

I.

A T H E S I S

presented for the degree of Doctor of Medicine

by

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## II.

### PART ONE:-

An investigation on the rôle of syphilis in the causation of children's diseases, based on an examination of 1010 cases by clinical and serological methods.

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### PART TWO:-

Paroxysmal Haemoglobinuria in the light of the Wassermann reaction, with some experiments on the properties of the autohaemolysin present in the serum.

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### PART THREE:-

Observations on the activating effect of the blood serum for cobra venom haemolysin in various diseases.

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### III.

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INTRODUCTION.

The following work has been pursued in the hope of determining precisely how far reaching the effects of congenital syphilis are. Keen observers even when provided merely with ordinary methods of observation have long ago recognised the tendency of congenital syphilis to manifest itself after prolonged periods of latency. Thus interstitial keratitis may appear for the first time at or near adult age, and its effects are of the greatest possible gravity, resulting not infrequently in total and irremediable blindness. The application of the most vigorous antisyphilitic treatment is often incapable of modifying the course of the disease. Accordingly even where the cause of the condition is manifest little may be able to be done once it has declared itself. Many other affections due to congenital syphilis are more amenable to treatment, provided that the nature of the condition is recognised, but without specific treatment may persist for years. Syphilis in its economic and social aspects, therefore, merits attention which it has by no means received. As will be seen the part played by syphilis in reducing the worth of human material is certainly not less than that of tuberculosis.

The recognition of the extent to which syphilis is disseminated and the early diagnosis of its existence in a given

individual are data of the utmost value, since radical treatment carried out at the earliest possible moment is the only effective means of insuring against further spread throughout the community in general and grave effects at a later date in the individual himself.

The biological syphilis reaction of Wassermann, Neisser and Bruck has afforded a means for the detection of syphilis, the value of which can scarcely be exaggerated. It cannot be claimed, of course, that it detects every case, but every open minded observer must admit that it brings to light very many cases in which the existence of syphilis could at best merely have been surmised and might have been missed altogether. This is especially clear when one considers that evidence of syphilis so frequently rests merely upon the personal or the family history, and the elicitation of such history depends on the temperament both of the inquirer and of those under examination. As of interest in this connection I may mention the unpublished result obtained in conjunction with Dr. Louise McIlroy at the Gynaecological Out-patient Department of the Royal Infirmary, Glasgow. Prior to this investigation Dr. McIlroy was of opinion that syphilis was numerically comparatively unimportant factor in the cases coming under her observation; but the results of the Wassermann reaction shewed us that in 100 cases seeking advice for minor gynaecological ailments syphilis was undoubtedly present in 55. Positive reactions were obtained in 49 of the cases and in children of 6 other women who themselves reacted negatively. The precision of the Wassermann reaction

is remarkable and must be especially striking to those who have experienced the fallibility of ordinary clinical methods when controlled by post-mortem examinations. One especial merit of the Wassermann reaction when scientifically carried out is that the error of obtaining a positive result in a case which is not syphilitic is almost negligible, one might well say impossible in view of the results detailed in Sections I and II.

To mention only briefly some of the principal results obtained - it has been shewn for the first time that a great proportion of cases of cardiac disease in young infants are due to syphilis and that these almost always die within the first year and so escape clinical observation in the Hospitals. Comparatively insignificant but persistent conditions of eczema of the face have been found to be syphilitic in origin. Mental deficiency has been proved, by the examination of whole families as well as of the affected members, to be syphilitic in between 40 and 50 per cent. of cases - a much larger proportion than has hitherto been recognised. In the case of a large series of prostitutes it has been found syphilization follows almost at once, since of 104 cases, all between 14 and 18 years of age, every one reacted positively in the Wassermann test. The early and universal infection of this class follows quite irrespective of social limitations since half of the number examined were resident in the most fashionable quarters of Glasgow.

Such results seem to constitute a claim of the greatest urgency for the recognition of the existence of syphilis by the State.



**PART ONE.**

**SECTION I.**

**SELECTED CASES.**

## SECTION I -

Selected cases.  
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Since the discovery of the reaction introduced by Wassermann, Neisser and Bruck over 6 years ago, it has been shewn that a positive result is practically specific for syphilitic infection, apart from leprosy, framboesia, and perhaps trypanosomiasis, which do not occur in this country. The value of the Wassermann reaction depends on two factors - (a) specificity and (b) delicacy. It is now generally admitted that positive results are obtained in over 95% of cases suffering from secondary syphilis, 75% of tertiary syphilis and 50% of latent syphilis. In the case of latent syphilis in some forms probably these figures are too low. For example, the parents of William W., a case of paroxysmal haemoglobinuria, appear quite healthy. Both parents and the child however give a positive Wassermann reaction, as well as a younger sister who also appears healthy. In the case of Lizzie J., a case of paroxysmal haemoglobinuria, who gave a negative reaction, an older sister, who appears healthy but shows evidence of congenital syphilis, gives a positive Wassermann reaction. Thus Browning and Watson have shewn the value of the reaction in cases of latent syphilis and paroxysmal haemoglobinuria.

