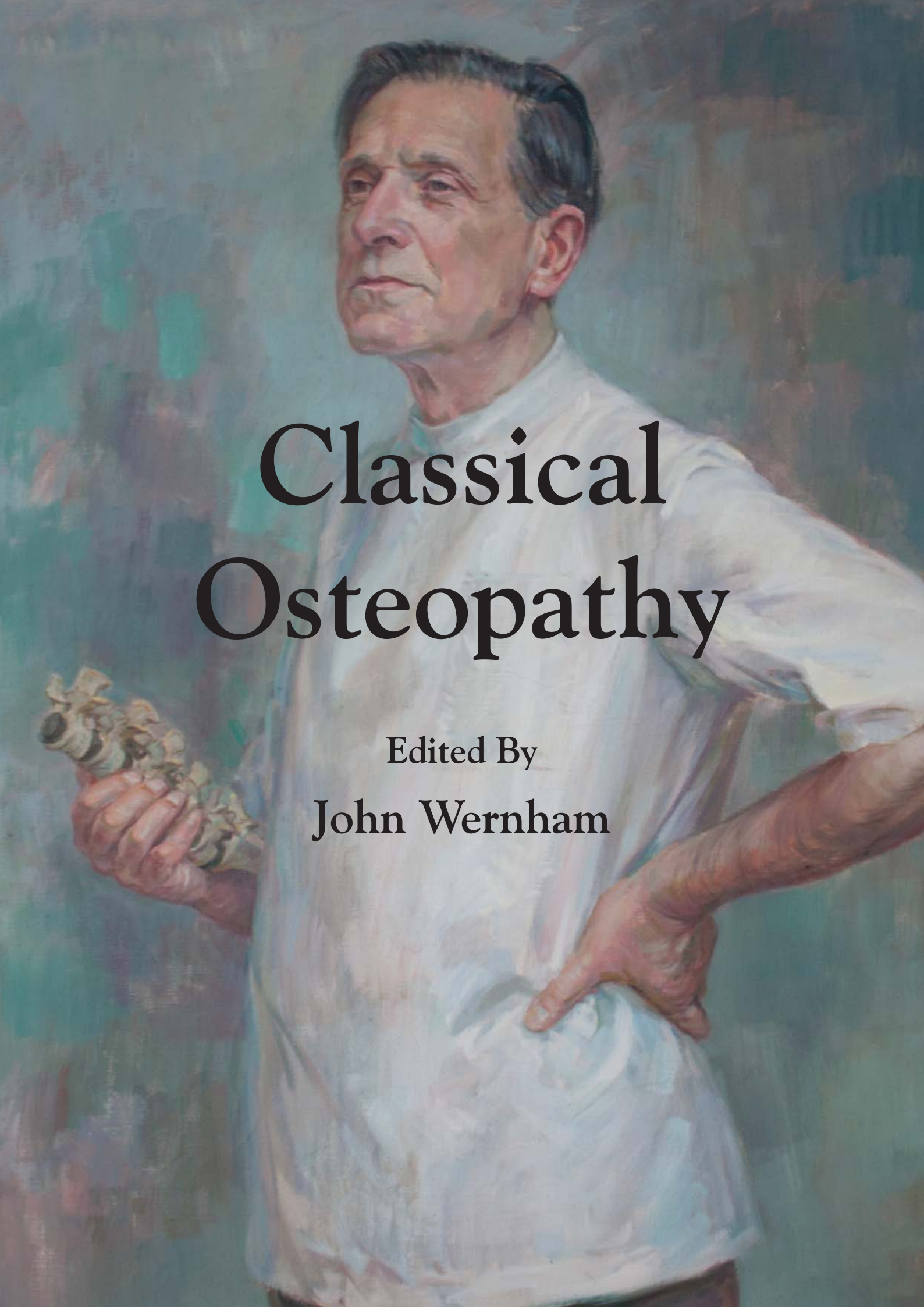

Classical Osteopathy

Edited By

John Wernham

FOREWORD

The Osteopathic Institute of Applied Technique began with a series of lectures given during the year of 1954 at quarterly intervals and at the invitation of the Management Committee of the Maidstone Osteopathic Clinic. Its purpose was the preservation of the Principles, Technique and Practice of Osteopathy as laid down by Still and Littlejohn.

