THE CONSERVATIVE UTILIZATION OF THE
WASSERMANN REACTION

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The statements in this communication are based on a study of over 3,200 reactions, and in view of the confusion and uncertainty that still prevail in the minds of many physicians as to the significance and value of the Wassermann test I am hopeful that this work will tend to render clear some obscure points and enable us to handle the question of syphilis from a serologic point of view with greater accuracy than heretofore. The impression that I have received from almost two years' work with this reaction and the benefits that physicians and patients derive from its application is that the value of the Wassermann test for diagnosis and therapy has been greatly overrated. It still remains an interesting problem for the biologists to solve, but so far their work has not been decisive enough as to enable the practicing physician to rely implicitly on the outcome of a Wassermann test. I do not wish to discredit the work of Bordet and Gengou, nor is it my intention to belittle the application of the phenomenon of complement deviation to the diagnosis of syphilis. I do, however, maintain that the promiscuous use of the test by insufficiently instructed physicians is as dangerous as the use of reports from tyro serodiagnosticians. I lay particular stress on this point, because such use to my knowledge has been the cause of serious damage. The accompanying tables containing the material gathered during twenty months of work with the Wassermann test owe their scope and variety to the kind assistance of Dr. Abrahamson and the staff of physicians at the Montefiore Home. Its completion and the study of the effects of mercury on tabes was accomplished at the Neurological Institute, whose medical officers were ever ready to furnish necessary data for this work.

CONSIDERATION OF TABLES

The first and largest group of cases analyzed was composed of cases of locomotor ataxia. The Wassermann reaction in this disease, contrary to the still prevalent conception that all tabetics are syphilitic, was positive in 88 per cent. in one group of cases and 44 per cent. in another group. In considering tabes dorsalis one must not lose sight of the patient's condition, whether in the active tabetic state or in the quiescent. The physician's disappointment is quite evident when a negative Wassermann is reported on a patient with tabes; it is the conviction of many physicians that every tabetic ought to give a positive reaction, as they believe syphilis to be the only etiologic factor concerned in this disease. The tables show that over 300 cases of tabes dorsalis were analyzed and on an average only 66 per cent. of cases gave a positive outcome. Whatever the substance may be that is responsible for a positive Wassermann reaction in a patient with tabes, it may be taken as a sign first, that his tabes is of syphilitic origin, and secondly that if active manifestations are present mercury is indicated. The contention makes it quite evident that the knowledge of the tabetic manifestations is very essential to successful therapy. Whenever a serum is analyzed from a case of active tabes (crises, girdle, shooting pains) the reaction is usually positive (88 per cent.). This sig-

TABLE 1.—DISEASES OF THE NERVOUS SYSTEM

	Cases.	Positive.	Negative.
	No.	No.	No.
	%	%	%
Tabes, total cases	306	108	60
Tabes, quiescent stage	249	110	44
Tabes, active stage	57	51	88
Paralysis agitans	12	0	0
General paresis	64	58	88
Pseudohypertrophic muscular dystrophies*	15	0	0
Syringomyelia	4	0	0
Progressive muscular atrophy	2	0	0
Multiple sclerosis	16	0	0
Hemiplegia	118	8	7
Acute anterior poliomyelitis	5	0	0
Tumors of brain	14	2	12
Alcoholic neuritis	8	0	0
Lead neuritis	4	0	0
Bell's palsy	3	0	0
Scleritis	8	2	25
Symmetrical adenolipomatosis	3	0	0
Adiposis dolorosa	2	0	0
Myasthenia gravis	1	0	0
Amyotrophic lateral sclerosis	4	0	0
Myelitis	8	2	25
Erb's luetic spinal paralysis	1	1	100
Spastic paraplegia	11	3	27
Tumors of spinal cord	9	2	22
Chiasm disease	4	0	0
Ophthalmoplegia	3	0	0
Optic nerve atrophy	4	0	0

* In two instances the parents were also examined with negative results.

