in. The lumen was then packed with iodoform gauze down to the level of the tracheotomy tube.

After this operation the patient at first made good progress. The tracheotomy tube was removed on the third day, and towards the end of January the patient returned to the sanatorium.

About the beginning of April he had an attack of influenza during which he lost $1\frac{1}{2}$ lb. in weight, and when seen on April 1 reported that the breathing had of late become gradually more difficult. Even when at rest there was now slight stridor. No return of the disease could be seen with the laryngoscope, but the respiratory obstruction was obviously due to constriction following the loss of so large a part of the first and second tracheal rings. The greater part of the neck-wound was firmly healed, but a small aperture still remained, through which air was forced on coughing or forced expiration. It was considered advisable to replace the tracheotomy tube, and this was done under local anaesthesia.

When the patient was last seen (about six months ago) there was no evidence of a return of the tracheal disease. There were, however, signs of some recrudescence of the pulmonary trouble, there had been a further slight loss of weight, and the general condition was not very satisfactory. Any attempt, therefore, to overcome the tracheal stricture and so dispense with the tracheotomy tube was out of the question.

So far as he has been able to examine the literature of the subject, the writer has been unable to find a record of any case in which tuberculous disease led to necrosis of large portions of the tracheal cartilages, and, after perforating the trachea, invaded the thyroid gland.

PARESIS OF THE THIRD NERVE AND DISEASE OF THE SPHENOIDAL SINUS.

BY C. ZIEM,
Danzig.

THE diagnosis and improved treatment of diseases of the sphenoidal cavity have been developed within recent times. Rouge (1871), Russell (1878), Raymond (1886), and others (1) had previously proved by *post-mortem* examinations the association of visual disturbances with suppurations in the nose and sinuses, especially the sphenoidal sinus. Further, in the clinic of my former chief, Dr.

Adolf Weber, of Darmstadt, as early as 1877 Countess Y—— was treated for bilateral atrophy of the optic nerve, due, probably, to fetid suppuration of the nose. I have likewise seen the same association diagnosed, in May, 1878, at Prague, by E. Zaufal and the celebrated oculist, J. von Hasner (2). But the credit certainly belongs to E. Berger, of Paris, formerly Privatdozent of Ophthalmology in the University of Gratz (Austria), of having directed, by his clinical, anatomical, and bibliographical researches (3), the attention of numerous specialists to the important relations of sphenoidal diseases to the optic nerve; in doing so he long anticipated Onodi. These relations, however, should not be overestimated. For I myself proved only after a period of personal experience—and I believe that I was the first to do so—that contraction of the field of vision is often dependent, not upon inflammation of the optic nerve itself, nor upon *retro*-bulbar affections, but much more frequently upon *intra*-ocular affections (4), namely, the dilatability and erectility of the choroid membrane, and, according to J. v. Gerlach, the extreme vascularity of the ciliary plexus (Zinn [1780], A. Weber [5], Ziem [6]), damaging by circulatory disturbance the function of the pigmentary layer, and secondarily that of the retina itself (7). On the other hand, in Berger's sphenoidal syndrome, which is extremely variable according to Frémont, of Caen (8), and Guisez, of Paris (9), and is composed, as regards the eye, of epiphora, photophobia, blepharospasm, tenderness on pressing the eyeball backwards, contraction of the field of vision, amblyopia, and amaurosis. One symptom is not infrequently missing, viz., paresis of the external rectus or of the third nerve, at a time when, as in thrombosis of the cavernous sinus or in sphenoidal tumours, exophthalmos or total ophthalmoplegia is not yet present. In the above-mentioned case of Rouge, however, strabismus divergens was noticed, and in the observation of Thiroloix and Pasquier (1892), double vision (10). Cases of this kind have also been published by Schech (11), Hoffmann (12), de Lapersonne, Lermoyez, and Stanculeanu (13), Thompson of Cincinnati (14), Bruns and King of New Orleans (15), and others. I myself have recently seen a similar case, which may be interesting for several reasons.

