The Annual Congress of the Ophthalmological Society of the United Kingdom was held at the Royal Society of Medicine, London, on Thursday, Friday and Saturday, April 28, 29 and 30.

The President, Dr. Gordon Holmes, C.M.G., C.B.E., F.R.S., was in the Chair and gave an address of welcome to the visitors and members of the Society. The discussion on the differential diagnosis of the causes of exophthalmos was of considerable interest. The openers dealt with the ophthalmological, rhinological and general medical aspects of this disorder. It would be invidious to select any one or two papers for special praise among so many that were admirable scientific, pathological and clinical contributions to ophthalmology. Below is published an abstract of the papers.

DISCUSSION

"Differential Diagnosis of the Causes of Exophthalmos."

Openers:

Ophthalmic Aspects. By Mr. R. Foster Moore.

For the purposes of this discussion I have analysed in some detail 114 consecutive cases of proptosis, excluding cases of Graves' disease.

It is proposed first to consider the various means which are available for the differential diagnosis of the different causes of proptosis: a consideration of the general health of the patient; as to whether the proptosis is uniocular or binocular, the direction of the proptosis, whether it is reducible or pulsatile, the degree of immobility of the eye, the degree of chemosis, and palpation of the orbital cavity so far as this is possible.

Examination will include X-rays of the orbital cavity and surrounding sinuses, and a general examination of the patient for the investigation of any constitutional disease such as Graves' disease or leukaemia, which might be responsible for the condition, or the possibility of some primary growth which might have given rise to a metastatic deposit in the orbit.

Some consideration will be given to the cause of the proptosis of Graves' disease.

It is then proposed to consider in some detail the most important of the local conditions which cause an eye to be prominent: inflammatory conditions, traumatic causes, neoplasms, whether innocent or malignant, primary or metastatic.
Synopsis of the ear, nose and throat aspect of exophthalmos.

By Mr. Terence Cawthorne.

Pathological conditions of the ear, nose and throat may produce exophthalmos either by causing an increase in the orbital contents or by reducing the size of the orbit. These mechanical effects may result from:

1. Foreign matter being forced into the orbit.
2. Interference with the venous return from the orbit.
3. Extension of inflammation to the orbit.
4. Invasion of the orbit by new growth.

The history, rate of onset, whether the exophthalmos is unilateral or bilateral, the general condition of the patient, and the state of the ear, nose and throat, are the principal factors to be considered in arriving at a correct diagnosis of the cause.

Neurological and general medical causes of exophthalmos.

By Dr. W. Russell Brain.

1. Diseases of bones of the skull.

2. Increased intra-cranial pressure.
   (i) Hydrocephalus and tumours remote from orbit.
   (ii) Tumours encroaching on orbit.
      (a) Meningiomas. Sites in relation to orbit; intra-orbital extension of tumour. X-ray appearances.
      (b) Osteoma of orbital roof; other tumours.
      (c) Pituitary tumours and suprasellar cysts.
   (iii) Intra-cranial aneurysm; sites in relation to orbit: exophthalmos before and after rupture; X-ray appearances.

   (i) Haemorrhage.
      (a) Traumatic (b) due to hypertension (c) due to haemorrhagic diseases, e.g., scurvy.
   (ii) Venous obstruction.
      (a) In cavernous sinus—due to (a) aneurysm (β) thrombosis.
      (b) Due to intra-thoracic venous pressure:—associated with papilloedema.
4. **Endocrine diseases.**
   (i) Exophthalmic goitre.
   (ii) Exophthalmic ophthalmoplegia.
   (iii) Pituitary adenoma. Recent evidence as to the rôle of the thyrotropic hormone of the pituitary in the production of exophthalmos.

**Synopsis of paper on proptosis in children.** By MR. J. H. DOGGART.

The principles of diagnosing the causes of proptosis are the same in children as in adults. Accessory methods of diagnosis are briefly considered.

