After some electrical treatment, and many vain efforts to get down solid food the patient determined to subsist entirely on liquids. To facilitate this he acquired the habit of daily passing two œsophageal bougies into his stomach, in order to, as he thought, dilate the stricture. The benefit he derived from this manipulation was evidently due to the fact that the bougie tilted the rim of the denture to one side and allowed the nourishment to pass along its concavity.

In June, 1910, the patient was sent to the London Throat Hospital by Dr. S. Rattray, of Swindon, and with the direct method Dr. Irwin Moore discovered the tooth-plate impacted in the œsophagus. (Fig. 2.) Dr. Moore kindly transferred the

FIG. 2.

Vulcanite denture impacted in the œsophagus. The illustration shows the margin of the tooth-plate, as seen by the œsophagoscope. The concavity of the plate allowed of bougies and endoscopic tubes being passed alongside it.

patient to my care, and I saw him in my clinic in King's College Hospital on Oct. 7th, 1910. Under cocaine, with a little careful searching, the red edge of the tooth-plate was easily seen in the œsophagus at a distance of 10 inches from the teeth. An X ray examination by Mr. A. D.

FIG. 3.

Radiogram showing denture opposite the fourth and fifth dorsal vertebrae, and at a level with the cartilage of the second rib in front. The shadow of the tooth-plate has been slightly intensified in order to be visible in reproduction.

Reid did not reveal much, but a developed photograph showed the faint outline of the tooth-plate opposite the fourth and fifth dorsal vertebrae, and on a level with the second rib cartilage in front. (Fig. 3.) This was estimated

to be at the level of the bifurcation of the trachea. On Oct. 11th chloroform was administered, and the tooth-plate was seized with a pair of forceps specially selected by being tried on the other half of the plate, which the patient had wisely preserved. It was found impossible to withdraw the tooth-plate through the Brinings tube, so the tooth-plate, forceps, and tube were all removed *en bloc*.

The patient left the hospital the next day, eating solid food. When examined a week later there was a slight fibrous contraction at the situation of the impaction. He continued to use the bougie until I saw him again in March, 1911, when I advised him to discontinue it. At that date—i.e., five months after the removal of the foreign body—he reported that he had had no difficulty with solid food since leaving the hospital, and had gained 11 lb. in weight.¹ When written to at the beginning of December, 1911, he replied as follows: "I experience no difficulty in swallowing, neither have I since the plate was removed. At times I am reminded of the sharp pains which I experienced if I attempted to laugh, by an itching under the right nipple. The place was equally painful if gulping up wind, of which I suffered so much after swallowing it. In swallowing I can detect nothing unless I drink cold water, which causes a twitch at the place where the plate was."

This case is interesting chiefly for two reasons: 1. It shows how little harm a solid, inorganic foreign body may produce in the gullet, particularly if blind attempts to fish it up are not made. 2. It shows how the diagnosis may be overlooked. Both the œsophageal bougie and the Killian tube had evidently glided along the concavity of the tooth-plate, and this being made of red vulcanite its colour was not so readily distinguished from that of the mucous membrane. Skilled observers with the X rays also failed to detect it. A reference to the plate (Fig. 3) will show that, though faint, the vulcanite throws a distinct shadow. If the patient was only screened in the other hospitals where he had sought relief, the case demonstrates the advantage of taking a photograph. In any case, it shows that care must be used in "reading" X ray photographs. This case teaches us that even when the radiogram is said to be negative, or the substance happens to be one which throws little or no shadow, the œsophagoscope should be used slowly and carefully, inspecting every portion of the gullet walls both during the descent and withdrawal of the instrument.

Two and a half years is a good time for a foreign body to remain in the œsophagus. This record has seldom been surpassed. Guisez records a case in which he extracted a foreign body after it had sojourned in the gullet for four years, but in that instance the substance was a smooth 10-centimes coin and not an irregular and angular tooth-plate.²

Wimpole-street, W.

SOME OBSERVATIONS UPON THE TREATMENT OF PULMONARY TUBERCULOSIS WITH SMALL DOSES OF TUBERCULIN,

THE DOSE BEING REGULATED BY FREQUENT ESTIMATIONS OF THE OPSONIC INDEX.

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THE following observations upon the treatment of pulmonary tuberculosis with small doses of tuberculin regulated by estimations of the opsonic index are perhaps of sufficient interest to justify their publication. The fact that this work was carried out as far back as the year 1907 is an advantage, in that we are now in a better position to determine whether or not the treatment was of any value than we were at the time the observations were made.

It will be remembered that in 1907 the use of tuberculin was being revived in this country under the influence of the work of Wright and his colleagues, and that the very large majority of physicians who prescribed tuberculin gave it in

¹ The patient and tooth plate were shown before the Medical Society of London on March 27th, 1911. (See THE LANCET, April 8th, 1911, p. 940.)

² *Maladies de l'Esophage*, Paris, 1911, p. 270.

accordance with Wright's recommendations. At King Edward VII. Sanatorium Wright's method of tuberculin administration was closely followed. The method is best described in Wright's own words:—

"I regard it as a matter of great moment, especially in connexion with the immunisation against tubercle, to employ in every case the smallest dose which will elicit a satisfactory response, to repeat the dose only when the effect of the preceding inoculation is passing off, and to increase the dose only when it becomes clear that the dose previously employed is ceasing to evoke a sufficient immunising response. Acting in accordance with this principle I now begin with a quantum of tuberculin corresponding to not more than 1/1000th milligramme of the tubercle powder, and never advance to doses larger than a 1/600th milligramme."

