SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF LARYNGOLOGY

November 1st, 1935

President—LIONEL COLLEDGE, F.R.C.S.

CASES

Three Cases Illustrating the Permanency of Cure and Adequate Voice after Operation for Intrinsic Cancer of the Larynx by the Laryngofissure Route.—ST CLAIR THOMSON.

These three cases are shown eleven, thirteen and eighteen years, respectively, after operation. Two were eminently suitable for operation by the laryngofissure route; but one was a border-line case. In all of them the site of the growth was not very suitable for securing a satisfactory portion for biopsy. The cases show that there is no drawback (e.g. suggested stenosis) from removing the ala, and its absence, amongst other advantages, facilitated the arrest of hæmorrhage, which was brisk in two of the cases. The settled technique illustrates the absence of shock and complication, and the rapidity of recovery.

CASE I.—R.B., aged 58.

1924: *December 6th.* Operation. Mobile cord with growth which did not invade either extremity. No biopsy. Thyroid ala removed. Cord with vocal process of arytenoid, and (unintentionally) cartilage of Santorini and lip of arytenoid fold removed *en bloc*. In view of this and from fear of arytenoid œdema, tracheotomy tube left in forty-eight hours. Patient sitting out of bed day following operation. Fogs prevented him from going out of doors until the seventh day. He returned to Birmingham on the twelfth day after operation.

Microscopical section showed an early squamous-celled carcinoma on edge of cord, with free margin in all directions. Mr. Lionel Colledge graded the malignancy as Group II (Broders).

1935 (eleven years after). Patient is now aged 69. He has never missed a day as works manager. He has been able to address an audience of 2,000 with a good, strong voice.

CASE II.—This patient was good enough to show himself to the Section on *May 4th*, 1923 (*Proceedings*, 1923, 16, Sect. Laryng., 59),

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and again in *November*, 1927 (*ib.*, 1927, 21, 289, Sect. Laryng., 1). The case is interesting on account of the comparatively early age of the patient.

1922: *May 19th.* Patient then aged 40. Right cord mobile; except at the two extremities it was invaded by an irregular, mammillated, projecting, cauliflower growth with white points. No biopsy.

Ala removed and then the soft tissues lining the right half of larynx, embracing a large portion of arytenoid was removed. The pathologist reported a typical squamous-celled carcinoma, the cancer cells penetrating the submucous tissue down to the level of the small muscles, but excision was complete in all directions. Mr. Colledge graded the malignancy as Group I (Broders). Tracheotomy tube removed eight hours after operation. Out of bed next day; he went out for a walk on the fifth day and returned to the country on the twelfth day.

1935: Patient is now aged 53. It is thirteen years since the operation, and he has had good health and is able to carry on a large practice as a surgeon.

CASE III.—Admiral W.E.R.M. Aged 49 years 10 months.

1917: *March 12th.* Operation. Voice had been failing for one and a half years. All right cord immobile and, with exception of small area in front of vocal process, replaced by an irregular, rough, whitish, cauliflower infiltration, with marked subglottic extension. No biopsy. Ala found eroded on inner surface and removed.

Pathologist reported typical squamous epithelioma. No cancer cells in cartilage, which was probably eroded in advance of the actual extension of growth. "But," he concluded, "this is an advanced growth. It is doubtful if excision is complete and I should regard the prognosis as bad." Mr. Colledge grades malignancy as Group I (Broders).

1935: *October* (eighteen years after). Patient is now aged 68. He was shown before the Section on *March 1st*, 1918 (*Proceedings*, 1918, 11, Sect. Laryng., 126). His health has been excellent; he leads a full, active life and is able to make speeches in the open air.

All these cases have been shown before, but they bring out a few points, as the patients are alive and active so many years after the operation.

One point is the difference between the picture seen in the mirror and that revealed by direct inspection. That difference will continue to cause surprise.

