the third row are as they should be at his age. The fingers and the thumb are evidently still growing.

"F." had an average intelligence and was not ungainly, though most giants are said to have been dull, feeble, ungainly, and short-lived. Magrath, 7 ft. 5 in., died in 1760 at the age of 24. Chang, the Chinese giant, was an exception, and so was the Russian, Machnow, who at 23 measured 9 ft. 3 in., and was well proportioned. He was, perhaps, the biggest of modern giants. Byrne measured 8 ft. 4 in. after his death, which took place at 22. Og, the king of Basan, was handsome (Josephus), and his iron bedstead was 13 ft. 6 in. by 6 ft. Goliath of Gath was 9 ft. 6 in., or according to Josephus 8 ft. 9 in., and his hand was big, for "the staff of his spear was like a weaver's beam." Classical evidence of giants measuring 46 and even 60 cubits is mythical and untrustworthy. The Scriptural evidence of races of giants does not amount to much. The two Hebrew words translated "giants" in the Authorized Version and "nephelim" and "mighty men" in the Revised Version did not apparently apply to giants in our sense of the word.

Even the celebrated naturalists Cuvier and Buffon fell into the popular delusion of there being "giants in those days" by figuring the fossil bones of elephants, rhinoceroses, mastodons, etc., as remains of human giants. Nevertheless human skeletons of extraordinary size have been found in the caves in the "Red Rocks" of Mentone, where they measured 6 ft. 6 in. in length, and showed evidences of powerful muscular development; and in Scotland, where five such skeletons were found together at Logie Pert, Forfarshire. We must therefore admit that giantism may be racial as well as the result of disease. The tallest men now living in the British Isles are said to be the villagers of Balmacellann, in Galloway, whose average height is 5 ft. 10.46 in. (Dr. Beddoe). The average height of the Tehuelches of Patagonia is only 5 ft. 10 in.

INVOLVEMENT OF THE ORBIT IN DISEASE OF THE NASAL ACCESSORY SINUSES.

BY

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It is not so very long ago that most cases of orbital cellulitis applying for relief at large ophthalmic clinics were regarded as of unknown origin. Even now the most diligent inquiry often fails to explain the mode of onset in certain cases. It should, however, always be remembered that until the ophthalmic surgeon can prove the accessory sinuses of the nose healthy, he is not justified in looking for a more obscure seat of origin elsewhere. The intimate relation between the orbit and the nasal accessory sinuses is familiar to all. To those who dip slightly deeper, and familiarize themselves with illustrations of the work of Onodi or of others who have for a considerable time drawn attention to this important matter, it must appear strange that extension from infected sinuses to the cellular tissues of the orbit is not more frequent. Probably mild degrees of periostitis are much more frequent and much more serious than is commonly thought. If ophthalmologists have been to blame in the past for accepting orbital cellulitis as a clinical entity, this cannot be said of those rhinologists who of recent years have devoted so much time and labour to the nasal accessory sinuses. Owing chiefly to their researches, it is now a recognized fact that cellulitis of the orbit is nearly always due to accessory sinus disease.

In a large out-patient department like that of the Government Ophthalmic Hospital, Madras, a considerable number of such cases report for treatment. More than half of the cases are children, in whom it is often very difficult to locate the sinus trouble; fortunately in adults it is simpler. In either case the nose should be carefully examined by the usual inspection methods; transillumination should be performed, and, if possible, a good x-ray photograph obtained. In children the sinus disease is more often of a primary acute nature, whilst in adults it is more frequent to meet with an exacerbation of a chronic

condition. It is remarkable how often orbital cellulitis clears up by mere drainage, but it is to be remembered that a certain number of patients come back later with optic atrophy. This note is intended, however, to record the comparative frequency with which one of these sinuses was responsible for cases of orbital trouble reporting to this hospital during the last quarter of 1920. Six cases in all were met with. This is greatly in excess of the average rate at which orbital complications are met with in frontal sinus disease in Madras. The case notes are as follows:

CASE I.