TABLE 2.—DISEASES OF THE SKIN AND GENITOURINARY ORGANS

		Cases.		Positive.		Negative.	
	No.	No.	%	No.	%	No.	%
Scleroderma*	5	5	100	0	0	0	0
Psoriasis	26	1†	4	25	96	1	4
Furunculosis	4	0	0	4	100	0	0
Rhinoscleroma	2	0	0	2	100	0	0
Leprosy §	8	8	100	0	0	0	0
Primary lues, less than 3 weeks' duration, no Hg.	101	90	89	11	11	0	0
Primary lues, less than 3 weeks' duration, after Hg. treatment.	20	12	60	8	40	0	0
Primary lues, more than 3 weeks' duration, no Hg.	74	72	97	2	3	0	0
Primary lues, more than 3 weeks' duration, after Hg. treatment.	36	26	72	10	28	0	0
Secondary lues	340	296	87	44	13	0	0
Tertiary lues	290	212	73	78	27	0	0

* Another patient was examined with a negative result, but the diagnosis of scleroderma was uncertain.

† In the positive case the patient admitted syphilis.

‡ These were all cases of long duration.

TABLE 3.—DISEASES OF THE VEGETATIVE ORGANS

	Cases.	Positive.	Negative.
	No.	No.	%
Aortic aneurism	16	12	75
Aortic stenosis	2	0	0
Tricuspid stenosis	1	1	100
Obiteration of anterior tibial.	1	0	0
Chronic endocarditis	38	7	19
Pulmonary tuberculosis	280	6*	276
Asthma	24	1†	23
Chronic bronchitis	28	0	0
Tumors of the lung	6	4	67
Tumors of the liver	3	2	67
Tumors of the kidney	2†	0	0
Tumors of the esophagus	2	0	0
Tumor of the iris.	1	1	100
Tumors of the sternum.	2	0	0
Noma	3	0	0

* In 2 of the positive cases the patients were cured and at no time showed tubercle bacilli. In the other 2 cases tubercle bacilli were present; also a history of lues.

† In the positive case the history was suspicious.

‡ At the autopsy one tumor proved to be a hypernephroma, the other a metastatic carcinoma.

TABLE 4.—MISCELLANEOUS DISEASES*

	Cases.	Positive.	Negative.		
	No.	No.	%	No.	%
Exophthalmic goiter	10	0	0	10	100
Arthritis deformans	28	4	14	24	86
Gastric anacidity	15	10	67	5	33
Diabetes	36	8	25	28	75
Pernicious anemia	2	0	0	2	100
Polycythemia	4	2	50	2	50
Colitis	8	0	0	8	100
Gout	10	0	0	10	100
Acute articular rheumatism	18	0	0	18	100
Hodgkin's disease	4	0	0	4	100
Hemophilia	3	0	0	3	100
Arteriosclerosis basis cranii	14	4	28	10	72
Raynaud's disease	6	2†	33	4	67

* Of 540 cases analyzed for diagnosis, unmistakably positive findings were obtained in 80 per cent. Weakly positive reactions were obtained 8 times in cases which most likely were not luetic; 6 of the patients had jaundice.

† The 2 positive cases improved with iodids.

nifies that the disease is most likely of a luetic etiology and that mercury will not injure the patient. In case the reaction is negative in a patient with active manifestations it is safer not to use mercury, as in such a case the cause of the tabes is likely not syphilis. In patients with straightforward tabetic signs without active manifestations the reaction is positive in only 44 per cent., as I found, and antisypilitic therapy is as a rule of no avail. It is quite evident that the ataxia and other symptoms the result of the degenerative process can not be influenced by drugs. It is consequently a better policy to leave the patient alone even if the Wassermann reaction is positive, provided he is in a state of comparative comfort.

I have examined fifty-one serums from active tabetics and found the reaction positive in forty-four, *i. e.*, 88 per cent. It is my belief that this form of exudative tabes is due to syphilis when the reaction is positive and that in about 12 per cent. of active tabetics the etiologic factor in case of a negative Wassermann still remains an open question. As the etiology of tabes is an important factor from a therapeutic and sociologic point of view, it is to the credit of the Wassermann test, which materially enhanced our knowledge in this direction and brought us considerably nearer to the truth than we were before the era of serodiagnosis in syphilis.

