the femoral condyles, and remained constantly as a foreign body in the joint.

In two previous cases I employed the method of drilling the fragments obliquely through the two-thirds of their depth on either side of the median line, and then obtaining approximation by means of two silk sutures. In the first case the result was all that could be desired; but in the second case a prepatellar abscess formed at the end of ten days, and though by that time fortunately the joint was shut off from danger, infection of one of the silk sutures took place, and it was only by its removal after a considerable time that a troublesome sinus became closed. However, in that case also the ultimate result was excellent, and the man is now, two years after, earning his living as a car-driver with perfect movement in the joint.

I could not, however, shut my eyes to the grave risk to which the latter patient had been exposed, and I determined accordingly in future cases to use some suture material incapable of absorbing septic germs, and easily rendered sterile before operation. Of all the various materials silver wire seemed to offer the most advantages in this respect. It appeared also that if a single drilling of each fragment only were practised, and some means of apposition employed which afforded a broader surface, and so reduced the liability to cut through the broken bone, that an important advance in the method of direct suture would be attained.

After consideration I finally decided on a D-shaped wire, No. 16 gauge, made of the softest silver, which, being flat on one surface and very broad, would be free from the tendency to cut through the drill hole, and would be strong enough to admit of only a single suture being inserted. This wire was specially drawn for me by Messrs. Fannin, and I found experimentally that it was of sufficient

Fig. 1.—Exact size of wire used showing sectional surface.

Fig. 2.—The loop *in situ*.

strength for one suture to hold together, under considerable strain, the sawn surfaces of a patella, and also that, on account of its shape and strength, a single loop of each end, interlocked as in the accompanying photograph, was quite sufficient to secure the suture, and the ends could be readily flattened down without forming any appreciable foreign body which could irritate the surrounding tissues. An opportunity was afforded me of putting theory to the test of practice last session, and in giving a

brief account of the case, I wish to emphasise those points which seem to be of importance in carrying out the procedure.¹

G. E., aged 24, was admitted into the Meath Hospital on November 11th, 1898. On the previous day he had fallen, and at the same time had felt something give way in his knee. He suffered great pain all night; and on admission next day his knee was found to be greatly distended, extremely tense, and with a transverse fracture of the patella in the lower third, an interval of about an inch separating the upper and lower fragments. The limb was kept elevated, a posterior splint fitted to the knee, and evaporating lotions applied for three days without any effort being made to bring the fragments into apposition. On the 14th—four days after the accident—the swelling had considerably subsided, active pain had gone, and, operation being determined on, the joint was opened by a large U-shaped flap having its convexity downwards just below the ligamentum patellae, and extending laterally well away from the margins of the fractured bone. I adopted the U-shaped flap for two reasons: it gives much freer access to the broken fragments; and, should a suture abscess or other accident to the skin wound occur, the joint wound is farther removed from the seat of infection. On opening the joint, a large number of firm and partly decolorised clots were freed and washed out with sterilised water, and it was then found that the line of fracture was very low down, running obliquely from above downwards 'towards the apex of the patella, and that the lower fragment was so tilted that its articular cartilage was the part presenting to the fractured surface of the upper fragment. It was evident, therefore, that without operation only the weakest form of fibrous union could have taken place. Both bony surfaces were covered with dense fibrinous exudation and blood clot,

and a torn fringe of periosteum was firmly embedded in that attached to the upper fragment. By means of a blunt periosteal elevator, the bony surfaces were cleared. The torn periosteum and aponeurosis were preserved for a future important step in the operation, being divided in the middle line to a point about half an inch above the upper margin of the fracture, and then reflected laterally to either side. Much difficulty was experienced in drilling the lower fragment owing to its small size, but at last this was successfully done, and the upper fragment was then also drilled obliquely exactly in the same median vertical line. The D wire was then passed without the intervention of any instrument, and, having been placed *in situ*, the joint was again thoroughly washed out with sterilised water. Accurate approximation of the fragments was then secured, the wire looped, and the divided aponeurosis and periosteum closely sutured with fine silk over the underlying wire. In this way the fractured surfaces were completely protected. I regard it as one of the most important steps of the operation. The skin flap was then closed with salmon-gut sutures, and when in position no trace of the wire loop could be detected with the fingers. Aseptic dressings were applied, a light posterior splint fitted, and the limb kept elevated on a couple of pillows. The dressing was re-applied on the third day as some slight serous oozing had shown through. The wound was perfectly dry. On the eighth day the sutures were removed, the skin incision being soundly healed. It was dressed again on the fourteenth day, and the splint removed in order to admit of passive motion being carried out. A few days later the patient was allowed to get up, and began to walk on crutches. A skiagraph kindly taken by Dr. Lane-Joynt at this period, three weeks after the operation, shows such accurate approximation of the fragments, that the oblique line of fracture can only be faintly recognised. The following week the man was brought to the Dublin Biological Club, and was able to walk into the room without the aid of a stick. Eight weeks after the operation he was able to walk over two miles on the level, and the only remaining evidence of his injury was a slight feeling of weakness on going up stairs.

