



RADIOGRAPHY AND RADIOTHERAPY

BY

THOS. E. ROBERTS

## Photographic Work.

Submitted are photographs taken of cases admitted to Hospital or receiving treatment as Outpatients. They have bearing mainly on Surgical work. These photographs have all been taken on Lumière's X Ray 10x12 rapid plates, or full plates, and developed with a Pyro-Soda developer.

Exposures are - for the hand 10 sec. : for arm 15 sec. : chest 35 sec. : abdomen 45 to 60 sec. and so on.

## Description of photos -

1. Ununited fracture of both bones of leg showing wiring of Tibia.
2. Shows a very fine example of a spiral fracture of the Tibia. Patient is now walking quite normally.
3. Case of extreme flat foot showing great flattening of the plantar arch.

4. Antero-posterior view of an old-standing Pott's Fracture

5. Photo. of same case taken from without - in hands. Note the great backward displacement of foot.

6. Example of a foreign body in the hand. Removed easily after being located.

7. Photograph of a patient's hand.

He had been under treatment for some time outside hospital, but, septic condition not improving, he was sent to us. We placed a metal ring over the most inflamed area and almost in the centre of the ring can be seen a small foreign body.

A second one was also removed from second phalanx of the index finger.

8. Showing a dislocated terminal phalanx of the thumb.

9. Foreign body in hand - easily removed after localisation.

10. Photograph of a body crushed

hand, showing fracture of metacarpal  
of index finger.

11. Elbow joint from within outwards  
to show detachment of lower end of  
humerus - epiphysial.

12. Greenstick fracture of bones of  
forearm.

13. Osteomyelitis of lower end of humerus.  
Taken for diagnostic purposes.

14. Separation of external condylar  
epiphysis of humerus.

15. Incomplete fracture of olecranon.

The case was a Japanese brother.

16. Photo. of hip joint taken for  
diagnostic purposes - pain in sciatic nerve.

17. Fracture of surgical neck of humerus.

Perfect recovery - no impairment of  
joint.

18. Photograph of a child's neck -  
Case was one of suspected  
inspiration of foreign body.

19 & 20. Two other views of same case.

21. Fracture of surgical neck of  
humerus - here also good recovery.

22. Photo. of hip joint -

40  
Post-operative case. resection of head of  
femur. Photograph was taken to  
ascertain if the neck of femur  
occupied the acetabulum.

23. Piece of metal in palm of  
hand. Uplal ring applied over  
sutures for sake of localisation.

24. Gunshot wound of hand.

25. Fracture of both bones of leg  
due to indirect violence.

26. Photo. of a Potts fracture four  
weeks after the accident.

Splints were removed at end of  
the third week.

27. Fracture of styloid process of ulna.  
Undiagnosed.

28. Compare with no. 5. Same  
case after osteotomy and tenotomy  
performed and limb put up  
in Plaster of Paris.

29. Fracture of left femur from  
being run over by a lorry.  
Child aged 10.

30. Fracture of anatomical neck of  
humerus.

31. Complete fracture of the olecranon  
result of being thrown out of a  
machine. Wound with good result.
32. Foreign body in paler of hand  
Easily removed.
- 

For out work with the X Rays  
the apparatus used is an 18 inch  
coil with Spark Gap. The current  
is direct from the main at 240  
Volts passing through a Rheostat  
Board, which controls the Voltage  
and Amperage.

For Photographic purposes the coil  
receives as much as 10 to 15  
amperes, but for ordinary treatment  
not more than 2 to 3 amperes  
are used. Sitzings for Lupus,  
Syphilis, Rodent ulcers, Ulcers &c.  
last from 10 to 15 minutes and

6.  
are at intervals of 2 to 3 days. No apparatus for applying pressure to the skin has been used, and the only adjunct is an Ointment of Salicylic Acid ( $\mathcal{R}$  or  $\mathcal{F}$  to  $\mathcal{F}$ ) in dry scaly skins, or Loto Plumbi in cases when the reaction has been too severe. The Rays have been kept to the part affected by means of glass diaphragms of a Britley-Savill Shield.

The tubes used are Coy's "Grand" and "Heavy Gauge". These, of course, being regulated from time to time as required.

The mode of treatment adopted has been to keep up enough reaction and redness of the part without producing an inflammation. In no cases have any untoward results, as, Dermatitis, supervened. Only a small part is at first treated until the reaction of the patient to the rays is ascertained; thereafter the whole surface is then treated.

