Ophthalmology.

UNDER THE CHARGE OF

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Etiology of Ocular Paralyses.

In the *Recueil d'Ophthalmologie* for March, 1887, Prof. Fournier sets out the distinctions between the symptoms of ocular paralyses, caused by ataxia, and those from lesions of the ocular nerves. If symptomatic of tabetic disorders, he finds the following distinctive points:

1. The paralyses are almost always single or in groups, and partial; the pupil is often implicated in a peculiar manner.
2. There is either the Argyll-Robertson pupil or myosis.
3. The paralyses are often of short duration, sometimes for an instant only.
4. They are especially liable to recur, and often cease spontaneously and quickly.

If of the following characters, a lesion of the nervous system is probable:

1. If the paralysis be complete.
2. If persistent.
3. If relieved only by specific treatment, long continued.

Of 62 cases of tabetic paralysis, the author found but a single one with total paralysis of the ocular muscles. Of the 62 cases the pupil was affected in 37, of which 28 had no other muscles implicated. Of the 9 remaining cases out of the 37, in which other muscles were affected, there were 3 cases of paralysis of the levator and of the internal rectus, 2 of the levator, 2 of the internal rectus, 1 of the inferior rectus, and 1 of the levator and inferior rectus. Of the 62 cases there were 15 myoses, 11 of which were without implication of other muscles. The author emphasizes the existence of a passing strabismus or of temporary diplopia, as thus often indicative of locomotor ataxia.

The Bacillus of Catarrhal Conjunctivitis.

Dr. J. E. Weeks (*Arch. f. Augenheilkunde*, xvii. 3, p. 318) describes a bacillus obtained from an acute case of catarrhal conjunctivitis, that he thinks the source of the infection. Two kinds of bacilli were found in the cultures, but the rod-like variety was proved by cultures to have no pathogenic quality. The one producing the inflammation was shorter than the tubercle bacillus, but of about the same thickness. The period of incubation after inoculation

was about forty-eight hours; inoculation always produced the characteristic conjunctival symptoms, and the bacillus in every case, when there was yellowish secretion, was always present.

Tuberculosis of the Conjunctiva.

In *Gräfe's Archiv*, Band xxxii. Abth. iii., Dr. Stölting reports three cases of this serious affection, and bespeaks a more hopeful prognosis than has heretofore been considered possible, and, especially, if the treatment be commenced at an early date. The diagnosis of the disease was rendered certain, in one case by the production of the characteristic bacillus under the microscope, in the second by inoculation and proof of the existence of the bacilli in the animal, and in the third case by both methods. The tuberculous ulcers were situated respectively upon the upper lid, the cheek, and the lower lid. The single and effective therapeutic measure advocated is the complete destruction of the tuberculous centre and deposit by the thermocautery. In some cases this may have to be repeated, or more thoroughly carried out at successful periods, but in each of the three cases cited, complete success was finally attained by this means. The author cautions against unnecessary destruction of healthy adjacent tissue, such as would cause cicatricial contractions, disfigurement, etc.

Injuries of the Eyes by Dynamite.

Professor A. von Hippel (*Gräfe's Archiv*, Band xxxii. Abth. iii.) describes the ocular injuries from explosions of dynamite in twenty cases that have come under his care. The most characteristic changes are in the cornea, and in all instances consist in a great number of grayish-white, punctate opacities, the result of the penetration of particles of sand, stone, etc., into the more superficial or deep corneal strata. The corneal epithelium was in all cases burnt or severely injured. The most serious and frequent complication of the many that may occur is, besides the loss of superficial substance, the perforating wounds of the cornea. The sclerotic was seldom perforated. In only one instance was any considerable fragment of stone, etc., found within the globe. The more severe injuries ended in loss of the eye by panophthalmitis or irido-choroiditis. Of the twenty cases, eight became blind in both eyes, seven in one eye, the vision of the remaining eye being very bad.

Ocular Injury by Lightning.

