several months; and in many of them it had been noticed for one, two, or more years. There were several of them in which the primary tumour was ulcerated, and several in which the axillary glands were filled with cancer.

It is much the same in public and in private practice. The operation is frequently performed solely for the sake of palliation. Nor can one be surprised that this is so. Cancer of the breast is very insidious in its onset, and is often discovered by accident. Neither the doctor nor the patient can bring themselves to believe that the little indolent, painless lump is really cancer; so valuable time is lost while the progress of the disease is being "watched."

Neither the patient nor the doctor has much faith in the value of an operation except as a palliative measure. The majority of medical men believe that "once cancer" means "always cancer," and, if the disease does not reappear in the breast or axilla, it will break out in some other part of the body. The discussion on Mr. Sheild's paper at the Royal Medical and Chirurgical Society during the course of last session revealed the fact that this opinion is shared by some operating surgeons of high standing and long experience. I was at first at a loss to understand why this should be so. I now attribute it chiefly to two causes—the imperfect adaptation of the operations to the disease, and the fact that the patients who have been treated have not been followed up after the operation. One surgeon said that the untraced cases would be found at Somerset House, and in the search for my patients I sent there to seek their names in the death registers. Many of them were found, but those which were not found there were hunted out with extraordinary skill and patience by my former house-surgeon, Mr. J. Preston Maxwell, to whom I am greatly indebted for assistance. It will be seen in the table of earlier results that only 3 of the 116 patients have not been traced, and all the Halsted cases have been kept under observation. I do not know whether we shall still discover the remaining 3 patients, but we have every reason to believe that one of them at least is living and engaged as a domestic servant.

I trust that the results I have been able to publish in this lecture, added to those of Mr. Watson Cheyne and of Professor Halsted, will do something to encourage both medical men and their patients to take a more hopeful view of the possibilities of operation against cancer of the breast. We shall then procure the cases at a much earlier period for operation, and shall, I am sure, obtain far better results.

REMARKS

ON THE

TREATMENT OF FRACTURE OF THE PATELLA BY THE OPEN METHOD AND SUTURE.

By SIR WILLIAM STOKES, F.R.C.S.I.,

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THERE are few operative measures that have been suggested and practised of late years that afford better evidence of the value of aseptic practice than the treatment of fracture of the patella by the "open method." To Lord Lister we are indebted for the introduction of this important addition to our surgical resources. Formerly, any open wound involving the knee-joint was looked upon—and with good reason—as one of the most serious accidents that could happen. In a large proportion of such cases acute suppurative inflammation with septic complications as a rule promptly set in, and ended either fatally, or in the necessity for amputation. In illustration of the good results that may be anticipated after the operation of suturing the patella by the open method, the following case affords a signally good example. It is the fifth case of the kind I have treated by this method, and although suppuration occurred in one, the result was eventually, as in all the others, satisfactory.

For the notes of my last case I am indebted to my clinical clerk, Mr. Henry H. Swanzy, jun.

J. L., aged 28, by occupation a messenger in a victualler's establishment, was admitted into the Meath Hospital under my care on April 18th, 1898, suffering from a fracture of his right patella. While carrying a side

of beef on his back down the paved yard of his employer he slipped and fell, and in doing so heard a "crack," doubtless produced by the bone lesion. On his admission into hospital almost immediately after the accident, the right knee was found to be enormously swollen, and on close examination the two fragments of the fractured bone could easily be determined separated by an interval of fully 1 inch. On being placed in bed, the limb was kept at first raised, a posterior well-padded splint adjusted, and a cold evaporating lotion applied. On the second day after the patient's admission into hospital (April 20th) I operated. A free vertical incision was made over the centre of the joint, and I found, on opening into it, that it was as usual occupied by several large blood clots. The bone fragments were widely separated, so much so that I feared a sufficient approximation of the fragments to bring them into accurate and immediate apposition would not be found possible. In this, however, I found subsequently that I was mistaken. Over the divided or broken surface of the upper fragment a large curtain-like flap of periosteum was found completely covering it, thus forming a fibrous barrier between both fragments. Its forcible detachment must have taken place close to the lower edge of the inferior fragment. This fibrous curtain was then excised, the blood clots removed, and the joint thoroughly irrigated with sterilised water. The fragments—the broken surfaces of which did not require to be refreshed, the fracture being so recent a one—were then sutured together with strong sterilised silk, this being effected rapidly and efficiently by my crochet suture needle. The bone was found very hard and dense—in truth, almost of the consistence of ivory. Two sutures were applied and the edges of the skin wound approximated by a continuous suture of fine sterilised silk. The limb was then fixed again on a posterior splint and kept elevated. Nothing noteworthy occurred during the convalescence of the patient. The wound healed without a trace of suppuration; the patient remained afebrile throughout, and on May 16th he left hospital for the convalescent home. On September 14th he returned to hospital to exhibit the knee. Its movements were found to be perfect, and the patient maintains that "it is a better knee than the other."

