sliding over and along the bougie the fine silver tube D E,* which is open at both ends, has a slit (F) for the tenotome to run in, and is fitted with the vesical half (G H) of the elastic catheter; so that, when the tube is entering the bladder, we have the combination depicted in Fig. 6, where the silver tube L, carrying the vesical half (M) of the elastic catheter, is seen gliding over and along the bougie (N), which is now to be withdrawn, when urine will flow out of the metal tube if it be really in the bladder. If urine come out, the stricture is to be divided by sliding a probe-pointed tenotome along the slit in the tube, which is to be held in such a manner that the slit, which serves as a groove, shall look upwards. The deep part of the urethra is thus divided subcutaneously without enlarging the original wound. The vesical half (M) of the elastic catheter is now to be gently pushed along the tube (L) till it is fairly in the bladder. If its progress be arrested at any point, the tenotome must be reintroduced, and any opposing tissue divided. The vesical half of the catheter having been passed into the bladder, the metal tube is withdrawn, and the end (I) of the urethral half (K) of the elastic catheter is to be screwed into its fellow-half at H, so as to make one continuous catheter. The next thing to be done is to pass the olive end (K) upwards from the apex of the wound till it emerges at the meatus externus. This is usually easy to do; but, if there be any trouble in doing it, an assistant can pass a large olivary catheter down the penis till the point of the instrument appears in the wound. The surgeon now catches hold of the point, and, having cut off three inches of the protruded catheter, he inserts into its cavity the end of the elastic catheter, K. The assistant, still holding the catheter he passed downwards, now draws it upwards, and thus brings up with it the other catheter, which was inserted into it by the surgeon. The catheters are now unlinked, and the one in the bladder can be retained or not as the operator may fancy. I look upon the retention of a catheter as a relic of a surgical age now past; for Dr. Gouley has, by the narration of a number of facts, conclusively demonstrated that the retention of a catheter after operation is, to say the least, perfectly unnecessary.

The advantages of the operation as above described may be summed up as follows. 1. The greater chance of finding the entrance to the stricture with a fine olive-tipped bougie, and, when found, of passing it through the stricture, than with the stiff metal probe, which is larger. 2. Demonstrating that the bougie is really in the bladder by sliding a fine silver tube over it and drawing off the water. This is really *the point* of the operation, for it enables the surgeon to divide the stricture with certainty, and spares him the mortification of laying open a false passage. 3. The metal tube serves as a guide over which the elastic catheter can be passed into the bladder. 4. Diminishing the risk of the operation by dividing the stricture subcutaneously, instead of enlarging and extending the original wound.

I consider the "boutonnière" the right and proper operation to perform for the relief of impassable stricture, after the surgeon has exhausted all ordinary means to pass a catheter. If retention from urine from impassable stricture set in, then the operation is specially indicated, for by it the cause and effect are treated at one and the same time.

CASES OF OTORRHOEA AFFECTING THE MASTOID BONE.

By F. M. PIERCE, M.D.,

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THE diseases attacking the mastoid bone, primary or secondary, are amongst the most serious with which aural surgeons have to contend, whether we regard the danger to the patients or the prompt treatment required. I do not intend, in this paper, to separate the different kinds of mastoid inflammation, but to record several cases illustrating the various forms of this affection which have come under my care in public and private practice during the last few years.

In a paper read before the Clinical Society in 1872, Dr. S. Gee pointed out very concisely that the connection between cerebral symptoms and purulent affections of the ears might be arranged under the three following heads: 1. Symptoms of otorrhoea preceding those of meningitis; 2. Symptoms of meningitis preceding those of otitis; 3. Symptoms of otitis latent throughout meningitis. In most of these cases, we find that some form of mastoid disease has existed in the course of the complaint. Only occasionally do we get fatal meningitis due to ear-disease without any implication of the mastoid.

The following cases will illustrate the symptoms of mastoid disease as a complication.

* Since writing the above, I have removed the handle of the silver tube, so that the elastic catheter can be slipped over it after it has been passed into the bladder.

CASE 1.—T. L., aged 34, gardener, came under my care at the Manchester Institution for Ear-Diseases in August 1874, having suffered for the previous two years from repeated earache, with purulent discharge from the right ear. He could not account for this condition, except great exposure to cold and frequent use of a pin in that ear. He had gradually become worse; he suffered intense earache, deeply seated, and most marked at night. On examination, the hearing distance was $\frac{9}{8}$ for the right ear; the left ear normal. The tuning-fork placed on the vertex was heard almost entirely by the left ear; it was very slightly perceptible at the right external meatus, the walls of which were much swollen, red, and bathed in offensive-smelling pus. After syringing, a small granular polypus could be seen coming through the membrana tympani, of which only a narrow rim remained. The right Eustachian tube was impervious, and loud rushing tinnitus aurium was constantly present. He was ordered a lotion of sulpho-carbolate of zinc, to be instilled warm and retained for ten minutes three times a day; the meatus to be packed with powdered oxide of zinc every evening. The compound liniment of iodine was directed to be painted over the mastoid bone two or three times a week. Under this treatment, the pain was much relieved, and the discharge became less copious and offensive; but the hearing distance did not exceed $\frac{2}{3}$.