In children proptosis occurs far more readily than in adults because:

1. The eyeball itself is more distensible;
2. The size of the orbit in relation to that of the eyeball is smaller than in adults.

The aetiology of proptosis is different in children. For instance, Graves' disease is almost entirely confined to adults; certain varieties of tumour are, on the other hand, unknown after childhood.

**Lid retraction and exophthalmos in Graves' disease.** By MR. E. E. POCHIN.

In cases of Graves' disease an appearance of exophthalmos may be produced by two different phenomena: first an actual proptosis and secondly a widening of the palpebral fissure by retraction of the upper lid, giving the illusion of exophthalmos.

The characteristics of this lid retraction were investigated in a group of cases of Graves' disease in which the retraction was unilateral and uncomplicated by any exophthalmos of the affected eye. This appearance is contrasted with that of the eye which is actually proptosed either owing to mechanical causes, or in such cases of Graves' disease as have exophthalmos, but give no evidence of lid retraction.

*The following Members joined in the discussion:*

MR. A. D. GRIFFITH briefly referred to arterio-venous aneurysm as a rare cause of proptosis.

MR. J. ELLISON.—Three cases of arterio-venous aneurysm of the internal carotid in the cavernous sinus are reported.

The mode of production of the condition is described and the effect on the circulation of the various methods of surgical treatment discussed.
MR. G. WILLOUGHBY CASHELL.—Description of case illustrating extreme proptosis following carcinoma of the antrum, which eventually involved the ethmoidal and sphenoidal sinuses and the base of the brain, illustrated with X-ray slides.

MR. A. F. MACCALLAN.—The following remarks are directed towards the inflammatory causes of exophthalmos only. The present speaker opened a discussion on this subject at this Society in 1928 (Vol. XLVIII, p. 1), when a classification of the causes of orbital inflammation was proposed. As a result of the study of recent cases and of recent literature a simpler classification is now offered.

The pathological changes in the orbit may be:—(1) Simple orbital oedema. (2) Orbital subperiosteal abscess. (3) Orbital cellulitis.

Orbital inflammations may originate from:—(1) Trauma. (2) The lacrimal apparatus. (3) Facial sepsis. (4) Dental sepsis. (5) The middle ear and mastoid cells. (6) The accessory nasal sinuses or nasopharyngeal inflammation. (7) Septicaemia or metastasis of septic material.

Remarks as to the differential diagnosis of these conditions are made.

“A case of glioma retinae, with special reference to the mode of spread.” By MR. S. SPENCE MEIGHAN and MR. I. C. MICHAELSON.

A case of glioma retinae, with secondary deposits in the optic nerve, orbit, skull, lymph glands, and liver, is clinically and pathologically described.

A striking feature in the optic nerve spread was a jump in the tumour growth. Based on the facts in this case and of those reported in the literature, certain deductions are made regarding the mode of spread of such tumours.

Further operative procedure after removal of the globe for glioma retinae is discussed.

A brief histological description is given of the second eye in this case, which was also affected by glioma, and which was treated with success by radium.

“A case of meningocele of the orbit and the diagnosis from other tumours.” By MR. M. H. WHITING.

A description is given of a case of posterior meningocele or encephalocele of the orbit, its development and the operative treatment; the diagnosis from other cystic conditions of the orbit is discussed.
"Remarks on ophthalmic gout." By Mr. L. H. Savin.

Cases are described in which gout appeared to be the cause of ophthalmic disease. The literature of ophthalmic gout is briefly reviewed.

"A contribution to the pathology of angioid streaks." By Mr. Frank W. Law.

A short review is given of the various theories which have been advanced in an endeavour to explain the phenomenon of angioid streaks. The clinical history and ophthalmoscopic appearances of a case which showed well marked angioid streaks are described, and from a study of the histological appearances conclusions are drawn which support the idea that angioid streaks are connected with folds in the retina.

"Abnormal retinal correspondence." By Miss E. E. Cass.

