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RÖNTGEN RAYS IN LARYNGEAL SURGERY.

(*Preliminary Note.*)

By JOHN MACINTYRE, M.B.C.M., F.R.S.E.

THAT Röntgen's brilliant discovery will prove useful in general surgery is no longer a matter of doubt. Only a few weeks ago photographs of the bones of the hand and foot were looked upon with curiosity mixed with speculative interest, and now the greater portion of the human skeleton, including the vertebral column and the extremities, have been photographed. The question naturally arises, however, will this important discovery be of use in our special department? and as I have been making a number of experiments in this direction, the following preliminary notes may be of some interest :—

For cryptoscopic purposes—and this must in the end be of more importance than photography—more expensive and powerful apparatus must be at the surgeon's disposal. For this work a current of something like ten volts and twelve to sixteen amperes is required at least, and a good coil, with a well-made interrupter, having a spark of from six to eight inches, also a Crookes tube at the proper vacuum. For photographic purposes the current need not be so powerful, and even a two to four inch spark coil may be used for most practical purposes. During my experiments I have been fortunate in having currents and coils of much greater strength than the above-mentioned; my work has been mainly done with an Apps coil, and the best results have been obtained with Newton's tubes. I have tried a number of fluorescent screens for the cryptoscope, but find the potassium platino-cyanide and barium platino-cyanide the best. Calcium tungstate in its crystalline form, as recommended by Mr. Edison, is also good. With this apparatus I have been able to see shadows of the different bones of the extremities,

and the vertebral column, ribs, clavicle, and scapula, as will be seen further on.

In the present state of our knowledge it may at once be stated that photography, by means of Röntgen rays, is in a more advanced state than cryptoscopy. With regard to the former, I may say that I have on the living subject photographed the vertebral column in the chest and neck (above and below the lower maxilla) with such definition that destruction of bone can be easily detected. I have also photographed the chest for the presence of foreign bodies, as will be mentioned further on; and I have been able to photograph the larynx in the human subject, the picture obtained showing the base of the tongue, hyoid bone, thyroid and cricoid cartilages with epiglottis; the opening at the upper part of the œsophagus is also seen, and the spine is indicated behind. I have also photographed the bones of the face in health and disease, in the latter case showing destruction of the upper jaw, the result of malignant disease. Experimenting on the dead subject, I have also been able to obtain excellent photographs of the presence of foreign bodies in and around the region of the larynx, as well as ossification in the cartilages.

With regard to the cryptoscope, the light easily penetrates the tissues of the neck and chest, and I have seen sufficient of the former to enable me to say that many foreign bodies might be detected with the eye without photography at all. In this department I have to record an interesting case sent to me by Dr. Rutherford and Professor Henry E. Clark. The patient had swallowed a halfpenny six months ago, and on examining him by means of the fluorescent screen I could easily see the round black shadow of the coin at the level of the third dorsal vertebra. This is important and interesting, because the boy referred his pain to the cardiac orifice of the stomach. I afterwards photographed the case, but the foreign body could easily be seen by the eye.

For the examination of the antrum of Highmore I made a number of experiments in the way of obtaining small tubes to go into the mouth. These are not so easily obtained, nor, as yet, as satisfactory as the large tubes. I therefore fell back upon another plan, viz., placing the Crookes tube outside. I made a small laryngo-cryptoscopic mirror and a cryptoscopic tongue depressor, the salt being placed on one side of the glass, cut to the proper size and shape and covered in with aluminium. In this case the x rays are generated outside of the mouth. For the antrum, where difference of density is to be detected, the tube is, of course, to be placed above the level of the face and the mirror inside of the mouth with the platinum surface towards the palate. In the case of foreign bodies or for viewing other parts of the mouth, the Crookes tube will be placed below the lower maxilla. This instrument I described at the meeting of the Royal Society in Edinburgh on the 6th inst. I hope at the next meeting of the British Laryngological Association to place the photographs and appliances before the Fellows. As far as I have been able to judge, the x rays are going to be much more useful in our special department than we had at first anticipated.

THE LARYNGOLOGICAL AND OTOLOGICAL CLINICS OF ENGLAND AND SCOTLAND.

THE object of compiling the following tables has been to enable gentlemen wishing to obtain post-graduate instruction in England and Scotland to have before them, in tabular form, a full list of all clinics open to them. And we take this opportunity of expressing our sense of gratitude for the universal kindness and courtesy shown by the deans and secretaries of the various institutions in supplying the JOURNAL with the information asked for.

Although it is obvious that the individual teacher is really the magnet which attracts—more, indeed, than the amount of material at the disposal of the student—yet it has not been found practicable here to insert their names; and reference to the “Medical Directory” will give the required information.

The Editors will be grateful for notice of any irregularity in the present text, and in future for changes made in the clinics, as well as for notice of omissions or additions.

