

AN ADDRESS
ON
EXCISION OF THE KNEE-JOINT IN MIDDLE LIFE:
JAMMING THE BONES.

Delivered before the Southern Branch of the British Medical Association.

By JOHN WARD COUSINS, M.D., F.R.C.S.,
President of the Council of the British Medical Association;
Senior Surgeon to the Royal Portsmouth Hospital.

GENTLEMEN.—The three patients I am going to show you to-day were all admitted under my care into the Royal Portsmouth Hospital for amputation, and I had to practise a great deal of persuasion before they would permit me to make any effort to save their limbs. The first patient (Fig. 1) was 39 years of age at the time of the operation, the second was 47 years (Fig. 2), and the third was in his 51st year (Figs. 3 and 4). Now excision in middle life is not generally con-

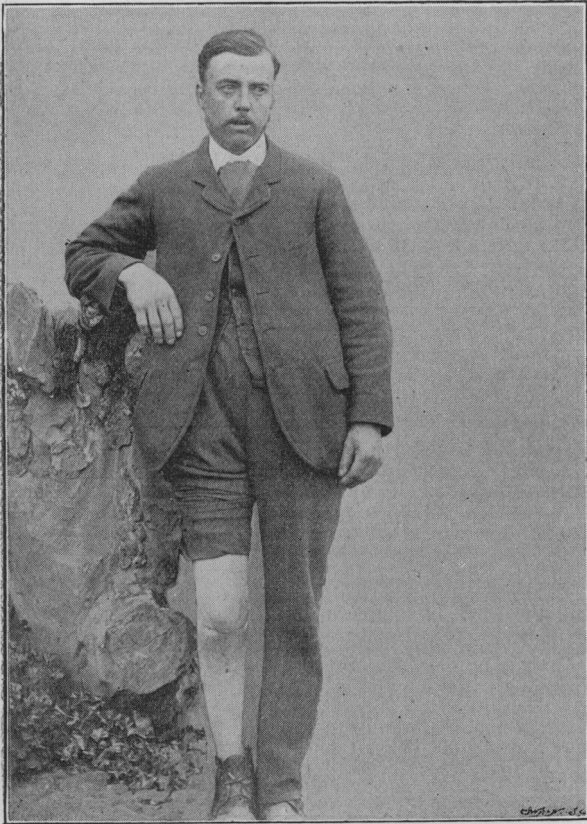


Fig. 1.—F. Excision, 1892. Patient 39 years of age.

sidered a very satisfactory operation, as the reparative power of the system is seldom at this critical period equal to the strain of prolonged treatment and wearisome confinement. In too many cases of chronic joint disease the health has been seriously impaired by prolonged pain and suppuration, and the vital powers reduced by visceral changes or constitutional disorder. The operation is always one of considerable severity, and demands daily watching and treatment extended over several months.

I shall now read to you a short history of each case:

CASE I.—W. F., aged 39, was admitted into the Royal Portsmouth Hospital in January, 1892. He stated that his leg was quite useless to him, and he wished to have it removed as soon as possible. The disease was of long standing. The joint was very swollen and tender, and he was quite unable to stand without the aid of crutches. There was a sinus discharging offensive pus over the outer condyle, and this was

laid freely open, and general means employed to improve the constitutional condition of the patient. On February 24th excision was performed. On opening the joint the synovial membrane and bones were found extensively diseased, and it was necessary to remove with the gouge the external condyle of the femur, and also to excavate freely the articulating surface of the tibia. About two months and a half after the operation a plaster-of-Paris splint was fitted to the leg, and he was allowed to walk about with the assistance of a crutch and stick. During the past three years he has been engaged as a porter, and has enjoyed excellent health.

