inspection there was found a small perforation in the inferior half of the membrane, perfect patency of the Eustachian tube, and complete absence of any sign of caries or granulation formation in the tympanic cavity or membrane. The mastoid process was free from pain and from tenderness on pressure; there were no subjective disturbances. Judging from the profuseness of the discharge, and its obstinacy under all treatment, Prof. Politzer decided that the intractable suppuration depended upon an abscess in the mastoid process, and that a chiselling operation was called for.

On the 14th of October the operation was carried out, and after a few strokes with the chisel a large cavity was found in the mastoid process, containing pus and granulation tissue. After the clearance of this by means of the sharp spoon, no communication could be made out between the cavity and the mastoid antrum. In view of Prof. Politzer's previous experience, that in such cases the suppuration in the tympanum ceased without the antrum being opened, no endeavour was made to effect an opening into the antrum, and the wound was plugged with iodoform gauze for five or six days. A few days after the operation the otorrhœa had markedly diminished, and after fourteen days every trace of suppuration had disappeared. There remained at the time of description only a small pin-hole perforation, which would probably soon close up. The wound over the mastoid process had nearly closed by granulation. The case was interesting inasmuch as, in spite of the fact that the disease had lasted for eight months, there were no objective or subjective evidences of an abscess in the mastoid process, and that the presence of such could only be inferred from the obstinacy of the otorrhœa.

The case showed the powerful influence of a shut-off mastoid abscess upon the duration of tympanic suppuration, which diminished so rapidly after the opening of the abscess, in spite of the fact that the antrum was not reached by the operation.

AMERICAN OTOLOGICAL SOCIETY.

(*From Vol. VI., Part III., of "Transactions."*) *July 14th*, 1896.

(*Continued from page 92.*)

Dr. ARTHUR MATHEWSON, *President.*

Dr. HERMAN KNAPP. *A Case of Purulent Otitis Media, in which marked Symptoms of Meningitis developed. The Opening of the Mastoid and Cranial Cavities was followed by prompt Improvement and subsequent Recovery.*

The cure of purulent otitic meningitis may be considered the last and greatest triumph of modern surgery. The only undoubted cases are those of Macewan, published in 1893. The case reported was first seen by Dr. Knapp in consultation with Dr. J. A. Wells, of Englewood. The illness began on May 4th, 1896, with a tonsillitis, which subsided, only to

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be followed, on the 13th, by a second rigor, high temperature, and involvement of the left ear, with discharge a few hours later. The temperature remained high, together with pain and dizziness ; vomiting of a projectile character set in on the 17th ; a temporary improvement set in the next day, lasting till the 26th, when nausea, vomiting (slight), and delirium (slight) appeared, with cessation of discharge. Up to this time the pulse had been disproportionately slow.

On May 27th Dr. Knapp saw the case for the first time; the temperature was 103, and pulse 120 to 140, weak and irregular. Delirium, great pain, and also tenderness on deep pressure. The mastoid was swollen. The diagnosis lay between mastoiditis (carious osteitis) and phlebitis, or beginning purulent mastoiditis.

Operation was decided on and proceeded with forthwith. The mastoid cells were lined with a thickened and vascular mucosa; the sinus pulsated well, but on exposing the dura to an extent of two centimètres above and in front of the sinus it was reddish. The bone was then removed further in the same direction, but no pus was found—only the dura discoloured, which was of a reddish-ivory tint. Twenty-four hours after the operation abundant foul, purulent secretion was found, but this was the one and only discharge of any kind, and by July 6th the health was completely restored and the wound almost closed.

Dr. GORAM BACON. *A Case of Brain Abscess, secondary to Chronic Suppurative Otitis Media, and presenting Unusual Symptoms. Operation. Recovery.*

The patient, a man of thirty-two, had suffered with chronic suppurative otitis media for fifteen years, and for some time past his friends had noticed him to act strangely at times, and he had complained of pains in his head. On December 5th he was seen by Dr. Bartlett, who found him with a temperature of 104°, intense headache and pain ; in the afternoon of the same day he had a general convulsion, with muscular twitchings and frothing at the mouth, with unconsciousness lasting fifty minutes.

