CASES
OF
CEREBRAL AFFECTION
CAUSED BY
DISEASE IN THE REGION OF THE NOSE AND EYES.

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It is not of very rare occurrence that we meet with cerebral affections caused by disease of the internal ear; while diseases existing in other regions adjacent to the cavity of the skull are seldom found to excite serious cerebral symptoms.

It is on this account that I venture to communicate the following cases, although I am aware that the observations might be more accurate, and that the manner in which I interpret the phenomena may be contested.

The first case occurred to me while I was assistant-physician to the Clinique at Bonn, then under the direction of the late Dr. F. Nasse, with whom I attended the patient.

CASE 1.—*Summary: Erysipelas of face, especially right eye and nose. First appearance of brain-symptoms on ninth day from commencement of illness; death on the twentieth day from same date. Post-mortem. Sero-purulent effusion*

in the lateral ventricles ; meningitis on lower surface of anterior lobe of right hemisphere ; thrombosis of cavernous sinus and ophthalmic vein of right side.

F. M—, æt. 25, shoemaker, pale and delicate-looking, had, three years ago, severe rheumatic fever ; during the last two years heart-symptoms, with a double bruit over the middle and right half of the sternum, attributed to stenosis and insufficiency of the aortic valves. In February, 1850, he had erysipelas of the face and head, from which he quickly recovered. On December 14th of the same year he was again attacked by erysipelas of the right cheek and right eye. The treatment consisted in the local application of a strong solution of nitrate of silver, and in the administration of effervescent draughts.

At the expiration of a week the erysipelas had almost disappeared, and the patient was considered convalescent, when, on December 23d, he began to complain of a dull headache, the temperature of the whole body being at the same time increased ; pulse 105. During the following days the headache became more violent, occasional delirium appeared, grinding of teeth during sleep, twitching of muscles ; rather contracted, almost immoveable pupils ; sickness and constipation, with a slow and irregular pulse (60—85).

On December 27th patient became drowsy ; the pupils wide and sluggish ; left arm slightly paralysed.

On December 30th drowsiness much increased ; pupils dilated and uninfluenced by light ; the paralysis of left side extending now to leg as well as arm. The degree of this paralysis appeared to vary at different times, but a remarkable transitory improvement, as well of this symptom, as of all the others, occurred on December 31st, when the drowsiness almost disappeared, the patient became conscious and was able to speak to his friends ; in the following night, however, the coma returned, the pulse became very weak and frequent, the breathing irregular, until death ensued on January 2d, 1851.

The treatment adopted after the commencement of the

head-symptoms consisted in local depletion by means of leeches, in the application of ice to the shaved head, of a blister to the neck, and the occasional administration of calomel and jalap.

Post-mortem, twenty-six hours after death.—The upper part of the nose, the lids of the right eye, and the surrounding tissue slightly swollen; a moist, light-brown scab from an almost dried blister is seen on the right side of the nose; a similar one on the upper lid of the right eye. After the removal of the skull, the upper surface of the dura mater appears normal, as also that of the other meninges, with the exception of very slight œdema of the pia mater on both sides. In raising the anterior lobes, the inferior surface of the right hemisphere is found to be covered with a layer of puriform fluid, from the anterior end to the Sylvian fossa. The membranes underneath the puriform fluid are considerably thickened and congested, and cannot be removed without tearing away particles of the subjacent gray substance, which is likewise much congested, of darker colour than in other regions of the brain, and is seen (through the microscope) to contain, besides the normal elements, a great proportion of congested capillaries, many granular corpuscles, and small granules. The puriform fluid exhibits pus-globules of the usual shape. The lateral ventricles are rather dilated, and contain about two ounces of a turbid fluid; their walls are slightly softened. The turbid fluid contains many pus-globules, some large cells like those forming the epithelium of the choroid plexus, and minute granules and fat-globules. The softened substance of the walls exhibits fat-globules of various shapes, granules, and granular corpuscles. The choroid plexuses are much swollen, of dark-red colour; their tissue is denser than usual. The rest of the brain is normal, as also the cerebellum and medulla oblongata. The right cavernous sinus feels hard and enlarged; the walls are thickened; it is filled by a grayish-red coagulum, strongly adherent to the lining membrane, which appears not quite smooth. The coagulum is composed of several layers; the

