

hibited in this country a year ago. A study of them will convince one that so-called osteosclerosis is not the result of chronic suppuration, but the cause of it. It is a type of infantile mastoid in which the cells have not developed.

DR. A. R. SOLENSBERGER, Colorado Springs: Prior to six or seven years ago I never operated on tuberculous otorrheas except by simple curettements. The teaching up to ten years ago, both in Europe and in America, was distinctly against it. However, since I have been in Colorado, where we see more of these cases than in the East and not a few coming to grief, we operate, and in as radical a way as possible. The only differences in the indication for radical work between tuberculous and non-tuberculous cases is the greater consideration of the general condition of the patient, but just such and no more than we would take into account in laryngeal tuberculosis. This done, we get just as uniformly good results. Obviously many patients do not require the most radical procedures.

DR. GEORGE E. SHAMBAUGH, Chicago: It may seem to some that the views expressed here are over-conservative. I would refer those who have this fear to the proceedings of the German Otological Society for 1908. The statement has just been made that whenever a diagnosis of cholesteatoma is made a radical operation on the ear is always indicated. This is hardly the case. There is a vast difference in the character of cholesteatoma. We have all seen cases in which a cholesteatoma discharges itself into the external meatus and the condition is practically cured without an operation.

DR. S. L. LEDBETTER, Birmingham, Ala.: Physicians who practice in large cities and in the clinics have a class of cases that we do not have in country neighborhoods and that probably explains some of the differences of view. I am sure that while I see a number of acute and chronic middle-ear suppurations, I do not have many cases in which it becomes necessary to do a mastoid operation. If properly treated nearly all these patients recover without operation.

DR. A. B. DUEL, New York: The presence of a bacteremia in an otitis without the other conditions which might give rise to it in other parts of the body has been considered an operative indication, even in the absence of other aural symptoms. In a recent paper I showed that in a certain number of the positive cases bacteremia existed which was not accompanied by any clinical symptoms whatever of septic sinus thrombosis. Therefore, it seems to me that it would be impossible for us to accept the dictum that it can be taken as an operative indication in the absence of clinical symptoms.

DR. B. A. RANDALL, Philadelphia: Dr. Duel's point should be emphasized; unless we do our intracranial operations generally as explorations we may fail to save our patients; if we wait for clear-cut indications we will often be too late. We must be fairly radical as soon as we feel that we are in the presence of intracranial complications. Abscess of the brain has been shown to be in 80 per cent. of cases immediately in relation to the diseased temporal bone, and without other localizing symptoms we are justified if not compelled to operate on such indications. I believe that some disadvantages of operation are, perhaps, more apparent than real. The facial palsy—which in my paper I, perhaps, cited in unpleasant form, referring to a hospital where 17 per cent. of cases showed facial paralysis—will often be precipitated; the palsy would have occurred spontaneously if it had not been brought on by the operation, and, while the operative palsy is transitory, the other may have been much longer. I would also speak again on the danger of the use of the mallet. I think that the lesions in the brain frequently may be ascribed to the use of the mallet.

DR. E. A. CROCKETT, Boston: The principal criticism of my paper seems to be in the matter of operating on tuberculous patients. Tuberculosis of the middle ear and mastoid, not complicated by lung tuberculosis, is found more often than is generally supposed. In a ward for babies in which there are 15 beds I tried the von Pirquet test in all cases, with positive results in 77 per cent. All the mastoids operated on were tested by injecting guinea-pigs and 20 per cent. of the guinea-pigs died with acute tuberculosis. I think that tuberculosis of the middle ear and mastoid without tuberculosis of the lung is much more common than we think. All these patients do

well with the simple operation which doesn't take over fifteen minutes, but if the radical operation be undertaken the children will often die of shock or sepsis. I am not against operating on the mastoid of tuberculous patients, but against doing the radical operation in these cases.

