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(*Continued from p.* 170.)

Vertigo of Labyrinthine Origin following a Chronic Suppurative Otitis Media with Cholesteatoma; 1st: Simple Mastoid with Curettage of the Middle Ear and Eustachian Tube; 2nd: Radical Labyrinth Exenteration.—Francis P. Emerson.—The otologist is particularly interested in those labyrinth cases which, in their final analysis confirmed by operation, may be readily labelled pathologically, and yet in their clinical manifestations may have presented a reasonable doubt as to the surgeon's attitude in regard to immediate operative interference. The relation of the vestibular apparatus to the brain demands exact diagnosis, and immediate surgical intervention in all pyogenic invasions of the labyrinth if life is to be saved. The case outlined is offered as one with delayed symptoms, and one which was perhaps less clear clinically than many.

The patient, male, aged sixty-two, was admitted to the Massachusetts Charitable Eye and Ear Infirmary, August 11, 1913, with a diagnosis of otitis media suppurativa chronica of the right ear. The case is summarised as follows: The patient is a man prematurely old. There is a perforation of the septum. His wife has had two miscarriages. The hearing test for his good ear, that is, the left, the writer has found to be strongly suggestive in other cases of lues, *i. e.*, a low note, but little, if any, raised, a positive Rinne with marked lowering of bone conduction, and the whispered voice reduced to $\frac{1}{25}$ or $\frac{1}{35}$. In this case there was a negative Wassermann, but no examination was made of the cerebro-spinal fluid. His eyes and a physical examination did not give evidence of specific disease. Could lues then be eliminated as a direct or contributory factor in this patient's symptoms?

The right ear gave a history of discharge for thirty years, and in addition there was a cholesteatoma, which, as is well known, is apt to invade the labyrinth. There were granulations in the posterior quadrant. The rotation test done several times always showed vestibular irritatio when the vertical canals were in the plane of rotation. Unfortunately the difference in the after nystagmus between the turning to the right or to the left was not recorded. The fistula and caloric test were negative and there was no spontaneous nystagmus. The hearing test, done by two different observers, showed total deafness for the right ear, except a bone conduction of three inches. Can we say that this then was a case of diffuse purulent latent labyrinthitis, and that the apparent vestibular reaction was compensatory? According to Ruttin this does not occur unless a latent purulent labyrinthitis has existed for a long time and has been followed by a complete ossification of the labyrinth or sequestration. In this case there was no clinical history of vertigo until five weeks before admission, and our operative findings showed the horizontal canal free, while the superior and posterior contained a greyish-red granular, non-adherent detritis. There was no organised tissue or evidence of ossification present. The second day after operation we had a clear, serous

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discharge resembling cerebro-spinal fluid. There was no facial paralysis and no sequestrum was found. On the other hand, the turning test was always positive.

Have we any evidence to suggest that this was a case of diffuse serous secondary labyrinthitis? The onset of the vertigo favours this supposition, and it is confirmed by the hearing test, which shows a remnant of vestibular irritation present. The operative findings are also consistent with this diagnosis; on the other hand, the caloric and fistular tests were negative, and there was no nystagmus at the time the patient was examined. The caloric reaction we know may be lost. If we assume that the portal of entry was originally by way of the oval window, could we not explain the failure at this time to obtain a positive fistular test by the presence of granulations in the posterior quadrant of the middle ear? We recognise that such an invasion is more often followed by a purulent labyrinthitis, but three cases of fifty reported by Ruttin were followed by the serous form. There remains then the absence of nystagmas to be accounted for. This is a symptom of irritation, and is, of the second degree, it might readily have been wanting at the time of observation. In the light of our symtomatology and the operative findings, the writer is inclined to consider the case one of a diffuse serous secondary labyrinthitis, as affording the only consistent diagnosis. For those who accept this interpretation, the division into two stages of the operative procedure, is perfectly consistent. If this diagnosis is accepted we must assume that there were no well-defined symptoms immediately following the mastoid operation, but that if present at all, they were but little marked, and only developed as a pronounced diffuse serous secondary labyrinthitis on the sixth or seventh day.

Dr. E. B. Dench thought it a mistake to follow the foreign school in making a classification of these cases into serous, suppurative, or perilabyrinthitis. Neumann, Ruttin, and others had said if a diagnosis was maee of one or another kind, one must do one or another kind of operation. He thought Dr. Emerson' splan of treatment in the case under consideration the proper one. He had had cases in which, if he had followed the foreign school, he would have killed his patient. The results of the German operators did not show that their operative recommendations were always warranted.