He was removed to the New York Eye and Ear Hospital, and Dr. Bacon opened the antrum; the sinus lay far out of the usual position and was wounded, blood flowing freely. For two days the patient did well, but on December 8th the temperature ran up to 102·3° and he became aphasic ; on December 9th he had a rigor, had headache, and aphasia was more marked ; the urine contained both albumen and sugar.

On December 10th the lateral sinus was explored and found healthy ; a button of bone was removed 2 inches above the external meatus; the dura bulged slightly and pulsated. The opening in the skull was prolonged down and backwards, and on separating the thickened dura from the tympanic roof pus was found; an opening through the dura was found, and half an ounce of pus escaped. After Y-shaped incision of the dura, the little finger was introduced in, up, and backwards; another ounce and a half of fœtid pus and brain tissue escaped. Iodoform gauze was inserted into the abscess cavity and the wound dressed.

By January 29th the aphasia had disappeared, and a facial palsy

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which appeared after the first operation was almost gone. There were convulsions at times during the healing, which were caused by retention of thin pus.

In conclusion, the reporter, after giving his experience of brain abscess, noted the value of aphasia as a symptom in left-sided disease in right-handed people.

Dr. ROBERT C. MYLES. *A Case of Otitic Brain Abscess in a Child Seven Years Old. Operation. Cure.*

The patient was seen by Dr. Myles in consultation with Dr. G. B. Teames, and the history of the case was that she had had discharge from the right ear for three years. When seen she was unconscious, and there was a swelling over the mastoid. The swelling was incised and the bone found carious and necrotic ; nearly all the mastoid process was removed, including the outer wall of the antrum and roof of the digastric fossa ; when curetting the tegmen the instrument passed easily into the cranial cavity, and part of the attic roof was pulled away; a gush of pus, fully a wineglassful, followed; a probe passed an inch and a-half into the cavity. Rapid recovery ensued, only retarded slightly by a burrowing abscess under the mastoid process and occipital bone. A year after the operation she commenced to regain mental vigour, and now, about twenty months after, she has no mental weakness. The drum and ossicles are visible, and there was discharge when irrigation was neglected some time previously.

Dr. KIPP fifteen years ago reported two cases of acute otitis media with optic neuritis and recovery, and had since seen recoveries in other cases where operation had been refused. Operation on the mastoid was not always necessary.

Dr. BACON : If when mastoid symptoms are present, and cerebral also, then, should the mastoid be sclerosed, this demands investigation of the cranial cavity.

Dr. MYLES : It the bone is carious and not necrotic, it will frequently return to a healthy state, and so should not be too freely removed.

Dr. GRUENING : Does Dr. Myles mean that diseased bone should be left ?

Dr. MYLES : Carious bone may become healthy again, and in draining a cerebral abscess through a large opening these may become infected and meningitis set in.

Dr. GRUENING and Dr. DENCH considered it of importance surgically to remove all diseased tissue in these cases.

Dr. ROBERT T. POOLEY. *A Case of Otitis Media Purulenta Chronica, Mastoid Periostitis, Mastoiditis Interna, Abscess of Cerebrum, Thrombosis of Lateral Sinus, Meningitis, Optic Neuritis. Death.*

The patient, a lad of twelve, had suffered for several years with left chronic otitis media purulenta, and when seen on July 20th, 1892, there was swelling over left mastoid, with pus exuding from the meatus and bulging of the posterior wall. Temperature 102·5, pulse 128. There was a history of pain in the head and ear for some days previously. Wilde's

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incision was made by the house surgeon on his admission to the New Amsterdam Eye and Ear Hospital that day.

The temperature remaining high, Schwartze's operation on the mastoid was undertaken on the 26th, and a drachm of *débris* removed from the antrum, and much pus. The lateral sinus was exposed during the operation.

A rigor occurred on the 27th, with a temperature of 104·5; this was brought down by means of ice to head and abdomen, and a fairly free use of phenacetin. On the 29th choked disc was found on the left side. On the 31st there was a rigor, and he became blind in the right eye on August 20th. Right motor paralysis was noticed on the 23rd, and he died on September 3rd.

