INTRODUCTION.

Syphilis made its first appearance in Europe at the end of the fifteenth century. This disease was unknown to the ancient Hebrews, the Greeks and the Romans. The first to write a book on this disease was a German physician, Joseph Grundbeck, who wrote "On the Venereal Disease" in 1496. In the latter part of the eighteenth century Hunter demonstrated the sequence of the secondary and tertiary lesions and their relation to the primary or initial lesion. In 1837 Abraham Colles, an English surgeon, made the observation which has come to be known as Colles' law; and that is, "that a child born of a mother who is without any obvious venereal symptoms, and which, without being exposed to any infection subsequent to its birth, shows this disease when a few weeks old, this child will infect the most healthy nurse, whether she suckle it, or merely handle it and dress it; and yet this child is never known to infect its own mother, even though she suckle it while it has venereal ulcers of the lips and tongue." It was forty years later that Giuseppe Profeta, an Italian physician, made the observation that an infant born to syphilitic parents may be immune to syphilis, either or both of the parents having syphilis.

That syphilis may be a bacterial disease was already thought of in 1675, when Antony Von Leeuwenhoek demonstrated the existence of bacteria by the perfection of a simple lens.

In 1837 Donné demonstrated a spirillum in chancres.

In 1881 Lustgarten described a bacillus which he found in all chancres, but this bacillus is now known to be a member of the smegma bacillus group.

In 1899 Von Neissév isolated a bacillus which he could cultivate and with which he could transmit syphilis to the monkeys, one pig, one dog, one rabbit, and three guinea pigs, but others failed to substantiate his findings.

In 1902 Bordet and Gengou noticed a delicate spirillum in...
chancres, but as they could not cultivate it they gave up further research in that direction.

In 1904 Siegel discovered a small spherical, highly refractive and actively motile flagellated organism.

In 1905 Schaudinn and Hoffman, at the request of the German government to investigate the findings of Siegel, discovered the spirocheta pallida, which now bears their name and which is granted to be the cause of syphilis.

In 1903 Metchnikoff and Roux showed the possibility of transmitting syphilis to the higher apes. A few years later other investigators were able to produce syphilitic infiltration in the cornea of the rabbit.

In 1903 appeared a notable article by Matzenauer, in which he disproves Colles' and Profeta's laws on a clinical and a pathological basis.

A few years later Bordet and Gengou described the phenomenon of complement fixation. And four years later Wassermann, Neisser and Bruck described a method for the diagnosis of syphilis in the laboratory, which is based on the phenomenon of complement fixation, and which is known as the Wassermann reaction.

The value of the Wassermann reaction in diagnosis of syphilis is well known to every medical man; that the Wassermann reaction has thrown some light on the nature of transmission of syphilis, and that through it we have collected data which disprove Colles' and Profeta's laws—laws which have been considered as truisms—is not so well appreciated. When Matzenauer suggested that Colles' law only proved that the woman was immune only in so far as her syphilis was latent, he met with such general dissen­sion as the suggestions of very few men have ever aroused. That he is right and the others are wrong we have more than ample proof now.

**WHAT IS THE WASSERMANN REACTION?**

The blood serum of one animal species, when injected into the vessels of another, may do serious damage, and even kill the latter through a rapid separation of the hemoglobin from the red blood cells. As the animal body is capable of adapting itself to toxic substances and to bacteria in such a way as to neutralize toxins and destroy bacteria, so it may respond similarly to the introduction of other foreign bodies as red blood cells.

The red blood cells of a guinea pig are not normally lytic
for the red blood cells of the rabbit. If we inject a few cubic centimeters of whipped blood of the rabbit (containing serum and the red blood cells) into peritoneal cavity of a guinea pig, and when blood from this guinea pig is drawn and allowed to clot the serum collected is markedly lytic for rabbit corpuscles. This process is called hemolysis. The serum possessing this capacity is called a hemolytic serum.

The hemolytic power of the serum of the guinea pig acquired by introduction of red blood cells of rabbits into its peritoneal cavity is due to two distinct substances. One results from the adaptation of the animal to alien blood and is thermo-stabile at 58°C. (amboceptor); the other, which is present in normal serum, is rendered inert at 58°C. (thermo-labile) (complement).

For hemolysis to take place both these substances (amboceptor and complement) must be present.

