

On excision of the elbow and wrist joints and the preservative surgery of the hand / by Richard G.H. Butcher.

Contributors

Butcher, Richard G. H., 1819-1891.

Publication/Creation

Dublin : Hodges and Smith, 1855.

Persistent URL

<https://wellcomecollection.org/works/t6wv5d8e>

License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

Abraham Lincoln
Nov. 2^d 1855

My dear Mr. Fyasson:

I have the pleasure
in sending you by this day's post
a paper of mine on the subject of the Storm
and what brings - and the preservation
of the 'Whetstone' -

The journal I have
hope it may meet with your approval

I have just received to you the
news of moving the location of the
'Whetstone' and at page 36. you will see
how I endeavor to make for
beautifying the subject of mi-
-itation. I have been much amused by a
friend of mine, who heard you were
-ly taken on the subject of the Stone, from



Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

ON EXCISION
OF
THE ELBOW AND WRIST JOINTS,
AND THE
PRESERVATIVE SURGERY OF THE HAND.

BY
RICHARD G. H. BUTCHER, ESQ.,

SURGEON TO MERCER'S HOSPITAL;
MEMBER OF THE ROYAL IRISH ACADEMY;
FELLOW AND MEMBER OF THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND;
LICENTIATE OF THAT BODY,
AND EXAMINER ON ANATOMY, PHYSIOLOGY, AND PATHOLOGY THERETO, FOR FIVE YEARS;
MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN ENGLAND;
MEMBER OF THE COUNCIL OF THE SURGICAL SOCIETY OF IRELAND;
ETC. ETC.

WITH A COLOURED PLATE.

DUBLIN:
HODGES AND SMITH, GRAFTON-STREET,
BOOKSELLERS TO THE UNIVERSITY.

1855.

DUBLIN :
Printed at the University Press,
BY M. H. GILL.

ON

EXCISION OF JOINTS.

1. EXCISION OF THE ELBOW-JOINT : WITH THE DESCRIPTION OF A NEW OPERATION IN CASES WHERE THE JOINT HAS BEEN FIRMLY ANCHYLOSED IN THE STRAIGHT POSITION AFTER INJURY.
 2. RESECTION OF THE WRIST-JOINT AND BONES OF THE CARPUS BY A NEW OPERATION.
 3. RESECTION OF THE CARPUS AND FOURTH AND FIFTH METACARPAL BONES.
 4. EXCISION OF THE MINOR ARTICULATIONS AND BONES OF THE FINGERS.
-

IF there be any one feature more striking than another, which characterizes the surgery of the present day, it is expressed in the preservative efforts which are striven after and made, to avert deformity, to lessen mutilation. The great practical question which now agitates and convulses the professional mind lies in reference to the operation of excision of diseased bones and joints, as a substitute for amputation. This subject has been handled, and with power dwelt upon, by many, and results and inferences arrived at, satisfactory to the energetic men who have pioneered the way, and most encouraging to those who have to follow after. The work is abroad; every periodical conveys its quota of information in expressing the

opinions of able surgeons, practically working out this great scientific problem, and a glance at the retrospect becomes salutary, all-convincing, and instructive.

In various numbers of this Journal through the past year I have dwelt at considerable length upon some of the most important resections, having considered the operation in reference to the upper and lower jaws and the knee-joint. I illustrated the observations which I then laid before the profession by cases successfully treated by myself; and now, in continuation of this all-important subject, shall confine my remarks to those joints and parts comprised under the heading of this paper.

Excision of the Elbow-joint ; Recovery ; the motions of the Fore-arm and Hand, with the functions of the limb, preserved.

A glance at the records of our art shows that the elbow-joint has been more frequently excised than any other, and the number of limbs which have been saved, and preserved perfect, is a theme most seductive to dwell upon; yet with the mass of evidence, so clear and consecutive, it would be tedious, nay, unprofitable, to present any analysis of each operation; more particularly for this reason,—the incredulous have cast away their doubts; many of the timorous (be it spoken with great respect) have been thrust into the van, and been compelled to go forward or be trodden down: they have chosen the former, and therefore we find opinion unanimous in the onward movement. In short, those trembling and sceptical about the propriety of the more severe excisions of the hip, knee, and wrist-joints, yield their allegiance, and assent tacitly in favour of excision of the elbow, and allow unsullied its accredited merits.

When a case of incurable disease of the elbow-joint presents itself to the surgeon, the first question for consideration is one upon which I have laid much stress when treating of excision of the knee,—namely, is the case one which must be submitted to amputation, or is it one to which resection is applicable? Now if this distinction be not made, if a pains-taking investigation be not instituted, an error in diagnosis may do one of two things,—either the wretched sufferer may be doomed to mutilation for life, or resection (a most valuable operation) may be brought into discredit by its performance where not at all suited, and where it was never intended by its warmest supporters. Again, it should ever be remembered that a patient may not have the power to bear amputation, after failure by an ill-advised resection, when he might have made a good recovery after amputation, if performed at first.

An all-important point to establish is, to what extent are the bones engaged? Through fistulous openings the surgeon, almost invariably, will have the power of determining with the probe and by manipulation, according to his tact, the amount of disease; the entire carious part must be cut away,—therefore, when extending much beyond the articular surfaces, resection should not be attempted, as it is plain, removal of a few inches of each bone could not be followed by even an approximation to cure in any way satisfactory. Here, then, amputation takes its proper place. A wide distinction, however, must be drawn between the hardened, roughened surface of the shafts of the bones in the immediate vicinity of carious joints, and the carious surfaces themselves which in most instances are confined merely to the articulating extremities. I wish to lay stress upon this vital distinction, because men have conveyed by their writings and delineations (though never intending to do so) the consummation of this blunder. In some instances, no doubt, some of these roughened spiculæ must be pared off, to permit the parts to come evenly in contact; but this is a very different thing from cutting away three or four inches of the humerus. There is this distinction between the two conditions: the one is the result of excessive action, as it were limiting disease, the other is the disease established and progressive. Now the thickened integuments, apparently disorganized, pierced with jagged apertures, through which escape the unhealthy secretions from the vicinity of the diseased bones within, need form no obstacle to resection; though livid, dark, and unhealthy-looking, it is marvellous in how short a time they recover when the sources of irritation have been taken away. The gelatinous infiltrated tissues become softened down by suppuration, and are cast off and replaced by a more healthy and vital action, that of granulation, the precursor of cicatrization and cure. The age of the patient, in a secondary way, may be mentioned in considering the question of resection of the elbow; however, I think the surgeon will be best able to form an opinion according to the individual case. I have seen some in advanced age repair injuries, and go through operations with as persistent a recovery as could be desired, when liberally supplied with stimulants. No doubt the plastic efforts of nature will be more marked and her restorative energy more decided during the elasticity and vigour of youth; yet if gently and carefully assisted by the surgeon, she will not abandon the young or the old; however, in young subjects sometimes the scrofulous taint, poisoning, as it were,

every healthy function, restlessly active, may create an insuperable obstacle to resection.

The annexed case offers practically an illustration of that which I conceive to be the best mode of performing the operation, and of conducting it to a favourable issue.

J. F., aged 56, admitted to Mercer's Hospital, July 8, 1854. *History.*—He had been a soldier, and served for many years, exposed to several vicissitudes and extremes of climate; on four occasions he suffered from syphilis, prolonged with its secondary and tertiary forms, but each yielded to treatment. The patient associated the commencement of his present sufferings with a severe wrench of the right elbow-joint, which originated in a scuffle with a tipsy companion eight years before, and during this lengthened period pain was never absent, though at times but trifling, yet at others almost unbearable. The joint was not only injured and violently disrupted, but the soft parts all around were extensively ecchymosed from contusion, the man having fallen upon him. Various modes of treatment, those usually adopted in similar cases, were had recourse to, but with little benefit and only temporary ease; latterly his annoyances became so much more permanent, that his health was entirely broken up, and the constitutional derangement, as a sequel to sleepless nights, loss of appetite, perpetual restlessness, made him seek for advice in hospital. When received under my charge on the above date his case was painfully typical of the prostrating effects, the corroding results of a diseased joint, paralyzing, as it were, the powers of vitality, and vitiating the very springs of life; the patient was sadly reduced: from being an athletic man, he was thin, emaciated, and haggard; loss of appetite, occasional diarrhoea, night-sweats, scanty renal secretions, evidenced the disturbance of the digestive functions; listlessness, weakness, and an inability to exertion, predominated over the muscular system; while pain, ever varying in acuteness and duration, hallucinations in imperfect sleep, partial stupefaction, sometimes from intensity of suffering, ending in total apathy as to recovery, evidenced how deeply the nervous system sympathized in the local malady. The changes wrought in the limb were strikingly characteristic of long-continued disease; the shoulder and upper third of the arm were wasted, the forearm and hand attenuated, the fingers being extended, flattened, and the integuments covering them being thin, shining, glazed, with the ungual phalanges slightly puffed, and nails bent.

As before mentioned, the forearm was fixed at nearly a

straight line with the arm; all around the elbow-joint was inordinately swollen, the circular measurement corresponding to the flexure being $15\frac{1}{2}$ inches, while the arm in its upper third only measured $6\frac{1}{2}$ inches, and the forearm, at the junction of the lower and middle third, only 7 inches. The integument covering the joint and adjacent parts was in many places of a dark livid colour, while immediately on the confines of the swelling it assumed a mottled appearance. Numerous apertures existed around the articulation, in all, eight in number; five were situated on the inner side of the limb, three behind the internal edge of the olecranon, and one on the outside, somewhat over the head of the radius.