Dr. M. Knies (*Gräfe's Archiv*, Band xxxii. Abth. iii.) describes a case of this rare occurrence. A ten year old boy was struck with what might be called a spent bolt, while standing by an open window. He at once turned around several times slowly and in a peculiar manner, fell backward to the floor, and was unconscious for two hours. Upon the return of consciousness, both eyes, especially the right, were found much swollen and flowing with tears. The child was weak, dazed, slept a great deal, but had no headache. Four days later the oculist found fresh irregular wounds of the forehead and temple, and these extended down the right sterno-mastoid and the side of the

body to the foot. The skin of the forehead was in folds from the constant contraction of the frontalis muscle. The eyebrows and lashes were burned upon both sides, and there was incomplete ptosis with ciliary injection and diffuse corneal opacity. Upon the right side there was a large posterior stellar polar cataract and further lenticular opacity from the equator to the anterior cortex. There was complete amaurosis, but a normal-sized and acting pupil. In the left eye there was beginning cataract and a normal fundus, with vision one-half, not improved by lenses. The ocular motility was not interfered with upon either side. The right cataractous lens was partially removed at a later date, but the patient passed from observation, and the final results are not to be had. Two sets of consequences are, therefore, to be distinguished: First, the direct, consisting in the burning of the lashes, the flesh wounds made by the electric stream, the injuries to the nerves or muscular tissues by the same; second, the indirect, the iritis, the irido-cyclitis, the cataracts, etc.

Relations of Corneal Curvature to Cranial Circumference.

Bourgeois and Tscherning (*Annales d'Oculistique*, xcvi. p. 203), from the measurements of 203 soldiers, found that the radius of corneal curvature varied in proportion to the circumference of the head. Whilst the first rose from 7.78 mm. to 7.92 mm., the cranial measurements were from 54 to 60 cm.

Irido-cyclitis Tuberculosa.

Tuberculosis of the uveal tract is a rare disease occurring not more frequently than once in about 5000 cases of ocular disease. Therefore, the case described in detail by Dr. August Wagenmann (*Gräfe's Archiv* Band xxxii. Abth. iv.) posesses a peculiar interest. The patient was a man of forty-four years of age (February 3, 1886), had no tuberculous family history, and syphilis was excluded. The anterior chamber was partially filled with pus, there was prolapse of the upper portion of the iris, the tarsal conjunctivæ were extremely congested. There was no fundus reflex, the ciliary region was very sensitive to pressure, the visual acuity, $\frac{20}{100}$ to $\frac{20}{70}$. The eye was enucleated on February 5, and the suspected tuberculosis was proved by finding the characteristic bacilli, and by the inoculation of animals with the pus. Dr. Wagenmann finds from a review of the literature of the subject, that the disease is usually chronic and monocular, generally limited to the age of childhood, and may be painful or not according to circumstances. Early enucleation is always advisable, since, the diagnosis being certain, there can be no hope of saving the eye, and by this measure as well as by general treatment, a great improvement in health is at once observed.

The Pupillary Immobility of Progressive Paralysis.

Mœlli's study of this subject (*Archiv f. Psych.*, xviii., 1887) is based upon 500 cases. In about half of the cases the light-reflex was destroyed or much below the normal. In only twenty-eight per cent. was there good reaction. Mydriasis is much more infrequent than myosis. There were twenty cases of pupillary immobility in non-paralytic patients. In the majority of these

cases syphilis or alcohol was the probable cause. Binocular immobility existed in twelve cases without cerebral or paralytic disease, and in half of these cases syphilis was the undoubted source.

The Relation between Choroidal Crescent and Astigmatism.

Georges Martin (*Annales d'Oculistique*, Mars, Avril, 1887) gives the results of his studies of the relation of the choroidal crescent about the papilla to the axis of astigmatism, and finds in the great majority of cases, perhaps in all, that the crescent is situated at the extremity of a partial contraction of the ciliary muscle, and that this contraction is the cause of its appearance and development. All eyes with a crescent, he finds, are astigmatic, and the direction of the lesion is in a plane parallel to one of the principal meridians, generally, in the one of least refraction. In 358 cases of regular or vertical astigmatism, 336 crescents were external and 22 inferior. In 24 cases of horizontal astigmatism, the crescent was vertical in every case. Of 22 cases of oblique astigmatism, the crescent was vertical 15 times, and 7 times was parallel to the axis of corneal astigmatism. In dynamic or lenticular astigmatism of the 9 cases reported, the crescent and spasmodic astigmatism had the same direction. In 413 cases, therefore, of all kinds examined, the relation was proved to exist in 384 instances, or in about 93 per cent. In 77 cases that are tabulated, 13 were emmetropes, 7 hyperopes, and 55 myopes, 2 cases not being determined.

