Mch. 1911 (1a

THESIS

offered by

JAMES RUTHERFORD KERR, M.B., Ch.B.,

in support of his application for the Degree of Master of Surgery of the University of Glasgow.

Ten typical cases from a Glass Works Surgery, and two thoracoplastic operations.

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Letter to the Dean of the Faculty of Medicine of the University of Glasgow.

The Surgery,
Messrs Pilkington Bros.,Limited,
St. Helens. Lancs.

31st May. 1910.

To

The Dean of the Faculty of Medicine of the University of Glasgow.

Sir,

I, James Rutherford Kerr, desire respectfully to present to the Faculty of Medicine of the University of Glasgow, an account of some work done by me in the course of my duty as surgeon to the Glass Works of Messrs Pilkington Bros., with a view to being deemed worthy of the Master of Surgery degree of my Alma Mater.

My training for surgery was got in Glasgow. The accompanying testimonials refer to my experience in the Western Infirmary, the Royal Hospital for Sick Children, and the Ophthalmic Institution. This hospital work occupied the three years between my graduating M.B.,Ch.B., (Glasg.) and my entering upon my present office.

The special character of the processes in which my patients are engaged gives rise to the frequent occurrence of accidents involving extensive incised wounds in addition to those that are common in an industrial community.

The first seven cases described, viz. -

_suture of flexor tendons and median nerve,

(continued)

- suture of single tendon of specialised function,
- suture of tendo Achillis,
- extensive, incised wound (forearm) with charring of tissues,
- extensive muscle suture (neck),
- cosmetic result (nose),
- neurasthenia after amputation of finger,

are essentially associated with glass making.

The eighth case is a penetrating wound of the eye-ball in a deaf-mute who was also blind of the other eye. Suture of a fractured patella is illustrated in the ninth example, and the tenth is a case of paralysis of the serratus magnus.

In general surgery I have had to perform operations for inguinal hernia, umbilical hernia, varicocele, hydrocele, appendicitis, osteomyelitis of tibia, tubercular disease of the knee, acute empyema, chronic empyema, etc. I select for the purposes of this application two cases of thoracoplasty.

I hereby declare that the foregoing is an accurate statement and that the work has been done and the Thesis composed by me.

I have the honour to be,

Your Obedient Servant,

P.S.

Accompanying this letter and the statement of cases is a set of photographs arranged to illustrate the various points brought out in the Thesis.

CERTIFICATES - "of having been engaged, subsequently to having "received the degrees of M.B., Ch.B., for at least one year "in attendance in the Surgical Wards of an Hospital." -

viz:-

IN-PATIENT DEPARTMENTS.

House - Surgeon, Western Infirmary,

Sir William Macewen.

House - Surgeon, Royal Hospital for Sick Children,

Dr. T. K. Dalziel.

Mr. R. H. Parry.

OUT-PATIENT DEPARTMENTS.

Dispensary Assistant, Royal Hospital for Sick Children,

Dr. Henry Rutherfurd.

Out-door clinic, Ophthalmic Institution,

Dr. John Rowan.

From Sir William MacEwen, M.D., Hon. F.R.C.S., LL.D.,F.R.S.,
Professor of Surgery in the University of Glasgow.

I have known Dr. James R. Kerr for three years, first as a student of surgery, and afterwards as a prominent graduate of the University of Glasgow. He has acted for two years in my wards, first as Clinical Registrar and than as House Surgeon. He has performed all the functions of the Office entirely to my satisfaction, and I have no hesitancy in stating that he is thoroughly qualified to perform all the duties of a House Surgeon in any hospital.

(Signed) WILLIAM MACEWEN.

The University,

Glasgow, 1st. March,1905.

Since I wrote the above Dr. Kerr has had eighteen months experience in the Royal Hospital for Sick Children and I am of opinion that he is thoroughly equipped for the practice of his profession.

(Signed) WILLIAM MACEWEN.

1st. March, 1907.

From T. Kennedy Dalziel, Esq., M.B., Surgeon Western Infirmary, Glasgow; Surgeon Royal Hospital for Sick Children, Glasgow.

Dr. J. R. Kerr has been known to me for many years especially as my House Surgeon in the Royal Hospital for Sick Children where in Medical and Surgical work he proved himself a thoroughly capable and efficient assistant. He is very strenuous in his work; courteous to all with whom he comes in contact and has a thoroughly good knowledge of diseases peculiar to children.

I anticipate for Dr. Kerr a very successful career in his profession and have every confidence in recommending him for a position of trust.

(Signed) T. KENNEDY DALZIEL.

196 Bath Street,

Glasgow,

March, 6th. 1907.

From R. H. Parry, Esq., F.R.C.S., (Edin.) Surgeon to the Victoria Infirmary; & Surgeon to the Royal Hospital for Sick Children, Glasgow.

I can speak in the highest terms of the character and professional attainments of Dr. Kerr, who was for a period of 12 months resident assistant in the Royal Hospital for Sick Children, Glasgow.

He came to us with an excellent reputation, so that we expected much good work from him.

In this respect, we were not disappointed, and I am pleased to have this opportunity of acknowledging his invaluable services to the Hospital.

He has, I know, the best wishes of the staff for his success in the practice of his profession.

(Signed) R. H. PARRY.

25, Blythswood Square,

Glasgow,

March, 1907.

(VIII)

From Henry Rutherford, M.B., C.M., Fellow of the Faculty of Physicians & Surgeons, Surgeon Glasgow Royal Infirmary. Extra Surgeon Royal Hospital for Sick Children. Examiner in Surgery for the License of the Scottish Triple Board.

Dr. James R. Kerr has been well known to me during the time of his appointment at the Royal Hospital for Sick Children, now especially during the last six months when I have had his assistance in the outdoor department.

I consider him a man who has made excellent use of his time both as an undergraduate and as a House Surgeon; I have always found him well informed in professional matters and sober in the exercise of his judgement: while his methodical habits, good sense and agreeable disposition as I have known them give me confidence in recommending him for a position of independent responsibility.