exterior layer being grayish-red, the next being of purer red colour, the centre being the softest, of cherry-red colour, and of the consistency of a stiff paste. The exterior layer is rather crumbly, *i. e.* not elastic; the second exhibits more elasticity and cohesiveness. The internal carotid and the nerves within the walls of the sinus appear in their tissue unchanged. The portion of the ophthalmic vein in immediate connexion with the sinus contains a dark coagulum, rather firmly adherent to the thickened lining membrane. The blood in the circular sinus is coagulated; that in the left cavernous sinus is not quite coagulated; the walls are of normal appearance. The other sinuses of the dura mater exhibit nothing pathological. The left ventricle of the heart is hypertrophied. The mitral valves are normal; the semi-lunar valves of the aorta are thickened, rather rigid, and contracted. On the pericardial surface of the heart are several white, tendinous patches, of large size. The lungs and the organs of the abdominal cavity are normal; there are nowhere any secondary abscesses.

The brain-symptoms in this case resemble in many respects those caused by acute hydrocephalus, which had, in fact, been diagnosed by two medical men, who had examined the patient, without being acquainted with the history of the case. The changing character of the hemiplegia is remarkable, and not less so the striking improvement of all the symptoms two days before death; but this latter phenomenon is occasionally seen to occur, in the most deceptive manner, in other diseases of the brain, although the organic lesions remain unaltered.

The fact that erysipelas of the face, and especially of the eye and nose, preceded the appearance of the head-symptoms, coupled with the pathological condition of the right cavernous sinus and ophthalmic vein, as also the existence of purulent meningitis on the inferior surface of the right anterior lobe, scarcely admits of a doubt that the endocranial affection had been caused by the erysipelas of the face, and that the ophthalmic vein had been the medium of communica-

tion. There may be, however, some difference of opinion regarding the exact way in which this communication was effected. I should be inclined to think that, through the ophthalmic vein, some blood, contaminated with erysipelatous matter, was carried to the cavernous sinus, where, favoured by the peculiarities of the sinus, it led to coagulation, which was propagated to the contents of the ophthalmic vein. The irritation caused by the coagulum, and the changes occurring in it, led to inflammation of the walls of the sinus and vein (phlebitis), which inflammation may have extended itself to the vessels of the meninges of the lower surface of the anterior lobe and to those of the choroid plexus.

This is, however, not the only way in which the endocranial alterations may have been effected. Thus it may be supposed that the coagulation of the blood commenced in the capillaries and venous plexus of the eye and nose, and proceeded thence to the ophthalmic vein and cavernous sinus.

The inflammatory thickening of the coats of the cavernous sinus and ophthalmic vein might also lead to the view that phlebitis had been the first link in the chain of the pathological processes, and that the coagulation and further alteration of the blood within the sinus were only the consequences of the inflammation of its walls. As we know, however, that the presence of a coagulum in a vein, and the changes constantly taking place within such a coagulum, are in themselves sufficient to cause inflammation of the coats, the existence of the remains of inflammation in the coats of the sinus cannot be regarded as stringent evidence that the erysipelatous process was propagated from the face to the brain, by phlebitis.

The fact that we were not permitted to examine the interior of the eye and nose, prevents me from stating in what condition the veins and capillaries in these regions were.

CASE 2.—*Summary: Syphilitic ozæna. Appearance of head-symptoms soon after cessation of sanious discharge; rigors four days later; pyæmia; death on thirteenth day after first rigors. Post-mortem. Thrombosis of cavernous sinus and ophthalmic vein of left side, as also of longitudinal, and, to a lesser degree, of circular and right cavernous sinus. Purulent meningitis on inferior surface of left anterior lobe. Secondary abscesses in lungs and liver; purulent effusion in left pleural cavity.*