With regard to results - unqualified  
success has followed treatment of  
such cases as Rodent ulcer. Tinea  
Incurans. Lupus &c. No benefit  
has resulted in cases of advanced  
Carcinoma and Sarcoma.

Operative scars have been given  
sittings, namely those arising from  
extensive operations for malignant  
disease e.g. scirrhus with  
resulting lymphatic deposits; lympho-  
sarcoma of tongue with widespread  
glandular infection &c. The  
results however cannot yet be  
properly estimated till further  
time elapses: one case,  
namely, lympho-sarcoma of  
tongue with glands in both  
sides of neck, I may quote.  
This patient was operated on  
by Watson Cheyne and Bullen  
and 4 Rays to scars were  
advised. He had 24 sittings  
of ten minutes, 5 min. on  
each side of neck. One month

late - that is in three months after  
the operation - glandular infection  
had returned.

Medical cases have given us  
various results - applications have  
been given in such conditions as  
Spleno-medullary Leucocythæmia.

Ophthalmic Gout and Hodgkin's  
Disease. Results are given late.

In the majority of cases, such  
as fractures, a screw examination  
is all that is required.

Every so-called sprain should be  
carefully screwed, as mistakes are  
exceedingly liable to be made.

Many sprains, which prove unsatis-  
factory to ordinary treatment, have been  
sent to this Department. In  
some cases bearing a note to  
the effect, that the case is one  
of simple sprain, but it would  
greatly relieve the patient's mind,  
if we would kindly & say the  
truth. Unfortunately in many  
instances the screw examination

9.  
did not bear out the original diagnosis.  
In the diagnosis and treatment of  
chest cases it is of great value,  
allowing one to study the movements  
of the diaphragm and the  
expansion of the lung. In our  
Hospital a large proportion of  
the medical cases are phthisical  
and we have had several cases  
of bronchiectatic cavities to deal  
with. The records go to show  
that screw examinations are of great  
confirmatory value in phthisis, and  
with regard to bronchiectatic cases,  
an accurate diagnosis of the  
condition has been made from  
screw Exam. alone, when the  
physical signs revealed practically  
nothing. Following on diagnosis,  
resection of the rib performed opposite  
affected area - three days allowed  
to elapse for adhesion of the  
pleural surfaces - Exploration of the  
lung carried out - cavity found  
and drained. On subsequently

10.  
probing these cavities we found conditions  
as revealed by screen examination.  
viz. sacculated and lying deeply in  
the lung tissue. One case with  
these cases study them in their  
different phases - throwing a dense  
shadow; then, after a severe fit of  
coughing with profuse expectoration,  
then a cupful, when examined  
showing a light shaded cavity.

With regard to foreign bodies  
swallowed, or supposed to have been  
swallowed, we can lay claim to  
having had a great variety of  
cases. In these cases our  
attention was mainly directed to  
the passage through the  
ilio-caecal valve.

We cannot lay claim to any  
such brilliant results as have  
been published from examination  
of a bismuth loaded stomach.  
We have attempted in several cases  
(Yin all) of dilated stomach to  
test the functional activity, the

results were fair, clinically  
however we could ascertain all  
the facts we wished. In five  
cases of stricture of the bowel,  
which we examined, we could  
by means of the screw

localise the condition very  
accurately. In an article dealing  
with X Ray exam. of the  
stomach it was stated that

"Neoplasms of stomach lowest as  
unsaid by operation or post-  
mortem examination are to be  
recognised and situated with  
accuracy". Although we have  
examined great numbers of cases  
of malignant stomachs, we cannot  
hold this statement as a true one.

In all cases of haematuria and  
inflammation of the bladder a routine  
examination of the cases with the  
screw, photograph. and cystoscope  
should be made. We examined  
several cases for suspected renal  
calculi: in none of them was

12.  
the result positive and no stone was found in those which underwent subsequent operation.

### Examples of Cases treated in X Ray Dept.

#### Dyscosis -

In most cases a mixed infection of Staphylococci and Streptococci; in some forming a diffuse inflammatory condition, as Spuris of Face. In another class, of which we have made a special study, the disease presents a definite concrete form - the patch is lupoid in appearance, is usually raised above the surface and presenting a weeping - or dry surface. There are deep seated excretions from small openings, - on pressure. It may be on any part of the body and is modified by its position. It grows from the centre, and heals apparently as it grows, but in several cases aft. nearly healing has broken out

15.  
- as badly as ever.

Microscopically - Staphylococcus is always present, and, though Tubercle Bacilli have been carefully looked for, they have not been found. Other organisms, as. Streptococcus, have been found. No doubt this is a mixed infection; it may have originally been lupus, but is now a mixture of infection and inflammation caused by several organisms.

