Clinical contributions to otology from the practice of Dr. C.R. Agnew / reported by D. Webster.

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CLINICAL CONTRIBUTIONS TO OTOLOGY,

From the practice of Dr. C. R. Agnew.

Reported by Dr. DAVID WEBSTER, New York.

Case I.—*Pain in the ears with spasm of the Tensor Tympani, caused by the use of strychnia internally.*

Rev. W. C. J., æt. 30, was referred to us by his physician, Dr. Daniel Lewis, on account of a large central scotoma of his left eye which had, for nine months, produced serious "confusion of vision." Ophthalmoscopic examination showed changes in and about the region of the macula. He was placed upon Bichloride of Mercury with Iodide of Potassium for about a month, had several hypodermic injections of a solution of nitrate of strychnia, and was sent home with vision increased from $\frac{8}{200}$ to $\frac{20}{100}$, and with instructions to take one pill containing one-sixtieth of a grain of strychnia, thrice daily.

About three weeks later I received a letter from him in which he said :—"The pills I take regularly, omitting them only when it is necessary, or I forget them. If I am not mistaken, they cause a pain in my head, especially in my ears. It comes on after taking them and does not appear when I omit them. The sensation is of *strange* rather than *acute* pain."

As I had given strychnia, both hypodermically and by the stomach, in many cases before, and no patient had ever complained to me of similar effects of the drug, I thought the matter worth investigating further, so I wrote to Mr. J. asking him to describe to me more specifically the effects of the strychnia upon his ears, and suggesting some things which I desired him to note. The following is his reply :—"I do not have any more of the pains n my ears and therefore cannot make the observations you sug-

gest. They stopped two weeks ago. As nearly as I can remember them I will describe them :

"I am in the habit of taking the pills just before or during my meals. When I was having the pains they came about the close of the meal, with a sudden thump, and would beat, for a few minutes, against the membrane of the ear. How long I cannot tell, as I was not in the habit of paying much attention to them and they went away without any absolute consciousness on my part of when, I would simply forget them. The first few beats were all that gave me any very great annoyance."

Pain in the head is not a very unusual effect of strychnia, but this is the first case I have seen or heard of where pain and beating in the ears was observed as an effect of the drug. The beating sensation was, I am inclined to think, due to spasmodic twitchings of the tensor-tympani muscles, and I can conceive it to be possible that the accompanying pain was caused in the same way.

It is true that we have all met with cases of throbbing pains in the ears, occurring as a symptom of acute inflammation of the middle ear, and taking its throbbing character from the pulsations of the heart, propagated through the internal carotid and other arteries in the neighborhood of the drum of the ear. But in the great majority of such cases only one ear is involved. Moreover, pain and throbbing are by no means the only symptoms in such cases. But the history of the above case proves, sufficiently, that the sensations were due to the strychnia, and the only plausible explanation I can think of is the one I have given.

CASE II.—*Mastoid periostitis occurring during the course of "continued fever"—followed by acute suppurative inflammation of the middle ear—incision—recovery.*

Charles D., æt. 69, farmer, was referred to Dr. Agnew by his family physician, Dr. Fred. Corse, of Kingston, Pa., with a letter of which the following is an abstract:—"The bearer, Col. D., was attacked the first of last February with epidemic influenza, at first affecting the nasal and bronchial mucous membranes, subsequently producing severe constitutional disturbance, continued fever and typhoid lesion of the bowels. During the fever the right mastoid process became swollen, red, painful, and extremely sensitive to the touch. As the fever subsided the signs of ulceration of the mastoid cells subsided, *pari passu*, leaving a whitish, inodorous discharge from the right external auditory meatus. Yesterday, May 29th, the region of the mastoid again became

tender and painful without change in the character of the discharge."

The patient arrived at New York a little more than two weeks after the above letter was written. He stated that the pain in and about the ear had been very severe for nearly three weeks, and had increased in severity so that he had not slept at all for the last four nights. He also had a constant roaring in the ear. The tissues over the temporal bone were so swollen as to push the auricle off from the side of the head about three-quarters of an inch. The swelling extended considerably in front of the ear, at least two inches above, and backwards nearly to the occiput, and the whole area was the seat of great tenderness.

The walls of the external auditory canal were swollen and boggy, and prevented a complete view of the membrana tympani, but after syringing out the pus with warm water, by using a very small speculum a bubble of pus could be seen protruding from the depths and on inflating by Valsalva's method this bubble was lifted, but there was no "perforation whistle."