R. P., Hindu male, aged 27, presented himself on September 19th, 1920, complaining of swelling of the left upper lid of three months' duration. His sight was not affected, but he had been troubled with nasal discharge. There was a small, rounded, firm swelling below the middle of the superior orbital rim and marked ptosis. While examining the cyst-like tumour the patient volunteered the information that he could empty it, and proceeded to do so by squeezing firmly upon it and evacuating the contents (about a drachm of mucus) upon the floor. There was tenderness on pressure against the floor of the sinus. The left nasal fossa showed hyperaemia, swelling of the middle turbinate, with polypi and pus in the middle meatus. A frontal sinus probe could not be passed; transillumination was negative. An x-ray photograph showed small symmetrical frontal air sinuses without marked septa. A certain amount of fogging on the left was the only indication of disease. There was no history of syphilis, and the Wassermann reaction was negative. Both fundi were normal.

Drainage by the intranasal route was adopted. The anterior part of the middle turbinate was removed with scissors and snare, and the ethmoidal cells broken down. A large escape of pus occurred on opening the agger cells. As the ostium of the frontal sinus was cleared and enlarged, pus flowed freely into the middle meatus. Drainage was established by enlarging the fronto-nasal canal and ostium. Irrigation was subsequently carried out for a short time. The patient left hospital on October 28th, 1920, free from swelling, ptosis or tenderness, and without discharge from the frontal sinus.

CASE II.

R., Hindu male, aged 30, came to hospital on September 20th, 1920, complaining of dull vision on the right side and discharge from the upper lid. R. eye, V. = F. at 2½ metres due to old leucoma; fundus normal. L. eye normal. The lid disease commenced three and a half years ago with unilateral headache and offensive nasal discharge. He had interrupted attacks of pain during this time. During one of these, five months ago, a swelling appeared below the brow. He had it opened, and as it would not heal he came to hospital. The sinus led to necrotic bone in the roof of the orbit. Examination of the nose showed polypi, and pus in the middle meatus. A frontal sinus cannula could be passed on the left but not on the right. Transillumination was negative. An x-ray photograph showed very extensive frontal sinuses on either side, divided into loculi by well-marked septa. There were large orbito-ethmoidal cells. The Wassermann reaction was negative, and there was no clinical evidence of syphilis.

The external route was chosen for operation. A Killian incision was made and the frontal sinus opened at its inner end. The mesial septum between the sinuses was eroded, and a probe could be freely passed through to the temporal region on the left. The left ostium communicated freely with the nose, that on the right was effectively blocked. There was erosion of the floor of the right sinus and subperiosteal pus over the os planum and lacrymal bone. The orbito-ethmoidal cell was opened and both it and the frontal sinus were put in free communication with the middle meatus. The necrotic inner wall of the orbit was removed. The wound was partially closed, drainage being established from its inner end through the free opening into the nasal fossa. For some time gauze wicks were renewed daily, then irrigation with a frontal sinus cannula was carried out. Clear fluid returned from both sinuses after about five weeks, and he was discharged almost well on November 11th, 1920. In this case the Killian type of operation was adopted, and the trochlea was saved by leaving a bridge. The lacrymal sac had to be removed. The important points in such cases are to establish good intranasal drainage without doing muscular damage, and avoid deformity due to subsequent contraction of scar tissue.

CASE III.

K. M., Hindu male, aged 40, reported on October 16th, 1920, complaining of swelling and pain of the left eye. R. eye, V. = 6.18, fundi normal. He gave an unreliable history of the swelling starting one and a half months before. He had no nasal discharge. He denied syphilis, but his wife had a suspicious record. The Wassermann reaction was positive. His right eye was much proptosed, there was extensive swelling of the lid, brow, and root of the nose. There was a pulsating swelling about the size of half an eyeball an inch above the inner end of the right brow. On firm pressure this disappeared and a circular loss of bone could be felt. This gave the patient acute pain, and caused the swelling of the lid to increase. The nasal fossa was so swollen and oedematous that nothing could be made out, even after thorough packing with cocaine and adrenaline. There was obvious bony deformity, and exposed

bone could be felt high up with a soft blunt probe. An x-ray photograph showed large frontal sinuses divided into loculi with a fairly sharp outline on either side. There was a definite general haze round the glabella, but no indication of an opening in the anterior wall of the left sinus. The antra were clear on transillumination.

