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SYPHILIS IN PRACTICE*

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Is syphilis uncommon in general practice? I have often asked this question, and have as often been assured that syphilis only accounts for a very small part of the practitioner's miscellaneous occupation. This does not seem to agree with hospital experience, or at least with the experience gained in a venereal clinic. Thus in 1,000 consecutive cases taken from the department for syphilis at the Middlesex Hospital I find the distribution of the disease as follows:

Primary	133	Syphilis of the eye ...	55
Secondary	172	Syphilis of the throat	112
Neurosyphilis	130	Miscellaneous	342
Cardiovascular syphilis	42		
Visceral	14		1,000

Out of these 1,000 patients, who may be considered a representative sample of the syphilized population, only 305, or 30.5 per cent., belong to the early or communicable stage. This may provide the explanation to a common, but I believe an erroneous, impression, for when I have further questioned my informants I find that by syphilis they usually mean and think of the early stages of the disease, whereas the term has, of course, a very much wider significance. This is partly because the early period has been given special prominence in the propaganda against the disease, and partly because the later developments are observed in special departments, and thus come to be related to diseases of the bone, eye, ear, or nervous system rather than to syphilis as a whole.

There are thus grounds for believing that the syphilitic taint is far more prevalent than is usually supposed. Nor is the disease decreasing, in spite of the efforts of the public clinics. Further, we have still to feel the effects of the syphilization of the war and the period that immediately followed.

To be prepared to recognize every form of syphilis, and to attempt to forestall or remedy all the possible consequences of infection, demands a comprehensive knowledge which is outside the scope of everyday work. The following short formula reasonably covers all the necessary ground, and provides a simple key to most of the problems likely to arise:

1. Early syphilis is communicable and curable.
2. Late syphilis is not communicable, and only cured with difficulty and in exceptional cases.

Early Syphilis is Communicable

A statement so obvious seems to need no comment. Syphilis is readily transmitted through the mucous membrane during sexual intercourse and in kissing, but apart from this the risk of infection is apparently inconsiderable. This has an important bearing on many domestic problems—for example, a recently infected individual living

in a household. Provided ordinary precautions are taken the danger to others would seem to be slight, and this is constantly confirmed by experience. While each case must be considered on its merits, the domestic servant requires special consideration, and the practitioner may have to decide whether he should disclose to the head of the household facts which have come to his knowledge in the exercise of his profession. The obligation to secrecy allows of exceptions: the circumstances related below would seem to justify extreme measures. A children's nurse was found to be suffering from a highly infective form of syphilis. Her lips and mouth presented numerous mucous patches. Although the nature of the disease and its possible consequences to her charges were clearly explained to her, she refused to leave her situation voluntarily. Such an occasion would no doubt be regarded in law as privileged. According to Dixon Mann and Brend⁴ a privileged communication is one which is prevented from being defamatory and actionable by circumstances rebutting the existence of malice: there must be an interest to protect or a duty to perform. Fortunately, the circumstances calling for such measures can only rarely arise: further, it is to be remembered that special privileges in this respect are conferred by law upon patients attending the public venereal clinics.

Early Syphilis is Curable

When we speak of cure it is necessary to define the sense in which we use the word. Here it is taken in its literal meaning. There are some authorities who believe it is still too early to judge of the results of modern treatment. On the other hand, it is to be remembered that in the case of syphilis we are in possession of specific remedies—the arsenicals, mercury, and bismuth—and a delicate specific test, the Wassermann reaction, which permit of a precision in treatment and in testing the results of treatment that is unique in medicine. We have therefore substantial grounds for presuming cure, provided that the patient has completed a standard form of treatment, and provided also a sequence of negative blood tests have been observed over a sufficient period.

In the early stages of the disease our object is to cure the patient: that is a personal service to the individual. Incidentally a contribution is made to the public health by excluding a potential source of infection. With such objects in view the most vigorous intensive treatment is justified. On the introduction of the arsenical remedies it was thought that no more than a short course was required: this opinion has long been abandoned.

In 1913 the late Sir Malcolm Morris and I² advocated salvarsan followed by mercury, continued with intermissions for two years, and I would further add that a full two years is desirable in all forms of the early disease, whether primary or secondary, because in both

* Based on a lecture given to the Folkestone Division of the British Medical Association.

cases we are dealing with a generalized infection which merits similar intensive treatment pushed to the limit of tolerance of the patient. A distinction is sometimes made between primary syphilis with negative Wassermann reaction and primary syphilis with positive Wassermann reaction. This is demonstrably unsound, for if the blood is tested at regular intervals while treatment is in progress it becomes evident that both conform to the same pattern, as Kennaway and I³ have shown. The intensive treatment should begin with an arsenical compound, preferably of the 914 type because of its convenience.