The ear seemed to be totally deaf to external sounds, but heard the turning fork when applied to the forehead or vertex.

The same afternoon Dr. Agnew made an incision down to the mastoid, about one inch and three-quarters in length, and cutting down through the periosteum very thoroughly. The depth of the wound was about one inch at its deepest portion, and the tissues cut through were tough and brawny, and the bone was roughened in spots. Little or no pus made its appearance, and the amount of bleeding was moderate. Lint was stuffed down to the bottom of the wound throughout its whole extent, and hot poultices of flaxseed or slippery elm were ordered to be applied about every two hours. The following day the patient reported that he had rested well, and there was marked amelioration of all the symptoms. In a day or two a slight discharge from the wound set in, and this was encouraged by continued poulticing, the tent in the wound being changed every two or three days. The ear was gently syringed with warm water from time to time, and occasionally inflated by Politzer's method. There was a gradual subsidence of all the symptoms, and in a little over a month Col. D. was allowed to return to his home in Pennsylvania. The discharge from the ear soon ceased, and the organ still remained well when we last saw him more than four years later. The ear did not recover useful hearing, however.

CASE III.—*Inflammation of the mastoid without demonstrable inflammation of the middle ear—incision—recovery with fistulous communication between the mastoid cells and the external auditory canal.*

March 17th, 1875.—Mrs. S., æt. 70, sent for Dr. W. Cheatham, then House Surgeon of the Manhattan Eye and Ear Hospital, now of Louisville, Ky., who noted the following history:

"Five weeks ago, while sneezing, she 'felt' a crackling noise in her right ear. It sounded as if something had burst in the ear. She has suffered intense pain in and behind the ear ever since, and has, in consequence, usually passed sleepless nights. There has been no discharge from the ear at any time. No physician has been consulted. She tried once to relieve the pain by dropping camphorated oil into the ear, but this made the ear worse. She has dropped laudanum into the ear three or four times a day for three weeks, and this has given her some relief.

"She is now suffering very much from pain over the whole of the right side of her head, and extending down her back and neck. There is great swelling, tenderness on pressure, and redness over the mastoid. The swelling of the walls of the external auditory canal prevents examination of the membrana typani. There is facial paralysis of the right side. The patient experiences some difficulty in swallowing, but this, she says, existed before the ear disease.

"She states that her sight has failed rapidly during the last three weeks, and that she sees all distant objects double. She is subject to asthma, but has not suffered from it since the commencement of the ear affection. Hearing was reduced to ability to hear the watch when pressed against the auricle."

I saw the patient on the evening of the same day, with Dr. Cheatham, and made an incision down to the mastoid, about one inch in length, half an inch behind and parallel to the attachment of the auricle. So great was the swelling that the scalpel penetrated to a depth of three-quarters of an inch by measure. No pus escaped, but there was free bleeding. No examination for diseased bone was made on account of the severe pain caused by the incision, the operation being done without any anæsthetic. The wound was well stuffed with lint and hot poultices applied, to be exchanged every three hours. An opiate was given to relieve the pain. *18th.*—The pain continued up to six o'clock this morning when it abated, and at eight o'clock she was found sleeping.

There is slight discharge from the external auditory canal—the first that has been seen. There is less tenderness over the mastoid. She is now able to lie on her right side, which she has not done for the last three weeks on account of the increase of pain so produced. *P. M.*—Visited the patient with Dr. Roosa. She says she feels like a new person. She has slept most of the day without an opiate. The discharge from the auditory canal is much more abundant, and the tenderness over the mastoid is less. Dr. Roosa advised a continuance of the warm poultices.

19*th.*—The patient rested well without an anodyne. Pulse 82; temperature 96½°; appetite and vision improved. Removed tent and inserted a clean one. Poultices to be continued and the ear to be syringed several times a day with warm water.

20*th.*—Tenderness and swelling over mastoid diminishing; pulse 82; temperature 98½°. While exploring the wound with a probe a sinus was found large enough to admit a No. 1 Bowman's probe, a quarter of an inch in length and extending forwards, upwards and inwards from a point nearly opposite the upper portion of the attachment of the auricle. Changed the tent and ordered the poultices to be continued. Ordered fifteen drops of Tinct. Fer. Chlor. three times a day.

