Description of a splint, (with plates and cases) : invented for the treatment of fractured limbs / by James M'Intyre.

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DESCRIPTION

OF

A SPLINT,

(WITH PLATES AND CASES,)

INVENTED

FOR THE

TREATMENT OF FRACTURED LIMBS.

BY

JAMES M'INTYRE,
SURGEON, NEWCASTLE UPON TYNE.

Newcastle: Printed by
T. & J. Hodgson, Union-street.

TO

THE SOCIETY

FOR THE

ENCOURAGEMENT OF ARTS, MANUFACTURES, AND COMMERCE.

My Lords and Gentlemen,

I take the liberty of calling your attention to a Splint I have invented, for the greater security of fractured limbs, and the abbreviation of the long, and frequently injurious, confinement consequent upon the usual modes of treatment. I have applied this Splint, during the last five years, to nearly two hundred cases, many of which were of the most severe description, without the loss of a single life, and without any confinement to bed, excepting a few

cases, where constitutional derangement required it. My patients have not only been thus relieved from a confinement to the supine posture of six or seven week's duration, but they have been able to resume their former avocations in little more than half the usual period, with an invariable freedom from that deformity of limbs so frequently the permanent result of the usual practice.

I have inclosed Cases illustrative and confirmatory of the above statements, and also testimonials, I have been honoured with, by Sir Astley Cooper and other eminent Surgeons.

I am,

My Lords and Gentlemen,

Your very obedient

Humble Servant,

JAMES M'INTYRE.

Newcastle, March 10, 1825.

Testimonials.

I have examined the Splint which has been invented by Mr. M'Intyre, and think it highly ingenious, and well calculated to diminish the sufferings and to lessen the confinement of those who have had the misfortune to fracture their limbs.

(Signed) ASTLEY COOPER.

May 21st, 1823.

Royal Infirmary, Edinburgh, Jan. 15th, 1824.

We have examined a Splint for the treatment of fractures of the thigh or leg, submitted to us by Mr. M'Intire, of Newcastle. From the security which it gives to the injured limb, while at the same time it obviates the necessity of protracted confinement to bed, we are of opinion that it is well calculated to promote the comfort and expedite the cure of patients with fractures of the inferior extremity.

(Signed) JAS. RUSSELL,
ROBT. ALLAN,
GEO. BALLINGAL.

I am of opinion that the apparatus of Mr. M'Intyre, for fracture of the bones of the lower extremity, is constructed on correct principles, is very ingenious, and must prove of practical benefit.

(Signed) CHARLES BELL.

Soho-Square, 23d October, 1824.

I have examined the Splint for fractures of the lower limbs, invented by Mr. M'Intyre and am of opinion that it is a very ingenious instrument and calculated to be very serviceable in the cases in which it is intended to be employed.

(Signed) B. C. BRODIE.

London, No. 16, *Saville Row,*
May 20th, 1823.

I have examined the Splint for fractures of the leg and thigh, which has been introduced by Mr. M'Intyre, and I think it extremely well adapted to its intended purposes, and likely to contribute essentially to the comfort of the patient.

(Signed) ROBT. KEATE.

London, Albemarle Street,
May 20th, 1823.

Mr. M'Intyre's Splint appears to me to be a very beautiful and simple contrivance—likely to relieve very much the sufferings of those who may have suffered severe injuries of the limbs and shorten their confinement. So much am I convinced of this, that I shall certainly employ it on the first opportunity.

(Signed) ROBT. LISTON.

Edinbro', Jan. 15th, 1824.

Newcastle, April 2nd, 1824.

I have examined the Splint invented by Mr. M'Intyre, of Newcastle, for fractured Limbs; and I am of opinion, that it will be peculiarly favourable for lessening the sufferings of seamen and soldiers, in ships, camps, or hospitals, in his Majesty's service, and I earnesty recommend its use to Surgeons of the navy and army.

(Signed) T. TROTTER, M. D.
Physician to the Fleet.

DESCRIPTION OF PLATE I.

Fig. 1st. Represents a fractured limb bandaged to the Splint.