CASE II.—E. J., aged 47, a plasterer, was admitted in May, 1893. He had suffered from disease of the knee for thirty-five years, and had previously been under treatment in the institution. The disorder had been quiescent for a long period, and he was able to follow his trade. Some months before his admission, however, he had a severe fall, and since that time he had been quite unable to move from the recumbent position. After four weeks' treatment in the hospital excision was performed on June 14th. The condyles of the femur were

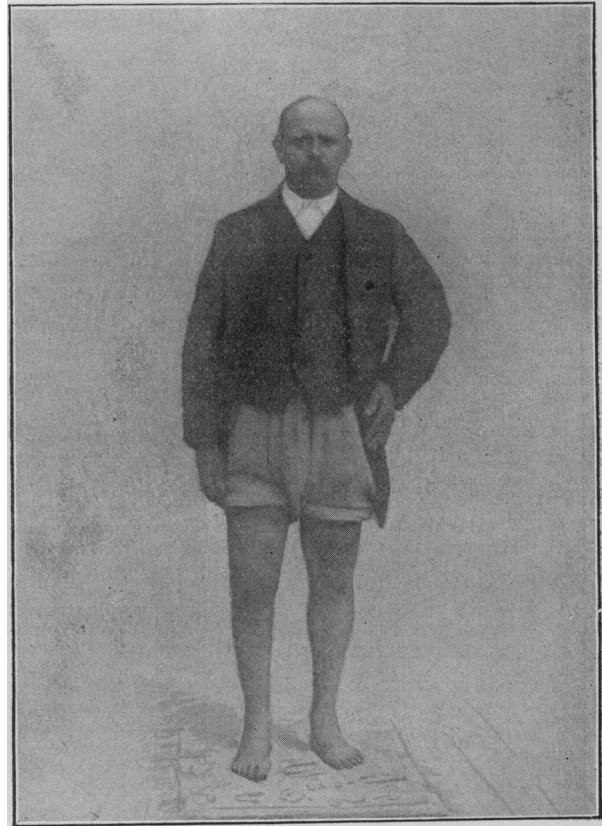


Fig. 2.—J. Excision, 1893. Patient 47 years of age.

extensively diseased, and were converted into cavities containing thick purulent deposit and necrotic masses. The synovial membrane had everywhere undergone pulpy degeneration. On October 3rd the patient was discharged in good health, and quite able to get about with the aid of crutches. For two years he has now pursued his old occupation, and he states that he can ascend a ladder, and work on a scaffold without fear or inconvenience.

CASE III.—J. L., aged 50, a plasterer, was admitted into the Royal Portsmouth Hospital in September, 1893, for chronic synovitis and ankylosis of the right knee-joint of some three years' duration. He was unable to stand or walk without crutches. The joint was much enlarged and very painful. He attributed the disease to a severe fall from a scaffold. The first treatment adopted was the free application of the thermo-cautery. On October 3rd he was discharged much relieved in every respect. He was readmitted on September

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11th, 1894, with all the joint symptoms greatly aggravated, and he was then treated daily with the local application of hot air, at the high temperature of 250°. These baths appeared to relieve the pain, but they were not followed by any real benefit. Excision was performed on November 28th, 1894. The joint was found extensively diseased, and a hole had to be drilled on the side of the tibia for the purpose of draining a large cavity in the cancellous structure. Both condyles were also freely gouged. The bones united well, but the wound closed slowly. He was discharged on April 2nd, 1895. Since then he has completely recovered, and is now daily engaged in his occupation.

SELECTION OF CASES FAVOURABLE FOR OPERATION.