23*d.*—Only slight tenderness over mastoid. Found the tent removed and the incision healing.

24*th.*—Found the patient cheerful and much improved. All tenderness gone. To leave off poultices, and dress the healing cut with a greased rag.

26*th.*—The patient says that her appetite is excellent. The double vision has disappeared and she declares that she sees as well as ever. There is still paralysis of the 7th nerve and a slight discharge from the ear. There has never been any discharge from the wound, which is now rapidly healing. The swelling of the walls of the canal is almost gone.

31*st.*—The facial paralysis is much better; she swallows with less difficulty; the incision is nearly healed; there is still slight discharge from the ear. She declares that she feels better than before for six months.

April 12*th.*—The patient came to the Manhattan Eye and Ear Hospital. There is still slight discharge, but the membrana tympani is intact. The posterior wall of the external auditory canal is swollen, and near the junction of the cartilaginous with the membranous portion a teat-like process is seen. This teat-like

process is a small mass of granulation tissue surrounding an opening through which the bent end of a probe can be easily passed. It seems most probably that this opening is the source of the discharge. The facial paralysis has almost entirely disappeared, and the patient now hears the watch on contact.

21*st.*—A slight discharge still continues. The teat-like process remains unchanged, and pus can be seen oozing from it. Dr. Agnew who saw the patient at this visit, advised an incision through the granular mass on the posterior wall of the canal, but the patient objected to it as she "felt perfectly well."

CASE IV.—*Chronic suppurative inflammation of the mastoid cells, with a sinus communicating with the external auditory canal, and without demonstrable inflammation of the middle ear.*

Albie D., æt. 30, states that she began to have noises in her left ear years ago, and that these noises have been accompanied with soreness about the ear, and with pain. The pain often extends to the top of the head, and down into the neck. She is also troubled with dizziness. She has sometimes had a little discharge from the ear after working at it with a hair pin. Her right tonsil is enlarged and she catches cold easily.

H. D. R $\frac{14}{60}$, L $\frac{8}{60}$. The tuning fork applied to the bones of the skull is heard better in the right ear.

In the left external auditory canal is seen a small granular mass, supero-posteriorly, and within an eighth of an inch of the membrana tympani. A No. 1 Bowman's probe, with the end bent at a right angle, is easily hooked into the mouth of a small sinus which is concealed by the small granular mass alluded to. The membrana tympani is intact.

The patient states that she was obliged to give up doing general housework on account of the pain produced in the top of her head by going upstairs, and now follows the occupation of a cook.

No treatment was advised, except that of cleansing the ear daily by syringing with warm water.

Cases II, III and IV, are remarkable as having been cases of primary inflammation of the mastoid cells. All the text-books on the ear treat mastoid cell inflammation as secondary to, or a complication of, inflammation of the middle ear, and I think that it is nowhere stated that the disease sometimes occurs independently of the latter. In Cases III and IV the membrana tympani was found intact, and there was

no evidence that it had ever been perforated; but there may have been a secondary inflammation of the middle ear in both cases, not sufficiently severe to produce ulceration of the drum-head, while the primary inflammation of the mastoid cells was such that in both cases, caries of the bone was produced, resulting in a persistent fistulous opening into the the external auditory canal. In Case II it will be remarked that the mastoid inflammation existed for some time before there was any discharge from the ear, and the latter, indeed, did not make its appearance until the former had subsided.

Although in the majority of cases there is no doubt that the inflammation extends from the posterior nares, along the Eustachian tube, through the middle ear, into the mastoid cells, yet there is no good reason for believing that the inflammation cannot, in the nature of things, originate in the mastoid cells themselves, and travel, perhaps, in the opposite direction.

In some of the following cases the inflammation seems to have followed the usual course, commencing in the middle ear and extending to the mastoid cells.

