position of the foreign body are the two things which must be considered in the employment of any instrument. To avoid all force is the rule, never to be violated, let the circumstances of the case be ever so tempting.

I now desire to quote the following few cases out of many constantly occurring to me in hospital and private practice, which bear on the foregoing remarks.

Some years since, a child was brought to me with a shell in the meatus, where it was quite visible. It was one of those small yellow shells common on the beach. The convex surface was directed outwards. It completely filled the meatus, and was jammed in the contracted portion. Many attempts had been made to remove it, but all resulted in driving it further in, and its smooth surface rendered it impossible to catch it. I advised patience and syringing. There were both pain and inflammation when I saw the ear. Some catarrhal discharge subsequently formed. The ear was syringed daily. In about three weeks from the time I saw the case, the unwelcome guest suddenly came out while the ear was being syringed.

A gentleman was tickling his ear with a programme-pencil while at a ball. In doing so, the bone-top of the pencil remained in the ear. He fancied that he afterwards heard it fall out. Feeling, however, uncomfortable the next day, he sought advice, and the practitioner whom he consulted thought he saw the white flat surface of the bone-cap. Several efforts to seize it were made, giving him great pain. On the following day, these were repeated. The passage now became swollen and painful, and another surgeon was consulted, who, without expressing any opinion as to the presence or absence of the foreign body, wisely abstained from all interference, and directed simple washing out of the ear, and leeches to subdue the inflammation. After some days, I saw the patient. I found the passage contracted by the inflammation, so much so that no speculum could be inserted; there were considerable pain and complete deafness. However, with the otoscope and Politzer's bag, I satisfied myself that the probability was against the presence of a foreign body; but there was evidently a considerable perforation of the membrane. With care and treatment, he ultimately recovered, hearing the watch before he left me at twelve inches; but there has remained a permanent perforation in the membrane. This case was all the more serious, as the hearing in the other ear was impaired from childhood.

Some months since, a child was sent to me from the country by two medical gentlemen, with a glass bead in the ear. The bead was blue, diamond-shaped, and was taken from one of those "surprise packages" of sweets which are sold to children. The bead was in for several days, and resisted all attempts at extraction and syringing. The child was very restless, so I put her under the influence of chloroform and tried syringing, but in vain. The smooth, diamond-cut, conical end of the bead was turned out, and it was fixed in the passage. Keeping the child well under chloroform, with Dr. Grattan's assistance, I passed the sharp curved edge of a Crichtett's cataract-scoop over the margin of the bead, between it and the wall of the meatus; I then was able to slightly turn it on its own axis. This gave me room to pass a loop of silver wire over the margin of the bead (as originally recommended by Mr. Hutchinson) and obtain a grip of it. But, after two or three efforts, the wire broke each time, and there was not room to pass a stronger wire behind the body. I, however, succeeded in getting a double loop of the thin wire over the edge, and finally brought it away. Some years since, a child was sent to me by Dr. Cummins of Cork with a spherical glass bead in the meatus, which completely filled the calibre of the canal. I thought that forcible syringing might, in this instance, by driving the body further in, do more harm than good; and, as the bead appeared not to be firmly impacted, and was not long in the passage, I thought of Brunel's plan for the coin in his larynx. Accordingly, I turned the child on her side, with the affected ear down, and, with assistance, while in this position, I placed the fleshy part of the thumb of my right hand (the body was in the left ear) over the opposite ear, the fingers being extended on the head, the inner side of the palm of the hand thus came above the auricle, on the temporal and parietal bones; by giving a few sudden jerks to the head in this position with the inner side of the hand, the bead dropped out.