Now excision, I need hardly remind you, can only be successfully performed under fairly favourable conditions, and every case ought to be carefully studied before the operation is decided upon. The existence of disease in other organs, and especially disorders of the excretory and nervous systems, are generally strong contraindications. Age, too, is a matter

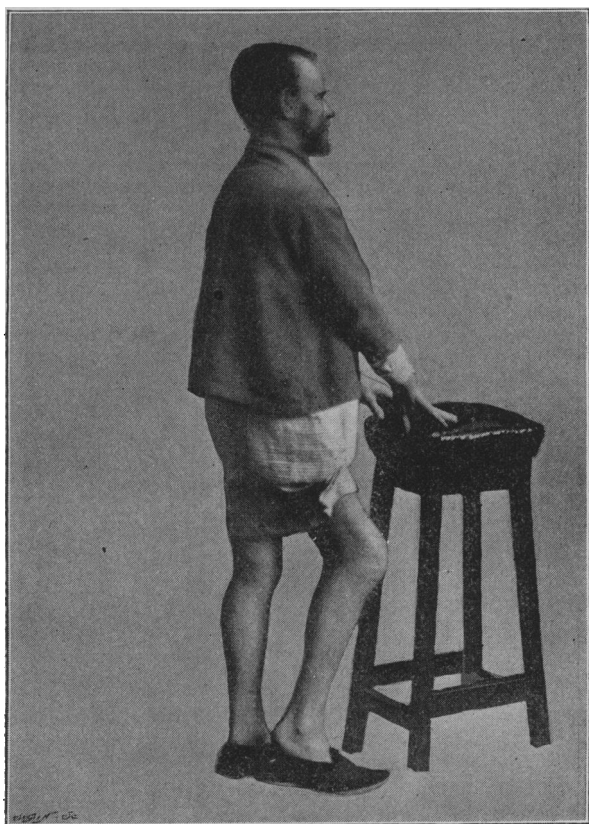


Fig. 3.—L. Patient, aged 50, before operation.

for serious consideration. Neither the very young nor the aged can be regarded as suitable subjects, but I trust the cases I have exhibited to-day will at least prove that sometimes in middle life the operation can be undertaken with a fair prospect of a good result.

I have never attempted excision in acute disease of the knee-joint, for in the midst of local inflammation and constitutional irritation, the risks of attempting such a severe proceeding are very great; and under these circumstances, whenever surgical interference is necessary, amputation affords the only hope of success. I select only chronic cases of articular disease in which destructive changes have in all probability been fully established within the joint. Sometimes it is impossible to arrive at any conclusion as to the chance of successful interference without opening the articulation; but whenever exploration proves that the extent of the morbid changes is too great for their complete removal, with a fair prospect of retaining a useful limb, excision can

readily be converted into amputation. I have no doubt that skiagraphy will in the near future be a great aid in the investigation of many doubtful cases.

Extensive disease of the soft parts around the affected joint always prolongs the process of repair; still, I do not consider that even this serious complication is sufficient to condemn the limb, provided the state of the bones and the other features of the case are not unfavourable for excision. Figs. 5 and 6 are taken from photographs of a boy admitted into the hospital in the year 1889. The disease of the knee-joint commenced when he was only 3 years of age, and he had never been able to walk. At the time of the operation the soft parts were riddled with sinuses, the tibia was badly dislocated backwards, and the articulating surfaces of the bones contained many cavities filled with caseous matter. Fig. 6 has been taken from a recent photograph. The patient is now an apprentice, and can walk easily many miles every day.

THE BEST AGE FOR EXCISION.