The term "retinal incongruity" was originally used in the 18th century to denote an abnormally placed, but normally functioning macula. The Nativistic school based their theories of space perception on Kant's philosophy and believed that corresponding points on the retina were anatomically fixed. The Empirists, headed by Helmholtz believed in an acquired retinal correspondence and Pickford, von Graefe and others brought forward proofs of new found retinal relationships. Nagel believed that there was no such thing as corresponding points but said that binocular single vision depended upon the muscle sense and the overlapping of the visual fields. He said a squinting person had diplopia and false projection until his muscle sense told him the true position of his eyes and then he had true projection, no diplopia and binocular vision again. His theory does not explain physiological diplopia. Javal wished to avoid the term "retinal incongruity" and as von Graefe called the paradoxical diplopia which occurs after operations upon abnormal correspondence "false projection," he used this term for the condition of "abnormal correspondence," although he himself says it is a misnomer as these cases have "true projection" before operations. Little importance was paid to the condition of abnormal binocular vision in squinting persons from 1900 until the late "twenties."

False correspondence in the author's 500 cases occurred in a large proportion and some were seen in the course of development. Macular correspondence can be elicited in most cases of false correspondence, but if left late in life the patients relapse after operation and revert to their false correspondence. If operated upon early in life normal correspondence may quickly develop. Three groups occur.

1. With false correspondence only: occurring in amblyopic persons who do not improve on occlusion, and in alternators.
2. True and false correspondence where there are two places on the retina at some distance from each other (one being the macula) corresponding with the other macula. Squints over 10° and with moderate amblyopia. False correspondence moves nearer true on training.

3. True and false correspondence, with fusion with the macula of one eye over an area between the true and the false corresponding point in the other eye. The patients have a low angled often periodic squint, with either amblyopia rapidly improving on occlusion, or no amblyopia. Groups 1, 2 and 3 may change from one to the other according to conditions.

"Some aspects of the anatomy of the optic nerve-head." By MR. EUGENE WOLFF.

(a) The central connective tissue sheath, that is the connective tissue surrounding the central vessels does not come directly into relation with the vitreous, but is separated from it by glial tissue which Kuhnt called the central connective tissue meniscus. This is continuous with the internal limiting membrane which is thus absent over the central portion of the physiological cup.

(b) Neuroglia also separates the anterior portion of the scleral and the whole of the choroidal portions of the entrance canal of the optic nerve from the nerve fibres. This tissue is continued anteriorly beyond the pigment epithelium, where it forms the "intermediary tissue of Kuhnt," which is thought to be visible by the ophthalmoscope. This is discussed.

(c) The structure of the lamina cribrosa and the part it plays in the ophthalmoscopic appearance of the disc in the adult and new born baby are described.

(d) The origin of the capillary vessels which are responsible for the pink element in the colour of the disc is discussed.

"The history of contact lenses." By MISS IDA MANN.

The paper is a short resumé of the progress and evolution of ideas on the subject of contact lenses during the last hundred years, beginning with the theoretical discussion of them by Herschel in 1827. The subject will be dealt with under the headings of optical properties, tolerance, and therapeutic indications.

Optical properties. The two main types, focal and afocal contact glasses, will be described. In the former the resultant power depends on the radius of curvature of the glass and on the thickness of the "fluid lens" between it and the cornea. In the latter the contact glass is only separated from the cornea by a capillary layer of fluid and is itself a lens of the required power. Müller, Zeiss and Dallos lenses are discussed.
Tolerance. Whereas earlier workers in this field had concentrated almost entirely on obtaining the optimum optical result Heine emphasized the importance of a good scleral fit as the main factor in tolerance. The question of the superiority of blown glasses over ground glasses in this respect is due to their asymmetrical scleral portion, and recent work has been mainly directed to the scleral fitting. Heine, Czapody, Prister and Dallos have suggested various means of obtaining this.