A child was brought to me with a piece of chalk, which she had wedged into the passage. Efforts had been made to extract it. The chalk had been partly broken down with the forceps, and there was no space possibly available to pass any instrument behind the mass. I scraped away with a sharp scoop as much as possible of the chalk from the upper wall of the meatus, washing the debris away with a syringe. I then persevered in properly directed syringing, and the mass came away under chloroform. Lately, I had a very obstinate case. A child with a smooth stone, rather angular in shape, was

brought to the hospital; the stone was inside the contracted portion of the canal. I tried syringing without avail. The stone, though it was not possible to get any extracting instrument between it and the wall of the meatus, was movable. I determined to wait and syringe. The child was troublesome. Several times, I got him under chloroform and examined the stone with a fine probe and good light carefully. I tried to catch it with cobbler's wax, but it would not come. I made an effort to fit the spoon behind it, but failed. It only went further in. Some inflammation setting in in the meatus, and discharge appearing, I desisted from all efforts, and merely had the ear washed out with warm water daily, filling the meatus each time with glycerine. By degrees, the stone worked its way out, until it was about half way through the narrow part of the canal. I was now tempted to try and get a wire behind it; it only pushed the stone back. I, therefore, determined to do nothing but syringe. Some discharge continued. At the end of three weeks, the stone came away. There was slight catarrh of the passage; but the membrane was not affected, and the child recovered with perfect hearing.

Having thus given the brief details of a few obstinate and difficult cases, I will conclude by quoting these remarks of Hinton and Tröltzsch on this subject. The former says: "I must be pardoned for speaking earnestly on this point. Even to this day, it remains the fact that ears are thus destroyed without shadow of reason or excuse, and not by careless and incompetent persons alone. I believe it may be laid down as a rule that, whenever an instrument will succeed, syringing would also succeed; and that, when proper syringing will not succeed, all instruments are full of danger; if had recourse to before violence has been used, would probably, in all cases, remove the offending body in ample time to prevent mischief." "Injuries", says Tröltzsch, "are frequently inflicted on the soft parts of the meatus by patients with itching in the ear by means of knitting-needles or sharp metal ear-picks; graver and more serious frequently prove those contused and lacerated wounds of the meatus, inflicted by a professional hand, in attempting the removal of foreign bodies, even in those cases in which most harmless intruders, as morsels of bread and paper, are concerned. On such occasions, the instrumental foreign bodies are generally the chief part of the evil."

UNUNITED FRACTURE OF THE FEMUR CURED BY OPERATION.*

By REGINALD HARRISON, F.R.C.S.Eng.,
Surgeon to the Royal Infirmary, Liverpool.

A CASE of ununited fracture of the femur, which has recently been under treatment in my ward at the Liverpool Royal Infirmary, presents, I think, sufficient features of interest, if not of novelty, as to render it worthy of record here. In bringing this case under notice, I do not claim any originality in treatment; I have merely applied those principles, although perhaps in a somewhat unusual manner, which are generally recognised in the management of this class of cases.

Austin Zinc, a seaman, aged 26, was admitted into the Infirmary, under my care, on July 26th, 1875. From the patient's history, it appears that, on April 18th previously, whilst at sea, he was struck by the sea in a gale and thrown violently against the side of the ship. It was found that he had sustained a fracture of the thigh. The captain of the ship put a long splint on him, and he was treated as well as circumstances would permit. He was subsequently placed on a steamship for conveyance to England, where he had the benefit of the attendance of the surgeon of the ship, who appears to have done the best to obtain union.

On his arrival in England, on July 23rd, it was found that no union whatever had taken place, and he was consequently transferred to the Infirmary at Liverpool for further treatment.

Upon examination, I had no difficulty in finding a fracture of the femur at about the junction of the upper with the middle third. The fracture was oblique, and the ends were widely separated, the upper fragment being readily felt beneath the skin in front, whilst the lower fragment was deeply embedded amongst the hamstring muscles. There were two inches and three-quarters of shortening. There was no union whatever.

