the histories of two of which are herewith subjoined.
I think they are good object lessons and may be a warning to some physicians not to allow their cases to go to the verge of dissolution before operation.

Case 1.—Acute suppurating otitis media, suppurating mastoiditis, extending into the deeper tissues of the ear.
T. M., white, age 56, was admitted to the Garfield hospital, June 24, 1896, stating that about six weeks previously he was suddenly seized with a severe pain in the left ear. He was treated with artificial application and purgatives and the abscess discharged through the external auditory canal, giving him only slight relief however. The hot applications were continued notwithstanding a large swelling had formed back of the ear. Slight pressure over the swelling was very painful and caused the pus to flow freely from the external auditory canal.
The patient was freely stimulated with whisky and strychnine and the mastoid region shaved and prepared for operation, which was performed June 25, under ether anesthesia. His condition was not considered favorable for anesthesia, but as he was a timid man stimulants he took and the operation went well.
An incision was made commencing just above the auricle and extending down upon the neck about two and a half inches. This was followed by a discharge of a large quantity of pus, which was found to have burrowed into the deeper tissues of the neck. The cortex of the lower portion of the mastoid was completely destroyed, while the upper portion still remained firm. This was removed with the chisel and roentgenography of the area opened and various holes being made with a sharp spoon, and in doing so the lateral sinus was exposed in nearly its full extent. As it was soft to the touch and no evidence of any septic infection, it was not opened.
The patient was discharged on the following day. The wound was scraped with a sharp spoon, and after thoroughly irrigating the wound it was packed with iodoform guaze, and closed with a bandage; 8 a. m. temperature 101 degrees, pulse 120. Owing to the extremely weak condition of the patient he was freely stimulated with whisky.
June 26, 8 a. m. temperature 98.4 degrees, pulse 92; 8 a.m. temperature 100 degrees, pulse 96, and stronger. Other wound dressing.
June 27, 8 a.m. temperature 98.4 degrees, pulse 84. The wound was dressed, owing to the dressings being quite moist. In the neck wound there was still considerable sloughing tissue, which was removed. A continuous flow of oozes was still observed coming from the external auditory canal.
June 30, temperature and pulse normal. Condition of the mastoid and neck wound very much improved. Large pieces of dead tissue were removed from the lower portion of the wound. Pus continued to discharge freely through the external auditory canal, although little is observed in the mastoid antrum. The solutions pass freely from the antrum through the external auditory canal. The wound was dressed every other day on account of the free discharge of pus.
July 15, while the general condition of the patient has improved very much as well as that of the wound, pus still continues to discharge through the external auditory canal. The patient was placed under ether, and the roof and posterior wall of the auditory canal were found to be in a state of extensive caries. The auricle was freed from its bony attachments and the bone removed from the lower portion of the mastoid antrum. The posterior wall of the auditory canal removed with a sharp spoon. The auricle was then brought back into position and after irrigating the wound it was packed with iodoform guaze, both through the canal and from the eardrum. While the temperature was up to 99.8 degrees, the body was then allowed to cool down to 99.2 degrees, and the iodoform guaze was removed, and the wound then packed with cotton. The patient was then allowed to convalesce,

Case 2.—Acute suppurating otitis media, suppurating mastoiditis with a commencing infiltration into the neck.
The patient, a young man 19 years of age, consulted me Jan. 11, 1897, giving the following history: December 14 he was seized with a severe pain in the left ear following a slight attack of influenza. In a few hours there was a profuse purulent discharge from the auditory canal which gave him temporary relief, the pain returning, however, with increased severity, and extending into the external and extending into the neck region. Poultices were applied and the air douche used. In a few days a swelling appeared back of the ear, which became intensely painful on pressure. This form of treatment was continued until I saw him January 11.
His condition then was serious, he being exceedingly weak and emaciated. His temperature was 99 degrees.
On examination, a profuse purulent discharge was observed issuing through the external auditory meatus, but owing to the swelling of the canal no view of the membrana tympani could be obtained. The auricle stood out prominently from the side of the head, and back of it over the mastoid region there was a large swelling extending into the neck. The parts were red and very sensitive, pitting on pressure. The patient was sent to the Garfield hospital and prepared for operation, which was performed on the following day. The incision was made commencing just above the auricle, continued over the mastoid and terminating about two inches below the apex in the neck. Pus in large quantities was found at the apex of the mastoid, burrowing into the deeper tissues of the neck, but the wound extending up over the upper portion of the process, the tissues being swollen from edematous infiltrations. After elevating the periorchum the cortex of the process was observed to be firm, and no opening communicating with upper cells or antrum being found, a probe was passed through the large cell found on the under surface of the mastoid apex. The antrum was opened and the cortex removed with a chisel, when the cells of the mastoid were found to be in a state of suppuration. Instead of having pus the cortex which had been removed found its exit into the tissues of the neck through the under surface of the apex where there is a large cell with very thin walls usually found.
After all the diseased tissue was removed with a sharp spoon, the wound was irrigated with a solution of bichlorid of mercury (1 to 3000), packed with iodoform guaze and closed with a bandage.
February 13, the patient is free from pain and feels generally comfortable. At 8 a.m. temperature 99.2 degrees; 1 p.m.
100 degrees.
The wound was dressed on the fourth day and very little secretion observed. The temperature was now normal and remained so during the convalescence of the patient. The subsequent dressings were made every third day; the wound continuing to heal rapidly, he was able to leave the hospital, cured, March 4, with a hearing distance of five inches for the deaf.
While such cases as the above are not unusual in the experience of many aural surgeons, still they are of value in demonstrating to what extreme conditions patients suffering from suppurative inflammations of the middle ear may arrive, especially when over treated with the ever popular poultice, and subjected to the injudicious use of the Politzer air bag, a most valuable instrument when properly employed, but one capable of doing great injury in the hands of the inexperienced, especially when employed in cases of children with hypertrophy of the post-nasal lymphoid tissue.