I think the technic of the Heath operation more difficult than any operation on the ear that I have tried to perform. The patients who recover with the Heath operation would recover with the old Schwartz operation in which the antrum was kept open until the middle ear was dry. When I have done the Heath operation in the other type of cases I have found the worst mess to do a secondary operation that I have ever encountered. These patients have been very difficult to treat afterward. Heath himself operated on one of my patients while she was in London last summer in July, and I have been seeing her, ever since her return for a continued suppuration, and she is in a far worse condition than any case of acute mastoid trouble that I have ever seen.

INFECTIOUS LABYRINTHITIS

TWO CASES WITH ACCOUNT OF OPERATION*

GEORGE F. COTT, M.D.

BUFFALO, N. Y.

CASE 1.—Mrs. E., aged 40, weight 210 pounds.

History.—The patient had had a discharge from the right ear since she was six weeks old; there was nothing left of the membrana tympani. The condition had never given any trouble till shortly before she consulted me. She complained of having had attacks of dizziness, lasting about five minutes each. She had had little sleep for several weeks and sometimes she awakened at night with an attack. Occasionally she vomited, and at times she became nauseated as soon as she awakened. She had also had attacks of fainting.

Examination.—The patient was pale and hysterical. On deep pressure there was pain, principally over the antrum. As soon as the caloric test was begun she screamed and became greatly excited; this test demonstrated some nystagmus. There was impaired coordination, and loss of hearing. Here it was necessary to discriminate between symptoms due to disease of the labyrinth and those due to hysteria. Revolving produced such dizziness that I could not turn the chair half around. Air pressure produced no effect at all.

Operation.—Ordinarily, in such a case as this, I should have hesitated to operate, but in view of the fact that the symptoms complained of were probably subacute following a latent period, I thought it best to give the patient relief at once. Membranes and ossicles were gone. A radical operation was first done; then a great part of the horizontal canal was removed and part of the inferior vertical canal also. I then chiseled behind the knee of the facial canal and entered the vestibule; a probe was then passed from the oval window to the operative field, thus establishing good drainage.

Postoperative History.—After the canal was opened, cerebral fluid began to flow more rapidly than gauze would absorb, but after the operation was completed gauze packing lessened the flow perceptibly; for two days, however, the patient felt it trickling down the Eustachian tube. Five weeks after the operation the patient felt well, though there was some facial paralysis. The ear was perfectly dry.

CASE 2.—Miss B., aged 16, a school girl.

History.—The patient's mother died of tuberculous laryngitis, and two sisters had tuberculosis of the bowels. The patient had had a discharge from the left ear since she was ten weeks old, which of late had become intermittent. She had been treated from time to time by different specialists, but without result, and had been told that she would probably outgrow it by the time she was fourteen.

Present illness.—On May 29, 1908, she had earache, and on the following day she had a severe chill. Three days later she became dizzy and had headache. Ten days after the first at-

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tack she had another chill on the train coming to the city and in my office had another severe chill, the temperature going up to 104 F. There was also deep-seated pain on pressure.

Operation.—Operation was done at 9 p. m. the same night. I found a membrane consisting mainly of epithelium and pus cells lining the antrum. Bone was destroyed over the lateral sinus and a quantity of pus was removed from under the dura. The girl made a good recovery and left the hospital in two weeks.

Subsequent History.—Two years later this patient came to my office complaining of dizziness. She was unable to stand without feet apart; was dizzy on waking, and her hearing had been gone for several years. I kept her under observation for two weeks but no improvement was noted.

Diagnosis.—In cleaning out the ear some cheesy matter was removed which proved to be a quantity of cholesteatoma; this led to a decision in favor of operation. Here was a latent labyrinthitis followed by a subacute condition which would certainly cause further trouble.

Second Operation.—The same operation was performed as in Case 1, except drainage of the vestibule. The lateral sinus having been perforated, it became necessary to plug it, and consequently it was difficult to remove enough bone to make room for the chisel to work under the facial canal, so there was no communication made with the vestibule, but the promontory was chiseled away and thus drainage established through cochlea, and canals.