In young and healthy subjects the ideal operation is primary suture; and with care and strictly aseptic precautions it offers no more grave risks than many of the forms of so-called subcutaneous suture, while in relative accuracy and efficiency no reasonable comparison can be established. Among the important points connected with the operation I would desire to specially emphasise the following:

1. The advisability of delaying operation for a few days after the injury until the subsidence of the more acute symptoms in the joints.
2. The thorough clearing out of the joint; all the recesses of the synovial membrane being completely freed from clots, and the broken surfaces of the bone thoroughly cleaned. This can only be secured by the open operation.
3. The use of an easily-sterilisable suture, strong enough to secure apposition by a single drilling, and so shaped as to render splitting of the bone an impossibility, and to prevent in fastening it the formation of a large and irritating loop.
4. The elevation, and not the resection, of the fibrous curtain, and its subsequent accurate suturing over the embedded wire, forming an additional barrier underneath the skin flap against infection or irritation.
5. The early commencement of passive movement, which is thus rendered feasible, and undoubtedly greatly shortens the period of disability following the fracture—a point of paramount importance to the class of persons most subject to the injury.

NOTE.

¹ For the photograph and notes of the case I am indebted to my late clinical clerk, Mr. F. G. FitzGerald.

THE DISPOSITION OF THE UTERO-VESICAL POUCH OF PERITONEUM IN CASES OF DISTENSION OF THE VAGINA AND UTERUS.

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IN his first lecture on Retention of Menstrual Blood,¹ Dr. Cullingworth has raised an interesting question concerning the disposition of the utero-vesical pouch of peritoneum in cases in which the vagina becomes distended with fluid.

He was able to answer the query with the statement that the bladder rises as the vagina distends, and the uterus remains perched on the summit of the vagina, and thus the fold retains its normal anatomical relations. This, it would appear, is the constant result where the vagina is the cavity that suffers the distension.

In 1892, I presented to the museum of St. Bartholomew's Hospital, a specimen (No. 3016A), which tends to confirm abun-

dantly the opinion of Dr. Cullingworth. A female infant, aged 7 weeks, had an abdominal swelling associated with retention of urine, for which the child was brought to me. The tumour in the abdomen had not attracted the attention of the mother, and there had been no difficulty during the birth of the child. The little patient was in a very weak condition, and died a few days later. It was then found on *post-mortem* examination that the abdominal swelling consisted of a greatly distended vagina, surmounting which was the diminutive uterus, itself also somewhat dilated. The vagina measured $4\frac{1}{2}$ inches in length, $2\frac{1}{2}$ inches antero-posteriorly, and $1\frac{1}{2}$ inches from side to side, and contained some 8 ounces of flaky mucus. Both kidneys were hydronephrotic from the pressure that had been exercised by the distended vagina, each of the ureters themselves being much dilated. But the chief interest in the specimen in view of Dr. Cullingworth's case is the fact that the distended vagina had raised the uterus above it, and at the same time had caused an elongation of the urinary bladder, and particularly of the urethra, which latter was some 2 inches in length. (Other instances of similar distensions from occlusion of the vaginal orifice will be found in the following records.)²

It would seem from this and other cases, that when the vagina is distended with fluid, the bladder is drawn up out of the pelvis, the uterus also rising on the summit of the vagina, and thus that the natural relationship of the utero-vesical reflection of peritoneum is preserved. It is usual in this class of case for the urethra to be elongated, and for it to be pressed upon between the distended vagina and the pubic bones, and this may cause retention of urine.

In instances of distension of the uterus, apart from the vagina, as in normal pregnancy, the bladder is not raised, and the utero-vesical pouch of the peritoneum therefore becomes considerably stretched and flattened out.

REFERENCES.

