

accordingly treated by Dr. Alexander Davidson with creasote and benzoïn inhalations but no improvement occurred. The cough persisted and the expectoration continued of the same offensive character. She was therefore sent to the hospital for admission.

The patient was found to be a well-developed, healthy-looking girl but had a somewhat anxious and distressed aspect. There was a constant hacking cough, causing great pain, especially referred to the lower part of the sternum. The cough was accompanied by the expectoration of a large quantity of yellow, purulent, offensive sputum. There was no pain on deep inspiration but a catching sensation was experienced over the lower portion of the sternum. There were no definite physical signs in the chest except a few rhonchi in the right mammary region. No dulness could be detected though frequent examinations were made for the purpose of detecting some localised empyema or abscess cavity. The breathing was rapid—30 per minute—and thoracic in type. The urine had a specific gravity of 1030 and contained a small quantity of albumin; there was a large deposit of brick-red urates; there was no sugar or blood.

The constant hacking cough continued unabated and greatly interfered with the patient's rest at night; she slept very badly and sometimes hardly at all. The temperature on the day of admission was 101·6° F.; it rose two days later to 103·6°, but dropped next day to 102·8°. On the following morning, four days after admission, a few rhonchi were heard over the right base, and those in the right mammary region were more abundant. Still no dulness could be detected, but there appeared some diminution of breath sounds above the angle of the right scapula. The expectoration was still abundant and was now of a brownish colour, very offensive and containing a large quantity of pus streaked with blood. On Nov. 17th, five days after admission, the right side of the chest was explored below the angle of the scapula but no fluid was found. The patient continued *in statu quo* for the next few days, and as the symptoms did not improve and her general condition seemed to get worse on Nov. 21st the right chest was again explored, this time in front, in the mammary region. A little blood-stained fluid was obtained but not sufficient to indicate the presence of pleural effusion. She still complained of pain in the lower part of the sternum on coughing; her cough became even more troublesome and she had very little sleep at night. The expectoration continued abundant, of a yellowish-brown colour, with a good deal of whitish froth, and having the same offensive character. There were still some diminished breath sounds close to the angle of the scapula and impairment of the percussion note at the extreme right base; the rhonchi had now almost completely disappeared. There was continuous pyrexia, varying between 100° and 101·2°, and gradually rising until Nov. 25th, when the temperature reached 103°. On the 26th the right base was again explored in the ninth space below the angle of the scapula, but again with a negative result. On the 28th the patient did not appear to be nearly so well; the pulse was rapid though the temperature had slightly fallen and was now 101°. She had relapsed into a weak asthenic condition; the cough continued to be extremely troublesome, with accompanying pain in the right chest, most marked above the right costal margin. There was still abundant, thick, yellowish, frothy, offensive expectoration and there was also a distinct *halitus ex ore*, while the patient herself still complained of a "nasty taste in the mouth." The sleep continued to be much disturbed by the continuous coughing. Moist râles were now distinctly audible at the right base, indicating a pneumonic condition. She got steadily worse and it was considered advisable to transfer her to the surgical side of the hospital, where an operation was accordingly performed by Mr. A. B. Barrow with a view of discovering a localised empyema or abscess cavity but without success; a drainage tube was introduced into the wound. The patient gradually sank and died on Nov. 30th at 1 A.M.

*Necropsy.*—At the post-mortem examination an opening of the size of a No. 8 catheter was found in the anterior wall of the œsophagus. The opening was quite round, with smooth edges, and was situated at the level of the bifurcation of the trachea and led into an abscess cavity in the mediastinum. This cavity was of about the size of a hen's egg and lay behind the end of the trachea and the two bronchi. Its walls were ragged and grey and it exuded a gangrenous odour; in the cavity

there lay a large greyish-white mass of varying consistency, soft in some places and harder in others. It appeared to form a kind of cone composed partly of necrotic tissue and partly of old fibrin. In the right bronchus, about one inch from the bifurcation, there was an aperture which led into the gangrenous cavity above described. The edges of this opening gave way on being touched, so that its exact size could not be estimated. The right bronchus and its branches were acutely inflamed and were filled with pus and the lower lobe of the right lung was solid and showed abundant large yellowish-red areas which would soon have suppurated; there was, in fact, a condition of insufflation pneumonia. The right pleura was covered with lymph and a drainage-tube was found there. There was no effusion in the pleural cavity, serous or purulent, nor yet between the lobes of the right lung. On the inner side of the upper lobe of the right lung, however—that is, next to the mediastinum and above the right bronchus—there was found a localised collection of serum and lymph. The trachea and the bronchial tubes of the left lung were inflamed but the lung itself was not pneumonic. There was some adhesion on the mediastinal side of the pleura but there was no evidence of recent pleurisy. There was no foreign body found in the gangrenous cavity and the cause of the œsophageal perforation remained undiscovered.

