thing we are born with, but something we can have developed in us—something that can be hammered into us. Possession of "personality" connotes a knowledge and understanding of the reactions of the individual as determining his behavior. Each individual, because he is an individual, is different from everyone else; each has to be handled for himself alone. As Dr. Meyer said, treat the patient, not the disease. The individual differs in different periods of his life in his reactions; certain accidents and environments make him different; if we study we can understand and it will help us to handle the patient.

DR. ANDREW L. SKOOG, Kansas City, Mo.: I liked very much the statement Dr. Meyer made regarding common sense. He has gone over the field of preparation of the medical student, before his course of study, in psychology or morbid psychology, and the more or less confusion which exists in his mind. I think when we are teaching students either neurology or psychiatry, we should constantly bear in mind common sense. We are dealing with a complicated subject, perhaps complicated because of the preparation of the student when he appears before us. Therefore, to reiterate, bringing before the student common sense ideas is of the greatest importance.

The subject of objective psychology has been discussed thoroughly. I admire the work of Bechterew which has been done with animals. The study of animals is very interesting, and to these investigations may be added also that of infants and young children.

DR. CECIL E. REYNOLDS, Los Angeles: I would like to mention one point in connection with the question that Dr. Orbison has brought up. If we assume, accepting Dr. Stoddart's views, that disturbance at the synapses is a cause of confusional insanity—that the normal relation of the dendrites of the cortical cells is disturbed—then we can bring into relation the views that Dr. Dercum has expressed on the toxic origin of mental disease with the psychical manifestations we are familiar with; for example, in confusional insanity. In the same way, if you regard the condition of sleep as a normal retraction of the dendrites, it is conceivable that those things that most affect our mind in the waking state will cause persistent interlacing of the dendrites concerned, with the resultant persistence of thought, especially deeply rooted desires, symbolized and distorted in a dream.

DR. ADOLF MEYER, Baltimore: It would be unfair to delay the work of the section by an attempt to answer in full the question of Dr. Orbison, because it would mean to reiterate a great deal of what is contained in the paper. I can best illustrate what I mean by referring to the remark of Dr. Reynolds. He has drawn our attention to Dr. Stoddart's view of confusional insanity, as if he thought all mental disorders should be explained by neurone-retraction. Dr. Stoddart has, by the way, lately come out as the most extreme Freudian in the English language. I would like to ask who on earth ever saw those dendrites wiggle in exhaustion psychoses. How much more important it is to look for what we can see. We want to rehabilitate the study of that which we see in every patient; to study every activity, every function of the individual or personality as a whole for all it can teach us, before we enter on confusing discussions of pure and often improbable hypotheses. I eliminate psychophysical parallelism because it brings more confusion than help. To my mind there does not seem to be any necessity of cultivating confusion over that which does not exist. I think it is greatly to the advantage of our science and our standing before a sensible public if we speak mainly of things which we can demonstrate, rather than to speak about synapses, hypothetical disorders, of which at the present time very few people know anything. The main purpose of the introduction of an objective psychobiology into the range of objective facts of physiology and pathology is to enable us to remain on a ground of common-sense and direct observation of the activities of the individual as a whole—facts which we cannot afford to ignore or to handle without training.

COMPARATIVE RESULTS OF THE WASSERMANN TEST

A CLINICAL STUDY

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AND

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Several months ago we were consulted by a man whose future advancement to an important position was jeopardized because his record contained a diagnosis of syphilis based on a positive Wassermann reaction. He denied ever having had syphilis. A careful study of the history of this patient revealed the fact that while suffering with a sore throat, he consulted two physicians, one of whom diagnosed tonsillitis, and the other suspected syphilis. His blood was examined, found positive, and the condition pronounced syphilitic. He was placed on active treatment, and at the end of one year, four blood tests were made with contradictory findings. During the year preceding our observation, no treatment was taken. His history and a physical examination led us to believe that a diagnosis of syphilis had been made on unwarranted grounds. The patient's blood was submitted to five serologists, all of whom reported a negative reaction. A luetin test was negative. From the data obtained it was very questionable, in our judgment, that this patient ever had syphilis, and this opinion was rendered.

Shortly before this, we were consulted by a serologist who, out of curiosity, had examined his own blood, and to his surprise found it strongly positive. Rather than rely on another test made by himself, he requested us to submit several specimens of his blood to different serologists. His history eliminated a clinical diagnosis of syphilis; all of the tests were returned negative. It was fortunate that both of these patients were able to banish the thought of syphilis from their minds. On the other hand, probably all of us have observed examples of that unfortunate class of syphilophobiacs who can never be convinced that they have not syphilis, when once told that the Wassermann test is positive.

