

simple as it is, causes a great deal of constitutional disturbance. In women not particularly robust the pulse will often rise to 120 or more immediately after the tapping, and several weeks will often elapse before the vascular fervescence at length gradually subsides. Deaths have even been reported, though none happily have come under my own cognisance. Females, however, who are in any way fundamentally delicate often remain in a state of weak health for many months. I have never heard of any drugs being vaunted for the cure of cystic goitre, but electrolysis has been tried, as it has in other goitres, with, however, more promising results. According to Dickson<sup>32</sup> of Toronto the best method is to empty the cyst by means of an aspirating needle isolated to within an inch of its point. Then refill the cavity with a solution of common salt and connect the needle with the negative pole of the battery, the positive electrode being applied between the shoulders. A current of thirty milliamperes may be employed for fifteen or twenty minutes, after which the sac is to be emptied and the opening sealed. The repetition of this procedure two or three times at short intervals may effect a cure. It may be mentioned that operating surgeons sometimes enucleate the cyst in this class of goitres. 3. Until recent years exophthalmic goitre has been regarded as entirely outside the domain of surgery. The patient, has, therefore, been subjected only to the influence of such drugs as seemed likely to combat the symptoms, especially bromides, digitalis, strophanthus, &c., with perhaps a surface application of electricity to the tumour or to the cervical sympathetic after the manner of Eulenburg.<sup>33</sup> Iodine has not been relied on in this affection as it has in ordinary goitres, although in one case recounted by Trousseau<sup>34</sup> it appeared to have a specific action. Both thyroid and thymus gland, antagonistic substances as it is thought, have recently been administered, but the evidence does not yet enable us to decide as to their value. The persevering use of galvanism to the goitre sometimes produces a diminution of size, but the value of electricity is most marked when the negative electrode is applied to the course of the sympathetic nerve in the neck.<sup>35</sup> An almost immediate reduction of the pulse to 80 or 90 often follows with a general sense of relief to the patient, which may last for two or three days. When there is a tendency to spontaneous cure, or the malady is stationary, such measures are palliative in a very high degree. As early as 1873 Watson<sup>36</sup> of Edinburgh had excised the goitre in three cases with encouraging results, but he was practically without imitators. Now, however, owing to the different views spreading as to the nature of Graves' disease radical measures are steadily coming into vogue. Thus, at the recent German Surgical Congress Mickulicz of Breslau brought forward a number of cases treated by partial excision and also some by ligature of the afferent arteries. Unfortunately, at present the wave of psycho-therapeutics has risen to such a height that a considerable number of practitioners are ready to attribute every successful result to hypnotic suggestion. It may be said, indeed, that in medicine now measures

"Of great pith and moment,  
With this regard their currents turn awry  
And lose the name of action."

I have myself been accustomed for some years to inject these cases as in ordinary goitres, though at much longer intervals than when there are no signs of neurosis. Not that I consider there is any special danger to be apprehended from the injection in such patients, but merely that the subjects being as a rule in a very nervous state the mere prick of the needle may drive them into hysterics, make a scene, &c., at the time, and even after some days the practitioner may hear that the patient is still displaying unusual restlessness in the domestic circle. After the injection has been done two or three times, however, this condition of things to a great extent passes off, and the sufferer submits with tolerable equanimity to the operation. It is just in this class of cases that freezing the surface becomes a valuable preparatory measure, and it is highly advisable to have recourse to it. I have little doubt but that in the future the cardinal rule for treatment of exophthalmic goitre will be to first get rid of the bronchocele. Electrolysis has been tried in exophthalmic

goitre, but I have met with no laudatory report of its action. I may here append some statistical information relating to 287 instances of all forms of goitre which have passed through my own hands:—