The great bulk of the limb corresponding to the diseased joint was elastic, harder in some places than in others, and made up of depositions of fibrine, consequent upon the oft-repeated and violent attacks of inflammation, perpetuated for many years. Several of the sinuses presented at their apertures everted, fleshy papillæ, bleeding on the slightest touch; through them the diseased condition of the bones entering into the articulation was clearly revealed; a probe gently passed along the trajet of either, soon came in contact with the denuded carious bone. From the great thickening of the parts around the joint, and the spastic action of the muscles imposed by a rigid position, the motions of flexion and extension were prohibited; slight pronation could be effected, and the grating of the head of the radius on its pivot was very audible at the time. By these various sources, and the method of examination, then, a very accurate conclusion was arrived at as to the totally disorganized condition of the joint,—the decay and death of the extremities of the bones formerly constituting its beauty and perfection. From a very careful investigation and minute inquiry into all the bearings of the case, I was forcibly impressed with the conviction that the shafts of the bones were not involved; by the most painstaking manipulation with the probe, I could only discover the condyles of the humerus, and the olecranon process, together with the head of the radius, diseased; the thickening and induration above and below the joint, I presumed, had its origin and seat in the soft parts, as the product of repeated inflammatory action. Upon the foregoing inferences I rejected amputation, and decided on excising the diseased extremities of the bones forming the articulation, and proceeded after the following manner:—The patient being placed upon a table in the horizontal position, and lying on his back, chloroform was administered, and on its effects

being produced the limb was drawn from the side and elevated: one assistant commanded the brachial artery, and steadied the arm, while another supported the forearm. Standing on the right side of the patient, I made an incision commencing about an inch above the internal condyle, and a little behind the ridge leading to it, and extending downwards in a direct line to a little below the junction of the coronoid process with the body of the ulna. The wound in its entire length measured about two inches and a half; an incision of like extent was next made over the external condyle, the ridge leading to it, and the head of the radius. The internal of these incisions was so planned that it permitted the ulnar nerve to be quickly freed from its sheath behind the condyle, and drawn without much disturbance, together with the soft parts, somewhat in front of that prominence; thus this important part was protected during the formation of the third incision, which connected the lateral longitudinal ones, and lay in a transverse direction over the extremity of the olecranon. The attachment of the triceps being cut through, the upper flap was raised and held upwards, while the parts covering the olecranon, and constituting the lower flap, were rapidly dissected from the bones and restrained downwards. The lateral ligaments were next cut through, and the forearm violently flexed; and the ends of the disarticulated bones thrust backwards through the wound. Scarcely had this measure been accomplished, when the accuracy of the diagnosis was fully confirmed; the ends of the bones seemed alone to participate in the mischief, but to their condition I shall again allude. The excision of the ends of the bones was readily effected in the following way:—The diseased articulating surface and condyles of the humerus were made to project more freely backwards, and clear of everything else, by bending the forearm to nearly a right angle and drawing it forwards, the humerus being thrust in the contrary direction. I next placed the fine blade of my own saw in front of the bone, and cut off the condyles, with the expansion of the shaft immediately above them, from before backwards: the line of section verged upon the superior margin of the fossa for the olecranon. The extent of the part removed measured from above downwards about an inch and a quarter. I next freed the attachment of the brachius anticus from the coronoid process of the ulna, and having passed the blade of the saw in front of it and the neck of the radius, I cut them across by antero-posterior section, thus removing the diseased olecranon and head of the radius. The divided ends of the bones were carefully examined, and

pronounced to be healthy; I clipped away with the scissors a good deal of disorganized tissues, and secured a few vessels which yielded blood, three on the outside, and the ulnar recurrent within; all were considerably enlarged from the previous persistence of disease in the part. The limb was next placed upon a splint at a right angle, and steadied above and below by a few turns of a bandage, the wound and parts adjacent being left exposed for the application of a few folds of linen steeped in spirit lotion. In this state the patient was removed to bed.

At 4 P.M., six hours after the operation, I proceeded to dress the limb. The man was free from pain, and there was no disturbance of the system; the bandages being taken off, and the limb remaining supported on the splint resting on its internal side, the glazed flaps were gently drawn together and made to meet in the transverse line, and retained so by three points of the interrupted suture; the longitudinal incisions were likewise approximated, and held so by a few stitches at their remote ends, the centre part being left open to permit any weeping or secretions to have a free escape; a few straps of adhesive plaster afforded additional support to the flaps. The wounds being so arranged, the arm was steadily lifted from the splint, retaining its somewhat more than rectangular position, and evenly rolled from the fingers to the shoulder; it was then placed in an evenly padded wooden case, accurately made for the purpose, with hinged sides, and the correct angle preserved. The forearm, resting on its inner edge, or midway between pronation and supination, was steadied so by pads adapted to its inequalities; the sides, being elevated and fastened by a few straps of broad tape and buckles, steadied the entire immovably. By this mode of dressing, and this apparatus, the patient felt relieved from all apprehension of displacing the bones; it lay evenly supported upon pillows, and somewhat raised at its lowest end. Wine, four ounces.

8 P.M.—No pain; no oozing of blood; no tension of the parts; ordered a full opiate, and to be repeated in the night if restlessness should come on.

15th. The patient slept nearly the entire night, and he had only to take the one draught. Pulse 92, soft and full; no headach; no pain in the wound; to have tea and toast, milk and eggs; spirits, four ounces; and beef tea with bread for dinner.

16th. Report most favourable. To continue stimulants and food.

17th. Slept all night after an anodyne; pulse 88, soft and

full. Proceeded to dress the wound by letting down the sides of the box, and slitting up the bandages from one end to the other, they were easily removed without lifting the arm from the support beneath, by this means all disturbance of the parts was prohibited; the flaps, at their junction in the transverse incision, were quite united, and the extremities of the lacerated cuts were, in the same way, repaired; no additional swelling; no pouching of matter; a slight oozing of imperfect pus and serum has stained the dressings, and has had free room to escape, owing to the precautions already alluded to; lint smeared with simple unguent being laid over the wound, all bandages were now dispensed with; the pads were efficient in affording an equable support to every part of the limb; the sides of the box being closed up and fastened as before; stimulants and anodynes were freely administered.

19th. Dressed the limb as at last report; wound looks most favourably; a free discharge of healthy pus; no swelling or tension of the parts; to continue stimulants.

28th. Dressed the limb every alternate day since last report; and now the inordinate thickening of the integuments and tissues around the joint, and constituting the flaps, is considerably diminished; the purplish livid discoloration has likewise nearly disappeared; the discharge is free and healthy from the interior, while granulations have sprung up, and appeared in the longitudinal wounds about their centre, where they had been suffered to remain apart for the special purpose of opposing union. On the whole, the parts are in a most satisfactory state, which, coupled with the total absence of all constitutional disturbance, promises most favourably for the issue. All ligatures have been cast off.

August 28th. There is very little discharge now, and the case is rapidly progressing to cure; whatever is secreted comes from the interior of the wound, and escapes without obstacle through an aperture in the most depending part beneath; the soft parts around are much contracted, or, in other words, their hypertrophied condition is, in a very marked degree, reduced, the structures being consolidated, and the patient possesses the full power of moving the fingers as freely as ever. He has been sitting up in bed for the last ten days, and his general health is much improved. I removed the heavy box, and substituted a light pasteboard trough made after a similar form, and permitted the patient to walk about. From this period he continued daily to improve, and at length the discharge ceased altogether; bony union did not take place, yet the

junction by fibro-ligamentous tissue was gaining rapidly thickness and solidity; at the same time the movements of the fingers were quite perfect, and his grasp was as strong as before the operation; the forearm retained its motions of pronation and supination to the full extent; the only motion deficient was the full power of flexing the forearm when the limb was extended: I attribute this, in a great degree, to the emaciated state of the biceps muscle, which existed before the operation, for be it remembered that its attachment to the tubercle of the radius was not interfered with. Now to compensate for this loss of power I had recourse to the following expedient:—A strong linen case was made to surround the false joint, and embrace the limb above and below it to an extent of from four to five inches; it was so formed as to sustain the forearm, at somewhat more than a right angle; it laced in front and was strengthened by pieces of whalebone placed exterior to the holes through which the cord passed: when this was adjusted the man could use a spade or shovel, and possessed great power with the limb.

The patient was now dismissed from hospital, and went to the country, and I lost sight of him for many months; on his return he called to see me: I found all the power and movements of the limb were quite perfect, with the exception of flexion of the forearm. I questioned him very closely as to the exercise which the limb had enjoyed, and was disappointed when I heard the linen case was seldom taken off, never by day, so that the muscles presiding over flexion of the limb were kept in restraint and inactivity, and consequently were enfeebled, lowered in tone, with a wasting and diminution of all bulk. So satisfied was I of the true cause being explicable on this ground, that I retained the man in hospital for four or five weeks, removing all restraint, and permitting him to use the limb in every necessity, and moreover to work in the garden with the spade and shovel. At the end of this period the changes were marked: a perseverance in the exercise of the muscles developed their tone, tension, and volume, so that the patient actually regained the power of flexing the forearm on the arm. No doubt, the effect was slow, but it was sure: and as time passes, so improvement will be superadded. At the present moment the man has had a limb preserved, well qualified for his numerous occupations.

Now with regard to incising the soft parts, many modes have been devised and recommended; but it need be of little moment to the dexterous surgeon, in ordinary cases, whether the

flaps be single, double, or quadruple; the convenient exposure of the bones from behind is all that is required if there is much to be taken away, as in the case by which I have illustrated the operation. I am of opinion that the H incision, the mode inculcated, executed according to the rules which I have laid down, is the one most desirable. By the internal incision the ulnar nerve can be drawn aside and taken away from injury. As to the cutting of the bones, I am of opinion that it can be most readily achieved by at once cutting through the insertion of the triceps and the lateral ligaments, and then disarticulating; all the remaining muscular fibres should be detached, and the osseous parts can be cut through with great facility from before backwards by aid of the saw which I have figured in this Journal for February of the present year: the fine blade of the instrument is readily placed in front of the bones, the flaps do not interfere with its working, and the rapidity with which it cuts is most pleasing to the operator; but, above all, the section is perfectly smooth and even: this latter perfection is borne ample testimony to by the numerous specimens in my collection, and which I have excised from the living subject with it.