In Case I there was no difficulty in diagnosis; there was a mobile cord, but the growth did not seem suitable for biopsy,

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as I thought it might not be possible to get away a suitable piece. That was eleven years ago, and since then the value and importance of biopsy have considerably increased. The growth was widely removed, up to the anterior commissure. Posteriorly, more was removed than had been intended, as the patient gave a sudden gulp, and so more of the ary-epiglottic fold than usual was included.

In Case II the patient is a medical man. The cord was mobile and there was no biopsy. A good margin of healthy tissue was evident in the removed mass.

In the third case, the patient had been husky for eighteen months, and though there was a suggestion of invasion of the subglottic region all that was visible in the mirror was the upper edge. On exposure it was found to be a large subglottic growth of typical character. The pathologist reported: "This is an advanced growth. It is doubtful if excision is complete and I should regard the prognosis as bad." Eighteen years ago there was no Broders' classification. Mr. Colledge has since looked at the slide and says that he would place it in Group I. It is partly because of that fact that this patient was alive after eighteen years. The growth had even reached the thyroid cartilage, but the pathologist could not find cancer cells in the removed ala.

DISCUSSION.

A. D. SHARP asked how soon after the operation Sir St Clair Thomson encouraged patients to use their voice.

Sir ST CLAIR THOMSON said he encouraged the use of the voice a few days after the operation, certainly at the end of a week, in a normal way. Voices were now much better than in the old days when silence was required for weeks.

Transpleural Removal of Total Thoracic Œsophagus.
—A. TUDOR EDWARDS.

Female, married, aged 58. Admitted to Westminster Hospital, *July 27th*, 1935.

History.—Pain in chest and difficulty in swallowing, particularly at the lower end of the sternum, and brought on by eating and drinking. Some regurgitation of food for two weeks. Frothy mucus returned; no blood; slight nausea; no true vomiting. Appetite good, but afraid to eat. Lost 1 st. in two weeks.

Examination.—Edentulous. Tongue clean; no glossitis. No glandular enlargement in neck. Heart somewhat irregular. Blood-pressure 125/80. Urine: Trace of albumin, no sugar.

Investigations.—Blood-count: Hb. 52%; R.B.C. 4,250,000; W.B.C. 9,400. Group IV. Barium swallow: Obstruction 3 in. long in lower third of œsophagus.

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Operations.—30.7.35 : Œsophagoscopy (Tudor Edwards). Neoplasm in lower third of œsophagus. Report on biopsy : Carcinoma of basal cell type.

6.8.35 : Laparotomy and gastrostomy (Kader-Senn) (Stanford Cade). No evidence of metastases in liver or glands on lesser curvature of stomach.

22.8.35 : Left artificial pneumothorax. 500 c.cm. Pressure 0 : −4.

25.8.35 : Preliminary blood transfusion, 550 c.cm.

26.8.35 : Refill artificial pneumothorax. 450 c.cm. Pressure 0 : −2.

27.8.35 : Operation (Tudor Edwards). Anæsthetic : Spinal percain with gas and oxygen.

Transpleural approach. From six to eight inches of the seventh left rib were removed, and the thorax was opened. The œsophagus was exposed and the portion above and below the growth was dissected free. The growth was adherent to the right pleura which was opened and necessitated a positive pressure. On opening the diaphragm, and examining the cardia, one large gland was found at the level of the cardiac sphincter and several smaller ones along the lesser curvature. A Petz sewing-clamp was put across the stomach a short distance below the cardiac orifice, enabling the stomach to be divided below the single large gland present there, and the stomach was closed. The upper part of the œsophagus was then separated by blunt dissection under the arch of the aorta and as far as could be reached. An incision was made on the left side of the neck and the œsophagus was exposed. It was divided between silk ligatures and the cut ends were cauterized with pure carbolic acid. With one hand in the thorax and the other in the neck wound, the upper part of the œsophagus was completely freed. The œsophagus was extracted by traction on the lower part. The upper œsophageal stump was sutured to the skin and the neck wound was repaired. The ligature occluding the lower end of the upper stump was left long. The opening in the thorax was closed after insertion of an intercostal tube in the lower chest. Air was aspirated from the right pleura and also the left : in the former case by means of an artificial pneumothorax apparatus, and on the left through the tube, which was then clipped off.