Paul Z——, aged thirty-five, consulted me on March 30, 1908, for visual disturbance of his left eye and vertigo, due to his having been engaged with some comrades in driving piles by means of a heavy iron block, which was hoisted twenty metres and then allowed to fall. During this occupation he had had to look up and down

by turns frequently. Paresis of the left oculo-motor was present, with images crossed and convergent upwards, the lateral distance of which increased towards the right side, and the difference in altitude and the obliquity increased on looking upwards. Absolute repose of the eye; in addition, for supra-orbital and frontal pain and obstruction of the left nostril—due to some hypertrophy of the inferior turbinated body—nasal, retro-nasal, frontal, and ethmoidal douches of salt water by means of the force-pump. As early as April 29, 1908, after ten douches, complete recovery, no more vertigo, no double vision.

He returned June 15, 1908, for recurrent squint, attributable, perhaps, to alcohol. He worked on, however, till November 13, having been engaged in digging canals and casting the earth dug out 2.5 metres upwards, overworking, also, his eyes by looking alternately and rapidly up and down. Lateral distance of the double images now at 4 metres, and on looking straight forward = 12 cm. When reading he closes the left eye. Eyelid not drooping. No complaint of blinding. Vertigo, especially when mounting the staircase of his second-floor lodging. Supra-orbital and frontal pain, shivering fits, anorexia, and thirst—in short, symptoms of influenza. Vision impaired to the right and to the left, due to opacities of the vitreous. Obstruction of the nose, especially on the left side, with considerable hypertrophy of inferior turbinated body. In spite of douches, sudorific remedies, leeches at the root of the nose, vesicatories in the retro-auricular (retro-lobular) region, iodide of sodium and malt, there was almost no improvement in the double vision or central vision, which was reduced finally to $\frac{4}{60}$ ($\frac{4}{36}$), and was aggravated by two faradic applications at the inner canthus and over the retro-auricular region. Fortunately, about the middle of March, 1909, I chanced to ask as to the condition of his lodging, and learned with astonishment that he had occupied, since October 1, 1908, a most unhealthy, and even mouldy, one. Removal not being practicable before March 25, the patient was ordered in the meantime to walk in the open air for hours together. As early as April 1 vision was improved and the distance of the double images, laterally and upwards, much diminished. Complete recovery was established by April 13, with normal vision; amplitude of accommodation to the right = 4.0 dioptries, to the left = 4.5 dioptries. No diplopia, no mydriasis, no anomalies of the media or the fundus. The nose free. *Status idem*, July 16.

Now, it is certainly astonishing that the first attack of paralysis

of the left oculo-motor disappeared so rapidly—viz. within a single month, whereas the third attack remained nearly unchanged from November 13 to the middle of March, 1909, although the injurious influence producing the last attack was slighter than that exciting the first—*i.e.* the conditions were more harmful for the eyes in ramming in piles than in throwing upwards earth dug out. The quick recovery from the first attack was undoubtedly favoured by the patient's inhabiting at that time a more healthy lodging than in November. The harmful influence of bad air, not only on an arm which has suffered from fire, as in the case of Oliver Goldsmith (Chapter XXVIII), but also in developing or aggravating nasal diseases, has repeatedly been insisted upon by me (16). Two years ago I took the liberty of recommending, instead of resections of walls of sinuses which have been performed by certain authors too frequently and too extensively, resections of walls or floors of mouldy dwellings (17). With C. Posey, Chr. Holmes, Logan Turner, and others, I am of opinion that swelling of the left nasal mucosa, after being present for a certain period, is continued backwards to the mucosa of the sphenoidal sinus, where, by means of the numerous contiguous venous plexuses (18) the left ocular motor, running for a certain distance *close to* the lateral wall of the sinus (19) and already congested by overwork, becomes involved. Immunity of the right motor oculi here is probably to be explained (1) by the absence of a swelling of the right nasal mucosa, (2) by the fact of frequent *asymmetric* development and varying extension of the two sphenoidal sinuses in the same head, as has been demonstrated by horizontal and vertical sections by Zuckerkandl (20), Merkel (21), B. Frankel (22), Jaques (23), Toldt (24), Onodi (25), Turner (26), and others, and by topographic projections published by H. W. Loeb and Miss Hamilton of St. Louis (27), so that in cases of this kind the motor oculi of one side may by venous stasis more easily be involved than that of the other side.