The lectures were given by the Founder Members and invited guests. These were then collected and published in a Year Book dating from 1956. Long since out of print it was considered that such valuable material should be made available to a generation of students and practitioners who have had little opportunity to become acquainted with the fundamental teaching of osteopathic philosophy.

Other contributions to our publications included research from earlier records from the work of the American pioneers in osteopathic development. In its history of little more than a hundred years, there can be no doubt that the osteopathic concept has made an impact on twentieth century medicine that is more than remarkable, but if we are to continue and retain our separate identity we must look to our past in association with the present in building a secure foundation for the future.

Maidstone 1996 John Wernham

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THE EYE

J. M. LITTLEJOHN

The eye is an organ with the special function of vision and yet it is so involved in the structure and function of the body that any and every body condition may be expressed through and in the iris, the retina and the pupil. In its relation to the nervous system it has a special cranial nerve, but it also depends for its nutrition, its movements and the balance of the two eyes in vision on the action and the coordinating function of the greater part of the central and sympathetic nervous system. This makes it impossible to deal with the eye as an isolated organ or to consider the eye diseases apart from their relation through the nervous system to the rest of the body. It would be true to state that except for purely structural deficiencies or alterations in the eye as an organ, every eye disease has its origin in some other part of the body.

The examination of the eyes must be made from both subjective and objective standpoints. The former includes the patient's history and symptoms: whilst he is speaking, note any irregularity of size, position or direction of the eyes. Have the patient seated with his back to a source of light, for example a window and with the head inclined slightly backwards. The eyes should be fixed on a small mirror or bright object two or three feet away. Observe any difference in intentness or in angle of vision. Irregularities of movement of one or both eyes may be seen if the mirror is shifted from side to side or up and down taking the eyes to their full range of movement. With the eyes still fixing the object now held in the mid line cover one of the eyes with the hand or a card. If the other eye has been fixing the object correctly it will not move, but if it has been deviating outwards it will now move in slightly; if the deviation was inwards it will move outwards in order to fix the object. On removal of the hand similar movements of the hitherto covered eye will reveal like deviations.

Examine the eyelids to find out if the margins are normal, and note the condition of the cilia and conjunctiva. To examine the lower half of the lid or eye, pull the eyelid down at its centre and then apply traction at the inner and outer canthi, noting whether the eyeball or lid move uniformly or not. If there is resistance to traction at the canthi, this denotes an impediment to mobility, inequality or unbalance in the nervous control of the movements of the eye. To exert the upper lid for examination, take the cilia between finger and thumb, draw the lid away from the eye and lift

upwards, meantime preventing the tarsal cartilage from moving upwards with it. Examine the cornea for transparency, inflammation or ulceration, which is found generally in small patches. This is best done by the method of oblique illumination where the rays of light from a lamp are brought to a focus on the part of the eye under examination by a lens of about one inch focal length; opacities will appear white. Observe if the pupils are equal in size and test their reaction to light, direct and consensual, and to accommodation.

In some cases it is necessary to test the range of vision. A simple method of doing this is to have the patient seated with his eyes about fifteen inches from a blackboard or paper, and fixed on a mark on the board. Cover one eye, and test the other by bringing a conspicuous object such as a piece of white chalk inwards towards the mark from various directions, marking on the board the point at which the object is first seen. Repeat with the other eye. By having the eyes follow the object it is possible in a similar way to map out circles of vision in order to assess the function of the extrinsic ocular muscles.

Objectively, defects may occur in the following ocular functions. In the normal eye, rays of light focus on the retina so that, whether the object be far or near, the eye itself has the power of regulating its focal point, i.e. accommodation in vision is a physical condition regulated and controlled by the eye via the nervous system. This power of accommodation is always more or less deficient in every eye and is usually found in connection with the ciliary muscle of the eye and results in an interference of some kind with the movements of the lens. When divergent rays of light from a near object enter the eye, they require more refraction than the parallel rays from a distant object, in order to focus on the retina. To do this the ciliary muscles must contract resulting in the lens becoming more spherical and focussing the rays of light on the retina. Any variation in ciliary muscle action will modify the focussing power of the eye hence in accommodation defects simply to correct the vision optically perpetuates the abnormal condition of the ciliary muscle. This can only be corrected via the nervous system.