(Signed) HENRY RUTHERFORD.

3 Royal Terrace,

Glasgow, W.. 8th. March 1907.

(IX)

From John Rowan, Esq., M.B., F.F.P.S.G.; Assistant Surgeon, Glasgow Ophthalmic Institution; Ophthalmic Surgeon, Glasgow Royal Infirmary; Ophthalmic Surgeon Dispensary, Royal Hospital for Sick Children, Glasgow.

Dr. James R. Kerr has been Assistant at the Dispensary of the Royal Hospital for Sick Children here for the last six months, during which time he attended my clinic there and in my absence took charge.

During the same time, he regularly attended my outdoor Dispensary at the Ophthalmic Institution, where there are from a hundred to a hundred and fifty patients twice a week. He thus had opportunities of gaining a knowledge of Eye Work enjoyed by few young men. Of these opportunities he took full advantage and gained a knowledge of Diseases of the Eye which will I am sure prove of great service to him in his future career.

I formed a very high opinion of his character, and abilities, and am sure he will prove a credit to himself and his school wherever he decides to practice.

(Signed) JOHN ROWAN.

10 Woodside Crescent,

Charing Cross,

Glasgow,

5th. March 1907.

TEN TYPICAL CASES from a GLASS WORKS SURGERY.

Injuries incidental to Glass making.

During the past three years I have been specially engaged with those accidents "arising out of and in the course of" their occupation which have befallen the 3.000 employées in the great sheet glass works of England, and in particular with incised wounds from sheet glass. The possibility of extensive injury from sheet glass is obvious from a glance at the process of manufacture. A "blower" produces a hollow tube 5½ feet long, and 4½ feet in circumference of say "window-glass" thickness. When cool this is "split" longitudinally, and then having been re-heated is "flattened" into a "sheet". The cylinder accordingly has to be carried from the "blower" to the "splitter", and from the "splitter" to the "flattener", who transforms it into a "sheet". The "sheet" has then to be "sorted","cut" and "packed, etc, in the warehouse. There are therefore multiple handlings of a large piece of glass, with as a natural sequel numerous accidents. But there is the additional danger attributable to the phenomenon of "flying" which is liable to be exhibited at any stage prior to annealing - e.g, a "cylinder" just blown may "fly", and the glass being then almost molten, the divided tissues are at the same time charred.

While the photographs submitted show that the anatomical distribution of the injuries is widespread, nevertheless by far the most common site is the wrist, especially the flexor aspect, a part exposed in carrying, the palms being turned upwards.

Within an exceptional 24 hours lately I ligatured 3 radial arteries, but as a rough average a case of division of tendons occurs twice a week, giving 300 cases in my 3 years' experience.

In the subject of photographs I and II a very typical group

(Continued)

of injuries was revealed, the structures severed being the flexor carpi radialis, and palmaris longus tendons; the tendons of the flexor sublimis; the median nerve; and the flexor longus pollicis tendon. In addition there was some laceration of the bundles of the flexor profundus tendons. Despite a little superficial suppuration a complete recovery was obtained with all movements restored and no sensory loss. The serviceability of the union of the flexor longus pollicis is manifest in I; yet the complete range of extension is shown in II, with the hand open. In this case the result depended critically on the success of the treatment of the median nerve and the tendon of the long flexor of the thumb, because while the flexor profundus is functioning the loss of the other flexors is only a relative one, whereas with the flexor longus pollicis out of action the skilled workman suffers an absolute loss, and is handicapped thereby.

Similarly with the extensor secundi internodii, a tendon with a specialised function, failure in repair means loss of dexterity to the patient. An example of division of this tendon is shown in III. The tendon being subcutaneous and prominent lends itself to detailed photographic demonstration of its efficiency. Immediate suture of the tendon and its sheath was performed, and the patient, a "flattener" returned to work within a month. The photograph is taken (a year later) with the muscle tense, and the transmission of its pull right up to the base of the terminal phalanx of the thumb is shown by the uniform and thong-like prominence from the insertion to the wrist where it passes from view.

Another case of suture of a tendon of individual function is seen in IV, where the patient has a thoroughly efficient tendo Achillis after complete division by glass falling from his shoulder on to the leg as the latter was extended backwards in walking. The photograph is taken with all the boy's weight on the united tendon.

(Continued)

As an example of another type of injury, photograph V shows an extensive wound of the forearm caused by falling fragments of a cylinder of red-hot glass. The supinator longus and the extensors arising from the external condylar region were raised backwards and upwards, exposing in the depths of the wound the radial nerve and the divided radial artery. The biceps tendon was partially severed and the supinator longus was wounded again at the proximal extremity of the incision. The cauterising effect on the cut surfaces was marked and there was considerable destruction along the skin margins. In 8 weeks this man was back doing his former, heavy and highly skilled, manipulatory work as a glass-maker, with complete recovery of his capability, except as regards endurance, i.e, he very naturally could not at first work a full 8 hours' turn.

In VI is seen a sinuous cicatrix extending from 1" beyond the middle line on the right to the posterior border of the left sterno-mastoid, the site of a deep wound a year ago from a falling cylinder of glass. In the anterior part of the wound the spinal accessory nerve was recognised as it left the sterno-mastoid to enter the posterior triangle, so the problem became reduced to one of muscle-suture, fastidious regard being paid the respective fascial planes. Uninterrupted healing took place, the patient leaving hospital in fourteen days. The contour of the neck remains symmetrical, there is no loss of power or function, and the scar is minimal. The patient's escape from a more serious injury may in some measure be attributed to the automatic wave of muscular contraction consequent on the skin stimulus, having helped to deflect the cutting edge as it proceeded from the surface through the successive muscle planes.

In the preceding instances wounds with glass have threatened to seriously handicap the wage-earning capacity of the patient, or even

(Continued)

to assail the regions of vital structures, but to both of these considerations there has been added in the case depicted in VII the anxiety regarding cosmetic result. The flying fragment of glass all but sheared off the lower portion of this girl's nose, including the alar cartilages - the incision being practically a vertical section by a transverse plane, a narrow band of skin of the left nostril being left attached. Immediate repair of the ragged edges, replacement, and suture was followed by rapid healing.