In the scheme originally adopted at Middlesex Hospital and continued for some years, a first intravenous injection of 0.6 gram N.A.B. was followed by nine further injections each of 0.9 gram at weekly intervals, for both men and women. This vigorous policy proved completely satisfactory. There were no calamities; even the minor inconveniences of arsenical medication were rare, and jaundice was almost unknown. Later, when the first dose was reduced to 0.3 gram, followed by nine injections of 0.6 gram, jaundice became much more common, which may indicate that so-called arsenical jaundice is, in some cases at least, syphilitic. After the preliminary arsenic, mercury in series of twelve intramuscular injections, one each week, with a rest of one month between each course, completed the two-year treatment. For some time past bismuth used in the same way has replaced mercury. An additional arsenical course following the first mercury or bismuth series may be considered necessary where the Wassermann response lags, or for other reasons.

What results can be expected from intensive treatment? To test this some 1,800 consecutive cases have been reviewed. Out of this number only 121 proved suitable for analysis; the remainder were examples of nerve, ocular, congenital, or cardiovascular syphilis, etc., or, if in the early stages, had defaulted. These 121 cases—thirty-five primary and eighty-six secondary—have been brought together in tables in which only those with at least two years' observation have been included. In every case the diagnosis has been verified either by a preliminary Wassermann reaction or by the presence of *S. pallida* in the primary sore. A word may be said concerning the subsequent blood examinations: the figures given in the column headed "subsequent W.R.: blood" summarize the form of the reaction throughout the whole period of observation, representing, in most cases, a large number of separate tests.

The investigation of the cerebro-spinal fluid, shown in the adjoining column, was invariably carried out shortly after the conclusion of treatment. An earlier examination may be misleading, because, as is now well known, in all forms of recent syphilitic infection involvement of the central nervous system as shown by the changes in the cerebro-spinal fluid is relatively common, the central nervous system participating in the general infection. This accepted fact, taken with the findings shown in the tables (examination of the cerebro-spinal fluid), permits of two conclusions: first, that the spirochaetes in the central nervous system can be, and are, reached and destroyed by intramuscular and intravenous treatment, and secondly, as one is entitled to infer from the above, that the specialized technique which claims to influence syphilis of the central nervous system by introducing therapeutic substances directly into the cerebro-spinal fluid is unnecessary and presumably much less efficacious than the intramuscular and intravenous routes. Further, in early syphilis the blood reactions in themselves afford a very reliable indication of the condition of, and result of treatment in, the central nervous system. If they have followed a favourable course during standard treatment it will then

be found that the cerebro-spinal fluid is negative to all tests if examined at the proper time—that is, three months after the full course has been completed.

Taking the primary cases first (Table I), twenty-one out of the total thirty-five may be considered as cured—that is, 60 per cent. In contrast to this, out of eighty-six secondary cases approximately 81 per cent. have been cured (Table II). These figures imply, contrary to the generally accepted view, that the chance of cure is greater in secondary than in primary disease. The evolution of an arsenic-resistant type of spirochaete, as suggested by Drake and Thomson,⁴ may explain this paradox. This postulates a type of spirochaete which has learned to accommodate itself to the arsenicals but not to the natural antibodies formed in the secondary stage. If the arsenicals are used very early these natural antistances may be prevented from developing. In this connexion it is interesting to recall the investigations of Bruusgaard⁵ into the after-history of Caesar Boeck's patients. Boeck held and

TABLE I.—Primary Syphilis (35 Cases)