F. B—, æt. 24, a waiter, belonging to a scrofulous family; had, himself, glandular swellings in childhood; was affected with chancre in 1845, when, he states, he was salivated. In 1846 he had ulcers in the throat, for which he again was treated with mercury internally and nitrate of silver locally. In 1848 he had psoriasis, which disappeared under the use of "Zittmann's treatment."¹ In 1849 he suffered from "pain and swelling in the bones of the legs," was treated in an hospital with iodide of potassium, and left much improved. Towards the end of the same year, after he had come to England, he had, according to his account, "cold in the head, which became chronic, and led, by degrees, to a considerable discharge of yellowish matter of a disagreeable odour." At times, he said, the secretion was scanty, and then he felt as if he was "stuffed up," *i. e.* he had a sensation of dulness, heaviness, and pain in the forehead, and could not breathe through the nose. Since March, 1851, the nose has become changed in shape, *viz.*, sunk in the region of the bridge. Once or twice, small pieces of bone were discharged with the matter, which was occasionally mixed with blood. Of late he had been under homœopathic treatment.

On November 28th, 1851, F. B— came as out-patient to the German Hospital. The patient had a pale, sickly appearance; the nose was considerably depressed and flattened in the region of the bridge; there was a marked

¹ Zittmann's treatment consists principally in the administration of a decoction of sarsaparilla and senna. Low diet forms part of this method of treatment.

fetor from both nostrils, and much discharge of sanious fluid. Pressure on the nose not painful; appetite in general good; sleep sometimes sound, sometimes disturbed by headache. Ordered iodide of potassium internally, and a weak solution of chloride of zinc for injection.

December 12th.—The discharge is diminished, and less fetid; the appetite improved; general aspect more healthy. Treatment as before.

After this date the patient did not come back to the hospital; feeling much better, he thought he could do without the further use of medicine. The discharge, however, had never entirely ceased, and the fetor, too, had not altogether disappeared.

When I was requested to see him on February 4th, 1852, he stated, that about ten days ago he had been exposed to cold; that soon afterwards, on January 25th, he suffered from a dull headache, and observed, at the same time, that the discharge from the nostrils was much diminished.

On the 29th he was seized, during the night, with rigors, followed by heat and violent headache.

On the 30th he felt much better, and slept also well during the following night.

On the 31st he was at work; but during the succeeding night the rigors returned with increased force, and were accompanied and followed by almost intolerable headache, spreading from the forehead over the whole head. The pain abated towards daybreak, but did not altogether disappear during the day. No rigors returned in the night from February 1st to 2d, but the patient was not free from headache. After 10 p.m. on February 2d, he was again attacked by rigors and violent pain in the head. He felt more easy on February 3d, and supposing his illness to be ague, with which he had been affected some years before, he treated himself with quinine.

Condition on February 4th, in the evening: Patient's principal complaint is headache, especially in the frontal region, rather increased by shaking the head, not increased by tapping on the forehead. The head is hot,

but its temperature is scarcely augmented over that of the rest of the body. Nose flattened and slightly swollen; nostrils blocked up by dry, brownish crusts; fœtor moderate, but quite distinct; pressure on nose not painful. Both pupils of equal diameter, contracting well under the influence of light. Bowels costive. Pulse regular, about 90.

Treatment.—Removal of crusts. Leeches to nostrils. Tepid injections. Mistura Sennæ cum Magnesiæ Sulphas.

7th.—Appearance of nose unchanged. Headache constant, but during night increased. Patient was yesterday often delirious; to-day he is drowsy, but can be roused, and then answers reasonably. Pupils since this morning rather dilated and sluggish. Had repeated rigors. Spleen was yesterday found perceptibly enlarged; to-day there is, in addition, tenderness of the lower part of the left side, and a soft friction sound is occasionally heard.

9th.—Somnolency increased; carphology; muttering delirium; frequent contractions of single fascicles of muscles, especially those of the thighs; ptosis of left upper eyelid; left eye moves only from inner corner to centre, never to outer corner of the orbit; both pupils wide and sluggish. Tongue dry, friction sound over lower part of left side again noticed; dulness increased. Pulse 120 to 125, very small.

10th.—Complete coma; right-sided hemiplegia. Left eye is almost closed, the conjunctiva slightly injected.

Death on February 11th.