A. Stay to secure the degree of flexion required, with rack and screw.

B. Brass Joint with rack and screw which may be used in place of the stay.

C. Convexity to admit the heel and preserve it from pressure

D. Foot board with slide and screws to adapt it to the length of the leg, and flexion of the ancle joint.

E. Sock with strap at the upper end to elevate or depress the lower portion of the limb, and preserve the heel from ulceration by continued pressure.

F. Cross-bar to steady the Splint.

Fig. 2. 3. & 4. The under convex surfaces of the three portions of which the Splint is formed.

2. Upper thigh-piece, with a buckle or brass nob on each side to attach it by straps to the thigh and waist, and a pe forated slide to regulate the length.

3. Lower portion of the thigh-piece with nearly one-half of its length made to slide into a sheath of brass or copper lining the concave surface of the upper thigh-piece.

G. Plate with screw to fix the perforated slide.

H. Projections resembling the condyles of the femor, and forming part of the joint.

4. The leg-piece with remaining part of the joint.

Fig. 5. A. A double male and female screw reversed at one end, to secure any degree of flexion.

B. A plate with screw to fix the slide C. at any distance.

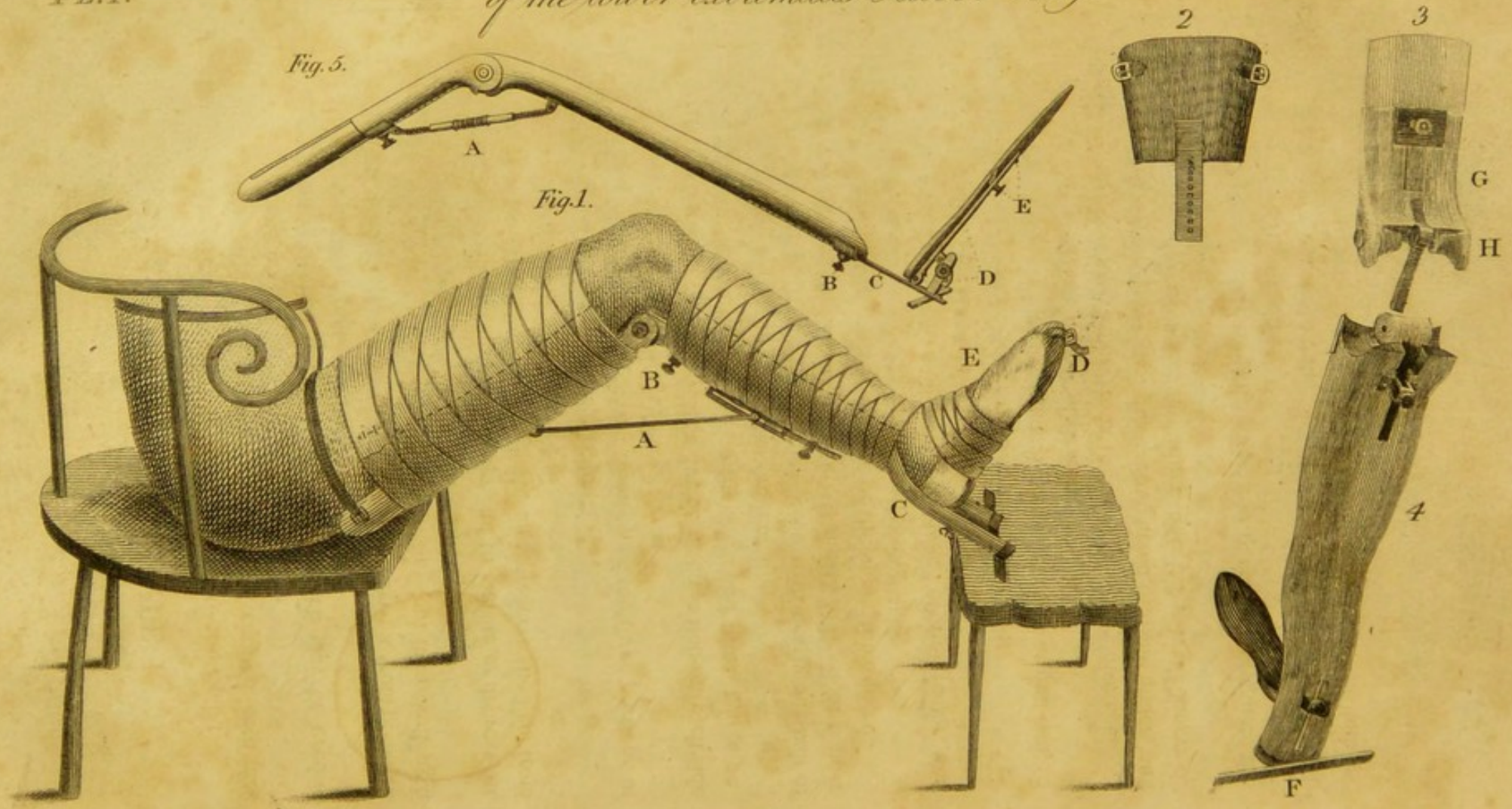
C. A sliding perforated plate, dove tailed into the under surface of the splint, to admit of its being made longer or shorter.