There may be abnormal refraction taking place as the rays pass from areas of varying optical density, i.e. from the air through the cornea aqueous, lens and vitreous humour; any variation in curvature between these media will affect the refractive power of the eye. This is a physical

condition, but still depends upon accommodation and nervous system control.

The antero-posterior diameter must be normal if vision is to be normal. If the diameter is too great, the rays will focus in front of the retina; if too small. the rays will not focus at all. This produces confusion of vision, artificial objects of vision, or sometimes blindness. The media of refraction must be clear, the solidification of the fluids of the eye produce films or growths which will affect the transmission of light.

If the condition of the eye is normal it is said to be metropic. Any deviation from this physical condition is represented by a particular variation, e.g. in hypermetropia the antero-posterior diameter is too small and it is not possible for the eye to focus rays of light coming from a distant object, i.e. which are parallel. Since the ciliary muscle contracts in order to relax the capsule of the lens and so increase its convexity the muscle becomes over-strained and eye headaches result.

Myopia results when the antero-posterior diameter is too great and the rays of light focus in front of the retina. Other possible causes are too great convexity of the cornea or poor physical relaxation of the ciliary muscle. This condition can be congenital because all eyes at birth are blind and at first vision is to some degree myopic because of the inability of the eye to rectify the rigidity of cornea and sclerotic, which is essentially present in an eye that has never functioned in vision or that has largely ceased to function by habit or other reason. This condition may be acquired principally in connection with paralysis of the ciliary muscle, muscular inactivity largely developed by non-use, or in intra-orbital conditions involving the tissues of the eye, or in constitutional disturbances such as rheumatism when toxins cause loss of tonicity in the eye muscles and tissues. In myopia therefore the eye is unable distinctly to see distant objects, and if an attempt is made continually to accommodate the eye to distant vision, the result is headache and further blurring of the vision.

In astigmatism there is structural derangement of the eye, the curvature of the cornea, lens or retina is irregular, hence the focus is not even over the visual field. The diagnosis of this condition is based on an examination of the axes or axial planes of the eye in relation to the axial plane of the optic disc. Symptomatically, there is headache, inability to use the eyes with concentration for any time, especially in near vision. Since symptoms are most pronounced when the subject is concentrating his vision on a particular object, e.g. a book, it is conceivable that this indicates

astigmatism to be a functional rather than a structural condition in origin, that is, the primary cause is an inequality in the contractibility of the ciliary or extrinsic muscles of the eye, possibly due to toxic substances affecting muscular balance. If this be so, astigmatism would be more easily corrected osteopathically than would myopia or hypermetropia.

Presbyopia is the senile condition of the eye in which there is inability to see objects either near or distant due to loss of elasticity of the ciliary muscle and of the eye itself organically. Note that if the eye is kept and used in normal activity, the muscles will, by their activity maintain the elasticity of the lens. This is important in cataract, as the solidification of the lens would be impossible if the muscles of the eyes play their normal part. Hence in all conditions relating to the lens, the eye should be kept in a state of activity and should not be shaded.

Diseases of the eye are the result of anatomical or physiological modifications, the significant points of lesion being the upper and middle cervical in relation to the function of the eye as an organ and the upper thoracic spine, in vaso-motor control. The lesion may be in muscle, joint or both, the muscle in relation to the sympathetic or constrictor function, and the latter relates to the central nervous system, or dilator function of the eye. In some cases the entire cervical spine is affected, being the region of reaction from other parts of the body. One point that must be noted from the standpoint of treatment is that nothing can be accomplished by treating only the cervical region. If lesions are corrected in the cervical area only, this will not affect the vision, and it is necessary to go to the field of cause which produced the reaction in the cervical region. Sometimes there are individual lesions of a cervical vertebra, or of the superior maxillary, first rib or clavicle, especially where a single eye is involved. Another common lesion involves the whole cervical area laterally with intense hyper-trophic contraction of the muscles on one side and associated with upper thoracic lesions. In some cases the fifth cranial nerve is involved, e.g. in motor derangements of vision such as diplopia and strabismus where eyestrain is the exciting cause; lesions being found at 3C and 2 and 3T chiefly. In axis lesions the lymphatics are involved and the eye suffers from enlargement, excessive swelling and fluid accumulation.