Dr. Norval H. Pierce, corroborated what Dr. Dench had said with reference to the foreign school and their methods. He cited a case, which had been under his observation at the Illinois Eye and Ear Infirmary, of acute otitis media, with obvious mastoid and labyrinthine involvement. The woman had had repeated attacks of discharge from the ear extending over a number of years, each time running an apparently normal course, until the last, when swelling and pain appeared over the mastoid. She complained of great dizziness. The caloric reaction was negative, as to both heat and cold. There was nystagmus to the opposite side. She was absolutely deaf in the diseased ear, as proved by Neumann's apparatus. There was no fistula. Here was a case for immediately going into the labyrinth, according to the German school. He had so completely abandoned their ideas that he had probably swung to the opposite extreme. He did not open this woman's labyrinth, and she recovered. This was one of six or more similar cases which had come under his observation during the past year. He did a simple mastoid operation. It was impossible to differentiate between suppurative, destructive labyrinthitis and serous laby-

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rinthitis which was capable of recovery. The cases which he had observed for some length of time had recovered function so far as hearing was concerned. He believed one should never do a labyrinth operation when symptoms of meningitis were present; to operate under such circumstances would have very little effect.

Dr. EMERSON, in closing the discussion, said his object in presenting this case was to bring out just such remarks as those of Dr. Dench and Dr. Pierce. These cases should have a preliminary masotid operation, and the labyrinthine operation only in the presence of evident signs.

The Labyrinth Operation; the Frequency with which it is demanded as determined by Hospital and Private Statistics extending over a Period of Ten Years.—Edward Bradford Dench.—The author stated that it was the object of his paper to show by statistics the relative frequency with which labyrinth suppuration occurs as a sequel either of acute or chronic middle-ear involvement. Between 1904 and 1915 less than one-tenth or 1 per cent. of the cases of middle-ear involvement at the New York Eye and Ear Infirmary were subjected to the labyrinth operation.

Dr. Dench's own records, from May 1905 to May 1915, show 659 cases of acute mastoiditis and secondary mastoiditis operated upon, 533 cases of chronic middle-ear suppuration subjected to the radical operation, 23 cases of brain abscess, 33 cases of meningitis and 37 cases, of sinus thrombosis. From 1907 to January 25, 1915, the same records show 22 cases in which the labyrinth operation was performed. These records would show that a labyrinthitis, demanding operation, is a most infrequent complication of a middle-ear lesion. Labyrinthitis occurred in only 2 per cent. of the operated cases of middle-ear suppuration.

Dr. Dench called a removal of a portion of the labyrinth a "partial" operation, and the free opening of the horizontal semicircular canal, the vestibule and the cochlea, thus securing complete drainage of the entire labyrinth, the "complete" operation. He performed the partial operation in 10 cases, and the complete operation in 12 cases. Of the cases in which the partial operation was performed, 7 were cured and 3 died; of the complete operation, 7 were cured and 5 died. Of the 3 cases of partial operation, 1 died of malignant disease and 2 of meningitis. Of the 5 fatal complete operation cases 4 died of meningitis and 1 of a pulmonary thrombus secondary to a jugular thrombosis. In 2 of the remaining fatal cases the operation was performed for the relief of an existing meningitis.

Dr. Dench concluded that the necessity of the complete labyrinth operation is comparatively infrequent, and that the operation should only be undertaken in the presence of very definite symptoms, pointing to either acute labyrinth involvement, or an acute exacerbation of a previous labyrinth suppuration. When these symptoms occur, operative interference is imperative, and must be prompt if it is to be successful. The expectant plan of treatment will probably be followed by the best results in cases of circumscribed labyrinthitis, or of a purulent labyrinthitis which is quiescent.

Dr. GEORGE W. MACKENZIE (Philadelphia), disagreed with Dr. Dench regarding the treatment of cases of circumscribed labyrinthitis in the semicircular canal by curetting and nothing more. Of course it was desirable to preserve the hearing as much as possible, but by curetting in the neighbourhood of a fistula, one would be apt to spread

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the labyrinthitis. He had done this in one case, with loss of function in the horizontal position, but with retention of function in the vertical canals. In cases of labyrinth suppuration, with positive evidence that the labyrinth was dead, the labyrinth operation should be done at the same time that the mastoid operation was performed, otherwise the case was apt to terminate fatally. He had reported fifty-five cases, not his own, in which there were two fatalities. One was a case of Neumann's, and one Alexander's. Both these fatalities were due to the fact that the radical mastoid was done and the labyrinth left untouched, when the labyrinth should have been operated radically. There was some doubt in the minds of these surgeons as to the diagnosis of labyrinth suppuration, before the operation on the mastoid. The two errors were committed early in the experience of these men, at a time when the knowledge of the labyrinth was more limited than it is now. My present conviction concerning the subject of labyrinth suppuration is that we should not attempt any operation on the mastoid without at the same time draining thoroughly the labyrinth. Furthermore, that no operation on the mastoid or labyrinth should be attempted until a most careful examination of the labyrinth by all known tests had been made, and a positive opinion arrived at concerning the condition of the labyrinth. Circumscribed irritative conditions of the labyrinth (congestion) without the fistula sign did well with mastoid operation alone. Circumscribed destructive conditions would always tax the skill of the surgeon as to what was best to be done. Each case would need separate consideration as there was no fixed law by which one should be governed in all cases.