D. An upright plate with hinge and quadrant to regulate the elevation of the foot-board.

E. Pivot & screw to admit of the foot board being turned inward or outward, should the natural form of the limb require it.

PL. 1.

Mr. McIntyre of Newcastle's Splint for fractures of the lower extremities October 1819.



Rules

FOR APPLYING THE SPLINT.

The proper length of the thigh, position of the foot-board, and probable angle of the knee must be ascertained, by first applying the instrument to the sound limb. The Splint being then covered with a chaff or hair pillow, or any other covenient material that will preserve a soft concave and smooth surface, the limb must be laid on it, the angle of the knee regulated as the situation of the bones may require, and the foot placed in a sock suspended on the foot-board, as in Plate I. A compress of folded linen must be laid over the fracture (a paste-board or thin wooden Splint may be added, if necessary,) and then the bandage applied round the limb and Splint together. It is desirable to secure the bandage with a needle and thread.

The patient being so easily removed to bed, after the fracture has been reduced and bandaged, that I would recommend (in most cases) the operation to be conducted on a table covered with a blanket, as on the accuracy and dexterity, shewn at this first and critical moment, depend, not unfrequently, the character of the surgeon, but also the life, comfort, and future hopes of their patients.

Cases.

April 13*th*, 1822.—John Hodgson, ætat 38. (*vide* Plate II.) Received a comminuted compound fracture of the tibia and fibula, from a cart shaft crushing his leg against a waggon. There was considerable laceration of the integuments and muscles, and five or six pieces of bone, forming nearly two inches of the tibia, were removed, and the Splint applied in the usual manner. 14*th*—Pulse 80, did not rest well during the night. 15*th*—Rested better, a little oozing of blood in the night. 18*th*—Pulse regular, rests well, and is nearly free of pain. Wound looks well—(*vide* plate, No. 2.) drawing taken this day. I was accompanied on this day's visit by Mr. Mahony, Surgeon to the 7th Royal Fusileers. 21*st*—Improving daily, sits up to have the bed made. 30*th*—A large slough is this

Pl. 2.

Fig. 2.