Post-mortem, twenty-two hours after death.—The examination of the interior of the eye and nose was not permitted. Upper surface of both hemispheres normal; the inferior surface of the left anterior lobe is covered with a thin layer of pus, which is especially distinct along the sides of the veins. The reaction of the pus is alkaline. The meninges over both hemispheres are congested; but underneath the layer of pus on the left side much more so than in other regions; they are, at the same time, thickened; the large veins appear distended, and are filled with dark, coagulated blood; these thickened membranes cannot be removed from the subjacent brain without taking away part of the gray

substance, which, here, is softer and of deeper colour than elsewhere. This altered gray substance exhibits under the microscope many granular corpuscles, single granules, fat-globules, injected capillaries, and free blood-globules. The lateral ventricles of the brain contain about three drachms of not quite transparent fluid; their cavities are not enlarged, the walls not softened, the choroid plexus not congested. The other parts of the brain, the cerebellum and medulla oblongata, offer nothing abnormal.

The superior longitudinal sinus contains a dark-red coagulum, rather firmly adherent to the walls, which, however, are not perceptibly altered. The left cavernous sinus is filled by a crumbling, slightly cohesive substance of reddish-gray colour. The external part of this thrombus is closely adherent to the walls, the centre is formed by a pultaceous fluid, of the consistence of thick pus, and of brownish-red colour. The walls of the sinus are considerably thickened, as are also those of the central end of the ophthalmic vein attached to the sinus, which is likewise filled by a dark, rather dry coagulum. The internal carotid artery and the nerves on either side of the walls of the left cavernous sinus appear not materially changed, with the exception of increased thickness of the surrounding areolar tissue. The blood in the left inferior petrosal sinus is coagulated, of dark colour, but can be easily separated from the walls, which are not thicker than usual. The circular and the right cavernous sinuses contain likewise a dark-red coagulum, which is but slightly adherent to the unchanged lining membrane. The other sinuses of the dura mater contain a loose coagulum, which is not at all adherent to the walls.

The bone forming the sella turcica and surrounding region of the skull presents no appearance of carious destruction; the dura mater is nowhere separated from it, there is nowhere a trace of pus between the bone and dura mater. The fluid in the centre of the thrombus of the left cavernous sinus contains—1st, small granules, which are dissolved by acetic acid; 2d, aggregations of such granules into irregular-shaped bodies (round, oval, crescentic), which

are likewise dissolved by acetic acid, nowhere exhibiting the characters of pus-globules ; 3d, other granules and aggregations of granules, dissolvable by ether and not by acetic acid ; 4th, oil-globules of various size ; 5th, blood-globules of different shape—some being much shrunk, some exhibiting a tendency to the star form, others being granular on their surface.

The left pleural cavity contains about a pint of thin, opalescent fluid, of a reddish hue and slightly acid reaction ; flakes of plastic substance are swimming in this fluid, and others are loosely attached to the pleura.

There are several spots of secondary inflammation in both lungs.

Heart flaccid, otherwise normal. The liver exhibits three spots of the size of a walnut and smaller, hard in the circumference, with commencing suppuration in the centre. Spleen enlarged, of pulpy consistence. The other organs of the abdomen are normal.

Although these two cases differ considerably, as well with regard to the original complaint, as also to the symptoms of the cerebral affection and the post-mortem appearances, yet they seem to be closely related to one another in the manner of propagation of the disease from the exo- to the endo-cranial regions. As I was in neither case allowed to examine the interior of the nose and eye, I am unable to state the exact seat and extent of the original disease. The appearance of the nose and the history of the disease in the second case show that there had existed for a considerable time necrosis of several bones of the nose. The vomer and the nasal bones were evidently to a great extent destroyed ; the profuse secretion renders it probable that the disease had spread considerably in the adjacent regions.