Cases of Primary Glaucoma in the Young.

Two interesting cases of glaucoma in young people are reported by Dr. O. Lange in *Gräfe's Archiv*, Band xxxiii. Abth. i. The first was in a man of twenty, and had continued with the usual symptoms of clouded vision, rings about lights, frontal headaches, etc., for over a year, with many subacute attacks. Latterly the abnormal increase of intraocular pressure had the peculiarity of an exact rhythmical occurrence. In the morning the pressure was high, decreasing toward noon, and disappearing entirely during the latter part of the day. At first, eserine controlled the glaucomatous symptoms, but it finally became powerless to affect the periodical rise and fall of the pressure. A sclerotomy, according to de Wecker's method, gave permanent relief for several years, when the attacks again came on, and, eserine once more proving of no avail, an iridectomy was made with the desired result of relief up to date. In the second case, a girl of twenty-two, the primary attack was connected with an amenorrhœa of seven months' standing. A de Wecker sclerotomy gave complete relief from what had been severe and frequent attacks of the usual glaucomatous symptoms. The author also adduces an instructive case of recurring glaucoma in a clarionet player, who was always seized with an attack after playing upon his instrument. Eserine, previous to an evening's engagement, always aborted the attacks. From these instances Lange argues that the glacomatous tension may be superinduced by circulatory disturbances, though he is so far from exclusively accepting this, or any other theory, that he sharply, and with much effectiveness, criticises those who thus accept any exclusive dogma of the etiology of the affection. Eserine, which enlarges the vessels, is, for this reason, deemed

to have its good influence in reducing the tension, but the author seems to forget that amyl nitrite has no such effect upon the intraocular tension. Mauthner's astounding theory that the increased tension does not necessarily belong to the glaucomatous symptoms, is as sharply criticised as the reverence due to great names will allow. As to the relative frequency of glaucoma in hyperopia and myopia, the author would modify the common belief that it is indiscriminately and excessively higher in hyperopia. Of his 163 cases of primary glaucoma, he finds that of 69 cases of glaucoma simplex, 30 were in myopic eyes, and 38 in hyperopic. In *glaucoma cum injectione*, the proportions were about as commonly given: 10 in myopes and 81 in hyperopes. In the *Archives of Ophthalmology* for June, Dr. R. L. Randolph reports a case of glaucoma in both eyes in a child of eleven years that had existed for over a year. No clew was obtained as to a family history. Vision was $\frac{6}{36}$ in the right eye, $\frac{6}{60}$ in the left, both eyes were under abnormal intraocular pressure, the left being of a stony hardness to the touch. The papillæ were cupped, and there was venous pulsation. The disease was not complicated with any other that could be learned. Operation was declined.

The Pathological Anatomy of Glaucoma.

Birnbacher and Czermak (*Gräfe's Archiv*, xxxii. 2 and 4) present an excellent account of the minute anatomy of seven glaucomatous eyes. The general results are in harmony with Schülten's experiments, viz., that any causes that increase the difficulty of the venous outflow, or that increase the arterial supply, tend to raise the intraocular tension. It is shown that the eyes under study give evidence of circumstances operating toward increased pressure, in that there is lessened lumen of the veins, caused by inflammatory changes and thickening of their walls, which changes also had the effect of cutting off the ready escape of lymph and other fluids. The primary source of the mischief is thought to consist in injuries of the uveal tract consequent upon inflammation, which prevent the escape of lymph and venous blood.

The Influence of Mydriatics and Myotics upon Intraocular Pressure.