Result.—The patient left the hospital in two weeks, still suffering from vertigo. I have seen her several times since and found her in good health, though with occasional headaches and sometimes some dizziness.

In both of these cases I might have waited for succeeding attacks, for in both cases there was labyrinthitis, while the organ of Corti had lost its function years ago through the disease of the middle ear, without producing any of the acute labyrinthine symptoms, unless they were entirely overlooked. When cholesteatoma is present, however, there is always danger of infecting the labyrinth, and one is justified in draining the internal ear.

DIAGNOSIS

These patients complain of great dizziness, moving of objects in one direction and sensation of body movement in opposite, usually going around, nausea and sometimes even vomiting. There is spontaneous nystagmus toward both sides. After two or three days (perhaps weeks, depending upon virulence) they enter the second stage, and nystagmus is toward the diseased side only; dizziness continues, irritability of the semicircular canals is increased and hearing is plus. If resolution does not take place the disease enters on the third stage. Nystagmus is then toward the sound or healthy side, vertigo is still present, irritability decreased and hearing is lost. After a few days nystagmus again becomes of equal degree on both sides in the fourth stage but dizziness is absent, irritability of the semicircular canals and hearing are gone. When nystagmus ceases the fifth stage is entered on, in which nystagmus, vertigo, irritability and hearing are all absent. (The normal ear has no nystagmus or dizziness, irritability normal and hearing plus.)

If the caloric test is applied in the third stage no reaction is noticed. This verifies the diagnosis of destruction of the labyrinth.

The first two stages, which show increased irritability to diseased side, belong to the variety called perilabyrinthitis. The change in nystagmus to the sound side and lessened excitability of the semicircular canals are distinctly endolabyrinthine. The first two stages of

perilabyrinthitis may be, and in the majority of cases are, due to a fistula or circumscribed disease of the bony canal, while in the three last stages the disease becomes diffuse and always finally destroys hearing.

If the disease is checked, instead of going through these regular stages, it becomes latent, to be succeeded sooner or later by a second or third attack, and so on. When the symptoms are not so severe as above described, and the patient is able to walk, he usually walks with the feet wide apart to keep from falling; the feet are placed in the same position when standing still. When they are placed together, that is, the sides touching each other, the patient usually inclines toward the affected side and, with the eyes closed, will fall toward the diseased side. This will be more marked when the patient is trying to stand on one foot, but more especially so when the foot employed is the one on the diseased side. After all these symptoms have passed off and the patient has entered the latent stage there still are means to ascertain the status of the disease, for the patient may believe himself perfectly well.

At first then we have the perilabyrinth affected but when through a fistula or carious process the endolabyrinth becomes involved and the process having been slow we get symptoms of approaching destruction of the semicircular canals which invariably affects the cochlea also, dizziness gradually vanishes. However, dizziness exists so long as nystagmus is directed to one side alone. As soon as the labyrinth becomes affected there are vertigo and disturbance of equilibration.

Barany says: These symptoms may be due to other causes but when they are of vestibular origin we can alter the fall of the patient by changing the position of the head; the patient is not conscious of the fact that he is not performing the test normally and can not retain his equilibrium by touching a stationary object.

Labyrinthine vertigo may and often does come on even during sleep, (the vertigo sometimes is so severe that nausea is produced, and even vomiting) or on rising from the bed or on performing any rapid movement of the head and lasts from a few minutes to half an hour or more. Slight attacks lasting from a few seconds to several minutes do not necessarily signify endolabyrinthitis but may be noticed in the latent stage and therefore are suspicious. Sometimes external causes affect a diseased labyrinth markedly, such as rapid movements of the head, stooping and rising, drinking spirits, or smoking and are accompanied by nystagmus. In vertigo, not labyrinthine, the patient often complains of everything getting dark and involuntarily closes the eyes, but this variety does not come on during sleep. Therefore the cardinal symptoms of suppurative labyrinthitis are spontaneous nystagmus, vertigo, increased irritability of the canals, or decreased if the endo-sac is involved.