For several years it has been our practice to have a Wassermann test made on every patient who has syphilis, or one who gives a doubtful history of syphilis. Our experience has taught us that a Wassermann test made by a competent serologist is of great value; especially is this so when two or more serologists agree in their reports. It may be said that the serologist exercises more care in his technic than does the physician in the study of his case. The Wassermann reaction is of only relative value, and should be considered with a careful history and study of the case. Under no circumstances should a diagnosis of syphilis be based on the result of the Wassermann reaction alone. The serologist's report should be positive or negative, and if it is at variance with the clinical expectancy, other specimens of blood should be submitted to several serologists for confirmation. Theoretically a negative Wassermann reaction should be uniformly obtained in a normal person, or one suffering with a disease other than syphilis, whereas a positive reaction should be found in all patients presenting active manifestations of the disease, except in the first few days of the chancre. A negative Wassermann

reaction does not exclude syphilitic infection, since such a test may be obtained in the early stage of chancre, or as a result of very active treatment, or in latent syphilis when the foci of disease are not active to the extent that antibodies may be detected by the test. In early chancre, spirochetes are present in abundance, yet the blood serum is usually found negative. In latent syphilis, a negative Wassermann reaction at times becomes positive after active treatment. In certain cases of nervous syphilis, the serum Wassermann reaction may be negative, and the spinal fluid Wassermann reaction positive. A formerly negative spinal fluid Wassermann test may become positive after an intraspinal injection of salvarsanized serum. Many competent observers have reported positive luetin tests with a negative serum Wassermann test.

Each serologist selects a technic which he regards as the best, and checks his work with known positive and negative controls. Should the Wassermann report vary with the clinical expectancy, especially if the test is repeated with the same result, the serologist is apt to regard his test as of greater importance than the clinical diagnosis. Certain factors, irrespective of the test itself, are regarded by the serologist as responsible for the discrepancy; these factors include the age of the serum, infected serum, nonsterile test tubes, the

TABLE 1.—NORMAL AND NONSYPHILITIC CASES

No. of Tests	Laboratory	Negative	Doubtful	Anti-complementary	Positive				Negative, Per Cent.	Positive, Per Cent.
					+	++	+++	++++		
107	A	93	6	0	5	3	0	0	88.8	7.4
97	B	91	0	2	1	2	1	0	91.7	4.1
64	C	59	0	1	10	3	1	0	92.1	6.2
96	D	71	1	9	10	0	3	2	73.9	15.6
97	E-1	88	1	0	0	3	2	2	90.7	8.2
87	E-2	79	1	0	0	3	2	0	80.8	8.0
33	F-1	32	0	0	1	0	0	0	56.9	3.1
11	F-2	8	1	0	1	1	0	0	72.1	18.1
32	F-3	30	1	0	1	0	0	0	93.7	3.1
38	G	36	1	0	1	0	0	0	94.7	2.6

character of the glass of the test tubes, changes in the blood the result of faulty metabolism, influence of alcohol, etc.

It frequently happens that there are conflicting reports submitted by several serologists, or that two or more reports from the same serologist do not agree. It can be readily understood, especially in such a complex test as is the Wassermann, why these discrepancies should exist in reports from different laboratories; but we cannot understand conflicting reports from the same serologist on specimens from the same individual withdrawn at the same time under identical conditions.

After we had discussed these discrepancies in the Wassermann reports with several serologists, it was decided that a series of blood specimens taken under identical conditions from approximately three hundred patients be submitted for examination, to ascertain to what extent the above-mentioned factors influence the Wassermann test. In the beginning of this study the tests were made by four serologists, and later three others cooperated, making seven in all. These serologists are all representative men connected with teaching institutions and hospitals. They have been designated in these reports as laboratories A, B, C, D, E-1, E-2, F-1, F-2, F-3 and G. All, with the exception of E and F, submitted one report; E submitted two reports with different antigens, F three reports with

three different antigens, and G a majority report using three different antigens.

The blood was collected (a) from normal individuals who denied syphilis; (b) from patients in private and hospital practice who suffered with diseases other than syphilis, and (c) from syphilitics in practically every stage of the disease. With a few exceptions, all syphilitic patients had been under our care for some time, and several Wassermann tests on them had been reported before this study was undertaken.