The endocranial affection appears in this instance, too, to have commenced with coagulation of blood (thrombosis) of the cavernous sinus, in consequence of the introduction of morbid substance from the original seat of the disease, through

the ophthalmic vein and its capillaries. The coagulation of the blood in the ophthalmic vein itself seemed to us of later date, as the changes in the coagulum were less advanced. The thickening of the walls (phlebitis) I am here again inclined to interpret as the consequence of the thrombosis and the changes taking place within the thrombus. The meningitis, too, and the congestion of the veins on the inferior surface of the left anterior lobe, appear to me caused by the thrombosis of the sinus, into which the veins of this region carry their blood. The obstruction of this passage might by itself lead to congestion and inflammation; it is, however, not to be overlooked that, besides this mere mechanical element, the quality of the decomposition occurring within the contents of the sinus, may have also contributed to the coagulation of the blood in the veins, and to the inflammatory processes within the pia mater and subjacent part of the brain.

The microscopic appearance of the thrombus, as well in this as in the previous case, exhibits no proof of the introduction of actual pus-globules into the blood from the seat of the original disease, but only the results of the changes usually going on within a thrombus. The view that what we term "pyæmia" is always caused by the entrance of entire pus, viz., serum and globules, into the circulation, is so untenable, that it is unnecessary to dwell on this subject.

With regard to the diagnosis, the consideration of the history of the patient, of the headache, the rigors, and the whole aspect of the case, could not fail to point towards the real nature of the case. The intermittent character of the pain, the periodic occurrence of the rigors, were in the present instance very striking, but they are often met with in similar affections, especially as the consequences of internal otitis. The dropping of the upper lid of the left eye, as well as the paralysis of the left external rectus, are easily interpreted by considering the relation of the third and sixth nerve to the cavernous sinus.

The two following cases differ considerably from those preceding, but bear great similarity to each other :

CASE 3.—*Summary : An infant is affected with purulent discharge from left nostril and left eye from birth. At the age of ten weeks cessation of the discharge, followed within a few days by epileptiform fits and coma, which disappear soon after the return of the discharge.*

A. K—, a male child, well developed, had, very soon after it was born, what was considered a cold, showing itself in a discharge of yellowish fluid from the nose, and in an inflammation of the left eye, which was almost always closed and discharged likewise a purulent fluid. When I saw the child first, on March 21st, 1859, it was three weeks old ; it then was well nourished ; the left eye was red and swollen, and entirely closed ; there was much purulent discharge from between the lids. The nose was swollen and stuffed up with crusts and muco-purulent fluid, the left nostril completely, the right less so ; the child breathed through the mouth. There had always been much discharge from the nose, sometimes watery, sometimes thick and yellowish, sometimes mixed with blood ; this discharge came almost entirely from the left nostril. General health good. Pulse 115 to 118. On further inquiry, it was found that the mother had been affected, during the last weeks before her confinement, with a rather profuse discharge of yellowish matter from the vagina, and that the child, on account of the nurse's late arrival, had not been washed until three hours after it was born. To these circumstances I ascribed the inflammatory affection of the left eye, and of the interior of the left nostril.

Treatment.—A weak solution of sulphate of zinc to be frequently applied to the eye, and dropped into the nostril, by means of a sponge.

April 14th.—Eye more open, lids less swollen. Discharge from nose varies. On the nates are several red pimples, and some round, slightly elevated patches of bright-red colour. On this day I had the advantage of seeing the child and mother together with Dr. Oldham, who found excoriations on

the os uteri of the mother, and relaxation of the anterior wall of the vagina. Dr. Oldham was likewise of opinion that the affection of the child was due to the discharge from the mother. Although we had no proof of the specific nature of the affection, we prescribed the fourth part of a grain of Hydrarg. c. Creta to be given twice a day. The child was, further, advised to be weaned.

May 1st.—The spots on the nates have disappeared, but there is no change in the condition of the nose. Bowels frequently moved, motions greenish, containing much mucus.

Treatment.—Omit Hydrarg. c. Creta. Tepid water to be frequently squeezed into the left nostril.

The discharge from the nose is reported to have been much diminished on May 6th, and to have altogether ceased on the 8th. At 9 a.m. of this day, when the mother considered her baby to be in improved health, the nurse observed, while bathing the child, that the right leg was drawn over the left, and the right arm over the chest; this was rapidly followed by stiffness of the whole body, foaming from the mouth, and clonic convulsions. These fits returned six times within four hours. At 1 p.m., when I saw the child together with Mr. R. Fish, with whom I had the pleasure of attending the case, we found it asleep; the sleep was, however, uneasy, the child starting often; breathing irregular, rather accelerated; pulse 140; skin moderately warm; pupils slightly dilated, sluggish; bowels had been moved twice in the morning. When awake the child seemed to take no notice.