The limb was placed on a splint after friction had been employed, and was kept absolutely at rest for some weeks. Other means were resorted to, including the introduction of a tenotomy-knife to the end of the bone, violent percussion, and friction, but all without avail. No

* Read in the Section of Surgery at the Annual Meeting of the British Medical Association in Manchester, August 1877.

union, or even any sign of reparative action, could be excited. The patient became very weary, and begged to have his limb amputated. On January 4th, 1876, with the assistance of my colleague Mr. Banks, I performed the following operation, the patient being placed under the influence of ether. I made an incision on the outer aspect of the thigh, about six inches in length, and sufficient to enable me to reach the fractured ends of the bone. By means of a small saw and a gouge, I completely bared the lateral aspect of both fragments, each of them to the extent of what they overlapped. After the opposing lateral surfaces of this oblique fracture had been most completely bared, I then passed round both fragments a stout piece of ordinary copper bell-wire, and a second piece at an interval of about an inch and a half. Having placed the wires in their proper relative position, I gradually screwed them up until the bones came into a position similar to that of a splice in a fishing-rod. Having thus screwed up the wires, I had the satisfaction of finding that they held the ends of the fracture in close and firm apposition.

To prevent any slipping, I then passed through the bones, midway between the two wires, by means of an Archimedean drill, a drill-head; this had the effect of completely fastening the two opposing portions of the fracture together. The wound was closed by wire sutures, the other end of the drill-head projecting through the wound. The limb was then placed on an outside interrupted splint, and the patient removed to bed.

Bleeding was entirely controlled during the operation by means of an Esmarch's bandage placed round the groin. The operation was followed by some slight febrile reaction; but, considering the severity of the operation, it was remarkable how little the patient suffered. The chief pain was referred to the position of the drill-head, the slightest touching of which occasioned severe and deeply felt pain. On January 8th, the pain referable to this drill-head was so great that I removed it, fearing that it might set up in the bone an undue amount of inflammatory action. The removal of this was followed by complete comfort. The suppuration was not excessive, and, in the course of a few weeks, the wound was completely filled in with healthy granulation. The wound was not dressed antiseptically. On March 8th, as the wires appeared now to be sources of irritation, I determined to remove them. I had the patient placed under ether. I then passed my finger through the mass of granulations down to the wires, and, by means of a curved pair of cutting pliers, severed and withdrew each wire. This was done without difficulty, and I had the satisfaction of feeling that union was complete. The patient was kept in bed till May 4th, when he was allowed to get up, union being perfectly complete. The amount of shortening was not greater than that observed on his admission; viz., very nearly three inches.

The patient was sent to the Convalescent Hospital at Woolton, where some very small fragments of bone were from time to time exfoliated. On July 10th, 1877, the patient called at the Infirmary to see me. His limb was perfectly firm. He informed me that he had been out to Callao as a seaman, and that he was again leaving on the following day for the same place. Except the shortening, which now appeared to give him little inconvenience, the movements and form of the limb were all that could be desired. The case, in fact, turned out as successfully as I could wish.

In commenting upon it, I would first observe that recourse to operation was not had until it was evident that it was useless to expect union from the employment of rest, position, and other means which are found successful in instances where union is merely delayed. In a seaport like Liverpool, cases of delayed union are not uncommon. Sailors and others are often sent for treatment who have been rolling in ships with fractured limbs, sometimes for weeks; in these, rest and proper treatment are speedily followed by firm union.

In this instance, all ordinary means for securing union had failed, and therefore it was necessary to consider carefully what proceeding offered the best chance of success. It was suggested that a portion of the fractured ends be sawn off, and the case treated as one of compound fracture. This plan, however, did not recommend itself to me, inasmuch as, without some means which would secure apposition and immobility of the fractured ends, it was hardly reasonable to expect union to take place.