This report is based on an analysis of 325 specimens of blood collected from 292 individuals, and submitted to at least four serologists. On thirty-three patients, two or more series of tests were made. Of the 292 individual cases, twenty-five were normal, seventy were suffering from diseases other than syphilis, and

TABLE 2.—COMPARISON OF TESTS BY DIFFERENT LABORATORIES

PRIMARY SYPHILIS CASES										
No. of Tests	Laboratory	Negative	Doubtful	Anti-complementary	Positive				Positive, Per Cent.	
					+	++	+++	++++		
4	A	0	0	0	0	0	0	4	100	
4	B	0	0	0	1	0	0	3	100	
3	C	1	0	0	0	1	0	1	66.6	
4	D	0	0	0	1	0	0	3	100	
4	E-1	0	0	0	0	2	0	2	100	
3	E-2	0	0	0	0	2	0	1	100	
1	F-1	0	0	0	0	0	0	1	100	
1	F-2	0	0	0	0	0	0	1	100	
1	F-3	0	0	0	0	0	0	1	100	
2	G	1	0	0	0	1	0	0	50	

SECONDARY SYPHILIS CASES										
No. of Tests	Laboratory	Negative	Doubtful	Anti-complementary	Positive				Positive, Per Cent.	
					+	++	+++	++++		
18	A	1	0	0	0	0	1	16	94.4	
17	B	0	0	2	0	0	1	14	88.2	
14	C	0	0	0	0	4	1	9	100	
17	D	2	0	0	0	0	2	13	88.2	
16	E-1	0	0	0	0	0	0	16	100	
16	E-2	0	0	0	0	1	1	14	100	
7	F-1	1	1	0	2	0	0	3	71.4	
5	F-2	0	0	0	0	0	0	5	100	
6	F-3	0	0	0	0	1	0	5	100	
10	G	4	1	0	1	1	1	2	50	

TERTIARY SYPHILIS CASES										
No. of Tests	Laboratory	Negative	Doubtful	Anti-complementary	Positive				Positive, Per Cent.	
					+	++	+++	++++		
16	A	3	0	0	2	0	0	11	81.2	
12	B	0	0	0	1	1	1	9	100	
8	C	1	0	0	1	0	0	6	87.5	
10	D	2	0	2	1	1	0	4	60	
15	E-1	1	0	0	1	0	0	13	93.3	
13	E-2	1	0	0	4	0	0	8	92.3	
2	F-1	1	0	0	0	0	1	0	50	
2	F-2	0	0	0	1	0	0	1	100	
2	F-3	1	0	0	0	0	0	1	50	
2	G	1	0	0	0	1	0	0	50	

197 were syphilitics in various stages of the disease. The reports from the different laboratories were collected in groups under headings of normal persons, nonsyphilitic diseases, and primary, secondary, tertiary, eye, nervous, congenital and latent syphilis. A glance at the reports in table form is very interesting and extremely instructive, but space does not permit of their publication. We can only summarize the results of the study and state how far the various factors enumerated above may account for discrepancies in the Wassermann report. Approximately half of all the specimens submitted were collected in sterile test tubes, the remainder in nonsterile tubes; the sterile tubes were thoroughly cleansed in normal saline solution, plugged with cotton and sterilized in an autoclave; the nonsterile tubes were used as obtained from the dealers. In every case the blood was withdrawn through a sterile dry needle inserted into a vein in the forearm, and collected in test tubes of 5-c.c. capacity. The date of collecting the specimen

and the date on which the test was performed by each serologist were recorded with the object of determining how far the age of the serum affected the test. The condition of the stomach, whether full or empty, was also noted; the process of digestion was considered to be finished three hours after eating. In many instances, the blood was taken many hours after eating and after thorough purgation. In syphilitic cases, a clinical expectancy of positive, negative or doubtful was determined before the specimen was submitted, and of which the serologist was not cognizant until the completion of the study; this clinical expectancy was based on our personal knowledge of the case, the type and activity of treatment and the results of previous Wassermann tests. In every instance in which two

TABLE 3.—COMPARISON OF 168 TESTS REPORTED BY LABORATORIES A, B, C, D, E-1 and E-2

No. of Tests	Laboratory	Negative	Doubtful	Anticomplementary	Positive				Positive, Per Cent.
					+	++	+++	++++	
168	A	98	13	0	8	7	2	40	33
168	B	113	0	7	9	5	29	58	58
168	C	124	2	1	3	20	4	14	24
168	D	79	0	2	23	13	15	36	51
168	E-1	96	3	0	7	14	7	41	41
168	E-2	94	8	0	0	16	10	45	42

or more specimens from the same individual were sent at the same time or subsequently, different names were used.