|                                       | Fibrous. <sup>37</sup> | Cystic. | Mixed. | Exophthalmic. | Totals. | Results. |           |                         |
|---------------------------------------|------------------------|---------|--------|---------------|---------|----------|-----------|-------------------------|
|                                       |                        |         |        |               |         | Cured.   | Relieved. | Negative. <sup>38</sup> |
| Males—                                |                        |         |        |               |         |          |           |                         |
| 15-25 ... ..                          | 1                      | —       | —      | 2             | 3       | —        | —         | —                       |
| 25-50 ... ..                          | 7                      | 1       | 3      | —             | 11      | —        | —         | —                       |
| Females—                              |                        |         |        |               |         |          |           |                         |
| 15-25 ... ..                          | 57                     | —       | 7      | 51            | 115     | —        | —         | —                       |
| 25-50 ... ..                          | 82                     | 18      | 23     | 35            | 158     | —        | —         | —                       |
| Totals ... ..                         | 147                    | 19      | 33     | 88            | 287     | —        | —         | —                       |
| Treatment—                            |                        |         |        |               |         |          |           |                         |
| Injection. . . .                      | 135                    | 1       | 30     | 17            | 183     | 111      | 39        | 33                      |
| Tapping ... ..                        | —                      | 15      | —      | —             | 15      | 9        | 2         | 4                       |
| Drugs and external application ... .. | 12                     | 3       | 3      | 71            | 89      | 11       | 40        | 38                      |
| Totals ... ..                         | 147                    | 19      | 33     | 88            | 287     | 131      | 81        | 75                      |

Finsbury-square, E.C.

THE VARIOUS METHODS OF OPERATING ON THE MASTOID PROCESS AND THE INDICATIONS FOR THE SAME.<sup>1</sup>

By ADOLPH BRONNER, M.D.

SURGEON TO THE BRADFORD EYE AND EAR HOSPITAL, AND LARYNGOLOGIST TO THE BRADFORD INFIRMARY.

DISEASES of the mastoid process due to affections of the middle ear are very common, but only a small number of cases are operated on; and even when an operation is performed the anatomy of the parts and the technique of the operation are often so imperfectly understood that the results are not as good as they might be. Every surgeon sees large numbers of cases with extensive disease of the mastoid process in which no operation has been performed until the disease has spread to the brain, or where the operation has been restricted to Wilde's incision or to the use of a gimlet or gouge. In operating we have three important cavities to deal with: the middle ear, the attic, and the mastoid antrum or cells. The attic is separated from the middle ear by fibrous bands and ligaments only, and the attic and mastoid antrum are practically directly continuous. The dangers of operating are not very great if we are thoroughly acquainted with the anatomy and pathology of the parts and have frequently performed the operation on the dead body. They are naturally extremely great and grave, if we restrict our methods of operating to roughly and rudely scraping out the middle ear or perforating the mastoid process with a gimlet or gouge. Some of the dangers are: (1) lesion of the facial nerve or (2) of the external semicircular canal; (3) opening the sigmoid fossa; (4) wounding the lateral sinus or (5) the internal carotid artery; and (6) perforating the tegmen tympani. In some cases the positions of these parts vary to a considerable extent, and we have therefore to operate with great caution. Frequently there is only a very small mastoid antrum and few cells, or we only find a few cells on a level with the attic and above the lateral sinus. This is of great practical importance. The indications for operating, according to Schwartze, are:—1. Acute primary or secondary inflammation of the mastoid process, if the symptoms under treatment do not improve in a few days. It is, of course, often difficult to know exactly

<sup>37</sup> Here are included all goitres not obviously cystic and without apparent neurosis.

<sup>38</sup> These are chiefly patients lost to sight before the treatment had a fair trial.

<sup>1</sup> Abstract of a paper read before the Leeds and West Riding Medico-Chirurgical Society, March, 1895.