Not only does the early disarticulation facilitate the after steps of the operation, but it is of incalculable advantage, as at once revealing the amount of disease, and as to how far these bones may need resection. The bones removed in the case which I have detailed afford so beautiful a specimen that I cannot forbear giving an engraving of them. It will at once be seen how completely limited to the joint the caries was, and how a cavity existed in the end of the humerus, which necessitated the section of the bone a little above the condyles. A small abscess will likewise be seen to exist in the olecranon process of the ulna. The head of the radius exhibits in its centre and on its outside a small remnant of its cartilage of incrustation, while the worm-eaten appearance of the bone around is very characteristic of the affection.

As to the after treatment of the limb, all arteries should be tied, particularly the posterior ulnar recurrent; if not secured, this vessel will surely bleed after the patient becomes warm in bed, and give a great deal of trouble by requiring the flaps to be again separated to permit of its being ligatured. Roux gives one solitary instance where a patient under his care died of secondary hemorrhage. The limb should be steadied in the box with falling sides, such as I have described, and maintained as steady as possible for many days; by this gentle ma-



CARIES OF THE ELBOW JOINT.

Hodges & Smith, Grafton Street,

Forster & Co. Lith.

Crow St. Dublin.

nipulation the part may be induced not to resent the violence offered to it by any destructive burst of inflammation. After the flaps have become united, and consolidation of the parts within has progressed to firmness, about the end of the fourth or fifth week, very small and passive motion may be commenced, so that, by carefully apportioning exercise to the repaired and condensed structures, the limb may be restored, efficient and useful for all the purposes of life. Sometimes the union between the bones may be slow in consolidation; it was so in the instance which I have recorded, yet after the lapse of some months it was sufficiently firm for all the necessities of manual labour. The surgeon, I say, then, need not be disheartened by the tediousness of recovery; in the end it will come. It was so likewise in one of Moreau's cases, who writes thus: "The flexion of the forearm upon the arm is strong, firm, and steady; it was a long time before the movement was regained: when he wanted to bend the arm, the forearm shook and fell in towards the inner side, but he has got the better of that of late, and now this motion is free and correct." Further on he mentions, in relation to this case: "I must not forget to state, that this man has now the use of his arm so completely that he uses it in thrashing in the barn, holding the plough, &c."

I shall append to these remarks on excision of the elbow-joint the impressive and simple words of Moreau: "If these things seem to be incredible, they may be easily brought to the test of experiment. I am firmly of opinion, that, in similar circumstances, the issue will be the same."

There is a condition of the elbow free from disease, the result of injury, when it has become fixed by bony ankylosis in the straight position, that requires special notice. I at once cede the point that, by many, such an inconvenience might be borne with rather than running risks by submitting to a severe operation; but, on the other hand, there are some upon whom the effect would be to deprive them of the means of earning their bread, and, having no resources, would, of necessity, consign them to be inmates of a poor-house for the rest of their days. Here, I think, surgery legitimately offers her powers to relieve. In such a condition of parts I would not excise the joint, but would execute the following operation. I have frequently performed it on the dead body, and a dexterous hand may readily accomplish it in the living. The arm being placed in the same position as that for resection, an incision should be made, about an inch in length, behind the internal condyle, and the ulnar nerve freed from its bed, and drawn

forwards with a blunt hook; a second incision should pass outwards to the most prominent part of the external condyle, at right angles with the first, dividing the integuments and ligamentous expansion covering the olecranon. The fine blade of the saw which I use for resection being detached, it should be passed from the extremity of the transverse incision, that is, from without inwards, in front of the condyles and the joint, its flat surface being applied to them; the blade, being sharp at the point, can be readily made to pass along this direction, and by drawing the integuments a little in front of the internal condyle it will appear through the perpendicular incision, or that made in the first instance; the serrated edge may then be turned backwards, the blade connected with its frame, a few movements will sever all resisting parts from before backward, corresponding to the line of the transverse incision through the soft parts; the limb should then be bent at less than a right angle, and any vessels requiring ligatures must be secured. The after treatment should be exactly in accordance with the rules laid down when speaking of resection. An operation accomplished after this plan is not, I conceive, nearly so serious a measure as excision of the joint; the brachial artery need not be considered in danger, except through undue rashness, and the hopes of a more perfect motion may rationally be expected, when no muscular attachments are divided.

Excision of the Wrist-joint and Carpus, by a new Operation.

E. R., aged 58, admitted to Mercer's Hospital April 26, 1855. *History.*—She states that in May, 1853, she fell over a footstool in a dark room, and instinctively threw out her arms to break the fall. Shortly after, she was seized with acute pain, quickly followed by swelling in the right wrist-joint. These symptoms, the evidence of acute inflammation, were subdued by leeching, heat and moisture, and suitable position.

From the period after the reception of the accident up to January of the present year, the patient was liable to variations of suffering in these two prominent indications of active inflammation; and, in opposition to every treatment enforced, they but ushered in and bore testimony to the morbid degeneration of the part implicated. At this time she was put under treatment, and patiently submitted and followed the directions prescribed by her attendant. However, the woman only obtained a temporary respite, when again the pain increased, the swelling became more augmented, and at length abscess terminated the burst of local inflammation, while the

constitutional disturbance became alarmingly developed,—the restlessness, the exhaustion, sudden, rapid, and continuous.

During the last week in March the integuments just above and behind the articulating surface of the radius gave way, liberating a quantity of pent-up matter: the abscess, though formed, matured, and evacuated, yet was not critical of good, for extreme pain again set in in the part, and she solicited my advice at the time already mentioned. Her condition was as follows:—Pulse rapid, small, sunken; appetite gone; perpetual sweating, and loss of flesh. The wrist-joint was excessively swollen, with numerous sinuses around it; an ulcerated patch, the size of a half-crown, was situated over the posterior surface and outer side of the end of the radius, and discharged freely; the dorsum and palm of the hand participated in the swelling, and were tender to the touch. On slight motion the grating of the bones entering into the radio-carpal articulation was made audible, and the extensive caries more than suspected,—the presumptive evidence derived from the history of the case, the general aspect and configuration of the joint, pointed to such a conclusion. While the foregoing experiments confirmed the diagnosis, more particularly when, by the introduction of a probe through any one of the numerous sinuses which surrounded the articulation, it came instantly in contact with the roughened, crumbling, and broken-down fragments of diseased bone,—not only were the ends of the radius and ulna diseased, but the entire carpus was equally involved; the metacarpal bones and phalanges were perfect, and the disease was limited above to the extremities of the bones of the forearm. Though diffused and wide-spread the mischief, the flexor muscles of the fingers were but little impaired, and the motor functions of the thumb were retained in almost their full integrity. Now, so extensive was the local disease, and so fearful the constitutional symptoms evoked by its presence, that the taking away of the source of irritation was absolutely called for, so as to afford a chance of life being preserved under the circumstances. I mentioned the operation of excision, and dwelt upon its propriety, and, if rejected, as a “dernier-ressort,” amputation through the forearm. The woman at once made up her mind not to lose the hand, and anxiously expressed a wish that I would endeavour to save it by cutting out the diseased bones. This I willingly undertook to accomplish. My reasons for adopting this practice, and the benefits which I considered likely to arise from it in preference to amputation, I shall again advert to.

May 2nd. 10 A. M. I proceeded to excise the wrist-joint and

carpus after the following manner:—The patient was placed recumbent in the operating theatre, and rendered insensible by means of chloroform: the forearm, placed in a state of pronation, was grasped and supported above the wrist by an assistant, while the hand was steadied by a second. Thus the boundaries of the posterior surface of the wrist-joint were conspicuously revealed. Standing on the right side of the patient, I thrust the knife down to the carpal bones, two lines to the ulnar side of the extensor secundi internodii pollicis, and from a quarter to half an inch below the radio-carpal articulation; from this point it was swept in a curvilinear direction downwards, close to the carpal extremities of the metacarpal bones, and carried up to a point just below the end of the ulna, and fully half an inch higher than that where the knife was first laid on. The flap thus marked out was rapidly dissected up, and consisted of the integuments, areolar tissue, and extensor tendons of the four fingers, together with large deposits of fibrine, the products of repeated and prolonged inflammatory action. Thus, by the elevation of these soft parts *en masse*, the diseased bones were at once brought into view: the flap being turned up to its base, which was oblique, the scalpel was passed farther, higher up under it, liberating the soft parts from the back of the radius and ulna, together with the second extensor of the thumb, from the osseous groove in which it lay: thus the tendon remained undisturbed in its superior and part of its lateral connexions. The liberation of the tendon being accomplished after this manner, it was an easy proceeding to divide the ligamentous shreds which bound the diseased bones together; and by forcing down the hand the carious ends of the radius and ulna were made to project; a few cautious touches of the knife, carried close to the base of the styloid process of the radius, left uninjured and undisturbed the radial artery in its near proximity; while a similar guarded proceeding on the ulnar side and in front preserved the ulnar vessel. The next proceeding was to remove the protruded bones, which was accomplished with facility, by passing the fine blade of my own saw (as set for resection) in front of the bones, and cutting backwards. After this the diseased carpal bones were dissected out, all, save one, the trapezium, which preserved its healthy structure, and was therefore suffered to remain, and left intact with the metacarpal bone of the thumb; the ends of the metacarpal bones of the fingers were exposed, but they were not diseased, they had escaped being implicated by the wide-spread caries, and were therefore not meddled with. Some of the thickened soft parts being cut away, the

flap was laid down, and most accurately remained in position; it was so retained by adhesive straps. The forearm and hand were supported in the same posture, that of pronation, upon a softly padded splint, and a few turns of a bandage above and below steadied it so, while the injured part was left uncovered for the application of a few folds of linen wetted in cold water.