J. Smith, 22 March 1821.

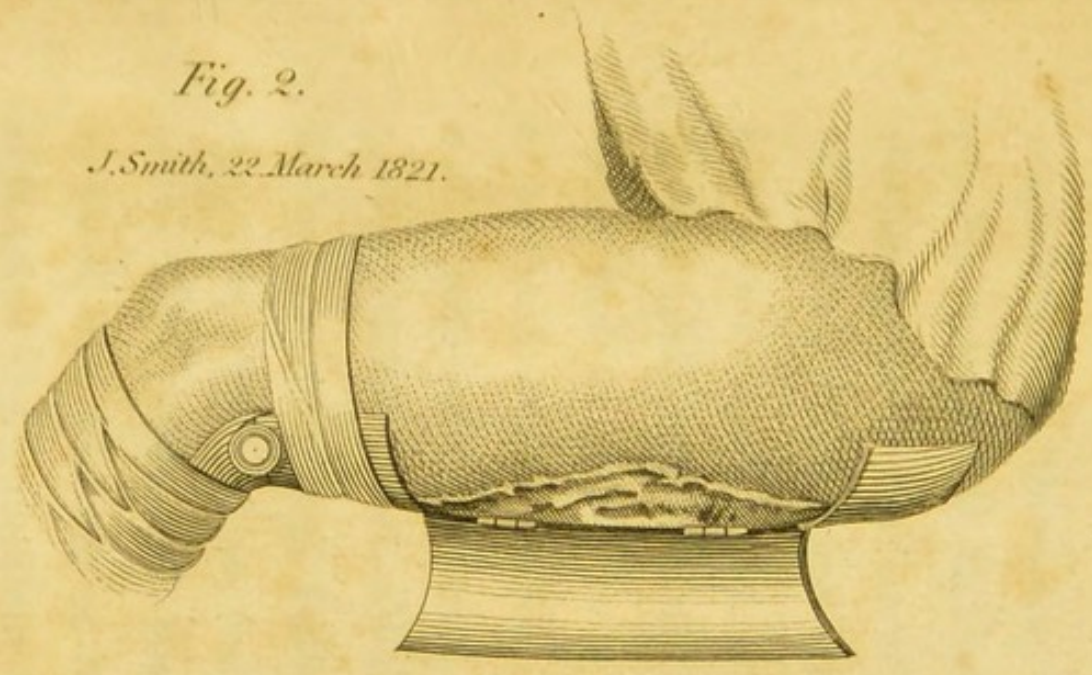
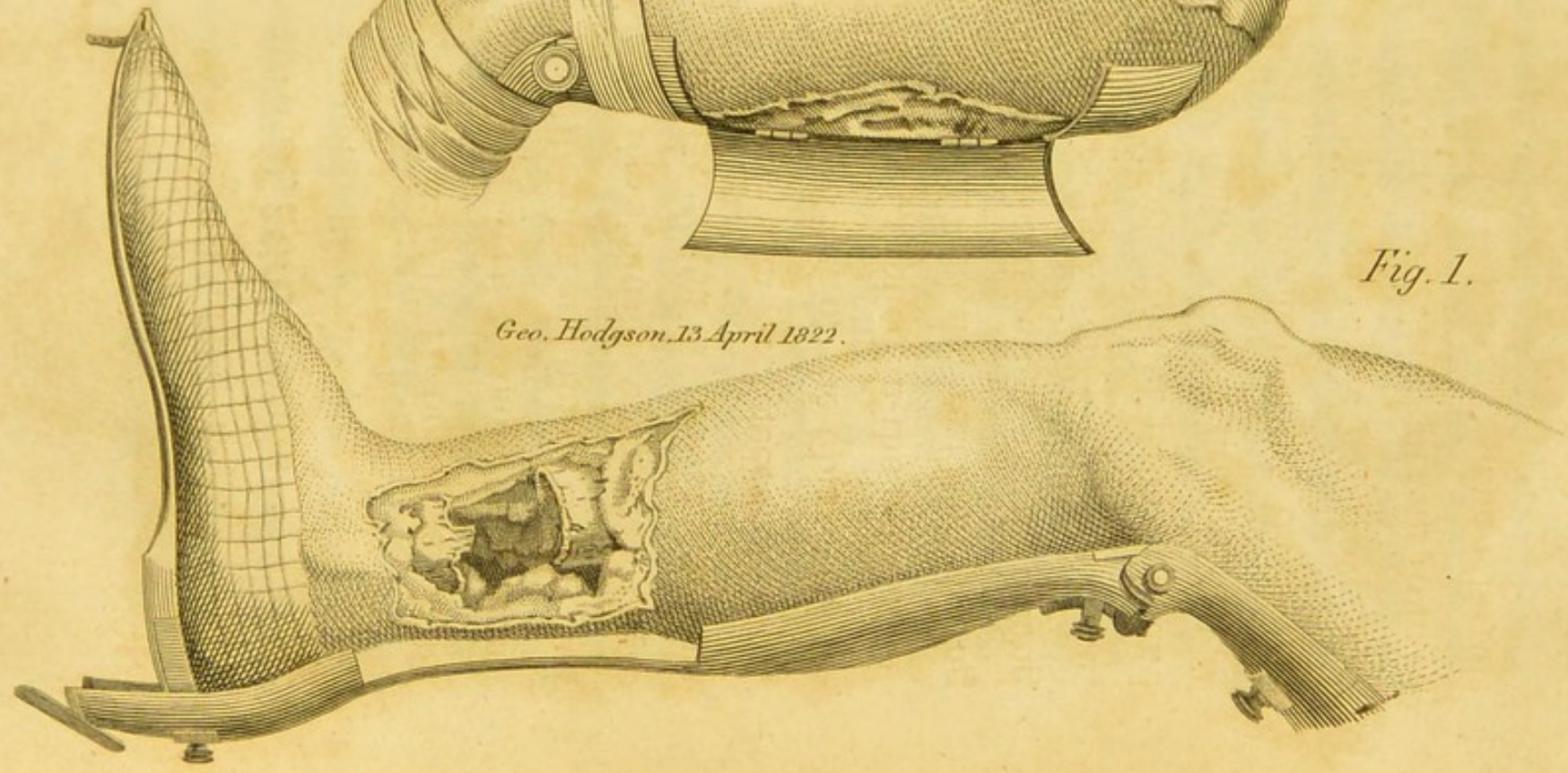