Knowledge of these facts is essential, for in the Wasserman reaction a hemolytic serum enters into consideration.

In a Wassermann reaction the following factors enter into consideration:

I A hemolytic serum—rabbit's blood immunized to sheep's blood (contains amboceptor and complement).

II Sheep's red blood cells.

III Antigen (which gives rise to antibodies) derived from a syphilitic liver.

IV Serum of luetic patient.

V Complement—derived from serum of guinea pig.

I A = I warmed to 58°C. (contains only amboceptor).

(a) I + II = Hemolysis = Amboceptor + Complement.

(b) I A + II = No hemolysis = Amboceptor.

(c) I A + II + III = No hemolysis = Amboceptor + Red blood cells + Antigen.

(d) I A + II + III + V = Hemolysis = Amboceptor + Red blood cells + Antigen + Complement.

(e) IV + III + V = Complement = Antibodies + Antigen + Complement.

(f) IV + III + V + II + IA = No hemolysis = Antibodies + Antigen + Complement + W. R. + RBC + Amboceptor.

In (a) hemolysis takes place because both amboceptor and complement are present.

In (b) and (c) no hemolysis takes place because there is no complement present.
In (d) hemolysis takes place because both amboceptor and complement are present.

In (e) the complement is fixed to the syphilitic antibodies.

In (f) no hemolysis takes place, because the complement has been fixed to the syphilitic antibodies, and has been deviated from the amboceptor, which without the complement cannot hemolysize the red blood cells. No hemolysis takes place, therefore, because the complement has been deviated.

The Wassermann reaction is, therefore, a test for complement deviation or (more significantly in German) "complement ablenkung." When the blood of a patient causes complement fixation, and thus prevents hemolysis from taking place, the patient has syphilis and the result is a positive Wassermann reaction.

Various modifications of the Wassermann reaction have been suggested. The most important are the following:—

<table>
<thead>
<tr>
<th>Wassermann</th>
<th>Anti-sheep</th>
<th>Complement</th>
<th>Amboceptor</th>
<th>Corpuscles</th>
<th>Patient's Serum</th>
<th>Antigen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bauer</td>
<td>Guinea pig</td>
<td>Natural anti-sheep amboceptor of human origin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hecht</td>
<td>Patient's serum</td>
<td>Patient's serum</td>
<td></td>
<td>Active</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stern</td>
<td>&quot;</td>
<td>Immune anti-sheep amboceptor added</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detre</td>
<td>Rabbit</td>
<td>Anti-horse amboceptor</td>
<td>Horse</td>
<td>Inactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaliski</td>
<td>Patient's own + Guinea pig</td>
<td>Rabbits immunized to sheep dried on paper or liquid</td>
<td>Sheep</td>
<td>0.02 c.c. active serum = 1 capillary drop</td>
<td>Syphilitic liver or beef heart or normal liver (acetone insoluble fraction)</td>
<td></td>
</tr>
<tr>
<td>Noguchi</td>
<td>Anti-human</td>
<td>Guinea pig</td>
<td>Rabbits immunized to human corpuscles</td>
<td>Human</td>
<td>Fresh, old, or inactivated</td>
<td>Normal or luetic organ (acetone insoluble fraction)</td>
</tr>
</tbody>
</table>

**MODE OF TRANSMISSION OF SYPHILIS.**

Various authors have demonstrated spirochetae pallidæ in the testicle and in the ovary of affected feti; still, numerous ex-
aminations of spermatic fluids have failed to reveal the presence of the spirochetae in this fluid. Finger inoculated 2 monkeys with spermatic fluid of a syphilitic and was able to produce syphilitic lesions in them. It is possible, therefore, that the spirochetae may exist in the spermatic fluid in a spore-like or some other form not yet demonstrated or in a form so small as not to be seen by the microscope. It is well known that most tuberculous fluids are "sterile"; not sterile in the proper sense of the word, but in the sense that it is impossible to demonstrate the tubercle bacilli in this fluid; when this fluid, however, is injected into a guinea pig or other susceptible animal the animal develops tuberculosis. Tuberculous fluids, though supposed to be sterile, are therefore really not sterile and do contain the tubercle bacilli in some unrecognized form. The analogy between this and the production of syphilis in monkeys with syphilitic spermatic fluid is (I think) complete. We cannot disprove that this mode of transmission of syphilis does not take place in human beings, nor can we prove it. Granting this mode of transmission possible, it is highly improbable that the ovum is infected directly by the spermatic fluid. Most likely it becomes infected from the mother through the placenta, who may be infected directly by the spermatic fluid.