In *Gräfe's Archiv*, Band xxxiii. Abth. i., Dr. Friederich Stocker publishes the results of his numerous experiments with the principal mydriatics and myotics upon the intraocular pressure of cats, under normal or physiological conditions. Morphine and chloroform were found ill-adapted as narcotics, and curare alone was resorted to. The tension was measured with a manometer, especially constructed for the purpose. The reader may be astonished to learn that the invariable result of the extended experiments was, that, under the influence of atropine, there was a slow diminution of the intraocular pressure. With cocaine there was also a lessening of the tension in every instance,[1] preceded, however, in the majority of cases, by a slight

[1] Elizabeth Sargent, M.D., in Archives of Ophthalmology for June, reports a case of diminution of intraocular pressure in a woman, and relief from pain and other glaucomatous symptoms for six or seven months, by the instillation of cocaine.

temporary increase of the tension. With eserine there resulted an increase of tension without any stage of diminished tension, but the *final* effect of eserine was to reduce the pressure to a greater degree than it had been raised. Pilocarpine slowly reduced the tension after a preliminary stage of strongly varying pressure, during which there was an average elevation of pressure in both eyes. In all the experiments it was proved that the pupillary play stands in no necessary and essential relation either to the increase or decrease of tension. This result is in direct contradiction to the conclusions of Hölztke and Gräser, who found (No. 13, *Verhandl. d. physiol. Gesellsch, zu Berlin*) that the pressure was raised with the widening, and fell with the narrowing, of the pupil. Regarding the radius of the corneal curve, the experiments show that the mydriatics atropine and cocaine have no influence upon it, in so far as may be learned by the ophthalmometer. The myotics eserine, and pilocarpine have the effect of shortening the radius during the myosis by one-tenth to two-tenths of a millimetre.

Subconjunctival Scleral Fistula in Glaucoma.

M. Motais communicated to the French Ophthalmological Society (Seance of May 4—v. *Recuil d'ophth.*, June, 1887) his method of operation in cases of hopeless glaucoma. When iridectomies are impossible, or have been proved of no avail to lessen the abnormal tension, and when other devices have failed, and an enucleation seems inevitable, M. Motais recommends the establishing of a fistula. He rotates the globe downward and inward, and plunges a knife into the vitreous at a point between the tendons of the superior and external rectus. The pressure of the eye prevents the healing of the sclerotic wound, but the conjunctiva soon heals, and a subconjunctival fistula is formed, so that the intraocular fluids are in communication with the subconjunctival pocket. In the fifteen cases so treated in the past three years, there was a temporary relief in but two, owing to the failure of the fistula to become permanently established. In the thirteen successful cases the tension has remained normal, and the pain and other glaucomatous symptoms have not returned.

The Spontaneous Absorption of Senile Cataract.

Dr. Paul Meyer, in *Gräfe's Archiv*, Band xxxiii. Abth. i., reviews the literature of the reported cases of spontaneous absorption of senile cataract. He finds that many are open to doubt and discussion, but that others, and especially the more recent cases, are so carefully observed, and with such intelligence, that denial of the fact is no longer possible. There is, of course, no question that juvenile cataract is frequently so absorbed, but as to senile absorption, conservative thought has heretofore been inclined to doubt either the accuracy of the previous diagnosis, or the trustworthiness of the report of reinstated vision. In the June number of the *American Journal of Ophthalmology*, Dr. Charles J. Kipp supplements the meagre literature with another case of spontaneous absorption of senile cataract without injury to the capsule of the lens, and with a restoration of excellent vision. The case is well reported, and there seems to be no doubt of the accuracy of the statement.

The Relation of Accommodation-strain to Glaucoma and Cataract.