<sup>32</sup> Canadian Practitioner, Aug. 16th, 1892.  
<sup>33</sup> Ziemssen's Cyclopædia, vol. xiv.  
<sup>34</sup> Loc. cit.  
For elaborate observations on this point see Cardew: The Practical Electro-therapeutics of Goitre.—THE LANCET, July 4th, 1891.  
<sup>35</sup> Edinburgh Medical Journal, Sept., 1873. See also the account of a case cured by a seton.—Macnaughton Jones, Brit. Med. Jour., Dec. 19th, 1874.

when to operate, but it certainly is safer to err on the right side and operate too soon rather than too late. If there is redness and swelling in the upper and posterior wall of the external meatus, or if the apex of the mastoid process is swollen and painful, we should operate at once. 2. Chronic inflammation of the mastoid process with recurrent attacks of swelling. 3. Fistula over or near the mastoid process. 4. Chronic inflammation of the middle ear without apparent affection of the mastoid process if there are symptoms of retention of pus (pain, fever, &c.) or if there is a cholesteatoma. 5. Persistent neuralgia of the mastoid process. 6. Chronic otorrhœa without symptoms of swelling of the mastoid process or of retention of pus, as soon as we think that the inflammation extends beyond the middle ear. In ordinary practice all cases of otorrhœa would be included which, under proper treatment, do not heal in from six to nine months. In cases where there are slight cerebral symptoms it is always advisable to first operate on the mastoid process before opening the brain cavity. Extensive disease of the bone can give rise to such symptoms as slight optic neuritis, strabismus with diplopia, convulsions, coma, &c. Whether there is not slight meningitis present, which subsides after the mastoid operation, it is difficult to say, but certainly in some cases these well-marked cerebral symptoms disappear after the ordinary mastoid operation.

Schwartzke in 1873 was the first to publish a series of cases of operations on the mastoid process, and he described a method of operating which was universally practised from 1873 to 1889.<sup>2</sup> The idea was to open up the mastoid antrum from behind the ear and establish a free communication and drainage between the antrum, the middle ear, and the external meatus. Schwartzke strongly recommended the use of the chisel and hammer, and these are now in universal use. The operation as described by Schwartzke is well known and can be found in all text-books of otology. The wound and cavity are plugged with iodoform gauze for several weeks and a lead nail or wire is then introduced into the fistula behind the ear and worn as long as possible—sometimes for one or two years. Macewen does not like the chisel and uses a rotatory burr for opening up the antrum. He thinks that with the chisel we may break down or crack any thin layer of bone between the diseased parts and the sigmoid groove or the middle cerebral fossa, or that we may loosen septic thrombi of the small vessels. In operating according to Schwartzke's method it was soon found that, although the majority of cases did extremely well, in a certain number the bone did not heal for years in spite of careful after-treatment. Experience proved that the majority of these cases were those in which the attic and surrounding bone had been diseased. In 1889 Küstner<sup>3</sup> recommended that in all cases in which the middle ear is extensively diseased we should not be content with Schwartzke's operation, but should also remove the whole of the posterior wall of the osseous external meatus. He passes a drainage-tube through the external meatus and antrum. Bergmann<sup>4</sup> suggests that the posterior and also the upper wall of the external meatus should be removed. He thinks that we should be very careful in syringing, as we may thus readily force pus into healthy tissues or cavities. Lucae<sup>5</sup> makes similar suggestions. Zaufal<sup>6</sup> uses Luer's bone forceps for a similar operation. In 1892 Stacke<sup>7</sup> suggested several important alterations in Schwartzke's operation. He removes the outer and lower wall of the attic, the posterior and upper wall of the osseous external meatus, and the outer and lower wall of the mastoid antrum. One large cavity is thus formed out of the external meatus, the middle ear, attic, and antrum. These modifications are of such great practical importance that I may perhaps describe the method of operating in a few words. A long incision is made behind the ear, the cutaneous external meatus is cut through above the drumhead, and the whole is drawn well forward. We thus get a clear view of the diseased parts. The remains of the drumhead and the malleus are removed, and a bent probe is passed into the attic. The outer and lower wall of the attic is then chiselled away. The middle ear and attic now form one cavity. A bent chisel is used. The probe is then passed into the aditus ad antrum, and the