I may state that the operation was rapid, and the patient recovered in a few minutes from the effects of the chloroform. She was insensible to pain, so faithfully did it act; the dressing of the wound was accomplished without its influence, and with but little suffering. The shock, if any, must have been very trifling, the pulse in a few minutes having regained its strength and volume.

3 P. M. Has taken a cup of beef tea and four ounces of wine, and feels very comfortable.

3rd. Slept all night, and has eaten her breakfast with appetite; countenance cheerful, and her pulse 90, full and quick. She suffers no pain whatever in the wound, and the limb preserves a nice temperature, being only a few degrees above the sound one. To have some beef tea, and an opiate at night, if required.

4th. Slept all night without a draught, and felt quite refreshed and comfortable when she awoke; ate her breakfast, and with a desire for it; pulse 88; the secretions healthy. There has been a natural evacuation from the bowels, and the urine is passed in full quantity. The wound looks very well, and the patient does not complain of pain.

9th. Up to this period the patient seemed to be going on most satisfactorily, when suddenly symptoms of effusion in the brain came on, rapidly indeed, and without premonitory symptoms. She quickly became comatose, and died in a few hours.

A very careful post-mortem examination was instituted, and the following appearances observed:—The scalp was not over vascular, but upon removing the cranium the venous circulation was turgid by congestion, indeed the sinuses and larger veins were gorged with blood; while the amount of serum contained in the ventricles and spinal canal was very great, measuring from six to eight ounces, the structure of the brain itself being rather pale and anemic.

By some it may be asked, why was the character of an operation, so new in itself, risked in a case so unpromising, in a patient so advanced in life? My answer simply is, the patient would not submit to amputation, while she willingly agreed to the proposition of resection. The latter was with my full

approbation acceded to. I could not bring myself, without any valid reason, to condemn the limb, and, as it were, to exclude this creature without the pale of modern surgery; and, from an impartial view of the case, in all truth I protest that the particular operation practised had no more to do with her death, than as it might have occurred after simple amputation of the forearm. There was no shock, all the vital actions for days seemed well balanced, and there was no local manifestation of mischief; on the contrary, repair had rapidly advanced. The post-mortem appearances, as already mentioned, pronounce the cause of death such as every practical surgeon must be conversant with: this sudden and rapid effusion, either into the head or chest, will sometimes frustrate his best efforts after operation in the old and young, in the latter particularly when a scrofulous taint exists.

The operation, as described and executed in the foregoing case, presents many points of novelty, and of great interest, as I conceive, in determining the question as to the propriety of excision of the wrist-joint. It has been urged as an argument against the operation, that the extensor tendons are all cut, the parts are matted together, all motion lost, and if the patient recovers, the hand and wrist are deformed, and deprived of mobility. Granting even all this, I am firmly of opinion that a stiffened hand and wrist is better than no hand at all. In this preservative operation we have Mr. Fergusson again leading the way, and giving freely the record of his vast experience and truthful deductions.

On August 16, 1851, Mr. Fergusson revived this operation by operating upon a man aged 22. The patient was placed under the influence of chloroform; a longitudinal incision was made on the ulnar side of the wrist; a parallel incision was made on the radial side, and a transverse one about one inch above the wrist. All the carpal bones were successively removed except the trapezium; the bases of three metacarpal bones, being likewise in a carious state, were also taken off, as well as the extremity of the radius and ulna; no vessels required ligatures.

In a second case Mr. Fergusson repeated this operation May 21, 1853, the patient being a man aged 28. In this instance Mr. Fergusson removed most of the carpal bones, and gouged out a portion of the extremity of the radius. Mr. Fergusson took advantage of the openings already existing, in order to take hold of the different carpal bones, being at the same time careful not to injure any of the flexors or extensors.

In October, 1853, Mr. Erichsen excised the wrist-joint

from a man aged 28. A number of irregular fragments of carious bone, constituting the whole of the first row of the carpus, together with about an inch of the lower end of the radius, and a little more than the styloid process of the ulna, were cut out. This was effected by making a transverse incision over the centre of the dorsal aspect of the joint, and two other incisions, at right angles to this, reaching from above the styloid process; a flap being then raised over the surface of the extensor tendons, from between which were removed the fragments of bone.

Mr. Simon, of St. Thomas's Hospital, excised the wrist from a boy, aged 19, on the 9th of October, 1852. He thought that the diseased osseous texture might be advantageously taken away, by making two long incisions on the anterior and posterior aspects of the joint, reaching from about two inches above the wrist, back and front, to the centre of the palm and dorsum of the hand, the incisions being so managed as to run between the tendons coursing down to their destination. All the bones of the wrist were taken away, except the trapezium and pisiform, and one of the metacarpal bones was likewise excised.

Mr. Stanley recently operated upon a boy, aged 13:—"He made a free semicircular incision above the wrist, turning back a considerable flap, together with tendons and integuments; the excision of seven bones of the wrist was then effected and the flap laid down again"^a. I have alluded to these cases to show, that so far as the removal of the bones is concerned, it can be achieved by incisions planned after either way; there are other methods, too, devised by able surgeons, the most simple of which is that of M. Doubled: it will answer well enough when the disease is confined merely to the end of the radius or ulna, and where there is no great distortion of the soft parts. He makes only one longitudinal incision on each side of the joint, always commencing with the ulna; he causes the hand to be pulled outwards, destroys the ulnar articulation, and dislocates the bone before cutting it off; then he goes to the radius, which he excises in the same manner; by this process all the tendons would be saved; and the operation is easy of execution on the dead body, and when the parts are sound; but a diseased and deformed hand would create obstacles, which might not, I conceive, be overcome by the division of the soft parts in so limited a way. The operation which I think best suited to those cases is the one which I put

^a Lancet, March 17, 1855.

in practice myself; it meets every objection which has been urged against the measure; and to which I have already alluded. Mr. Stanley's operation is somewhat similar, but mine is superior, inasmuch as the tendons of the muscles of the thumb are not divided or disturbed from the soft tissues which immediately surround them, and are thereby protected from sloughing and death, so that all the motions of the member in its integrity can be preserved. No doubt, after excision of the wrist-joint and carpus, much motion cannot be expected; a firm fibro-ligamentous structure fills up the place of the removed bones, and fuses the surrounding textures into its dense tissue, and mats all together. But, according to my views, the hand may be retained nearly as useful as ever; the fingers being kept semiflexed during the process of repair, they retain this position, and the thumb, being preserved perfect in its motions, readily approximates either of the fingers, so that the hand can be applied to its most delicate uses, such as writing, sewing, &c.; as well as to the most severe and commonplace, using implements for husbandry, grasping bodies, &c. I can best enforce this position by reference to a few cases conjointly bearing on the subject.

Terence Farrell, aged 53, a large, powerful, muscular man, by occupation a labourer, was admitted into Mercer's Hospital February 14, 1853. He stated that three weeks before, he was finishing some taskwork, violently labouring with a shovel; that he blistered and bruised the palmar aspect of the middle phalanx of the ring finger of his right hand; it was exceedingly painful, yet he continued to work; the pain increased, and also the tenderness and swelling, and for five days he suffered great torture; he stuped and poulticed the part at night, at the same time that he endeavoured to work by day to support his family. The "blister" gave way, and the finger became exquisitely sensitive, and the man was forced to give up his employment, and sought relief from a medical attendant. Now the part was not incised at first; however, it was some time afterwards cut open when the "blister" had given way,—this was eight days after its first commencement. This superficial cutting did not arrest the mischief, which gradually went on until three weeks had expired, when the patient was sent to hospital to be placed under my care. At this time the hand was enormously swollen, each finger tense, engorged, and more than double its natural size, the thumb alone being exempt from the surrounding mischief. The palm of the hand was hard as a board, tense and unyielding, while its dorsum was puffed up and ready to burst from distention by fluids; but the

inflammation did not stop here,—it had passed up the forearm with alarming rapidity to nearly as high as the elbow, seizing with impunity on both aspects of the limb. The engorgement and tension were beyond anything which I had before witnessed, and the deep purple-red discoloration of the parts most alarming. The edema was so abundant as to totally obliterate the proportions of the forearm, and convert it into a shapeless mass, twice and a half the size of its normal configuration; the pain produced by pressure on any part was severe, and the pitting deep and lasting, the compressed part slowly regaining the surface. The annular ligaments before and behind were sunken, depressed, as if a tight band had been girt around the limb and strangled its vitality. The man upon admission was stricken by the lowest fever; though originally a powerful man, of gigantic proportions, he was totally prostrated and feeble as a child; his pulse was rapid, small, and feeble; his gait tottering; his tongue dry, hard, and brown. Great and constant suffering, perpetual watchfulness and want of sleep, imperfect nourishment from privations by want, stamped the type of the constitutional disturbance purely asthenic. I determined at once upon freely incising the parts, but before attempting to do so, had copious draughts of wine administered. The beneficial effect of the stimulant was soon manifest by the enlarged circulation, the heat disseminated over the body, and the increased confidence arising from resuscitated nervous energy. Two hours after his admission this great and desirable change was brought about, and then I did not hesitate to slit up freely the palmar fascia through its entire extent, observing the cautions which I have elsewhere alluded to^a. I likewise freed the fascia over the muscles of the little finger fully to two inches in extent, and also over the anterior surface of the extremity of the metacarpal bone of the index finger; thus the three compartments of the hand, created by the dipping in of the fascia, were each laid open, and all tension taken away. I also laid freely open the fibrous sheath binding down the tendons of the ring finger, as much pain was still referred to this region. The hand being changed into the prone position, I freely incised its dorsum, from which the rush of blood and serum was most copious; and likewise cut through the fascia over the metacarpal bone of the little finger on the same aspect. So much for the hand; the forearm next required attention.