As it appeared impossible, under any circumstances, to prevent shortening, I thought it better to avail myself of the overlapping of the fragments, and, by baring the *sides* of them to this extent, in this way to obtain a much larger bony surface from which union might spring than if section of the ends of the bone were done. For the purpose of holding the fragments thus bared together for a time sufficient to allow union to take place, I determined merely to encircle the bones with wire. I was anxious to avoid retaining the wires in the substance of the bone, as I have seen the plan followed by most violent

inflammation, resulting in extensive necrosis, and thus defeating the object in view. I therefore contented myself with wrapping the wire round the bones.

For the purpose of adding to the security of the union thus effected, and guarding against any slipping of the bones by the spasmodic action of the powerful muscles of the thigh, which is not uncommon for the first two or three days after such an operation, I introduced a drill-head, which firmly "nailed" the fragments together. At the end of four days, I removed this without difficulty, as the pain referred to it became intolerable, and I was fearful of setting up an excessive inflammatory action in the bones; besides, by this time, the drill-head had fulfilled the object I had in view in its introduction. The wires were not removed until union was complete, when, for the first time, Nature began to indicate they were no longer necessary. On their removal, the wound healed kindly, and beyond, from time to time, the throwing off of small necrosed portions of bone, no further inconvenience was experienced by the patient.

The degree of shortening was not greater than three inches, and I was surprised to find how little it interfered with the patient's movements.

I shall not trouble you with any further observations on the case. The treatment of so unfortunate an occurrence as an ununited fracture claims from us all, when opportunity offers, contributions to the literature of the subject.

DIABETIC COMA: ACETONÆMIA.*

By BALTHAZAR FOSTER, M.D., F.R.C.P.,

Professor of Medicine in Queen's College; Physician to the General Hospital, Birmingham; Consulting Physician to the West Bromwich Hospital; etc.

THE sudden occurrence of grave symptoms, and death following in a few hours, are startling events in any chronic disease. They are especially startling in a malady like diabetes mellitus, which usually runs a long and comparatively uneventful course. Prout, with his usual keen observation, noted some instances of this sudden ending in diabetes, but has simply referred to them as interesting illustrations of the frail tenure on which the life of a diabetic is held. Later writers have advanced hypothetical notions to account for the phenomena observed in their cases. By some, myself included (*Clinical Medicine*) they have been regarded as uræmic; thickening of the blood to a degree sufficient to render it unfit to circulate, from excessive loss of water, has been suggested by others; the nervous and respiratory systems have been invoked as the centres on which these grave symptoms depend; and, lastly, chemical transformations of the diabetic sugar, leading to the formation of poisonous compounds within the body, have been supposed by some German and Italian authors to be associated with sudden death in diabetes.

There are cases, I have no doubt, to which each of these hypotheses may be justly applied; but my more recent experience strongly inclines me to regard the last mentioned view as the most satisfactory explanation of the hitherto obscure and alarming condition which has been aptly termed diabetic coma. In this communication, I propose to record some cases of this kind, and to inquire how far their clinical aspects support the chemical view.

One morning about twelve months ago, when teaching in the wards, I was called away to see a boy who had been admitted two days before for diabetes. We found the boy in bed, tossing about restlessly, with a very anxious expression of face and slight duskiness of the skin. He had very remarkable dyspnoea. Each inspiration was deep, ample, and chest-filling. Large volumes of air passed in and out of the chest thirty-two times a minute, but seemed to have no power to satisfy the patient's craving for air. On examination, the chest was everywhere resonant, and loud and harsh breathing was heard all over the chest. No odour beyond the ordinary diabetic smell was observed in the boy's breath. The pulse was small and weak, but regular, 136; the tongue was moist, with whitish fur; the temperature in axilla was 97 deg. The boy was somewhat dull mentally, but, when roused, answered correctly. The symptoms had begun the evening before with *sickness*, which had occurred again early in the morning, and been associated with sharp pain in the epigastric region and rapid breathing. The abdomen

* Read in the Section of Medicine at the Annual Meeting of the British Medical Association in Manchester, August 1877; and also before the Birmingham and Midland Counties Branch.