

THE VALUE OF X RAYS IN MEDICINE AND SURGERY.

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THE accompanying illustration shows very many points of great interest to the anatomist, physician, and surgeon. Briefly described, it is a skiagraph (originally life-size and reduced to one-third) of a boy aged six years who died in the hospital from meningitis. His father expressed a wish that he should be examined by means of the "new light," which request was complied with. In order to test whether or not foreign bodies placed in the body could be accurately located and recognised I inserted a brass watch-key as far as possible into the right bronchus through an opening in the trachea. I also inserted a small, leaden toy pistol (as being an object easily recognisable and also very opaque to the rays) into the cæcum and carefully closed the openings. I then laid the body upon a negative 24 in. by 18 in. in size carefully folded in several layers of brown paper and placed the focus tube exactly in the centre above at a distance of 20 in. The platinum anode was directed obliquely and almost parallel to the surface of the chest. The exposure given was fifty minutes, the current being turned off every five minutes to cool the platinum and also to warm the tube with a spirit lamp. The negative was developed with amidol solution and a bromide print was taken with an exposure of thirty seconds. The points of interest are the following.

The foreign bodies.—The watch-key being of greater opacity is distinctly seen pointing downwards and outwards, a little to the right of the middle line, and opposite the third and fourth ribs apparently (it must be remembered that this print is a negative and not a positive); part of it is lying directly in front of the vertebral column so that its outline is actually shown through the vertebræ. The toy pistol is most distinctly seen over the cæcal region, and so well is it delineated that the trigger and other parts can be actually made out.

The outlines of the viscera.—These I consider are well delineated. The lungs are seen to be quite transparent to the x rays; the upper limits in the large picture are not above the clavicle, whilst the lower boundaries on the diaphragm are well seen. The outline of the heart is shown rather larger than in the normal, but this was due to the pericardium being distended with fluid. The narrowing of the pericardial sac is well seen. The diaphragm is shown with the liver outlined, especially the right lobe. The vertebral column is actually seen showing through the liver. The kidneys and spleen cannot be definitely made out on the original picture.

The skeleton.—The chief interest in the bones is of course the fact of their being in the developmental stage. The vertebral column is seen in its entirety, a considerable space being seen between the bodies of the lumbar vertebræ. The shadows of the ribs forming the posterior wall of the thorax are, of course, better seen than those in front, whilst the outline of the sternum is absent. This is due to the fact that the posterior wall was next the plate. The clavicles are seen with the scapular end not shown being cartilaginous. The scapula and the thicker parts, including the glenoid cavity, are well seen. The coracoid process, the nucleus of which appears at the first year, is prominent, whilst the acromion, the nuclei of which do not appear until the fourteenth year, is not seen. The spine of the scapula is shown as a dark shadow through the body of the scapula itself. The humerus is very interesting. The nuclei of the head and tuberosities have united to form an epiphysis, which is not united to the shaft until the twentieth year. In the lower end the epicondyle of Chaussier is well seen, which unites with the shaft at the sixteenth year. In the radius the nucleus of the head, which only appears at the fifth or sixth year, is just seen whilst the nucleus of the carpal end, which appears at the end of the second year, is prominent as a separate epiphysis. The nucleus of the carpal extremity of the ulna is just seen as it appears at the fifth year. The carpal bones are very interesting. The os magnum (first year), unciform (second year), cuneiform (third year), trapezium and semilunar (fifth year), and scaphoid just

appearing (sixth year) are well seen. The trapezoid (seventh year) has not yet appeared. The left arm is pronated and the point where the radius crosses the ulna is seen to be high up. The pelvic bones are not well seen, but the femora are distinct.

In another large skiagraph I made an attempt to exactly delineate the outlines of the viscera as follows. I carefully opened the chest and abdomen of an adult male and exposed all the solid viscera. I then carefully placed a piece of thick copper wire exactly round the edges of the heart, lungs, liver, spleen, and kidneys, that of the heart encircling also the aorta with a bend corresponding to the aortic valve. The wire encircling the kidneys was continued down the ureters. I also placed four calculi in the gall-bladder and calculi in the renal cortex, in the pelvis, and also in the ureter, and carefully closed the cavities, replacing the ribs exactly. With an exposure of sixty minutes a good negative was obtained which showed all the points desired very well, the calculi being especially clear. Owing to the vibration of the lamp there was in places a double line. I hope to be able to do better plates with further experience on this point.

The current used was from our own installation (ten volts twelve ampères). An induction coil by Harvey and Peake of London and focus tubes by Reynolds and Branson of Leeds were used. I must also express my indebtedness to Mr. Ross, our dispenser, and also to Messrs. Valentine and Son, photographers, for the prints.

Dundee.

ON LATENT AND TRANSIENT PERICARDIAL EFFUSION.

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PROFESSOR CLIFFORD ALLBUTT¹ describes under the heading of Quiet Pleurisy with Effusion a familiar group of cases in which effusion takes place by degrees and without any pain or initial severity of symptoms, the patient ultimately seeking advice in connexion with anæmia and incapacity for exertion at a time when the fluid has already accumulated to a considerable extent. That pericarditis also occurs in a latent way is a fact anatomically demonstrated by the agglutinations, the bands of adhesion, the thickenings, and the fibrinous deposits found after death in the pericardium of those in whose history there is no record of pericarditis. Some fluid is probably effused in all cases of pericarditis, though in many of these milder or limited attacks its amount must be small. Yet, both as regards origin and subsequent behaviour, the history of effusions differs in the two serous sacs. At any rate, I do not at present possess a sufficient series of clinical cases in point to construct a group of quiet pericarditic effusions absolutely analogous to that of the "quiet pleurisies," though other observers may be provided with that material. This communication does not therefore venture beyond the recognition of latent pericardial effusions, irrespectively of their mode of origin, which doubtless in some cases is inflammatory. It is written in the belief, based upon repeated clinical observations, that pericardial effusion is less infrequent than is sometimes thought, and that it may originate, run through a short course, and disappear, entirely unsuspected. Looking back over clinical studies of the last few years I call to mind several cases in which the effusion had not been detected at first, and might readily have passed unrecorded but for the chance of a renewed examination of the chest having been made at an opportune moment. The three following cases, admitted into St. George's Hospital and still under my treatment at the time of writing, are striking illustrations of their kind. They were specially instructive as affording an opportunity of following the process from beginning to end, of accurately studying its stages by percussion, and of keeping exact tracings of the surface markings obtained during and after the period of effusion.

CASE 1. Nephritis.—A man aged forty years, strong and healthy in aspect, but slightly pallid, applied for admission to

¹ Quain's Dictionary of Medicine, second edition, vol. ii., p. 466.