^a See Dublin Medical Press, July, 1852, "On Wounds of the Palmar Arch, and of the Arteries in the Vicinity of the Wrist-Joint."

Parallel to, and midway between the radial and ulnar arteries, I slit the fascia of the forearm to fully three inches in extent; the evidence of tension relieved was manifest from the edges flying open, leaving a gaping wound from which gushed out serum and blood; the limb was then plunged in a vessel of warm water, and permitted to bleed until the loaded capillaries were allowed time to disgorge themselves. At the same time attention was bestowed upon the pulse to insure no ill effects from over bleeding. Afterwards the entire forearm and hand were enveloped in a linseed-meal poultice; and lastly, the most powerful adjunct, *position*, was favourably insured, by placing the limb partially flexed, and supported on an inclined plane of pillows, the hand being higher than the chest or centre of circulation; stimulants and opiates were liberally given.

February 15th. Slept, and great relief from the burning tension of the limb, yet apparently little local amendment; no doubt the coloration of the arm is changed; it is paler, and its volume is slightly lessened; stupes and poultices to be continued; chops, wine, porter, and opiates, freely.

17th. Pulse slightly intermitting; tongue red, but not dry; slight hiccough; tension greatly lessened on the anterior aspect of limb; rugæ formed; nevertheless, had to incise the fascia on the posterior surface of the forearm, above the wrist, to two inches in extent; imperfect suppuration in the wounds first made; local treatment as before, and constitutional strictly stimulant.

19th. Much as at last report; pulse occasionally intermitting; tongue red, yet moist. He is able to take animal food; no sickness or tenderness of abdomen; stimulants and opiates as before; stopped poulticing, and applied pledgets of old linen steeped in a solution of chloride of soda, as a wash, made warm, —the fingers and forearm were covered by them; a thin layer of cotton wadding was next put on, and outside all a sheet of oiled silk to prevent evaporation; the limb was again steadied in its elevated position.

21st. Improved in every respect; pulse has lost its intermission, and gives a full beat; hiccough gone; matter streaming from the wounds; redness, swelling, and tension of hand and forearm nearly gone; applied dressings as at last report; chops, eggs, spirits, and opiates, as before.

23rd. Constitutional symptoms greatly improved; stopped the chloride of soda dressings, the wounds being now healthy, and all increased inflammatory action so totally subdued. I rolled the limb, bandaging each finger separately, padding the hand carefully, and interposing over the wounds lint smeared

with zinc ointment; gentle bandage support as far as the elbow; the same position enforced, and the same amount of stimulants, &c., given.

26th. Had to make a small opening over the posterior surface of the ulna in its lower third.

March 2nd. Another abscess formed about an inch above the wrist, which had to be laid open; continue stimulants, opium, &c.

6th. Permitted to get up and move about the garden, the limb being supported in a sling.

7th. Had to lay open another small abscess over the end of the radius.

12th. Had to open an abscess on the posterior surface of the hand in the cleft between the thumb and index finger, close to their junction with the metacarpal bones; and, to free effectually the parts, had to slit up the thin fascia covering the radial artery in this locality. In every other respect matters rapidly improving; the fingers are a good deal stiffened, but semi-flexed, and the motions of the thumb are perfect.

22nd. All sinuses and abscesses obliterated, and wounds healed; and on the 7th of April the patient was dismissed cured, his hand useful for all practical purposes.

Again, I had under my care in hospital during the past winter, a man, aged 70, who had been bitten by a fox. The index finger of his right hand was deeply cut on its inner side and palmar aspect; nevertheless the wound healed, but, after five days, deep tensive pain settled in the part: active inflammation was aroused, it passed on to the hand, the palm became engaged, and quickly it travelled up the forearm; the local symptoms and constitutional derangement ran much the same course as represented in the previous case: indeed, in this instance the parts seemed more prone, when attacked, to run rapidly into gangrene, therefore early and free incision was at once had recourse to. On the first invasion, by this precaution, I have no doubt more extensive mischief and death of deeper parts were often stayed. Nothing could be more unpromising, from the very first, than this case in all its bearings: the advanced age and broken-down system of the patient, the alarming extent to which the disease had progressed, the utter prostration and typhoid fever present, formed such a combination as to give but a feeble chance of recovery, yet, by numerous and repeated incisions carefully executed, by an abundant supply of stimulants and nutriment, the case was conducted to a happy issue. The patient was admitted into hospital on the 16th of October, and dismissed cured on the 28th of December.

I have dwelt at considerable length upon the history of these cases, particularly the first, but attempt no apology, as a great practical principle remained to be enforced. By the repeated and judicious use of the knife, in each instance the limb was saved. By many surgeons, I have no doubt, both would have been condemned to amputation. Recovery took place in each with the fingers stiffened, but by management they were compelled to retain a semi-bent position. And though in each instance the thumb was so surrounded by destructive inflammation, yet it escaped being implicated, and therefore preserved its motions in their perfect integrity.

Were it necessary to multiply facts, the following case bears forcibly on this question:—

Mary M., aged 38, a servant, was admitted into Mercer's Hospital under my care, December 7th, 1853. She stated that on the 25th of November she severely pricked with a needle the unguinal phalanx of the middle finger of the left hand. On the same day, when cooking, she inadvertently burnt the same finger; it became exceedingly painful, and gradually grew worse. She continued to stupe and poultice it; the dorsum of the hand became excessively swollen; all power of bending the fingers was lost; the tension of the palm was extreme; the redness of the back of the hand had rapidly progressed, and the integuments absolutely gave way, freeing the parts, and permitting purulent matter to escape. During all this time the patient had no sleep, but burning fever and its numerous concomitants. The foregoing description conveys very accurately her state on admission. I at once freed the fibrous canal bounding the tendon on the affected finger, and corresponding to the second and third phalanges; I extended the incision from the latter, beneath the fibrous transverse band, to the palm, so as to free it effectually, and afterwards slit the palmar fascia in a straight direction. A free flow of matter followed these incisions, not only from the region of the hand, but also from the forearm, above the annular ligament, proving the extent to which the mischief had extended; I next freed the dorsum of the hand in two places, and let out matter from beneath the burrowed integuments; after these incisions the limb was submerged in a vessel of hot water, and allowed to bleed freely. It is unnecessary to follow up the daily report. The intensity of the inflammation, sufficient to cause the death of the tendon of the affected finger, was equally effectual, having seized upon the palm of the hand and forearm, in matting the common supply of tendons to the remaining fingers altogether, binding and fusing them together with the fascia in this region, and destroy-

ing altogether and for ever their independent action. Now the effect of inflammatory action thus propagated was to place the fingers in a state of semi-contraction, and so they were maintained, and the tendon of that first affected being dead, a similar position was enforced. Through all this ruin the thumb, as in the foregoing cases, was not interfered with; and the patient left the hospital on the 8th of January, a little more than a month after her admission, with a hand, owing to the perfect and uninterrupted motions of the thumb, effective for every office.

Now, by some not conversant with disease, it may be said, such crippling of the fingers ought not to result from paronychia. In reply, I would simply state, these were the very worst forms of the affection, neglected, let to run their own course, until all the mischief capable of being committed was actually done before relief was sought; that the inflammation had passed from the tendon and its fibrous sheath, and seized upon the palm of the hand and the complicated arrangement of parts located there,—and, having done its worst, proceeding beneath the annular ligament, and involving the areolar tissue and fascia binding down the muscles of the forearm in the same destructive process, continuous and progressive from the first until checked by the interference of the surgeon.

The converse of the proposition, namely, that the thumb may be deprived of its functions, spoiled in its motions by inflammation set up in itself, without implicating the adjoining fingers or lessening their usefulness, I could easily prove also from hospital cases, but I do not consider it necessary to dwell longer upon the matter: by a glance at the anatomical configuration of the part a solution is readily afforded.

The extensor muscles of the thumb lie deeply buried at their origin, while, on assuming their tendinous arrangements before passing over the wrist-joint, and finally to their insertion, they became isolated and apart from all others, each provided with its own fibrous channel, each lined by its own distinct synovial bursa, reflected upon the tendon in its transit. So is it with the powerful flexor tendon: the muscle taking its origin deep in the forearm, attached to the very bone, to within about two inches of the carpus, behind the median nerve, and surrounded by a distinct synovial membrane; it then runs outwards between the two portions of the short flexor and the two sesamoid tubercles at the extremity of the metacarpal bone; being so far protected, it then enters a strong ligamentous sheath lined by a bursa, and is confined by it as far as the last phalanx of the thumb into the middle of which it is inserted.

Upon a thoughtful consideration of these concurrent facts, I planned and executed the operation already described. By it the muscles of the thumb are not interfered with, and there is no good reason for supposing that this member, isolated and apart, should be influenced by, or participate in, the inflammatory action necessary to the consolidation and repair of the wound, after excision of the wrist-joint, when performed after my method.

Acting upon the same principles which ruled me in the foregoing case, I recently excised the carpus and two of the metacarpal bones, with the greatest success, as herein recorded.

Excision of the Carpus, together with the fourth and fifth Metacarpal Bones; case recovering with a most useful Hand.