No.	Age	Sex	Form of Treatment			Duration of Treatment	Period of Observation	W.R.: Blood		W.R. in Cerebro-spinal Fluid	Result
			As	Hg	Bi			1st	Subsequent		
738	41	F	+	+	0	18 mos.	2½ yrs.	+	— — — +	Negative	Uncured: treatment irregular
813	32	M	+	+	0	18 mos.	2 yrs.	+	— — — —		Cured
908	25	M	+	+	0	5 mos.	4 yrs.	P	— — — —		Cured
1,006	19	M	+	+	0	12 mos.	3½ yrs.	+	— — — —		Cured
1,044	33	M	+	+	0	10 mos.	8 yrs.	P	— — — —		Cured
1,145	34	F	+	+	0	2½ yrs.	2½ yrs.	+	+ — — +		Uncured
1,152	29	M	+	+	0	1 year	2 yrs.	+	— — — —		Cured
1,168	29	M	+	+	0	4 yrs.	5 yrs.	P	— + + + —		? Cured
1,222	22	F	+	+	0	1 year	4 yrs.	+	— — + +		Uncured: treatment irregular
1,323	21	M	+	+	0	2 yrs.	4 yrs.	—	— — +		Uncured: chancre redux
1,339	26	F	+	+	0	1 year	2½ yrs.	P	— — — —	Negative	Cured
1,413	28	M	+	+	0	4 wks.	8 yrs.	P	— — — —		Cured
1,466	24	M	+	+	0	7 wks.	2½ yrs.	+	— — — —		Cured
1,509	26	M	+	+	0	2 yrs.	3 yrs.	+	+ + + +		Uncured
1,543	34	M	+	+	0	3 mos.	6 yrs.	+	— — — —		Cured
1,656	28	F	+	+	+	2 yrs.	2½ yrs.	—	— + + —		? Cured
1,657	35	F	+	+	0	18 mos.	5 yrs.	+	— — — —		Cured
1,682	20	F	+	+	+	2 yrs.	5 yrs.	+	— — + +		Uncured
1,688	23	M	+	+	0	18 mos.	2½ yrs.	P	— — — —		Cured
1,685	20	M	+	+	0	18 mos.	3 yrs.	+	— — — —		Cured
1,754	30	M	+	+	+	2½ yrs.	5 yrs.	+	+ + + +		Uncured
1,766	22	F	+	+	+	2 yrs.	4 yrs.	+	+ + + +		Uncured
1,776	19	F	+	+	0	18 mos.	3 yrs.	+	— — — —		Cured
1,792	31	M	+	+	0	1 year	2 yrs.	+	— — — —		Cured
1,885	35	M	+	+	+	2 yrs.	3 yrs.	+	+ + + —		? Cured
1,920	29	F	+	+	+	1 year	2 yrs.	+	— — — —		Cured
1,942	23	M	+	+	+	3 yrs.	4 yrs.	+	+ + + —		? Cured
1,955	30	F	+	+	0	1 year	3 yrs.	+	— — — —		Cured
1,983	44	M	+	+	+	2 yrs.	4 yrs.	P	— — — —		Cured
2,045	41	M	+	+	+	2 yrs.	2 yrs.	+	— — — —		Cured
2,048	20	M	+	+	0	3 mos.	2 yrs.	+	— — +		Uncured
2,302	24	M	+	+	+	2 yrs.	4 yrs.	+	— — — —		Cured
2,314	24	F	+	+	0	2 yrs.	2 yrs.	+	— — — —		Cured
2,325	32	M	+	+	0	2 yrs.	3 yrs.	P	— — — —		Cured
2,350	40	M	+	+	0	2 yrs.	2 yrs.	+	— + + +		Uncured

P = Present

TABLE II.—Secondary Syphilis (86 Cases)

No.	Age	Sex	Form of Treatment			Duration of Treatment	Period of Observation	W. R. : Blood		W. R. in Cerebro-spinal Fluid	Result
			As	Hg	Bi			1st	Subsequent		
556	24	F	+	+	0	16 mos.	3½ yrs.	+	— — — —	Negative	Cured
553	29	F	+	+	0	2 yrs.	3 yrs.	+	— — — —		Cured
563	27	M	+	+	0	1 year	6 yrs.	+	— — — —		Cured
573	39	F	+	+	0	18 mos.	2½ yrs.	+	— — — —		Cured
578	25	F	+	+	0	1 year	2½ yrs.	+	— — — —		Cured
582	29	M	+	+	0	1½ yrs.	7½ yrs.	+	— — — —		Cured
603	30	F	+	+	+	2 yrs.	8 yrs.	+	— + — —		Cured
621	38	F	+	+	0	18 mos.	5 yrs.	+	— — — —		Cured
623	29	M	+	+	0	2 yrs.	5½ yrs.	+	— + — —	Negative	Cured
625	24	F	+	+	0	1 year	10 yrs.	+	— — — —	Negative	Cured
636	40	F	+	+	0	2 yrs.	2 yrs.	+	+		Uncured
662	29	F	+	+	0	18 mos.	3½ yrs.	+	— — — —		Cured
678	36	M	+	+	0	1 year	2½ yrs.	+	— — — —		Cured
690		F	+	+	0	2½ yrs.	6 yrs.	+	— + — —	Negative	? Cured
789	17	M	+	+	0	2 yrs.	2½ yrs.	+	— — — —		Cured
793	23	M	+	+	0	1 year	4½ yrs.	+	— — — —	Ne active	Cured
803	35	F	+	+	0	1 year	4½ yrs.	+	— — — —	Negative	Cured
810	21	F	+	+	0	18 mos.	2 yrs.	+	— — — —		Cured
811	21	F	+	+	+	4 yrs.	4 yrs.	+	— + — —		? Cured
824	27	M	+	+	0	4 mos.	2 yrs.	+	—		? Cured
825	30	F	+	+	+	3 yrs.	9 yrs.	+	— + — —		? Cured
831	25	M	+	+	0	2 yrs.	5½ yrs.	+	— — — —		Cured
837	19	M	+	+	0	2 yrs.	4½ yrs.	+	— — — —	Negative	Cured
842	27	M	+	+	0	1 year	3 yrs.	+	— — — —		Cured
854	25	M	+	+	+	1 year	10 yrs.	+	— + — —		Cured
877	21	F	+	+	0	18 mos.	9 yrs.	+	— — — —	Negative	Cured
894	26	M	+	+	0	1 year	4 yrs.	+	— — — —		Cured
895	22	F	+	+	0	15 mos.	3½ yrs.	+	— — — —		Cured
903	36	F	+	+	0	1 year	8 yrs.	+	—	Negative	Cured
940	26	F	+	+	0	15 mos.	7 yrs.	+	— — — —	Negative	Cured
944	26	F	+	+	0	16 mos.	3½ yrs.	+	— — — —		Cured
959	35	M	+	+	0	1 year	2 yrs.	+	— — — —		Cured
970	40	M	+	+	0	2½ yrs.	4 yrs.	+	— — — —	Negative	Cured
1,024	24	M	+	+	+	2½ yrs.	6 yrs.	+	+		? Cured
1,033	20	F	+	+	0	1 year	10 yrs.	+	— — — —	Negative	Cured
1,062	30	F	+	+	0	1 year	9 yrs.	+	— — — —		Cured
1,071	27	M	+	+	0	1 year	9 yrs.	+	—		Cured
1,076	25	F	+	+	0	15 mos.	3 yrs.	+	— + — —	Negative	Cured
1,096	27	F	+	+	0	3 mos.	14 yrs.	+	— — — —		Cured
1,104	26	F	+	+	0	18 mos.	8 yrs.	+	— — — —		Cured
1,148	40	M	+	+	0	2 yrs.	2 yrs.	+	— + +		Uncured
1,175	19	F	+	+	0	18 mos.	6 yrs.	+	— + — —	Negative	Cured
1,187	26	F	+	+	+	20 mos.	7 yrs.	+	— — — —	Negative	Cured
1,189	21	M	+	+	0	2 yrs.	2 yrs.	+	— + + +		Uncured
1,193	28	M	+	+	0	18 mos.	2½ yrs.	+	— — — —		Cured
1,215	25	F	+	+	0	2 yrs.	6 yrs.	+	— + — —		Cured
1,241	30	F	+	+	0	18 mos.	5 yrs.	+	— — — —	Negative	Cured
1,245	26	F	+	+	0	1 year	8 yrs.	+	— + — —		? Cured
1,289	20	F	+	+	0	2 yrs.	5 yrs.	+	— — — —		Cured
1,294	22	F	+	+	+	2 yrs.	4 yrs.	+	— + — —		? Cured
1,314	23	M	+	+	0	2 yrs.	4 yrs.	+	— + — —		Cured
1,316	24	M	+	+	0	1 year	7 yrs.	+	— — — —	Negative	Cured