Gum saline, 300 c.cm. given on the table. Blood, 400 c.cm., given three hours later.

Post-operative course.—The left pleura was drained by the water-seal method.

The course was uneventful with the exception of a small bilateral effusion of fluid in both bases which cleared up spontaneously.

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30.8.35 : Lung expanded well. No oral complications. Wounds of neck and chest-wall healed well. The ligature separated from the stump of the œsophagus in the neck on the thirteenth day and saliva was discharged.

	Weight Chart.	st.	lb.	oz.
27.7.35	On admission	7	3	8
6.8.35	Gastrostomy		—	
25.8.35	—	6	10	4
27.8.35	Operation		—	
13.9.35	—	6	0	8
24.10.35	—	6	5	4

Note on diet.—After several days it was found that the patient was only having a diet of 1,020 calories daily, which was insufficient to maintain equilibrium at rest. A diet was therefore evolved by Dr. N. F. Maclagan, giving a total of 2,320 calories, which was later increased, after the patient had got out of bed, to 3,410 calories a day, on which she is gaining weight.

Comment.—A year ago a patient was shown in whom a successful attempt was made to remove a growth by incision in the neck and in the abdomen, incision of the diaphragm, and blunt dissection with the fingers between these two points. The patient shown had had the œsophagus removed, including the cardiac orifice, by the transpleural approach. I believe there is a field for this operation, and one or two successful cases might stimulate those who have opportunities of examining such patients, to advise operation of such a type at an earlier stage. It is a formidable operation, and we shall meet with many cases in which the procedure is impossible, owing to adhesions. In this case spinal anæsthesia was used, I think, for the first time for this operation, although we have been using it for lung operations, and are of opinion that it diminishes the shock. Anæsthesia is obtainable by it up to the third dorsal vertebra, and for neck operations it is possible to use a minimal amount of gas and oxygen. The other advantage of exposure through the pleura is that we can see what we are doing—an important point when the œsophagus is adherent.

A week after the operation the patient was still losing weight. Most of us leave the gastrostomy patient to be fed by the ward sister as best she can and the importance of adequate feeding after gastrostomy is not usually realized. In this case the amount of calories that were being given amounted to only about half the requirements when at rest.

Discussion.

W. Stirk Adams asked what tests of mobility of the œsophagus were carried out during the preliminary œsophagoscopy, and what criteria Mr. Tudor Edwards applied in judging whether the patient would be suitable for excision of the œsophagus.

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A. TUDOR EDWARDS (in reply) said he did not think that there were any tests of mobility of the œsophagus before operation: it was usually rigid. The only criterion was to operate and see it.

N. F. MACLAGAN said that a liberal quantity of butter was now given. The patient had four eggs, four ounces of butter, two pints of milk, two ounces of glucose, and water to make up 60 oz., which was the total amount she could take. That gave 2,300 calories. It was increased a little by giving more butter and more glucose. Her urine had never contained acetone, and she had never passed less than 25 oz. of urine a day.

Myxochondroma of the Nasopharynx.

—A. LOWNDES YATES.

A girl, aged 14. First seen *February*, 1934, when adenoids were removed and found to be of tough consistency. Microscopical section showed adenoid tissue. The adenoids recurred and were removed in *September*, 1934; in *June*, 1935 they again recurred. Microscopical examination showed myxochondroma. Since then the tumours have again recurred and now form small rounded masses in the left side of the nasopharynx.

DISCUSSION.