AN HISTORICAL SKETCH OF THE OPERATIONS UPON THE MASTOID PROCESS.

Presented to the Section on Laryngology and Otology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY LAURENCE TURNBULL, M.D., PH.D.

aural surgeon Jefferson Medical College Hospital.

PHILADELPHIA.

It is now 105 years since a Danish surgeon, Berger of Copenhagen, was successful in non-surgical inflammation of the tympanum attended with distressing tinnitus aurium and deafness. To relieve this
condition the operation of perforating the mastoid process was performed. The patient being old and
the bones very hard, the injection used would not pass
through the opening in the mastoid into the middle
ear. Pain, fever, sleeplessness, vomiting and delirium
closed the scene and he died eleven days after the
operation. The postmortem revealed "suppurative
mucitis." Where the bone had been opened it
was found to be two lines in thickness, while the per-
forator had entered much deeper.

A regimental surgeon by the name of Jasser, in
1776, performed the same operation upon the mastoid
of a soldier who had suffered for a long period from
a chronic middle-ear suppurition, with occasional sub-
acute attacks attended by great pain. The region
over the mastoid was swollen and the patient was half
insane with pain. Jasser made an incision over the
mastoid about an inch long and found a drop of pus.
Encouraged by this he cut down upon the whole
length of the mastoid bone. He found the surface
roughened. He passed a probe quite deeply into the
mastoid cell and injected fluid into the opening; it
came out of the external auditory meatus, and at the
same time a large quantity of pus was discharged from
the external meatus. The patient immediately ex-
claimed that the pain had left his ear. He fell asleep
and rested uninterrupted for ten hours. In three
weeks the opening behind the ear had healed, his
charge from the auditory canal had ceased and the
patient heard better than before. Stimulated by this,
Jasser performed the same operation upon the other
ear of the same person, from which there was no dis-
charge, but in which the hearing was impaired. The
hearing is said to have also been improved after the
operation, but this is very doubtful. There were no
caries of the bone.

The operation received its name from "Jasser." The
indications were correct in the first case, but were
wanting in the second.

This valuable surgical operation lay dormant for
over fifty years by this mistake.

Von Troeltsch, in 1861, published a valuable
paper in Virchow's Archiv upon this subject of per-
foration of the mastoid, resurrecting and describing
the operation in a clear and satisfactory manner. He
then reported a case in which he had, in 1858, per-
formed the mastoid process with a blunt probe.
According to Troeltsch's own words, although the
indications that opening of the mastoid to remove
dead bone and concealed pus and thus secure drain-
age, were now considered imperative and clear, he
opened the softened mastoid with fear and trembling.
He says: "I went to work with uncommon care, even
with dread." The case was a success.

I now quote my own case, the report of which fol-
lows as given by Dr. D. B. St. John Roosa of New
York (extract from Philadelphia Medical and Sur-
gical Reporter, Vol. vii, p. 463, February, 1862) and
published by him in a history of the operation, to be
found in his work on "Diseases of the Ear" (1891,
p. 540).

In February, 1862, Laurence Turnbull, M.D., pub-
lished two cases in which he made an incision down
to the bone, and in which two months after he had
opened the external tissues, he perforated the
surface of the bone with a sharp hollow probe and
applied nitrate of silver freely. A month later he
again broke down part of the bone and nineteen days
later he removed a large piece which was found to be
movable with a probe. This was an operation simi-
lar to that of Troeltsch, although the German surgeon
waited only a few days before venturing to perforate
the cells with a probe, while the American delayed
for two months. In spite of its exclusion from some
tables, Turnbull's cases belong to the same category
with that of the reviver of the operation. It was
carried upon but three years after Troeltsch's case,
and only one year after it was published. This had
now a man of 34, made a perfect recovery and is still
well and living.