Another phase of the results of industrial accidents is illustrated in photograph VIII. This man received an accident to his hand resulting in the loss of a finger,(which I had to amputate) followed by a very marked neurasthenic condition. He presented the characteristics of advanced neurasthenia as seen typically in the workman who is the subject of a "compensated" injury. There were no signs of organic disease, but it was observed that the pupils while active to light and in accommodation remained unequal. When after much persuasion, the patient re-started his former work as a glass packer, it became obvious to him that his earnings even at "piece-work" would not suffer so much, if at all, as he had anticipated, and only the unequal pupils remained to recall the period of extreme nervous instability through which he had passed. Repeated examinations since then have failed to discover any organic lesion.

The last case brings me towards the subject of "traumatic "hysteria" or "litigation neurasthenia", but I do not propose to deal with it here, although it is inseparably associated with the surgery of industrial accidents. A somewhat analogous consideration is the attitude of the injured workman towards the proposal of operative procedure. The skilled artisan who finds that the gash in his arm has left his wrist drooping and incapable of extension, feels at once an overwhelming

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sense of loss and helplessness and, in my experience he gladly accepts the belief that operative repair holds out the best chance. It behoves the surgeon to consider in each case how the operation will affect the after daily life of the patient, who has to be made as fit as possible for the discharge of his normal work. The proposed operation must be a means to an end - not an end in itself.

Three cases occurring in the Works, but not specifically related to glass making.

As being illustrative to some extent of such restraining considerations, I might instance this crate-maker (photograph IX). A wire nail struck faultily by his hammer failed to enter the wood and ricochetted upwards striking his left eye. I saw him within a few minutes of the accident, and found prolapse of the iris from a radially situated wound at the junction of cornea and sclera, with a shallow anterior chamber, and the escape of some globules of vitreous presenting at the scleral portion of the ruptured coats. Eserine was applied forthwith, and considerable reduction of the prolapse was obtained thereby, but instrumental replacement or anything but the minimum of interference was negatived by the personal factor supplied by the patient. for he was a deaf mute, and had not even perception of light in the other eye. The injured eye therefore was almost his sole link with the world around him. By using the "deaf and dumb" code, with his left hand as the receiver, and my right hand as the indicator it was possible for me to transmit questions to him when his eye was bandaged. His replies were always of favourable significance, and the appearance of the eye never suggested infection, nor the substitution of atropine for its therapeutic effects. Uninterrupted recovery followed, and he returned

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to work having visual acuity $\frac{6}{8}$.

With the same important purpose of restoring the subject of an industrial accident to his former employment with a maximum of efficiency, and a minimum chance of permanent disability, the operation of wiring a fractured patella seems to recommend itself. The period in bed is much reduced, and the loss of muscular tone is correspondingly little.

The patient (photographs X. XI. XII) fell on the flexed knee and sustained a simple transverse fracture of the patella with 2" of separation of the fragments. The haemarthrosis found at the operation three days later was treated by free exposure and lavage of the joint. One silver suture was inserted in a longitudinal direction, its twisted ends sheared close and hammered into a recess in the bone cut by the point of a strong scalpel. After the first 24 hours no splint was used, the limb resting on a pillow and no restriction to movement being made except by the bulky first dressings. In a week the volume of dressings was much reduced and considerable flexion of the joint was indulged in by the patient. The skin sutures were removed on the tenth day, no dressing was applied after the 14th day; the patient got up on the 17th day and was walking freely with a stick in three weeks. The degree of flexion and the power of extension increased gradually and there has not been pain or discomfort since the operation. The views are taken 9 weeks after the accident. Union seems perfect, and no tendency to separation is suggested. The scar is well above the kneeling surface of the leg, and the presence of the wire is not felt by the patient who is unable to locate it or the twisted ends, by experimental pressures. A method without restraining splints in the treatment of this lesion has obviously the advantage of minimising the likelihood of stiffness in the joint, or the loss of muscular power from disuse, to recommend its

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adoption when the conditions permit.

In contrast to all the preceding cases, the patient shown in photographs XIII and XIV, although the subject of a very well-marked pathological condition, suffered no loss to his wage-earning capacity. He presented himself on account of the deformity. The projection of the shoulder-blade, the inability to fix its posterior edge against the chest, and the consequent failure to raise the arm above the horizontal, pointed to paralysis of the serratus magnus, from a lesion of the posterior thoracic nerve. This nerve is usually injured by what might be termed "direct" violence, e.g: a blow on the side of the neck; or by "indirect" violence, e.g: from a fall on the shoulder, causing extreme extension of the head; or "from the effort of swinging "a hammer". In this patient there had been no known violence, and no pain, but "swinging a hammer" had been a feature of his occupation as a case-maker, which he had continuously pursued for thirty years, and in which he was still engaged. The disability did not produce a reduction of his "piece-work" earnings, and he therefore continued at his employment, and made no change in his habits as regards food or drink. When seen two months later, improvement was marked, and within six months complete recovery had been attained.

TWO THORACOPLASTIC OPERATIONS.

The problem of the unhealed empyema of long-standing, where one has to deal with a large cavity with rigid walls, scarcely permits of that delicacy of solution which characterises the most recent advances in the surgery of the thorax. Yet these cases are far from uncommon, and they demand radical measures if the patient is to be liberated from a detraction from his expectation of life, and a barrier to his presence as a purposive unit in the social economy.