ALEX. R. TWEEDIE suggested that the origin of this growth might well be associated with the cartilaginous end of the Eustachian tube. He had shown a somewhat similar case in November, 1912 (*Proceedings*, 1912, 6, Sect. Laryng., 15; *Journ. Laryngol., Rhinol. and Otol.*, 1913, p. 203). In that case also, an operation for adenoids had been performed several times previously and on inspection of the nasopharynx no trace of adenoids could be seen, but a finger-like process extended from the left Eustachian tube horizontally across the nasopharynx almost to the right side. When the mouth was opened under a general anæsthetic this process at once presented in front of the velum and was easily removed by a cold snare. Further examination showed that the growth consisted of twin-plates of cartilage separated by and surrounded by fibrous tissue, the whole being covered by a normal mucous membrane. No recurrence had taken place.

A. LOWNDES YATES (in reply) said he did not think that the growth in this case arose from the cartilage of the Eustachian tube, because when first removed it consisted of firm adenoid tissue, and recurred and was again found to be adenoid tissue. It was pronounced by four pathologists to be myxochondroma. It was now steadily enlarging and yet it did not seem to be doing harm, nor, apparently, had it shown any signs of malignancy. The rounded masses were hard to the touch, but were freely mobile on the underlying tissue.

Two Cases of Malignant Disease of Bronchus.

—F. C. ORMEROD.

CASE I.—Patient shown at meeting of Section of Laryngology, *May 5th*, 1933 (*Proceedings*, 1933, 26, 1496, Sect. Laryng., 80).

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Seen 15.12.32. Aged 36. Pain in chest and cough from *June*, 1932. Pyrexia *July* to *November*. Collapse of right lower lobe.

December, 1932.—Semi-pedunculated tumour removed from lower part of right main bronchus. Columnar-celled carcinoma. $6 \times 1 \cdot 5$ millicuries of radon inserted in container for five days. Progressive improvement; patient returned to work two months later as fish porter. Has remained well to date.

CASE II.—W.S., seen 24.5.34, aged 31. One year's history of cough and hæmoptysis. Phthisis had been diagnosed and the patient had spent a considerable time in a sanatorium.

Admitted to Brompton Hospital and found to have a partial collapse of right upper lobe.

24.5.34: Bronchoscopy. Large tumour, apparently partly pedunculated, almost filling right main bronchus above opening of upper lobe bronchus. Biopsy: Columnar-celled carcinoma.

7.6.34: Attempt made to remove tumour with diathermy snare, but impossible to encircle it; a portion was removed by morcellement. Much mucopus was released. After this procedure the tumour swelled and produced complete collapse of the whole of the right lung. Patient very ill.

10.6.34: Endoscopic removal of large masses of tumour with improvement and re-aeration of lung. 15.6.34: Further removal. 5.7.34: Insertion into remains of tumour of $5 \times 1 \cdot 5$ millicuries of radon (0·6 mm. silver screening).

23.8.34: Insertion of $5 \times 2 \cdot 0$ millicuries of radon. Gradual improvement. Practically normal bronchus. The upper lobe has not fully re-expanded.

In the second case there is much differentiation of the carcinoma cells and an attempt to form alveoli, the columnar cells being arranged in a palisade manner. If these tumours can be graded according to Broders, the second one would fall into Group I, the first would be in either Group III or IV.

In addition to the patients shown, and others with a long survival period, there are many who are very much better for a few months after insertion of radon, even if the survival period is short.

DISCUSSION.

E. MUSGRAVE WOODMAN said that he had had a similar case under observation for five years, one of carcinoma of the right bronchus. Radon seeds had been inserted twice and radium had been used once. The patient, after five years, was doing her work and was quite well.