The results of my work support the old contention of von Leyden, who is against the idea that all tabetics are infected with syphilis, and tend to disprove the teachings of Erb, who believes that they are all of luetic origin. The administration of mercury in any of its forms in the case of an active tabetic should always be preceded by a careful Wassermann reaction and the drug used only when the result is positive.

It came to the notice of Dr. Joseph Fraenkel that some forms of tabes were decidedly harmed by mercury and that the course of the disease was markedly aggravated. I was enabled to follow this experience with the Wassermann reaction and found that in patients with the active form of the disease with a negative reaction mercury did no good and in some cases harm. It has been clinically observed that the Duchenne form of tabes is made decidedly worse by the use of mercury. I may therefore say with justice that if a clinically undoubted active tabes gives a negative Wassermann reaction, it may be taken, in view of what has been said before, as better to abstain from antiluetic treatment. Furthermore, the Wassermann test intelligently used will help us to solve more definitely the differentiation between the real tabes and the genuine general paresis of the old type, from the so-called pseudotabes and pseudoparesis and the so-called mixed forms, placing them all under one category of syphilis of the cerebrospinal system. Applied to therapy, the Wassermann test points out the indication for or against the use of mercury in the exudative types and the advisability of treating degenerative tabes is left to the clinician. As a rule the uselessness of mercury in these cases is conceded and the irreparability of the diseased tissues is accepted.

THE WASSERMANN REACTION AND HG IN TABES

Active Exudative Tabes.—Reaction positive, Hg indicated. Reaction negative, Hg contra-indicated.

Quiescent Degenerative Tabes.—Positive or negative there is very little that Hg can do to restore function.

To come to the conclusion as to the etiology of a case from the therapeutic efficiency of mercury is also erroneous. In the case of tabes we know that improvement

may follow any and no treatment. It is advisable not to form an opinion as to the etiology of a disease from the accepted therapeutic specificity of a drug like mercury.

A patient in the Montefiore Home with all the signs of a brain tumor was treated by Dr. Fraenkel some fifteen years ago. The mercury apparently did some good and the etiology at that time was uncontrovertibly established. After three years of rather good health the patient succumbed to a relapse of the previous condition and at the autopsy showed a sarcoma from the thalamus to the fourth ventricle.

Another case (from the service of Dr. Spiller, to whom I am very thankful for this fact) showed a positive Wassermann reaction from a very competent worker. In this case also the patient was suffering from a brain tumor. The reaction was the occasion of vigorous mercury treatment which did no good whatsoever. After a short time the patient died and the autopsy in this case revealed a gliosarcoma of the brain and on abdominal examination a gumma of the liver. This warns one not to be too much dependent on laboratory reports and never to permit one's clinical acumen to be eclipsed, no matter how trustworthy the laboratory worker. In the above case it may have been of vital importance to have an operation performed if the possibility of a dual cause were recognized; mercury was given the preference as a result of the Wassermann reaction. This experience teaches a lesson: never to allow the Wassermann test to decide for or against an operation.

In general paresis mercury is as useless as in degenerative tabes. The poison that brings about the changes in the nervous system is very often stimulated to increased energy by the administration of mercury. I know of two instances in which the patients were reduced to invalidism, although previous to the use of mercury their vegetable organs were in a perfect condition. Two months after the use of the drug the patients died. In both the reaction was positive. The surprising therapeutic results with mercury in general paresis and the reported cures need closer investigation. There are very few distinctions between some cases of general paresis and some forms of syphilis of the brain and spinal cord. It is not at all too far-fetched to consider these improvements and cures as having been effected on patients suffering from syphilis of the brain and cord. The Wassermann reaction in these cases does not shed any light on the condition although the Munich school claims to be able to differentiate between the two clinical states. The only distinction that Plaut says can be found in the cerebrospinal fluid when a Wassermann test is performed, is that the reaction is always negative in syphilis of the brain and cord, and positive in general paresis.