It will be observed that in the preceding case the variety of suture employed differed from that originally recommended by Lord Lister, which was silver wire. In both of my first two cases I employed wire sutures, but did not succeed in either of them in getting them encapsuled or quiescent. Though the results in both cases were eventually most favourable, the wires gave rise to irritation, and eventually had to be removed. I then determined to substitute sterilised strong silk, and in my later cases have employed it with most satisfactory results.

A good deal has been written of late, notably by Mr. Arthur Barker, in reference to the advantages derived from opening the joint, not by a direct vertical central incision, but by an oval flap, the convexity of which is directed upwards, thus avoiding a central cicatrix over the patella. The flap method has also been advocated by Dr. Ball, the convexity in his cases being, I believe, in the opposite direction. I think, however, the alleged advantages of such methods are much over-estimated, as in none of my cases have I found that the existence of the central cicatrix has been attended with any inconvenience to the patient. In kneeling it must be remembered that the pressure is not so much on the patella as on the tubercle of the tibia below the cicatrix.

Notwithstanding the good results obtained by Mr. Barker, the method of suture advocated by him of passing a wire behind both fragments does not commend itself to me, as I cannot but think that the permanent presence of a foreign body in the knee-joint must be a continual source of peril. None of the methods of subcutaneous suture either appear to me desirable for two reasons, first, because no provision can be made for clearing the joint of blood clots; and, secondly, if, as I believe is usually the case, a periosteal curtain intervenes between the fragments—a condition of things which was conspicuous in the case recorded above—no means exists by any method of subcutaneous suture for bringing the broken fragments into accurate and immediate apposition. I believe the open method of suture should be adopted in all cases of fractured patella, recent as well as old, unless some distinct contra-indication for any operative procedure exists. The operation is, of course, a serious one, and should not, I think, be undertaken by any surgeon unless he is constantly engaged in the performance of surgical operations carried out with the strictest and most careful antiseptic and aseptic precautions.

The objections that I think may be urged against the subcutaneous methods and retropatellar suture—the latter suggested originally, I believe, by the late Professor Volkmann—are:

1. The impossibility of thoroughly freeing the joint of all blood clots, an objection equally applicable to the circumferential as well as the retropatellar methods of suture.
2. The inability to deal with the fibrous curtain which so frequently has been observed to exist between the broken

fragments, and which, if left, would effectually prevent osseous union taking place between the fragments.

3. The dangers inseparable from punctured wounds of the deeper structures of the joint being made in passing a sharp-pointed curved needle between the condyles and the articular surface of the patella.

4. The undoubted danger that must attend leaving a foreign body permanently in the interior of the knee-joint.

I see no reason to deviate from the original suggestion of making a vertical incision in preference to making a flap. It is the simplest method, and, as Professor Annandale has recently urged, simplicity is what we should aim at in all our operative measures.

It has also been stated that in drilling the bones for the introduction of the sutures the bone fragments are apt to split. But when such a calamity occurs it must, I think, be due to the employment of a faulty instrument or to a want of ordinary dexterity on the part of the operator. A bayonet-pointed drill should be employed. Although I can only speak from an experience of the operation based on five cases, I may say that in none of them have I seen this mishap occur.

In future I purpose using a drill worked by an electro-motor, which I have recently employed with very satisfactory results in suturing the bones in a case of resection of the knee. By the employment of this method of drilling and suturing it is hard to see how splitting could occur, as the drill passes through the bone so smoothly, swiftly, and easily.

The circumferential patellary suture, whether carried out by a subcutaneous or an open method, appears to me to be open to the objection of probably interfering by pressure with the nutrition of the bone. The external circumferential pressure, such as is used in Lonsdale's apparatus, undoubtedly acts injuriously in that way.

REMARKS ON THE VALUE OF STEREOSCOPIC PHOTOGRAPHY AND SKIAGRAPHY: RECORDS OF CLINICAL AND PATHOLOGICAL APPEARANCES.

[WITH STEREOSCOPIC ILLUSTRATIONS.]

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THE ADVANTAGES OF STEREOSCOPIC PICTURES.

THE advantages of stereoscopic photography for the purpose of recording and illustrating medical and scientific work is very great. For years past I have used it with the greatest benefit to myself and to students. Once its advantages over the ordinary single picture are realised, it appears certain that many illustrations in medical journals and in scientific or other periodicals—even in books—will be reproduced stereoscopically. The observer will be able to use some simple form of stereoscope (similar to a pair of pince-nez) for examining the illustration, and will at once see it in perfect relief. (See Fig. 1.)