In vascular lesions of the eye there is a direct impingement on the vertebral arteries with disturbances of the vaso-motor nerves of the lymphatics. In such cases the lower two cervical vertebrae and clavicular lesions obstruct the lymph flow from the head. Lesions of the atlas, axis

and 3rd cervical affect the superior cervical ganglion which is the sensory head of the ascending sympathetic chain and sends branches via the carotid arteries and the cavernous plexus to the head and eyes, also sending fibres directly to the eyeball and via the ophthalmic arteries to the eye. The ciliary ganglion, a very important structure in relation to the eye, lies just behind the orbit, between the trunk of the optic nerve and the external rectus muscle of the eye. Hence any abnormal pressure on the eye backward into the socket, by enlargement, dilatation, increased intra-orbital tissue such as fat posterior to the eyeball will affect the ganglion directly. This ganglion has direct sympathetic connection with the 3rd and 5th cranial nerves, and it represents the regional sensory motor and sympathetic fibres of the eye, in the same sense as the term is applied to the spine, where nerves pass from the regional centres for distribution. It is this ganglion that is affected in treatment when the eyeball is pressed backwards into the orbit, the direct pressure on the ciliary ganglion may be inhibitory or stimulatory according to circumstances.

The 3rd cranial nerve supplies all the extrinsic muscles of the eye except the superior oblique and the external rectus muscles, and also the sphincter muscle of the iris. The important nerve centre controlling the function of the latter is the superior cervical ganglion, and sympathetic types of lesion tend to produce strabismus which is a condition of motor disturbance. A typical example of this type of lesion is found where there is a fullness of the muscles and soft tissues on one side of the neck often with intense contractions on the other side. Pressure on these contracted muscles will cause pain in the eye, particularly when applied at the level 2 to 4C.

Diseases such as conjunctivitis, glaucoma, cataract and cases of structural changes such as pterigium classify as nutritional disturbances, produced by over-stimulation of the vaso-dilator nerve fibres being carried to the point of inhibition. Dilator fibres to the eye always act in connection to the 3rd cranial nerve transmitted along the anterior roots of the upper thoracic nerves to the eye.

In eye disease, different types of lesion may be found, for example the vascular type, operating by direct impingement on the vertebral arteries; by disturbance of the vaso-motor nerves by lesions of the upper thoracic spinal area, 2 to 4T; of the lymphatics with lesions at 6 and 7C and 1 and 2T, also of the clavicles, causing obstruction of lymph flow to and from the head.

The sensory type of lesion occurs when the superior cervical ganglion is affected through lesions of the atlas, axis and 3rd C. The ascending sympathetic chain sends branches out to the eye in connection with the cavernous and carotid plexus, filaments being sent to the eyeball and ophthalmic arteries.

Affections of the ciliary ganglion cause muscular and motor lesions in connection with the sympathetic nervous system affecting in particular the coordination of muscle control. Hence muscle control in the eye is not a brain function but an inherent and automatic one and this is the reason why lesions affecting the sympathetic system so seriously disturb eye muscle action. The sympathetics reach the eye through the cervical sympathetics, the optic branch of the 5th cranial nerve and via the long ciliary fibres. In defective accommodation and in eye strain there are lesions in the cervical and upper thoracic regions because of the irritated condition of the cervical sympathetic ganglia and of the 5th cranial nerve in its final facial distribution, and of the ciliary fibres. The ciliary ganglion is controlled through the cilio-spinal centre which is located in the lower C and upper T regions, the fibres in connection with the centre extending from 4 C to 4T.

Motor fibres to the involuntary muscles of the eye and eyelids pass out from the upper five thoracic nerves to form part of the cilio-spinal system. The retinal fibres pass out from the sympathetic system, through the superior cervical ganglion, thence to the Gasserian ganglion. there establishing connection with the cranial branches of the 6th cranial nerve, passing to the eye with the other fibres from the Gasserian ganglion. Stimulation of the cervical sympathetics produces constriction of the retinal arteries, whereas stimulation of the thoracic sympathetics (at the heads of the ribs) produces dilatation. The cilio-spinal function therefore has reference to constriction, dilatation and the balance of the two, i.e. the rhythmic tone of the eye via retina and pupil, and the coordinated activities of the eye as an organ. Hence all these functions are centred in the cervical and thoracic areas of the spine, namely 4C to 4T, 4C to 7C (constriction) operating with and under the stimulus of the superior cervical ganglion and 1 to 4T (dilatation) also of the sympathetic ganglia at the heads of the corresponding ribs. It is important to note that the sympathetic system is the medium of stimulation in the cervical spine of constriction and in the thoracic spine, of dilation, in explaining the seemingly contradictory results obtained by the articulation of the cervical and thoracic regions.