On October 18th, 1920, the pulsating swelling was opened by a vertical incision and a large quantity of glairy muco-pus escaped. Through this opening the sinuses were explored and were found to reach 2 in. above the orbital rim, and to the external angular processes. The nasal fossa was easily entered with a blunt probe on the right but not on the left. A Killian incision was made. This disclosed a complete absence of the roof of the orbit and extensive caries with the dura exposed above. The nasal fossa was now easily entered on the left. The carious ethmoidal cells were curetted away and a large drainage orifice made into the nose. Gauze wicks were led through from the upper incision and the inner extremity of the lower incision to the nose, and from the body of the sinus to the outer angle of the wound. In spite of careful drainage and vigorous antisyphilitic treatment it became obvious after some time that it was essential to remove the anterior wall of the left sinus and let the skin fall in. This was done on January 7th, 1921, good drainage was established right and left, and after careful curetting the wound was lightly packed. The patient made an uninterrupted recovery. The deformity was, of course, considerable.

CASE IV.

A. C., Anglo-Indian, aged 51, was admitted on October 22nd, 1920, with proptosis of the right eye, with swelling and oedema of the lid and brow, and acute pain. There was no impairment of vision. The first symptoms he noticed were bulging of the eye and double vision. A month previous to this he got a knock on the brow, and a week before exposed himself by sitting up shooting. Shortly after this severe pain started. When seen at hospital he presented a typical picture of orbital cellulitis. An incision was made in the superior fornix and pus evacuated, but this did not relieve the condition, and a fluctuating swelling appeared over the outer third of the eyebrow. Nasal examination revealed oedema of the middle turbinate and pus coming from the frontal sinus. No x-ray photograph was obtained. On November 13th, 1920, the frontal sinus was opened by the intranasal route. This did not relieve the condition, and a week later the external operation was done. There was caries of the orbital rim and a large pocket of pus under the periosteum of the orbital roof, which was perforated and opened into the frontal sinus. The latter was small and communicated with the superior meatus with a very angular fronto-nasal duct. Free drainage was established into the middle meatus, and gauze drains led through. About a month later a large sequestrum was removed from the outer part of the orbital rim. The patient frequently complained of severe neuralgic pain. In spite of a negative history of syphilis and a negative Wassermann reaction he was put on mercury and iodides. He improved steadily, but still complained of supraorbital pain. He was discharged at his own request, without diplopia, and with diminished proptosis, but there was considerable interference with the movement of the upper lid due to adhesions to the periosteum at the orbital rim.

CASE V.

This was a case of very extensive ulceration of the orbit and frontal sinuses, due to gummatous disease, superimposed upon which was myiasis. This case has already been fully recorded, as it was of interest also from an entomological point of view, the adult flies having been hatched out from the maggots.¹

CASE VI.

M. R., European, aged 42, was admitted on December 31st, 1920, complaining of acute supraorbital pain on the left side, which had prevented him from sleeping for some time. He had very slight swelling of the lid and thickening of the supra-orbital nerve. There was pain on pressure against the orbital rim and the nerve was excessively tender. The vision was 6/5 for both eyes and the fundi were normal. There was a negative history of syphilis, no clinical signs, but a positive Wassermann reaction. An x-ray photograph was not obtained. Transillumination was negative. He gave a history of a very severe fall from a motor bicycle five months before, with temporary unconsciousness and bleeding from the ear. The exact location of the latter was somewhat uncertain, and he had a perfectly normal drum. There was no history of influenza or acute catarrh. The nasal fossa looked healthy, but on passing a cannula into the fronto-nasal duct a small quantity of muco-pus was evacuated. He was given an injection of novocain, followed by alcohol, into the supraorbital nerve, which relieved his pain. On December 31st, 1920, the anterior end of the middle turbinate was removed with scissors and snare and the ostium of the frontal sinus enlarged. The anterior ethmoidal cells were also broken down. He developed a third nerve paralysis three days after operation. He was put on injections of mercuric cream and novarsenobillon on alternate weeks and rapidly got better. On January 21st, 1921, the paralysis had almost gone and there was no diplopia. He had no pain and his nasal fossa and sinus were apparently healthy.