STEREOSCOPIC PHOTOGRAPHY.

In order to take stereoscopic photographs, the first requisite is a camera with twin lenses of $3\frac{1}{2}$ to 6-inch focus, which should be mounted with their centres $2\frac{1}{2}$ inches apart. It would be out of place here to enter into details of the method of taking these photographs and mounting the prints. The result to be aimed at is to obtain a picture in relief which shall be as far as possible a correct representation of the original. This can be done provided that the lenses in the stereoscope be of the same focal length as the lenses in the camera with which the photograph was taken. The observer, of course, must possess binocular vision.

The most convenient instrument for viewing ordinary stereoscopic photographs is some form of lenticular stereoscope, and there are a great variety of these to be had. The ordinary cheap forms do quite well, but it is an advantage to have one in which the distance between the two eyepieces can be altered to suit different observers.

If colour be desirable, the writer has succeeded in the following way: Two albumen prints were mounted correctly on

a thin sheet of glass (stereoscopic size), and then coloured by the "chrysoleum process." Excellent results can thus be obtained.

STEREOSCOPIC SKIAGRAPHY.

It is only necessary to look at two good stereoscopic skiagraphs in a Wheatstone's stereoscope to realise at once how thoroughly practical and important this method is in surgical work. A single skiagraph is often confusing, if not misleading, but with two properly taken and viewed in a stereoscope, the picture stands out in true relief, and shows clearly the relation of the parts.

I will now describe the method and apparatus¹ I employ. It is that which up to the present time I have found to be the best.

1. *The Crookes's Tube.*—A tube giving the best possible definition, and which will at the same time allow of the shortest exposures, is essential. The tube with an osmium anode (introduced by the writer) answers these requirements well. Mr. Cossar has made these tubes admirably, but unfortunately the supply of pure solid osmium seems to be exhausted. It can be obtained in fine powder, but in small lumps it cannot now be procured, and no one seems to care to make any more in the solid form.

2. *Horizontal Bar.*—Two skiagraphs must be taken from two different points of view. The Crookes's tube after one skiagraph has been taken must be displaced and then another skiagraph taken. I use the horizontal bar of my localising apparatus (described and illustrated in the BRITISH MEDICAL JOURNAL of January 1st, 1898). Any desired displacement, of course, may be given to the tube, but it seems best to displace it about 6 cm., which may roughly be taken as the distance between our eyes. The two skiagraphs thus taken from two different points of view, and the necessary marks made on the patient's skin to guide the surgeon, give data sufficient to localise the position of any foreign body or other part accurately; while the same skiagraphs give a stereoscopic picture enabling the surgeon to have a correct view of the parts in relief. This method, if correctly carried out, is so accurate and complete that the surgeon can have little cause for complaint.

3. *Changing Box.*—This consists of a stout frame of any desired size over which is tightly stretched some calf skin. This is stout enough to support a considerable weight and at the same time is thin and quite transparent to x rays. The photographic plate, wrapt in black paper in the usual way, is placed beneath the skin and brought up against it, and supported there by some suitable arrangement. Fig. 3 shows the apparatus, and if it be viewed with a stereoscope its construction will be readily seen and understood. The horizontal bar shows the tube holder displaced to one side, and the clip on the right side is the limit to which it must be displaced for the second photograph. A wire is seen stretched on the nearer end of the box, and the bar is arranged parallel to this wire. This leaves a white line at the edge of each negative, and this enables the photographs to be mounted correctly in register. A board is seen below, and upon it will be noted the photographic plate wrapt in the black paper. By means of a lever worked by a screw at the far end of the box, not visible in the illustration, this board is raised so that the plate is brought firmly up against the calf skin. The part of the patient to be skiagraphed is placed upon the top of the box. It will be easily seen how two photographs can be taken on different plates without disturbing the position of the patient; we are thus sure of obtaining correct stereoscopic pictures. This method can, of course, be carried out by having a table made with calf skin covering a space cut out of the top; or, again, an operating table can have a window, so to speak, covered by the calf skin upon which the patient can lie. This has the further advantage that it will allow a Crookes's tube to be placed below this part of the table, so that the patient could be examined by a fluorescent screen while lying on the couch.

4. *Wheatstone's Stereoscope.*—Two plane mirrors, about 4 inches square, are so fixed on a vertical support that their backs form an angle of 90° with each other. When the observer puts his face close to the edge where the mirrors meet, so that this edge lies vertically between his eyes, it follows that his right eye can only see what is reflected in the right mirror, while his left eye can only see what is reflected in the left mirror. Now, if the two skiagraphs,