Dr. Arthur B. Duel (New York City), thought it interesting to note the change of attitude with reference to these cases of suppurative labyrinthitis. When the Vienna school first promulgated their ideas, their plan was pretty generally adopted. No doubt many mistakes were made as a consequence. The general opinion among surgeons of the present time was to regard acute cases, whether suppurative or not, as unfavourable for operative intervention. These cases should never be operated in the acute stage unless there were evidence of a concomitant meningitis. It was much better to wait; for, if operated upon immediately, they were much more apt to die, by precipitation of the very complication they were trying to avoid. He had shared with Dr. Pierce the rather hopeless view of meningitis until last year, when he succeeded in curing a case by means of the Neumann operation and drainage at the internal auditory meatus, accompanied by repeated spinal punctures, drawing off twenty to thirty cubic centimeters of milky cerebro-spinal fluid, at the same time injecting back about 40 grains of urotropin in 15 or 30 c.c. normal salt solution. At each subsequent tapping of the cord, done at intervals of one or two days, six times, the fluid became more and more clear, until the patient finally recovered. He shared the belief of the majority, that in chronic cases if, at the time of operation, the gross appearances indicated the presence of a fistulous opening and necrosis, it might be necessary to open the labyrinth; otherwise it was better to wait for further symptoms.

Dr. MacKenzie added that many cases of supposed labyrinthine suppuration of ten years, standing might present all the symptoms of labyrinthine suppuration, and yet there might never have been this condition, but instead, a chronic labyrinthitis of the plastic type. Unless, therefore, Dr. Beck, or someone else, had seen the case at the very

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onset, with complete loss of function, it could not be pronounced a case of labyrinth suppuration. There must be typical signs of suppurative labyrinthitis. There was, with suppurative labyrinthitis, sudden, complete loss of hearing, loss of equilibrium, with negative findings by caloric tests, by galvanism, and by turning. Answering a question by Dr. Pierce concerning the method of differentiating between serous and suppurative labyrinthitis, the speaker said it was indeed difficult to make the differentiation early. Headache and fundus findings were guides. When present they suggested a suppurative type of labyrinthitis.

Dr. George L. Richards asked whether the discussion concerned the perilymph or endolymph channels, whether within or without the membranous labyrinth. It made a great difference.

Dr. Norval H. Pierce said the functional symptoms of serous and suppurative labyrinthitis were the same, and one condition could not be differentiated from the other. The only light thrown on the subject was that given by the meningeal complications. It was better not to operate until the meninge were involved.

Dr. Dench, in closing the discussion, said, in answer to Dr. Richards' question, the subject involved both the perilymph and the endolymph, and was within the bony capsule. It could not involve the endolymph without involving the perilymph. That was just the hair-splitting question the German school had raised. He could not agree with Dr. MacKenzie with reference to the treatment of circumscribed labyrinthitis. He believed it wise, in the presence of a fistulous tract, to go in with the curette where this could be done without breaking down Nature's barriers to the course of infection. He removed all necrosis with a small curette.

(*To be continued.*)

Abstracts.

LARYNX.

Cancer of the Larynx complicated with Laryngocele.—Smith, Harmon, The "Laryngoscope," August, 1915, p. 560.

Laryngocele ventricularis may be due to playing on wind instruments or to sudden explosions of air, as in coughing. Harmon Smith records a case of a male, aged thirty-seven, who suffered from hoarseness, with occasional loss of voice, for two years. At times there was dyspnœa. For one month he had suffered from pain radiating towards the ears. Laryngoscopy revealed a large tumour of the left ary-epiglottic fold which pushed the epiglottis to the opposite side and obscured the cavity of the larynx. The tumour also projected into the neck just beneath the hyoid bone and was of a cystic or fatty consistency. Smith punctured the swelling, when there was a sudden expulsion of gas, accompanied by a noise like that made by the bursting of a toy balloon. After this the tumour had entirely disappeared, not only in the larynx, but also in the neck. Further examination now showed a large mass involving both true cords, ventricular bands, and the anterior commissure. The laryngocele appeared to be secondary to this malignant invasion of the larynx. The patient's breath had a cancerous odour, and both cords were slightly fixed. One cord was ulcerated. (Wassermann reaction

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