Fig. 1.

Geo. Hodgson 13 April 1822.



day removed from over the fibula, which enabled me to remove a portion of that bone which I thought advisable to leave on my first visit. There is considerable discharge. *May* 30*th*—The granulations are extending from the upper portion of the tibia—the wound and discharge gradually lessening, but he complains of considerable pain in the ancle joint. *June* 10*th*—None of the bones are now exposed, is out of bed several hours daily, and can move his toes freely. *July* 1*st*—Owing to a severe cold, he is not so well as usual; complains of a severe pain in his head, and is restless. The wound is nearly well. 10*th*—Pain of head, &c. gone, and is improving daily. 26*th*—Walks with his crutches without pain. *Aug.* 10*th*—Continues improving. *Sept.* 20*th*—Can walk without any assistance; the intermediate space of tibia is as firm as bone, and as long as the other: excepting stiffness of the ancle joint he is free from complaint, and is dismissed cured. *Sept.* 1823—Except occasional pain in the ancle joint, after a day's severe labour, has no complaint.

WILLIAM GALLON, ætat. 15. *May* 19*th*, 1822 —Being this day thrown under some waggons, loaded with coal, had both thighs fractured and otherwise much bruised; one femor fractured in the centre, the other three inches from the condyles, with a severe wound on the knee. The fractures were reduced in the usual manner, and an anodyne given. 20*th*—Has had a considerable attack of fever during the night, in other respects doing well; pulse 115. 22*d*—Has less fever than at last report. 25*th*—Owing to one of the Splints being rather long and having taken opening medicine, he complains of a pain under the tuberosity of the ischium.—30*th* The Splint being properly adjusted on the 25th, he is much better and feels comfortable. *June* 2*d*—Pulse regular, sleeps well, appetite improved, and is nearly free from fever; a strengthening plaster is this day put on. Complains of shooting pains. 10*th*—Yesterday he sat up for an hour, and was conveyed to the window on a board, with a back to let up or down at pleasure. Says he is much better to-

day, and quite free from pain, rests well, functions regular. *29th*—Gets up as often as he chooses, and has been conveyed to the garden and enjoys the open air. *July 5th*—The limbs are daily extended, and friction used to the joints. *15th*—Walked across the room on his crutches this day, and feels stronger daily. *26th*—Walks about the village on his crutches daily. *30th*—Can walk with freedom without assistance or lameness of any description, and is dismissed cured.