In the latent stage, a patient may be examined at the office and even in the acute stage he is often able with a little assistance to call on his physician. The actions of the patient are peculiar in every case. He may waddle as though topheavy, instead of walking, his feet may be far apart and, he may state that everything is going around or that he is moving around the room and the furniture seems to remain still. He may walk steadily but when attempting to stand on one foot, on the side of the diseased ear, he will fall always toward the side of the disease. Von Stein's test of jumping backward is favorable only in some patients

and during the latent stage. When one can make use of it the patient will jump backward with separated feet deviating from a straight line, such deviation being toward the diseased side and the energy with which the patient begins jumping becomes markedly less with the fourth or fifth jump.

If one side is normal, it may be tested and found to produce on turning, nystagmus up to forty seconds, possibly but thirty or even only twenty-five seconds. Which-ever it is, the diseased ear, will be much more than normal. If the endolabyrinth is involved the opposite will be the rule. Whatever the normal is, the diseased side will be lower by more than one-half, as perhaps from five or eight to thirty.

When the patient has become hysterical from long suffering with suppuration or anxiety, the caloric test may call forth a scream and violent sobbing, this must not draw the attention of the physician from the real work in hand; also revolving an hysterical patient seems almost intolerable and puts him or her into a terrible fright.

The caloric test is applied with water that is above or below the body temperature. A few ounces in a Politzer bag is thrown into the ear against the upper wall of the meatus through an attic nozzle; it takes one or two minutes to empty the bag; the eyes looking straight ahead are watched and nystagmus is soon observed.

The revolving test is simple and can be carried out in the office while the caloric test may be used at the

produce nystagmus but to diseased side. Air-pressure nystagmus with the Politzer bag, according to Barany, when perceptible, and the caloric test is positive is indicative of fistula.

In using galvanism, the anode in front of the right ear, 10 to 12 milliamperes, produces rotatory nystagmus toward the left while the cathode will have the opposite effect.

It is difficult to maintain the body erect when placing one foot before the other (Jansen). Standing on one or both feet with eyes closed is practically impossible (Rhomborg), and often the patient stands with feet apart to keep from falling.

Dizziness occurring during sleep and on rapid movements lasting a few minutes to thirty or more is a valuable diagnostic sign.

INDICATIONS FOR OPERATION

In acute suppuration of the labyrinth, when there is vertigo, nystagmus to good side, and decreased irritability, fever, headache, foul secretion, pain in mastoid or periosteal abscess, the radical operation is first performed followed at the same sitting by removal of semi-circular canal or canals and drainage through the oval window.

If the patient is not in immediate danger we may wait until the more acute stage has subsided, then both operations should be done at once; for in just these cases if the radical operation only is performed, postoperative meningitis is most liable to occur.

TABLE OF ALEXANDER

Stages.	1	2	3	4	5
Spontaneous nystagmus	Toward both sides.	To diseased side.	To good side.	Toward both sides.	Gone.
Vertigo	Present.	Present.	Less.	Going.	Gone.
Irritability of semicircular canals.	Increased.	Increased.	Decreased.	Less.	Gone.
Hearing	Plus.	Plus.	Gone.	Gone.	Gone.

bedside. It has been found that turning a patient ten times on a revolving chair gives most accurate results.

Barany says: After rotating neurasthenics, they will complain that the vertigo produced is more violent than the spontaneous variety but on bending the head forward during the turning no difference will be noticed.

In a fistula or circumscribed inflammation of the vestibular tract rapid head movements produce more violent dizziness than in hysterical patients. It is even possible by throwing the head backwards to produce nystagmus toward the affected side with vertigo (perilabyrinthitis).