Among the fifteen cases of pseudohypertrophic muscular dystrophy of various types all reacting negatively, the parents were examined in two instances, also giving a negative result.

It is of interest to note the positive results obtained in scleroderma. The fact that the reaction was positive does not in the least establish the etiology of this skin condition. It is personally known to me that mercury used for a long time in no way influenced the course of the disease.

The large percentage of positive results (75 per cent.) in aortic aneurisms greatly reflects on the cause of this disease. The predilection of involving blood-vessels is

a well-known peculiarity of the syphilitic incitor, and the improvement that follows the timely administration of mercury in some cases tends to confirm the etiology in many instances.

In pulmonary affections the presence of the tubercle bacillus decides the etiology. I examined 280 cases and found the reaction six times positive. Two patients at no time showed the tubercle bacillus, and improved after mercury; two others also showed the presence of the bacillus; of these one improved and one died. An autopsy showed tubercles and a gumma in the lung and endarteritis luetica of the larger blood-vessels, especially the aorta. The cases of gastric subacidity gave a positive outcome in ten serums. These patients showed an increase in acid values after mercury. The positive Wassermann reaction need not introduce the idea that lues was the cause for the subacidity. I wish to thank Dr. W. G. Lyle for pointing out to me these facts, who at the time when these tests were made did not wish to express an opinion as to the significance of the coincidence. In a few cases a history of lues was obtained.

I encountered four cases of arthritis deformans with positive reactions; one of these improved after mercury administration; the course of the other three is unknown to me.

I shall now endeavor to form a conclusion as to the value of a negative Wassermann obtained from a study of the behavior of the test in patients with primary lesions and patients with symptoms bordering on this period.

THE VALUE OF A NEGATIVE WASSERMANN TEST

The table shows the percentage of positive reactions in primary lesions and in cases bordering on this period to be rather large. It is this class of patients that furnishes the greatest number of positive results. A negative outcome in a patient showing a primary lesion, or clinical signs suggestive of the symptoms of the stage bordering on the *ulcus durum* period ought to put the physician on guard as to the true etiology of the symptoms. A negative reaction during this period carries great weight, as the reaction is usually strongest during this period, and with even little technical knowledge usually gives a strong positive result. Comparing the chances of error from a clinical and serologic point of view it seems to me that it is much easier to err clinically than serologically, of course bearing in mind the stage of the disease. I would suggest that in such a case in which the reaction is negative, in view of the above symptoms, whenever the patient's condition permits it the physician should pursue the orthodox method of waiting until more evidence for or against syphilis appears. This is especially recommended in dermatologic practice, bearing in mind at the same time that waiting gives the spirochetes a firmer hold on the patient's constitution. I also believe that it is less harmful to let the patient wait than to subject him at once on meager evidence to the influence of mercury and have him ever afterward carry the odious knowledge of having been treated for syphilis. There are many such patients who years later consult a physician for unimportant ailments and when the possibility of syphilis is inquired into as a matter of routine their experience of the past gives a dominating impression and potassium iodid is prescribed. There are many such cases unjustly stamped luetic. The practice of waiting for corroborative evidence is a useful one because, first, we will not treat an innocent lesion for syphilis, and secondly, we may be able

better to judge the value of Wassermann reactions. The experiences with Wassermann test brought me fourteen such patients. All of these were told to wait. In six cases undoubted signs of syphilis developed; the remaining eight at no time showed any symptoms suggestive of specific disease, in spite of the fact that no specific treatment was carried out. It is therefore my conviction that, whenever under the above circumstances it is possible to wait without placing in jeopardy the patient's health, this delay should be employed.

There is no test at hand to-day, no matter how carefully performed, that will infallibly demonstrate the true state of affairs and especially with such a treacherous disease as syphilis. Since the introduction of the Wassermann test many patients come to the serodiagnostician to ascertain if the disease is out of their system. They admit that long ago they had an eruption or a sore and were placed on mercury. The physician wishes to ascertain the efficiency of his treatment. As a rule most of these patients react negatively; first, because not sufficient time has elapsed since the last administration of mercury, which tends to negative the reaction; secondly if sufficient time did elapse, it may not be at all impossible that the lesion or eruption was not specific. In the absence of any help beside one's clinical training, before the days of the Wassermann reaction, it was very easy to make a mistake. It is gratifying to know that to-day, thanks to the Wassermann test, very few innocent lesions are submitted to antiluetic treatment and restrictions, and only those are obliged to carry the knowledge of having syphilis who were really infected.