The general object of the present work was to determine the incidence of congenital syphilis among children and to examine how far the characters of the disease did or did not agree with the signs which are admitted clinically to be of syphilitic character. The material for such an examination was yielded by those attending the out-patient department of the Royal Hospital for Sick Children,

Glasgow, the Central Dispensary, Glasgow, (cases attending Dr. W. R. Jack, to whom I am indebted for permission to make use of the material) and a number of normal country children from Ayrshire. Thus the great majority of the children belong to the poorest class of Glasgow. Accordingly it was necessary in the first instance to ascertain how far the Wassermann reaction was an independent phenomenon. That is to say, it was essential to make use of all the means at one's disposal to find out whether the result of the Wassermann reaction was, or was not, in agreement with other facts. Such other modes of examination comprised, (1) clinical examination of the patient. (2) Examination of other members of the family. (3) Examination into the family history, and (4) The Wassermann reaction in the patient in every case and frequently in some other member of the family. It was clear that if the Wassermann reaction should give statistics entirely at variance with those other data then its reliability as a sign of syphilis could <sup>be</sup> gravely questioned. On the other hand, when, as will appear was the case, a correlation of the result of the Wassermann reaction and of the other data shewed that in the great majority of instances a positive Wassermann reaction was accompanied by some suspicious circumstance, then a sound basis for the value of the Wassermann reaction was secured. Thus, for example, a minor manifestation of disease, such as a recurrent facial eczema, might not be significant of syphilis, and in the past has not been regarded clinically as syphilis. The presence of a positive Wassermann reaction in the greater number of such cases was still liable to doubt in the minds of those not convinced that a positive Wassermann reaction could have but one significance. When it was found, however,

that the family history revealed frequently the occurrence of repeated abortions in the mothers of the children and when it was found that the mothers also reacted positively then the accumulation of evidence made it quite clear that in eczema oris one was dealing with syphilis. The great positive value of the Wassermann reaction in the patient himself, however, comes in here. Abortions in the mother do not necessarily prove that a child of that mother is syphilitic; but the occurrence of a positive Wassermann reaction in the child affords absolute proof.

In order to prove the value of a negative Wassermann reaction, as excluding syphilis when taken along with entire absence of suspicious events in the personal and family history, in the first section (I), I selected the children by excluding all those in which there was (1) positive syphilitic history, (2) positive signs or history of positive signs in the patient, or other members of the family (including the parents), and (3) a history of abortions, miscarriages in the mother, or of premature births or suspicious deaths in infancy. Children suffering from general diseases attending the Sick Children's Dispensary were chosen and of the 103 cases examined all gave a negative Wassermann reaction.

In six instances the Wassermann reaction was done on other members of the family and with negative results.

These results contrast with those found in Section II, in which the specimens of blood were taken indiscriminately. Of the 306 town children in which there were no clinical signs and in which no history was taken before carrying out the Wassermann

reactions, it was found that 248 reacted negatively, 16 positively, while 42 were doubtful. Of the 16 positive cases the history and clinical examination elicited positive confirmation in 11 instances, while in the 42 doubtful results the suspicion was confirmed in other ways in half the cases examined.

**Foot Note.-**

The date opposite the name of each patient corresponds to the date in which the Wassermann reaction was carried out, as shown in Section XI.

- June 3. 12. John G., aged 1. Gastro-enteritis. Father alive and well. Mother drinks to excess: takes little interest in her children or household affairs: seven pregnancies. Four children died in infancy - diarrhoea and vomiting and one died of pneumonia. The two living get unsuitable food and both have gastro-intestinal disturbance. Jane, aged 3, is much emaciated and anaemic. Wassermann reaction is negative. John is in poor health: motions are frequent, offensive and of a bad colour. Wassermann reaction is negative.
- June 3. 12. Willie A., aged  $\frac{5}{52}$ . Naevus. Father alive and well. Mother alive and well. Four pregnancies. First, boy, aged 6, healthy. Second, boy, aged 4, healthy. Third boy, aged  $1\frac{11}{12}$  healthy. Fourth, Willie. A fine healthy boy who has a large naevus on the back. There is no history of specific disease. Wassermann reaction is negative.
- June 3. 12. Maggie D., aged 2. Cervical abscess. Father alive and drinks to excess. Mother drinks to excess and smokes four ounces of black tobacco every week. Maggie is the first child, has crusts on her head which is verminous. There is no suspicion of specific disease. Wassermann reaction is negative.
- June 3. 12. Sarah S., aged  $\frac{9}{12}$ . Vomiting. Parents alive and well. This is the first child: she gets too many sweets. Wassermann reaction is negative.
- June 3. 12. Mina T., aged 11. Bruised arm. Father and mother are alive and well: three sisters and nine brothers alive and well. Patient was sliding on a stair-railing, when she

fell over but escaped with a bruised arm. A skiagram was taken at the Royal Infirmary but no fracture is shown.