TABLE II.—Secondary Syphilis (continued)

No.	Age	Sex	Form of Treatment			Duration of Treatment	Period of Observation	W. R. : Blood		W. R. in Cerebro-spinal Fluid	Result
			As	Hg	Bi			1st	Subsequent		
1,325	24	F	+	+	0	18 mos.	2½ yrs.	+	— — — —		Cured
1,338	24	F	+	+	0	2 yrs.	2 yrs.	+	— — — —	Negative	Cured
1,379	18	F	+	+	+	3 yrs.	6 yrs.	+	— + — +		Uncured
1,391	42	M	+	+	0	7 mos.	5 yrs.	+	— + — —	Negative	Cured
1,395	22	F	+	+	0	2 yrs.	6 yrs.	+	— + — —	Negative	Cured
1,395	34	F	+	+	0	18 mos.	2 yrs.	+	— — — —		Cured
1,414	31	F	+	+	+	2 yrs.	3 yrs.	+	— + + +	Positive	Uncured
1,459	22	F	+	+	0	3 mos.	13 yrs.	+	—		Cured
1,469	27	F	+	+	0	2 yrs.	6 yrs.	+	— + — —		Cured
1,494	32	F	+	+	0	2½ yrs.	3½ yrs.	+	— + — —		? Cured
1,499	40	F	+	+	0	2½ yrs.	5 yrs.	+	— + — —	Negative	Cured
1,503	21	M	+	+	0	2 yrs.	3 yrs.	+	— — — —	Negative	Cured
1,511	25	F	+	+	0	18 mos.	4 yrs.	+	— — — —	Negative	Cured
1,512	33	M	+	+	0	20 mos.	2 yrs.	+	— — — —	Negative	Cured
1,518	20	M	+	+	+	3 yrs.	3 yrs.	+	— + — —		Cured
1,533	25	F	+	+	+	3 yrs.	4½ yrs.	+	— + — —		Cured
1,539	30	F	+	+	+	2 yrs.	6 yrs.	+	— — — —		Cured
1,546	27	F	+	+	0	2 yrs.	2 yrs.	+	— — — —		Cured
1,557	28	F	+	+	+	2 yrs.	4 yrs.	+	— — — —	Negative	Cured
1,570	24	F	+	+	0	1 year	2 yrs.	+	— — — —	Negative	Cured
1,581	47	F	+	+	0	20 mos.	2 yrs.	+	— + — —		? Cured
1,644	21	M	+	+	+	2½ yrs.	3 yrs.	+	— + +		Uncured
1,651	43	M	+	+	0	3 yrs.	7 yrs.	+	— + — —		Cured
1,661	25	F	+	+	+	2 yrs.	3½ yrs.	+	— — — —	Negative	Cured
1,679	27	F	+	+	0	18 mos.	6½ yrs.	+	— — — —		Cured
1,586	32	F	+	+	+	2½ yrs.	4½ yrs.	+	— + — —		Cured
1,828	20	F	+	+	0	18 mos.	2 yrs.	+	— — — —	Negative	Cured
1,833	28	F	+	+	+	3 yrs.	3 yrs.	+	— + — —		? Cured
1,860	26	M	+	+	+	2 yrs.	6 yrs.	+	— + — —		Cured
1,867	22	M	+	+	0	1 year	6 yrs.	+	— — — —		Cured
1,953	31	M	+	+	+	2 yrs.	5 yrs.	+	— — — —		Cured
1,989	33	F	+	+	+	2 yrs.	3½ yrs.	+	— — — —		Cured
2,002	21	M	+	+	+	2 yrs.	5½ yrs.	+	— — — —		Cured
2,358	28	F	+	+	0	2 yrs.	2½ yrs.	+	— — — —		Cured