At 8 p.m. of the same day the fits had become very frequent, the convulsive movements scarcely ever ceased. One of the fits which I witnessed commenced with sudden stiffness of the whole body, especially of the right arm and leg; the thumb and fingers of the right hand being so forcibly bent in, as to leave the marks of the nails; the eyes at first turned upwards and then rolling about, the pupils being wide and inactive; the face livid; the pulse at wrist not perceptible; the general stiffness being soon followed by clonic convulsions, more strongly marked on the right side; mouth

covered with foam. The convulsive movements cease after about ninety seconds with a deep sigh. The face and head are then seen covered with perspiration, and a restless sleep succeeds.

Treatment.—Half a grain of calomel every eight hours; small doses of ether and sal volatile every three or four hours.

May 9th, 9 a.m.—Many fits during night. The convulsive movements scarcely ever cease; still more marked on the right side. Pupils wide, scarcely influenced by candle-light; pulse 160, very weak; breathing irregular; bowels moved repeatedly. No food of any kind has been taken since yesterday.

Treatment.—Wet nurse. Hot bath. Calomel to be omitted. Ether and sal volatile to be continued.

9 p.m.—Soon after this morning's report, while in the hot bath, the child sneezed several times, by which much discharge was expelled from the nose. No fits since then. Child sleeps much; has taken the breast. Pupils less wide. Pulse only 125.

10th, 2 p.m.—Many fits since this morning; scarcely any discharge from nose. Pupils sluggish. Pulse 135. Omit calomel.

9 p.m.—Convulsions almost without interruption until a few minutes ago, when after a hot bath the discharge had again become copious, and the child fell asleep.

11th.—No return of fits. Much sleep, with frequent starting; child starts also, when awake, at every noise. Convulsive movements are frequently observed in right arm. Pupils contract well. Pulse 120. Much discharge from nose.

13th.—Yesterday evening, and during last night, several fits. Secretion from nose scanty. Injection of warm water into left nostril; frequent application of moist sponge to nose.

14th.—Discharge much more copious. No fits except two, which seemed brought on by the shock of the injections.

During the week following the last report, the child had still several fits, which, however, appeared to be excited by sudden noise. The treatment consisted in small doses (one fourth to half a grain) of oxide of zinc and the application of the moist sponge.

After May 21st no fits returned; the child gained steadily in health and strength; the discharge from the nose became, by degrees, much diminished, but did not altogether cease until ten months later. Besides the liberal use of warm water by means of the sponge, nothing was done.

CASE 4.—Summary: A child is affected with congenital syphilis and ozæna; cessation of the sanious discharge from the nose is followed by epileptiform fits, coma, and other cerebral symptoms, which rapidly disappear after the re-establishment of the discharge.

M. G.— came first under my observation in October, 1858, as an out-patient at the German Hospital. The little boy was five months old, rather emaciated, of sallow complexion, suffered from chronic diarrhœa, and had large mucous patches, of yellowish colour, near the anus, and several sores of the size of a threepenny-piece, with livid margin, on the nates. The father of the child had had chancre ten years ago, and later secondary syphilis. The mother has had several times, after her marriage, soreness of the lips and mouth; lost the only other child from chronic hydrocephalus, with symptoms of congenital syphilis; miscarried once.

The treatment of the child consisted in small doses of Hydrarg. c. Creta and opium, and after the cessation of the diarrhœa in Hydrarg. c. Creta alone. The mucous patches and sores disappeared within five weeks; the child was, at the same time, in every other respect so much improved, that the mercury was left off, and Oleum Morrhuæ substituted. After March, 1859, the mother did not bring the child any more.

Since the end of June, 1859, the child is said to

have always had a "cold in the head;" sometimes the nose was "stuffed up" for days; at other times there was considerable discharge of "fetid matter." The child is reported to have been more cheerful when there was much discharge, irritable and unhappy when there was none.