William Moran, aged 20, a tailor, was admitted to Mercer's Hospital, August 4th, 1855. *History.*—In November, 1854, he got a severe blow on the back of his right hand; for five days he was unable to work from pain and swelling in the part; he leeches and stupes it according to advice, and swallowed several doses of medicine; from this treatment the swelling subsided, and the pain went away. An interval from this time up to March passed without any annoyance from it; however, early in the latter month, very acute pain seized upon the part, and which he ascribed to the inclement frosty weather that then set in. He worked at his employment from March to the end of June; during all this time a dull, indolent pain wearied him, and at the termination of this period, redness and discoloration were the precursors to the formation of matter; a large abscess developed itself quickly, and burst, giving exit to a vast amount of matter. Now at this time the hand was perfectly powerless; shortly after, a second abscess formed over the upper range of carpal bones and towards the radial edge of the forearm; this was opened by me, and a large quantity of pus escaped; after this, I carefully examined the parts; the hand was greatly swollen on its dorsum, an ulcerated patch, the size of a sixpenny piece, marked the opening of the first abscess, being situated a little above the base of the fourth and fifth metacarpal bones, while the opening made to free the second abscess allowed a probe to pass between the first and second carpal range, and I could not get it to pass upwards towards the radio-carpal articulation; a probe passed through the lower opening proved the metacarpal bones stripped and carious, and also the carpal bones in their vicinity, while that through the upper confirmed this information; but I could not

detect any evidence of disease in the radius or ulna, or in the approximated surfaces of the scaphoid or lunar. I could move this range of bones upon the radius in flexion or extension, gentle abduction or adduction, and I could press them together without any grating sensation. The man had the full power of moving the thumb and partly flexing the fingers, but the power of extension was gone, nay, more, when the hand was left unsupported, it instantly drooped at the wrist, and the will had no power over the muscles to elevate it: the surface of the whole hand was glazed, shining, and discoloured.

Now, a very remarkable feature in this case is, the length of time the patient was able to work while the disease was developing itself; for he distinctly mentioned, that up to a month before his admission he was employed as a journeyman tailor, and fully competent to work the most difficult parts, and use a smoothing-iron of eight pounds' weight. During, then, the latter month, the disease progressed with fearful rapidity; the hand almost suddenly became useless, and pain was never absent from it. The aspect of the man fully attested the truth of his statements: he was worn and debilitated, with a jaded, haggard expression of countenance, that which we so constantly recognise as concomitant with incurable disease of a joint. It was clear that something should be done, that the source of irritation should be removed. After a very careful examination of the case, and the chest being healthy, I decided upon excising the diseased carpus and metacarpal bones. The patient being put under management for a few days, on the 10th of August I operated, much in the same manner as in the case of excision of the wrist-joint and carpus.

The man being placed recumbent, was quickly brought under the influence of chloroform. I raised a flap from the dorsum of the hand, beginning a little below and outside the second extensor of the thumb, over the junction of the first and second carpal range, and carried the knife in a semicircular manner downwards and outwards, over the posterior thirds of the third, fourth, and fifth metacarpal bones, and from this upward to a point nearly opposite to where the incision commenced; the flap thus formed, including the external tendons, was dissected up, and the diseased carpus fully brought into view. In order to expose the metacarpal bones sufficiently, a straight incision had to be carried along the fourth, and a flap dissected outwards; their carious state was then revealed through its entire extent, and two-thirds of each had to be taken away; the bones were clipped across with a narrow-bladed bone forceps, and, being carefully lifted backwards,

were freed from the soft parts. The bones of the carpus which required to be altogether taken away were,—the cuneiform, the trapezoid, the os magnum, and the unciform. On passing a probe through the aperture already alluded to over the end of the radius, it clearly pointed out the accuracy of the diagnosis. The instrument passed below the scaphoid and lunar; the inferior edge of the latter was roughened, and stripped of its cartilage, and I therefore pared it off with the forceps; the proper wrist-joint, however, was not, as premised, at all implicated in the disease. The metacarpal bone of the thumb and the trapezium were diligently looked to; but these bones, as well as their articulations, remained healthy. A good deal of thickened deposits were then clipped away, and the surface sponged, to facilitate a very close examination of the parts as to their healthy arrangement; all were pronounced in a favourable state. The divided arteries were next secured, four requiring to be ligatured. The edges of the vertical incision over the metacarpal bone were first brought together, and retained by two points of suture, and next the semilunar flap laid down and kept in position by four more; the hand and forearm were then sustained on a padded splint, the wounded part being left exposed for the application of cold. The patient rapidly recovered from the effects of the chloroform, and having given him some wine, he was placed in bed, the limb being considerably elevated upon pillows; in a quarter of an hour after he got a full opiate.

4 P.M. Not suffering pain; to have a pint of beef tea and bread; an opiate at night.

12th. Is wonderfully well; slept quietly all night; countenance placid; he has no pain at all; pulse 80, soft and regular in its beat; eats with appetite. The hand preserves a nice temperature, it is but little swollen; the cold has been assiduously applied; healthy purulent matter discharging through the ulcerated opening over the metacarpal bones. To have free diet, and two ounces of spirits.

15th. Has gone on most favourably since last report; dressed the wound to-day, the first time since the operation; removed the stitches; union by the first intention has taken place at some points. To continue diet as before.

24th. The patient now sleeps without an opiate; there is very little discharge, and no pain in the hand; dressed every second day, and even now possesses the power of considerably flexing the fingers, which are kept bent over the end of the splint. Allowed to sit up in bed supported with pillows.

September 2nd. Improved in every respect, and the whole

joint and parts bear compression with soap plaster without uneasiness. Permitted to get up and walk in the garden.

5th. The going out in the open air has produced a marked improvement; the limb does not pain him at all; the discharge is very trifling; all œdema of fingers entirely gone; his appetite so sharp that it is necessary to restrict him in food. He sleeps undisturbedly the entire night.

22nd. Since last report the improvement has been very marked; there is but little discharge; the wounds are nearly healed; the part corresponding to where the bones were cut out is comparatively firm, and the hand left unsupported does not droop; the motion of the fingers is considerable, while that of the thumb permits its approximation to any of them, thus small bodies can be caught and held with some firmness. After a little time, there can be no doubt but the hand will be useful for every necessity. The part is still carefully strapped with soap plaster and maintained upon a splint.

By all anatomists and physiologists the beauty of the human hand has been dwelt upon: to the former it has yielded the most interesting characters for minute examination; while to the latter it has afforded the best example that could be adduced not only of superiority in human organization when contrasted with that of any other created being, but also of the most perfect adaptation of structure to function, of means to an end, of design in a plan, and of perfection in its execution. The hand not only becomes the principal agent in most of the physical acts of life, defensive or offensive, but also the immediate instrument in the production of every work of art, thereby in a great measure portraying the feelings of the mind and the powers of the intellect. Then, to the care and profession of the surgeon we have committed the protection of this part, in which the most exquisite delicacy of tact and feeling resides; necessarily and almost constantly exposed to violence or to injury. To save it from deformity and mutilation is the imperative injunction, and the point to which his efforts should ever strain, and when not practicable to preserve the hand entire, parts must be cut out and sacrificed, the dead from the living, sooner than all should perish.

When speaking of excision of the wrist-joint, I have laid great stress upon the advantages accruing from the motions of the thumb being preserved perfect: for the fulfilment of many of its offices it is essential that its length be retained, or nearly so; for instance, in using the pen, pencil, &c., &c.

Now, when caries or necrosis attacks either of the phalanges or metacarpal bones, or when, from accident, they are disrup-

tured, broken up, irremediably shattered, it is with me a rule to take away the dead or crushed bone, and preserve the soft parts as nearly as possible in their natural configuration, sedulously leaving the flexor and extensor tendons, so that they may contract new attachments to the denser tissue deposited as a substitute for the bone removed.

Excision of the first Phalanx of the Thumb ; Recovery ; its functions admirably preserved, and with little deformity.

T. B., aged 22 years, admitted to Mercer's Hospital March 4th, 1854. When oiling a steam-engine, the crank which steadies the shaft broke, and struck the thumb of his right hand, and crushed it against the framework: the third, fourth, and fifth fingers were all considerably lacerated, but the first phalanx of the thumb was smashed in pieces, and split to its ends, while the integuments covering the ungual phalanx were torn and spoiled a good deal. I saw the patient immediately after being brought to hospital at 5 P.M.; having carefully examined the lesion, discovered that the flexor and extensor tendons were not torn through, though the broken bone was so extensively comminuted; I had to extend the wound, which lay over the base and outer edge of the broken phalanx, forwards, and through this wound removed the entire bone, leaving the ungual phalanx with the flexor and extensor tendons attached. At the same time, and through the same wound, I pared off with a strong knife the cartilage of incrustation, covering the ends of the preserved phalanx, as well as that upon the exposed surface of the metacarpal bone. I put a few stitches in the wound, and fixed the finger at its full extension on a splint, and then dressed the torn integuments of the hand. The entire forearm and hand were then steadied upon a splint by a few turns of a bandage. The finger operated upon was cold, particularly at its extremity; to preserve its vitality and create reaction, I wrapped it in lint soaked in oil of turpentine, and then enveloped it and the entire hand in carded wool. The patient was afterwards conveyed to bed, and warm stimulants given, with an opiate.

10 P.M. Pain had almost subsided, and the finger was of natural temperature: ordered to continue the turpentine dressing and to repeat the anodyne.

March 5th. He slept quietly, and upon waking had no startings or pain in the hand; finger fully preserves its vitality, being $90\frac{1}{2}^{\circ}$ in temperature, while the hand is exalted to 108. To be dressed in the same way as before, and half a grain

of muriate of morphia to be taken every fourth hour to allay all nervous irritability.

8th. Full temperature in the finger, and now perfect sensibility restored to the ungual phalanx; the wound looks most satisfactory, and the minor lacerations present a healthy aspect.

