the size of an object as the numerator of a fraction, the denominator of which denotes the distance of the eye from the perimeter, and he insists that in all perimetric work it is necessary to state the size of the object, the distance of the eye from that object, and the illumination and the color of the object. Elliot thinks that the best results may possibly be secured in the end by the adoption of the electric-lit instruments. In connection with the distribution of the nerve fibre bundles on the retina, and its bearing on glaucomatous field defects we draw special attention to the original diagrams Nos. 29, 30, and 39. The study of these diagrams is most helpful. This section abounds with illustrations and those of Roenne, van der Hoeve, Bjerrum, and Sinclair are freely drawn upon to supplement the writer's own charts.

Elliot describes a new scotometer, and takes the opportunity of figuring a novel perimetric sign of glaucoma, which may be a development of Seidel's well known sign. On the assumption that Seidel's sign is due to an injury to the fibers of the optic nerve, either on the disc or at its edge, it has always seemed curious to Elliot that the scotoma in question should be described as ending in a pointed or rounded single extremity. It seemed more reasonable to assume that the peripheral limits of the scotoma would end not in one point but in several. This has been found to be the case when early glaucomatous eyes were examined with the author's new scotometer. Readings, however, must be taken all round the circle, at each point from  $1^\circ$  from the center out to  $26^\circ$ . After the relief of tension by surgical means the scotoma is much reduced in size, although its peripheral limits still possess a more or less ragged edge. The sign now described by Elliot may prove to possess considerable diagnostic value.

Speaking of the Schiötz tonometer Elliot says that "the feeling of those who work with it is that one might just as well guess a patient's temperature by passing a hand over his skin as attempt to estimate his ocular tension by the digital method alone." In using the instrument the author prefers to have the patient lying flat upon a bed, or on a comfortable couch, and in such a position that it is difficult for him to drop the chin. Before application the foot plate of the tonometer should be sterilized in absolute alcohol and dipped into warm water. In order to avoid the danger of corneal abrasion a drop of sterilized liquid paraffin should be used, and in all nervous patients local anesthesia should be secured by a drop of holocain, 2%. The eye should be fixed by looking at an object immediately above the couch. One application of the instrument made with care should usually suffice. The tonometer should be applied vertically, its footplate should rest as nearly as possible on the center of the

cornea, and never on the sclero-corneal junction.

Elliot concludes that "though the Schiötz tonometer does not necessarily record the exact intraocular pressure given to Cridland's views as to its rather wide range. In brief, Elliot thinks it probably goes very near to doing so in the great majority of ordinary cases. The comparative readings which it furnishes of any one eye at different periods and under different conditions are absolutely reliable. Again, the instrument may be depended upon to detect with certainty very small differences between the pressures of the two eyes of the same person." The writer agrees with Priestley Smith in thinking that the actual reading given by the instrument should be recorded, and not the supposed equivalent in mm. of mercury.

In discussing the limits of the normal intraocular pressure prominence is given to Cridland's views. In brief, Elliot thinks that the great value of the Schiötz tonometer lies in watching the progress of a case and in observing the effect of the means employed to combat the rise of intraocular pressure. The author appears to believe that the examination of the light sense (for which purpose he has devised a special apparatus), may prove a fruitful field in the future, altho he is far from being dogmatic on the subject.

Altogether, Elliot has covered the diagnosis of glaucoma in a most satisfactory way. Running all thru the chapter is the insistence upon the need of taking a broad view of each case; and never being led into the mistake of forming a judgment upon one sign or symptom alone, however important that particular item may seem to be. When in doubt after a survey of all the evidence available, the surgeon's attitude should be one of watchful waiting.

The chapter which deals with congenital glaucoma and some allied conditions, as juvenile glaucoma, is most interesting. Once again Elliot insists upon the essential unity of all forms of glaucoma. If it were possible to judge all cases in the light afforded by full anatomico-pathologic knowledge, which is unfortunately not the case, we could

scientifically classify glaucomas into: (1) the congenital, i. e., those due to prenatal defects in the normal development of the excretory passages of the eye; (2) those in which the degenerative processes associated with senility play the leading part; and (3) those in which the anatomic configuration of the eye is such as to pave the way for the onset of glaucoma, with a minimum of assistance from the processes of senile degeneration. As to buphthalmos it probably always dates from birth, altho slight cases may not be recognized until later in life; so that not a few instances of so-called juvenile glaucoma are really of buphthalmic origin.

The signs and symptoms of buphthalmos are carefully described. Speaking of the tension of such eyes Elliot points out that owing to alteration in the curvature of the cornea, the Schiötz tonometer is unsuitable for recording the intraocular pressure. He comments upon the fact that in buphthalmos the myopia present is very moderate in amount. In the majority of cases the disease is due to a persistent fetal condition of the angle of the anterior chamber, as maintained by Collins and others. In a smaller number of cases intrauterine inflammation is responsible for the condition. It is probable, says Elliot, "that the main factor is the tendency to reffective development, and that disease plays a subsidiary and comparatively infrequent part" (p. 338).

