over-exposed to x rays, then x-ray burns would provide a combination of factors favourable to the development of epithelioma analogous to that which caused the development of epithelioma contagiosum in pigeons—injury, disturbed nutrition of cells, and the possible presence of a conjecturable growth-promoting factor.

Having regard to the profound degenerative changes which are produced in the gastro-intestinal tract by faulty food deficient in vitamins,¹ and to the ease with which, in these circumstances, harmful substances may find their way into it, or may be formed in its contents, it is possible to suppose that among these substances there may, at times, be some possessing growth-inducing properties. In this connexion attention may be drawn to the occurrence of a carcinoma of the pylorus in an early stage in one of my monkeys fed on a diet of autoclaved food, butter, and onion.² Although I cannot affirm that this carcinoma had actually developed within the period of the experiment, yet the observation is to be borne in mind in connexion with the considerations raised in this paper.

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RADIOGRAPHIC LOCALIZATION OF SPINAL LESIONS BY SICARD'S METHOD.*

(With Special Plate.)

BY

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DURING a recent visit to Paris Professor Sicard kindly demonstrated to me his method of localizing certain spinal lesions by radiography after injecting an opaque fluid into the spinal theca. It provides us with a new means of diagnosis of great value.

Briefly, Professor Sicard's method is as follows. A small quantity, between 1 and 2 c.cm., of lipiodol is injected into the spinal theca through a suboccipital puncture, the patient being in a sitting posture. Lipiodol is a heavy oily fluid consisting of "huile d'oeillette" containing 40 per cent. of iodine, and is remarkably opaque to the x rays. The lipiodol sinks slowly downwards and is arrested at any point of occlusion of the spinal theca, so that the upper limit of a tumour, for instance, can be accurately demonstrated by x-ray examination. Similarly the lower limit of such a tumour can be shown by injecting the lipiodol through a lumbar puncture, and taking a radiogram with the patient in the head-down position. The three cases in which I have employed this method are as follows:

CASE I (Under the care of Dr. M. A. Cassidy).

An intrathecal neurofibroma compressing the cord at the level of the ninth thoracic segment. The curved lower border of the shadow defines clearly the rounded upper surface of the tumour (Fig. 1). The two small shadows situated lateral to the main mass mark the position of a posterior root ganglion. The tumour was removed, and the patient made a rapid and uninterrupted recovery.

CASE II (Under the care of Drs. H. G. Turney and A. E. Russell).

An extrathecal endothelioma at the level of the eighth thoracic segment. The radiogram (Fig. 2) showed the lipiodol to have been completely arrested at the level of the body of the sixth thoracic vertebra. In this case the neurological signs were such as to render it doubtful whether the case was one of spinal compression at all, whilst at the same time the exact segmental level was difficult to define. The radiographic examination immediately and almost dramatically settled both these questions. Laminectomy was performed and the tumour was removed.

*A paper communicated to the Section of Surgery at the Annual Meeting of the British Medical Association held at Portsmouth.

CASE III.

Fracture-dislocation at the level of the first lumbar vertebra. Here the radiogram (Fig. 3) shows the narrowing of the spinal canal and the upper limit of thecal occlusion. It also shows small droplets of lipiodol arrested at various points, probably demonstrating the presence of arachnoidal adhesions.

Even from these few cases the value of Sicard's method is obvious. Not only can it be employed to ascertain whether or not a block exists in the spinal theca, but it shows the exact position of the lesion with relation to the bones. From the operative standpoint the localization is more accurate than that which can be arrived at by neurological examination. Neurological signs may enable the segmental level to be accurately determined, but the exact position of any given spinal segment with relation to the bones is by no means easy to ascertain. Consequently a radiographic demonstration of the relation of the lesion to the vertebrae is of great value, and enables a tumour to be exposed by the removal of perhaps only three laminae arches. If, the upper limit of a tumour having been defined, a second examination is made by taking a radiogram with the patient placed head downwards after injecting lipiodol through a lumbar puncture, the lower limit of the tumour can also be demonstrated. This is a point which cannot be ascertained by neurological examination, but it is a matter of considerable importance to the surgeon, since tumours extending over many segments are sometimes encountered.

I am indebted to Sir Archibald Reid and Dr. Fildes for the excellent radiograms from the radiological department of St. Thomas's Hospital.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

A LONG PAROXYSM OF AURICULAR FIBRILLATION.

Mrs. M., now aged 74, was seized on November 15th, 1919, with right hemiplegia and aphasia. The pulse was hard, regular, and slow. Early on November 17th she became faint with cold clammy skin, and later in the day it was found that auricular fibrillation had set in, the pulse rate averaging 130. On November 24th this attack ceased, and the pulse was regular at 64. On December 3rd fibrillation once more appeared, and its onset was apparently associated with the same symptoms of heart failure as before. From this time onward till July, 1921, a period of eighteen months, she was seen at first weekly and later about once a month, and during the whole of this period the pulse remained quick, and wholly irregular. At my July visit the pulse was found to be regular at 60 a minute. Since that date she has had three paroxysms of fibrillation, each of a few days' duration, and each time she has become collapsed and somnolent at the onset of the attack. When the heart is regular, the rate is slow (50 to 60), and the symptoms of heart failure at the commencement of fibrillation are doubtless dependent on the great increase of rate. As she is constantly in bed she apparently becomes inured after a time to the defective circulation. The polygraph curve during an attack shows a wholly irregular pulse without accurate spacing of the beats, such as is found in the irregular pulse of auricular flutter.

It is well known that a paroxysm of auricular fibrillation may continue for some months and then cease (Mackenzie), but it is probably very unusual for an attack to last as long as a year and a half. It seems fair to assume that during the whole of this period fibrillation was present even though the patient was seen only once a month during the latter part of the period. The onset of tachycardia is always associated with the prominent symptoms of heart failure, and these would almost certainly have been observed and reported to me by her daughter had there been any return of the normal rhythm followed by a fresh paroxysm.

Hull.

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SARGENT: RADIOGRAPHIC LOCALIZATION OF SPINAL LESIONS BY SICARD'S METHOD.

Fig. 1.—Intradural tumour.

Fig. 2.—Extradural tumour.

Fig. 3.—Fracture of first lumbar vertebra.