A. TUDOR EDWARDS said that several years ago he and his colleagues found that nothing active was being done for cases of carcinoma of the bronchus, which was more commonly diagnosed. The use of tubes had been evolved because it was a question of canalizing as well as of irradiating, and they were modelled on the Symonds' œsophageal

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tube. The majority of these cases were strictures of the bronchus. Room must be left for the secretion from the lobe of the lung, and for that reason the tubes were made hollow. The difficulty in many cases was to get the tube to remain *in situ* when the growth was small; hence one was made with a spring for that purpose. Whether it was safe to leave it there without a thread he did not know. The original idea was to put the tubes in and attach a fine thread up through the larynx. Patients then retained them for days. Later on a very short loop was made, consisting of thread attached to the tubes, with the idea that if the tube went through the stricture, it could be pulled back by the string at the second bronchoscopy. He had seen one tube go through and remain in a large carcinomatous cavity, but in such an advanced condition the outlook was grave in any case.

The growths were of very varied malignancy, and those of lesser malignancy had been termed by some American observers " carcinoid ". They presented a " cottage-loaf " appearance, a small portion being in the lumen of the bronchus, and a larger portion outside. They were very sensitive to radium and all had associated bronchiectasis.

Carcinoma of Nose.—D. F. A. NEILSON.

Male, aged 63. In 1926 patient received a severe blow on his nose which apparently fractured the bones and produced a slight deformity and swelling. Eighteen months ago the nose was slightly increased in size and has continued to grow larger since then. There is no nasal discharge or obstructive symptoms of any importance. There was no evidence of any secondary glandular enlargement.

The swelling was thought to be due to a dermoid cyst or a sarcoma. On incision the tumour was found to be growth, and a portion removed for microscopy showed a basal-celled carcinoma.

X-ray treatment was begun on *October 15th.*

Osteomyelitis of the Skull

By PROFESSOR C. VON EICKEN (Berlin)

FOR many years I have been deeply interested in cases of osteomyelitis which has originated in suppuration of the frontal sinus, and it is with the clinical experiences of these cases that I shall now deal.

We have to distinguish between the two aspects of the disease.

First there is the *chronic* form, in which the suppuration extends along the diploetic veins and, as a rule, invades the roof of the skull without at first penetrating to the interior. The temperature is not much raised, and the suppuration leads to abscesses which, on being opened, frequently reveal a sequestrum. Months pass, abscess after abscess forms and is opened, and the patient finally succumbs to abscess of the brain.

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The more frequent aspect of osteomyelitis is, however, the *acute* form. Its progress is far more stormy, but its prognosis far more favourable, if the disease is diagnosed in time. I have seen five such cases during the last few years and have saved three. The histories of the cases are so similar that I need only describe one.

In *August*, 1932, after prolonged swimming and sun-bathing, a girl aged 15, developed acute pain in the right frontal sinus, accompanied by exophthalmos (Fig. 1). I opened the floor of the frontal sinus by means of a bow-shaped incision extending from the eyebrow over the frontal process of the upper jaw, removed the floor of the frontal sinus and the frontal process of the upper jaw and thus made a large communication between the fronto-ethmoidal cells and the nasal cavity. I found the frontal sinus full of pus, which I drained away with a rubber tube towards the nose, and I inserted a skin graft from the upper part of the thigh to repair the defect between the mucous membrane of the frontal cavity and the nose (Seiffert's method). The temperature fell and the pain diminished during the first two days but the temperature rose again and the pain increased. A particularly painful spot appeared on the frontal eminence far removed from the frontal sinus itself. There was visible swelling too at this point; the following day the swelling had spread, the pain became unbearable and the temperature reached 39.8° C. X-ray examination showed, besides severe clouding of the maxillary and frontal sinuses, mottling of the bone laterally beyond the frontal sinus (Fig. 2.) I extended the incision to the outer end of the eyebrow, removed the anterior wall of the frontal sinus, and found pus between the mucous membrane and the bone, which itself was soft and contained pus. The zygomatic process of the frontal bone showed an abscess in the diploe which I cleansed thoroughly. The swelling of the frontal eminence remained, however, without explanation. I therefore made a perpendicular incision along the linea temporalis to a point beyond the hair line, and from there extending parallel to the line of the hair, right back to the middle line and down to the bone (Fig. 3). I turned this rectangular flap inwards towards the middle line without finding any pus, but dots of pus were found on chiselling away the outer table. This made me decide to remove the greater part of the frontal bone down to the dura mater, with chisel and forceps, until normal bone was reached. During this operation I discovered a diploetic vein which I could follow plainly from the frontal eminence down to the zygomatic process. This vein was filled with a purulent thrombus.