REFERENCE.

¹ Indian Medical Gazette, February, 1921, p. 58.

THE ISOLATION OF DIPHThERIA BACILLI.

BY

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It is sometimes necessary to obtain the diphtheria bacillus in pure culture in order to test its pathogenicity, as, for instance, when found in swabs taken from lesions other than the throat and nose, such as the ear, the eye, and sores on other parts of the body, and occasionally from the throat and nose also in the case of very persistent carriers.

A useful medium for this purpose is described in Browning's *Applied Bacteriology* as follows:

Sheep serum, sterilized by heating on several occasions for one hour at 57° C.	5 c.cm.
1 per cent. telluric acid in distilled water	0.9 c.cm.
Peptone water agar (roughly neutral to litmus) to ...	100 c.cm.
The serum and telluric acid solution are added to the melted agar at 50° to 55° C. before pouring into Petri dishes.	

In my experience sheep serum, when the blood is obtained from the abattoir, is seldom sterile when heated at 57° C. for one hour on seven or eight consecutive days, and the ether and chloroform methods of sterilization are equally unreliable, in fact, the only reliable method appears to be filtration through a Chamberland filter. It is therefore a great advantage to be able to dispense with this constituent.

Diphtheria bacilli grow exceedingly well on Gordon and Hine's legumin tryptagar,¹ and when this medium is used no sterile serum is necessary. The addition of 0.3 c.cm. of sterile 1 per cent. telluric acid to 10 c.cm. of this agar gives a very satisfactory medium. Plates of this medium are poured, and when set brushed with a dilute emulsion of the growth containing the diphtheria bacilli and incubated at 37° C. for forty-eight hours, by which time the characteristic appearance of the colonies of the different organisms is most distinct.

The majority of organisms other than the diphtheroids reduce the telluric acid and produce blackish colonies; this is very marked with the staphylococci. The staphylococci do not reduce the telluric acid, their colonies are characteristically greyish-white, small (usually less than 1 mm. diameter), very flat and very translucent. The colonies of the diphtheroids are greyish-white, semi-translucent, slightly convex, about 1 mm. in diameter, with a slightly darkened central spot. By the use of this medium I have selected as many as five colonies of *B. diphtheriae* in succession from a plate containing numerous colonies of other organisms.

The morphology of the diphtheria bacillus when grown on legumin tryptagar differs from its morphology when grown on Loeffler's serum; the bacillus stains more uniformly, the characteristic beads are not evident, and club-shaped forms are common. With a little practice, however, it can readily be recognized and distinguished from Hoffmann's bacillus grown on the same medium. It is unfortunately not possible to distinguish between the colonies of Hoffmann's bacillus and those of true diphtheria bacilli. Douglas's trypsin broth² with the addition of pea-flour extract and 0.5 per cent. Witte's peptone (to help toxin production), is very suitable for the cultivation of *B. diphtheriae* for animal inoculation. Almost invariably a good growth is obtained—an essential condition of the experiment—while with ordinary broth this is far from being the case, the growth more often being only scanty. Glucose litmus legumin trypsin broth is very suitable for the observation of acid productions from this sugar.

REFERENCE.

¹ Vide BRITISH MEDICAL JOURNAL, November 18th, 1916; also Reports of the Medical Research Council, Special Report Series No. 19. ² Loc. cit.

A SMALL Italian surgical hospital with an out-patient department has been opened at Aleppo by the National Italian Association.

THE sixteenth Congress of the German Orthopaedic Society will be held in Berlin from May 18th to 20th, when the principal subjects for discussion will be bone and joint tuberculosis and rickets.