Therapeutic indications. It is obvious that with improvements in fit and therefore in the possibility of good tolerance the range of suitable cases becomes wider. In the earlier stages only two indications were recognised, lagophthalmos and keratoconus. The list now extends to at least six classifications, i.e., (1) keratoconus and irregular astigmatism of all types, (2) high errors of refraction, especially high myopia and aphakia, (3) high degrees of anisometropia, (4) lagophthalmos, (5) occupational and cosmetic cases and (6) in certain investigations (fundus and slit-lamp examination and certain operations).

"Some observations on fluid interchange and its bearing on certain ophthalmological problems." By Dr. J. Douglas Robertson.

If the aqueous humour is a dialysate, then the intra-ocular pressure should be maintained by the hydrostatic pressure in the capillaries minus the difference in osmotic pressure in plasma and aqueous. Evidence is brought forward that such a physical equilibrium does not always exist in the eye. The intra-ocular pressure has been studied in patients with very depleted plasma proteins and marked oedema, and in animals after alterations in the osmotic pressure of blood. The behaviour of the intra-ocular pressure suggests that the aqueous can no longer be regarded as a dialysate.

"Studies on the aqueous humour of normal and glaucomatous eyes." By Mr. T. H. Hodgson.

The osmotic pressure of aqueous humour is higher than that of the corresponding blood serum. Pathological intra-ocular tension is not a simple function of either the osmotic or the chloride balance between the blood and the aqueous humour. Owing to the distribution of certain substances and to the osmotic relationship between the intra-ocular fluid and the blood it is impossible that the former is a simple dialysate.

"Detachment of the choroid." By Mr. B. W. Rycroft.

Choroidal detachment has been investigated in cases of glaucoma and cataract. Suggestions as to the aetiology are made. The prognosis and treatment are discussed.
“Vascular changes in the retina, optic nerve and kidney, a clinical and pathological study.” By Dr. A. J. Ballantyne, Dr. I. C. Michaelson, and Dr. J. F. Heggie.

A case of vascular hypertension, which came to post-mortem, and in which ophthalmoscopic examination of the retinal vessels had been made, is described. An attempt is made to correlate the histological vessel appearances with the changes found clinically. Parallel changes in vessels of comparable size in the kidney and brain are described.

The general pathological changes are those of essential hypertension. The heart which weighed 330 gms. was hypertrophied (small woman, stature 4 ft. 10 ins.). B.P. seven days before death 200 mm. Hg. The outstanding arterial lesions were found in the kidneys and brain. The former were not much reduced in weight, but showed areas of ischaemic atrophy in the cortex; the capsular aspects were finely granular. In the brain the arterial lesions were more advanced. The vessels of the circle of Willis were sclerosed and atheromatous, while the smaller vessels in the basal nuclei and medulla show elastic tissue proliferation with deposition of calcium salts and intimal thickening, and occasional thrombosis with resultant softenings.

“Associated lacrymal sac and partial mixed parotid tumour.”
By Dr. J. Pendleton White, Dr. I. C. Michaelson, and Dr. J. F. Heggie.

Mixed tumours of the salivary gland type occasionally occur without these glands and recorded cases show them to have origin in several sites; palate, lip, tongue, etc.—“enclavements” at any point of fusion of the several embryonic processes which go to form the face. In the case here recorded a small tumour of this kind arose in the lacrymal sac of a man. It had been present for many years. Within six months of its removal a similar tumour was excised from the parotid gland on the same side. The occurrence of such tumours in the lacrymal sac is extremely rare.

“Observations on the treatment of epiphora.” By Mr. O. Gayer Morgan.

The treatment of epiphora in cases of dacryocystitis with muco-purulent discharge from the sac is extremely difficult, and in many cases unsatisfactory.

Such a condition produces a disability out of all proportion to the extent of the pathological condition present, and to the afflicted patient, correct treatment means the difference between comfort, and extreme and continuous discomfort and danger.

Probing and other forms of local treatment seem to have only a very limited usefulness. Removal of the infected sac may obviate
some of the discomfort, but it is not really a satisfactory method of treatment in the majority of cases, and is unscientific in the cases in which the sac can be utilised in some other way.