After this extensive operation (Fig. 4) pain and fever disappeared and the patient recovered. The other two cases ran the same course.

What I had seen led me to ponder over the connection between diploetic veins and suppuration of the frontal sinus. My studies show that large frontal sinuses for the most part are surrounded by a well-developed diploe especially upwards and laterally.

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Fig. 1.
Shows mottling of frontal bone. Indication of commencing osteomyelitis before operation.

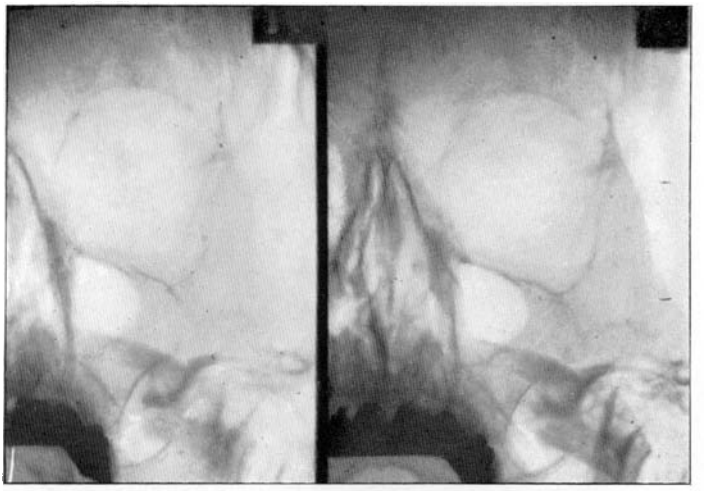


Fig. 2.
Osteomyelitis of frontal bone in an adult male.

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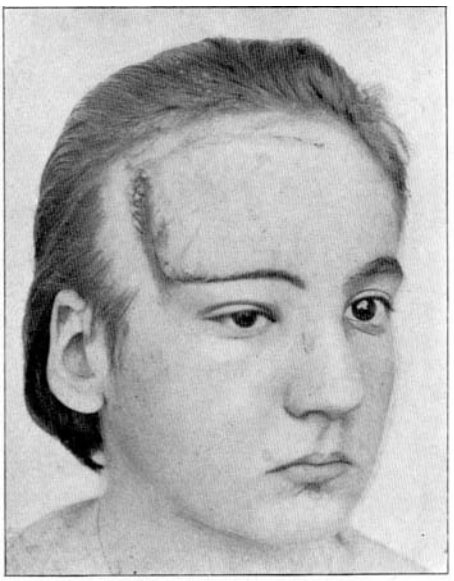


FIG. 3.
Incision in scalp for exposure of frontal bone.

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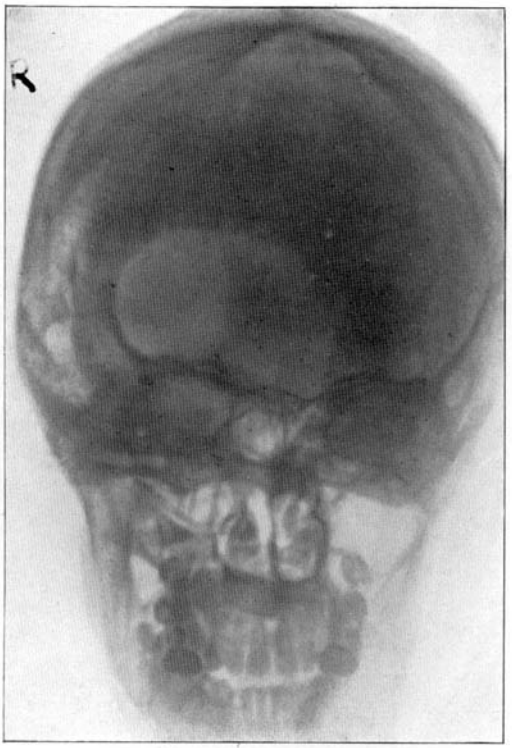


FIG. 4.
Post-operative defect in skull.