At the *post-mortem*.—The vessels of the dura engorged and lifted up by purulent collection. The left hemisphere was bathed in pus, also the bases of the frontal lobes. There was an encapsulated abscess in the anterior border of the occipital lobe on the left side, and acute softening around it; also thrombosis of lateral sinus to the torcular, and an opening through the temporal bone along the lateral sinus was found.

Dr. Pooley reviewed the case at length, and pointed out that even had they succeeded in evacuating the abscess, which could not be localized, they would still have had the meningitis and thrombosis to deal with. And he also referred to his views on the value of optic neuritis as enunciated by him at the American Laryngological, Rhinological, and Otological Society. (JOURN. OF LARYNG., p. 13, Vol. XI.)

Dr. EDWARD B. DENCH. *Otitic Meningitis; Operation; Cure.*

The following case seems to demonstrate, even more clearly than that reported earlier in the meeting, the advisability of exploration in cases of doubtful intracranial involvement due to ear disease. In order to minimize the shock attendant upon prolonged operative procedures on the exposed contents of the skull, the primary incision should be one which will allow of exploration of ear, sinus, and cerebrum, and posterior fossa. This saves the delay of prolonging incisions. The incision advised starts just below the tip of the mastoid, is carried half to three-quarters of an inch posterior and parallel to the auricular attachment, and then forward to half an inch posterior to the external angular process of the frontal bone.

The patient was a man of about sixty years, who twenty years ago had suffered with double otitis suppurativa after enteric fever. He had, however, no trouble until five weeks before he was seen by Dr. Dench. At this time he was seized with vertigo and giddiness, so much so that he had to retire to bed. The vertigo receded, but pain appeared in the left side, most marked in the temporal region. After two or three weeks the temperature, previously normal, ran up to 102° to 104°. The cranial cavity was opened as described before; the meninges were congested, and as the bone was removed towards the meninges the congestion became more intense, and there was free discharge of bloody serum. A probe passed along the tympanic roof discovered rough bone, and enabled a still larger quantity of serous fluid to escape. The surrounding brain

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was carefuily explored, as was also the sinus, with negative results. An iodoform gauze drain was inserted along the course taken by the serum, and antiseptic dressings applied. He rallied quickly from the operation, and left the hospital in four weeks. In this case there had been no effort at a cure by nature by shutting off the infected area, and but for the operation rapid extension would have taken place.

Dr. GORAM BACON. *A Case of Acute Otitis Media followed by an Abscess in the Temporo-Sphenoidal Lobe. Operation. Death from Shock. Autopsy.*

The patient, a young man of twenty-five years of age, came to Dr. Whiting, giving a history of a discharge from the left ear four weeks before. The attic was found to be the seat of trouble, and a few drops of pus were evacuated. This was several times repeated, giving relief from severe headache. He at times had mastoid tenderness and loss of memory for objects and names, also fits of acting and talking strangely. He now came into hospital, eight weeks after the initial attack, having refused to come in before. His temperature was 98·8°, pulse 56, respirations 16. Abscess of temporo-sphenoidal lobe was diagnosed, but operation was deferred by the advice of Dr. M. A. Starr. But the antrum was opened and cleansed. The bone was much sclerosed. For six days there was great improvement; less headache and memory of objects perfect, but still difficulty with proper names. But on this day he became childish in demeanour. Four days later, April 5th, 1896, he vomited twice, and he had vomited once on the 4th, and by 10 a.m. he was delirious. Operation was decided on, and a button of bone 2·5 centimètres above the external meatus was removed. The opening was enlarged with rongeur forceps, and half an ounce of pus evacuated from a depth of three centimètres in a direction backwards, inwards, and upwards. He became much collapsed during the operation, but was rallied by hypodermics of strychnine, nitro-glycerine, and ammonia. He, however, sank from shock two hours after the operation. During his stay in hospital the temperature never rose above 100·6, and was generally between 97·8 and 99·6; respiration varied from fourteen to twenty, and pulse from fifty-four to ninety-nine.

Autopsy.—There were two abscess cavities found, both in the temporo-sphenoidal lobe; the second was lying in the middle of an area of softened tissue, presumably caused by escape of the abscess contents into the brain tissue.