- ¹ BRITISH MEDICAL JOURNAL, January 6th, 1900, p. 8. ² *Trans. Obstet. Soc. of London*, vol. v, p. 284; vol. xix, p. 5.

NOTE ON A SPLINT FOR USE AFTER
AMPUTATION.

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AFTER amputations, especially of the thigh, it is customary to support and bandage the stump upon a suitable splint. This is removed at each dressing, and the shifting and readjustment causes sometimes pain and annoyance to the patient. The painful quivering so often seen when the support is suddenly withdrawn is familiar to most of us. To meet this inconvenience I have devised a simple plan, which has seemed to me of great utility. The opening for the tube is made through the posterior flap, or in the case of lateral flaps, the tube is brought out posteriorly. In the end of the splint a large circular hole is cut, and the anterior end of the splint round this aperture is thickly padded with soft iodoform gauze. When the flaps have been accurately sutured the splint is applied next to the limb, and secured with adhesive strapping and gauze bandages. The tube appears through the centre of the large circular opening in the splint. Nothing now remains but to apply the usual dressings.

Posterior surface of a thigh stump with splint applied.

The opening in the splint is padded with strips of iodoform gauze and a thick layer of salicylate wool. At the early

dressings this can be constantly renewed. Here alone oozing will take place. The tube can be flushed and slowly withdrawn in the usual manner, without the least disturbance of the splint. In most of the cases I have left the splint in through the whole healing process. If there is any soiling, it can easily be changed, but this only has to be done once. Should the stump suppurate, of course this method is not so applicable. I have now adopted it in a sufficient number of cases to feel sure of its use, and I hope surgeons will give it a trial. It is essential that the splint be broad, of a good length, and that the aperture be large; also the fixing to the stump must be carefully executed.

MEMORANDA:
MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

A CASE OF SODIUM SALICYLATE POISONING.

Miss B., on December 26th, 1899, complained of feeling "bilious," and at night she was feverish and had a slight cough. When I saw her at 9 P.M. her temperature was 99.2° , her pulse 88, her tongue was coated, the breath sounds were harsh over the front of the chest, but there were no adventitious sounds. Her head and limbs ached, and she was evidently having "her annual attack of influenza." I gave her some compound ipecacuanha powder, and on drinking some hot liquids she perspired freely. She was restless in the early morning and fancied she saw a face at the window, but had no other mental disturbance.

On December 27th her pulse and temperature were normal, her tongue was cleaner, but the pains in the limbs were more marked and the cough more troublesome. She remained in bed, and was given a mixture containing sodium salicylate in 10-grain doses with carbonate of ammonium, to be taken every four hours. At 3.30 P.M., when she received the medicine, she purposely took a double dose; an hour afterwards she heard people, well known to her, making libellous remarks about her outside the bedroom. She made a complaint, but on investigation it was proved that the remarks were imaginary. She was left alone, and again heard the remarks and whispering; later she imagined she saw people outside creating a disturbance, and opened the window to send them away, but was persuaded to return to bed. Following this, ornaments in the room became distorted and converted into hideous faces; then she imagined she heard people singing, bands playing, bells ringing, and later the whole of the hallucinations were mixed up together without cessation. She had no sleep whatever.

On December 28th, I found her in a very excited state, but apart from the hallucinations she was perfectly sensible. She had got up and was performing her ordinary duties in a perfectly rational manner, and felt bodily well. Her temperature was normal; her pulse 100, full but soft; her eyes were staring, the pupils being normal; her tongue was clean and her urine scanty. She suspected the medicine as the cause of her hallucinations, and had taken none since 6 A.M. When she told me about the double dosage the bottle showed that she had taken about 80 gr. of sodium salicylate in fourteen hours. I stopped the medicine, told her to take plenty of warm drinks, and gave her some potassium bromide with aromatic spirit of ammonia. Her bowels were well moved with sulphate of magnesia; her urine was acid, contained plenty of urates and phosphates, but no albumen or blood, and gave a marked reaction with perchloride of iron. During the day, along with the other visions and noises, she saw rats, dogs, and cats, all more or less distorted and hideous. She heard, and repeated to bystanders, elaborate conversations taking place between two people on the telephone, although she was perfectly cognisant that there was no telephone in the room; people appeared to her and gave her perfectly rational messages which she would have obeyed had she not been prevented, and all this after I had told her what was the matter and she had made up her mind to ignore the "animals" until the drug had been eliminated, which I told her would be in about