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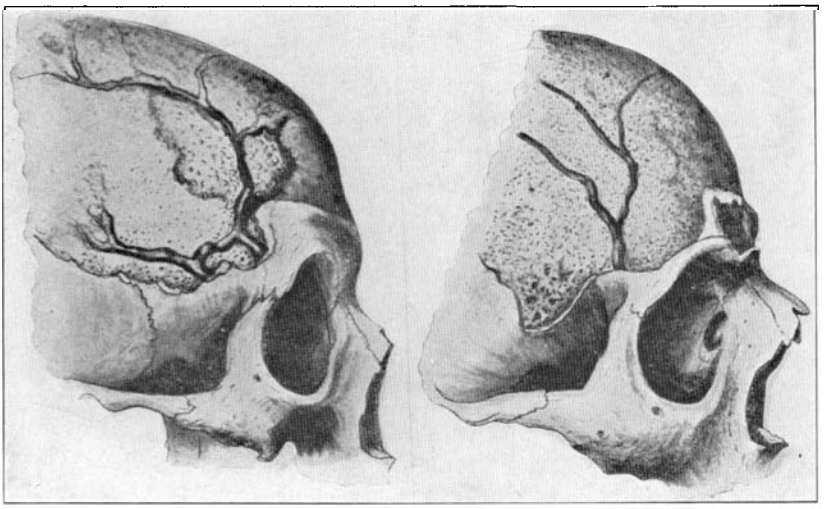


FIG. 5. FIG. 6.

Figs. 5 and 6.—Dissections from the Anatomical Museum, University of Berlin, to show veins of Breschet.

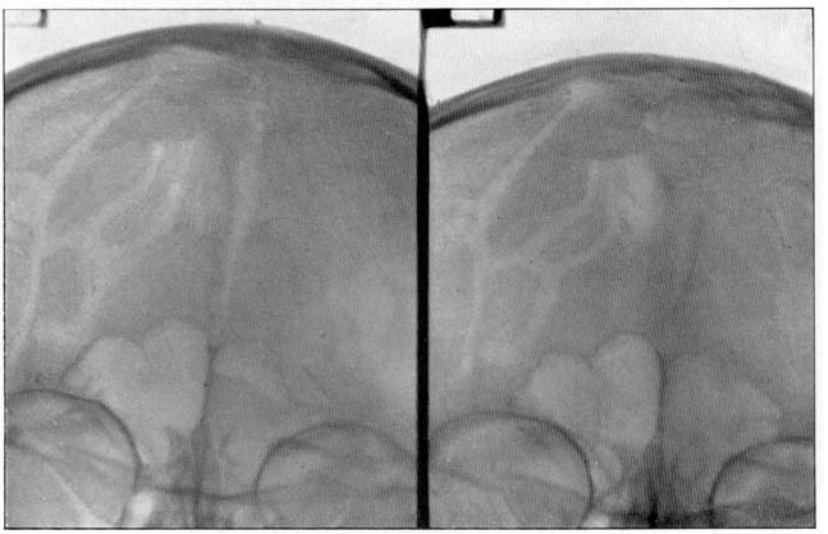


FIG. 7.

Shows the veins of Breschet in a living subject. Female child, aged 4 years.

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Should the frontal sinus extend far outwards, diploetic spaces are found in the zygomatic process of the frontal bone (Figs. 5 and 6).