If the ovum were infected at the time of impregnation it is not probable that it could go on to a stage of development observed in syphilitic feti that are aborted, prematurely born or stillborn.

There is only one other mode of transmission possible, and that is by way of the placenta. Whether a healthy non-diseased placenta can transmit spirochetae is an open question. Sufficient evidence is at hand to prove that in a majority of cases of syphilitic infants pathologic findings are noted, such as the syphilitic virus is known to produce. Spirochetae are usually found in abundance in the fetal portion of the placenta, and almost always in the cord, but are seldom found in the maternal portion of the placenta.

From these facts we can make the following deductions:—

(1) If an infant is syphilitic its father may or may not have syphilis.

(2) If an infant is syphilitic its mother invariably has syphilis.

(3) The most usual mode of transmission of syphilis to infants is by way of the placenta.

Statistics on this point are of interest: Of 123 mothers whose
blood was examined within a short time of birth of syphilitic infants, 110 (90 per cent.) gave a positive Wassermann reaction.

COLLES’ LAW AND THE WASSERMANN REACTION.

By Colles’ immunity is meant that which is shown by those healthy mothers who, owing to syphilis in the father, have borne syphilitic children but have themselves escaped infection. In the “American Text Book of Surgery,” 1903, the following statement is made: “The immunity has been proved in thousands of cases, and there is no longer any doubt that it may exist. It is true exceptions are published, but they are few and uncertain.”

If we believe in the most reasonable explanation of the mode of transmission of syphilis to the infant, the fallacy of the above law is evident. The Wassermann reaction throws more light on this subject.

Compilation of statistics given by Knopfelmacher, Michaelis, Baisch and others show the following:—

1. Of 125 mothers, who at no time had any syphilitic symptoms and who at no time received any antispecific treatment, 82 (71 per cent.) gave a positive Wassermann reaction.

2. Of 25 mothers (Knopfelmacher) who had symptoms, and some of whom had received antispecific treatment, 18 (72 per cent.) gave a positive Wassermann reaction.

The small per cent. of positive Wassermann reactions in the untreated cases may be due to the fact that the children may have had acquired syphilis.

It is of interest to compare the per cent. of positively reacting mothers with results obtained in syphilitics of the acquired form.

<table>
<thead>
<tr>
<th>Type</th>
<th>Wassermann Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>78 per cent.</td>
</tr>
<tr>
<td>Secondary</td>
<td>92 “ “</td>
</tr>
<tr>
<td>Tertiary</td>
<td>82 “ “</td>
</tr>
<tr>
<td>Early latent</td>
<td>72 “ “</td>
</tr>
<tr>
<td>Late</td>
<td>58 “ “</td>
</tr>
</tbody>
</table>

(The above figures represent the averages obtained by adding 4,500 cases reported by Wassermann, Noguchi, Kaliski and Knopfelmacher respectively.)

It is seen that mothers who give birth to syphilitic children react to the Wassermann test in the same way and to the same per cent., as do those who have acquired syphilis in an early latent stage.
We may therefore conclude that mothers who give birth to syphilitic children are themselves syphilitic, whether they have any symptoms or not, and react to the Wassermann test as do those who have acquired syphilis in an early latent stage.

There are two factors which influence the per cent. of positive reactions in mothers of syphilitic children:—

(1) The number of children.

(2) The length of time which elapsed after the birth of the last syphilitic child and the time when the mother’s blood was examined.

Mothers who have given birth to from 1 to 7 children gave a positive Wassermann reaction in 60 per cent. of the cases. Those who have given birth to 8 or more children give a positive Wassermann reaction only in 46 per cent. of the cases (Knopfelmacher). It may be noted that those who have given birth to 8 or more syphilitic children react to the Wassermann test, as do those with acquired syphilis in a late latent stage. The influence of time between the time of the birth of the last syphilitic child and the time of the examination of the last syphilitic infant is shown in the following:

Of 123 cases collected, in which the mother’s blood was examined within a short time (less than one year) of birth of last syphilitic infant, 110 (90 per cent.) gave a positive Wassermann reaction. Many small collections of cases included in the 123 cases, reported by various investigators, gave a 100 per cent. positive reaction.