—— Barns, ætat. 10. *April 17th*, 1820—Received a compound fracture of the femor near its centre, the upper portion protruding an inch through an extensive wound. The Splint was properly adjusted to the sound limb, and covered with a pillow nearly half filled with chaff, and fixed at the angle which the case required; the fracture was reduced, and the limb laid on the Splint as usual; an anodyne was

given, and he was put to bed. 19*th*—Pulse 100, bowels regular, rests well. 21*st*—Pulse 90, moderate discharge from the limb. 24*th*—Continues improving. 27*th*—Is not so well this day, which may be accounted for by a little irregularity on the part of the patient. 30*th*—Has been quite well since last report in his health; wound granulating. *May* 4*th*—There is but little discharge, and he enjoys the open air daily. 20*th*—The wound is healed, and general health good. 25*th*—Walks about on his crutches. *June* 9*th*—Continues well, and is now able to walk without halt or uneasiness, and is dismissed cured.

December 11*th*, 1823.—I was this day sent for to visit Robert Bulmer, who had received a compound fracture of the femor, two inches above the condyles, a dislocation of the knee joint and fracture of the external condyle, from a fall of stones. The femor protruded considerably,

and, on making extension, there was a gush of blood from the wound, mixed with sinovia.—Having reduced the dislocation, and afterwards the fractures, and dressed the wound, I applied the Splint, which had previously been adjusted to the sound extremity; I had no difficulty in retaining the limb at its original length, without forming so acute an angle as usual, in order to prevent the action of the rectus muscle, and consequent pressure of the patella. A bandage was put on to give uniform support to the limb, and cold embrocations were applied. He expressed himself much relieved, and nearly free from pain; an anodyne was given, and he was put to bed. 14*th*—Pulse 80, has no pain, and is allowed to sit out of bed for two hours daily. 20*th*—Continues improving, and declares he has no more pain in one extremity than in the other. *Jan.* 3*d*—Was this day examined by the house-surgeon to the Newcastle Infirmary, who found the limb firm and straight. The joint is now put in a state of flexion and extension daily. *Feb.* 1*st*—Walks about the floor with freedom on

crutches. 10*th*—Is daily gaining strength, the limb is as long as the other, and he has free use of the knee joint. 28*th*—Walks without pain, and is dismissed cured.

Vide Plate III.

