EXHIBITION OF RADIOGRAMS ILLUSTRATING
THE PATHOLOGY OF MASTOIDITIS.†

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I wish to express to you my appreciation of the honor of the invitation extended to me to take part in this evening's discussion, but much regret that owing to a change from the original date to the present, it conflicts with the conduct of my examinations in the University, hence my reason for being absent.

When reflecting upon the value of radiography in diseases of the frontal sinuses and antra, it occurred to me that perhaps the same method might be applied to the mastoid process, and thus, independently of any work that had been done elsewhere, I had my first plate made in 1908. It was taken with the patient lying on his face, and the result was not satisfactory, as only the cells and the tip of the mastoid were visible. Studying the matter still further, I learned that Schier of Breslau had done some work along these lines, but his plates were taken with the patient lying on his side. In 1909 I again took up the work, having my plates taken with the patient lying on his side. For a description of the technic I am indebted to Dr. A. Howard Pirie in his article on "Radiography in the Diagnosis of Mastoid Disease,"* which is as follows:

"The patient should lie prone on a firm couch. The head is supported on an inclined plane making an angle of twenty-five degrees with the plane of the couch. The photographic plate rests on this inclined plane. The head is rotated 90 degrees, so that the patient looks directly to his side; this brings the mastoid into contact with the plate. The pinna of

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the ear is turned forward so as to obscure the mastoid as little as possible. The source of X-rays is placed vertically above the head, and the perpendicular ray is made to fall on a point two inches above the highest point of the pinna. The mastoid on each side must be skiagraphed separately. The glass of the focus-tube should be nine inches away from the hair. The exposure required will turn a Sabouraud pastille, placed at 2 centimeters from the glass, to one-third of the B tint. A medium hard focus-tube (4 to 5 Benoist) with 30 milliamperes for fifteen seconds from a Snook apparatus, gives a plate which should be fully developed in seven minutes (Ilford plate and developer). Skiagraphs of both right and left mastoids must be made of every case, as a single skiagraph of one mastoid is of little value. A different focus-tube should be used for each mastoid, as it is rarely possible to get one tube to remain constant in vacuum for both exposures. Both focus-tubes must, of course, be of the same hardness. This is one of the most important points in the technic, viz., to have two similar tubes of equal hardness and quality. The American made tubes lend themselves to this better than any others I have used."

The value of radiography in affections of the mastoid process is to demonstrate first of all the anatomic characters of the mastoid process itself, diploetic, pneumatic or sclerosed. It further gives us in many cases the position of the antrum and the position of the lateral sinus in its relation to the mastoid process, and in many, as shown in some of the plates, the emissary vein is distinctly seen.

Clinically, we are enabled by radiography to recognize when the mastoid process has become involved in acute inflammatory or purulent infection, by a distinct blurring or veiling of the cells. Should the disease have existed for some time, leading to destruction of the cells, this is often indicated by distinctly enlarged cavities, which occurring over the lateral sinus in some cases shows it definitely exposed as a dark area. One case I have on record—unfortunately the plate is not on exhibition owing to its having been broken—distinctly shows a sinus thrombus. This was evidently due to the fact that the thrombus was not only surrounded but infected with pus.

I wish, however, to make it distinctly clear that I am not an advocate of radiography as applied to diagnosing diseases of

the mastoid process exclusive of one's clinical experience; I only look upon it as one of the nice adjuncts to one's work and I do not allow my judgment to be biased by any findings of the radiogram. But I will say this, that my readings of the radiograms have in operative cases always been confirmed.

I wish to acknowledge the valuable assistance of Mr. McNeil of the X-ray department of the Royal Victoria Hospital in the development of this work from its very beginning.