

## **Experience with Noguchi's luetin reaction / by Howard Fox.**

### **Contributors**

Fox, Howard, 1873-1947.  
Royal College of Surgeons of England

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15

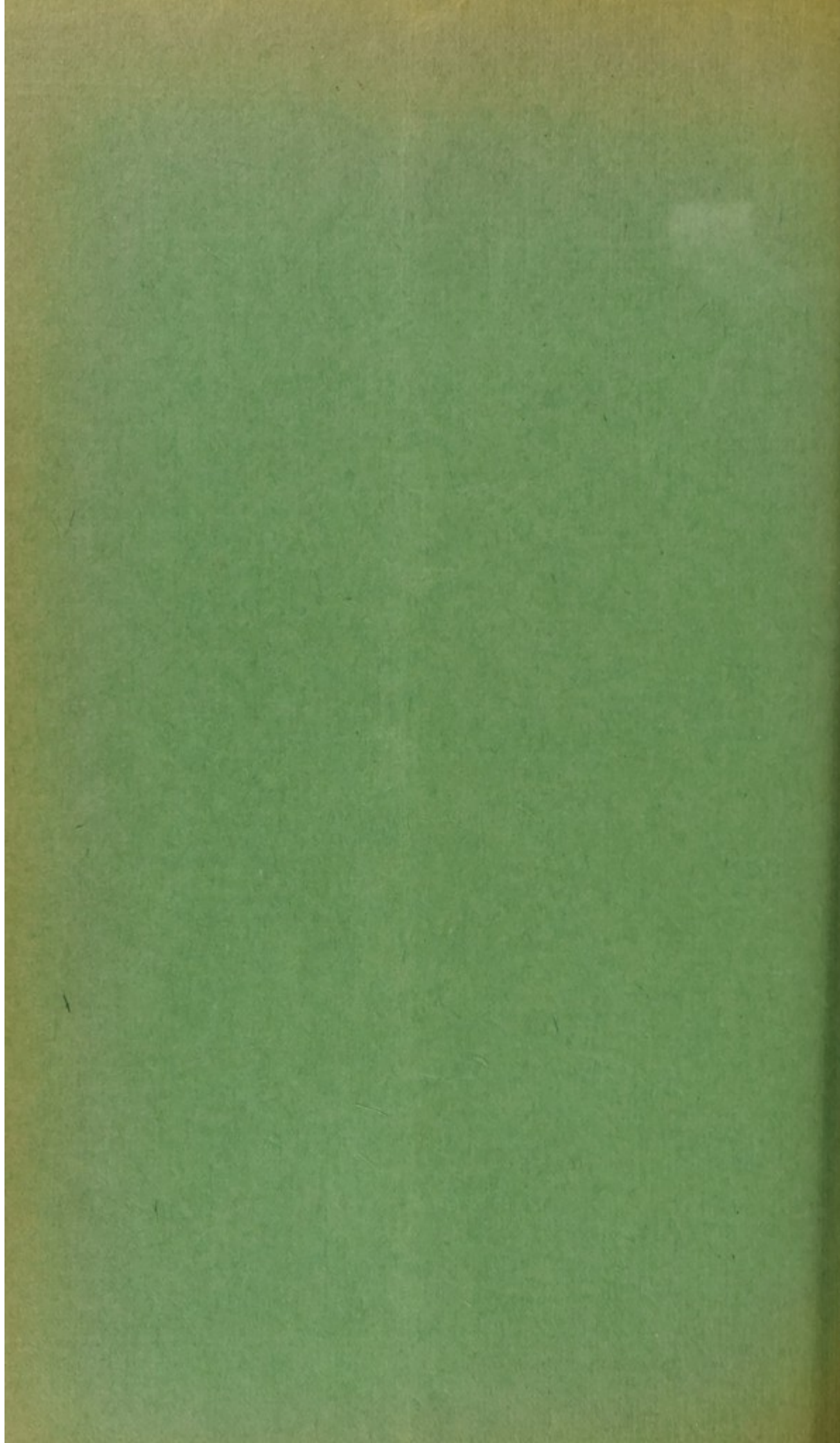
# EXPERIENCE WITH NOGUCHI'S LUETIN REACTION

BY HOWARD FOX, M.D., NEW YORK

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## EXPERIENCE WITH NOGUCHI'S LUETIN REACTION.\*

HOWARD FOX, M.D., New York.