Name.	Ear Clinic.	Throat Clinic.	Remarks.	Duration.	Fees.
ST. BARTHOLOMEW'S ..	Tu., F., 2 p.m.	Tu., F., 2.30 p.m.	MEDICAL SCHOOLS. The fee includes the whole hospital practice No post-graduate instruction in Aural Department Fees, etc., inquiries to be made of the Dean. Demonst. Throat Fri. 3 p.m. Fees for hosp. pr., each dept. Throat operations, Fri. 1.30 Ear fees apply to the Dean. Attendance free on application to Dean. For particulars regarding Throat Course apply Physician in charge. Lectures: Aural, Wed., 3 p.m., Fri., 3 p.m. Summer session For lady students. No post-graduate course. Ditto.	3 months	£15 Is.
ST. GEORGE'S ..	Tu., 2 p.m.	Th., 2 p.m.		3 months	£2 3s. each
ST. THOMAS'S ..	M., 1.30 p.m.	Tu., F., 1.30 p.m.		3 months	£3 3s.
CITY'S ..	Tu., 1 p.m.	F., 2 p.m.			£5 Is.
ST. MARY'S ..	M., Tu., 3 p.m.	Tu., F., 1.30 p.m.			
KING'S ..	Th., 2.30 p.m.	M., 1.30 p.m.			
UNIVERSITY ..	M., Th., 9 a.m.	M., Th., 9 a.m.			
CHARING CROSS.....	F., 9.30 a.m.	F., 9.30 a.m.			
LONDON ..	W., 9 a.m.				
ROYAL FREE ..	Sa., 3 p.m.	Sa., 3 p.m.			
WESTMINSTER ..	W., Sa., 9 a.m.	W., Sa., 9 a.m.			
MIDDLESEX ..	Th., 9 a.m.	Th., 9 a.m.			

(Continued on next page.)

Name.	Ear Clinic.	Throat Clinic.	Remarks.	Duration.	Fees.
GOLDEN SQUARE	{ Daily, 2.30 p.m. M., 9 a.m.	SPECIAL Daily, 2.30 p.m. Tu., F., 6.30 p.m.	HOSPITALS. £2 2s. per course of Lectures given in the winter	{ 3 months 6 months	{ £3 3s. £5 5s.
LONDON THROAT	{ Daily, 2 p.m. Tu., F., 5.30 p.m.	Tu., F., 6 p.m. Tu., F., 6.30 p.m.	Fee for Lectures per term £1 1s. Hospital practice	{ 1 month 2 months Perp.	{ £1 1s. £2 2s. £5 5s.
CENTRAL DITTO	{ M., Tu., F., 5.30 p.m. M., W., Sa., 2.30 p.m.		Throat Hospital for London post-graduate course	{ 3 months 6 months	{ £3 3s. £5 5s.
ROYAL EAR	{ M., W., Sa., 3 p.m. Tu., 9.30 a.m.		Clinical Lectures, apply to Secretary	3 months	£2 2s.
GREAT NORTHERN CENTRAL WEST LONDON	Tu., F., 2.30 p.m. Tu., Sa., 10 a.m.	EXTRA-MURAL Tu., F., 2.30 p.m. Sa., 10 a.m.	METROPOLITAN. Commence third Wed. Jan., May, Oct. For information apply Hon. Sec. post-graduate course.	3 months 3 months	£2 2s. £3 3s.
OWEN'S COLLEGE, MANCHESTER	SCOTCH { M., 2 p.m. Tu., 1 p.m. W., Th., F., 2 p.m.	AND PROVINCIAL	CLINICAL MEDICAL SCHOOLS. Clinics at Ear Institute free. Post-graduate course, June, first week	{ 1 course 2 courses Perp.	{ £1 1s. £1 11s. 6d. £2 2s.
UNIVERSITY OF DURHAM	Th., 10 a.m. Tu., F., 3.30 p.m.	Tu., F., 3.30 p.m.	None.	3 months	£1 1s.
ABERDEEN GENL. DISPENSARY	M., Th., 2 p.m. Daily, 9.30 a.m.	M., Th., 2 p.m. Daily, 9.30 a.m.	Courses commence April, last until June		
VICTORIA UNIVERSITY, UNIVERSITY COLL., LIVERPOOL	M., 2.30 p.m.	W., 1.30 p.m.	At Royal Infirmary. No course.		
BIRMINGHAM	M., 2.30 p.m.	W., 1.30 p.m.	For fees enquire of the Dean.		
YORKSHIRE COLLEGE, LEEDS	M., 2.30 p.m.	W., 1.30 p.m.	EDINBURGH. No regular lectures	3 months	£2 2s.
EYE, EAR, AND THROAT INFIRMARY, ROYAL INFIRMARY	M., Th., Sa., 12 noon Tu., F., 11 to 12 noon	Tu., F., 4 p.m. Tu., F., 11 to 12 noon	No post-graduate instruction.		
ANDERSON'S COLLEGE	Th., 8 p.m.	GLASGOW.	Ear courses commence May and November	3-6 months	£1 1s.
CENTRAL DISPENSARY	Tu., F., 1 p.m.	Tu., F., 3 (summer)	Apply Dean for fees, syllabus of Lectures, etc.		Free
ST. MUNGO'S COLLEGE	Tu., F., 12 (winter)	Tu., W., 3 p.m.	DUNDEE.		
ROYAL INFIRMARY	Tu., F., 2 p.m.	Tu., F., 2 p.m.	No post-graduate course		£1 1s.
ROYAL INFIRMARY THROAT AND EAR INSTITUTION	Tu., F., 2 p.m. (winter) M., Th., 2 p.m. (summer)	Tu., F., 2 p.m. (winter) M., Th., 2 p.m. (summer)			