In a series of twenty-nine cases, eight nonsyphilitic and twenty-one syphilitic, the blood in each instance was collected in fourteen sterile test tubes, seven of which were at once infected with virulent cultures of *Bacillus typhosus*, *Staphylococcus pyogenes aureus* or streptococcus, and an infected and noninfected specimen sent under different names to each serologist. In another series of thirteen cases with nervous diseases of suspected syphilitic origin, the blood serum Wassermann was comparatively controlled with the spinal fluid Wassermann. Of 197 syphilitic cases, eighty-eight were latent; in this group we include patients we know to be syphilitic, but who at the time of this study showed no clinical signs of the disease, irrespective of the duration.

On twenty-five normal persons there were twenty-seven series of tests, with no less than five reports in each series. All the serologists agree in a negative report in twenty-one series of tests and disagree in six. In each instance of disagreement, a positive report was not submitted by more than one laboratory. In two cases in which the tests were repeated, one serologist reported in one case, first a positive, then a negative, while another reported in the second case a negative at the first examination and then a positive.

Seventy-four series of tests were made on seventy patients, all of whom denied syphilis and presented no clinical evidences of syphilis, but suffered with some other disease. Of these seventy patients, there were four on whom the reports varied considerably, two or more positive reports being submitted by different serologists in each case. The blood of one of these patients was examined four times. This case is very interesting. On the first examination there were four positive and no negative reports; twelve days later three positives and two negatives; the following day five positives and one negative, and six weeks from the first examination, two positives and four nega-

tives. On account of the great number of positive reports, this patient was repeatedly questioned regarding a possible syphilitic infection. He flatly denied any such infection, nor had he taken treatment for syphilis. The luetin test was negative. Analyzing the reports on this patient, we find but one laboratory, F, consistently positive; laboratory A reports one positive and three negatives; B, two positives and one negative; C, two positives and one negative, and D, first positive, then negative, again positive and finally negative. If this patient is to be considered syphilitic it must be solely on Wassermann tests, which, to say the least, are decidedly inconsistent. The second patient whose blood examination was repeated had four negatives and one positive at the first examination and six negatives and two positives at the second; positive tests were not obtained by the same laboratory twice. In the third case there were four positives and two negatives; the luetin test was negative. In the fourth case, six laboratories reported positive, two negative, one doubtful and one anticomplementary. This patient was referred by a neurologist with a diagnosis of brain tumor; the spinal fluid was examined with nine negative results and one positive. Of the remaining sixty-six patients whose blood was examined only once, all serologists agree in a negative report in fifty-six, and in ten cases one laboratory disagrees with the others in presenting a positive report.

Forty series of tests were made on thirty-six patients with primary, secondary or tertiary syphilis. All agree in a positive reaction in twenty-five; in fifteen they disagree. With one exception there was only one negative reported in each of the examinations in which the tests disagreed; this exception was noted in a patient with a tuberculous syphilid of the leg which subsequently responded to antisiphilitic treatment. In

TABLE 4.—PERCENTAGE RESULTS OF FIFTY-SIX CASES BY ALL LABORATORIES COMPARED TO CLINICAL EXPECTANCY

Positive Expectancy		Negative Expectancy		Doubtful Expectancy	
Laboratory	Positive, Per Cent.	Laboratory	Positive, Per Cent.	Laboratory	Positive, Per Cent.
A	44.8	A	0	A	11.1
B	27.5	B	0	B	0
C	31	C	0	C	11.1
D	75.8	D	33.3	D	66.6
E-1	55.1	E-1	5.5	E-1	44.4
E-2	55.1	E-2	5.5	E-2	44.4
F-1	37.9	F-1	11.1	F-1	11.1
F-2	68.9	F-2	27.7	F-2	77.7
F-3	44.8	F-3	5.5	F-3	22.2
G	27.5	G	0	G	11.1

this case the laboratory reports showed seven negatives and three positives. Of the remaining fourteen tests in which one report differed with the others, the tests were repeated in four; in each case the second test showed a positive report by the laboratory which first reported a negative.

In eye and nervous syphilis, the Wassermann reactions varied considerably. In forty-one series of tests made on patients with various syphilitic eye or nervous lesions, there were twenty-eight disagreements.

One hundred and eight examinations were made on eighty-eight patients who to our knowledge had syphilis, but who at the time of the examination presented no clinical lesions. Many had been under constant treatment for various periods of time, and others had received recent active treatment. Repeated examinations were made on sixteen, thirteen of whom had two examinations, two had three examinations, and

one had four. The reports from the laboratories were so inconsistent and the reports from the same laboratory varied so extremely in cases of repeated examinations that an analysis is practically impossible.

Table 1 presents the results of all the tests made by the serologists on normal persons and nonsyphilitic patients, together with the number of tests performed by each. Analysis shows that a positive Wassermann test was obtained in from 2.6 to 18.1 per cent.