If the mother’s blood is not examined from three to five years of the birth of last syphilitic child only 50 per cent. of these mothers give a positive Wassermann reaction.

PROFETA’S LAW AND THE WASSERMANN REACTION.

Profeta’s immunity is the immunity of children of syphilitic parents, either or both being syphilitic. It was thought that children in many such cases were born healthy and remained healthy, and that some of them were proof against the contagion of syphilis just as if they had had the disease. The results of the Wassermann reaction in these cases show very clearly that this law also is a fallacy.

Of 123 mothers who gave a positive Wassermann reaction, 110 of the infants (90 per cent.) gave a positive Wassermann reaction. The fact that 13 of these infants did not give a positive
Wassermann reaction does not mean that they have not syphilis. It has already been remarked that a certain per cent. of syphilitics with active lesions do not give a positive reaction, so that absence of a positive Wassermann reaction in these 13 cases may be explained on that ground.

That the Wassermann reaction does not depend on a diffusible chemical substance found in mother's blood which is transmitted to the infant the following table shows very clearly.

Of a group of 14 mothers and 14 infants examined (by Baisch) the following reactions were noted:—

<table>
<thead>
<tr>
<th>MOTHERS.</th>
<th>INFANTS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 W. R. +</td>
<td>9 W. R. +</td>
</tr>
<tr>
<td>4 W. R. +</td>
<td>4 W. R. —</td>
</tr>
<tr>
<td>1 W. R. —</td>
<td>1 W. R. +</td>
</tr>
</tbody>
</table>

It has been noted in a few cases, where the mother was suffering from active lesions and gave birth to an infant, that the infant gave a negative Wassermann reaction.

We may conclude that the great majority of infants of syphilitic mothers are themselves syphilitic. It may be possible that a syphilitic mother (i.e., with latent syphilis) may give birth to a healthy infant, (?) but such a mother never gives birth to children who are immune to syphilis and healthy at the same time.

As a corollary of the above we may state a luetic mother may give birth to luetic (great majority) or to healthy children, (?) but to none that are immune.

HEREDITARY SYPHILIS.

Infants suffering from hereditary syphilis almost invariably give a positive Wassermann reaction. Of 300 cases examined 298 gave a positive Wassermann reaction. Whereas, a positive Wassermann reaction absolutely speaks for presence of syphilis, a negative reaction does not absolutely mean the absence of syphilis.

In cases of hereditary syphilis, before any symptoms manifest themselves, the Wassermann reaction may be negative; later, with advent of symptoms, positive.

Infants born of syphilitic mothers give a positive Wassermann reaction, though they have no signs nor symptoms of any syphilitic infection.

Of 44 children suffering from late hereditary syphilis, 26 gave a positive reaction and 18 negative Wassermann reaction.
INFLUENCE OF TREATMENT ON WASSERMANN REACTION.

The earlier treatment is instituted the sooner will the reaction become negative. In a few cases the Wassermann reaction is negative before treatment and becomes positive after treatment.

When treatment is commenced as soon as the diagnosis is made 75 per cent. give a negative Wassermann reaction within one month. When treatment is delayed for six months only 33 per cent. of negative reactions will be obtained.

KI—atoxyl, soamin, or sudan have little or no influence on the Wassermann reaction.

Salvarsan (606) will cause a + Wassermann reaction to become negative in from three weeks to two months.

In children under treatment it is harder to negate a Wassermann reaction than in adults.

THE CURABILITY OF LUES AND THE WASSERMANN REACTION.

The question "Is syphilis a curable disease?" we must answer in the negative. Syphilis is not a curable disease—at least we must admit that neither mercury nor salvarsan (?) cures it. These drugs relieve symptoms, mitigate and hold the disease in check, but they do not cure it. After the most thorough mercurial treatment many cases have had syphilitic recurrences. After two and three injections of salvarsan recurrences have already been noted. Many cases with a positive Wassermann reaction, which became negative after treatment, have again become positive after three or four months have elapsed, and since a positive Wassermann reaction means the presence of spirochetae these cases cannot be called cured. Further proof of the incurability of syphilis we have in the fact that the great majority of people do not contract this disease more than once. That there are exceptions to this rule is undisputed, but it must be apparent that the reason why the majority of the so-called "cured syphilitics" do not contract the disease a second time is because they still have syphilis; in a latent form, perhaps, but syphilis they have, so that "once a syphilitic always a syphilitic" holds true in the majority of the cases. It is true, Finger was able to reinoculate 5 out of 12 monkeys, but that was in the primary stage, before the disease became systemic.