October 27th. The otorrhoea was very slight. He complained of great itching in the ear, and sometimes had a sudden severe attack of deeply seated earache, chiefly at night. The patient's general health had much improved under the use of cod-liver oil and iron; but he still looked very anxious, thin, and pallid.

November 17th. The swollen condition of the walls of the meatus having disappeared, and a more healthy state having been attained, I endeavoured to find if there were any fistulous openings into the mastoid bone, but failed, as on previous occasions, to detect caries with the probe. The polypus was reduced in size, and I intended to apply astringents at the next visit; but he ceased to attend, and did not return until

April 2nd, 1875. He stated that he had been very ill with inflammation of the lungs. He now had a more profuse otorrhoea than before. The hearing distance was $\frac{9}{8}$; the tuning-fork was not heard at the right external meatus, nor in the right ear, when placed on the vertex. He complained of intense pain in the ear and round the face and right side, worse at night, and accompanied by severe headache. He was very feverish and emaciated.

April 9th. He was much improved after taking quinine with morphia, and resuming the local treatment originally ordered, which had been omitted during his illness. The meatus was wiped out with solution of nitrate of silver (gr. 40 to 3j) every other day. The lotion now passed from the ear into the mouth very freely.

April 30th. Lotions of iodine with glycerine, and weak solutions of muriate of iron with opium, were used alternately.

May 7th. Frequent applications of tincture of perchloride of iron were made to the polypus through the speculum. He experienced some difficulty in closing the right eyelid, and in inflating the right cheek. The pupils were equal, but the right was less sensitive to light.

May 14th. A soft red swelling had arisen on the right mastoid process, containing pus, into which a deep incision was made, affording relief from pain, and removing the otorrhoea from the meatus. Poultices were ordered to the incision. A probe passed into the incision came upon soft carious bone; and, on exploring the walls of the meatus for the first time, some dead bone was felt at the superior and posterior walls.

June 18th. Frequent warm-water douches, leeches to the tragus, morphia pills, and the application of small pledgets of cotton soaked in acetate of lead and opium, afforded temporary relief to the pain and discharge.

June 29th. The meatus was found blocked up by a large piece of necrosed bone, which appeared to have descended from the posterior and superior wall of the meatus, and was firmly implanted. The polypus and membrana tympani could not be seen.

July 9th. There was no improvement. The patient was in extreme pain, and complained of numbness of the right half of the face.

The patient died of meningitis, with convulsions, on July 24th, as I was informed by letter from Mr. Renshaw of Altrincham, who attended him. Unfortunately, I did not hear of his death until some time had elapsed, and too late to have a *post mortem* examination.

In this case, there was unusual difficulty in applying efficient local applications, owing to the smallness of the polypus, and the perforation of the membrana tympani, and to the swollen state of the meatus. The situation of the caries and sinuses was made out with difficulty; and the size and fixed position of the necrosed bone did not warrant much attempt at removal in the patient's state of health at the

time. The intercurrent attack of pneumonia was probably due to purulent infiltration from the ear. The mastoid was implicated by extension of the suppuration from the meatus and tympanum.

[To be continued.]

EFFECTS OF VARIOUS DISEASES ON THE WEIGHT OF THE BRAIN IN 2,050 SANE AND INSANE ADULTS OF BOTH SEXES.

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THE following record of the effects of various diseases on the weight of the cerebrum, cerebellum, pons, and medulla, in the sane and the insane, is taken from the necrological registers kept by me for thirty years at the St. Marylebone Infirmary and Somerset County Lunatic Asylum. As far as I know, the subject is one which has not hitherto been referred to by any author, and I think it may be of sufficient interest to bring before one of the sections at the Edinburgh meeting of the British Medical Association.

The citation of figures must be wearisome to all, but it is the only means by which the facts can be brought clearly under notice: I will, however, endeavour to be as sparing as possible in this particular. The sane adults, and many of the insane—classified according to age—are included in my tables of the weights of the human body and internal organs in the *Philosophical Transactions* for 1861. From these cases, and others of the insane subsequently examined, it was found that, as regards the sexes, the average weight of the encephalon was from four to five ounces heavier in males than in females, and that there was a difference in height of an equal number of inches. The proportions of the different parts of the encephalon, estimated according to the height, in 400 males and 325 females, insane, were as follow—the average height being in the males sixty-six, and in the females sixty-two inches.

TABLE I.

CEREBRUM.		Cerebellum.	Pons and Medulla.	Encephalon.	Sex.
Right Hemisphere.	Left Hemisphere.				
.301	.302	.077	.016	.607	Males
.294	.295	.076	.016	.681	Females

From the above, it appears that the average weight of the cerebrum was .007 more in males than in females; the cerebellum .001 heavier in males than in females; the pons Varolii and medulla alike in both sexes; and that the left cerebral hemisphere was heavier than the right by .001 in both sexes. The encephalon was .016 heavier in males than in females. Inequalities in the cerebral hemisphere have been frequently observed, especially in epileptics; and cases by me have been published in the thirty-ninth volume of the *Medico-Chirurgical Transactions*.

