abnormal flexures; and it is probable—though I have not been able distinctly to observe this—that other bones undergo slight changes in form from abnormal stress in these cases. Bones do thus become modified in shape under abnormal pressure or traction, as shown by the ordinary lateral curvature of the spine, and no less markedly in that hardest of all bones, the lower jaw, under the influence of contraction of cicatrices and the pressure of a prolapsing macroglossia (see Spec. 1228 Camb. P. Mus.). The elongation of the ligaments is, of course, due to the same cause.

Further, the specimen is clearly an exaggerated form of the ordinary flat foot in which the same joint (mid-tarsal) is preternaturally extended, and the heel bone rendered horizontal. That is, in the main, due, as we know, to superincumbent weight. It is also, as in this case, attended with want of muscular balance, the extensors of the toes and the flexors of the ankle being preternaturally tense, and resisting return to the normal position.

NOTES OF A CASE OF ACROMEGALY TREATED BY OPERATION.

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WITH REPORT OF THE OPERATION BY

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A. L., aged 33, was admitted to the infirmary on June 6th, 1891, complaining of pain in the head and swelling of face, hands, and feet.

HISTORY.

Nothing of importance was elicited as to family history—the record was a good one. Her own health was good prior to the year 1888. There was no evidence of syphilis, nor of intemperance. She was married, and had one child 9 years old.

In June 1890 she was seized with pain extending across the base of the skull from one ear to the other, and soon after that she herself and her friends noticed that her lips, chin, nose, hands, and feet were enlarging, but so far as she could judge no change occurred in the dimensions of the trunk, legs, or arms. She formerly wore gloves of the number six size, but now has to wear sevens. The boots she wears are two sizes larger than those she could wear with comfort a few years ago. During the year before admission she had suffered severely from pain in all the regions supplied by the fifth cranial nerve on the left side. She supposed the ailment to be neuralgia, and had several teeth extracted, but without deriving any benefit. During the past five years she has had to work hard as a confectioner, being at times much exposed to the heat of the oven.

CONDITION ONE YEAR AFTER ONSET OF SYMPTOMS.

She was well nourished and fairly healthy in appearance. The mammae were atrophied; she had a thick growth of coarse, yellow hair over the scalp. She stated that the hair was coarser and more rapid in growth than it was a few years earlier. The skin of the face was rough, of a yellowish tint, and had a somewhat greasy aspect. The patient laid much stress upon the enlargement of her nose, lips, and chin, stating that her personal appearance had entirely altered. The mouth was always kept open, the lower teeth, which formerly were slightly behind the upper ones, were now a little in advance of them. The lower lip was nearly an inch thick, and the mucous surface had a peculiar, dry, glazed, and congested appearance. There was a distressing hyperæsthesia of the lower jaw on the left side, both on its cutaneous and its mucous surfaces. The tenderness of the latter made eating painful at times.

In the photograph No. 1, the patient is represented as sitting in a fairly erect posture, but usually there was a dorso-cervical kyphosis, and the head hung over the front of the chest.

The hands were distinctly spade-shaped, and the fingers curiously misshapen, bearing some resemblance to sausages.

In the feet the enlargement was chiefly in the great toe; the os calcis also seemed increased in size.

Nervous System.—Intelligence was normal; memory slightly impaired. She slept well when free from pain. All reflexes were normal. Sensibility was normal everywhere, excepting over the left half of the lower jaw. Pupils 4 millimetres, reacted to light and in accommodation. The retina was reported normal; she was rather deaf in right ear. The other special senses were normal. She complained of acute pain in the region supplied by the fifth cranial nerve on the left side.

Fig. 1.—Case of Acromegaly.

The *Muscular System* was apparently normal; electrical reaction was unchanged.

Cutaneous System.—There were various erythematous patches on the skin of the forearm and trunk; pressure—as, for example, that of the stethoscope—produced an erythematous blush, which persisted for some time. There was much perspiration.

Circulatory System.—There was an occasional faint systolic bruit at the apex, but no other abnormality.

The *Respiratory System* was normal with the exception of frequent pain in the nares on the left side.

Alimentary System.—The tongue was large and rather cedematous; the appetite large. Soon after a meal the patient felt as if she had eaten nothing, and desired to eat again. She complained of considerable thirst. Digestion was good, the bowels somewhat constipated. The liver dulness extended four inches. She complained much of pain in the left side of mouth and fauces.

Renal System.—The urine was normal in amount, specific gravity 1020; it contained neither sugar nor albumen.

Reproductive System.—She had ceased menstruating for three years; the mammae were atrophied.

Blood Glands.—The spleen was normal. The thyroid was not enlarged, but rather tender; there was some dulness over region of thymus.

The diagnosis presented no difficulty, the case was obviously one of acromegaly.