Table 2 presents the serologic findings in primary, secondary and tertiary syphilis; the percentage of positive tests in active syphilis varies from 50 to 100 per cent.

Table 3 summarizes the comparative results obtained in 168 series of tests, made by each of five serologists. An analysis shows that all the laboratories agree in their findings in 47 per cent. They vary in one result in 20 per cent., in two results in 12 per cent., and in more than two in 21 per cent. In other words, if a specimen of blood from the same individual be submitted to five serologists, there is one chance in two that the reports will agree.

In fifty-six cases, ten reports were received in each case from seven serologists. They have been classified according to a positive, negative or doubtful clinical expectancy, in each case. It will be observed that the laboratories reporting the greatest number of positive reactions, in cases in which a positive reaction was expected, also reported the greatest number of positive reactions when the clinical expectancy was negative or doubtful.

Analyzing the reports, we find that all the laboratories agreed in 21 per cent., they disagreed materially in 19 per cent., and varied in from one to four of the ten results in 60 per cent. Of the latter, 20 per cent. varied in one test, 20 per cent. in two tests, 12 per cent. in three tests, and 8 per cent. in four tests. In other words, if a specimen of blood from the same individual be submitted to ten tests by different serologists, there is one chance in five that the tests will agree.

Space does not permit of detailing the technic of each serologist; however, four used only specific antigen, one submitted two reports in each case using two different cholesterinized antigens, another submitted three reports, using two cholesterinized and one specific antigen. Comparing the positive reports submitted by each laboratory with the total positive results in all cases, they vary from 9.1 per cent. to 58.5 per cent. With two exceptions, the lowest percentages of positive reactions were obtained by the laboratories using specific antigen, and at the same time they agree more consistently with the clinical expectancy.

After carefully considering the results of the Wassermann test, the clinician cannot help but be disappointed in its accuracy. When we consider that various representative serologists report positive findings in from 2 to 18 per cent. of normal individuals, and that in active syphilis, in which the clinical diagnosis is certain, some serologists report only 50 per cent. of positive results, there is every reason to discredit the diagnostic value of the test. In suspected latent syphilis and in syphilis under active treatment, the most extreme variations occur, and in these conditions, in which the clinician needs its help the most, it is the least accurate. Notwithstanding the numerous discrepancies in the Wassermann reports, our experience with this test over a period of several years has

convinced us that it is of great value and should be regarded only as a link in the chain of evidence for or against the disease.

From the experiments undertaken, we have proved to our own satisfaction, and to the satisfaction of the serologists associated in this work, that it makes no difference whether the blood is collected in a sterile or nonsterile test tube; whether infected with the above-mentioned pathogenic organisms or not infected; whether the specimen is one or several days old, or whether the blood is collected when the stomach is full or empty. In a few instances marked acidosis was present, but it did not influence the test from the standpoint of clinical expectancy. We are firmly convinced that the antigen used by the serologists is not wholly responsible for the discrepancies in the Wassermann report, and there is every reason to believe that a cholesterinized antigen will give a higher percentage of positive reports than a specific antigen. Leaving aside the element of personal equation, serologists cannot obtain uniform results unless a standardized antigen is employed and a uniform technic agreed on.

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DELUSIONS OF PERSECUTION AS A BIOLOGIC DEFENSE REACTION*

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LOS ANGELES

The life of the individual is a constant struggle, and is made up of a series of reactions having as their end the opposing of influences which tend to limit this life, or at least to prevent its development along the most favorable lines. Psychologists have come to believe that these reactions, which in their sum go to make up human conduct, are determined, in the main, by inherited tendencies which have been evolved in the struggle for existence of a long line of ancestors dating from the lowest forms. These tendencies have been developed in order to carry out the three great ends of organized beings; namely, defense from danger, procuring of food, and reproduction. The mechanisms to accomplish the first of these ends, requiring the most prompt and active reaction — protective mechanisms — were earliest and most firmly established.

These protective mechanisms vary immensely, from the methods of concealment of the lower forms of animals, through the armor of the turtle and armadillo, the venom of the serpent, the offensive odor of the skunk, the fleetness of the hare and the antelope, the teeth, the claws, and the strength of the tiger, to the capacity of man through his superior knowledge and reasoning power to invent weapons which more than compensate his lack of speed and strength.

Not the least of these human defense mechanisms, however, is developed in the ability of man to analyze the conduct of his fellows and to provide against any manifestations of hostility on their part. This ability varies immensely in different individuals, depending on their mental makeup, education and environment, state of health, good or ill fortune, etc., and in accordance with the laws of adaptation it tends to be sharpened by adversity and dulled by ease and comfort.

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