Operative procedures have been devised, elaborated, and brought nearer to perfection, yet we find that results are extremely variable. The consequence is that the sufferer from chronic empyema is liable to be permitted to glide to a "natural" termination. Yet it is difficult to see how the recent methods - e.g: the negative pressure chamber of Sauerbruch, or the positive pressure arrangements of Brauer, can materially aid these cases of large cavity of long-standing, with as a consequence very complete and permanent collapse of lung rendering decortication impracticable. In considering this new technique with regard to its applicability to the treatment of chronic empyema, the two purposes which it effects have to be thought of - viz: the prevention (a) of pneumo-thorax, and (b) of the "shock" which follows pneumo-thorax. These apparently cognate conditions are in fact quite distinct. The doctrine that pneumo-thorax with collapse of the lung always followed the opening of the pleural cavity when there were no organic adhesions present, has long since been disproved by actual cases in which the desired intra-pleural manipulations were carried out with absolute return of full expansion, and coalescence between the pleural surfaces. On the other hand, in extensive interference, e.g: total pneumonectomy. the extreme pneumo-thorax necessarily produced is attended by profound

(Continued)

"shock". Here the mediastinal septum - as pointed out by Sir William Macewen in the Cavendish Lecture, 1906 - has lost its steadying support on one side, is unbalanced, and thus the heart and great thoracic vessels swing uncontrolled and the immediate and severe symptoms naturally follow. The steadying of the mediastinum by air pressure obviates this danger. But in the case of the chronic empyema this danger is not present for the mediastinal septum is already firmly fixed with dense, fibrous, connective tissue layers. For these reasons it appears to be, as has been said, "needful to continue the rough means "that have been long in use for the cure of chronic empyemata"

If the methods suggest crudeness they have at least reached a stage in improved technique when the term "radical" can be applied. The complete exposure of the visceral pleura wherever it is not in apposition with the parietal marks a stage in the surgery of the unhealed empyema, and puts the treatment at once on a radical basis. The visceral pleura having been brought fully into view, choice is left between decortication, or thoracoplasty, or a combination of the two. In neither of the two following cases did the operation of decortication commend itself.

In the first patient, who suffered from pulmonary tuberculosis with empyema - thoracoplasty was the only solution.

In the other patient, the long duration, the extreme degree of collapse of lung, the large size of the cavity thus left, and the cachectic condition of the subject - a girl of 7 years - demanded interference which while being radical would make the minimum call, after operation, on the already much reduced vitality.

Case 1 - girl aged 17 - the subject of phthisis pulmonalis of the right lung was first seen by me when more urgent conditions had developed. Examination of the chest elicited physical signs of a large pleural effusion on the right side, and moreover a purulent discharge

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was oozing through at the usual site for the spontaneous opening of an empyema - viz: in the fifth interspace, just external to the nipple line. A portion of the seventh rib in the mid-axillary line having been removed by the subperiosteal method, free exit was given by rupturing the wall of periosteum and pleura. After the liberation of the purulent fluid, fibrinous masses, and shreddy debris, respiratory embarrassment passed off, and with the establishment of ample drainage improvement in the general and local condition of the patient followed. But there remained the problem of the very large cavity left by the completely collapsed lung. The condition of the other lung remained good, and in view of the general satisfactory progress the patient was making it seemed not unreasonable to infer that the original tubercular focus in the right lung was at least in abeyance. Accordingly the obliteration of this cavity was undertaken in two operations, an interval of some months intervening. On the first occasion the lower portion of the large pleural space was dealt with, by removing the roofing ribs subperiosteally, and, having excised their periosteum, and the inter-costal tissues in a piece, replacing the skin-muscle flap. The patient made a good recovery from the operation. There remained a fistula from which a much diminished discharge proceeded, and which led to a space under the second and third ribs. The general health of the patient having been in the intervening months restored almost to normal, the next operation was planned against the apical focus, which was exposed by dividing the second, third and fourth ribs posteriorly and anteriorly through an incision carried from between the scapula and the spine at the level of the second rib downwards, forwards and upwards to the corresponding level in front, and raising the included osteo-plastic flap, which contained the scapula and the arm. The remnant of lung tissue was now seen to be a disintegrating mass with apical and parietal

(Continued)

attachments, portions of which were removed distally to strong clamp forceps which were left "in situ" 24 hours. The second, third and fourth ribs were excised from the pleural surface of the flap, and the greatly thickened pleura dissected off. The flap on being replaced was entirely in contact with the remnant of lung and was sutured in position with the forceps' handles projecting from the original spontaneous aperture. Symptoms of broncho-pneumonia of the other side manifested themselves and a fatal issue had to be recorded on the tenth day.

In reviewing the stages of this girl's case it is clear that the preliminary excision of rib was an urgent necessity, and that the first thoracoplastic operation followed in natural sequence. These brought her to a very satisfactory state of health and activity - she even indulged in "cake-walk" and "skipping-rope". The presence of a discharging sinus, however, was a complete barrier to her obtaining any sort of employment, and in the absence of any indication of invasion from the original tubercular lesion to the other side, further operative measures were indicated.

Case 2. The patient, a girl of 7 years presented herself 8 months after excision of a portion of rib for empyema. An aperture at the site of the excised portion of the seventh rib provided exit for a thin purulent fluid which escaped in no great amount. The general condition had been going steadily down, and she appeared languid and anaemic. Some degree of falling in of the chest had occurred, but on passing a flexible probe, I found the sinus to lead to a cavity with wide limits in all directions. The method involving least post-operative disturbance to the patient, while at the same time being radical, was judged to be in this case thorax resection, which was carried out by raising a skin-muscle flap with its convexity downwards, and removing those portions of ribs which roofed the cavity. This was

(Continued)

found to involve from the ninth to the fourth rib inclusive. The periosteum, intercostal structures, and parietal pleura were cut away in a piece. The rigid structures roofing the cavity throughout its extensive limits were thus removed, viz., the ribs and the thickened and unyielding parietal pleura. Accordingly when the skin-muscle flap was replaced it quite filled up all spaces. Haemorrhage had not been excessive; the intercostal arteries apparently having diminished calibre in such cases, for only occasionally a vessel spurted as the intercostal tissues were divided with the scissors. The patient stood the operation well, and made a good recovery.

The photographs Nos: XV and XVI taken six months after complete healing had been effected, show a well-nourished child. There is good use of the right arm, and a hardly noticeable lateral curvature, the girl being quite restored in health and vigour.