Many women with florid syphilis who had undergone thorough mercurial treatment before conception, have given birth to apparently healthy children. (No Wassermann test made on these
Two or three years later these same women, with no renewed treatment, have given birth to stillbirths, premature children, or have aborted. In these cases, also, we have further proof that treatment does not, in a majority of the cases, cure the disease, but transforms it into a quiescent, latent state, which at some future time may reassert itself with as much vehemence as it ever existed before. It is true that the latent state may last as long as the patient lives, but there is always the possibility of the disease reasserting itself when the patient's resistance is lowered from one cause or another. We may therefore conclude that neither mercury nor salvarsan (?) cures the disease, but rather transforms an active syphilis into a latent form.

Patients with so-called "cured syphilis" are but seldom reinfected, because they have syphilis in a latent form.

The latent period produced by treatment may last through the remainder of the patient's lifetime; in many cases it does not.

**WASSERMANN REACTION AND THE WET NURSE.**

Although the Wassermann reaction is not a specific reaction, it is characteristic of syphilis. Various authors have put different interpretations on the presence of a + Wassermann reaction. Some believe it signifies the presence of colloidal substances found in the blood, which, normally found in this fluid, are found in increased amounts in syphilis. Others believe that it is not specific for spirochetæ, but is specific for the disease. But the consensus of opinion is that a positive Wassermann reaction means the presence of spirochetæ in the body.

In this connection it may be stated that in an examination of 1,010 normal persons not once was the Wassermann test positive. This is Wassermann's own finding. It is, therefore, conclusively proven that a positive Wassermann reaction means the presence of syphilis, and as corollary of this we may state that a positive Wassermann reaction means the presence of spirochetæ in the body.

The importance of testing the blood of a wet nurse is apparent. Whereas, a positive Wassermann reaction means the presence of syphilis, a negative Wassermann reaction does not mean that the nurse is not syphilitic.

It is also necessary to test the reaction of the blood of the infant. If the infant gives a positive Wassermann reaction the
mother is syphilitic whether she gives a positive Wassermann reaction or not. This step must be taken when the mother (wet nurse) gives a negative Wassermann reaction.

FREQUENT MISCARRIAGES AND THE WASSERMANN REACTION.

Of 32 women in whom syphilis was suspected and whose blood was examined for the Wassermann reaction, 28 (87 per cent.) gave a positive reaction. The most usual time for these women to abort is after the fourth month, at a time when the placenta is fully developed. This lends further proof to probable infection of fetus by way of the placenta at this time.

THE VIRULENCE OF INFECTION.

At onset of the disease the virulence of the disease is not as great (i.e., first three months) as it is at a later date; it then remains stationary (four to six years), and after a number of years begins to decline.

Evidence of this we have in the way syphilitics react to the Wassermann test. In the primary stage only 78 per cent. give a positive Wassermann reaction; in the secondary 92 per cent., and in the tertiary stage 82 per cent. Wassermann reaction.

Further proof is obtained from the manner syphilitic mothers behave during pregnancy. If the infection is very severe she will abort; if less severe she will have a miscarriage or premature birth; if still less severe a stillbirth at full term. Later she may give birth to a full term syphilitic infant; and when her syphilis has become latent she may give birth to an apparently healthy infant.

We have additional proof in that only 20 per cent. of mothers give a positive Wassermann reaction after birth of first infant; 100 per cent. after birth of fourth, fifth, sixth and seventh infant, and 80 per cent. after eighth infant.

SYPHILIS AS A CAUSE OF INFANT MORTALITY.

Eighty to ninety per cent. of all men have, or have had, gonorrhea. To every 10 men who have gonorrhea there is 1 who has syphilis, so that 8 to 9 per cent. of all men have syphilis. It is stated that about 5 per cent. of all women have syphilis. Syphilis
is claimed to be the cause of infant mortality in 1.2 per cent. of the cases.

That the mortality of infants due to syphilis is much greater than the above figures show is hardly appreciated. Of 904 children born to syphilitic mothers, 768 died within one year. To 23 syphilitic mothers 153 children were born; of these, 153 died within one year, so that syphilis annihilates posterity in no small number of families.