SYPHILOPHOBES

There are some patients who take up the physician's time with unfounded fears as to the condition of their blood. Such patients are in great fear of having had remotely a syphilitic infection. A few come with ready-made diagnoses and bring in evidence the statements of a physician who told them they had the disease. If such a patient presents clinically no signs of syphilis, in any of its stages, and if this present opinion issues from a syphilologist, the reassurance to the patient is greatly enhanced when the report of the Wassermann reaction is negative. My point is carried if it is understood so far, that the diagnosis for or against syphilis clinically, and the negative or positive laboratory reports are of decisive significance only when used together.

As to the constancy of the Wassermann reaction in syphilis, the last word has not been said; as far as frequency and sharpness are concerned old leprosy cases present a much more definitely positive reaction than old syphilis. It is worthy of mention at this juncture that the older the leprosy the more marked the reaction, unlike the majority of cases of old lues. What there is in common between lues and leprosy is a speculative subject; the future may find the link that makes both diseases interfere with hemolysis while using the same inhibitory extract.

THE WASSERMANN REACTION AND ANTILUETIC THERAPY

If in a well-treated case of syphilis a previously positive reaction becomes negative, it is permissible to draw a favorable prognosis therefrom. It is certainly gratifying to note the disappearance of the Wassermann reaction, provided the clinical manifestations go hand in hand. A negative Wassermann in a patient presenting clinically vestiges of lues is not to be considered conclu-

sive. It is much more rational and useful to obtain a cure clinically first and to have the laboratory corroborate the cure with a serum reaction. In tertiary syphilis a negative reaction is of no value after treatment, except when the patient's serum is so negative that when added to another positive serum the combined mixture will result in a negative outcome. The test is performed as follows:

Five hundredths of a c.c. of an established positive luetic serum are placed in a test-tube and mixed with 0.2 c.c. of the negative luetic serum to be tested; the mixture is incubated for half an hour and complement added. This is incubated another hour, and cells and amboceptor added. Observations are then taken.

A somewhat analogous method was recently advocated by Brauer.¹ The author omits the study of the effects of the mercury serum (serum from patients without syphilis who received mercury injections) from normal individuals on luetic serums, a study to which I refer in a recent article.² The consideration of the Wassermann reaction from the therapeutic standpoint is not exhausted by the few examples cited. It must be borne in mind that some tertiary syphilitic manifestations can never be improved by antiluetic treatment and it must not necessarily follow that a luetic process is at a standstill because of a negative Wassermann reaction. I know of patients with tertiary syphilis in whom a negative reaction could never be obtained, no matter how thoroughly mercury was administered.

EFFICIENCY OF WORKERS

It is not to be denied that the Wassermann reactions reported on by beginners in insufficiently equipped laboratories certainly did some harm; even the best work from laboratories equipped for the sole purpose of performing the reaction loses much of its value when used promiscuously by physicians who look for too much help from such reports. I know of instances in which negative reports decided the etiology of a disease without further clinical investigation. Such confidence is met rarely to-day, as physicians begin to appreciate that even a positive Wassermann reaction does not always spell syphilis.

It becomes the duty of everyone actively engaged in the performance of the reaction to render clear certain shortcomings of the test and to place clearly before the physician who is to use the submitted report, the significance of a positive, a weakly positive and a negative reaction, and to what extent the test can be relied on as a whole. It is needless to emphasize that such advice should hail from matured workers only, who not only know how to perform the test, but whose enthusiasm has cooled as the result of an extensive experience. It is to be granted that the best workers make mistakes; some are pardonable, others not; but when we consider the delicate adjustments of the test, it is no wonder that different serologists report differently on the same serum. The clinicians as a rule, in the case of conflicting evidence, form their own opinion and treat the condition on its merits.