taught that mercury and iodides interfered with nature's efforts to eradicate syphilis, and he only used drugs where he considered the body had failed to react. Bruusgaard has been able to trace the after-history and condition of many of these untreated patients, and has shown that a considerable proportion of them recovered completely. It is clear from this that the natural antisubstances are not negligible, and if they are allowed to develop, as in the secondary stage, have then an important therapeutic action, which may explain the better results obtained in secondary syphilis. The idea of an interference with the natural protective substances by specific arsenicals is to-day represented in the alleged increase in neurosyphilis attributed to arsenical treatment. Certain observations of the late Professor George M. Robertson⁶ bear upon this question. In the seventh Maudsley Lectures he called attention to the sudden fall, in 1919, in the number of deaths from general paralysis of the insane, a decrease which he said was maintained. He reasoned as follows: The symptoms of general paralysis do not occur with any frequency until seven years after infection, and the patient

usually lives two years after the disease has declared itself. Therefore nine years before 1919 something had happened to account for the observed fall in the accurately recorded death rate of this disease. In 1910, the year in question, Ehrlich introduced "606." This does not accord with the theory that early intensive treatment increases the vulnerability of the central nervous system, nor does the routine examination of the cerebro-spinal fluid in adequately treated early cases favour this hypothesis.

Cure may be presumed where the blood Wassermann reaction has become negative after the first course of treatment and has remained negative subsequently for two years. This has at least the merit of a working proposition. Discrepancies are, of course, met with, as in the following exceptional case:

In 1920 a woman, aged 28, attended the clinic with a primary sore on the lip and a secondary rash (No. 1163). Blood Wassermann reaction and spirochaete test both positive. She was treated for two years and attended regularly for observation up to July, 1926. The blood reactions followed a favourable course and remained constantly negative in the succeeding years up to July, 1926. The cerebro-spinal fluid was also negative. In November, 1926, she contemplated marriage, and her blood was again tested; this and a confirmatory Wassermann taken a week later both proved strongly **positive**. For six years she had satisfied every criterion: then when it seemed she was entitled to be considered cured, a serum relapse developed suddenly and unexpectedly.

Some of the cases referred to in the tables merit additional details. While primary syphilis sometimes provides the most resistant and most disappointing forms of the early disease (see 1,145, 1,168, 1,509, 1,656, 1,682, 1,766, 1,885, 1,942, 2,350) it is, on the other hand, generally recognized that cure, or apparent cure, may follow courses of treatment so short as to seem on theoretical grounds at least totally inadequate. In a similar way in secondary syphilis cure, or apparent cure, can sometimes be obtained by forms of treatment which fall far short of the two-year standard. Thus a proportion of those recorded as cured received no more than one year of treatment and in exceptional cases even less. This raises the question whether the two-year standard is not unduly severe. The experience gained from the defaulters from my own and from other clinics goes to show how unsatisfactory inadequate treatment usually is and how often it fails, for serum or clinical relapse may develop in the inadequately treated even after a latent period of so many years that cure has been reasonably assumed, as in the following instance:

No. 805 attended with secondary syphilis from November, 1919, to June, 1920. He was given ten intravenous injections of N.A.B. (total 8.7 grams) and twenty-six intramuscular injections of mercury. His blood Wassermann reaction was negative at the end of this course of treatment, and further negative tests are recorded in November, 1920, June, 1921, November, 1921, May, 1922, July, 1923, and October, 1927. His circumstances precluded an examination of the cerebro-spinal fluid. This patient was seen again in 1934, and it was found that he had developed *tabes dorsalis*. This goes to show that a long series of negative blood tests is only reliable evidence of cure when a full standard treatment has been completed.