CASE V.—*Acute inflammation of the middle ear, with inflammation of the mastoid cells, resulting in a fistulous communication between the mastoid antrum and the external auditory canal.*

April 3d, 1873.—C. W. E., æt. 62, merchant, states that three weeks ago he caught a severe cold in his head. He characterizes the cold as an "epizootic," and says that the discharge from his nostrils was very great. About two weeks later his left ear became affected with a sense of fulness and obstruction "as though stopped up with wax," and soon after, broke and began to discharge. The discharge still continues. He has had no pain to speak of, but "constantly hears noises of water and of the beating of the heart." Hearing distance, right, $\frac{14}{48}$; left, click of nails at one inch. The tuning fork applied to the calvarium, is heard more decidedly in the left, or diseased ear. The pharynx is reddened and the uvula elongated. The left membrana tympani is perforated antero-inferiorly, and has a small granulation projecting through the opening. Upon causing the patient to inflate by Valsalva's method pus is forced from the tympanic cavity, and the

external auditory canal is bathed in pus. A small, slightly projecting red spot, on the upper part of the posterior wall of the auditory canal, very near the membrana tympani, attracted our attention, and upon further examination we found this to be the mouth of a fistulous opening through which the end of a bent probe could be easily passed into the mastoid antrum.

The ears were inflated by Politzer's method, and he was instructed to have the left syringed gently, three times a day with warm water.

The patient returned to us three weeks from the date of his first visit with some swelling and tenderness over the mastoid. He had not had any acute pain, but complained of a constant dull aching, "like the feeling produced by a boil." A free incision down to the mastoid, over an inch in length was made, but no pus was found. A tent was introduced and poultices applied, and he was sent home again to be under the care of his family physician. When he came to see us again in three weeks, the swelling and tenderness of the mastoid had passed away, the wound was healed, and the hearing distance had risen from nails 1," to nails at 8." The fistulous communication between the mastoid cells and the external auditory canal still persisted.

CASE VI.—*Acute inflammation of the middle ear, terminating fatally from brain complication.*

June 16th, 1875.—James M., æt. 60, manufacturer, states that he caught cold, last Friday, by getting wet in the excavation under the East River at Hallet's Point. The following night he suffered from pain and "pulsation" in his right ear. For the last two nights the pain has been so severe as to prevent sleep. The auditory canal is red and swollen in the vicinity of the membrana tympani, which is reddened, bulging, and distinctly pulsating. The Eustachian tubes are open. The watch is not heard in his right ear. The pharynx is red, the tonsils are swollen.

I punctured the membrana tympani and by inflation by Politzer's and Valsava's methods, considerable thick bloody matter was expelled from the tympanic cavity. Ordered frequent use of the warm douche, and an opiate to relieve the pain.

June 17th.—The puncture is healed and the drum-head is again bulging and pulsating. The pain, which was temporarily relieved, has returned. I repeated the paracentesis, again forced out through the opening the purulent contents of the tympanum by inflation, and ordered a leech to be applied half an inch in on the front wall of the meatus.

June 18th.—There is free discharge of pus, and there is still pulsation of the drum. The patient has neglected the leeching. Ordered to have two leeches applied to-day, one behind the ear, and one in the canal.

This gentleman soon after went away out of the city and placed himself under the care of another medical man, and died on the 18th of August, just two months from the date of his last visit to Dr. Agnew's office.

Although no autopsy was obtained yet the symptoms showed very plainly that his death was due to an extension of the ear affection to the brain.

CASE VII.—*Double acute otitis media, with inflammation of both external auditory canals, and both mastoid processes, supposed to have been caused by the use of the nasal douche.*

J. B. N., æt. 34, lawyer, states that on the first of January he had an attack of typhoid fever which was broken up by treatment after it had lasted just one week. He caught cold on January 10th, during convalescence, and had a severe nasopharyngeal catarrh. He used the nasal douche, with simple warm water, on the 10th, 11th, and 12th. His ears were very painful on the morning of the 13th, and he quit using the douche, believing the pain to be due to water extering his middle ears through his Eustachian tubes.

Inflammation of his left mastoid process set in, and he was confined to his bed for ten weeks. He was delirious for the first five days.

He has, at present, May 14th, inflammation of both external auditory canals, completely hiding from view both membrana tympani. The skin over both mastoids is reddened, and there is a tender point at the antero-inferior portion of each. The Eustachian tubes are probably open as Valsalva gives great pain. The pharynx is reddened and granular, and there is considerable discharge from the nares. Hearing distance, right, $\frac{7}{48}$, left, $\frac{1\frac{1}{2}}{48}$. Tuning fork heard equally well in both.