A negative report on a ripe syphilitic serum, however, does reflect on the abilities of the serologist (considering the difficulties of the reaction) as well as positive report on a serum from a healthy person. It is impor-

tant to bear in mind that the value of a negative Wassermann reaction for diagnosis, except in the instances mentioned before, is almost *nil*; it is different when the report is requested to ascertain the therapeutic efficiency of a treatment. The patient's well-being and the time elapsed since the last use of the drug must be noted. There is generally an error committed in sending patients to the laboratory without stating the time elapsed since the last treatment. A negative Wassermann reaction together with a complete absence of subjective and objective symptoms, with treatment as remote as possible (six months or more) is the *ultimum bonum* the clinician desires to attain.

The instructions to such patients are to have them report at stated intervals for a physical examination in order that the least deviation from the normal may be investigated with the help of a Wassermann reaction. Discharged patients should be systematically supervised with the help of the laboratory; the reactions should be kept on record, and the patients giving persistently negative results may be considered as practically cured. Such patients may even be permitted to marry. Some physicians use the Wassermann test for therapy only and depend very little on its help for diagnosis. In many instances the test is performed with the sole intention of reassuring the patient.

READING AND REPORTING RESULTS

It is very sad but nevertheless true that our knowledge of the reaction has not progressed far enough to make all work on these lines uniform in all laboratories. In fact, the same serum if sent to a number of laboratories will result in as many different interpretations. These conflicting reports fundamentally shake the confidence of the clinicians who are to use them.

There is a movement on foot in New York to bring together practical serologists and render their methods for work and standardization more uniform than heretofore. Such endeavor, I believe, will bring about more accurate work and less conflicting results. It may perfect the methods so that the physicians will be able to use it more extensively, especially for therapeutic purposes. It may also change the conception of the syphilitic etiology of some diseases; for instance, locomotor ataxia. For the present, I believe that the only way of rendering useful service to the cause of serodiagnosis is to employ in the case of the Wassermann test the original method plus another modification and to become thoroughly conversant with its peculiarities. To minimize chances of error it is best to perform the reaction twice with each method and to report results after the elimination of every reaction that is not unquestionably positive. I wish to emphasize particularly this manner of coming to conclusions and to disregard any form of reading results and reporting to the doctor in an unintelligible and confusing manner. I am referring to the attempt made by some workers to designate the results of their reactions as 80 per cent. or 90 per cent., etc. Citron had some such arrangements using a certain number of crosses (+ + +) and dashes (+ —) or (+ — —) to impress on physicians the intensity or weakness of his results.

I wish to be placed on record as considering this form of arriving at conclusions quantitatively as absolutely unreliable, for the simple reason that, no matter how uniform the every-day work of a serologist, he will on many occasions report differently on the same serum. Irrespective of this, we are not at all advanced enough

1. Brauer: München, med. Wchnschr., 1910, No. 17.

2. Kaplan, D. M.: The Theoretical Consideration of the Wassermann Reaction and Its Practical Application, Jour. Am. Med. Sc., July, 1910.

nor are our methods uniform enough to justify the adoption of such a meaningless scale for recording the results of Wassermann tests. While one will have 80 per cent. another will have 90 per cent. and a third something different again. I believe that the answer "positive" or "negative" for diagnostic purposes is all that our colleagues expect from us and that a confusing report of 80 per cent. positive, especially where a definite answer is expected, will tend only to mislead the physician. When the reaction is performed to ascertain the effect of treatment no patient should be discharged until the serum behaves like a normal serum. The serologists who wish to express their results numerically may be excused in the case of therapeutic tests, as physicians are sufficiently instructed in the majority of instances to know that only the entire disappearance of the reaction from the serum is of value in successful therapy.