In presenting the foregoing illustrative cases from my ersonal experience, no claim to originality of method, or special fficiency in results is made. Regarding technique - I have always ept before me the precepts of my teachers to whom I have now the honour f submitting these samples of my work. I have only endeavoured to pply the ideals of general surgery as I have learned them.

PHOTOGRAPHS ILLUSTRATING THE SURGICAL CASES PRESENTED IN A THESIS FOR THE DEGREE OF MASTER OF SURGERY

BY

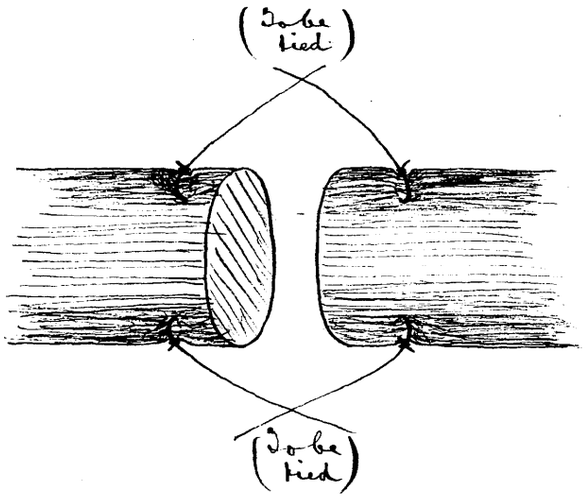
JAMES R. KERR, M.B., Ch.B..

31.V.1910.

Diagrams showing method of suture.

(All sutures are of chromicised cat-gut.)

Suture of Muscle



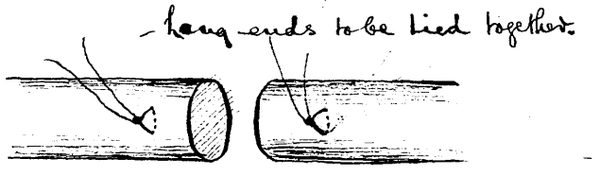
Tension Sutures.

Lateral, inclusion, sutures which obtain a firm hold of some of the muscle fibres and do not slip when pulled on, are regularly used.

Coaptation Sutures.

Accurate apposition of the edges is obtained by a simple continuous suture.

Suture of Tendon.



Tension Sutures

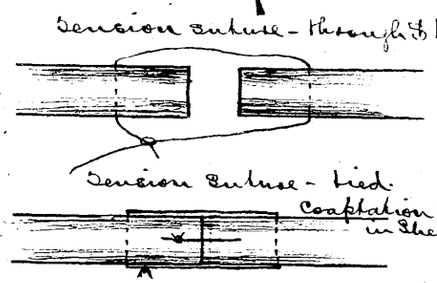
In uniting a divided tendon, two sutures of the inclusive sort, are inserted - namely - in the superficial aspect of the proximal and of the distal portions respectively.

Coaptation Sutures

When there is a succession of tendons lying side by side, as with the superficial flexors in Case I a continuous suture is used to maintain accurate apposition of the edges of each of the tendons in series, and then to bring together the divided common sheath, and the areolar tissue at their respective depths in the wound.

With a single tendon, as the long flexor of the thumb (I), or as in III, the liability to displacement is overcome by accurate suture of the divided tendon sheath.

Suture of Nerve.



In case I, median nerve was sutured by one simple through-and-through tension suture, and one coaptation suture in the nerve sheath.

With reference to the 300 tendon cases, I attribute the consistent success of surgical intervention in those cases to—

(1) the aseptic condition of the cutting glass and its keen edge, and therefore to—

(2) the advisability and possibility of dealing radically at once with the injured parts, which are physiologically in vigorous health.

I

Suture of flexor tendons & median nerve.

This girl was cut in June, 1904, by a falling sheet of glass and the views I and II (taken in May, 1910) show that while full power of flexion has been obtained, there is at the same time complete range of extension.

The functional activity of the flexor longus pollicis tendon after union is seen.

I.

II

The same hand – open – showing full extension of the finger tendons and of the long flexor of the thumb.

II

III

Hand of a "glass-flattener" — illustrating suture of a single extensor tendon of specialised function — the extensor secundi internodii pollicis.

Photograph — taken a year later — shows tendon prominent and thong-like, and completely functioning.

III

IV

Suture of tendo Achillis cut by glass falling from shoulder. As regards flexion and extension of the ankle, the normal range has suffered no diminution.

The patient here shown balancing himself on the toes of the affected foot brings his entire weight on to the union, but exhibits neither hesitation nor discomfort in the action.