An analysis of all the pregnancies of 80 syphilitic mothers shows the following:—

(a) Number of conceptions ....... 464
(b) Abortions .................. 115 — 25 per cent.
(c) Stillbirths .................. 20 — 5 “ “
(d) Premature births ............. 35 — 8 “ “
(e) Luetic at full term ........... 133 — 28 “ “
(f) Apparently healthy .......... 87 — 18 “ “
(g) Died within one week ...... 75 — 16 “ “

It is seen, therefore, that on the average a syphilitic woman conceives about six times, but seldom has more than 2¾ living children, unless the number of pregnancies is more than six.

It has already been stated that of 904 syphilitic infants born at full term 768 died within one year (85 per cent.). Only 28 per cent. of all conceptions of syphilitic mothers result in full term syphilitic infants, and 85 per cent. of these die within one year, so that only 5 per cent. of all conceptions of syphilitic mothers result in syphilitic infants which survive the first year.

Adding the 18 per cent. of the apparently healthy infants born to syphilitic mothers to the 5 per cent. syphilitic infants which survive the first year, there is a total of 23 per cent. of all infants which, born to syphilitic mothers, survive the first year. Seventy-seven per cent. of all conceptions of syphilitic mothers result in death of the infants within one year of birth.

As syphilis causes death of the infant before birth in 50 per cent. of all pregnancies of syphilitic women, 3-4 per cent. would more correctly express the per cent. of syphilis as a cause of infant mortality than 1.2 per cent.

By way of prophylaxis it may be stated that 75 per cent. of all syphilis is spread by prostitutes, and that from 80-90 per cent. of all prostitutes have syphilis. The problem of prophylaxis of syphilis is mainly one of supervision of prostitution. Though
syphilis causes more deaths in the first year of life than measles, pertussis, scarlet fever and diphtheria combined, there is practically nothing being done by the Boards of Health or medical profession at large to safeguard the health and lives of the innocent infants. As yet "the cry of the unborn" is unheeded.

**HEREDITARY SYPHILIS AND THE WASSERMANN REACTION. ILLUSTRATED.**

Through kindness of Dr. L. E. La Fétra I am able to present the history of a syphilitic family with reports of Wassermann reactions, which illustrate most of the points discussed in this paper.

October 16, 1909, Mrs. C. brought her youngest son William to the Vanderbilt clinic for treatment. The mother stated that there had been a fissure in the anal region of the infant for the past six weeks, and that it did not show any tendency to heal. The child had never been ill before; no early history of snuffles, or rash of any kind, could be obtained. Physical examination was entirely negative; neither spleen nor liver were enlarged; the glands were not enlarged; there were no scars. There were some signs of a mild rickets. A von Pirquet test was made. On the strength of the family history and of the chronicity of the fissure a diagnosis of syphilis was made. The infant was put on mercury internally and calomel locally to fissure. At the next visit of infant it was noted that the von Pirquet test was negative. Treatment was continued. Ten days later a Wassermann test was made. The Wassermann reaction was negative (probably due to mercurial treatment). Treatment was continued in spite of negative Wassermann reaction, and within three weeks of first visit the fissure had completely healed.

*Family History.*—The mother had been married once before, and by that marriage had conceived six times.

The first was a healthy child, lived three years, died of scarlet fever and diphtheria.

The second was also a healthy child, lived two years and died of cholera infantum.

The third, fourth and fifth were stillbirths at full term.

The sixth, a prematurely born child at eight months, died within one week.

The first husband died in 1899 of cerebrospinal meningitis and pneumonia.
The mother remarried in 1900, and by her second marriage has five children, the infant above described being the youngest of these.

The Mother.—Repeated examinations of the mother have failed to show any past or present signs of any syphilitic infections.

The Second Husband.—Repeated examinations of second husband have failed to show any signs of any old or recent syphilitic lesions.

November 19, 1909, Martha (seven and one-half years old), second daughter, was brought to clinic suffering from a unilateral sore throat. Examination showed a diphtheritic-like deposit on right tonsil; cultures were negative; a diagnosis of mucous patch was made.

December 16, 1909, Mary, oldest child (nine years old), was brought to clinic suffering from mucous patches on both tonsils.