The determination of the result so far as the treatment of eye diseases is concerned is not solely from the sympathetic side. If stimulation is applied to the sympathetic chain, it is necessary to determine whether its result is constrictor or dilator. The sympathetic system is an inherent and automatic regulator of organic functional activity, and treatments applied to it, whether stimulatory or inhibitory can be used by it to normalise any particular abnormal condition. The vaso-motor system is the factor which determines whether sympathetic effect is dilator or constrictor and relates the general circulation to the specific blood supply to the eye. The primary disturbance may have its origin in one of the special nerves, such as the optic nerve, the 3rd. 4th, 5th. 6th, 7th or 10th cranial nerves, but the effects of this can only be closely associated with the eye so as to cause disease if the effect is transmitted to the eye via the sympathetic nervous system. Hence, palliative treatment is directed to normalising vaso-motor and sympathetic control.

In vaso-motor disturbances of the eye, such as retinitis, lesions will occur in the cervical and thoracic areas. If in the cervical spine the condition is brought out through its effect on the 5th cranial nerve; if thoracic, the cause may lie in the abdominal viscera, one of the organs providing an exciting cause. The trigeminal nerve sends branches to the eye through the sympathetics, the cavernous plexus providing vaso-motor and trophic fibres. Hence inhibition of the 5th cranial nerve, if maintained by a lesion condition will later produce ulceration because of nutritive obstruction in the eyeball, lachrymal glands and conjunctiva. Such lesions are commonly of the maxilla or atlas, but may also be found in the upper C and upper T regions of the spine in connection with the cervical spinal nerves which send branches upwards to the eye and the sympathetic connections of the superior cervical ganglion.

Control of pupillary contraction is through the inferior cervical ganglion in connection with the sympathetic nerves from 7C and 1T. Pupillary dilatation is also a function of the ganglion, but in this case it acts in conjunction with the spinal nerves from 6–7C and 1–3T. The action of these spinal nerves upon the ganglion is to inhibit its normal constrictor function. If the sympathetic nervous system is normal, control of pupil dilatation remains under the control of the upper thoracic spinal nerves, but when normal integrity is lost, the lower cervical spinal nerves take over this function. The 5th cranial nerve in relation to the eye, functions only through the sympathetic nervous system, in particular through the superior

cervical ganglion, hence the eye in its relation to the trigeminal nerve depends on the integrity of the sympathetic ganglia.

The constrictor fibres in connection with the retinal arteries arise from the sympathetic chain in the cervical area, and the dilator fibres pass from the thoracic sympathetic chain, both of these series being relayed through the superior cervical ganglion. Thus, constriction and dilatation, viscero-motion, and cranial nerve activity in relation to the eye and its function derive from the sympathetic system and is affected by the reactions of the various plexuses within the body. Hence lesion conditions corresponding with thoracic and abdominal organs produce reflex effects on the eye through the sympathetic nervous system. If such a condition is of long standing, it produces an alteration of blood pressure in the eye, and eventually this extends to other structures contributing to the function of the eye, the 5th cranial nerve being the main medium of transmission.

General eye diseases are all reactions to change in the normal structure or function of the eye, or violations of the principles that govern its relation to the other organs of the body. It is necessary to have a thorough knowledge of the anatomy and physiology of the eye, and a knowledge of the common nose, ear, cerebral and systemic diseases that are associated with the functioning of the eyes. In these general conditions it is essential to trace out the relation of the eye trouble and the form it assumes in relation to associated disease as the primary cause.