To follow up patients is never easy, and although every encouragement is held out to the patient with syphilis to report at regular intervals and keep under observation, sooner or later he or she disappears. Nevertheless, it has been possible to trace and review the present state of two, both early defaulters, whose treatment was meagre, who returned at intervals for observation.

Thus 1,096 was only treated for three months (8.7 grams N.A.B. and seven mercury injections) in 1920; blood Wassermann reaction negative in 1923 and 1927. Recently (January, 1934) a careful general examination failed to reveal any

organic disease, and the blood Wassermann reaction was negative.

No. 1,459, treated in 1921 (sore on lip and rash), received seven injections N.A.B. (total 6 grams) with concurrent mercury. She then developed severe arsenical dermatitis, afterwards refusing further antisyphilitic treatment. She was seen again in 1923, 1927, and in January, 1934. On all these occasions the blood Wassermann reaction was negative. Her general health has remained excellent. She declines lumbar puncture: so far, however, as can be ascertained her nervous system is normal.

These two patients have been classified as cured with some misgivings. If this happy end has been achieved they may be counted among the fortunate exceptions who have done very little to merit the result.

Late Syphilis is Not Communicable

A positive Wassermann reaction does not always mean potential or actual infectivity. It should be interpreted in relation to the duration of the disease and the sex of the individual. Thus a man who marries ten or fifteen years after infection need not necessarily fear that his children will be tainted, even where his Wassermann reaction remains positive. Congenital syphilis is transmitted through an infected mother. In such circumstances the man's disease, owing to its duration, is usually no longer communicable: his wife escapes contamination, and therefore the link required to transmit his disease to his offspring is wanting. An exception may be given:

A young man received twenty injections of arsenical compound for secondary syphilis and subsequently an intermittent and incomplete treatment with mercury. Four years later he developed pityriasis rosea, and in view of his history a blood test was made at his own request, which proved positive. Subsequently further interrupted treatment was carried out, but again in intermittent form, and he remained uncured. Six years after the original infection he married, and eighteen months later his wife developed syphilis. This case has many exceptional features, and is unique in my experience.

The sex of the individual with old-standing syphilis has an important aspect. The woman with late syphilis, although her Wassermann reaction is positive, may not be able to infect her husband; nevertheless, during the child-bearing period she remains capable of transmitting the disease to her children. All the risks of congenital syphilis continue to be present; miscarriage may occur, or the child may survive to develop in infancy or later one of the many manifestations of the congenital taint. Fortunately there is a remedy for this state of affairs; if the latent syphilis is detected, and if the expectant mother is adequately treated during her pregnancy, the child escapes contamination. Preventive measures of this kind constitute the best, and indeed the only, satisfactory method of frustrating congenital disease, and this applies to early as well as latent syphilis in the mother. To this there would appear to be one exception: if the cerebro-spinal fluid of the mother is positive, intensive treatment may fail to secure the desired object, as pointed out by Miss Gladys Sandes.⁷ As *tabes* and general paralysis are, however, comparatively rare in syphilized women, only 0.5 per cent. developing such conditions as contrasted with 3 to 5 per cent. in men, this disturbing factor is not considerable.

Those who are historically minded will observe the bearing of these facts upon the medical history of Henry VIII. Mr. Frederick Chamberlin,⁸ Dr. MacLaurin,⁹ and Mr. Macleod Yearsley¹⁰ have all found it difficult to reconcile Henry's presumed syphilis with the condition of his later children. This is not surprising if we examine the facts in the light of the statement above.

In 1509, at the age of 19 years, Henry was called to the throne, and in the same year married Catherine of Aragon.

At this period he must have been infected and have infected his wife, for from 1510 to 1518 there are a series of stillborn children or children who only survived birth. In the middle of this series, in 1516, Mary was born. She suffered from ozaena, severe headaches, and defective vision, possibly from interstitial keratitis (Macleod Yearsley). The obstetric record of Catherine of Aragon is typical of an untreated syphilized woman infected at marriage. The condition of the other children present no bar to the hypothesis of syphilis in the King, their father. Ten years after infection Henry had a child by Elizabeth Blunt, called the Duke of Richmond. Queen Elizabeth, born still later, was the daughter of Anne Boleyn; and Henry's last child, Edward VI, born in 1537, was the son of his third wife, Jane Seymour.

Old-standing syphilis is not communicable; therefore all the mothers of the later children, and consequently their children, escaped contamination. Queen Mary alone can be considered to have suffered from congenital disease.