The patient remained three months in the hospital. On July 25th the temperature rose without any apparent cause to 104.2° F., and did not return to the normal until July 28th. She suffered almost constantly from the pain, which was only temporarily relieved by morphine, exalgine, antipyrin,

butyl chloral, quinine, the constant current, blisters, and the local application of belladonna and aconite. She left the hospital against advice, and remained away a year and a-half.

CONDITION TWO YEARS AND A HALF AFTER ONSET OF SYMPTOMS.

She was readmitted on December 7th, 1892. It was obvious that she had lost flesh during the interval. She stated that her strength had diminished, rendering her unable to work. During the past eighteen months she had rarely been free from the pain, which at this date was acute in the left side of the face and head and also in the chin, nose, and back of the neck. There was much pain also in the mouth, augmented on swallowing. The gums were sore, the submaxillary gland seemed enlarged on the left side and the flow of saliva was increased. There was pain about both orbits and sight was lost in the right eye. Vision was much impaired in the left eye. The ophthalmoscope showed atrophy on the right side and optic neuritis on the left. On testing the left eye with the perimeter the visual field was found to be greatly diminished on the temporal side. The area for perception of blue was much restricted, that for red still more so. The patient herself had noticed the singular absence of red in the objects round her. She was now deaf in both ears, but most so in the left. Smell and taste were normal. Memory appeared to be impaired. She slept badly. The circulatory and respiratory systems were in the same state as before. Appetite and digestion were failing.

The patient was observed during the months of December and January to be progressively losing flesh and strength. She had frequent vomiting; albumen appeared at times in the urine. The pain was obviously getting worse, and towards the end of January affected both sides of the head. Vision, moreover, was rapidly failing. There could be little doubt that a greatly enlarged pituitary body was causing, directly or indirectly, increased intracranial pressure.

THE QUESTION OF SURGICAL INTERFERENCE.

The patient was obviously in the final atrophic stage of the disease and it was evident that her life would not be greatly prolonged. The question therefore arose, Ought we to accede to her earnest desire for operation in order to relieve the intense pain and possibly to arrest the rapidly-advancing blindness? Mr. Victor Horsley kindly gave me his opinion, which was in favour of operation. I also obtained the opinion of my friend and colleague Mr. Paul, honorary surgeon to the infirmary. The following are his notes referring to the operation:

The two points submitted for a surgical opinion were:

1. Was it possible to undertake the removal of the tumour? And
2. If not, was it desirable to relieve the general intracranial pressure by making a free opening in the skull?

As the former expedient was judged to be not feasible, it was decided to adopt the latter, and to make the opening in such a position that by subsequently enlarging it it might be possible, if at any time it appeared desirable, to proceed with the major operation. As the right eye was already useless, there could be no special objection to clearing out the contents of the right orbit; therefore it was agreed that the bones forming the anterior portion of the right temporal fossa should be removed at the first operation, and if at that time or subsequently any attempt were made to remove the tumour, the right orbit should be emptied, and the aperture in the skull enlarged by the removal of its outer wall.

OPERATION.

On February 2nd the patient was taken into the operating theatre. The scalp had previously been carefully shaved and prepared, and as she was in a weak condition brandy was injected into the rectum. Mr. Paul then made a large semi-circular flap over the right temporal fossa, and after stopping the bleeding applied the trephine. Owing to the very irregular thickness of the skull in this position, the trephine was not of much service, and a small piece of bone having been elevated, the large opening was completed by the use of gouge-ended cutting forceps. Ultimately about 3 or 4 square inches of dura mater were exposed without injury,

and this was considered sufficient. (*Vide* illustration No. 2.)

Fig. 2.

The intracranial tension was evidently great, for the dura mater bulged at once, and the pulsations of the brain could not be perceived. Some vessels in the dura mater oozed freely, and as they were unaffected by irrigation with hot water, a soft new sterilised sponge was laid over them under the flap, and the wound dressed with iodoform, cyanide gauze, and salicylic wool.

The patient rallied fairly well. The next day the sponge was removed, and the flap laid in position; there was no further hæmorrhage, and subsequently the wound gave no cause for anxiety. It never entirely healed, as the gradually increasing bulging of the brain through the opening in the bone kept the edges apart, and there were some projecting bosses covered with granulations up to the time of her death. However, the operation effected all that was expected of it as regards the pain, the relief it afforded being gratefully attested by the patient. At no time was she considered to be in a fit state for a more severe operation, and therefore all thoughts of attempting the removal of the tumour were definitively abandoned.

AFTER-HISTORY.

The acute pain never returned after the operation, and the remaining three months of the patient's life were comparatively comfortable. Sight, unfortunately, was lost. My only regret in regard to the case is that the operation was not performed earlier. Although the patient desired it, her husband and friends objected. The patient died somewhat suddenly towards the end of April.

POST-MORTEM APPEARANCES.

Dr. Abram, pathologist to the infirmary, kindly furnished the following notes of the necropsy. The accompanying illustrations show the tumour and the enlarged sella turcica.