To the ophthalmic surgeon the three ocular affections of exceptional importance are certainly those mentioned in the above title, and in uniting the three in a nexus of cause and effect Dr. W. Schoen (*Gräfe's Archiv*, Band xxxiii. Abth. i.) decidedly justifies his happy motto: *simplex sigillum veri.* There can be little doubt that we are only beginning to realize the widespread and variously injurious effects of eye-strain upon the organism generally, and upon the eye in particular. That the accommodation-strain of ametropic eyes may produce glaucoma and cataract is the thesis that Dr. Schoen renders far more than plausible. In hyperopic, astigmatic, and presbyopic eyes (the ones peculiarly strained) the persistent and irritating strain of the ciliary muscle upon its two attachments leads to the accommodative excavation on the one side, and to folding of the lens capsule with radial opacity on the other. Eighty per cent. of the patients subjected to accommodation-strain showed the expected accommodative-excavation. Of 95 cases of equatorial cataract, 92 showed the excavation, and there were in these 95 cases, 39 astigmatics, 39 hyperopes, 11 presbyopes, and 4 whose refraction could not be determined—nearly or quite 100 per cent. showing uncorrected refractive error. There was no case of nuclear opacity without equatorial cataract, and 90 cases of the latter without the nuclear sclerosis, showing that the equator is the starting point of the opacity. Besides refractive errors, leucoma of the cornea, extremely fine work, wearing too strong convex glasses, etc., may produce the strain. The consequences are, accommodative excavation, capsular folds, and hypertrophy of capsular epithelial structure, with other subsidiary injuries, such as overcorrected astigmatism (by the lens), halo, venous pulsation, blepharospasm, inflammation, etc. The final results are glaucoma simplex, cataract, glaucoma acutum.

Visual Disturbances Resulting from Cauterization of the Nasal Passages.

In the *Archiv für Augenheilkunde*, xvii–iii., E. Berger describes a case believed by him to be unique, where the application of the galvano-cautery to the nasal passages produced a decided amblyopia ("everything as if through a thick fog"). The subsequent spontaneous recovery was gradual. In the *Centralblatt für praktische Augenheilkunde* for May, 1887, Dr. Zien presents three similar cases of ocular troubles. In the first case cauterization of the hypertrophied mucous membrane of the middle turbinated bone of the right side was followed by indistinctness of sight of the right eye. Sph. + 4.5 gave V. $\frac{20}{40}$ with the right eye; sph. + 4.00, V. $\frac{20}{20}$ of the left. There was pulsation of the veins of the right papilla; none in the left. There was also slight limitation of the right visual field as compared with that of the left. In the second case, cauterization of a small tumor in the inner canthus of the left eye was followed by impaired vision and decided hyperæmia of the papilla of the left eye. In the third case cauterization of the nasal passage, followed by some hemorrhage, seemed to reduce the intraocular tension, and to produce pronounced venous pulsation and papillary hyperæmia.

Epidemic Hemeralopia.

In the *Archiv für Augenheilkunde* of June, 1887, Dr. Theodore Kubli recounts a curious phenomenon occurring in Russia in connection with the church fasts before Easter. Meats and even eggs are forbidden, and, as the period of fasting lasts for seven weeks, there is a great deal of resultant ill nutrition of the body. With other organs, the eye feels the effects of this regimen. Out of 19,588 cases of ocular affections in one hospital in St. Petersburg, from 1882 to 1887, there were 320 cases of hemeralopia, nearly every patient being of the orthodox faith, and the hemeralopia appearing during the fasting season. During the other fasts, extending over much shorter periods of time, there were but few cases presented. As concerns the ages, the older the person the greater the immunity. Of 200 cases of men there were 61 cases, each, from 10 to 20 and from 20 to 30 years of age; 43 from 30 to 40; 18 from 40 to 50; 12 from 50 to 60; 5 from 60 to 70. Among the number many had had the hemeralopia every year from youth. Pregnancy predisposes, but it is noteworthy that of the 320 cases 241 were men. Other ocular symptoms than the hemeralopia were, of course, frequently present, as epiphora, blepharitis, conjunctivitis, xerosis, keratitis, etc., but there were no considerable ophthalmoscopic changes, and the range of accommodation was not affected. The field [?] and the color sense were also normal. Diminished reaction to light was the distinguishing symptom. With Förster's photometer 15 cases had less than one-half the normal sensitiveness, 9 cases less than one-tenth, 11 less than one-twentieth, 8 less than one-fiftieth, and seven less than one-hundredth. The hemeralopia at once disappears with the resumption of a better diet. Other therapeutic measures were ineffectual. The popular remedy is therefore the best, and this is cooked liver, an article of food not held to be meat by the rigorous devotees!