upper and outer wall of the external meatus and the outer wall of the antrum are removed with the chisel. We now have one large cavity formed by the external meatus, middle ear, attic, and antrum. The ear is then replaced and the wound sewn together. Schwartzke now also performs a similar operation, but he first opens the antrum and then works forward into the attic and middle ear. He does not cut through the whole of the cutaneous external meatus, but only through the posterior half. In the last few years most excellent work has been done in this country by Ballance, Arbuthnot Lane, Urban Pritchard, and especially by Macewen and Victor Horsley. They have, however, chiefly dealt with the methods of operating on such cases in which cerebral complications have developed. Macewen and Horsley have made most valuable suggestions for the after-treatment of mastoid operations. In severe cases they prolong the ordinary incision behind the ear forwards round the top of the auricle, and thus make a large gaping wound which can be easily overlooked and dressed. The wound is not stitched at all, but is allowed to fill up by granulations from below. By this method a recurrence of the disease is rendered practically impossible. I hope that in the interests of otology, Horsley and Macewen will publish their experiences in this method of after-treatment. It seems to me to be of the greatest value, and we shall in future be better able to effect a radical cure and prevent any fresh outbreak of the disease. I have for some time drawn attention to the fact that it is a great and fatal mistake to sew up the greater part of the wound, and that we should leave a large opening so that we can watch the diseased parts. In bad cases I am now adopting Horsley's method, and make a large incision round the ear and use no stitches. It seems to me to be a great and distinct advance in mastoid operations.

In determining which method of operation we should adopt in the various cases it is of course essential that we are thoroughly acquainted with the anatomy and pathology of this region, so that we may be able to form an opinion as to which parts are affected and how far the disease has spread. In acute cases of mastoid disease the ordinary Schwartzke's operation suffices. When there is neuralgia of the mastoid process we make Wilde's incision and then remove part of the cortex of the process. In cases of chronic otorrhœa, when the disease is confined chiefly to the mastoid process, Schwartzke's operation gives excellent results. When there are no symptoms of mastoid disease it is best to perform the first part of Stacke's operation. We can then thoroughly explore the middle ear and attic. In most cases we will find that the latter is diseased. We then remove the outer and lower wall of the attic, scrape away the diseased bone, and see if any pus or granulations come from the mastoid cells or antrum. There are frequently some mastoid cells on a level with the attic, which are generally overlooked. In some cases the antrum is extremely small. If we think that the antrum is diseased we finish Stacke's operation. In many cases of chronic otorrhœa the disease is chiefly confined to the attic and to a few surrounding cells. In cases of perforation of Shrapnell's membrane, or disease of the ossicula, we should at once perform the first part of Stacke's operation. Some years ago numerous cases were recorded, chiefly by American writers, in which removal of the ossicula cured the disease of the attic. Milligan<sup>8</sup> has lately also published some cases. My own experience, and also that of others,<sup>9</sup> seems to prove that removal of the ossicula may stop the suppuration for a short time, but that in nearly all cases the disease breaks out again. I therefore now invariably strongly recommend Stacke's operation at once, or at least the first part of it. In cases of extensive cholesteatoma we should perform the whole of Stacke's operation and form one large cavity, which can be carefully watched and any recurrence at once seen. In severe cases it is best to leave a large permanent opening behind the ear.

The facts to which I should like to draw particular attention in this short paper are: (1) that we should not undertake operations on the mastoid process unless we are thoroughly acquainted with the anatomy and pathology of the parts and unless we have frequently operated on the dead body; (2) that in all cases of chronic purulent otitis media which do not yield to the ordinary methods of treatment the attic and mastoid antrum should be carefully examined and, if necessary, operated on; (3) that the use of

<sup>2</sup> Archiv für Ohrenheilkunde, Band vii., p. 157, and Band xi., p. 21.

<sup>3</sup> Deutsche Medicinische Wochenschrift, Nos. 10 to 13.

<sup>4</sup> Die Chirurgische Behandlung der Gehirnkrankheiten, 1889.

<sup>5</sup> Archiv für Ohrenheilkunde, Band xxxi., p. 225.

<sup>6</sup> Ibid., Band xxx., p. 291.

<sup>7</sup> Berliner Klinische Wochenschrift, No. 44, and Archiv für Ohrenheilkunde, Band xxxi., p. 213.

<sup>8</sup> Brit. Med. Jour., Nov. 24th, 1894.

