Let me, gentlemen, conclude my paper with a short account of Mr. B.'s case, as far as it relates to the question now under consideration; for him I devised my apparatus, and to him it was of so much service.

Mr. B. was a gold merchant from the coast of Guinea; he was a man of colour. He was thrown from an omnibus in the Strand, and sustained a compound fracture of the left leg, in the latter part of December, 1849. Mr. B. is a tall slim man, of delicate frame, about 48 years of age, and healthy. The accident happened very near the hospital, and he was immediately brought into the house. It was then found that the left tibia was broken at the junction of the lower with the middle third, and the upper fragment, as is usual, was thrown forwards and overlapped the lower, and it protruded through the skin at least three inches. The laceration of the integument was not very great. The fibula was broken high up, and the fracture was simple. The patient being put to bed, the leg was placed in a Macintyre's splint, the parts having been previously restored, as nearly as possible, to their natural position.

From that time till he left the hospital, this patient exhibited almost every kind of varied complication which can follow such an accident. It was just one of those difficult cases, which require so much skill in treatment on the part of the surgeon, and all that judgment and tact, which, I need scarcely tell you, it received at the hands of Mr. Partridge, under whose care Mr. B. was placed.

The limb was at first kept in the Macintyre's splint; the wound poulticed twice daily, and sponged softly at each dressing. This was continued for three weeks, during which the patient progressed favourably. He now began to complain that his back felt tender from pressure upon the sacrum, and Mr. Partridge determined to use a swinging apparatus, and Torbeck's was employed. The plan that was adopted was this:—A splint was employed, consisting of the leg-piece and foot-piece of a Macintyre's splint, the thigh-piece and screw beneath for extension being removed, and the rest beneath the heel, for the support of the foot, was also cut off. This splint was padded with flannel, and covered with oil-silk. Previous to placing the leg in the splint, the limb at each dressing was raised, and well sponged on the under surface, dried, and then clothed with broad straps of lint, thickly spread with simple dressing, so as thoroughly to protect it; it was then carefully let down into the splint placed underneath for its reception, and fixed by stocking bandage at the foot and at the upper part of the leg, the wound being left bare for the poultice, which was changed twice daily. The leg was then swung.

It was found that this mode of procedure answered well, excepting that the movement of the leg in the swing was very limited. There was the greatest difficulty with Torbeck's apparatus to employ any cradle to keep off the bed-clothes, and the adjustment of the cradle and bed-clothes pretty nearly prevented all motion of the leg, entangling and fixing the suspending chain which passed through them. The apparatus before you was devised to obviate these difficulties.

It is not my intention to enter minutely into the details of Mr. B.'s case: suffice it to say that he suffered severe complications. He was attacked repeatedly with erysipelas; he had several deep-seated abscesses in the leg and thigh. At one time there was enormous effusion into the knee-joint, and on three separate occasions considerable exfoliations took place from the tibia. Those of you who did not see him, must needs think how perilous was his condition, and will not wonder at the fear we entertained lest this lean worn-out patient should suffer bed-sores; but from the cleanliness of the nurse, and the facility to cleanliness and change of posture which the swing afforded, this evil was warded off.

It was with great satisfaction that I often witnessed the comfort and convenience that were afforded Mr. B. by the swing. I have frequently watched the manner in which he would assist himself; he would shift himself to one side of the bed, reach over and take up the *pot de chambre*, use it, resore it to its place, and again get to the centre of the bed, with great alacrity, his broken leg swinging about under the cradle in accordance with the movements of his body, moving altogether and without concussion or injury, which could not have been effected without the swing. In the same way he would raise himself in bed and sit up, leaning his loins against the pillow unassisted, take his book from an adjacent table, or his paper and writing case and write. Again, any blow that struck the bed could produce no concussion of his leg, and any start he might make in his sleep would not displace its parts. All swung easily and lightly and all moved together.

Mr. B. remained in the hospital four months, and left it ultimately quite restored.

I must mention that my apparatus was manufactured by Mr. Matthews, Portugal Street, Lincoln's Inn, and it was well put out of hand, at a moderate charge.

CASE OF UNUNITED FRACTURE.

By J. H. HOUGHTON, Esq., M.R.C.S., DUDLEY.

On the 21st of January, 1850, whilst at his work, Daniel Simmonds, a fine-made hearty miner, sustained a simple fracture of the left tibia and fibula. I reduced the fracture without difficulty a short time after it occurred. A little opium was given at intervals as it seemed necessary, and the bowels were regulated till the end of about four weeks, (during which time his health was excellent,) when on examination I found that union was exceedingly imperfect. Anxious, however, to disturb the bones as little as possible, I again applied the splints without minutely examining the state of the union, and desired him to keep perfectly quiet. In about four weeks, again the fracture was carefully examined, when it was found that very little, if any union, existed.