Orbital inflammation is caused primarily by sinusitis, generally as a result of a thrombus forming in one or more of the perforating veins linking the ethmoidal sinus with the orbit, or the antrum with the lachrymal duct. Although there is continuity of the nasal mucous membrane with the conjunctiva, and although the bone separating the sinus from the orbit is very thin, these are not usually the route of interference with the eye from sinus or antrum. Thus the starting point is of venous origin and external to the eye, the first reaction being tears or an excess of lymph, due to obstruction first on the venous side, then on the lymphatic. Palliative treatment should therefore be directed to the venous circulation outside the eye and stimulation of the lymphatics in head, face and neck areas.

If the maxillary sinus is responsible for the orbital disease the major symptom is pain because there is a periostitis which may lead to necrosis of the bone. This is also due to venous obstruction which affects the periosteum, and it will produce oedema of the lower eyelid and injection

and fluid stasis in the lower half of the conjunctiva. Palliative treatment consists of improving the lymph drainage, and inhibition around and over the orbit to relieve the pain and to drain the excess of blood downwards by steady inhibition from the external canthus to the angle of the jaw. If this condition becomes extreme, the eyeball becomes displaced upwards in the orbit with the resultant diplopia. To relieve this pressure should be applied over the bone just lateral to the external canthus and continued until pain is transferred from the point of pressure into the eyeball. As soon as this pain in the eye is felt by the patient, convert the inhibition into stimulation by a circular moving pressure, progressing outwards and downwards until the eye begins to move then, while continuing this, press the eyeball backwards and downwards into the orbit. If osteomyelitis develops, the inner part of the orbital floor becomes the centre of a dropsical effusion which may continue to the point of pus development and sloughing. The orbit should be irrigated daily with a saturated solution of Epsom Salts following the above treatment. In all cases general circulatory treatment should also be given.

Frontal sinus infection may extend into the eye producing a tender fluctuating swelling at the upper inner angle of the orbit with oedema of the upper eyelid and displacement of the eyeball downwards in the orbit. This is found chiefly in cases of tuberculosis and always associated with osteomyelitis. Sometimes there is a fistula into the frontal sinus. In such cases the appropriate surgical drainage should be used, but the irrigation and local eye treatment as described above also general circulatory treatment should be given.

The most common sinusitis in relation to the eye comes from the ethmoidal sinus via the anterior ethmoidal vein, and produces oedema of the medial halves of both eyelids, injection of the medial conjunctiva with lateral displacement of the eyeball. In some cases the posterior ethmoidal vein is the channel of infection, when exophthalmos may occur. The treatment again is similar, but only very gentle pressure should be given over the eyeball, and irrigation given frequently instead of daily. The eye should be kept cool by application of a mild ice poultice, cold milk or cold thymol of glycerine. Sphenoidal infection sometimes affects the orbit, but occurs always secondary to posterior ethmoidal vein involvement. Drainage treatment with inhibitory and tapping pressure over the sinuses should be given as frequently as possible, followed by the circulatory drainage treatment from the eye downwards along the side of the face towards the neck and spine. The posterior ethmoid and the sphenoid, on

account of the anatomical relation of the intervening spaces and the optic nerve are the sinuses to which optic nerve involvement can always be traced, the origin of the inflammation being generally in the nose. Polypoid degeneration and consolidation of oedematous material are the chief primary conditions occurring at any point in the head, neck, throat and upper thorax, but the main source of infection is always in the sphenoid or posterior ethmoidal vein. The condition is therefore primarily venous, and the line of treatment should be to try to eliminate venous stasis around the head, neck and throat, followed by general circulatory treatment away from the head, directing the blood chiefly into the abdomen using lymphatic pump and spinal treatment.

In iritis there is a combination of conditions involving the iris, the choroid, and the retina, all being secondary to a chronic sinusitis. If cataract appears as a secondary complication, the establishment of drainage must be followed by the clearing of accumulated inflammatory material, so treat to establish the circulation to, through and from the eye, and follow this by general circulatory treatment.

The two prominent symptoms of asthenopia are headache and ocular fatigue with dizziness resulting from the latter. In some cases, especially in the growing child, paroxysmal squint frequently accompanies the fatigue. This is generally caused by the absorption of poison into the eye from the sinuses through the blood stream, and produces its effects through the static condition of the circulation in the eye. The task here therefore is to loosen the eye and all the orbital structures and to establish drainage by inhibition followed by rhythmic treatment at the internal canthus and from the external canthus to the angle of the jaw. Complete by general stimulation of blood and lymph circulations.