The table of Alexander presents graphically the five stages of labyrinthine infection. The first two stages refer to perilabyrinthitis and the last three to endolabyrinthitis always due to suppuration of the middle ear. A tumor of the auditory nerve would present the same condition. The otologist sees the patient in any of these stages. The disease may stop at any stage and become latent for awhile then start up again, and so on.

To recapitulate: Revolve patient ten times toward the left when the right ear is affected, and, on stopping, nystagmus will be toward the right side, that is the slow movement of the eyes toward the left and the rapid movements toward the right side. Nystagmus above normal as compared with the healthy side indicates perilabyrinthitis. If the movements of the eyes are below normal say from five to ten seconds only, it indicates endolabyrinthitis.

In the caloric test, cool or cold water if injected into the affected ear in the second stage will produce nystagmus toward the good side. Hot water will also

In fistula or the circumscribed variety of labyrinthitis middle ear exenteration often causes healing without touching the canals or vestibule. If diffuse symptoms follow, the labyrinth must be drained.

Hearing must be taken into account. When it is bad or gone the cochlea must not be considered at all; when good it is better to hesitate, for the patient may recover, as the disease has not yet reached the inner side of the sac. If the patient's hearing is bad in the healthy ear and better in the diseased, drainage of the vestibule or destruction of the canals must not be considered because hearing is always destroyed by the operation.

Alexander's rule is never to operate on a labyrinth when there is hearing or when there is normal or increased irritability of the vestibular apparatus.

So long as a fistula or even exterior caries keeps the condition circumscribed and hearing is conserved the radical operation alone is often sufficient. When, however, hearing has already been destroyed there is no reason for sparing the vestibule or canals and thus taking chances on recurrence or new lighting up of the labyrinth infection.

To drain by the vestibule alone seems to me to invite further trouble unless it is distinctly shown that a fistula exists, perhaps through the promontory, or the cochlea that is carious. When infection has entered through the oval window there is every reason to believe that it is better to drain the canals as well as the vestibule. At any rate, whichever operation is decided on, the patient should be closely watched for several weeks and if necessary the more extensive operation should be done.

RESULTS

I believe with others—Politzer, Jansen, Alexander, Neuman, Barany, etc.—that the operation is not in itself dangerous but patients often die from too long delay. The results ought to be uniformly good barring complications.

Serous labyrinthitis sometimes occurs after a radical operation which has most of the symptoms of the suppurative variety with deafness to all sounds but the high forks, and recovery is complete in a week or ten days, without interference.

Intercurrent attacks no doubt occur in fistula or as a forerunner of later and more severe infections.

1195 Main Street.

ABSTRACT OF DISCUSSION

DR. J. HOLINGER, Chicago: Before we irredeemably destroy a patient's labyrinth, we ought to make a more careful examination of the real condition. For example, Dr. Cott says: "The first patient complains of dizziness for a short time and is sometimes awakened in the night with an attack." All these things can be produced by simple occlusion of the tube. For instance, I saw a woman of 54, four times, at intervals of one week, and every time she had these same symptoms, dizziness, vertigo, vomiting, headache, swelling over the mastoid, pain on pressure. She could not stand on her feet; could not walk from the bed to a chair. On simple inflation with the Eustachian catheter she was relieved and without help walked back to her room. Afterward a surgeon was called and he promptly operated. Six weeks after that I saw the patient again, the wound was not healed, and all the symptoms were just as before. I took her to the hospital and gave her about eight catheterizations of the tube. Her condition improved promptly. I repeat, therefore, that all symptoms the Doctor mentioned do not prove affection of the labyrinth, and do not justify its destruction. They may be caused by occlusion of the tube.

In the second case there is nothing said as to the findings of the drum dead, nothing as to the pulse and temperature. Therefore, we unfortunately are not able to judge whether the Doctor's diagnosis and indications for operation are correct. The proofs of labyrinthitis in these cases I do not think have been given. The hearing tests are absolutely left out and I think if we want to know anything about the labyrinth we must have complete hearing tests.