### MEXBOROUGH COTTAGE HOSPITAL.

A CASE OF COMPOUND, COMPLICATED, COMMUNED FRACTURE OF THE PELVIS; WIRING; RECOVERY.

(Under the care of Mr. J. J. HUEY and Dr. B. CROSSFIELD STEVENS.)

THE most frequent cause of fracture of the pelvis is a "buffer" accident, when a man is caught between the buffers of two railway trucks, and the injury described below appears to have been inflicted somewhat similarly. In cases of fractured pelvis in which there is already a wound leading down to the fracture wiring is distinctly indicated. Mr. W. H. Battle<sup>1</sup> has published a similar though less severe case in which wiring was successfully performed.

On April 10th of this year a boy, aged 14 years, was admitted into the Mexborough Cottage Hospital suffering from a severe injury to the left side of the pelvis. He was examined and was placed under the care of Mr. Huey, who asked Dr. Stevens to see the patient with him. It was stated that the boy was carrying lamps in a coalpit and was walking on the level just behind some "tubs" filled with coal which were being drawn by horses. Other "tubs" were coming down an incline behind him. The driver of the latter, thinking that the "wedges" were in position, unhitched the horses with the result that two of the loaded "tubs," becoming detached, rushed down the incline, caught the boy, and knocked him on to the "tubs" in front. These moving on he fell to the ground and remembered nothing more.

When Dr. Stevens saw the patient on admission there was not a great amount of shock or collapse but a good deal of pain and tenderness were present over the groin, the hip, and the flank. There was an incised wound three inches long in the left groin, just missing the external iliac artery but laying open the inguinal canal. The anterior third of the iliac crest was felt to be loose and another sharp piece of bone was threatening the skin, a blister having formed at the point of tension. On further examination with one finger in the wound the whole of the left side of the pelvis seemed to be altered and some serous fluid escaped. The sartorius muscle was torn across but the pelvic viscera were intact. It was decided to explore further under an anæsthetic.

Under chloroform the incision was extended up to a point where the anterior superior spine would normally have been. It was then found that the fracture involved the true pelvis. The hip-joint was disorganised and the pubic ramus was quite loose. The head of the femur was *in situ*. From deep down in the pelvis a loose square-shaped piece of bone was hooked up by the finger and brought into contact with another piece of the ilium and was wired with stout copper wire to another similarly shaped piece of loose bone. Another sharp triangular piece of bone was removed. The

<sup>1</sup> Transactions of the Clinical Society of London, vol. xxvii., p. 289.

piece of bone in the true pelvis was dangerously near wounding the bladder and the iliac vessels until it was brought up and fixed in the ilium. The sartorius muscle was repaired with catgut and a fresh origin was made for it by uniting it to the insertions of the abdominal wall muscles on to the iliac crest. The psoas muscle was not damaged. The wound was thoroughly irrigated with biniodide lotion, the inguinal canal was made secure, and the skin was sewn up with a continuous catgut suture. A gauze drain was left in for 24 hours.

The boy stood the operation well and the gauze was taken out on the next day. The temperature kept rather high for the next 12 days, this being due mostly to a bronchopneumonia. The inguinal part of the incision healed but the upper part suppurated superficially chiefly from exuberant granulations all through May and then a spicule of bone came away.

*Remarks by Dr. STEVENS.*—The wound is now healed and a poroplastic pelvis and thigh splint is being worn. There is good flexion of the joint and the patient can now walk a little way with all his weight on the pelvis. It is yet early to say whether he will be able to work again but the prospects are good. I should certainly recommend the expediency of wiring the fragments of a badly fractured pelvis. It is remarkable that with such a smash the pelvic viscera were uninjured. I am indebted to Mr. Huey for allowing me to publish this case.

## Medical Societies.

### OPHTHALMOLOGICAL SOCIETY.

#### *The Bowman Lecture.*

THE following is an abstract of the Bowman Lecture delivered before the Ophthalmological Society on June 13th by Professor ERNST FUCHS of Vienna. The lecture was illustrated by numerous drawings.