The dosage of tuberculin given to the patients in King Edward VII. Sanatorium in 1907 was never outside these limits of 1/1000th to 1/600th milligramme, T.R. being the preparation used in every instance. The opsonic indices

shown by the rise in the opsonic index. The repeated immunising responses were not, however, associated with any appreciable alteration in the clinical condition, in respect to such essential factors as reduction of temperature, diminution in the amount of sputum, disappearance of tubercle bacilli, &c. We were indeed unable to detect any difference whatever in the progress of the tuberculin-treated patients as compared with the progress of similar types of patients who, living under precisely similar conditions, were not having tuberculin. It is of some interest to note that in no case did the weekly repetition of the small doses of tuberculin give rise to any hypersensitiveness.

2. *Ultimate results.*—Considering only the 17 cases whose treatment extended over periods ranging from a minimum of 7 weeks to a maximum of 25 weeks, the results are as follows. Of 12 cases of moderately advanced disease (Group II.), after a period of five years since discharge from the sanatorium, 4, or 33 per cent., are well, and the remainder are dead. Of those who have died, 2 lived for

Table giving Particulars of Tuberculin Treatment in Small Doses Controlled by Estimation of the Opsonic Index.

No.	Group.	Number of weeks of tuberculin treatment.	Number of doses.	Condition on discharge.	After-history.	Remarks.
1	II.	11	10	Unaltered.	Died 12 months after discharge.	T.B. present all through treatment.
2	II.	25	19	Arrested.	Well and at work in 1912.	T.B. present on admission, absent on discharge. During treatment had acute pleurisy with some effusion, which rapidly cleared up.
3	II.	10	8	Much improved.	Died 2 years after discharge.	T.B. present throughout treatment.
4	II.	23	23	Improved.	Very fair health in 1912.	T.B. present on admission, absent on discharge. Febrile throughout most of stay.
5	II.	7	6	"	Died 18 months after discharge.	T.B. present on admission and on discharge.
6	II.	24	22	Much improved.	In good health in 1912.	" "
7	II.	11	10	Worse.	Died 1 year after discharge.	" "
8	II.	11	6	Slightly worse.	Died 4½ years after discharge.	T.B. present on admission and on discharge. Treatment stopped by moderately severe attack of hæmoptysis which was followed by slight extension of the disease.
9	II.	9	8	Stationary.	Well and at work in 1912.	T.B. present on admission and on discharge. Febrile throughout.
10	II.	7	7	Worse.	Died 3 weeks after discharge.	T.B. present on admission and on discharge. Disease rapidly progressed throughout period of treatment.
11	II.	12	12	Much improved.	Died 2 years after discharge.	T.B. present on admission and on discharge.
12	II.	13	11	"	Died 4 years after discharge.	" "
13	III.	10	8	Stationary.	Died 9 months after discharge.	" "
14	III.	11	10	Unchanged.	Died 11 months after discharge.	T.B. present on admission and on discharge. Febrile throughout.
15	III.	21	14	Died in sanatorium.	—	T.B. present.
16	III.	21	19	Unaltered.	Died 12 months after discharge.	T.B. present on admission and on discharge. Made material improvement for 17 weeks, then had severe hæmoptysis and relapsed. The relapse was preceded by a marked fall in index.
17	III.	17	16	Some improvement.	Died 9 months after discharge.	T.B. present all through treatment.

were estimated by Dr. Elder, at that time pathologist to the sanatorium.

Thirty cases in all were treated, over periods varying from a minimum of 6 weeks to a maximum of 25 weeks. Thirteen of these cases had less than 6 inoculations and need not be considered further. The remaining 17 cases were patients with well-marked lung disease. Classified according to the Turban-Gerhart method, 12 would be described as Group II. and 5 as Group III. cases. No case of early and limited disease (Group I.) was included. The cases then were for the most part of an unfavourable type clinically.

Results of Treatment.

1. *Immediate result.*—In the case of all the patients thus treated the injection of the small dose of tuberculin nearly invariably resulted in a satisfactory immunising response, as

over 4 years, 3 lived for over 3 years, 2 lived for over 1 year, and 1 lived three months only after discharge. Two of the 4 patients who are well lost their bacilli before they left the sanatorium. The 5 cases of very advanced disease all died within 12 months of their discharge.

These results, as a matter of fact, compare somewhat unfavourably with the ultimate results of comparable cases treated in the sanatorium during the same period without tuberculin. The numbers treated with tuberculin, however, are small, so no great importance can be attached to such a statistical comparison.

The conclusion we seem justified in arriving at is that the tuberculin, from a clinical point of view, was a negligible factor, and in no wise influenced either the immediate or the ultimate prospects of the patients to whom it was given.

Some details with regard to the treatment of the 17 cases are given in the accompanying table.

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1 Transactions of the Royal Medical and Chirurgical Society, vol. lxxxix.