CASE VIII.—*Chronic suppurative inflammation of middle ear with mastoid complication—benefited by incision down to mastoid.*

Oct. 29th.—Miss Ada S., æt. 16, scholar, has long had discharge from right ear caused by scarletina. For the last four months she has had pain in the head and tenderness over the mastoid. She sometimes gets "so dizzy that she cannot see." She has constant pain or soreness over the right side of her head, through the

temple and extending to the vertex. She hears the tuning fork in the right ear when applied to the head, but cannot bear the click of finger nails. The auditory canal is filled with pus, which being washed away, discovers a polypoid mass hiding the membrana tympani from view. The Eustachian tube is open, inflation producing a perforation whistle.

Nov. 1st.—Made incision one inch long, down to the mastoid. Free bleeding followed. Dressed with vaseline and absorbent cotton.

Nov. 6th.—Has had much less dizziness since the mastoid incision. The discharge from the ear has increased. Probed the wound throughout its length and dressed again.

Nov. 18th.—For more than ten days has had no pain in the head, and the dizziness occurs rarely, and only when she walks in the sun. Applied a blister of cantharidal collodion back of the cut.

Dec. 14th.—The hearing distance has increased from inability to hear the click of nails to $\frac{16}{48}$, and ability to hear words spoken in an ordinary tone of voice all the way across the room. She has kept up counter irritation with the blistering collodion. A granulation is springing up from the whole length of the cut. To allow the cut to heal, and to keep the ear cleansed with a solution of carbolic acid. She complains no longer of dizziness or headache.

This case is remarkable for the improvement in the hearing which took place under treatment, and the rapid improvement in the symptoms which followed the cut through the mastoid periosteum.

CASE IX.—*Acute inflammation of the middle ear with labyrinth complications, caused by the use of the nasal douche.*

D. S. G., æt. 41, musician, has been troubled with nasopharyngeal catarrh for three years, during which time he has used the nasal douche, as ordered by his physician, but not daily. The first trouble he ever noticed with his ears was about a year ago, when he observed that the air whistled through his left ear while blowing his nose. He has never had any discharge from either ear, and only slight tinnitus until the present acute attack. About ten days ago he used the nasal douche for the last time. The application gave him a violent pain in the left ear, and this continued until relieved by the application of six leeches, three behind and three in front of the ear. The singing and roaring noises have been very annoying since the commencement of the trouble. For

the first eight days he heard everything a second time, like an echo from a great distance. A piano in good order sounds horribly out of tune to him.

Status præsens.—Hearing distance, right, $\frac{30}{48}$; left, $\frac{4}{48}$. Tuning fork applied to the skull, heard more in left than right. Pharynx hyperæmic, nares dry, external auditory canals normal. Left membrana tympani reddened along the handle and at the periphery, and sunken.

This patient was thoroughly inflated by Politzer's method, but did not return for further treatment.

Case X.—*Subacute inflammatiou of the middle ear from the use of the nasal douche.*

H. C. W., æt. 31, lawyer, has been troubled with catarrh for a long time and has used the nasal douche for several years. When he used it the last time, several days ago, he felt the water enter his right ear. The ear has felt very sore and disagreeable since, but he has had no real pain. There is no tinnitus. He has long been in the habit of trying to relieve an itching sensation in his auditory canals by scratching them with a hair pin.

Hearing distance, right, $\frac{15}{60}$; left, $\frac{60}{60}$. The tuning fork in contact with the head is heard more in the right ear. The pharynx is granular, and the external auditory canals are somewhat obstructed by exfoliated epidermis. The right membrana tympani is reddened, and shows no light spot. The Eustachian tubes are open.

This case was treated successfully by leeching and inflation by Politzer's method. It is remarkable only for the mildness of the inflammation caused by the entrance of water into the ear through the Eustachian tube.

Case XI.—*Acute inflammation of the middle ear apparantly caused by rupture of the drum-head while blowing the nose.*

S. P. W., clerk, æt. 24, states that on Friday morning, while blowing his nose, something seemed to give way in his ear, and the air whistled through. The ear became painful at once, and the pain continued until bed time. He experienced the same sensation on blowing his nose on Saturday morning, and he has had severe pain in the depths of his ear ever since. This morning (Monday), it commenced running, but is still painful. The pain is less severe when he is quiet. He has considerable tinnitus, and hears the watch only in contact. The turning fork is heard more in the painful ear.

The left external auditory canal contains pus, the membrana tympani is reddened, swollen and perforated, the air whistling through, and the pus bubbling out, on inflation by Valsalva's method.

He was treated successfully by leeching, the warm douche, and inflation.

