FIFTY CONSECUTIVE CASES OF EXCISION OF KNEE, WITH A HISTORY OF AFTER RESULTS IN MANY OF THE CASES.

By R. F. TOBIN, F.R.C.S. ;
Surgeon to St. Vincent's Hospital, Dublin.

[Read in the Section of Surgery, February 26, 1904.]

I ASK leave to lay before you an account of fifty consecutive cases of excision of the knee-joint performed by me in St. Vincent's Hospital, between 1894 and present date. Of these one died from the combined effects of sepsis and shock; forty-nine walked out of the hospital with useful limbs.

Wishing to know the after results of these operations, I addressed last October to each patient who had had two years' experience of the new conditions forty-one in all the following questions on a tabular form, and an addressed envelope for reply:—

1. Is your leg operated on by me at St. Vincent's Hospital on-----free from pain?
2. Is it straight?
3. Is there any discharge from it?
4. Can you walk upon it, and if so, say whether *well*, fairly, or badly?
5. What is the condition of your general health?

To forty-one letters sent out I received thirty-two answers. Of these twenty-four (75 per cent.) described themselves as perfectly cured and walking well. Seven mentioned some short-coming, which, although not bad enough to make them wish for further treatment, prevented their inclusion in the list of perfectly cured. Only one

was found to be doing badly. In this instance the limb, subsequent to the patient's discharge from hospital, had become bent, and suppuration had set in. As regards the eight who did not reply, second-hand news I received was favourable. For instance, two, I was told, had emigrated to America; others had got employment as domestic servants and had left home. Taking, then, the replies received as an indication of results, we find that of thirty-two patients, twenty-four, two years after the operation, described themselves as in every way well; seven had some slight short-coming; one was not progressing favourably.

Before I pass from the question of results, may I submit for inspection the answers received, and remind you that at our last meeting but one I showed all the cases of two years' standing that happened to be in this neighbourhood (ten in all) and that without exception they had good useful limbs.

These results, I must confess, are much better than what I obtained antecedent to the date I have mentioned; and as I attribute them to an operative procedure then introduced by me, I shall take the liberty of describing it to you.

It is distinctive only in the method of keeping the bones in apposition. The splint I employ is that introduced by Sir W. Thomson. I have it fitted to the sound limb, and make the patient wear it thereon, so as to test it, for the twenty-four hours preceding the operation. In re-secting the bones I employ a broad-bladed saw. Two well-fitting, smooth surfaces having been so obtained, and all trace of diseased tissue having been removed, especially from the posterior aspect of the joint, this being a locality likely to escape notice and very inaccessible later on, I force, with the help of a brad-awl, a stout iron pin, about five inches long, into the tibia just below its tubercle, and in such a

direction as to make its point appear a little above the centre of the sawn surface. When it does so appear, I withdraw it and leave it flush. So much being done, I put the bones in apposition and apply the posterior splint, using plaster of Paris bandages. By sight and touch I ascertain whether the approximation is good. If it is not, I seek out and correct the defect; if it is, I drive home the dowel-pin, already in position, some two inches or so into the femur. This prevents lateral displacement. Now to prevent the bones being drawn apart—a thing likely to happen when the patient is pulled up in bed—calipers of the pattern I hand you are driven, one on each side, into holes bored in the condyles of the femur, or if much of the

condyles have been removed, into the bone above, an inch or so from the sawn surface, and into corresponding holes in the tibia. By means of the approximating screws the bones can now be clamped firmly together. The closing of the wound, insertion of drains, and application of the

anterior splint concludes the operation. The instrument to which I have given the name of calipers is a tool known by carpenters as a "spring divider," with the legs so bent that they are parallel when in position. The specimen which I hand round has been resected in the *post-mortem* room and the bones clamped together in the manner described. You see that a very secure fixation has been thus obtained.

The advantages claimed for this fixation by calipers, which may be likened to Malgaigne's hooks applied to bone, is that they keep the parts in better apposition than any other means in use. Let us take the specimen before us and study it with a mechanical eye.

I say that the parts are here better secured than they would be, say, by a few wire sutures: 1st. The points of the calipers are inserted in a part of the bone that is hard. 2nd. The adapting pressure is applied exactly in the required direction and only in that direction. 3rd. You can, by a turn of the screw, increase the pressure at will. 4th. You can remove the pressure as readily as you apply it. (I generally remove the calipers on the seventh day and the dowel on the eighth.)

This *a priori* reasoning as to the excellence of the method is, I am glad to say, fully borne out in the results obtained by its use. It is my custom to take off the splint on the twentieth day, and any Vincent's men present will bear me out when I say that almost invariably the patient is found able, three weeks after operation, to lift the leg from the bed, the parts below the knee being unsupported. Children on whom I have operated have been able to do this after a fortnight. My present position as to the time of union is that I do not know at how early a period in an ideal case movement might be tried. The question is, given two broad, flat, well-nourished surfaces of bone kept

in accurate aseptic apposition, how long would it take for the establishment of firm union between them?

As regards the treatment of cases when allowed up, I think that every patient should, when walking, wear a support till the ossification of the epiphysis is complete. When one pictures to oneself a bone as long as the femur and tibia combined, and in the centre of that bone two points as weak as are epiphyses in the young, the necessity of some support is evident. To cases over twenty I have never given any sort of appliance on their being discharged, and their subsequent histories show that it would have been a mistake to have done so.