DR. COTT: There was no hearing.

DR. HOLINGER: Hundreds of people have been treated as deaf mutes and then we find they do have considerable hearing after proper tests are made. I do not believe that from this paper we can get clear ideas on the subject. We have to study and digest carefully every point of this difficult question. The paper shows that the whole question of surgery of the labyrinth is much more complicated than it looks at first sight. The entering of the labyrinth with our instruments destroys every function of this most necessary and interesting organ, it involves a mutilation of the patient which ought not to be undertaken unless every means have been tried to avoid it. Conservative methods will often preserve a useful quantity of hearing otherwise destroyed in over-zealous attempts at radical surgery which is not indicated in slowly progressing chronic suppurations, since they usually have time enough to limit themselves.

DR. J. R. FLETCHER, Chicago: I have read the preseasonal print and listened to the reading of this paper. It is one certainly not to go unchallenged. The essayist speaks of labyrinthitis without the presence of labyrinth symptoms, or if present, overlooked. They must have been overlooked, as nystagmus, at least, is always present, from the very beginning of a labyrinthitis. Some form of labyrinthitis can be diagnosed from this symptom alone, when the disease follows a chronic suppurative otitis media. In the initial stage of labyrinthitis, and so long as it remains circumscribed, attacks of nystagmus will occur, varying in duration and severity. The quick movement is directed to the diseased side and not to both sides, as stated by Dr. Cott. When the irritability of one labyrinth has been de-

creased by the disease becoming diffuse, the nystagmus changes its direction to the sound side, but can at this time be reproduced toward the diseased side also by irrigating the tympanic cavity with warm water; the nystagmus directed to the sound side, however, will be the stronger. Spontaneous vestibular nystagmus directed toward both sides is of intracranial origin. Usually the nystagmus of intracranial origin is directed to the diseased side. The difference between nystagmus of intracranial and that of labyrinthine origin is that the intracranial appears relatively late in the disease. When the nystagmus, after changing from the diseased to the sound side, at the time of destruction of the labyrinth, swings back to the diseased side, meningitis or abscess in the posterior fossa may at once be diagnosed.

In all these cases the nystagmus is of the rhythmic vestibular type, as contradistinguished from the undulating, or ocular type. The rotary element is always present, though the nystagmus may be compound, that is involving more than one plane. The important symptom of nystagmus is sometimes overlooked because the eye is not observed in the extreme lateral position. The nystagmus may be so slight that unless this is done it is not seen. If we remember that one of the characteristics of the vestibular type is that it is increased by looking in the direction of the quick component and decreased or stopped completely by looking in the direction of the slow component, the symptom will not be overlooked. Before Bárány insisted on thus examining the eyes, a number of competent observers had reported the absence of nystagmus in cases in which it must have been present. It is on this account, and because of my great interest in the subject that my remarks have been confined to nystagmus. The mention of the presence of nystagmus without stating its direction and plane is of no value.

DR. PHILIP D. KERRISON, New York: Dr. Cott's paper seems to me to be in some respects misleading, and for the following reasons: In the first place, the symptoms he recounts in the two histories given are not those usually regarded as justifying a diagnosis of labyrinthitis; and, second, the operation described in connection with the second case is not generally held to be advisable. In discussing these histories, we must consider what positive symptoms are mentioned, and their value as pointing to labyrinthitis.

In Case 1, the patient was a woman, 40 years old, pale and hysterical. As positive symptoms we are told that (1) "she had had attacks of dizziness," (2) she had occasionally vomited and (3) there had been attacks of syncope. She had no spontaneous nystagmus. Attacks of dizziness without nystagmus are not characteristic of labyrinthitis. Vomiting is usually a symptom of the onset, continuing fairly constantly for a day or two, then stopping wholly. Attacks of syncope are decidedly not characteristic of labyrinthitis. In this case the caloric test was followed by great excitement and screaming, and also caused nystagmus and disturbed equilibrium. The excitement and screaming are characteristic of hysteria, while the nystagmus and ataxia must be regarded as evidence of an intact labyrinth. The symptoms in this case do not indicate suppurative labyrinthitis.