Although the patient believed that violently blowing his nose was the first cause of the trouble, I think it more probable that there already existed a painless otitis media, and that the drum-membrane was already ulcerated and ready to burst when the forcible entrance of air through the Eustachian tube completed the perforation, and thus gave an impetus to the pre-existing inflammation, producing the severe pain.

CASE XII.—*Subacute inflammation of the middle ear with fluid in the tympanic cavity—puncture of the drum-head—recovery.*

May 19th.—B. N. F., æt. 51, farmer has had for the last three months, a crackling or ringing noise in his left ear which interferes seriously with his comfort. It originated in a cold which he caught in February. Occasionally he has slight pain which he refers to the tragus. He states that he had a similar attack twenty years ago from which he recovered without treatment. His voice is a little hoarse, and his throat the seat of a follicular pharyngitis. There is a copious secretion from his nares. Hearing distance, right, $\frac{8}{60}$; left, $\frac{2}{60}$. The tuning fork is heard better in the left ear. Both Eustachian tubes are pervious. The left membrana tympani is of a dirty yellowish color with a light spot of normal shape, but of diminished brilliancy. Upon inflation, air bubbles were seen through the membrana tympani rising slowly and bursting in the upper part of the cavity. The drum-head was punctured and air was forced through, carrying along with it a quantity of Malaga-grape colored fluid, enough to trickle out of the meatus. Half an hour later the noise had ceased and the hearing distance had risen to $\frac{6}{60}$.

May 23d.—There has been no tinnitus since; there is no evidence of fluid in the tympanic cavity; the hearing remains at $\frac{6}{60}$.

I saw the patient about two years later and he stated that there had been no recurrence of the ear trouble.

CASE XIII.—*Subacute inflammation of the middle ear, with fluid in the tympanic cavity—relieved by puncture of the drum-head.*

Mrs. J. S., æt. 50, had a roaring in the right ear last winter, which passed away after a short time, but returned about a week ago. Never had pain, or discharge from the ear, but there has been some dulness of hearing. Sometimes she can hear as well as ever with the right ear when lying on her back.

Hearing distance, R. watch in contact, L. normal. Tuning fork heard only in R. Chronic pharyngitis. The lower part of the right membrana tympani has a yellowish look; the head of the stapes can be seen indistinctly; the light spot is very large, but not bright.

Air seems not to pass into the ear by Politzer's or Valsalva's method.

As the history of the case and the appearances of the membrana tympani led us to suspect that there was fluid in the tympanic cavity, Dr. Agnew punctured the drum-head. Immediately on puncturing a bubble of air was seen in the cavity, but we could not blow either air or fluid through the perforation by Politzer's or Valsalva's method or by the Eustachian catheter. The use of Siegle's otoscope was then resorted to, and by making powerful suction while the patient endeavored to force air through his Eustachian tubes by Valsalva's method a comparatively large quantity of mucilaginous, Malaga-grape colored fluid was expelled. More of this fluid was afterwards expelled by Politzer's method, amounting to about one drachm in all. Before the patient left the office the hearing of the ear had gone up to $\frac{6}{48}$.

The large quantity of fluid evacuated in this case is conclusive evidence that the mastoid cells as well as the tympanic cavity were filled with it.

CASE XIV.—*Subacute inflammation of the middle ear with fluid in the tympanic cavity—relieved by puncture of the drum-head.*

L. A. W., æt. 27, baker, had his first spell of deafness and earache at the age of fifteen. Again, two years ago, he had a great deal of roaring noise in the left ear. This lasted for six or eight weeks, but passed away after inflation of the ears by Politzer's method. Last winter he had the same roaring and deafness for about two months, but got well without any treatment. The present attack came on about the first of August, got better without treatment, but now, Dec. 3d, is worse than ever. There is a constant noise in the left ear like the sound of a cataract. Up to two or three days ago this noise entirely disappeared on lying

down. Now, with head erect the hearing is $\frac{6}{4}\frac{6}{8}$, with the head thrown back, $\frac{3}{4}\frac{6}{8}$, but the noise still continues. The drum-head looks reddish, but no air seems to enter the middle ear on the use of Valsalva's or Politzer's method.