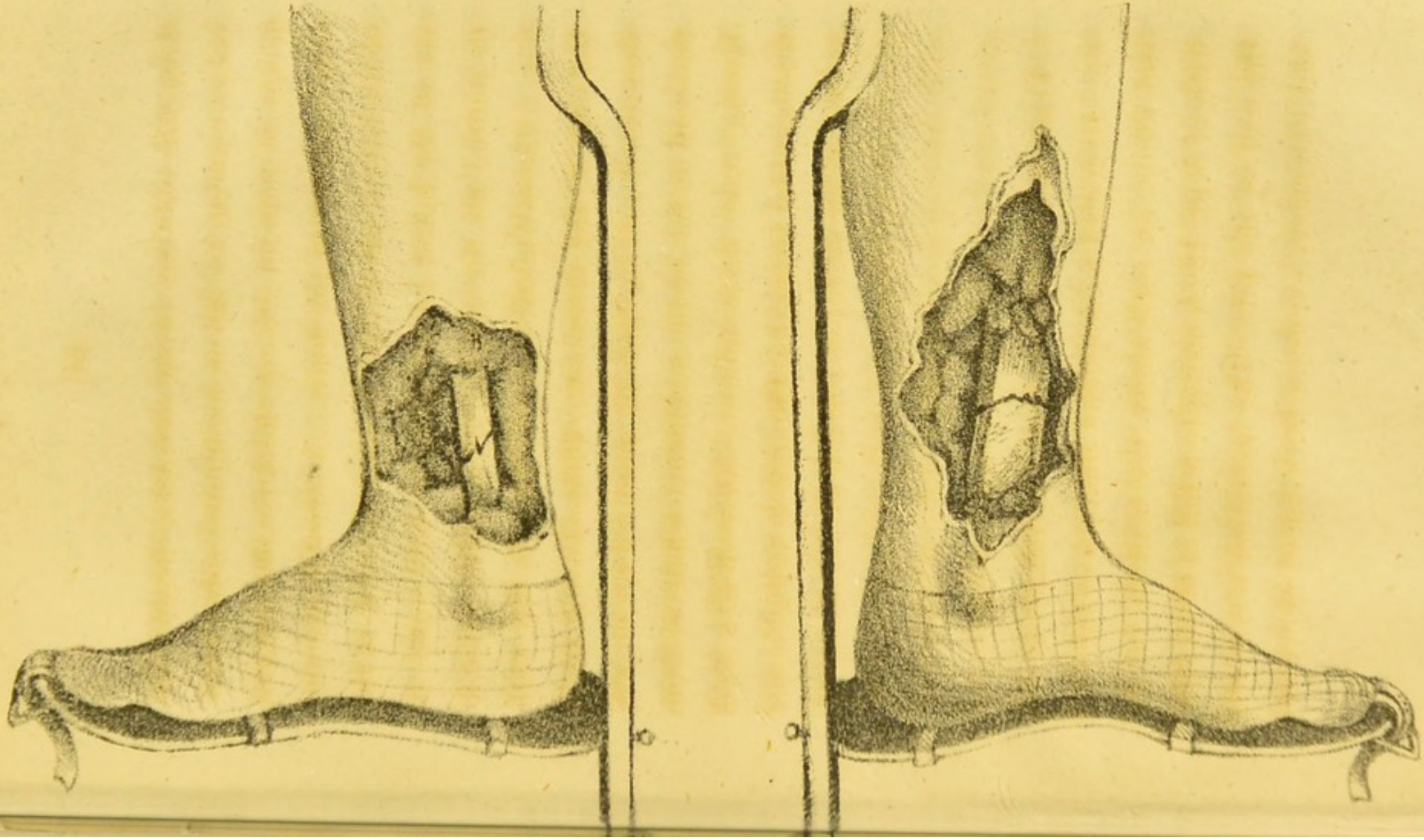
March 22d, 1822.—I was sent for to visit I. Smith, ætat. 12, whose hip joint I found dislocated, and the femor fractured in two places; likewise a deep seated and lacerated wound seven inches long, extending from opposite the trochanter minor to the condyles. Having placed him on a table, and raised the limb so as to relax the muscles of the thigh and leg. I grasped the head of the femor firmly in my hand, and ordered gentle extension to be made, which enabled me to reduce the dislocation easily. I then directed my attention to the fractures, one at the trochanter major, the other three inches above the knee; both being reduced, and the wound dressed with adhesive plaster. The

limb was put on the Splint. I then placed a a common thin Splint along the outside of the thigh, so as to preserve the whole as firmly as possible, without any injurious pressure. *23d*—Pulse 100, rested pretty well, considerable thirst, does not complain of any pain in his thigh. *25th*—Pulse 115, hot and feverish, with loss of appetite. *26th*—Pulse 103, less fever, general symptoms much improved, rests well, and says he is free from pain. Being well aware that each dressing would cause the limb to be removed from the Splint, I had one made so as to drop down like the leaf of a table, with hinges and clasps, &c. &c. The wound looks well, and is dressed as before, and placed on the new Splint. *28th*—Pulse 90; is dressed without changing the position of the thigh (as represented in plate, No. 3). Wound healing and granulating; is allowed to sit upon two chairs for a few hours daily. *April 1st*—Continues improving. *20th*—Wound skinned over, and has no complaints. *30th*—Walks about the doors with the assistance of a pair of crutches.

May 5th—Owing to carelessness, he lost his balance and got a fall on his injured side: complains of pain on the hip and knee, but has not displaced any of the bones. 10*th*—On account of the fall he was obliged to have recourse to the use of the Splint for a few days; cold water to be poured on the thigh from a kettle twice a-day. 23*d*—Walked three miles this day with the use of the crutches. 26*th*—To my great surprise, I met my patient mounted on an ass, and said he felt no inconvenience whatever from having rode three miles. 30*th*—Walks with freedom and strength; the limb is straight, and as long as the other; is this day dismissed cured.