IV

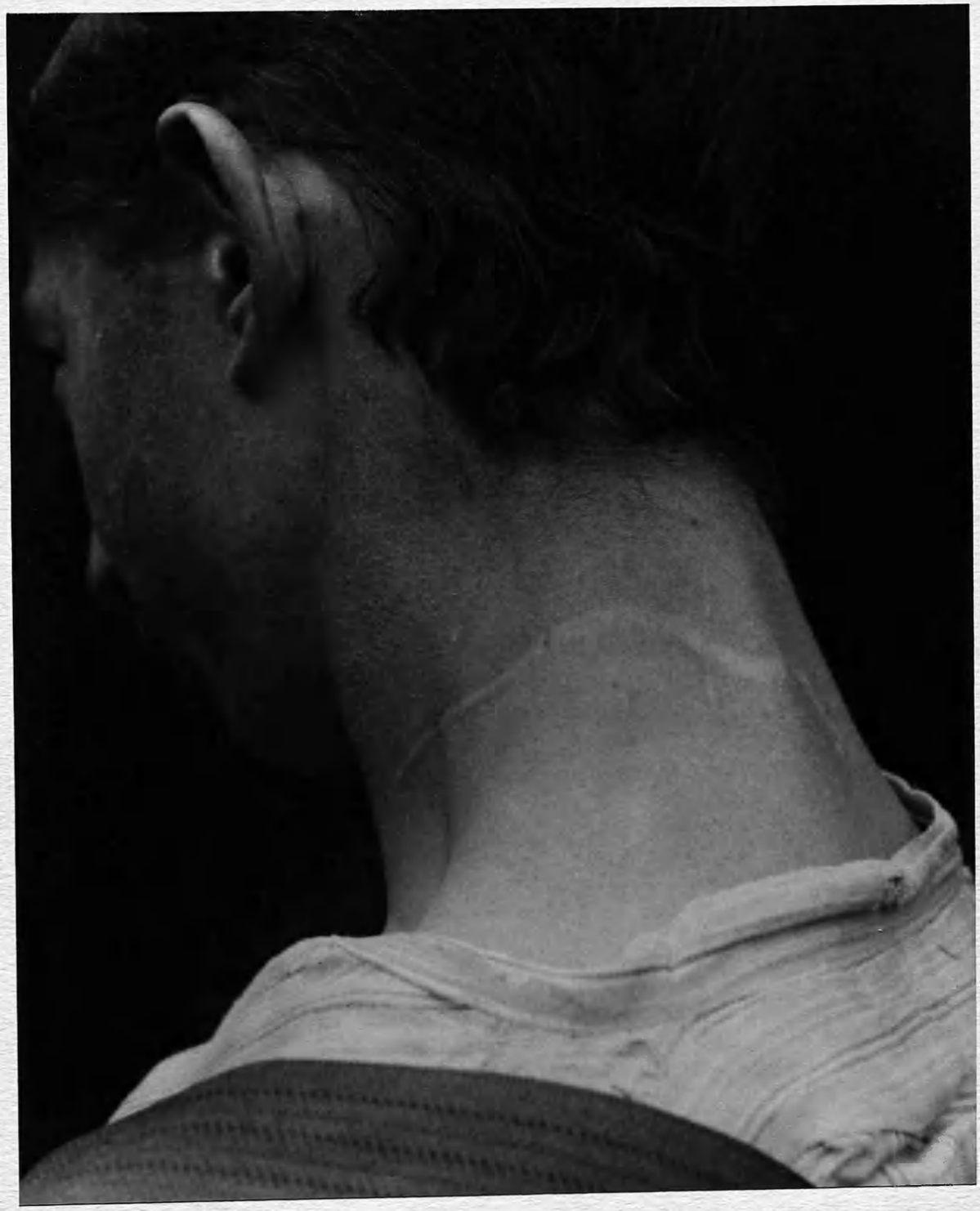
V

Extensive wound of forearm complicated by charring of the tissues from the hot glass. The patient, a glass-maker, obtained complete return of his usefulness in the skilled manipulatory work of his occupation.

V

VI

This cut traversing a semi-circumference was produced by a cylinder of glass, which the youth had been carrying. There is no loss of power or function, the scar is minimal and the contour of the neck is symmetrical.



VI

VII

Cosmetic result - nose.

Ragged wound of nose by a sheet of glass, producing a vertical transverse section, only a band of skin at the margin of the left nostril remaining attached to the severed portion.