Megalocornea is regarded by the author as an instance of infantile glaucoma that has undergone arrest before permanent damage has been inflicted upon the eye. With regard to the treatment of buphthalmos a resumé is given of the subject and stress is laid upon the fact that whatever the nature of the treatment it should be begun early. The author has had some encouraging results from trephining, altho he is far from claiming invariable success from that or any other operation. In operating upon these difficult cases he points out certain technical matters, of which one is that the usual step of slitting the cornea is not needed. The

essential factor of success, whatever operation be adopted, lies in the production of a filtering scar. The possible influence of congenital syphilis in buphthalmos must be borne in mind.

Chapter VII is devoted to a discussion of the medical treatment of glaucoma, taking up separately in the same chapter prophylaxis, the treatment of an established condition of simple glaucoma and of an attack of congestive glaucoma. In regard to the medical treatment of glaucoma the various means at our disposal are discussed, special stress being laid upon the employment of miotics, and of various kinds of massage. De Wecker's striking aphorism is quoted: "If miotics have never cured a case of glaucoma they have prevented many glaucomatous patients from being cured." If despite medical measures the disease progresses, Elliot is convinced that we should resort without further delay to surgical means for the production of a fistulous scar.

Chapter VIII deals with iridectomy in glaucoma, the first section being devoted to the opinions of the old masters and the second to those of more modern writers. In order to account for the curious discrepancy of view as to the value of the operation in glaucoma several points must be considered; such as the confusion in terminology, the different periods at which iridectomy is undertaken, and the technic of the operation. With reference to the last point Elliot claims that the "man who can perform iridectomy in congestive glaucoma easily, smoothly, and safely is a pastmaster of his art." Another important point in judging the effect of iridectomy in glaucoma has to do with the period during which the cases are followed after operation.

A glaucomatous process may be definitely checked by operation yet the surgeon's aim may be defeated by a progressive atrophy of the optic nerve, and in connection with this Elliot throws out the valuable suggestion that we should in all such cases seek out and treat all possible causes of auto-infection, inasmuch as a nerve damaged by intraocular pressure may be

liable to fall a ready prey to any toxic influence which it would under other and happier conditions have readily overcome. After pointing to the various ways in which an iridectomy reduces the tension of a glaucomatous eye, Elliot makes the point that in the newer operations we are dealing with an entirely different set of conditions; since the aim is not to reopen old physiologic channels, but to form a new and vicarious conduit for the escape of the aqueous. In those operations, he thinks, there can "be no question that a fistula can be established long after the time is past when an iridectomy would be of any avail." Again, arguments for the importance of early operation in iridectomy do not tell so much when dealing with the newer operations, although even under those circumstances the point is not to be belittled.

The author reaches the following conclusions: (1) If an operation for glaucoma is to be undertaken, the earlier it is performed the better is the result likely to be; therefore, it is important to make up one's mind on the subject at the earliest possible moment. (2) Every case of glaucoma in which operation is postponed should be watched with the utmost care, and the moment that medical treatment fails to hold it in check, surgery should be resorted to without delay. (3) Special watch should be kept on (a) the condition of the visual field, (b) the tension and (c) the visual acuity. A departure from the normal in all three or in any one of them and especially in the visual field calls for a decompression operation. (4) Iridectomy, undertaken with the deliberate intention of freeing the natural channels of excretion and so of restoring the *status quo ante* should only be resorted to in those early cases in which there is reason to believe that such a feat is possible. Once plastic inflammation has blocked the angle of the chamber, this rôle of the procedure ceases. (5) When it is recognized that the attainment of decompression depends on the opening up of various filtration channels, the obvious call is for one of the newer

operations. The fact that an iridectomy or a sclerotomy may be followed by the formation of a filtration scar is beside the point. We should deliberately undertake a well planned procedure which aims at the formation of the kind of scar we desire to produce. Any other line of action is bad surgery, since it lacks consistency and clarity of purpose. (6) Each surgeon must be guided not only by the environment of his patients but also by his own idiosyncrasies. (7) Each case must be considered on its own merits. The relative prospects of life and of remaining months or years of sight must be carefully weighed. Against the admitted dangers of operating must be set the inexorable progress and the appalling results of the disease. (8) Statistics are wanted both of success and of failure.

In bringing this notice to an end we congratulate Lieut.-Colonel Elliot upon having produced a noteworthy book in which the manifold problems of glaucoma are discussed in a broad-minded and logical way and in a thoroughly scientific spirit. It marks an epoch in the history of glaucoma.

SYDNEY STEPHENSON.

### CORRESPONDENCE.

#### The British Society Meeting.

*To the Editor:* The 38th Annual Congress of the Ophthalmological Society of the United Kingdom met under the Presidentship of Mr. E. Treacher Collins, at the Royal Society of Medicine, London, from May the 2nd to the 4th, 1918.

The Proceedings were opened by the President's address, in the course of which he reviewed the work of the past year, and announced that "the Bowman Lecture would be delivered by our friend and ally, Professor Morax," and that the Nettleship gold medal for the year had been awarded for the first time to a physician, Dr. Gordon Holmes, in recognition of his work in connection with War Injuries of the Visual Centres.

The President then read a very valuable paper on "An experimental investigation as to some of the effects of