The method of forming conclusions is an important qualification of every serologist and no one ought to consider himself thoroughly competent to work with serum unless this degree of perfection is attained. Luckily it is not so dangerous to make a negative report in a syphilitic individual as it is to make a positive report in an innocent patient. I therefore state again that it is proper to perform the reaction twice, using the original Wassermann test and, as I have been in the habit of doing, also a Noguchi test. These tests are best repeated on the following day and anything that is not distinctly positive ought not to be used for diagnosis. No dubious results ought to be reported. It is every time better and by far safer to admit that the result of the Wassermann reaction is inconclusive and that another reaction ought to be performed. In case the reaction is performed for therapy and the serum does not behave like an absolutely normal serum (negative) the patient ought to be treated more and have his serum reexamined after a suitable time has elapsed.

SUMMARY

1. When a serum is submitted for diagnosis the laboratory report should read "negative" or "positive." No qualifications as to degree are necessary.
2. For diagnostic and therapeutic purposes the laboratory report should always be collated with clinical findings.
3. Negative reports are of value in therapy.
4. Treatment should be stopped for four to six months after the patient becomes clinically and serologically normal and at the end of this period the test should be repeated.
5. All patients cured of syphilis ought to have for preventive purposes a test performed twice a year.
6. Any reappearance of the reaction even in traces is to be dealt with as under Paragraph 4.
7. Some patients who have had syphilis never lose the positive reaction in spite of any therapy.
8. A negative report obtained on a serum from a suspicious case should defer treatment until the course of the disease decides the etiology, provided there is no danger in delaying treatment.
9. With a positive report one must not lose sight of the possibility of another disease being present besides syphilis.
10. In my experience advanced scleroderma and old leprosy are more positive than old syphilis, quantitatively and qualitatively.
11. In active tabes 88 per cent. and in quiescent tabes 44 per cent. of positive reactions were obtained.

THE COLONOSCOPE

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I have devised an instrument for the inspection of the sigmoid flexure which possesses a number of advantages over other instruments intended for the same purpose. The following description will prove this contention:

Figure 1 represents the sheath with obturator. A is the sheath of $\frac{5}{8}$ inch diameter and 12 inch working length. B is the obturator, C the lamp. The wiring for the lamp is armored in the wall of the tube. The conduit projects neither on the inside nor on the outside of the sheath. The lamp itself is loaded in a capsule with a water-tight screwtop and a glass window. The capsule projects somewhat beyond the distal opening of the sheath, and is of material assistance in pushing aside rectal folds in the vicinity of the mouth of the sigmoid flexure, and may be utilized as a guide. The light arrangement is a novelty in all rectal examining devices. It permits the use of a telescope or optical system to see at right angles, thus enabling one to inspect the first and even the second portions of the flexure. D is an improved electric coupling with on and off switch; this coupling is very reliable. E is a stop-cock, to which may be attached the air-inflating apparatus.

F is a locking and releasing device for the conical fittings of sheath and optical system. Its function is to lock and separate the sheath and its members while the instrument is in position without jarring, and to avoid discomfort to the patient.

Figure 2 is a double optical system; through the long tube one is enabled to see at right angles to the axis of the instrument, and through another eyepiece the portions in front are magnified, which facilitates their minute inspection. G is the cone fitting in sheath. H designates the telescope tube. I is the objective, giving a right sided and upright image. K shows a circular spring-holding tube, with lens system on one side of the tube. L is the eye-piece of the optical system, and M the eye-piece, which is removable and gives a magnified view of the parts straight ahead.

Figure 3 is a longitudinal section of the sheath, with an end for air-tight closing. It has a lens for bringing the object at the distal end of the tube nearer the operator's eye, and a rubber nipple admitting instruments for operation and application while the rectum and flexure are under air distention.

Figure 4 illustrates a lens system, with a tube bent on the far end for guiding and deflecting applicators into the flexure.
250 West Seventy-Third Street.

Military Versus Medical Heroes.—It is a curious commentary on our civilization of to-day that we litter every public place with granite tributes to brigadiers, while the families of these men [Reed, Carroll, Lazear and others] beat at the doors of Congress for adequate support and the crowd passes, thoughtlessly by their graves.—Martin Cooley, *Jour. Outdoor Life*, October.