On October 17th the patient was seen again. He was not emaciated, but of sallow complexion; the nose was swollen; there was from both nostrils, especially from the right, discharge of a sanious, yellowish fluid, with much fœtor. Pressure on the bridge of the nose seemed to cause pain.

Treatment.—Good nourishment. Three times a day two grains of iodide of potassium in a mixture. Frequent use of tepid fomentations and injections.

November 4th.—The child breathes more easily through the nose; the secretion is less fetid, and diminished in quantity. General health improved.

After this date the child was not seen again until December 17th. The mother considered the improvement so great, that she soon discontinued the mixture. In the beginning of December, however, the discharge became again increased in quantity, and more fetid. On December 15th, the little boy began to cough, became restless and feverish, breathed always through the open mouth, and took no food.

On December 17th, in the morning, the child had an attack of convulsions, which lasted several minutes. The fits recurred several times in the course of the day. At the time of my visit, at 5 p.m., an hour after the last fit, I found him lying on the back, sleeping, with mouth wide open, and deep, snoring respiration. The nose is almost closed by brown crusts, there is no discharge from it; the mother does not know when it ceased, but is sure that it had not done so three days ago. The right eye seems smaller, the lids being slightly swollen. Pupils rather wide, but contracting under the influence of light. Head warm, but not more so than rest of body. Right arm moved about in various directions, apparently without influence of will; left arm lies motionless at side of body, but is not quite

flaccid, and when placed in an uneasy position, as over the head, it is gradually drawn back. Sensation not impaired. The child is not quite unconscious.

During my visit, while the mother took the patient on her lap, an epileptiform paroxysm occurred, lasting for more than five minutes.

Treatment.—To soften the crusts ; to inject warm water into the nose ; to apply a leech to the interior of each nostril. To place the head high. Hot bath.

December 18th, 9 a.m.—Before the crusts were removed and the leeches applied, the child had five more paroxysms, and became quite comatose. At 4 a.m. the leeches sucked well. Fits since then less frequent, but coma continues ; pupils wide and sluggish ; head rather hot ; a small quantity of sanious discharge is observed at the nostrils. Movement of limbs as yesterday. Pulse 120 to 125, regular. No motion of bowels within the last forty-eight hours.

Treatment. — Another application of leeches. Two grains of calomel to be given immediately. Continue injections.

18th, 4 p.m.—Injections have not been made for fear of disturbing the child.

Two fits since this morning ; comatose state continues. Pulse 125 to 130.

During the injection of tepid water into the nose, which I made myself, a fit occurred, as soon as I commenced the operation. By repeated injections, resumed as soon as the convulsions ceased, a large quantity of thick, fetid fluid, mixed with blood and almost solid pieces of yellowish colour (crusts), was removed, more from right than from left nostril, but much from either.

19th, 9 a.m.—Only two fits since yesterday, the one brought on by the injection, the other by banging of the door. Between the fits the child is conscious ; sleeps much ; moves limbs of both sides equally. Pupils normal. Pulse 110. Bowels moved several times. Much discharge of purulent matter mixed with blood.

Treatment.—Beef-tea and milk. Warm sponge to be frequently applied to nose.

After the last report no return of epileptiform fits. Under the continued use of iodide of potassium, and of the injections of warm water, and the moist sponge, the discharge from the nose became much diminished, and had almost disappeared in the beginning of February; the general health being at the same time much improved.

The nature of the original complaint was not quite the same in the last two cases; but in both there was chronic catarrh or inflammation of the Schneiderian membrane, much more advanced in one side of the nose than in the other; and the phenomena of the cerebral affection, too, resembled each other much in both.

It seems, further, quite certain that the retention of the discharge—through congestion of part of the membrane, or blocking up of the natural passage by means of dried crusts, or both circumstances combined—was the cause of the cerebral disturbance, as the re-establishment of it was followed almost immediately by the cessation of the principal symptoms. It is true that some fits did occur in both cases after the free passage for the discharge had been restored, but we know that convulsive fits, after having once occurred, often become habitual, especially in children, although the primitive cause has been removed. The last three fits, in Case 4, were evidently caused by external influences and mental agitation, acting on nervous centres inclined to fits; and in Case 3, many fits were occasioned by noise or injections, the nervous centres having previously acquired such a convulsive disposition.