Fig. 3.—Enlarged pituitary body.

Calvaria thickened, especially in anterior third from enlargement of diploic layer. The base of the skull shows numerous

well-marked ridges. The vertical process of the axis projects into the cranial cavity. The pituitary body is enlarged, forming a mass the size of a Tangerine orange; it projected half an inch above the level of the lesser wings of the sphenoid bone. The growth had a distinct capsule, which is thin, and dotted with small granules. It involved both lobes, the infundibulum being free; at the upper and anterior right corner it had perforated the capsule, and involved the

Fig. 4.—Sella turcica.

orbital surface of the right frontal lobe. The growth was excessively soft, of a dark puce colour, dotted with hæmorrhages. On microscopic examination it was found to be a round-cell sarcoma. The optic chiasma and adjoining portions of the optic nerves were flattened, but not entered by growth. The sella turcica measured antero-posteriorly $1\frac{1}{2}$ inches, transversely $1\frac{1}{4}$ inch, vertically $\frac{1}{2}$ inch. Examination of thoracic and abdominal viscera was not permitted.

EXCISION OF THE LARYNX, HYOID BONE, AND FIVE RINGS OF THE TRACHEA, FOR CANCER.

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LARYNGECTOMY is no new operation, and the following case is principally of interest as illustrating the impunity with which a large gap in the pharynx can be dealt with.

L. P. H., aged 39, was admitted into the Dunedin Hospital in April, 1893, suffering from severe dyspnœa and dysphagia, due to a large cartilaginous-like tumour springing from the larynx. He had been complaining of breathlessness for six months, and of more or less laryngeal irritation for three years. Latterly, however, the dyspnœa had increased so much that he was in constant dread of suffocation. The mass to look at was as if the larynx had developed to the size of a large orange. It spread laterally and up and down, as if the whole front of the neck were a solid mass. The ordinary stomach-pump tube passed with great difficulty down the œsophagus, and it was impossible to say whether the œsophagus was involved or not. A laryngoscopic examination revealed nothing, as the walls of the larynx were so compressed and the breathing so difficult that a careful examination was impossible. Otherwise the man was in fairly good health. The diagnosis was malignant disease (myxo-sarcoma), and after consultation it was decided to perform tracheotomy as a preliminary step, and thereafter remove the mass if practicable. Accordingly I performed tracheotomy as low down as possible.

Ten days afterwards I incised the mass, and found that the

growth was almost entirely extralaryngeal, but involving the thyroid cartilages, the hyoid bone, the upper part of the trachea, and the whole of the soft structures surrounding them in front to the level of the skin. The pharynx was slightly involved, but the œsophagus seemed to be free. It was decided to proceed to removal of the tumour. A median incision was made over the whole length of the tumour, and two lateral incisions following the hyoid bone as far as the carotids would permit. This gave ample room to dissect the mass out, which was done from below upwards. The hæmorrhage was profuse, but principally from the upper portion of the thyroid gland. On arriving at the part around the epiglottis and hyoid bone, it was found impossible to avoid opening into the pharynx. A strong effort was made to save the epiglottis, but immediately below it the pharynx was opened from side to side. This large gap was carefully stitched over a large rectal bougie, and finally fixed to the soft structures in front. The external wound was left open so as to facilitate drainage and avoid the troublesome burrowing of pus in operations along the trachea. The patient made an excellent recovery. The wounded pharynx gave no trouble, nor was there any difficulty in swallowing after the second day. The fact of the pharynx being opened and the certain glueing of it to the tissues in front raised the question of the opening to the mouth being ever properly established. Three months were allowed to pass before I attempted to establish this opening so as to permit of the wound in the pharynx being thoroughly united. The first attempt was successful in establishing communication with the mouth, but the cicatricial tissue externally sloughed, and so the opening was allowed to close. The certainty of restoring the voice was established by this attempt, and this gave courage to all concerned.

On August 3rd the sinus to the mouth was enlarged, and the operation brought to a successful conclusion after numerous difficulties, of which books give no intimation, had been met and successfully dealt with. At first he could articulate better without the reed, the epiglottis seeming to take the place of the natural larynx. Indeed, he could whisper in quite an audible tone by merely inserting a simple rubber tube, showing the wonderful powers of speech contained in the epiglottis, throat, and lips, *minus* a larynx. Latterly, however, he excelled this mode of speech as he became accustomed to the reed in the artificial larynx. It is marvellous how well an individual can speak by means of an artificial larynx, and it redounds to the credit of surgery that life and speech can be so comfortably prolonged.

REMARKS.—An operation of this kind is one very difficult to carry out successfully in New Zealand, and probably in any of the Australasian colonies, owing to the difficulty of procuring a suitable artificial larynx, or modifying it in any way when procured. There are no manufacturers of such instruments in the colonies, and no one to modify or alter in any way such instruments as can be procured here from the