11th. The finger was nearly healed, and the patient had the power of slightly flexing it; and on the 12th he left the hospital to attend as an external. This he regularly did for about a month, when the cure was complete. A firm, dense tissue occupied the site of the removed phalanx, and even at this time the power of flexing the ungual phalanx was nearly complete.

The wound was now healed, and I lost sight of the man for two months, when he called at the hospital to show himself. The distance between the ungual phalanx and the metacarpal bone was half an inch less than that of the left thumb; in other words, the substituted tissue was less by that quantity than the excised bone; however, this was scarcely appreciable; and though the new structure was not as hard as bone, yet it furnished sufficient resistance for almost the perfect development and exercise of the muscles of the thumb, even when opposed by great resistance; and all the minor and rapid actions were perfect as ever; the man could use his pen with as much dexterity as before the operation. There are two points which I would strenuously urge as conspiring to the favourable issue of this case: *first*, the restraining of the ungual phalanx from the end of the metacarpal bone, until the exuded fibrine thrown down in the bed from which the phalanx had been taken acquired sufficient consistence to resist any great amount of shortening; and, *secondly*, when this object was accomplished, removing restraint, and favouring gentle, passive motion.

The following case affords an example where I excised the ungual phalanx of the thumb, preserving the soft parts entire, it being attended with the best results.

Excision of the Ungual Phalanx of the Thumb; Recovery, attended with scarcely any deformity, and but little loss of power or motion.

John Robinson, aged 60, a house-smith, admitted to Mercer's Hospital towards the end of July, 1855. *History.*—Six months before his admission he bruised the top of his left thumb when at work; severe inflammation followed, and he

went through all the routine of poulticing, stuping, leeching, &c., but with no benefit; after three months' suffering, an abscess formed on the dorsum behind the nail, and burst, from which matter was constantly flowing; some small bits of bone next came away; this was all very tedious; for months he was idle, being unable to work; a fortnight before his coming to hospital, he attempted some gentle employment, where the hand was not severely engaged, yet after following it for two days, he had to desist; increased and violent pain attacked the finger, inflammation ran along the absorbents, and the glands in the axilla became enlarged; this state lasted for two days, when he came to hospital: then the finger was greatly swollen, the irritated lymphatics were conspicuously present along the entire extremity, and the swollen glands in the arm-pit painful and exceedingly sensitive to the touch. The patient was greatly prostrated for want of rest and food, his appetite having altogether failed; after some days' suitable treatment, this local accession of inflammation was subdued, and the healthy state of the lymphatics and glands restored. When the local and constitutional disturbance was quieted, then came the question of the best mode of dealing with the finger. Upon moving the phalanges in opposite directions, the grating of diseased bone was quite audible; two apertures existed, one behind the nail, the other at the point of the finger, a little below it; on passing a probe into either, the dead bone could be felt. On ascertaining these points, I decided on resection of the diseased bone, and saving the soft parts; the way in which I accomplished this object was the following:—

August 10th, 1855. The man was seated in a chair, and the arm and hand steadily supported in the position of pronation; I made an elliptical incision, corresponding to the phalangeal articulation; the arms of the ellipse embraced the anterior extremity of the first phalanx, while its most convex part lay a little behind the matrix; the flap being dissected back, I opened the joint, and then passed a very narrow sharp-pointed knife along the first phalanx, without perforating in front, and keeping its edge to the surface of the bone, liberated it from the soft parts, and with a dressing forceps then drew it back; I next cleared the projecting end of the second phalanx, and with one of my own fine saws removed its cartilage with a thin slice of the bone, cutting from before backwards; the vessels divided were far larger than could have been expected, and three of them required ligatures. All bleeding being checked, I brought down the flap and secured it with a few points of suture, and then wrapped strips of lint wetted in cold water

around all; they not only kept the parts cool, but likewise afforded a gentle support; the hand and forearm were then steadied on a splint, and the man put to bed.

I did not use chloroform in this case, as the man had an exceedingly feeble heart, besides visible pulsation in all the main arteries, or, in other words, open aortic valves; before the operation a large stimulant was given, and after it wine and opium administered.

10 P. M. Suffering no pain of any amount; the finger being a little cold, enveloped the hand in cotton wadding: to repeat the opiate.

12th. Suffering no pain; slept; heat of finger perfectly restored.

15th. Wound suppurating healthily through the opening of the old sinus included in the flap, while the edges of the wound are united by first intention.

24th. The wounds inflicted by the knife all healed; only a few drops of matter discharge through the old opening; the part bears handling wonderfully well.

September 5th. The old sinus entirely obliterated, and now its external aperture is on the point of being healed; he is able to move the finger freely, and allow it to be handled without pain.

7th. On this morning the patient was dismissed from hospital, the parts being perfectly healed.

22nd. On this day the man called to hospital, as I directed, to show me his hand. His thumb is perfectly firm and capable of holding, with the index finger, the numerous small instruments which his trade requires; had the phalanx been amputated, the finger would be too short for this purpose, and thus the poor fellow, as he feelingly asserts himself, would be prevented earning his bread, which he is now enabled to do as well as ever, by this preservative operation in surgery.

The same arguments which have been used to establish the principle of saving the thumb as long as possible will also apply, though in somewhat a minor degree, to the index finger. When the second and third phalanges are diseased, the bones should be exsected by a longitudinal incision, and the soft parts retained as long as possible; in this way the finger may be saved efficient for many useful purposes; the operation is particularly applicable to scriveners, a class of people that earn their livelihood by writing.

The following case proves how far preservative efforts may be successful in such a dilemma.

Excision of the Anterior Extremity of the first Phalanx of the Index Finger, together with the entire of the second Phalanx, the Unguinal having perished early; Recovery, with preservation of nearly all the soft parts, and a useful Finger.

James Corker, aged 60, admitted into Mercer's Hospital, April 4th, 1854. He had suffered from severe paronychia, which commenced in the unguinal phalanx of the index finger of his right hand; it got from bad to worse under treatment at home, and ultimately he applied to a practitioner, who incised the finger, but without checking the disease; finally the bone died, and the disease continued up the finger towards the hand. At this time he came under my notice: the last phalanx of the finger was black, shrivelled, and dead, the bone was also diseased; the rest of the finger was greatly swollen, tender and red; some openings existed on the outer and back part of the second phalanx, and over the articulation corresponding to it and the first; through these openings, matter had made its escape. On introducing a probe, it was quite clear that the second phalanx was also dead, and the extremity of the first stripped and crumbling. I removed the entire of the second phalanx and cut off the extremity of the first with the fine saw already described; a longitudinal incision carried over the outer and back part of the finger afforded sufficient division of the soft parts to permit these things to be accomplished; the soft parts in front were pared off from the dead, and adapted to lie evenly towards each other. The longitudinal incision was not closed; on the contrary, the parts were kept far away from each other by a roll of lint steeped in oil and laid down in the space from which the bones were taken. In a few days the dressings were repeated, granulations sprung up within, and after some time the parts became more solid. By this arrangement the bulk of the finger was almost preserved, and the amount of shortening was scarcely more than the length of the unguinal phalanx. On the 28th of April the parts were all healed, and the motions of the first phalanx on the metacarpal bone being perfect, the finger was exceedingly useful. The man was dismissed from the hospital at this time, and in about a month he called back, and showed himself; he could then write nearly as well as ever, and the finger, by this *novel mode* of treatment, was preserved almost as useful as ever.

In some instances the first phalanx of the index finger, as well as the two anterior, may be entirely diseased; and it becomes a question as to the best mode of dealing with it. In

such cases I invariably take away the head of the metacarpal bone, whether implicated or not, together with the disorganized finger, after the following method:—

Excision of the Index Finger, together with half the Metacarpal Bone; Recovery, with very little deformity.

Patrick Murphy, aged 57, a labourer, admitted to Mercer's Hospital December 31, 1853. Fifteen days before his admission he was attacked with severe pain and inflammation in the ungual phalanx of the index finger of his left hand: it rapidly extended to the second phalanx, and even to the third, destroying quickly the soft parts and the bones of the two former. The pain and suffering he endured were very great: he had no sleep for nights; there were great redness of the parts and throbbing of the arteries leading to it; the soft parts over the second phalanx gave way behind, matter flowed out, the tendon sloughed, and the bone was exposed and black. On coming to hospital the two first phalanges were destroyed, and the first was carious close to the metacarpo-phalangeal joint; covering the latter, the integuments were also disorganized, and perforated by ulcerated apertures; the bone at the articulation, though not dead, was thickened, expanded, and spoiled. The patient was ordered stimulants liberally, sedatives, and support. When under treatment for two days, I proceeded to remove the entire finger, together with half the metacarpal bone, in the following way:—An incision was begun a little above the centre of the metacarpal bone, and carried along in a straight line its radial edge, to within a quarter of an inch of the extremity of the bone, when the knife was swept in a curved manner downwards and forwards to the anterior part of the joint; the knife was then applied to the anterior extremity of the straight line, opposite to where the curved incision commenced, and was carried with a similar degree of obliquity on the inner side of the joint, through the cleft between the index and middle fingers, to the front of the joint, so as to meet the corresponding incision from the opposite side; the metacarpal bone was then dissected out, as it were, from the soft parts, and cut about its centre with a degree of obliquity from behind forwards and inwards, thus, as it were, slicing the bone, by means of a fine saw after my own construction; when the flaps were laid together, a single line merely traced the wound; there was no unsightly prominence or projection; a few stitches held the edges in contact, and a few folds of linen wetted in cold water, and laid over the part, steadied on a splint, com-

pleted the dressings. On the 22nd the wound was healed, and the motions of the other fingers preserved perfect. The cicatrix was not unsightly; it was narrow, and from the manner the incision was planned was somewhat beneath the convexity of the hand, and therefore shaded by it.