THE successful cultivation of the spirochæta pallida by Noguchi has opened up new opportunities for the experimental investigation of syphilis. A direct result of this achievement is the luetin reaction, a diagnostic cutaneous test similar to that of von Pirquet for tuberculosis. The reaction is produced by the injection of a suspension of spirochætæ pallidæ that have been grown in pure culture and then destroyed by heat.

In my experience with luetin, which Dr. Noguchi has very kindly given me, I have followed the technique prescribed in his original communication (*Jour. Exper. Med.*, 1911, xiv, p. 557). One-tenth of a cubic centimetre of the luetin was injected in the skin of the left arm and an equal amount of the control (uninoculated culture medium) in the skin of the right arm. The injections were given as superficially as possible, separate syringes and needles being used for the luetin and the control.

The first few cases injected were observed daily for a period of ten days. The majority, however, were seen upon the third day after the injection and subsequently at irregular intervals. All of them were followed at least two weeks.

In five of the cases constitutional symptoms of an insignificant character followed the injections. Two of the patients complained of headache and two of general malaise. No attempt was made to observe the effect of the injection upon the temperature. The local discomfort accompanying the reaction was slight as a rule.

A positive reaction was generally first noticed on the evening of the day of injection or the following morning and was at its height in the course of 48 to 72 hours. In one case it was delayed until the ninth day (the "torpid" form of Noguchi).

The reaction varied greatly in intensity. In some cases it appeared simply as an inflammatory nodule. In others the nodule was surrounded by a bright-red areola varying from a half inch or less to three inches in diameter. Pustulation was noted in 11 cases. From a dermatological standpoint, I have preferred to speak of

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the usual reaction as an inflammatory nodule instead of a papule as Noguchi has done. The lesion is deep seated and does not correspond to the dermatologist's conception of a papule. It is highly inflammatory and suggestive of an incipient furuncle. It certainly bears no resemblance to the dull-colored papule of syphilis.

In quite a number of the cases, all of which were observed by my colleagues at the Vanderbilt Clinic and the Harlem Hospital, it was difficult to decide how the reaction should be interpreted. In a number of cases in which there was no suspicion of syphilis, the reaction was present in a doubtful or mild form. I am glad to say, however, that I have not found as yet, a well-marked reaction in an undoubted non-syphilitic case.

In most of the cases of syphilis the Wassermann reaction was performed for comparison with the luetin test. In all of these cases I used two separate antigens (alcoholic extracts of syphilitic infants' livers) and followed the original method of Wassermann.

My experience with luetin is limited to 100 cases, 49 of which were of acquired syphilis. Control tests were made in the other cases which were of various non-specific diseases of the skin. In 14 cases of active secondary syphilis (Table I) the luetin reaction was positive in 6 cases or 43 per cent. The Wassermann reaction was positive in 100 per cent. of the cases (not being performed in one instance). In 33 cases of tertiary and latent syphilis (Table II) the luetin reaction was positive in 17 or 51 per cent., negative in 14 and doubtful in 2 cases. The Wassermann reaction showed varying degrees of positiveness in 19 or 65 per cent. (not performed in 4) and negative in 10 cases.

Of 5 cases of tertiary and latent syphilis that had been well treated by mercury (Nos. 2, 3, 8, 19, 33), one gave a positive and 4 negative luetin reactions. Of 11 cases treated by one or more injections of salvarsan 3 gave positive and 8 negative luetin reactions.

In 10 of the cases the reaction was about equally marked upon both arms, possibly the condition which Neisser has termed "Umstimmung." These cases (Nos. 5, 13, 14 in Table I, and Nos. 5, 8, 11, 17, 21, 26, 32 in Table II) were included among the positive reactions. In addition a few other cases giving well-marked positive reactions showed a partial reaction in the control arm.

Most of the patients in whom a positive reaction occurred have continued up to the present time to show a bluish macule or tiny keloid at the point of injection. These lesions still persist in some patients who were treated two months ago.

Before an opinion of real value can be expressed upon the luetin reaction, it will be necessary to study the results of a very large number of clinical investigations. My own experience is too small from which to draw conclusions. It is, however, my hope and belief that the luetin test will prove to be of some value as a diagnostic aid, particularly in cases where the Wassermann reaction fails to give any definite information.