Excision is at all times a severe strain on the reparative

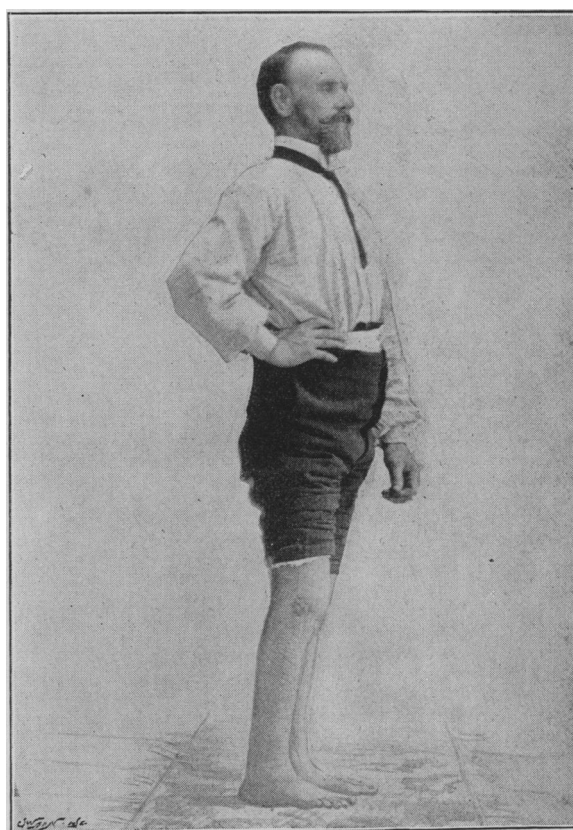


Fig. 4.—L. Patient two years after operation.

powers of the system. The operation is generally considered unsuitable for persons past middle age; also in very young children. Under 5 years, the early stage of the ossific process, the prolonged after-treatment and the severe restraint seriously reduce the chances of a favourable result. Excision is more hopeful after the age of 10, but I may remind you that the ossification of the lower extremity of the femur is not generally complete until after the age of 20, and also that the upper epiphysis of the tibia only joins the shaft between the 18th and 25th year. The best period of life is certainly, then, between the 15th and 30th year, for perfect bony ankylosis is more readily obtained when the various centres of ossification are coalescing, and the bones of the articulation have nearly or quite reached their complete development.

Now, I think that excision in children does interfere with the future growth of the limb. Many surgeons, however, entertain a different opinion on this question. Mr. Barwell

says that arrest of growth is just as likely to occur as the result of inflammation. Dr. Boeckel,¹ of Strasbourg, states that "the shortening of the limb is less due to injury of the epiphysal cartilages than to disease of the limb owing to pain and muscular atrophy." It is, indeed, a matter of common observation that osteitis involving the epiphyses, even when slight and insidious, does tend to check the growth of bone, and that injury and disease of the long bones

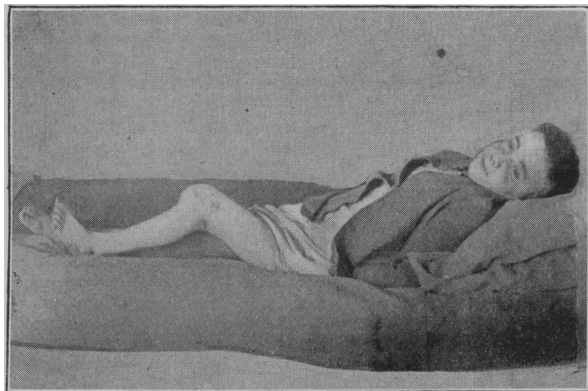


Fig. 5.—F. L. Chronic disease of knee. Patient aged 9 years.