Oculo-motor paralysis is not a frequent affection, and in the "Annual Reports of the Eye, Ear, Nose and Throat Hospital of New Orleans," 1900 to 1908, sent me by the kindness of Drs. de Roaldes and King, in 963 patients in the eye department only 15 cases of this kind (0.08 per cent.) were observed, and in only one case (1907) was chronic maxillary empyema found associated with orbital involvement and paresis of the third nerve. The late renowned oculist, A. Mooren, of Dusseldorf, in 108,000 patients noted 139 cases of oculo-motor paresis, that is, 0.12 per cent. He mentions especially the case of a young lady suffering from neuritis optica,

oculo-motor paresis and "scrofulous" periostitis basilaris, who was not cured or even much relieved (28). It seems probable, however, that conjoint and steady attention to ocular *and* nasal diseases will in future assure to a greater proportion of sufferers of this kind full recovery from an apparently hopeless paralysis, and that the ominous term "never returned" will gradually vanish from the statistics. It is likely, too, that constant attention to ocular and sphenoidal diseases will benefit our patients in a great proportion of cases of recurrent paralysis of the oculo-motor, attributable according to L. Nauthner (29) and Schmidt-Rimpler (30) to a basal rather than a nuclear factor. The statement which I ventured to make twenty years ago, that the greatest progress in ophthalmology is to be expected from the study of nasal diseases and their intimate relationship with those of the eye (30), can no longer provoke, as John Locke said, "a terrible charge or an outcry amongst those who judge of men's heads as they do of their perukes, by the fashion, and can allow none to be right than the received doctrines."

As to the treatment in my case resection of the inferior or middle turbinated body might have been performed but would have probably been useless while the musty smell was still present in the patient's habitation. It is with good reason that Professor Jacques, of Nancy, says: "Creusées dans l'épaisseur du massif facial, qu'elles minent en tout sens, les fosses nasales, avec leurs annexes, constituent un vaste système cavitaire, anfractueux, parcouru par l'air inspiré," a factor capable of compensating many fresh troubles or lesions in the forepart of the head, by the influence of healthy, not infected, air. The striking improvement after my patient's removal should certainly induce us in similar cases before undertaking an operation on the sphenoidal sinus which is not always free from danger (31), to provide for plenty of fresh air.

In aere salus is an excellent old proverb, and hours spent in the open air will, as John Lubbock states, tend to make our days long in the land.

BIBLIOGRAPHY.

- (1) DREYFUSS.—"Krankheiten d. Gehirns b. Naseneiterungen," 1896. EVERSBUCH, *Graefe-Saemisch; Hdb. d. Augenheilk.*, Lief 61-62.
- (2) ZIEM.—*Monats. f. Ohrenheilk.*, 1893, p. 267.
- (3) "Krankh. d. Keilbeinhöhle," 1886; "Chirurg. du sin. sphén." 1890; "Rapports d. mal. d. yeux avec celles du nez," 1892.
- (4) *Monats. f. Ohrenheilk.*, 1886, p. 137; *Internat. klin. Rundsch.*, 1888, Nr. 10-11; *Berl. klin. Wochenschr.*, 1888, Nr. 37; 1889, Nr. 38; *Monats. f. Ohrenheilk.*, 1892, p.