December 13, 1910, Patrick (six years old) was brought to clinic suffering from mucous patches of both tonsils.

December 13, 1910, William (three years old), was brought to clinic suffering from mucous patches of both tonsils.

December 20, 1910, blood for a Wassermann test was taken from every member of the family. The results of the reactions are as follows:—

The history of this family presents the following points of interest:—

(1) It proves that the mother of children suffering from hereditary syphilis invariably has syphilis; that their father may or may not have this disease (as the mother may acquire the disease in other ways; in this case from her first husband).

(2) It disproves Colles' law. Though the mother never had any obvious venereal symptoms, she gives a positive Wassermann
reaction, thus proving that this mother has syphilis in a latent form.

(2) It disproves Profeta's law, for all the children born to this mother have syphilis. The Wassermann reaction of Matthews is negative, which is probably due to the fact that the syphilis is latent. Later in life symptoms may develop, and his reaction will undoubtedly become positive.

(4) It proves that after a certain number of years (six) the virulence of syphilis has a tendency to decline, even where treatment has not been instituted.

CONCLUSIONS.

(1) The most usual mode of transmission of syphilis to fetus is through the placenta. If the infant is syphilitic the mother is invariably syphilitic also; the father may or may not have syphilis.

(2) Mothers who have no syphilitic symptoms, but who give birth to syphilitic children, have syphilis in a latent form; 71 per cent. of these women give a positive Wassermann reaction.

(3) Mothers with syphilitic symptoms, who give birth to syphilitic children, give a positive Wassermann reaction in 72 per cent. of the cases.

(4) The earlier the blood is examined after delivery of last syphilitic child, the greater the per cent. of positive Wassermann reaction. If the mother's blood is examined within one year of birth of last syphilitic child we obtain 90 per cent. + Wassermann reaction. If within four years we obtain 40 per cent. + Wassermann reaction.

(5) The great majority of infants of syphilitic mothers are themselves syphilitic. A syphilitic mother may give birth to a syphilitic child, or during her latent stage to an apparently healthy infant, but never to one who is immune to syphilis.

(6) Ninety-nine per cent. of infants with hereditary lues give a positive Wassermann reaction. Fifty per cent. of infants with late hereditary lues give a positive Wassermann reaction.

(7) An infant suffering from hereditary lues may give a negative Wassermann reaction before any symptoms are present, and a positive Wassermann reaction later when symptoms arise.

(8) Mercury and salvarsan cause a + Wassermann reaction to become negative. In a certain number of cases the reaction becomes positive again within six months.
(9) Mercury and salvarsan (?) do not cure syphilis. These drugs transform an active lues into a latent lues. Reinfection occurs but seldom, because the so-called “cured cases” have syphilis in a latent form.

(10) The blood of every wet nurse should be examined for the Wassermann reaction. If it is positive she has syphilis and should not be employed; if it is negative the blood of her infant should be tested; if it is positive the mother (wet nurse) has syphilis, even though her own reaction is negative.

(11) The virulence of syphilis is mild at first, increases in severity for a few years, then remains stationary and later begins to decline.

(12) Syphilitic women on the average conceive about six times, but seldom have more than 2½ living children, unless the number of pregnancies is more than six. Seventy-five per cent. of all conceptions of syphilitic mothers result in deaths of the infants within one year of birth.

In conclusion I wish to express my indebtedness and sincere thanks to Dr. La Fétra for the invitation to present the family here described at the Academy of Medicine, and for the privilege of reporting the history in connection with this paper.

I also wish to express my sincere thanks to Dr. Kaliski, who performed the Wassermann reactions on all the members of this family, and many other cases cited in this paper.

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Transient Presence of Casts in Urine of Healthy Infants.—Goldsmith (Journal American Medical Association, January 8, 1910), out of curiosity, examined the urine of a perfectly healthy male child, aged eleven and one-half months, who had been properly fed and weaned after nine months. He was surprised to find in it a large number of hyalin and pale granular casts, “an appearance suggesting the showers of casts seen in adults.” There was neither albumin, blood, nor any other constituent to suggest renal disease. The day before the child had possibly not been quite so lively as usual, but there was nothing indicative of ill-health, and on the day in question was as well as possible. Daily examination of the urine for the next two weeks and occasional examination subsequently, however, failed to reveal anything abnormal.—British Medical Journal.