I am indebted to Dr. George T. Jackson and Dr. Edward Pisko for the use of their material at the Vanderbilt Clinic and the Harlem Hospital respectively. I also wish to thank Dr. B. F. Ochs, Dr. R. Frothingham, and Dr. C. D. Van Wagenen for permission to inject a few of their cases.

TABLE I

## CASES OF SECONDARY SYPHILIS

No.	Sex	Age	Lesions	Treatment by mercury	Wassermann reaction*	Luetin reaction
1	M	51	Papular syphilide	None	++	Negative
2	F	24	Papular syphilide	Internal, 3 months	++	Negative
3	F	28	Macular syphilide	None	++	Positive
4	M	30	Macular syphilide	None	++	Negative
5	F	28	Mucous patches	Internal, 2 weeks	++	Positive
6	M	34	Papulo-pustular syphilide	None	++	Negative
7	M	42	Macular syphilide	None	++	Negative
8	F	28	Papular syphilide	None	++	Negative
9	M	24	Papular syphilide	None	++	Negative
10	F	15	Macular syphilide	None	++	Negative
11	F	26	Mucous patches	Internal, 1 month	++	Positive
12	M	33	Mucous patches	Internal, 1 month	Not done	Positive
13	M	24	Mucous patches	Internal, 3 months	+	Positive
14	F	27	Mucous patches	Internal, 1 month	++	Positive

\*Strongly positive ++

Positive +

Weakly positive † +

Faintly positive † † +

Negative —



TABLE II  
CASES OF TERTIARY AND LATENT SYPHILIS

No.	Sex	Age	Lesions	Treatment by mercury	Treatment by salvarsan	Wassermann reaction*	Luetin reaction
1	F	46	Gumma	Internal, 3 months		—	Positive
2	M	38	Periostitis	Internal, many years, 20 injections		+	Negative
3	M	44	Latent	Internal and inunctions, 3 years		—	Negative
4	M	37	Latent	Internal, 1 month		+	Negative
5	F	28	Tuber'lar syphilide	Few injections	1 intramuscular and 1 intravenous injection	+	Positive
6	M	49	Tuber'lar syphilide	Internal, 1 month		Not done	Positive
7	M	25	Gumma	Internal, 2 months		Not done	Positive
8	M	29	Latent	Internal, 4½ years		††	Positive
9	M	51	Gumma	None		+	Doubtful
10	M	23	Latent	None	2 intra'ular injs.	—	Negative
11	M	40	Latent	Internal, 2 years		++	Positive
12	F	21	Latent	Internal, 7 months		—	Positive
13	M	38	Gumma	None		††	Positive
14	M	30	Tuberculo-squamous syphilide	None		Not done	Positive
15	M	23	Latent	None	4 intra'nous injs.	†††	Negative
16	F	54	Latent			—	Negative
17	M	33	Latent	Internal, 6 months		††	Positive
18	M	26	Latent	None	1 intra'ular inj.	—	Negative
19	M	33	Latent	Internal, 3 years; few injections	1 intra'nous inj.	†††	Negative
20	F	24	Mucous patches	15 injections		††	Negative
21	M	30	Latent	Internal, 18 months		††	Positive
22	M	31	Latent	Internal, 3 years	1 intra'nous inj.	—	Negative
23	F	23	Latent	None	1 intra'nous inj.	—	Negative
24	M	28	Latent	Internal, 1 year		—	Negative
25	M	23	Latent	None	2 intra'nous injs.	—	Negative
26	F	31	Latent	Probably none		++	Positive
27	F	30	Latent	None	1 intra'ular inj.	+	Positive
28	F	22	Gumma	None		++	Doubtful
29	M	42	Latent	Internal, 1 year		††	Positive
30	M	21	Latent		1 intra'nous inj.	†††	Positive
31	F	28	Latent	Internal, 10 months		Not done	Positive
32	F	32	Latent	Internal, 2 months		†††	Positive
33	M	36	Latent	90 injections	3 intra'nous injs.	†††	Negative

\*Strongly positive ++  
Positive +  
Weakly positive †+  
Faintly positive ††+  
Negative —