J. Smith Oct. 38.

Chronic Syphilis originating in a foul sore nine months previous to admission to Hospital.

The original infection of tinea seems to have been rapidly overlaid with a staphylococcal infection, causing disease of all the hairs of the face, including the eyelashes. When treatment started the whole hairy part of face was covered with dense yellow crusts and considerable inflammation and

142  
induration of the skin was present.  
Condition of mentagra was well  
marked. The hairs had not started  
to fall out.

Applications :-  $10 \times 12 \times 15 \times 15 \times 15 \times 15$   
 $\times 15 \times 15 \times 15 \times 15 \times 15 \times 15$ . (At this stage  
a violent reaction was set up, so  
applications were not given for next  
two days)  $\times 15 \times 15 \times 15 \times 15 = 225$  min.  
or 3 hrs 45 minutes. - Curat.

cases belonging to the second  
class :-

© W<sup>g</sup> Wackay ad. 43.

This patient was shown  
to the Northern Branch of the  
British Medical Association and  
was unanimously diagnosed as  
Lupus Vulgaris. The condition was  
of two years standing and was  
situated on the back of the  
left hand which it almost  
covered - gradually spreading and  
healing. There was no ulceration.  
On bacteriological examinations  
of scrapings taken on several

occasions no tubercle bacilli were found. I consider this case to be one of the lupoid form of sycosis, caused by an infection of staphylococcus albus, which was present.

Treatment gave us a complete cure with very little scarring.  
Applications: -  $5 \times 6 \times 8 \times 10 \times 10 \times 10 \times 10$   
 $\times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 129$  min.

at 2 hours 9 minutes - cured.

② Mr. Nelson. act 38.

- An almost exactly similar case in a woman of middle age. Here the condition was limited to the back of the right wrist. Scrapings examined by the Clinical Research Association were reported to be infected with Staphylococcus albus. In no examinations were Tubercle Bacilli found. We got a perfect cure with no scarring.

$5 \times 8 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$

$\times 10 \times 10 = 93$  min. or 1 hr 33 min.

③ *U.?* *U.?* *U.?* - act. 44.

6 months duration. The condition began with a scratch on dorsum of left little finger. It then spread to the hand, healing as it went. On admission it presented a red inflamed oval patch, 2" x 1 1/2", with openings discharging white curdy material. On sexual exam<sup>n</sup> - nothing. On microscopic examination staphylococcus was present, on culture staphylococcus albus.

Applications :- 8 x 10 x 15 x 15 x 15 (pus cleared away, edges raw and inflamed) x 15 x 15 x 15 x 15 x 15 x 15 x 15 = 168 minutes or 2 hours 48 minutes.

Of the above type of cases we have treated in all nine cases, with perfect results. We have several cases also at present undergoing treatment, and are endeavouring to make a special investigation into this curious form of skin disease.

14/  
Lupus Vulgaris - Some cases given  
① Miss Foster aet. 21.

Lupoid patch on right cheek,  
size of half a crown. No ulceration  
- Applications :-  $5 \times 6 \times 8 \times 10 \times 10 \times 10 \times 10$   
- 59 minutes - cured.

② Georgia Stewart aet. 18.

Lupoid patch on left cheek,  
 $\frac{4}{8} \times \frac{5}{8}$ ", of 2 years duration.  
- Applications :-  $5 \times 8 \times 10 \times 10 \times 10 \times 10$   
- 53 minutes - cured.

③ Mary Batchen - aet. 34.

Lupus of nose involving alae  
and septum, and two thirds of  
the external surface.

- Applications :-  $5 \times 8 \times 10 \times 10 \times 10 \times 10$   
 $\times 10 \times 10 \times 10 = 83 \text{ min or } 1 \text{ hr. } 23 \text{ min.}$

We have treated in all  
seventeen cases of Lupus Vulgaris  
with perfect success.

Lupus Erythematosus -

This case was a young  
domestic servant aet. 16. General  
health good. Since age of three  
she had suffered from a slowly

18.  
Spreading inflamed area which gradually extended from the left malar prominence across the cheek and bridge of nose to the right cheek. The condition invaded the lower eyelid and actually involved the inner canthus.

- After several applications of the Rays a very marked reaction was produced, with considerable oedema and swelling of the left side of the face.

This gradually disappeared, and the edges of the area took on a more healthy appearance. The cicatricial tissue softened and became more like ordinary skin, and the scales disappeared.

The present appearance is that of a thin cicatrix.