In confirmation of the above facts, Professor Gruber,
in his text-book "Diseases of the Ear" (Translation
by Drs. Edward Law and Coleman Jewell, London,
1893, p. 462) states that, "in more recent times the
attention of aural surgeons was again turned to this
operative measure by Von Troeltsch, who gave as
indications for its performance: Otitis media with
collection of pus in the mastoid cells, which, even
with coexistent perforation of the drum membrane,
can not otherwise be evacuated, and the symptoms are
so marked as to justify waiting for spontaneous opening
of the abscess." The operation has been performed
on these grounds with more or less good results by
Von Troeltsch,5 Turnbull,6 Pagenstecher,7 Follin,8
Schwartz,9 Gruber,10 Mayer,11 Jacoby12 and others. The
operation first came into more extensive use, how-
ever, in consequence of Schwartz's zealous advocation.

In the table published by Schwartz and Eysell
they give the writer credit for his operation in 1862.
The indications given by Schwartz for performing
the mastoid process are:

1. Acute inflammation of the mastoid process with
retention of pus within the mastoid cells, when a per-
manent remission of the symptoms have not been
brought about by Wilde's incision. The operation
ought to be performed without waiting for symptoms
of cerebral irritation or pyemia.

2. Recurrent swelling of the mastoid region, which
has undergone temporary recession; or has led to
abscess formation with or without fistulous openings
in the integuments, even though no threatening
symptoms exist at the time.

3. When after discharge of an abscess in the mas-
toid region, examination with the probe reveals a fis-
tulous passage in the bone. Besides these generally
recognized indications, the author considers the
operation called for—

4. If with inflammatory processes in the ear,
severe pains which resist all other treatment be pres-
ent in the corresponding side of the head, even though
no inflammatory appearance can be detected over the
mastoid region.

In certain cases of tedious otorrhce the obstinacy
of which is not sufficiently accounted for by the con-
dition of the Eustachian tube and tympanum, and
which resist long-continued and approved treatment
in the ordinary lines, the discharge being offensive
and mixed with cholesteatomatous masses or bony
particles, even where no conspicuous changes can be
discovered in the mastoid region, the author has
recourse to operation; experience having taught him

1 Virchow's Archiv, Bd., xxi, 1861.
3 Archiv für klinische Chirurgie, 1862, Bd. iv. S. 323 et seq.
4 Gazette des Hôpitaux, 1864.
5 Praktische Beitrage zur Ohrenheilkunde, 1864.
6 Record of cases of patients treated at the Vienna Hospital during
the year 1865.
7 Archiv für Ohrenheilkunde, i. Bd.
8 Id., iii. Bd.
that after removal of the cholesteatomatous masses or granulations which are frequently present in the antrum or mastoid cells, the otorrhea cases and recovery takes place.

Sometimes, moreover, small circumscribed areas of inflammation exist in the mastoid process, which maintain the otorrhea and are inaccessible to ordinary modes of treatment. These are exposed by the operation and recovery is thus brought about more readily.

In connection with the two last-named indications, the operation acquires an exploratory significance, and under the modern favorable auspices of antiseptic surgical treatment, it may be the more readily be undertaken on account of the danger which is always associated with a continuance of the disease.

235 South Seventeenth Street.

DISCUSSION ON THE PAPERS OF DR. BRYAN AND TURNBULL.

Dr. C. H. Burnett—I would like to ask Dr. Bryan whether an attempt was made to use peroxide of hydrogen, and the Politzer bag?

Dr. Bryan—In the first case the man was in a very low condition and could not give much information, but I understood that there had been only pouting up to the time I saw him. In the other case there had been instillations of peroxidal of hydrogen.

Dr. Burnett—In the histories of all the cases reported as acute otitis media followed by acute mastoiditis I can read that in a few cases the mastoid was a secondary infection, and in some cases I can see that the ear was over treated and secondary infection followed. I believe that in most instances the secondary inflammation was caused by the use of peroxidal of hydrogen. Acute mastoiditis following otitis media has become much more frequent since the introduction of peroxidal. You can imagine that erroneous ideas of treatment some people have, by one instance. I once found that a physician, of whom I do not speak, in the case of the ossicles, had been for a year in the habit of cleansing his ears with his own saliva. I am sorry to say that nearly all the articles on this subject state nothing as to the treatment before the patient was seen by the aurist. I believe that cases of acute mastoiditis, complicating acute otitis media, are artificial results of improper irritative treatment and not the necessary result of the primary disease. They are in consequence of secondary infection due to the introduction and retention of morbid germs, by the irritative treatment of the primary inflammation and I know of no agent so efficient in forcing pyogenic germs into the inflamed ear as the expansive, even the most powerful, of the so-called hydrogen.