The limb was now enclosed in three gutta percha

splints, extending from the knees, and so moulded as to embrace the ankles, and meet underneath the sole of the foot; over these the starch bandage was applied, and the patient desired to get out on his crutches. Being a very timid man, I had difficulty in getting him out, but after a short time he gained confidence, and then he was out a good deal. A new roller was applied, and the leg examined every fourteen days. In eight weeks from the application of the gutta percha the union had become tolerably firm, and from that time to the present (September 22nd, 1850,) the consolidation of the union has continued, and for the last month he has walked to my house (two miles) with a common walking-stick. His health throughout has been excellent.

It would be difficult to assign a cause for the want of union in a case where all the *juvantia* appeared to be present. The patient was a robust and hearty man, in the very prime of life. The fracture was simple, it was soon and easily reduced, and the limb had not been moved from the time the bone was set till I examined it, a month after. To explain how it was that the limb was not moved for a month, it is necessary that I should state how, as a general rule, I put my fractures (of the leg) up.

I have a board, about two feet six inches long, and twenty inches wide, with a hole at each corner. I have, also, two iron half-hoops, each spanning twenty inches, through a hole in the centre of each of these pass the ends of an iron rod, two feet six inches long; at each end of the rod is a screw and button, by which the half-hoops and rod are connected when in use, the ends of the hoops thus first put into the four holes of the board, the whole forming a sufficient support for the limb, and a protection from the bed-clothes, &c. This frame, and a pair of common splints, comprise my whole apparatus. In the reduction, extension is made till the bones are properly adjusted; the splints, carefully lined, (a double answers well, and is always at hand,) are then applied, and bound on with three pieces of common tape. No plaster or roller is used for the first three or four weeks. Upon the board is placed a good firm large pillow, or a sheet or blanket folded neatly to the proper size; on this the leg, (after the splints have been applied,) and the whole on the bed. If the bed is a bad one, it is properly padded underneath the board to keep it even; the iron frame is then fitted to the board. The edges of the pillow are raised a little on each side, so as to form a furrow, on which the pillow rests. The edges of the pillow are kept up by anything convenient—a piece of narrow board running inside, and supported by the iron hoops, or perhaps a brick or two resting on the frame. It is well to have the whole raised a little higher than the pelvis, so that the knee may be slightly flexed; as this position is easier than the perfectly straight one.

The great advantage of this mode of treatment seems to be its simplicity, and its allowing the fracture to remain unmoved till union is complete. Those in the habit of treating fractures know well how difficult this is; and those who are in the habit of treating them at

the homes of the poor, know that it is almost impossible, in consequence of the creaky state of many of their beds.

The board and pillow form a well-padded undersplint, which keeps the bones straight in that direction; the two lateral splints prevent lateral projections. In this stage of the business, rollers and plasters are only in the way, they prevent our seeing how our work is going on, and render frequent meddling with the limb imperative; after union is literally firm, they may be used with advantage. As the fracture lies, the edge of the tibia is in view all the time, and the least deviation may at once be seen. If any doubt exists, the tapes (tied in front) are easily loosened, and the bone examined, without disturbing it or even taking off the splints. They may be opened—almost like a book—and closed again, if all be right. I seldom touch a simple fracture for eight days, when I just open the splints. If any deviation of the bone should exist, a little padding inside the splint may be used, in the position indicated, by which the bone may be kept perfectly straight. I never move the limb for twenty or twenty-five days, unless it is absolutely necessary, by which time union is generally tolerably firm, and the position of the bones definitely fixed. I now apply a roller.

With respect to the treatment of this non-union, I have only to say, that as the simple means used were successful, they should be carefully and fully tried in every case before having recourse to the operative proceedings which have been suggested.

The gutta percha splints answered well in keeping the bones steady. The great objection to it—and to my mind it is a serious one—seemed to be, that perspiration could not escape, and hence a great deal of filth, smelling very offensively, collected under them. In a case of diseased joint in which I have lately used it, I had it perforated with a number of small holes, not sufficient to weaken it, and in this case the nuisance did not occur. In another case I am rather disposed to think I should prefer the “Moulding Tablets” recommended by Mr. Smee, in the *Medical Gazette*, Feb., 1839; however, gutta percha is always at hand, and moulding tablets require some time and trouble in preparation.

“Meddlesome midwifery is bad,” was the constant warning of Dr. Blundell; and in the treatment of fractures I am convinced that meddlesome surgery is equally injurious; still, I would insist upon the *most careful* watching in every case, and immediate attention to any displacement which is not incompatible with almost perfect quiet, provided we study great simplicity in our apparatus, and take care at the onset that things shall be so arranged that little or no movement may be necessary. I would repeat, that *faith* in our apparatus should never supersede vigilance, and then we may look with confidence to the result of almost every fracture.

Dudley, September 23, 1850.