In some cases the metacarpal bone is so extensively diseased that it is more judicious to take away the entire of it than run any risk of a repetition of the caries, by striving to save a part, as in the following instance:—

Excision of the Index Finger, together with the entire Metacarpal Bone; Recovery, with little deformity.

James Porter, aged 40, an ostler, admitted to Mercer's Hospital, April 1st, 1854. Nearly three weeks before this date he was seized suddenly with violent pain under the anterior edge of the nail of the index finger of his right hand—"it was a burning, severe pain"—so as to prevent his sleep, and remove all appetite. Under the advice of some friends he poulticed and poulticed it; the finger became more swollen, the inflammation extending quickly to the dorsum of the hand. When admitted, the finger was dead as far as the first phalanx; over this the integuments were of a livid red colour, extending particularly over the corresponding metacarpal bone, from which it passed along the entire dorsum of the hand, but in a far less marked degree; apertures existed over the metacarpal bone and second phalanx, through which the deadened bones could be readily felt with a probe, but the inflammation was not limited to these parts: it extended in a diffused character up along the forearm; there were enlarged glands in the armpit of the affected side, and the inflamed lymphatics coursing up the limb were readily discernible. On coming into the house the patient was haggard, cold, with little pulse, agitated by frequent tremblings and faintness. Heat was applied, and warm stimulants freely given. In four hours reaction was fairly established, and then I freed by the knife the soft parts over the diseased metacarpal bone, and also the outer and back part of the hand; from the wounds made blood and pus flowed, as there was imperfect suppuration throughout the lax areolar tissue of the part. After this the limb was submerged in hot water, and the bleeding encouraged until the vessels unloaded themselves. Two grains of calomel and a grain of opium were given, and he was ordered a grain of opium every third hour.

April 2nd. The man slept; pulse better; pain diminished in the hand, along the lymphatics, and in the axilla; the hand

is greatly reduced in bulk; the integuments are corrugated in many parts; the incisions were dressed with lint soaked in a solution of chloride of soda; to continue the opium; meat diet; spirits, four ounces.

3rd. Swelling greatly diminished; all tendency to spreading of inflammation stopped; the part affected looks now pale, and the inflamed lymphatics have disappeared; the glands in the axilla are likewise lessened in bulk; removed quantities of deadened areolar tissue through the incisions on the back of the hand; a line of separation has appeared in the soft parts, over the metacarpalphalangeal joint, though the metacarpal bone is stripped and dead for two inches higher than this point; chloride of soda dressings to the parts; half a grain of opium, to be continued every fourth hour through the day; animal food; spirits as before.

9th. Again inflammation of a diffuse character attacked the hand, both on its dorsal and palmar aspects. I freely incised both, the latter with great caution, so as to slit up the fascia on a director. Spirits, six ounces; animal food; opium, a quarter of a grain every third hour.

10th. All pain absent; inflammation checked; parts flaccid and relaxed; healthy matter streaming from the incisions. To continue everything locally and constitutionally.

19th. On this day I considered the parts in a good state for operation, and removed the finger, with the entire of the metacarpal bone, much after the same manner as in the previous operation. The incision having commenced higher up, some caution is here requisite to insist upon, to avoid injuring the radial artery in the cleft between the metacarpal bones. In this operation the radialis indicis artery required ligature, and three other vessels, all enlarged from continued disease in the part; the wound was next brought together, and maintained so by suture; lint wetted in cold water was then laid over the part, and the limb supported, steadied on a splint by bandage. It is not necessary to continue the details of this case. On the 14th of May I find the following report entered in my note-book:—"So perfectly has the part been removed, that it requires close observation to perceive that so much has been taken away; the wound is cicatrized, and bears considerable amount of pressure; the motions of the remaining portion of the hand are all restored; perfect flexion and extension of the fingers and of the thumb, together with those of the wrist-joint." Up to the time of the healing of the wound, all along this patient had to be liberally supplied with stimulants, and continued half doses of opium to allay irritation, together

with the most nutritious diet. I have frequently seen this man since he left hospital, and I am happy to say he finds the hand as capable as ever in obeying his will, and as effective in all violent exercise.

When the middle or ring finger requires removal either from accident or disease through its entire extent, or for distortion the result of disease, I now invariably take away a part of the metacarpal bone with it, so as to lessen deformity. In fact, the loss of either finger excised in this way is but little noticed. Mr. Fergusson, in his admirable system of Practical Surgery, when speaking in favour of this operation, mentions the case of a gentleman in Dublin (now recently dead), upon whom he operated some years before. Now, in reference to this case, I may just state that I was personally acquainted with the gentleman referred to, and I over and over again examined the hand with the greatest possible pleasure, the operation had been so beautifully executed, and the power and strength of the hand so completely preserved: or, in Mr. Fergusson's words, "the gentleman was not aware of any material difference in the power of grasping with either organ."

The objection which has been urged to the taking away of a portion of the metacarpal bone in these cases is the supposition that the hand must be weakened by it, but this I am fully satisfied, from practical experience, is not the case, when the operation has been properly performed; in the instance just alluded to, it was the ring finger which had been excised; the following case will show that the middle finger may be dealt with in the same way, and with an equally favourable result.

Excision of the Middle Finger and part of the Metacarpal Bone; Recovery, with the Motions and Strength of the Hand preserved; scarcely any Deformity.

J. B., aged 43, a labourer, admitted to Mercer's Hospital, December 27, 1851. When at work the middle finger of his left hand got severely crushed between two stones; he treated it at home for nearly five weeks; at first it promised to get better, but after a fortnight a severe change occurred in the weather, the temperature suddenly fell, and extreme cold ensued for some time. The second and ungual phalanx died, and the integument covering the first was in a state of gangrene. At the period of his coming into hospital a line of separation fully the eighth of an inch deep had taken place, a little in front of the joint between the finger and the meta-

carpal bone, above this the integuments were thickened and swollen. The day following the patient's admission he was put under chloroform, and I removed the finger in the following way:—The forearm placed in a state of supination; the hand was steadily fixed, its dorsum upwards; I commenced an incision about the centre of the third metacarpal bone, and carried it forwards in the mesial line, dividing the soft parts as far as the articulation; from this point it was curved downwards and forwards to the crease on the palmar aspect of the finger, a point fully three-quarters of an inch in front of the joint; an incision preserving accurately the same curve was next carried round the opposite side of the articulation, meeting the former beneath; the flaps were quickly dissected to either side; the metacarpal bone was next cut through with a pair of narrow-bladed forceps from behind forwards and downwards, so as to guard against any unsightly prominence after the wound should be healed; the bone being thus cut through was drawn downwards and forwards, all the soft parts being detached close to its surface, so as to guard against opening up the palm or dividing the transverse ligament; after the parts were excised the cut surfaces lay most accurately in contact. There was no bleeding to require ligature, and having sponged the part until all oozing ceased, I brought the parts together, and held them so by a few stitches. The only point necessary to lay stress upon in the dressing was the propriety of placing a small pad between the index and ring fingers, to guard against their overlapping; the limb was then supported on a splint, and the parts kept cool by the application of cold water.

January 5th. The wound in front all healed by first intention, and healthy suppuration from the part where the metacarpal bone was taken; applied simple dressing over the wound, and put the fingers bent over the end of the splint, supporting the forearm in its entire extent.

January 25th. Wound entirely healed; a narrow cicatrix marks the position from whence the bone was taken, but the fingers lie so directly in their natural course that the deformity is scarcely to be noticed. Several looked at this hand without immediately missing the part taken away. The man left the hospital with the motions of the fingers perfect, and with his grasp nearly as strong as that of the other hand.

In two months later I saw this patient: he had been employed as a labourer in numerous occupations, even from the time of his leaving the hospital, and he assured me at this time "that his hand was fully as strong as it ever was, and

also that he felt no difference in power between the right and left when violent efforts were required."

Should the little finger, from similar affections to those I have been noticing, call for removal, the same rules will apply as in the case of the index finger; by taking away a part of the metacarpal bone obliquely, but little trace of deformity will attract attention, or point out the interference of the surgeon.

Faithful casts, accurately coloured, representing the appearances, before and after operation, in each of the cases which I have given, are preserved in my collection, the numbers being respectively in the catalogue as follows:—

	BEFORE EXCISION.	AFTER OPERATION.
Caries of the elbow-joint,	Cast No. 444	Cast No. 445
Caries of the wrist-joint and carpus.	" 450	
Caries of carpus and metacarpal bones,	" 452	" 453
Crushing injury of first phalanx of thumb,	" . .	" 430
Caries of ungual phalanx of thumb,	" 454	" 455
Disease of index finger, soft parts preserved,	" 418	" 419
Disease requiring removal of index finger and half of the metacarpal bone, }	" 416	" 417
Disease requiring removal of index finger and the entire of the metacarpal bone, }	" 421	" 422
Disease requiring removal of middle finger and part of the metacarpal bone, }	" 381	" 382
Cases of paronychia and diffuse inflammation alluded to, Casts No. 404, No. 411, and No. 413.		

RESERVATIONS

ASURES NECESSARY IN THE TREATMENT

HARE-LIP.

W. C. W. BENTLEY, M.D.

OF THE HARE-LIP, AND THE
NECESSARY PREPARATION OF THE
PATIENT FOR THE OPERATION.
WITH A DESCRIPTION OF THE OPERATION,
AND THE AFTER-TREATMENT.
BY W. C. W. BENTLEY, M.D.
OF THE HARE-LIP, AND THE
NECESSARY PREPARATION OF THE
PATIENT FOR THE OPERATION.

REPRINTED FROM THE LANCET, AND THE BRITISH MEDICAL JOURNAL.

DUBLIN.

HODGES, SMITH, AND CO., 68, ADAMS STREET.

REPRINTED FROM THE LANCET, AND THE BRITISH MEDICAL JOURNAL.