Dr. J. A. Stucky—I have seen many cases of acute mastoiditis caused by the use of peroxidal of hydrogen in middle ear troublies, especially in acute otitis media. I consider it a disastrous error, and it is not right to use it in these chronic cases, unless there is a large opening.

Dr. Myler—A coagulum of the mucoid substance and the peroxidal is formed and is left in the recess, from which it can not be washed out.

Dr. A. B. Randall—My experience has been in absolute conflict with much that has been stated. I must speak with a word in defence of the Politzer bag, the syringa and peroxidal of hydrogen. They are in constant use in my practice. While I have been reproached with the fact that I have a considerable group of mastoid cases to operate on, I will ask anyone to whom I speak of mastoiditis, and primary cases are almost taken from the practice of other men. I have never seen any evil results from my foolish habits. The proper employment of the Politzer inflation in the early stages of the media is of great value; its abuse has no place whatever. The use of peroxidal of hydrogen is limited ordinarily to the acute cases. The perforation is commonly small, especially in children. When the hot douche has not freed the use of a syringe is necessary. The care that should go into the very places where it is said to do so much harm. We have bad results when the peroxidal does not penetrate. With the use of the intra-lympthic syringe, care should be taken to get the peroxidal in the cavity. The case of Mr. Hortan in the case that I operated on, I understood, was washed out the cavity with peroxidal, and had put something into the ear to stop the discharge. I believe that we should discriminate in our cases. If we have a large perforation we can use peroxidal with more safety than with a small opening, but it must be used carefully.

The Chairman—I would ask Dr. Burnett if he objects to the use of peroxidal of hydrogen to chronic cases to the same degree.

Dr. Burnett—I do not use peroxidal at all, either in acute or chronic suppuration of the ear on account of its expansive force and the consequent risk of forcing pus into the middle ear cavities. It is perhaps less harmful in chronic than acute cases. We must regard the antrum as part of the middle ear, not the mastoid. Many acute cases will get well without mastoid disease. A natural siphonic action takes place between it and the antrum. When I was a medical student we never heard of mastoid disease occurring as a sequel of otitis media. Why should one man now see 100, 200 or 300 cases in a comparatively short time if it is a necessary result of ear disease? The so-called acute mastoid disease as a sequel is largely an artificial result.

H. D. Hatch, D.D.S.—I once had a lesson as to the explosive force of peroxidal of hydrogen. In making an incision on my instrument slipped and I was at the tissue of the outer eye. The wound healed and was apparently all right, but later an abscess formed, well up toward the eye. There was no swelling around the eye, except this small point, and there was no wound in the mouth. I slipped a bistoury into the abscess and injected peroxidal of hydrogen. Inside of twelve hours after my injection, which caused intense pain, the face was swollen and the eye black. I have ceased to inject peroxidal into any cavity into which there is a small opening, except in some cases where I inject a little at a time and tease out the pus. I have had other cases where the mechanical force of the explosion gave great pain. Members of the dental profession use peroxidal of hydrogen largely. I came to the conclusion last winter that it was unsafe to inject it into a bone cavity.

Dr. Bryan—I have seen serious results from the use of the Politzer bag and from the use of peroxidal of hydrogen, but they were at the hands of operators who did not know how to use them. My object was not to much to advise the members of our profession against the use of hydrogen, but to make them cautious. I have thought it best to present these cases so that they might be an object lesson to those who are not so careful.

PHENOMENA OBSERVED IN TWELVE CASES AT VARIOUS STAGES OF THE OPERATION FOR SECTION OF THE INCUDO-STAPEIDAL ARTICULATION AND MOBILIZATION OF THE STAPES.

Read in the Section on Laryngology and Otolaryngology at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

By E. B. Gleason, M.D.
Clinical Professor of Oto-laryngology in the Medico-Chirurgical College, Surgeon-in-Charge of the Nose, Throat and Ear Department of the Bowery Dispensary, Philadelphia.

The ear in which the patient's hearing was the more defective was invariably selected for operation. The night before the operation the auditory canal was thoroughly cleansed, syranged gently with a solution of bichlorid, 1 to 1000, and occluded with a piece of iodoform gauze, which was allowed to remain in position over night. The drumhead was soaked for one hour before the operation in a sterilized 4 per cent.