Dr. FRYER considered that frequently brain abscesses were due to transmission through the carotid artery.

Dr. REEVE: Did Dr. Dench say, "If there is drainage of the antrum through the tympanic cavity, it seems unnecessary to open the mastoid cells"?

Dr. DENCH replied in the affirmative.

Dr. REEVE had operated within the last three weeks on such a case, and had found a large quantity of fœtid pus in the antrum.

Dr. GRUENING made remarks of similar import.

Dr. RANDALL did not agree that an extra-dural abscess was a conser-

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vative process, as he had not infrequently noticed cases of brain abscess accompanied by extra-dural abscess with intact meninges, or of extra-dural abscess with the brain already infected.

Dr. DENCH, when saying extra-dural abscess was a conservative process, meant it shut off the remaining meningeal cavity from infection. And in his case, as he could pass a probe into the antrum, he concluded there was free drainage.

Dr. BACON: These brain operations should not be of any unnecessarily long duration. To drain the antrum thoroughly, he considered external opening advisable.

Dr. J. E. SHEPPARD. ***An Analysis of One Hundred and Fourteen Cases of Mastoid Involvement complicating Acute Middle Ear Suppuration.***

Brief notes are given in each case, and the whole are analyzed and discussed.

These cases were all of less than six weeks' duration, and all were complicated with otic discharge, and in each one the mastoid was distinctly involved. Fifty-one were operated on by Dr. Sheppard, 3 by others; 1 died without operation, 34 recovered, and 25 were lost sight of. As symptoms there are: discharge, 114; pain, 102; mastoid tenderness, most frequently apex, 101; postero-superior perforation of membrane, 52; trunk, 56; bulging of postero-superior canal wall, 36; and swelling over mastoid, 22. There were 65 males and 49 females. The etiology is given, but presents no feature of special interest. The various complications were as follows: mastoiditis, 77; Bezold's form, 3; mastoiditis and periostitis, 19; ditto and suboccipital abscess, 1; mastoiditis in old cases of middle and internal ear disease, 2; ditto with otitis externa circumscripta, 1; ditto with erysipelas, 3; ditto with diabetes, 2; ditto with diabetes, erysipelas, and meningitis, 1; ditto with meningitis, 2; ditto with meningitis and cerebral abscess, 1; ditto with tender glands under apex, 2. Of 83 cases which were really under Dr. Sheppard, 5 died—1 within 3 hours of being seen, from meningitis, from a ruptured cerebral abscess, and without operation; 2 from meningitis; 1 diabetic from erysipelas and meningitis; and the fifth from erysipelas.

In the concluding remarks it is pointed out that 21 out of the 65 cases with known cause were subsequent to *la grippe*. Abortive treatment should usually be employed for about five days. It is not necessary to have external symptoms before operating, as the operation itself is free from danger. Finally, a generally safe rule is, when in doubt, operate.

Dr. MYLES: What proportion of cases which refused operation died?

Dr. RANDALL could give still better figures from his treatment, which had been more expectant. His 120 operations represent quite 500 in whom mastoid involvement seemed imminent. As to Bezold's form, he had had 12 in his own practice, and one of his assistants had had quite a number; and Orne Green reported 13 amongst 80.

Dr. KNAPP advised operation without delay in cases of mastoid involvement somewhat removed from the ear. He did not know there was no communication between the antrum and mastoid cells, as stated by Dr. Gruening.

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Dr. GRUENING: The communication is usually only present in children.

Dr. JOHNSON agreed with Dr. Randall's views.

Dr. BACON: Influenza cases require operation more often than others.

Dr. THEOBALD pointed out the difficulty often found in distinguishing between deep and superficial mastoiditis.

Dr. SHEPPARD: The finding of unhealthy granulation tissue justifies operation.

Dr. KNAPP advocated immediate microscopic examination of tissue removed.

Dr. SHEPPARD usually used antiphlogistic measures for from two to five days, and believed by acting as he did regarding operative treatment he saved the patient from both risk and pain.