The heaviest brains have not unfrequently been those of epileptic idiots. Hypertrophy of the connecting tissue of the brain is stated to have been found in such cases; and to the same cause may probably be attributed cases of convulsions and sudden death in children, of which there are instances in the tables referred to amongst the cases examined in the St. Marylebone Infirmary. In these cases of sudden death, apparently in healthy children, when the skull-cap was removed, the dura mater was observed to be extremely tense and shining, and, when divided, the cerebrum projected considerably over the edges of the skull, the convolutions were flattened, the ventricles devoid of fluid, and their sides pressed together, the other internal organs being natural.

The following table shows the average weight of the cerebrum, cerebellum, pons Varolii, and medulla, and the encephalon in the sane and insane of both sexes, commencing with diseases of the nervous system, including those of the brain and membranes, and also of the spinal cord; diseases of the chest, under three heads—pleuropneumonia, bronchitis and asthma, pulmonary phthisis; diseases of the heart and dropsy; diseases of the stomach and abdominal organs; and, lastly, fevers, including the eruptive and erysipelas. The mental disorder in the insane of both sexes is shown on the annexed comparative table. (Table III,

on next page.) Of the 2,050 cases (616 sane males, 653 sane females, 430 insane males, and 351 insane females), the principal causes of death were as follows.

TABLE II.

Diseases.		SANE.		INSANE.	
		Males.	Females.	Males.	Females.
Nervous	Brain	Per cent. 17.3	Per cent. 25	Per cent. 32.5	Per cent. 15.7
	Spinal cord	.7	.1	14.4	7.4
	Totals	18	25.1	46.9	23.1
Lungs.	Pleuritis and pneumonia	22.1	17.3	21.6	17.4
	Bronchitis and asthma	11.1	13.6	3.7	8.8
	Phthisis	28.7	14.8	13.7	22.8
	Totals	61.9	45.7	39	49
Heart and dropsy		5.5	9.6	3	3.4
Abdomen		7	13.6	11	19.1
Fevers		7.6	6	.1	5.4

From the comparative table of the effects of various diseases on the weight of the brain and its several parts in the sane and insane of both sexes, it appears that, taking the total numbers, the encephalon was heaviest in the insane; the difference being in the males three-quarters, and in the females one ounce and a quarter. The average weights are as follow.

TABLE IV.

Cerebrum.	Cerebellum.	Pons & medulla.	Encephalon.	
41.4	5.1	1	47.5	In sane males
41.8	5.4	1	48.2	In insane males
36.4	4.6	.9	41.9	In sane females
37.5	4.7	1	43.2	In insane females

These averages, taken from the whole of the cases, will serve to show what effect is produced on the average weight under the various diseases enumerated in the table.

With respect to diseases of the nervous system, which include diseases of the brain and membranes, as well as those of the spinal cord, we find the cases most numerous amongst the insane males, amounting in them to very nearly 47 per cent. of their whole number, and in females to 23 per cent. A considerable proportion of this excess in males (insane) is due to the frequency of general paralysis—a disease, as the symptoms indicate, usually arising from disease of the spinal cord. This fact, confirmed by the microscopical observations of Mr. Gulliver, was first stated by me in 1848, also in subsequent annual reports of the Somerset Asylum, and in the *Journal of Mental Science*. The fact has since been confirmed more or less by other observers at home and abroad.

In diseases of the brain and membranes, the encephalon was in the males one ounce below the average above given in the sane, and two ounces in the insane, and in the females about three-quarters of an ounce below the average. In both classes, four-fifths of this loss was in the cerebrum in males and in the sane females; in the insane females, the entire loss was in the cerebrum, and in them the cerebellum was one-tenth of an ounce above the average. It will be seen that there is a considerable difference in the weight of the cerebrum in diseases of the brain and spinal cord, owing to cerebral wasting usually accompanying paralysis of the insane.

In the four cases of disease of spinal cord in the sane males, the encephalon was half an ounce above the average, the increase in weight being due to the cerebellum and pons Varolii. In the insane males a very different state of the encephalon was found; it was three-and-a-quarter ounces below the average, being the lowest average of that organ in any of the various diseases: the loss of weight was entirely in the cerebrum. In the females, also, the loss of weight was entirely in the cerebrum, and amounted to 1.1 ounce.

The form of mental disorder in the foregoing (282) cases of cerebro-spinal disease was in the following ratio.

Mania	19.4 per cent. males; 23.4 per cent. females.
Melancholia	4.4 " " 12.3 " "
Fatuity and dementia	12.9 " " 12.3 " "
General paralysis	35.3 " " 29.5 " "
Epilepsy	25 " " 16.5 " "
Idiocy	3 " " 6 " "
100	100