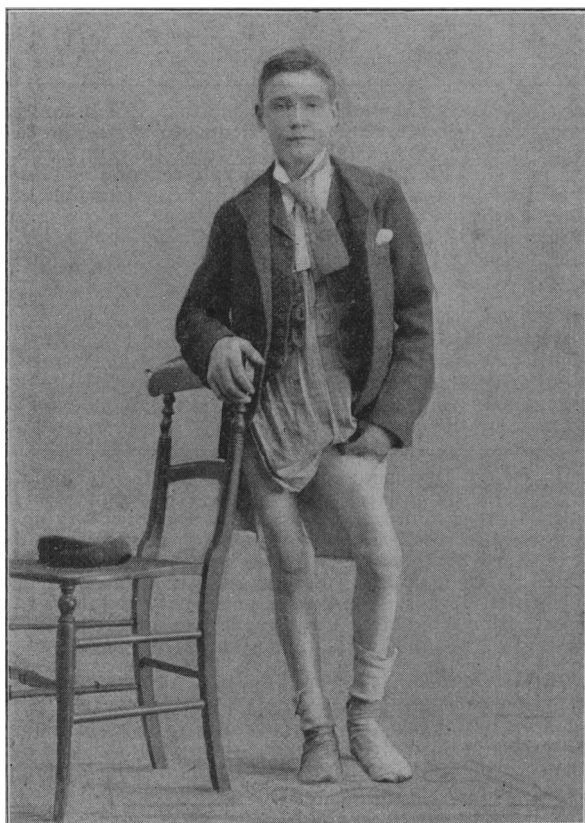


Fig. 6.—F. L. Photograph of same patient six years after operation.

in young children are followed by atrophic changes and defective nutrition. Surely, then, these changes must be aggravated by excision of the knee-joint, in which the epiphyses of both the femur and tibia are at least partially removed. It is in consequence of the serious arrest of growth from these two causes—recurrent osteitis and partial excision of the epiphyses—that resection of the knee-joint in young children cannot be lightly undertaken. The bones must be

spared as much as possible and the gouge employed instead of the saw, otherwise the ossific process will be arrested, and, as the height of the patient increases, the limb will become practically useless.

JAMMING THE BONES.

Since the revival of excision of the knee-joint in 1850 by Sir W. Fergusson the operation has been extensively performed and its details variously modified. My method is in some respects different from that of other surgeons, and I shall now briefly describe it:

After the application of the elastic bandage, the joint is opened by a circular incision with the convexity downwards, the ligamentum patellæ is divided, and then the crucial ligaments just so far as to admit the forcible flexion of the joint. The bones are then divided beyond their epiphysal junctions,

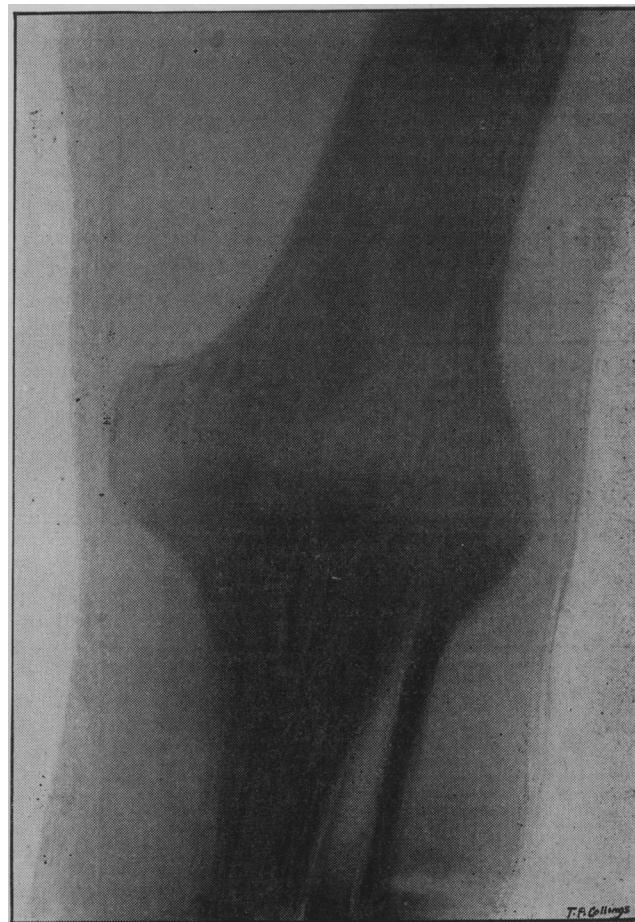


Fig. 7.—This photograph is the reproduction of a skiagraph by Mr. Sydney Rowland.

for the risk of the operation is increased the nearer the section is made to the medullary canal. In excising the articular surfaces it is always my purpose to remove as little bone as possible, and to clean out necrotic cavities with the gouge and spoon, as the inflamed cancellous tissue around them soon undergoes repair. The cut surfaces are not now merely adjusted in good apposition, but forcibly jammed together.