In Case 2, a girl of 16 years, on whom a mastoidectomy had been performed two years previously, came to the office complaining of dizziness, and could not stand except with feet well apart. There is no mention of spontaneous nystagmus; and no caloric test was made. Rotation produced nystagmus; it always does if one labyrinth is intact. If in this case the caloric reaction had been tested and found absent, we would have had something to go on. As it is, I can find no symptoms justifying a diagnosis of labyrinthitis.

In Case 2, Dr. Cott, owing to an accidental opening of the lateral sinus, did not open the vestibule, contenting himself with opening the cochlea by removing the promontory wall. This is not considered ever to be justifiable. Hinsberg, Jansen, Neumann, Bárány, Richards—all who have done recognized work in labyrinthitis—agree that the vestibule should always be opened. This constitutes one of the first essential points of the operation, its importance resting on two facts, viz.: (1) that it secures free drainage from the vestibule, which is always involved in suppurative labyrinthitis, and (2) that it enables the surgeon to destroy the membranous structures of the vestibular

apparatus, which is an essential point in controlling permanently vestibular symptoms.

DR. S. MACCUEEN SMITH, Philadelphia: When it comes to treatment, I believe, as in all other cases, the first thing is to make our diagnosis, and this, notwithstanding our tests, is often very difficult to accomplish in this class of cases. In some instances it might appear that these patients would require operation, and yet a great many will recover spontaneously if we perform the radical mastoid operation and then treat the case by more simple methods, so that, notwithstanding Dr. Cott's brilliant results, I would offer a plea for considerable conservatism in most of these cases, especially at the hands of those more or less inexperienced in this line of work. I was interested in noting that the majority of his cases come from the recurrent type of suppurative otitis media. In my experience, the majority of intracranial complications arise from this particular form of disease.

DR. GEORGE SHAMBAUGH, Chicago: This discussion has brought out several points which it is well to have emphasized. The first is that the interpretation of labyrinth symptoms and the correct diagnosis of labyrinth conditions is by no means a simple matter. To make such a diagnosis, a clear understanding of the physiology and of the pathology of the labyrinth is necessary. The second point that the discussion has emphasized is that the practice of otology is a good deal more than the application of the principles of general surgery to the mastoid region. To carry out successfully the surgical measures necessary to relieve complications in and about the mastoid, the middle ear, and the labyrinth, requires not only skill in carrying out the difficult technical examinations of the ear, but requires also an intimate acquaintance with the complicated anatomic relations of this part. The tendency of the general surgeons to undertake aural surgery is to be deprecated for the reason that they are not trained in otologic technic and can seldom make an accurate diagnosis, nor have they as a rule mastered the anatomic details of this region, without which serious injuries are readily caused.

DR. OTTO GLOGAU, New York: It is important to have all or at least most of the symptoms before we consider operation on the labyrinth indicated; nystagmus, impairment of hearing, disturbances of equilibrium, dizziness, nausea, fever, etc., and it is especially important to have the tuning fork test. I would like to mention one case in which all the symptoms were present and yet there was no suppuration of the labyrinth. They were the so-called pressure symptoms. The indication for operation was there and only by opening the neo-membrane which had formed in place of the destroyed drum and the evacuation of the pus was the diagnosis made. It is probably not well to be too conservative. I saw one patient who had been operated on for mastoiditis and after a few weeks developed symptoms of labyrinthitis. The man was not examined properly and by three physicians a diagnosis was made of cerebral tumor. I operated on the patient's labyrinth and now, some months after, he is all right. I would impress on you that in the Mount Sinai Dispensary we now examine every case of suspicious chronic suppurative otitis media for the so-called labyrinthine symptoms, which are very important because often we can detect a starting involvement of the labyrinth before there is a more serious complication. When all the symptoms have developed it is almost too late for treatment. I think it would be very interesting if every case of chronic suppurative otitis media were examined in this way.