A series of patients were treated by Toti's original method, and the results were not satisfactory. A further series treated by the method of Dupuy-Dutemps have given much better results, and although cases have to be chosen with care, this operation seems to be one which should be much more widely employed.

"A further communication on the aetiology and treatment of phlyctenular ophthalmia." By Mr. A. Sorsby, Mr. R. Hamburger, Miss Margaret Coveney, and Miss Mary E. Nevin.

1. Analysis as to results of tuberculin tests and clinical evidence of tuberculosis in cases of phlyctenular ophthalmia admitted to White Oak Hospital, July, 1935—April, 1938.
   Comparative data in blepharitis cases.
2. Comparative study of the significance of tonsillar sepsis in phlyctenular ophthalmia and in blepharitis.
3. The sedimentation rate of phlyctenulosis.
4. The tuberculosis contact rate in phlyctenulosis.
5. After history as to clinical tuberculosis in cases of phlyctenular ophthalmia admitted to White Oak Hospital, 1921-1931. Comparative study for cases of blepharitis.
6. Phlyctenular ophthalmia as a tuberculous allergy.

Demonstration:
"A living patient with fundus stained by green dye injection." Mr. A. Sorsby.

"Evipan anaesthesia in ophthalmic surgery." By Mr. T. K. Lyle.

The advantages of intravenous anaesthesia in ophthalmic surgery are shown in:—
A brief review of the cases at the Royal Westminster Ophthalmic Hospital for which evipan has been employed. (Evipan has been in use at the Royal Westminster Ophthalmic Hospital for the last four years).
A description of the technique of injection as employed at the Royal Westminster Ophthalmic Hospital.
Possible contra-indications and complications are mentioned.

"Paraldehyde analgesia." By Dr. E. S. Rowbotham.

A safe method of basal narcosis is described which renders the patient unconscious but not anaesthetic; local anaesthesia is used in addition. Paraldehyde in watery solution is given per rectum combined with omnopon where necessary.
Narcosis is followed by a period (which may be continued almost indefinitely) during which the patient remains asleep but can be roused for feeding.

Except in young children and old and debilitated subjects paraldehyde alone will not produce unconsciousness.

Cases may be grouped as follows:

Group 1. *Children under seven. Debilitated or severely toxic subjects.*—Chloretone suppository gr. x one hour before operation. Paraldehyde one drachm per stone weight three-quarters of an hour before operation per rectum.

(The solubility of paraldehyde in water is 1 in 10, so that each drachm of paraldehyde is dissolved in ten drachms of warm saline.)

Group 2. *Normal adults and children over seven.*—One and a quarter hours before operation patient receives hypodermically omnopon gr. 1/30 for every stone weight; chloretone suppository gr. x followed in 15 minutes by paraldehyde one drachm per stone weight.

Group 3. *Alcoholics, athletes, very nervous patients.*—These patients receive on the night before operation a bromide sedative. One and a quarter hours before operation omnopon gr. 1/30 per stone weight and hyoscine hydrobromide gr. 1/150. One hour before operation paraldehyde one drachm per stone weight.

To tide patient over post-operative period repeated small doses (one drachm to two drachms) of paraldehyde may be given.

"Cataract and other operations during deep sleep induced by paraldehyde and omnopon." By Mr. Basil Graves.

This is a safe hypnotic. The patients continue to sleep comfortably after the operation. It is suitable for cases of cataract, glaucoma, enucleation, excision of sac, trachoma expression and seemingly all eye operations for which it is considered that sleep is advantageous. Paraldehyde was first used therapeutically in 1882. Leech, of Manchester, in the Medical Chronicle, 1884-1885, suggested giving it per rectum. Morphia derivatives were in use long before that. Koller introduced cocaine as an eye anaesthetic in 1884. Some aspects of ophthalmic surgery are survivals of the pre-anaesthetic days and may advantageously be reviewed from this point of view.