Miners' Nystagmus.

In his interesting lecture on this affection (*Brit. Med. Journ.*, July 16, 1887) C. S. Jeaffreson brings both clinical facts and general logic to show that the theory of the local character of the disease advocated by Mr. Simon Snell and others is no longer tenable. Many facts go to show that the disease is of central origin, and that the general system may largely share in the morbid process. Choreic movements of the face and extremities, frontal headache, epigastric fluttering, spinal pain, general distress, and even a kind of cardiac nystagmus are some of the symptoms noted, and also go far to disprove the theory of Dr. Dransart, of Belgium, that the essential feature of the disease is a myopathy of the elevator muscles of the globe. The lecturer's theory is that the miners' position produces an interference of vascular supply of the head generally, but chiefly of the parts supplied by the basilar arteries. Hence the ill-nutrition of the visual centres, and the frequent hemianopsia. There is probably also an injurious pressure of the tentorium cerebelli upon the pons, caused by the miners' position, and the cerebellar function being the coördination of muscular action, it also may be interfered with by the causes mentioned.

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Report on 500 Enucleations of the Eyeball.

Dr. d'Oench's report of 500 enucleations by Dr. Knapp (*Archives of Ophth.*, June, 1887) is remarkable for the quantity of clinical material shown. As regards the causes: 234, or about 45 per cent., were enucleated on account of injury, 48 of which were because of a foreign body in the interior. "In 8 of them an attempt at removal was made." Tumors ranked next to injuries; glioma, 18 cases (11 in males, 6 in females, 1 unknown); sarcoma led to 30 enucleations; carcinoma to 9; enchondroma to 1. A "slow cyclitic process" led to 74 enucleations; phthisical eyeball to 40; painful stump to 8; staphylomas to 41 (16 anterior, 15 total, 10 ciliary); absolute glaucoma to 8; ossification of the choroid to 6, etc. In answer to the question whether it is safe to remove an eye in which panophthalmitis has developed, the statistics given show 20 successful cases out of 21 operated upon. 30 cases of death are reported after enucleation.

The Influence of Chronic Alcoholism upon the Eye.

Dr. W. Uhthoff's noteworthy article upon this subject in *Gräfe's Archiv*, Band xxxii. Abth. iv., gathers to a focus the clinical and anatomical results of the study of 1000 cases of chronic alcoholism. As regards the pathological anatomy, the conclusions are based upon the dissection and microscopical examination of seven cases, and the lesion is found to consist of a retrobulbar optic neuritis with secondary atrophy of the fibres. There is a wedge-shaped massing of the nerve fibres about the macula pointing to the central vessels. At this point there is an interstitial neuritis and degeneration, which is more severe in the retrobulbar portions of the nerve and extending to the cranial part of the same. There is a pronounced increase of the intraneural connective tissue, though healthy nerve fibres are always found running through this network, and in the majority of cases the greater part of the fibres maintain their functional activity. From this fact is explained the common observation that even with positive ophthamoscopic lesions, vision usually remains normal or but slightly impaired.

The cranial portions of the optic nerve and its branches were not examined, but the degenerative changes became less marked the further they were followed from the eye. They were generally of a crescentic shape in the retrobulbar portions of the nerve. No formation of new vessels was noted. The degenerate fibres were those of the inferior and external quadrant of the papilla, those, therefore, supplying the upper and inner quadrant of the visual field, and were wholly made up of the direct or uncrossed fibres. The macula fibres were, if at all, only slightly implicated. Paleness of the temporal half of the papilla was a constant, and the most pronounced ophthalmoscopic symptom in the cases that were subsequently examined post-mortem. In four out of the seven such cases, there had been little or no previous visual disturbance; in the others vision was more or less below the normal. Simple gray degeneration of the optic nerve was not observed.