DR. F. I. BROWN, Chicago: I would like to speak of a case somewhat parallel to the one reported by the last speaker. It is impossible to judge from any one case just what should be done. We must have a collection of cases before we can arrive at any definite conclusions. This was a case which would have been put down as one of operative labyrinthitis. A radical mastoid was done and in three months' time the patient came back for internal operation. During the interval there was no cessation of symptoms but they all progressed steadily and the man begged for relief. The second operation gave immediate relief. I was present at both of Dr. Cott's cases. It seems to me that with a rapidly progressive perilyabyrinthitis Dr. Cott was justified in operating. The great lessons for us to learn are not so much when to operate as when it is best not to do

any operation at all on the middle ear without at the same time operating on the internal ear.

DR. B. A. RANDALL, Philadelphia: One will find that with the personal equation that is so important in the examiner there is also a large personal equation in the examined, and hysterical and other elements may largely complicate the findings; and one need but turn to the studies in the Vienna Otologic Society to see that these men who rank as experts find many difficult cases and that it is not all plain sailing for them. The matter is difficult and will remain so.

DR. G. F. COTT, Buffalo: I wish to thank the gentlemen who criticized me most severely and most adversely. It is a good stimulus and will help a man to do better work. Dr. Brown and I went into these cases very thoroughly during the last eight months and were satisfied with what we were doing and that it was right to operate. I simply wanted to give an idea in my paper how to make a diagnosis in these cases of infectious labyrinthitis due to suppuration of the middle ear. Dr. Kerrison has given a paper on this subject which took into consideration almost the entire category of symptoms. I therefore left out most of the theoretical part.

Dr. Holinger claims that these symptoms may be present with Eustachian tube occlusion; that is impossible, so far as the labyrinthine vertigo is concerned. I know of two patients treated expectantly because of the mistaken idea that the symptoms might be due to some other cause and both patients died. Perilyabyrinthitis and endolabyrinthitis have absolute and definite symptoms and must not be mistaken for anything else.

Jansen is the only man who has had any great experience with suppurative labyrinthitis, having operated over 100 times with a death rate of 29 per cent. Such a mortality will be cut down very much with the more definite symptoms to guide us.

I do not lay any stress on temperature; the probabilities are that one will have no rise of temperature or a very little. I am familiar with the work in Vienna, having visited that city last year and gone over the matter thoroughly. As to the cholesteatoma deciding the diagnosis, it did not, but it decided that if I did not operate the patient would sooner or later succumb. I did not drain the vestibule in this young patient because after I had punctured the lateral sinus I could not remove enough bone to lay the vestibule bare; therefore I took off a part of the posterior and horizontal semicircular canals and opened through the oval window. This course was justified, as the result shows.

PEMPHIGUS NEONATORUM, OR BULLOUS IMPETIGO CONTAGIOSA OF THE NEW-BORN*

O. H. FOERSTER, M.D.

MILWAUKEE, WIS.

Pemphigus neonatorum was first described as an independent disease by Oehme in 1773. Previous to that time it had been confounded with syphilis, and until almost the middle of the last century there were many who still considered it as syphilitic in origin. Writers on the subject gave prominence to the bullous character of the affection, to its frequent occurrence in epidemics—especially in obstetric wards, foundling asylums, and in the practice of midwives—and to its variable course, benign in some instances, and in others presenting an alarming mortality. The latter observation early led to its division into a benign and malignant form. The possibility of a transference of the disease from infants to other children or to adults was also noted, and many writers observed that transmission to older children or adults resulted in a decided change in the clinical character of the affection. This alteration in character is striking; it appears strange that it has

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