<sup>9</sup> McBride, *ibid*

the gimlet or gouge alone is a dangerous and incomplete method of operating; and (4) that in the after-treatment we should not stitch up the wound, but leave a large opening, so that we can carefully watch and treat the diseased parts, and that in severe cases we should prolong the incision well round the ear, plug the wound with gauze, and allow it to heal up from below by granulation.

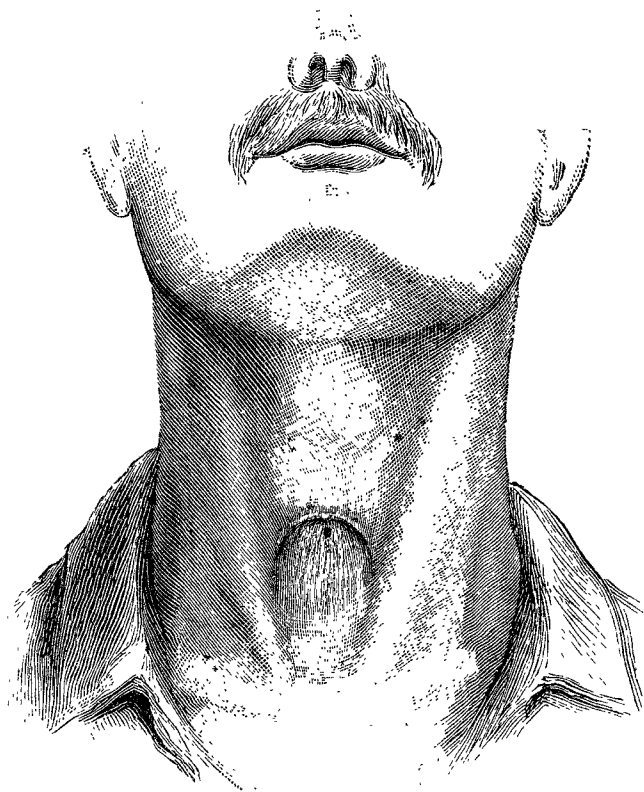
Bradford, Yorks.

## ON A CASE OF MEDIAN CERVICAL FISTULA.

By J. BLAND SUTTON, F.R.C.S. ENG.,  
ASSISTANT SURGEON, MIDDLESEX HOSPITAL.

SOME months ago Sir Hugh Beever kindly placed under my care a young adult with a "median cervical fistula." In the lower third of the neck, as represented in Fig. 1, the skin presented what looked like a depressed and puckered scar. At the upper part of this bay or recess there was a rounded opening from which clear mucus exuded. An ordinary probe introduced into this hole easily passed upwards in the middle line directly beneath the skin to stop at the middle of the lower border of the basi-hyal. It was

FIG. 1.