The success of the operation is much promoted by this simple method, as the immobility of the bones is secured and the rapidity of their union greatly assisted. The whole of the diseased synovial membrane is dissected away, and in some parts of the joint scissors, with short blades and sharply-curved on the flat, are very convenient instruments. I never use any sort of peg to hold the bones in position, but rely wholly upon jamming them together, with a few strong catgut sutures introduced between the periosteal surfaces

¹ Ashurst's *International Encyclopedia of Surgery*.

Table of Fourteen Cases of Excision under Observation since the Date of Operation.

No.	Initials.	Age.	Sex.	Disease.	Operation.	Time under Treatment.	Result.	Remarks.
1	G. S.	10	M.	Chronic disease of knee-joint	Excision 1879	4 months	Cured	Examined ten years after operation; health good; height 5 ft. 3 in., shortening of limb about 1½ inch.
2	A. B.	16	F.	Chronic disease of knee-joint; limb useless and painful	Excision 1882	4½ months	Cured	Examined six months ago; shortening ½ inch; scarcely limps in walking.
3	E. M.	14	F.	Chronic disease of knee-joint; caries of shaft of tibia	Excision 1882	7 months	Cured	Seen a few years ago; she was engaged as a nurse; tibia was slightly curved outwards.
4	M. A. W.	30	F.	Disease of knee-joint; limb very painful	Excision 1883	6 months	Cured	Patient had syphilis several years before operation; at present time very little shortening; health good.
5	M. W.	19	F.	Chronic disease of knee-joint; very large and painful	Excision 1885	7 months	Cured	Patient examined recently; shortening ¾ inch; health good; scarcely limps in walking.
6	C. F.	10	M.	Extensive tuberculous disease of bones and joint, with many sinuses, and dislocation of tibia	Excision 1886	5 months	Cured	Patient very troublesome during convalescence; can now walk twenty miles without difficulty; height 5 ft. 4 in.; shortening 1½ inch.
7	F. L.	11	M.	Extensive disease of bones and joint; tibia dislocated backwards; soft part around extensively involved	Excision 1890	10 months	Cured	Disease of knee-joint commenced during infancy; patient examined 1896; health good; height 5 ft. 4 in.; shortening 1½ inch; limb slightly flexed.
8	E. G.	13	F.	Chronic disease of knee; old sinuses; limb useless and painful	Excision 1885	4 months	Cured	Patient in good health, married, and has had one child; shortening ½ inch.
9	F. M.	9	F.	Chronic disease of knee-joint; limb useless	Excision	5 months	Amputation	Patient progressed favourably for two months after the operation, then osteitis and septic fever occurred. She rapidly recovered after amputation.
10	W. F.	39	M.	Chronic disease of knee-joint with old sinuses	Excision 1892	5 months	Cured	Patient examined 1896; health good; shortening ½ inch; employed daily as porter.
11	M. D.	30	F.	Chronic disease of knee-joint; limb painful and useless	Excision 1886	6 months	Cured	Married; health good; limb sound.
12	E. J.	47	M.	Chronic disease of knee-joint	Excision 1892	5 months	Cured	Patient examined 1896; health good; working daily at his trade; limb sound.
13	J. L.	50	M.	Chronic disease of knee-joint of years' standing; limb useless	Excision 1894	5 months	Cured	Now in good health; works daily as a plasterer; scarcely any shortening.
14	L. C.	14	F.	Chronic disease of knee-joint from early life	Excision 1894	4 months	Cured	Shortening ½ inch; examined 1896; limb sound; height 5 ft. 5 in.; health much improved since operation.

and the cut ends of the ligamentum patellæ. I never remove more of the patella than is absolutely necessary. When it is only slightly involved the carious parts can be readily cleaned out with a spoon. Sometimes the extent of the disease necessitates the complete removal of the articular surface, and also the concave surface on the femur upon which the patella glides. The bones must then be accurately fitted together, for their union imparts much strength and solidity to the limb.