138: 1893, p. 266; *Annal. d. med. d. l'or.*, 1892. BERNHEIM and LAURENT.—*Traité de méd. prat.*, 1895, t. vi.

(5) A. v. GRAEFE'S "Arch.," 1877.

(6) VIRCHOW'S "Archives," 1891.

(7) J. v. GERLACH.—"Anatom. d. Menschen," 1891, p. 211. LEBER, *Graefe-Saemisch*, ii, Bd. 2, Abt., p. 103 and 112, 1903. MÖLLER.—*Augenh. f. Tierärzte*, 1892, p. 68, u. 118. BEYER.—*Ibid.*, 1903, p. 66.

(8) *Bull. de la Soc. Franc. d'Otol.*, 1907, p. 464.

(9) *Ibid.*, 1906, p. 93.

(10) *Cf.* Dreyfuss, *l.c.*

(11) *Berl. klin. Wochenschr.*, 1898, p. 583.

(12) *Verhandl. d. Deutsch. Otol. Ges.*, 1897.

(13) STANCULEANU.—"Les sinus de la face," Paris, 1902.

(14) *The Laryngoscope*, St. Louis, September, 1907.

(15) "Reports of the Eye, Ear, Nose, and Throat Hospital," New Orleans, 1907

(16) *Cf.* ex. gr. my paper on "Scrofulous Diseases of the Eye," *Ann. of Otol.*, St. Louis, vol. xv, 1906, where p. 1128 from "high" is to be read "mouldy fillings of walls," instead of "modern walls."

(17) *Monats. f. Ohrenheilk.*, 1907, p. 327.

(18) *Cf.* SPALTEHOLZ.—*Atlas d. Anat.*, ii, Bd. 98, p. 441. ZUCKERKANDL.—*Atl. d. topogr. Anat.*, 1900, pp. 49-55. ZUCKERKANDL, HEITZMANN.—*Atl. d. descr. Anat.*, 1905, ii, pp. 633-634. TOLDT.—*Anat. Atl.*, 1906, v, p. 687. SIEUR, JACOB, and DELSAUX.—*Bull. de la Soc. Belge d'Otol.*, 1905, p. 19. TURNER.—*Journ. of LARYNGOL., RHINOL., and OTOL.*, 1909, p. 269.

(19) MERKEL.—*Topogr. Anat.*, 1890, p. 71. STANCULEANU.—*l.c.* STCLAIR THOMSON.—*Verhandl. d. Deutsch. Laryng.*, 1907, p. 456; *Trans. Amer. Laryng. Soc.*, 1908, p. 219.

(20) ZUCKERKANDL.—*Anat. d. Nase*, 1882, taf. 21, fig. 93.

(21) *L.c.*, p. 330-331.

(22) *Gefrierdurchschn. d. Nase*, 1890-91, taf. 1, 2, 13, 14.

(23) POIRIER and CHARPY.—*Anat. humaine*, t. v. p. 1421.

(24) *Anat. Atl.*, 1906, vi, pp. 805 and 905.

(25) *Gehirn u. Nebenhöhlen d. Nase*, 1908, taf. 21-25, 28, 30, 31, 54, 55.

(26) *L.c.*, p. 268.

(27) *Ann. of Otol.*, 1906, p. 697.

(28) "Fünf. Lustren ophth. Wirksamkeit," 1882, p. 273.

(29) *Vortr. Augenh.*, 2 Bd., 1886, p. 412.

(30) "Erkrank. d. Augesb. anderen Erkrank.," 1906, p. 186.

(31) *Berl. klin. Wochenschr.*, 1889, Nr. 38.

(32) *Cf.* Schech, *l.c.*

Dr. TAPIA, of Madrid, recently invited Sir Felix Semon to preside at the opening of a clinic for the treatment of diseases of the throat, ear and nose, and, indeed, had put off the inaugural ceremony until the arrival of Sir Felix and Lady Semon at Madrid, on their tour round the world.