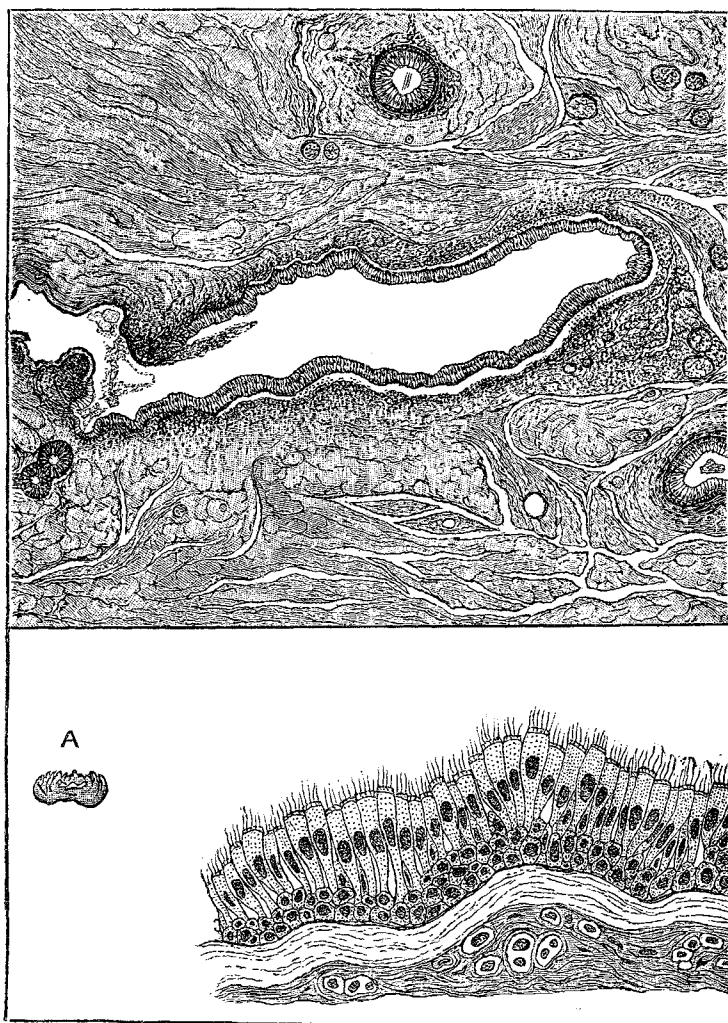


Median cervical fistula.

evident that I had before me an example of a persistent thyroid duct. The patient stated that the opening in the neck existed as long as he could remember, but his parents told him that it appeared when he was about three years old. Ordinarily the fistula caused no inconvenience, but during the past two years it seemed subject to catarrh, and the excessive flow of mucus caused him so much inconvenience that he was anxious for relief. The man was admitted into the hospital, and I dissected out the duct. It passed vertically upwards beneath the deep fascia of the neck to the basi-hyal, and in the course of the dissection it was found that near its lower end the duct bifurcated, one arm ending blindly, the other opening on to the skin at the margin of the bay as already described. The upper end of the duct passed behind the basi-hyal, finally becoming incorporated with the thyro-hyoid membrane. I succeeded in removing the duct entire, guided by a probe introduced into it at the beginning of the operation. The incision in the deep fascia was secured by interrupted sutures of cat-gut and the skin brought together by means of fine silk. As no previous attempt had been made to cure this fistula I had the duct carefully hardened and sectioned. Its lumen was

lined with typical columnar ciliated epithelium; goblet cells were present. The tissue forming the walls of the duct resembled atrophied thyroid tissue; here and there, as shown in Fig. 2, isolated acini lined with epithelium were detected. This case illustrates very well the chief features of the thyroid segment of the thyro-glossal duct: (1) Its median position and relation to the basi-hyal; and (2) The appearance of the fistula subsequently to birth. It thus stands in striking contrast to branchial fistulæ, which are (1) always lateral and in close relation to the anterior border of the sterno-mastoid muscle; and (2) are always congenital. I have had many opportunities of studying and operating upon these ducts and fistulæ, but this is the first occasion on which I have been able to secure a thyroid duct

FIG. 2.



Section of a persistent thyroid duct.  
A represents the duct of natural size. The lowest drawing shows the epithelium more highly magnified.

which had not been damaged by previous attempts at cure, thus the epithelium was in good condition. It is a noteworthy fact that the epithelium of the thyroid duct and persistent branchial fistulæ is identical. This example demonstrates what I have often emphasised—namely, the thyroid duct is a real and tangible structure large enough in adults and even in children to accommodate a probe: it is not a minute passage existing only in the embryo and requiring elaborate histological methods and high powers of the microscope to render it visible.

Queen Anne-street, W.

**SOUTH-WEST LONDON MEDICAL SOCIETY.**—A meeting of this society will be held at 235, Lavender-hill, on Wednesday, Nov. 13th, at 8 P.M. Dr. Chas. W. Chapman will read a paper on Heart Disease in the Young, its Management and Treatment, and proposes, if possible, to show patients illustrating his paper.

**IN MEMORIAM.**—The honorary medical staff of the Sydney Hospital, New South Wales, intend to erect a tablet in the hospital chapel, in recognition of the great services he rendered to the profession, as a memorial to the late Mr. Louis R. Huxtable, M.B., C.M. Edin., who died at his residence in College-street, Hyde Park, Sydney, on July 30th last.