At this stage of the operation the elastic bandage is removed, and the raw surfaces are freely irrigated with hot water. Sponges are then tied round the joint, and the limb is carefully secured on the splint. I always use a straight-back splint fitted with an adjustable foot piece, and a strong

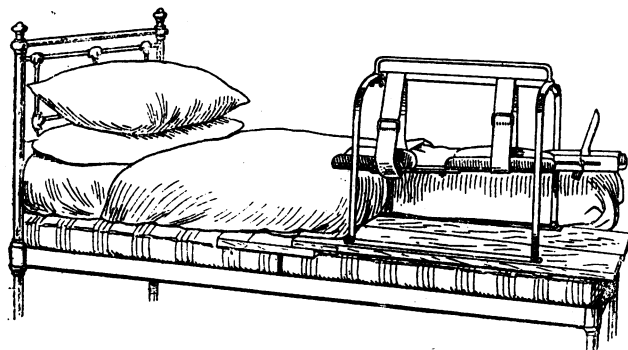


Fig. 8.—Excision bed, with the mattress cut away and the splint in position.

plate of metal, 2 inches in breadth, behind the knee-joint. The foot and leg are first of all protected with cotton wool and flannel, and then a plaster bandage is applied to fix the limb on the splint as far as the tuberosity of the tibia. The thigh is then secured in the same manner, the sponges are removed, the wound sutured and dressed with pads of wood wool and gauze. I always take care that the knee is not actually in contact with the splint, because by attending to this little detail the bony surfaces can be accurately fixed and compressed firmly together without causing pain, and a pad of antiseptic material can be adjusted behind the head

of the tibia. Bony ankylosis is not usually complete for about four or six months, and the patient must not attempt to sit up until firm union has taken place and the limb can be freely moved. Fig. 7 is a photograph reproduced from a skiagraph which was taken ten months after excision. The patient is referred to in the above table, see Case No. 14.

I am indebted to my colleague, Mr. C. H. Newby, for the excellent photographs of my cases which are referred to in this address.

In conclusion, the after-treatment is always tedious and requires the special attention of the surgeon. I have my patients put into a light and airy room, and placed on a special bed (Fig. 8). Half the lower end of the mattress has been cut away for the purpose of securely swinging the limb, and rendering the dressing easy. The thigh piece of the splint rests on the edge of the mattress.

INCREASE OF DRINKING IN FRANCE.—In 1869 there were in all France 365,875 places licensed for the sale of alcoholic liquors. In 1892 there were 417,558 liquor shops, leaving out the 27,000 saloons. This is an average of one such establishment to every 80 inhabitants. It ought to be remembered that on July 17th, 1880, the French Parliament abrogated the law by which liquor shops were previously required to be licensed. Since that time any Frenchman or Frenchwoman who has never received a disgraceful punishment by judicial process has been free to open such a shop on payment of the tax on all retail businesses. In 1830 the annual consumption of alcohol *per capita* was nearly a quart. In 1860 it had doubled, in 1880 it reached 3½ quarts, till in 1890 it amounted to one gallon of pure alcohol for each man, woman, and child in France. In addition there is a large quantity of brandy brought into the hands of consumers fraudulently.

At the quarterly meeting of directors of the Society for the Relief of the Widows and Orphans of Medical Men on July 8th, the President, Sir James Paget, in the chair, it was resolved to distribute £1,256 among 53 widows, 12 orphans, and the 5 recipients of the Copeland Fund. The expenses of the quarter amounted to £45. The deaths of two members were reported, and two new members were elected. A fresh application for a grant from the Copeland Fund was considered and assistance given. A further sum of £928 has been received under the will of Miss Emma Carpue, making a total of £4,000.