Bowman's name, said Professor Fuchs, would be for ever connected with the development of anatomy, physiology, and ophthalmology, and as far as the eye was concerned Bowman's membrane and Bowman's tubes would perpetuate for all time his name in the memory of the student of medicine. In discussing keratitis the lecturer declared his intention of confining himself to the consideration of recent disease, showing what anatomical changes corresponded with visible signs, such as opacity, loss of brilliancy, &c. The transparency of the cornea allowed a closer comparison between clinical and microscopical appearances in this than in any other structure, especially with the aid of a lens or corneal microscope. Diffuse opacity would be found to correspond with an infinite number of minute grey points representing swollen corneal corpuscles, aggregated lymph cells beside them, or accumulations of corneal corpuscles in lymph spaces. The surface from being smooth and brilliant became dull and stippled at the slightest disturbance of underlying tissues corresponding with a change in the epithelial layer. In the normal structure the nutrition of the epithelial layer was provided for by osmosis from the corneal tissue through Bowman's membrane, and the regeneration of cells by division of the basement and middle layers. In health this was slow, as evidenced by the scarcity of dividing nuclei. On account of the exposed position of the corneal epithelium its pliant, delicate nature, and its loose attachment to subjacent structures, abrasions were common, and rapid and extensive exfoliation took place in inflammation. Its vitality was further lowered by the low temperature resulting from surface evaporation and its dependence for nutrition on non-vascular tissues. Its sensibility was its chief defence and the integrity of the epithelium was the chief defensive agent against the intrusion of microbes. The close and persistent growth of these surface cells tended to level all irregularities, producing a thicker layer where there was loss of substance and a thinner one over any protrusion. This was illustrated by drawings, as was also the rapid development of these cells preventing direct union of the tissues after a cataract extraction of four days' standing, having already penetrated the wound as far as Descemet's membrane. A drawing was shown illustrating a still further development in which the superficial corneal epithelium had penetrated to and lined the entire anterior chamber, covering both the iris and back of the cornea;

this drawing was from a cataract extraction of several years' standing. This condition practically represented cyst of the anterior chamber; the tension was raised. Four such cases had come under the lecturer's observation and he suggested that this might be the explanation of increased tension after cataract extraction where there was no other cause of glaucoma. There also occurred small epithelial cysts in the root of the iris continuous with the surface epithelium and representing the blind end of its invagination. These would in time develop into iris cysts and were, except in distribution, analogous to the chamber cyst just mentioned. Cysts of the iris occurring after penetrating wounds were always due to this kind of intrusion of the external epithelium. Another instance of this intruding tendency was furnished by cases of old leucoma; in such cicatricial tissue there often occurred calcareous deposits which consolidated into calcareous plates. These, at first intimately connected with the contiguous tissue, presently separated from it by shrinkage and lay in it like a foreign body. A drawing showed the surface epithelium penetrating to this space, surrounding the plate, and effecting its separation. Another drawing showed the process nearly complete, the epithelium on the outer aspect having necrosed, while on the deep surface it separated the mass from the living connective tissue, thus at the same time protecting the eye from external agencies by a continuous epithelial layer. The vital energy of this epithelium was greater at the periphery in proximity to the nutrient vessels. When uniformly affected it was speedily thrown off in the centre but grew exuberantly at the margin, as in kerato-malacia and neuro-paralytic keratitis, and most strikingly in marginal ulcers where the epithelium was seen to push quickly towards the bottom of the ulcer peripherally, whereas the central margin remained bare and infiltrated. On this account many ulcers tended to progress towards the centre but not towards the margin as in fascicular keratitis. Disturbance showed itself by dulness (unevenness) or haziness (opacity) of the epithelium; where the epithelium was raised in places the small vesicles appeared black if the subjacent cornea was clear. The opacity was due to abnormal fluid either between or within the cells. It commonly occurred between the cells in glaucoma (cedema of epithelial layer), separating first the basement and then the superficial cells, and might form vesicles. A figure from Grieff showed this and swelling of cells from imbibition of fluid. The cells might burst and leave depressions while the swollen ones projected, thus producing an uneven surface. The stippled appearance in glaucoma, irido-cyclitis, and interstitial keratitis was thus accounted for. The entire layer might be affected, producing a homogeneous mass which separated. Absorption occurred quickly, even within 30 minutes, under eserine. The superficial cells separated and fell off. In neuro-paralytic keratitis the desquamation was specially rapid, being due largely to exsiccation, but it occurred from nerve changes in man where this was prevented. The change occurred principally in the centre while there was proliferation at the margin, the cornea being left uneven with a stippled appearance. Only the basement layer might be left and the cells altered in shape, being long, short, or oblique, or the loss might be total, as in conjunctivitis and inflammation of other mucous membranes (desquamative catarrh). This condition endangered the cornea by facilitating the entrance of micro-organisms and conjunctival disease was often followed by corneal disorder. Change in the epithelium was the cause of such disorders of vision as coloured halos round lights, as in glaucoma and cocaine instillation, especially where this had been long continued or the eye had been left exposed. The epithelium became opaque and dull and desquamated. The lecturer never entrusted patients with cocaine, particularly when suffering from keratitis. Thinning of the epithelial layer occurred from pressure of the lid, the surface remaining smooth, as it did in atrophy from insufficient nutrition, the number and size of the cells being diminished. Where calcareous deposits occurred in corneal cicatrices bacteria might invade the cornea, causing necrosis. This was the explanation of the rapidly destructive ulcers in old leucomas (atheromatous ulcer, sequestering cicatricial keratitis) resulting in perforation and panophthalmitis. This might also occur from within, as in corneal degeneration. Local areas of the kind resulted from irritation or might develop after cataract extraction, producing inflammatory areas with lymph cells