The inference that the retention of the discharge caused the cerebral affection, is strengthened by the fact that, in Case 3, a relapse took place when the discharge from the nose became again, for some time, scanty.

In Case 3 the convulsions were more marked in the limbs of the side opposite to that where the original disease had made the greatest progress; in Case 4 the limbs of the left

side seemed incompletely paralysed, while the principal discharge took place from the right nostril. In both cases, therefore, it is permitted to infer that the hemisphere of the brain corresponding to the side most diseased was most affected.

Of what nature the affection of the brain was, which led to the epileptiform convulsions, seems more difficult to understand. It may be conceived that there was, in these cases, as in the first and second, absorption of part of the sanious or purulent matter, through branches of the ophthalmic vein, that this led to stagnation of blood in the cavernous sinus and further disturbance of the circulation of the brain, which in infants, more disposed to convulsive disorders, caused the fits and the comatose state connected with them. The timely restoration of the normal passage for the discharge, may be considered as having prevented the further absorption of morbid matter, and thus having given the opportunity for the recovery of the equilibrium in the endocranial circulation.

The view that real inflammation existed in the brain or meninges of the children, I am not inclined to adopt, as the rapid disappearance of the brain-symptoms appears to me in discord with it.

I feel, however, that other interpretations may be brought forward different from the one I have ventured to give; but I will not further occupy the time of the Society with hypothetical views.

With regard to the diagnosis, prognosis, and treatment of such cases, I shall add only a few words.

A due consideration of the history and the present symptoms of each case will, I should think, in most instances allow us to recognise the connection between the endocranial and the exocranial affection. Although, I confess, in the third case this connection had escaped me, until nature had given a broad hint by the sneezing of the child and its consequences. The more accurate diagnosis, however, of the cerebral, or rather endocranial affection, will, in general, be very difficult. There are as yet, for instance, to

my knowledge, no certain symptoms observed as due only to thrombosis of the sinus of the dura mater. Phenomena like the ptosis of the upper eyelid and the paralysis of the external rectus in the second case, are of great importance, as they are occasioned by the affection of the sinus (thrombosis and inflammation of its walls) influencing the third and sixth cerebral nerves in their course through the sinus. These symptoms, however, need not be present, especially in the first days of the thrombosis, as the nerves are protected by their sheaths, and their functions may remain, as we have repeatedly seen, undisturbed for a considerable time, in spite of their being surrounded by pus and other morbid substances. The functions of the third and sixth nerves may further be disturbed by other pathological conditions in, and adjacent to the brain. Yet the symptoms in question are very valuable, and may occasionally, with due consideration of the concomitant circumstances, lead to the diagnosis of affections of the cavernous sinus.

The prognosis must, of course, widely differ according to the individuality of every case. Thus, in Case 1, the symptoms of meningeal inflammation and of inflammatory effusion into the ventricles left little hope. In Case 2 the occurrence of the repeated rigors plainly indicated the existence of pyæmia in its worst degree, and the issue could scarcely appear doubtful. Cases 3 and 4, on the contrary, show that even an apparently severe character of epileptiform paroxysms with continued coma, especially in children, need not be looked on as a fatal sign, as long as the symptoms of other complications, such as meningitis or effusion into the ventricles, have not yet appeared.

Concerning the treatment, we can do little, I fear, in cases of erysipelatous ventricular effusion or general pyæmia. But in cases such as 3 and 4, where the cerebral symptoms have been preceded by a chronic discharge from the nostrils—whether caused by mere chronic inflammation of the mucous membrane, or whether connected with necrosis or caries—the removal of the crusts, the application of leeches to the nostrils, warm fomentations and injections, will be of

great service. Internal remedies are of only secondary importance. On the proper use of the syringe I would place the greatest reliance; but it ought, in general, not to be entrusted to the unprofessional attendants, who will very rarely use it with sufficient energy, but the medical man himself should perform the injection. The regular and adequate use of the syringe offers also the best prophylactic means in the various conditions of ozæna; in some of which, of course, the constitutional treatment cannot be superseded by it.