As far as the eye is concerned, the symptoms of increased intracranial pressure are similar, whether due to brain tumour, abscess, meningitis, or any kind of irritation producing a reaction through the brain. The pressure produces papilloedema in practically every case of tumour of the cerebellum, midbrain and optic thalamus. In tumours of the anterior central area of the brain there is always an optic neuritis but this is seldom so if the tumour lies in the optic tract: instead there is optic atrophy. There is almost always some systemic disease in the background, symptoms being persistent headache, reduced and concentrically contracted vision. There are enlarged veins in the head area, contracted arteries, haemorrhagic exudates from the eye which become white and thick. The ordinary

tumour condition is associated with three types of general disease, locomotor ataxia, multiple sclerosis, and general paralysis of the insane. In secondary optic atrophy there is always a pupilitis followed by neuritis, the first reaction on the disc is irregularity followed by enlargement. In dealing with this condition one must treat the original disease and the line of expression of the nervous system along which the effects have travelled from the spine to the brain. To relieve the effects on the eye, treat locally to remove rigidity and congestion, relax suboccipital and cervical contractions and improve spinal drainage by articulating downwards along the neck. Follow by raising and articulating the clavicles and first ribs and thorax generally. Always see that the kidneys and bowels are free in action and treat accordingly.

Pressure symptoms in the eye associated with meningeal abscess, meningitis and encephalitis follow a different line of development. From the meninges inflammation travels to the eye and settles as pupilitis, the stages being swelling and rigidity of the eyelids, conjunctival injection and corneal laziness. The pupils are contracted and there is retinal haemorrhage followed by partial paralysis of the 3rd and 6th cranial nerves and strabismus. The final results are partial or complete paralysis of accommodation and bilateral ptosis of the upper eyelids. Little can be done in the later stages of this condition, but in the earlier stages treat as a typical meningitis.

Ophthalmic migraine is due to a semi-paralysis originating in a basal lesion and conveyed to the eye and accessory fields of the face by the sensory nerves. Primarily there are head pains with photophobia followed by ptosis of the lids, strabismus, loss of accommodation and pupil dilation. Light accommodation and convergence reflexes are absent or disturbed. The disturbance is in the base of the brain and in its relation to the body through the sensory function of the superior cervical ganglion, so that palliative treatment consists of the relaxation of the suboccipital, upper cervical and superior cervical ganglion areas. A similar condition is found in the hydrocephalic child, but there is, in addition, downward rotation of the eye, swollen disc and optic atrophy.

Eye symptoms are important in the diagnosis of multiple sclerosis and locomotor ataxia, nystagmus being typical. This is an ocular ataxia and is absent when the eyes are at rest. Another symptom is a central scotoma associated with a form of colour blindness in reference to the red-green colour. There is irregularity of pupil action, dilation and contraction taking

place as if the marginal border of the pupil was without control. This is due to involvement of the 6th cranial nerve resulting in partial paralysis of some of the eye muscles. Optic atrophy is found in later stages of spinal cord degeneration. It is necessary to differentiate between a scotoma due to nerve exhaustion when the eye will become blinded by prolonged reading but will recover with rest, and a scotoma due to a lesion in the nervous system. Loss of vision often appears worse to the subject than it really is, and as a rule the greater the loss of vision the greater dilatation of the pupil. If in testing the eyes the pupil dilates readily to its maximum, remains so, and does not easily contract, this usually indicates a deep seated nervous disease with a tendency to optic atrophy.