VII

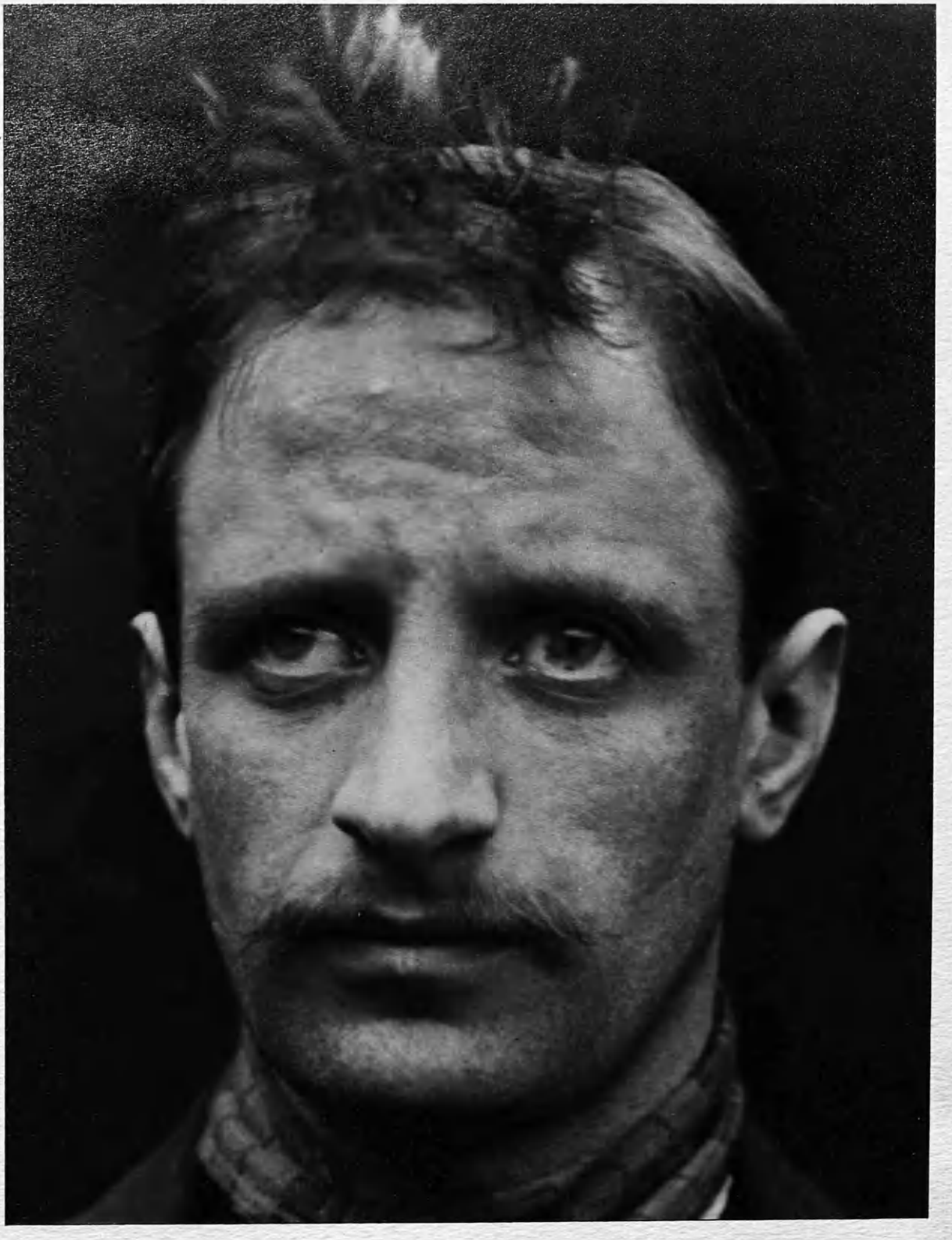
VIII

Amputation of finger followed by neurasthenic condition. This passed off as work was resumed. Both pupils active to light and in accommodation, but left pupil always greater than right.

VIII

IX

Penetrating wound of eye of a deaf-mute who is also blind of the other eye. The saving of the eye being in this case of so great significance, the minimum of interference was indicated. Patient returned to work with vision $\frac{6}{8}$.



IX

X

Suture of fractured patella.

Photographs, X, XI, XII, taken nine weeks after the operation, show knee flexed to right angle.

X — front view.

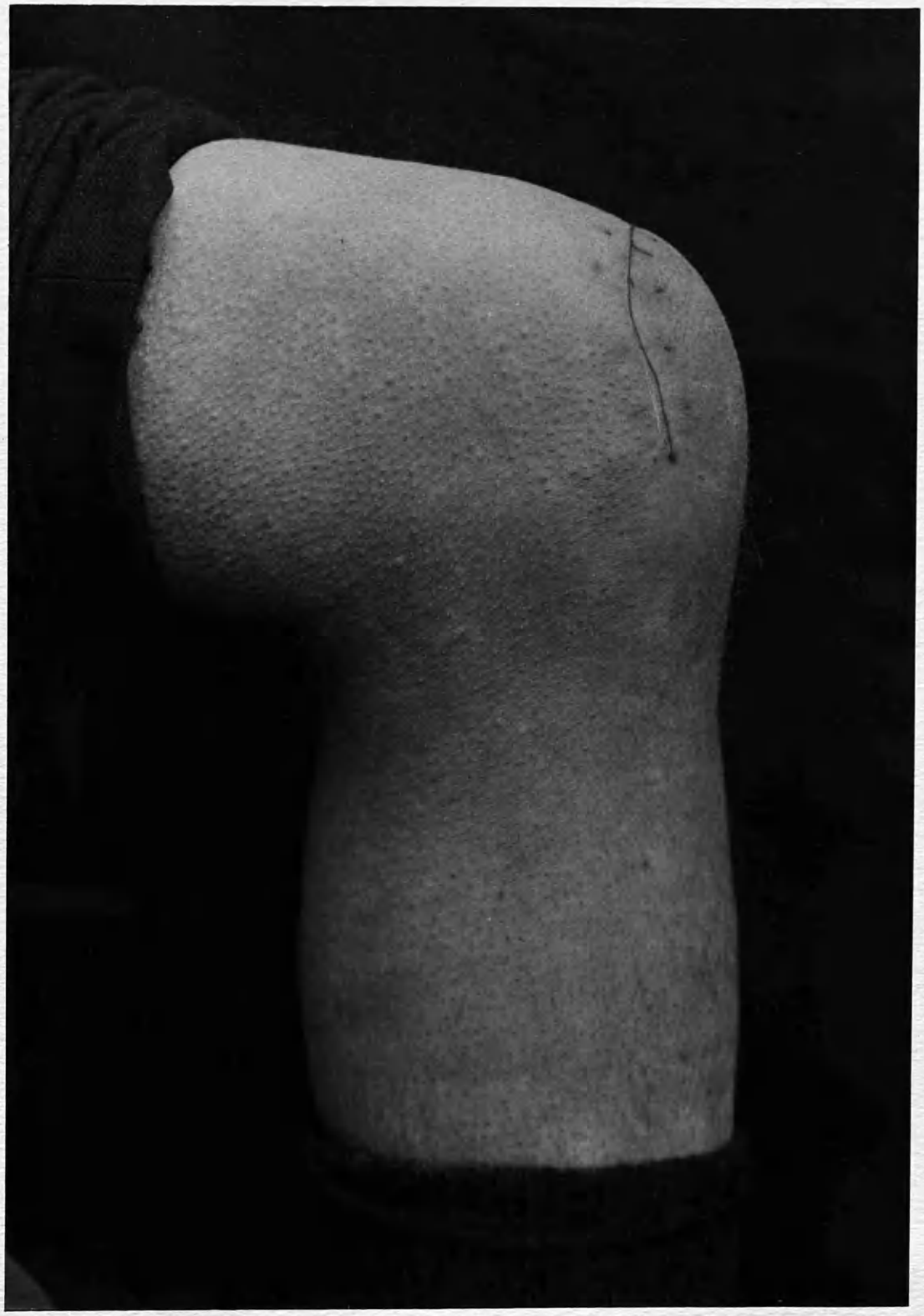
U shaped incision, convexity upward.

X

XI

Side view.

Incision quite clear of kneeling surface throughout.