Dr. CHARLES J. KIPP. *A Case of Purulent Inflammation of the Middle Ear, with Perforation of Mastoid Cells. Followed by Erysipelas.*

The patient was under treatment for about three months with double chronic suppurative otitis, but was unable to attend to herself well, and on March 22nd she presented herself at the New York Eye and Ear Infirmary and was admitted into the German Hospital. She had a large swelling below the right mastoid; the skin was neither hot nor red, and fluctuation was indistinct. The swelling was incised and the mastoid found perforated on the mesial side of the digastric fossa, and the pus had burrowed far down the neck under the cervical fascia; pus and granulation tissue were removed from the antrum, and in the mastoid two large pus-filled cavities were found. The day following the operation erysipelas set in, with a temperature of 104·8° Fahr.; this gradually receded under treatment, and the wound healed, but at the time of discharge from the hospital there was still slight otorrhœa.

Dr. CLARENCE J. BLAKE. *The Use of Drills in Mastoid Operations.*

The possibility of estimating roughly the amount of available operative space in any mastoid was pointed out. For instance, in a large rounded mastoid with a shallow digastric groove there was usually ample room; whilst, on the other hand, a narrow mastoid running into a point, with a deep digastric groove, usually gave but little room. And as an examination of over three hundred crania showed there was a fair amount of symmetry on the two sides, so if the outline on the side to be operated on was masked by swelling, the opposite one might act as a guide. He next proceeded to advocate the use of his hand-drill, which had a broad cutting edge, and was made to cut at an obtuse angle and was used to prepare the way for the chisel.

Dr. RANDALL agreed with Dr. Blake's anatomical statements, but should hardly like to place the drill in the hands of the ordinary post-graduate student.

Dr. SEELY: From how many cases did Dr. Blake draw his twenty-eight operations?

Dr. JACK: About fourteen hundred were registered that quarter.

Dr. MYLES never used the drill.

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Dr. GRUENING had often felt the need for an instrument to replace the chisel, especially in sclerosed mastoids. He pointed out the danger of rupturing a thin-walled cerebral abscess, and referred to a new bur which ceased rotating when it entered a cavity.

Drs. BLAKE and SPRAGUE considered Dr. Blake's instrument very valuable.

Dr. THEOBALD: Were the bones passed round extreme cases?

Dr. BLAKE: Yes.

Drs. MATHEWSON and RANDALL had each similar specimens.

Dr. ST. JOHN reduced the concussion by a rubber cap on the chisel.

Dr. BLAKE agreed with Dr. Randall as to teaching students.

Dr. B. A. RANDALL. *Some Observations on Objective and Subjective Tinnitus, Aneurismal, Anæmic, and Muscular.*

Dr. Randall stated that for years he had himself suffered from tinnitus, and had no diminution in hearing acuity. He considered anæmia was not sufficiently recognized as a cause, and that the deleterious effect of drugs like quinia was overrated, and also that an anæmic bruit might be conducted up *viâ* the jugular. He reported a case of objective tinnitus checked by pressure by the catheter and on the carotid. In this case aneurism was diagnosed, and ligation of the common carotid proposed but not agreed to by the patient. He had frequently observed the muscular form of objective tinnitus.

Dr. BLAKE also suffered from tinnitus, which was temporarily relieved by quinine in small and frequent doses.

Dr. RICHEY referred to Politzer's observations on hyperostosis around the footplate of the stapes.

Dr. THEOBALD had suffered from tinnitus which was due to eye strain from myopia.

Dr. KIPP had reported a case of aneurismal tinnitus fifteen years ago.

Dr. MULLER had also suffered; his was tubal in origin, and had yielded to treatment.

Dr. GORAM BACON exhibited a *New Rongeur Forceps* for enlarging openings made by trephines, or the rapid cutting away of considerable portions of bone. *R. Lake (Abs.).*

ABSTRACTS.

DIPHTHERIA, &c.

Goodall, E. W.—*Three Cases of Diphtheria, occurring in Patients the Subjects of Nephritis, treated with Antitoxin.* "Lancet," Nov. 21, 1896.

THESE three cases are interesting when considered in relation to any supposed effect of antitoxin on the kidneys. In Cases 1 and 2 the patients were actually suffering from nephritis when the serum was injected, and the renal inflammation was in no way aggravated—quite the contrary, in fact, in Case 2. In Case 3, the

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