Late Syphilis is only Cured with Difficulty and in Exceptional Cases

Some years ago I should have been inclined to regard the prospect of cure in late syphilis as uncertain, or at least improbable. Since the introduction of bismuth therapy there has been reason to modify this opinion. Bismuth is used in early syphilis for its convenience, and especially for its painlessness; it is then as good as mercury. But it is in late syphilis that bismuth has its special application, and since its general employment the chance of curing or arresting nearly all forms of long-standing disease has been notably improved. In passing, it may be pointed out that the results of the arsenic-mercury combination in early disease, as seen in the tables, surpass those obtained where bismuth has been given. This is, however, a matter of a chance sample, and does not therefore represent the actual facts.

Late or chronic syphilis may be conveniently considered in three groups: (a) cardiovascular, nerve and visceral; (b) cutaneous; and (c) serum-positive cases without other definite signs. While the form and duration of treatment is or may be very different in each group, it cannot be too strongly insisted upon that each case merits that individual consideration which the state of the patient and the nature of the symptoms demand.

In the first group the intention of treatment is to arrest the progress of disease and to prevent further damage to an organ or tissue already impaired. A greater or lesser degree of organic disease is present, and it is therefore neither desirable, nor as a rule safe, to impose upon such a patient the kind of intensive treatment which is readily tolerated by a young, robust adult with early disease. Nevertheless some form of prolonged treatment is, as a rule, necessary: the difficulty can be overcome by lengthening the intervals of rest between each course up to three or even six months. As has been indicated above, intramuscular bismuth constitutes the principal agent of attack, and its action can be supplemented by a course of five to ten intravenous arsenicals, either at the beginning of treatment, or at a later stage, if there should seem to be a risk of a focal reaction in a vital organ before protection from such a reaction has been obtained by a preliminary series of the more moderate bismuth or mercury. This applies especially to cardiovascular disease, where, indeed, the administration of any form of the arsenical substance may be considered undesirable. In intracranial gummata, bismuth should precede neosalvarsan for the same reason. The progress of the patient can be judged by the improvement in symptoms or by the diminishing strength of the Wassermann reaction in units, and for this purpose a series of tests must be made; the "strength" of a single test has, of course, no clinical significance in any form of syphilis, as it bears no relationship to the severity of the infection

or the degree of the disease. In *tabes dorsalis* an indication of this kind may not be available, for it is well known that the Wassermann reaction may die out in the blood and in the cerebro-spinal fluid even in progressive forms of *tabes*. With this exception a sustained fall in the Wassermann reaction units holds out a prospect of cure under continued treatment—that is, a prospect of the elimination of the infective agent which has caused the pathological changes, but not, of course, a return to a normal condition of the diseased organ or system, the functioning of which, however, can be, and usually is, improved, as shown by the favourable modification of the symptoms which its dysfunction has brought about. While meningo-vascular syphilis is directly influenced through the blood stream by the remedies injected into the muscle or vein, it is held that the choroid plexus, acting as a barrier between the blood stream and cerebro-spinal fluid, prevents the arsenical and presumably the other blood-borne therapeutic substances from entering the cerebro-spinal fluid and influencing the parenchyma, and this criticism applies in particular to the treatment of *tabes*. Since we know little of the nature of the specific antisubstances which are formed when arsenic or mercury or bismuth is introduced into the body, we have no means of testing whether they do or do not pass from the blood stream into the cerebro-spinal fluid following intramuscular or intravenous injections. We have, however, as has already been pointed out, the clinical and serological evidence of their curative action, when so administered, on the infection of the central nervous system in early syphilis, which implies that in *tabes* they may be similarly effective when similarly used.

Late Cutaneous Syphilis

The development of a late cutaneous lesion, or a *gumma* arising in the subcutaneous area, is the most fortunate event that can happen to the individual with latent syphilis, because the appearance of a lesion or lesions of this kind is an almost certain guarantee that the central nervous system is, and will remain, unaffected. The recognition of the indemnity of the central nervous system in these circumstances has even suggested that two strains of spirochaete exist, one with a special affinity for the skin, the other for the nervous elements. Clinical experience is destructive to this theory. Thus on a number of occasions I have observed a man with *tabes* and his wife with cutaneous gummata, or the circumstances reversed. The reaction to the pathogenic agent thus dwells in the individual, since the same strain of spirochaete can be presumed to have infected both parties. Even more convincing are those very rare cases where *tabes* and skin gummata coexist, as in the following (No. 968).

This patient, a man aged 51 years, when first seen in 1920 had acquired syphilis twenty years earlier, when he was treated with mercury pills for eighteen months. In addition to *tabes dorsalis*, severe lightning pains, and a perforating ulcer, he presented over the left leg extensive superficial scarring, marking the site of a late cutaneous syphilide.

Skin gummata, superficial or deep, provide the most convincing example of the efficacy of the arsenicals in the rapidity and completeness with which even extensive areas heal and cicatrize, and this satisfactory result can be obtained by relatively few injections. In consideration of this, and in consideration of the prospect of a similarly responsive reaction should a relapse take place, it would seem that any form of prolonged treatment may be unnecessary, especially as we can rely upon the integrity of the central nervous system in such cases. The possibility of disease in other regions should not be forgotten, the buccal mucous membrane in particular. In long-

standing syphilis in men who smoke, syphilitic leucoplakia of the tongue is far from uncommon. Since this is so often the precursor of cancer of the tongue it provides a factor which must be taken into account should it be discovered.