Some problems of neuromyelitis optica. By Dr. T. R. Hill.

The condition is contrasted with that of disseminated sclerosis, and an intermediate group of cases is described.
"Direct measurement of the axial length of the eye in the living subject by X-ray."  Mr. R. H. Rushton.

That the dark adapted eye is sensitive to X-rays had been noticed by early workers (Edison 1896, Röntgen 1897, Dorn 1898, Himstedt and Nagel 1901).

The phenomenon had not been further investigated until recent years. Gifford and Barth (Arch. Ophthal. 1934, p. 81) give an account of the early and recent work, together with some applications to ophthalmology.

The present paper describes the principle of a method of using the phenomenon for the accurate measurement of the axial length of the living eye. An instrument which embodies this principle has been used clinically and is described.

"A melanosome dispersing substance in the blood and urine in retinitis pigmentosa."  By Dr. E. C. Dax.

In the past ten years a number of writers have suggested that there is a relationship between retinitis pigmentosa and pituitary gland abnormality.

A substance which will disperse the melanosomes of the frog has been shown to be present in the blood and urine of eleven cases of retinitis pigmentosa.

This substance has never been found in the urine except in pituitary disorders or when the gland has been subjected to physiological stress.

"Retinitis pigmentosa in rats."  By Mrs. D. R. Campbell.

An account will be given of a hereditary retinal lesion in rats, which is primarily a degeneration of the rods and subsequently affects the pigment epithelium and other layers of the retina. The mode of inheritance and histological appearances bear a striking resemblance to retinitis pigmentosa and its mode of progress may be regarded as experimental evidence of the theory that this disease is primarily due to a degeneration of neuro-epithelium.

"Notes on dark adaptation and a simple instrument for its investigation."  By Mr. R. T. M. Haines.

An apparatus designed to carry out tests for vitamin A deficiency by the dark adaptation test is described. Errors due to incomplete illumination of the retina and to subjective phenomena are eliminated or reduced. The intensity of illumination of the test object is controlled by the use of two polaroid discs one rotatable through a known angle. A number of dark adaptation curves are shown together with the effect of dosage with halibut liver oil on those subjects whose adaptation appeared to be abnormally poor.
Mr. M. L. Hepburn joined in the discussion on the previous papers.

"The treatment of tobacco amblyopia by acetylcholine." By Mr. P. McG. Moffatt.

A series of cases of tobacco amblyopia has been treated by acetylcholine, at the Royal Westminster Ophthalmic Hospital. The physiology and pharmacology of the choline compounds is discussed. Details of cases are given.

The Annual Dinner was held on Thursday, April 28, at the Langham Hotel. The President was in the Chair and proposed the health of the Society. He alluded to the importance of a close relationship between neurology and ophthalmology and referred to the activities of the Society in the past and of its association with famous neurologists and physicians.

Dr. Percival Hay proposed the toast of the Guests to which responses were made by Sir John Parsons and Major-General MacArthur. Mr. Leslie Paton proposed the toast of the President.

In connection with the Congress a trade exhibition of instruments and apparatus was held in the College of Nursing.

On Saturday afternoon facilities were afforded to some of the members to make a tour of the General Post Office. This was most interesting and instructive.

ABSTRACTS

I.—GLAUCOMA


(1) Maziny gives the percentage of glaucoma cases examined at the Egyptian Government Hospitals during the last twenty years. He shows that with the enormously increased number of new patients, which in 1935 amounted to more than a million, the percentage of glaucoma has diminished from 3·25 per cent. in 1919 to 0·73 per cent. He points out that this is due to the increased attendance of patients with less serious ocular conditions, and is not due to any defects in the recording of cases of glaucoma.

In the discussion Zaki stated that the highest incidence of glaucoma at the Minia Hospital was 4·5 per cent. in 1923, while in 1935, it was 1·2 per cent. It is remarkable that in the year 1934 he saw 392 glaucomatous patients at this hospital.

A. F. MacCallan.