Applications :-  $5 \times 8 \times 10 \times 10 \times 10 \times 10$   
 $\times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$ . =

133 minutes or 2 hours 13 minutes

Subnecrosis of Skin

Jas. W. Mason - aet. 29.

This patient suffered

19.  
for several months from a very  
persistent "sore" on the sole of the  
right foot. The condition might  
be described as an annular  
granuloma, which occasionally  
healed at parts, only, however,  
to break down again. A  
small portion was excised and  
sent for examination to the  
Clinical Research Assoc., who  
reported as follows -

"This is an inflammatory lesion and  
shows no evidence of malignant growth.  
There is marked invasion of the  
cutaneous and subcutaneous tissue with  
leucocytes and occasional large giant  
cells. Some of the latter are  
arranged in giant cell systems and  
although we cannot find any  
Tubercle Bacilli, we think the  
lesion is tuberculous."

Applications :-  $5 \times 8 \times 10 \times 10 \times 10 \times 10 \times 10$   
 $\times 10 \times 10 \times 10 \times 10 \times 10 = 113$  minutes or  
1 hour 53 minutes. Care.



21.  
-the Rays, ten minutes each, five minutes on each side.

Result - recurrence of glandular infection.

Podent ulcer

① C. MacDonald 52.

Podent ulcer of the right cheek size of two shilling bit, with characteristic rolled edges.

-Applications :-  $5 \times 8 \times 10 \times 10 = 53$  minutes.

Condition returned after four months -

$10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 40$  min. or 1 hr. 10 min. No recurrence.

② J. Boyne aet. 44.

Characteristic ulcer of the right cheek size of a shilling piece.

-Applications :-  $5 \times 8 \times 10 \times 10 \times 10 \times 10 = 53$  minutes. Cured. no recurrence.

*Spleno-Metastasy Leucocythæmia.*

We have treated two cases of this disease with applications of the Rays. In neither of these cases could we claim to have got any beneficial result.

*Hodgkin's Disease.*

22  
Jas. Haver. aetas 23.

Glandular enlargement in the right side of the neck, right axilla, and marked enlargement of the spleen - which reached to a point almost midway between the costal margin and umbilicus.

He was given twenty four applications of nine minutes - on alternate days. Three minutes to each enlarged area.

At the conclusion of the treatment patient's spleen had receded so much as to be palpated with difficulty, no difference however to glands in neck and axilla. I should mention that this treatment was complicated by use of arsenic.

Exophthalmic Goiter.

We have observed the effects of the Rays on several cases of this disease. These cases varied greatly in intensity. We shall quote the most severe case -

Jessie MacDonald Oct. 22.

Patient had been under treatment for eighteen months for this condition, and had been an inmate of a large hospital for two months, with temporary benefit. On admission the gland was enlarged, particularly on the right side, soft in consistence, and exhibiting blowing bruit. She was exceedingly nervous, with very pronounced tremors, exophthalmos of both eyes very marked.

Pulse 142. No albumen or glycosuria. We had patient on various medicines without any great improvement. X Rays were suggested, and she had in all 44 applications, on alternate days, each lasting seven minutes. Rays were applied to gland, which was protected by felt.

Patient at end was distinctly improved. The gland was smaller in size, nervous condition greatly

24.  
berupted and pulse rate 102. The  
exophthalmos, however, showed no  
diminution, being almost as  
pronounced as before. Patient also  
improved generally, gaining half  
a stone in weight.

Of the other six cases, five  
were treated as outpatients.  
We shall instance one outpatient  
case.

Mrs H. aet. 21.

She was in a state of  
intense nervousness being unable  
to walk without stumbling. Her  
speech was affected, patient  
remarking that she did not seem  
to have control over her tongue.  
Gland was not greatly enlarged,  
pulse 130, and marked exophthalmos  
of right eye.

She was given in all 38 sittings,  
the first 24 of ten minutes each,  
the rest of five minutes.

Patient at conclusion declared  
she felt more like her old self,

the nervousness had almost completely disappeared, only noticeable in a certain explosive excitability of speech. The eye condition was somewhat improved. Pulse varied from 80 to 100.

Summing up the other cases we have found that -

The neurotic element is greatly benefited. Secondly, invariably the pulse rate has diminished, in the majority of cases markedly.

In two cases of the severe the thyroid diminished in size. The exophthalmos was not affected to any extent in any of the severe.

The average number of exposures works out at 41 of 7 minutes each.

---

J. C. Roberts.

Inverness - 24<sup>th</sup> April 1909.