Serum-positive Cases without Other Signs

The accidental discovery of a positive blood Wassermann reaction in an individual apparently healthy is met with from time to time. The test may have been made from caprice or as a part of a routine examination or for some other reason, and stands in quite a different category from those cases where an examination has been carried out to confirm the diagnosis of some suspected syphilitic lesion. There are undoubtedly individuals who enjoy good health and live to an advanced age, notwithstanding a positive blood Wassermann reaction: in itself, therefore, this is not an unconditional demand for treatment. A complete general examination should, of course, be carried out, including the cerebro-spinal fluid. If, apart from the blood reaction, nothing abnormal is discovered, should the patient be treated or should nothing be done? The decision turns upon the patient's age: in a young individual it would seem prudent to endeavour to bring about a cure, a procedure which will probably be lengthy and tedious, and may end in complete failure. In an elderly man or woman a negative policy will generally be decided upon; assuming an infection in early life the individual in question has passed safely through the period of greatest risk, and it is now unlikely that any of the late manifestations will develop.

Syphilis has been called the great imitator: it might equally be called the great deceiver. Its effects extend into every domain and every branch of medicine and surgery in so many different patterns and degrees as to be outside the competence of any one individual to recognize and discriminate in all its forms. In a different case stand the general principles which co-ordinate syphilis as a single disease, of which the various clinical manifestations are not isolated phenomena, but rather separate links in a complete chain.

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At a meeting, in May in Paris, of the executive committee of the International Organization for the Campaign against Trachoma, it was decided to provide financial assistance for an investigator to study the aetiology of trachoma in a laboratory in a country where this disease was prevalent. A conference will be held in Budapest next spring on prophylaxis; the opening speakers will be Mr. A. F. MacCallan, F.R.C.S., and Drs. Myashita of Japan, Zachert of Poland, Tewfik of Egypt, and Jitta of Holland. The joint conference last May of this organization and the International Association for the Prevention of Blindness gave careful consideration to the question of trachoma in colonial settlements and in Southern Europe. M. Morax opened a discussion on the part played by the gonococcus in tropical countries.

RHEUMATISM AND ITS RELATION TO ARTERIAL DISEASE AND PERIARTERITIS NODOSA

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(With Special Plate)

It will be seen that in the above title there is a linking together of a manifestly common disease with a clinically rare disorder. The principal purpose of this paper is, however, to bring forward observations on some of the recognized manifestations of rheumatic disease as affecting the arterial system, with special regard to recorded instances and a presently observed case of affection of the visceral arteries in rheumatism.

Extent of Body Lesions in Rheumatic Disease

In 1904 Aschoff established the now well-known microscopical tissue changes in rheumatic disease, and since that time it has been common parlance to refer to the Aschoff tissue or nodes in affected areas, more especially in the ventricular myocardium. Later investigators have recorded their findings of Aschoff tissue reaction in other parts of the circulatory system. Klotz noted such effects in the aorta, and MacCallum reported his researches into rheumatic lesions in the auricular musculature. Pappenheimer also carefully investigated the subject, and noted manifestations of the Aschoff type in the cardiac muscle and various parts of the arterial system. Perry, Davis, and Schlesinger, in a recent paper entitled "Thrombophlebitis in Acute Rheumatism," review the literature on the subject of rheumatism attacking the veins, and report three cases of venous thrombosis occurring during acute rheumatism. They consider that though congestive cardiac failure may play a part in some of these cases, there is such a condition as rheumatic thrombophlebitis, and in one of their cases demonstrated Aschoff tissue in the wall of a thrombosed vein. Certainly cases are recorded of thrombophlebitis occurring during chorea in the absence of any clinical cardiac lesion.

It is thus evident that since Aschoff's original discovery much attention has been directed, both in the pathological and in the clinical aspects, towards the extent of the lesions in the body of a person who is suffering from rheumatism. Clinicians who are in close contact with large numbers of cases of the disease continually recognize the wide variety of clinical symptoms and signs that may be presented, and the diversity in duration, type, extent, and prognostic features of the affection. That rheumatic disease is a general infection (or perhaps to meet the views of some authorities, an infection having bacterial, toxic, or allergic generalized effects), possessing actual or potential capacity to damage a wide variety of structures in the body, cannot be doubted. Since Aschoff's publication it is correct to say that cardiac lesions (frequently the most important, however) are but local manifestations of a general disease.

Arterial Disease in Acute Rheumatism

In an article by A. F. Bernard Shaw some interesting general observations are made concerning arterial disease in acute rheumatism. Rheumatic valvular disease is considered by him to arise as an intrinsic valvulitis in accordance with a vascular arrangement in the particular