Of the total 1000 cases that came under observation, 139 had pronounced temporal paleness of the papilla, and of these, there were 60 instances of visual impairment, either existing at the time or that had been previously noted. Of these 60, five only had had visual trouble for but two months or

less, whilst with the rest it had existed from six months to fifteen years. In 26 patients that were certain of a previously existing visual defect, there had taken place a reinstatement of visual acuity so that they could read Sn.1, though central scotomata for green and red were often found present. Indeed, as is well known, color-sense was much more affected than simple light reaction, green and red sometimes producing no peripheral response. In only 2 cases was the amblyopia excessive, $\frac{6}{200}$ being the measure in 1 case, and in the other an absolute central scotoma with a perimacular zone only slightly sensitive to light. There was no case of absolute blindness. In 8 cases the atrophic portion of the papilla was only one-fourth, or less, of its surface. In every instance (of the 60) the lesions were of both eyes. In the remaining cases, 65 of the 139, there was no complaint of amblyopia. 12 had the whitened papilla in but one eye; in 15 cases it was only slightly pale. In 10 cases it was characteristically and decidedly whitened, without producing any visual disturbance; in 8 cases tests were impossible, owing to the patient's condition, etc. In 4 cases, in addition to the temporal change of color of the papilla, there was also paleness of the inner half, though less in degree, coexisting twice with, twice without, defective vision.

In the 1000 cases there were 9 of amblyopia without any ophthalmoscopic changes of the papilla, and 53 in which there was a general cloudiness of the same. There were 6 cases of hyperæmia of the papilla, 7 of retinal hemorrhage, and 60 of pupillary abnormality. Of the latter there were 25 with decided differences of pupillary diameter, 10 with destroyed reflex to light, and 25 in which it was very slight. Convergence-reaction was almost always preserved. There were 22 cases of paralysis and anomalies of the ocular muscles, 4 of partial xerosis of the conjunctiva, 29 of congenital anomalies of the eye, 15 cataractous lenses, 27 corneal opacities, etc.

The second and concluding article of Dr. Uhthoff (*Archiv*, Band xxxiii. Abth. i.) treats of the special aspects of alcohol amblyopia, and of its relations with other, and especially with tobacco amblyopias. We at last find something authoritative as regards the much-mooted question of the differential diagnosis between tobacco and alcohol amblyopia, and of the relative injury of the eye by these two agents. But it will be regretted that this definiteness is purely negative. Up to this time there has been discovered no reliable ophthalmoscopic sign or other symptom enabling one to decide in any given case. Neither the living fundus oculi, nor visual tests, nor anatomical dissection of the tissues, give any trustworthy answer. The attempt by Poetschke to show a difference in form of the central scotoma (paracentral in pure tobacco amblyopia, pericentral in the alcohol type) is not found to hold.

The following, then, remains the symptom-complex either of tobacco or alcohol amblyopia, so far as concerns visual disturbances: There is central scotoma for red and green in the great majority of cases, and sometimes, also, a failure in response to the same colors in the periphery. In a minority of cases there is a blue scotoma, but it is less extensive than the red and green one. In a very few cases there is an absolute central scotoma—*i. e.*, no response to either color or light, surrounded, first by a zone of blue blindness, and other more extended zones of red and green blindness. The periphery is always sensitive to white light. Few exceptions were found to these rules.

There was complete blindness in no instance, and the greatest amblyopia (highly exceptional) was $\frac{6}{200}$.

Out of 30,000 cases of eye-troubles examined by the author, there were 204 of retrobulbar optic neuritis; of these 204, there were 64 clearly due to excessive use of alcohol, 23 as clearly due to tobacco, and there were 45 that were either due to the combined use of the two, or in which it was impossible to distinguish between the two agents. 3 cases were caused by diabetes, 1 by lead, and 2 by carbon disulphide. Of the remaining cases not specifically traceable to toxic agents, syphilis and heredity are credited with 7 each; multiple sclerosis with 5; menstrual abnormality, 3; pregnancy, 4; loss of blood in abortion, 2; vitium cordis and periostitis, each 1; and for 32 cases no distinct etiology could be found. Our space will not permit consideration of many interesting questions treated, such as the relative frequency of tobacco and alcohol amblyopia in different countries, the differential diagnosis between these and other toxic and systemic forms of amblyopia, etc.