It was already well known that the diploetic veins of Breschet were most irregular in course and situation, and did not respect the lines of the sutures, but not long ago, in 1924, a Polish anatomist, Wischnowski, found that in this region there was a vein so constant that he called it *norma temporalis*. In two skulls preserved in the Anatomical Museum of the Berlin University I again found these veins well developed and capable of beautiful demonstration.

I then asked one of my assistants to examine by X-rays two hundred skulls in the Anatomical Museum, with the result that we found the vein in question in a great number of the skiagrams. Since then we have had several skiagrams taken in living patients, showing clearly these veins in the frontal bone (Fig. 7). Far be it from me to suggest that this *norma temporalis* is to be found in every frontal bone, but I think it is important for rhinologists to know that it is often to be found. It gives us a definite indication for the procedure to be followed in osteomyelitis and its complications.

DISCUSSION.

HERBERT TILLEY said that Professor von Eicken's paper recalled to the memory of the seniors who were present the late eighties of the last century when active attention was first drawn to the diagnosis and surgical treatment of pyogenic infections of the accessory nasal sinuses.

It soon became evident that radical external operations on the frontal sinuses were liable to the serious and nearly always fatal complication of acute spreading osteomyelitis of the frontal bone. In many instances an element of tragedy attended such cases because, not infrequently, the patients were young and had submitted to operation for the relief of what was little more than an inconvenient chronic nasal discharge.

His own first experience of this type of acute post-operative bone infection was recorded during the Portsmouth meeting of the British Medical Association in 1889 when Luc and Röpke described similar cases in their own practice. Professor von Eicken had mainly confined his remarks to channels by which acute infection spread from the frontal sinus to the surrounding bone of the forehead. He himself had had only one experience of the *spontaneous* spread of this complication, and the case report was published in the *British Medical Journal*, 1917 (ii.), 7. It will suffice to say that after a stormy (post-operative) passage—which included removal of the left half of the frontal bone and drainage of an acute metastatic abscess in the left breast—the patient had made an excellent recovery.

He had also dealt with one case of spontaneous acute osteomyelitis affecting the squamous portion of the right temporal bone, complicating a mastoid infection. The former was completely removed at the

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same time as the primary focus was drained. This patient also—a young boy—had made an uneventful recovery.

He had no doubt that the present comparative rarity of osteomyelitis as a complication of operations on the nasal sinuses—especially of the frontal air-cell—was due to an improved technique which provided for free and spontaneous drainage into the nasal cavity, and the removal of that chief source of reinfection, sepsis in the ethmoidal labyrinth. From the diagnostic point of view the first sign which should arouse suspicion of the commencement of the local bone infection was an area of pale and almost painless œdema round the borders of the sinus. If, in the course of a day or two, another œdematous patch should develop at a distance from the first and separated from this by normal skin tissues, it would be a pathognomonic sign of spreading septic osteomyelitis. In such circumstances, the life of the patient could be saved only by free exposure of the infected area and its complete removal, together with an ample margin of the healthy bone surrounding it.

ALEX. R. TWEEDIE said that the illustrations also demonstrated why osteomyelitis of the skull following infection of the mastoid bone was so much rarer than after similar infection of the frontal sinus, since, as shown, the venous flow from the mastoid had a negligible communication with the diploeic veins of the skull and was chiefly served by the lateral sinus, which, of course, was prone to a similar infection.

Professor VON EICKEN (in reply) said he agreed with Mr. Tilley that the cases of osteomyelitis following frontal sinus operations were different from the acute cases spoken of in his paper. In such cases, with elevation of temperature and exquisite pain, X-rays as a rule were valuable. He did not know whether that would apply equally to the cases mentioned by Mr. Tilley. In these cases large quantities of frontal bone must be taken away. In one case that he operated upon a long time ago he took away the whole frontal bone on the right side, and a great deal of the bone on the other side. The temperature before the operation was 103° F., but it fell immediately after the operation, and the patient recovered. The great bone defect was restored by the dura mater and the soft parts of the skull.

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