This being a clear history of fluid in the cavity of the tympanum, Dr. Agnew, by means of a narrow Graefe's knife, incised the drum-head from the end of the handle of the malleus to the infero-posterior margin. Still, the patient could not expel any fluid or air by Valsalva's method, but by a forcible use of Politzer's method, at least five or six drops of Malaga-grape colored fluid were expelled. Immediately after, the hearing rose to $\frac{3}{4}\frac{6}{8}$ with head erect. The patient said that the noise was so diminished that it felt like another ear. He was told to syringe the ear with warm water, but the following evening syringed it by mistake with a solution of Bichcloride of Mercury (gr. vi., ad. ℥ i.). This caused smarting at the time, and he had severe, burning pain in the ear for several minutes. The next morning the wound in the drum-head was found closed, but was reopened by forcible inflation. Three days after the operation, the patient heard the watch five feet with each ear. He stated that the ear which had contained the fluid felt, in every respect, as well as the other.

These cases of chronic or subacute inflammation of the middle ear with fluid exudation in the drum are not very common. I have seen several, however, besides those reported above, and they all, so far as I know, terminate favorably, after ridding the tympanic cavity of its fluid contents. In one case which I treated at the Manhattan Eye and Ear Hospital, the inflammation took an acute form after the puncture, and there was a discharge of pus for some weeks, but the inflammation eventually passed away leaving useful hearing.

Cases of acute inflammation of the middle ear, with the drum filled with pus, are met with much more frequently; and in many such cases it is good practice to anticipate a perforation by puncturing the drum-head. I adduce a few cases.

CASE XV.—*Acute inflammation of the middle ear treated by puncture of the drum-head—recovery.*

March 9th, 1875.—S. H., æt. 60, sashmaker, states that his right ear has been deaf since childhood. On the 28th of February he came

home from church deaf in his left. He was soon attacked with pain behind and in front of the ear, and much noise and throbbing in the ear. The same night there was a discharge of bloody matter upon the pillow.

Hearing distance $\frac{2}{60}$ in each ear. The right membrana tympani is sunken and cicatricial, the left is reddened, swollen and bulging.

Punctured the drum-head, and by inflation by Politzer's and Valsalva's methods, expelled a considerable quantity of bloody, whey-like fluid.

The ear recovered in a week or ten days under leeching, warm syringing and inflation.

CASE XVI.—*Acute inflammation of the middle ear with pus in the tympanic cavity—puncture of the drum-head—recovery.*

May 22nd.—P. C., æt. 35, laborer, caught cold in his head and has suffered from severe pain in his left ear for twenty-four hours. The ear hears a watch in contact, and the tuning fork, placed in contact with the head, better than the right ear which is normal. The left mastoid is tender to the touch, and the membrana tympani is red, swollen, and has three bleb-like elevations upon its surface.

A free incision was made through the drum-head, posterior to the malleus handle, and several drops of thick pus were expelled by inflation.

May 23d.—The patient states that he has had no pain in the ear since incision was made. He is still able to expel pus by Valsalva's method.

The ear recovered rapidly from this time.

CASE XVII.—*Acute inflammation of the middle ear with pus in the tympanic cavity—drum-head punctured thrice—recovery.*

March 17th.—Miss B. L., æt. 25, waitress, states that nine days ago, while suffering from a cold and a sore throat, pain came on in the left ear and she has suffered more or less acutely ever since. There is a roaring noise in the ear, whose hearing is reduced to $\frac{1}{48}$, and in which the tuning fork is heard better than in the normal ear. The drum-head is red, swollen, and bulging, and the back wall of the auditory canal is red, swollen, and ulcerated. Eustachian tubes open.

After puncturing the drum-head the patient forced air through his Eustachian tube, expelling pus from the drum, and producing the "perforation whistle."

March 18th.—The incision has healed; punctured again, and expelled more pus from the drum by Politzer's method.

March 19th.—The wound is again healed, and the drum-head bulging. Punctured a third time, and expelled pus as before.

March 20th.—Free discharge of pus from the ear; air is easily forced through the perforation; the boggy spot on the back wall of the canal has disappeared.

March 30th.—The discharge has ceased, and the noise is again troublesome. The patient also complains of headache, dizziness, and pain back of the ear.

Two leeches were applied half an inch in on the front wall of the ear, and the warm douche used frequently.

April 6th.—The headache and pain over the mastoid have disappeared, and there is now only occasional tinnitus. The membrana tympani is only slightly red, and the hearing has increased to $\frac{8}{48}$. The patient suffered no relapse after this.