XI

XII

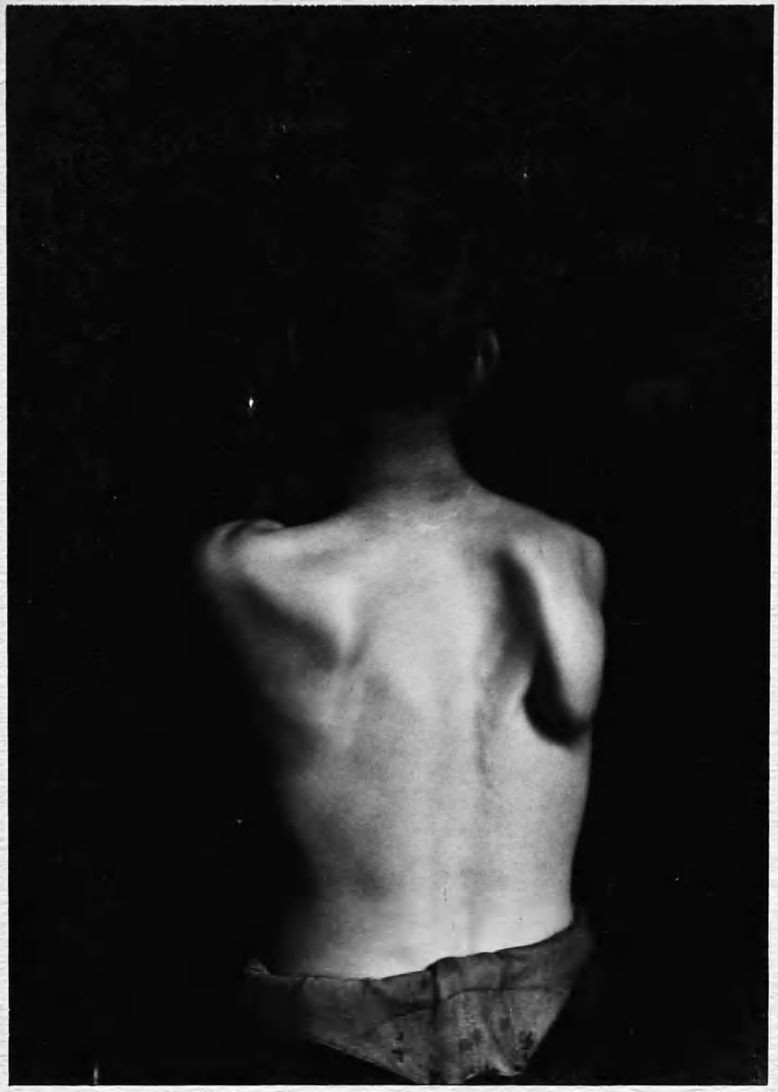
This view shows the silver suture, and its buried ends.

There is no sign of separation of the fragments — after six weeks use of the joint in walking.

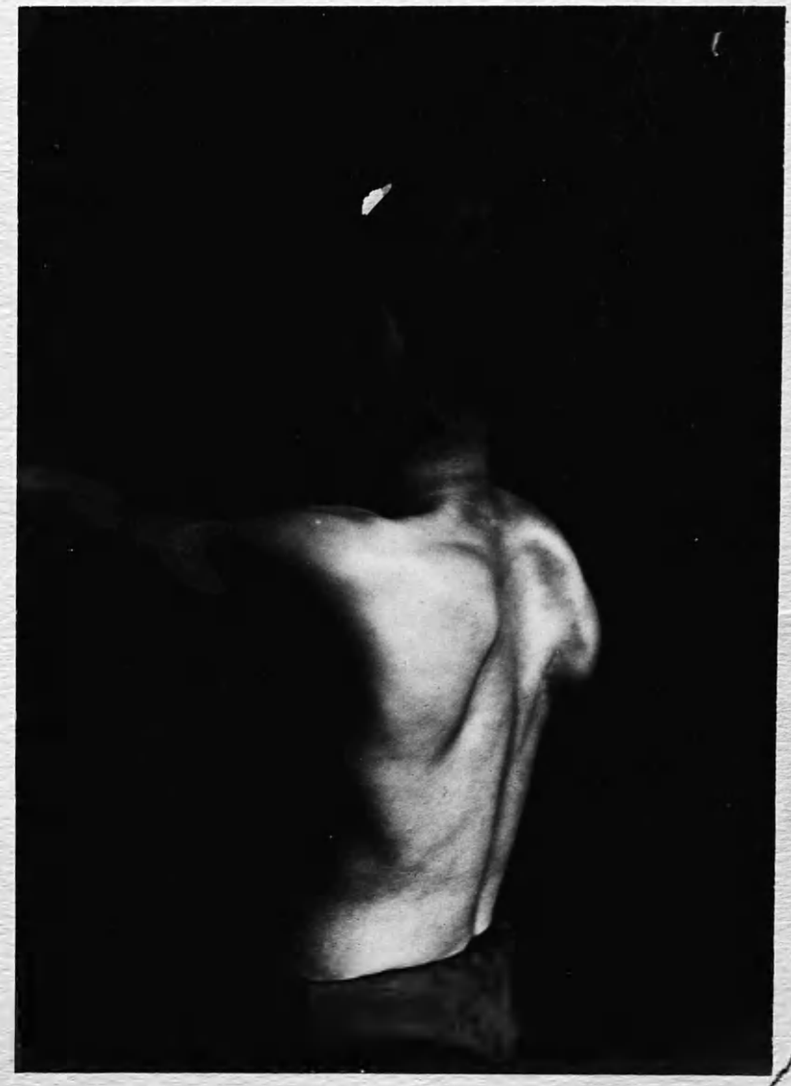
XIII , XIV

Paralysis of Serratus Magnus without violence, pain, or known toxic cause. Occupation involving almost incessant use of hammer, by right hand, pursued for 30 years and continued during the six months of deformity and associated weakness, after which spontaneous recovery occurred.

XIII and XIV taken with arms outstretched forwards and left hand supporting the right, show the projecting shoulder-blade, and the trapezius raised on it.



XIII



XIV

XV, XVI.

Thorax resection in a girl of 7 years for ablation of large cavity remaining 8 months after opening of acute empyema.

The greater portions of ribs 4-9 inclusive were excised by the subperiosteal method, the corresponding periosteum, intercostal structures, and parietal pleura being then cut away in a piece and the skin-muscle flap replaced. Haemorrhage was not excessive and the patient stood the operation well. A good recovery followed and she has been quite restored to health and vigour.

XV and XVI are taken 6 months after complete healing.

XV

XVI