George Patterson, ætat. 12 (*vide* plate, No. 4). Received a compound fracture of the tibia and fibula, an inch above the maleoli, on the 24th of Sept. 1823, owing to a fall of stone from the roof of the pit. The laceration was severe and extensive, exposing both bones above and

— Patterson.



below the fracture, there being only a small portion of skin left on the front of the ancle undivided, and about half an inch on the tendo Achilles. This case was attended by my assistant, and laid on the Splint as usual after dressing wounds, &c. An anodyne was taken at bed-time, and a purge in the morning. *25th*—Passed a good night; has taken his purging draught, which has operated twice; pulse 100. *27th*—Pulse 104; has been tolerably easy since last report, sits up daily to have the bed made, and go to stool, &c. *30th*—Pulse 90; sits up daily, being relieved by change of position, bowels regular, appetite improving, wounds looking healthy. *October 4th*—Having cut away the sides of the Splint to admit of washing and dressing the wounds, without changing the position, and a small pillow being introduced after the wound was dressed, preserved an uniform surface for the limb, the bandage was applied as usual. *10th*—Pulse 80; continues improving. *13th*—On my visit this day, found him outside the house, sitting on a platform amusing

himself with his playmates. The wound looks well, the granulations are abundant and healthy —the discharge is considerably lessened; is daily drawn on a small cart into the fields. 18*th*—After dressing him in the usual manner, I suspended his leg in the Splint with my hand, and found he was able to walk across the room with his crutches, care being taken to prevent his falling. *22d*—I was this day accompanied by my friend, Dr. Aynesly, surgeon to the Scotch Greys, who declared himself much satisfied, and requested one of the Splints, should he have a case while the regiment remained in Newcastle. The bones are covered with granulations of a florid and healthy appearance. 30*th* —Continues the use of the cart or rolly, as it is called, his mother taking him daily into the fields; his general health is much improved, and unquestionably better than when the accident happened. *November* 15*th*—The Splint is removed while in bed; friction and motion of the joint have been daily employed with advantage; can walk with his crutches. 20*th*— Wound healed over the tibia, that on the fibula

nearly so; there still remains a considerable degree of stiffness in the joint. *30th*—Can bear a little weight on the leg, which is equally as long as the other. *December* 10*th*—Can bear a good deal of weight on his fractured leg. *20th* A strengthening plaster is applied, and is dismissed cured.

Peter Palmer, ætat. 26, *September* 10*th*, 1824, had his right thigh bone fractured near its centre, and knee joint dislocated; also both bones of the left leg fractured four inches above the ancle joint, and was otherwise much cut and bruised. I first reduced the dislocation, and then the fractured thigh, and laid it on the Splint, previously adjusted, with the angle of the knee less acute than usual, to relax the rectus muscle, and consequently diminish the pressure of the patella. I then reduced the fractured leg, and applied another Splint in the usual manner; pulse feeble. 17*th*—Pulse 90; slept part

of the night, and continues free from pain. 18*th*—Bowels freely moved; pulse 93. 20*th*—Pulse 96; was this day removed to the window, where he sat some time amusing himself, and felt much relieved. 25*th*—Functions regular, and is removed daily to any part of the house, on a flat board easily introduced under him. *Oct.* 1*st*—The swelling having subsided, the bandages were taken off, the bones were in perfect apposition, and friction daily ordered to be used to the joints. 10*th*—A strengthening plaster is this day put on, and he declares he has no complaint, except hunger. 30*th*—Was this day able to walk across the room on crutches. *Nov.* 10*th*—General health improving. 16*th*—Both fractures are firmly united, and, on close examination, are scarcely perceptible, and can walk with freedom. 25*th*—Except weakness of his knee, has no other complaint; his general health is better than when the accident occurred. Cold sea-bathing is now recommended. *Feb.* 1*st*, 1825—Walks without lameness, and has resumed his usual occupation.

FINIS.