In arteriosclerosis, hypertension and nephritis the arteries of the eye become tortuous, irregular and white; the veins are twisted and show compression where crossed by an artery. White stripes on the vessels indicate sclerotic changes, and haemorrhages are found. Old haemorrhages are indicated by grey or white spots, sometimes the greater part of the eye becomes whitened and atrophy results. Blurring of vision is an early symptom of acute and chronic interstitial nephritis and is caused by oedema and haemorrhage. The points of nerve connections form white spots, ultimately merging into a mass of white, forming a stellate figure on the retina which leads to impairment of vision. The diabetic eye has small white spots and haemorrhages, sometimes an extravasation of blood which covers the whole retinal field. Chorio-retinitis is one of the most common eye diseases associated with syphilis, both hereditary and acquired. Small pin-points of opacity are found in the vitreous and lens, and there are the grey and white spots on the retina indicating degeneration of the nerve endings, which are later outlined in black. The blood vessels become tortuous and sometimes obliterated. In the hereditary form there is a pigmentary retinitis. Acquired syphilis causes a ring to appear in the visual field, more pronounced on dark days and at night, and this produces the effect of looking down a tube as the condition progresses. Pigment leaves the retina and disseminates through the nerve layers, assuming various shapes, while the choroidal vessels are exposed: the vision becoming worse to the point of blindness. The whole field of the toxicology of the body is expressed in the eye-uraemia, septic teeth, tonsils or colon, the effects of drugs or tobacco are all realised either as weakness of the eye or as flashes of light representing some form of squint, divergence, insufficiency of ocular conception, and exhaustion of accommodation, the forms of amblyopia

which represent the beginnings of a loss of vision due to nervousness fatigue, poisoning, or other ocular exhaustion.

The general diseases of the eye that have been indicated are all reactions to, or violations of the principles that govern the function of the eye in its relation to the other parts of the body. By some irritation there is produced a change in the normal structure and function of the eye, therefore these disturbances originate on the sensory side and so involve to some extent the optic nerve, its direct relation to the eye, and the stimuli from other parts of the body that modify optic nerve function. The optic nerve, because of its origin in the base of the brain and its relations with other basal and cerebellar ganglia, functions as a result of the correlation of these ganglia and the correlation of the two halves of the cerebrum, since each optic nerve carries fibres from both cerebral hemispheres.

Both of these factors are determined by the circulation and distribution of blood, lymph and cerebrospinal fluid and this leads to the basal occiput the occipito-atlantal articulation. 1–3C and 2–4T as the controlling vaso-motor field. The sensory side of distribution of impulses coming from different parts of the body is centred in the superior cervical ganglion as the essential part of the sympathetic system in collecting all sensory stimuli from the body for transmission to the brain. Lesion conditions at any level in the spine involve, in particular, the posterior ganglion on the spinal nerve root and its relation to both the sympathetic ganglion and the posterior column of the spinal cord.

IRIDIAGNOSIS

STAFF LECTURE

The eyes are the most highly developed organs in the body. They are sense organs which reflect every part of the body and this is the basis of diagnosis of disease through the eyes. If we consider the eye in relation to the face, the narrower and more covered with hair are the brows, the more brilliant and glistening, is the forehead, with corresponding glistening in the white of the eye. It is often said that some eyes are large and others small, but the truth is that the visible part of the eye is controlled by the opened lids which may vary in height from 9 mm to a maximum of 13 mm. In what appears to be a large eye there is a strip of white above and below the iris, which together with the moistened edges of the iris mark the frame of the eye. If the lashes are long, dense and strongly situated the white of the eye is even more brilliant. Regarding the expression of the eye there is a small lineal furrow on the upper lid formed by a backward folding of the skin, and which almost disappears when the lids are closed. For example, if the bright, moist edges of the upper lid become a little wider than usual, then we have the "languishing eye," in which the expression appears to be concentrated inwards rather than outwards.

The white of the eyeball is produced through the action of the cornea, being covered by conjunctiva, which is traversed by a network of capillaries. Absence of the normal white indicates that the conjunctiva has become dim in colour because of persistent irritation, and it is through the conjunctival discolouration that the eye becomes yellow. This means that the eye depends on facial expression, facial circulation nutrition; on normal tone and rhythmic activity of the eyelids; on the integrity and functional activity of the conjunctiva; colouration or discolouration of the eye depends on the condition of the cornea. The brilliance of the eye is the reflected light from the conjunctiva and the cornea; the more moist the eye, the wider the opening of the lids and the more pure the white the more perfect is the brilliance upon which is built the diaphragmatic action of the iris.

It is said that the eye is the mirror of the soul, thus disclosing mental conditions. From our point of view, however, the normal eye is an expression of the physical conditions within the body rather than the soul. The normal eye is clear; the glaring eye is nervous, consumptive and degenerative; the expressionless eye is that of the typhoid state; the constricted eye in which the contraction shows in lines is that of insanity.