Wassermann reaction is negative.

June 3. 12. George H., aged 3. Broncho-pneumonia. Father alive and well. Mother alive and well. Two pregnancies. First, George who appears very ill. Wassermann reaction is negative. Second, Maggie, aged  $\frac{6}{12}$ , healthy. Wassermann reaction is negative.

June 3. 12. Hannah W., aged  $\frac{2}{52}$ . Ovarian hernia. Father alive and well. Mother alive and well. Three pregnancies. First, Joan, aged 5, healthy. Wassermann reaction is negative. Second, Martha, aged  $2\frac{1}{2}$ , healthy. Wassermann reaction is negative. Third, Hannah, who seems a healthy child except for the hernia. Wassermann reaction is negative.

June 4. 12. Annie C., aged 3. Abscess of right foot. Parents alive and well. One brother, aged  $\frac{10}{12}$ , healthy. No evidence of specific disease in mother nor child. Wassermann reaction is negative.

June 4. 12. Jane W., aged 3. Measles. Parents alive and well. No evidence of specific disease in mother nor child. Wassermann reaction is negative.

June 4. 12. Isa W., aged 2. Diarrhoea and vomiting. Parents alive and well. Child has the "run of the house". Slight rickets. No evidence of specific disease. Wassermann reaction is negative.

June 4. 12. James M., aged 4. Bronchitis. Parents alive and well. Child has evidence of rickets. No evidence of specific disease

in parents nor child. Wassermann reaction is negative.

June 4. 12. John M., aged 5. Diarrhoea. Parents alive and well. Mother has had four pregnancies. First, boy, aged 10, healthy. Second, boy, aged 7, healthy. Third, boy, aged 5 - the patient. Wassermann reaction is negative. Fourth, boy, aged  $2\frac{1}{2}$ , healthy. There is no evidence of specific disease in any member of the family.

June 4. 12. Susan P., aged 7. Rheumatism. Father alive and well. Mother has had three attacks of acute rheumatism: she has mitral stenosis and some bronchitis. There have been six pregnancies. First, girl, aged 17, healthy. Second, boy, aged 15, healthy. Third, boy, aged 13, healthy. Fourth, girl, aged 11, healthy. Fifth, girl, aged 9, had chorea about one year ago. Sixth is Susan: there is no evidence of endocarditis. Wassermann reaction is negative. There is no suggestion of specific disease in any member of the family.

June 4. 12. Hugh B., aged 13. Rheumatism. Father and mother alive and well. Patient is an only child. He had a severe attack of chorea one year ago. The mother states that he has had growing pains ever since. There is a loud blowing murmur in the mitral area. There is no evidence of specific disease in the family. Wassermann reaction is negative.

June 4. 12. Joshua A., aged 12. Rheumatism. Father and mother alive and well. Three pregnancies. First, Joshua. Rheumatic pains began one week ago. No cardiac murmur. Tenderness over right knee, left wrist, and left elbow. Wassermann reaction is negative. Second, girl, aged  $9\frac{1}{2}$ , healthy. Third, girl, aged 6, healthy. There is no evidence of specific disease



in any member of the family.

June 4. 12. Annie A., aged 10. Pleurisy. Father died of phthisis, aged 24. Mother alive and well. Patient is the only child and has had recurrent attacks of pleurisy. There is nothing to suggest specific disease. Wassermann reaction is negative.

June 4. 12. Jane T., aged 2. Rickets. Parents alive and well. Jane is the only child, is allowed too much tea and food at irregular intervals. Mother is lame and has little desire to take the child out. Parents live in a single apartment which is small, badly ventilated and not kept as clean as it might be. There is no evidence of specific disease. Wassermann reaction is negative.

June 11. 12. Jemima P., aged 3. Rickets. Parents alive and well. Two pregnancies. First, Jemima who has frequent attacks of diarrhoea and vomiting. Wassermann reaction is negative. Second, a child of six months, healthy. There is no evidence of specific disease.

June 11. 12. Willie P., aged 13. Nephritis. Parents alive and well. Five pregnancies. First, boy, aged 19, healthy. Second boy, aged 17, healthy. Third, boy, aged 15, healthy. Fourth, Willie. There is a possibility of his having had scarlatina about six weeks ago, but the history is somewhat indefinite. There is some oedema and the urine contains albumen. Wassermann reaction is negative. Fifth, Annie, aged 11, who is suffering from a mild attack of chorea. There is no evidence of specific disease. Wassermann reaction is negative.

June 11. 12. Andrew W., aged  $\frac{2}{12}$ . Convulsions. Father alive and well. Mother alive and well. Three pregnancies. First, boy, aged 6, healthy. Second, boy, aged 3, healthy. Third, Andrew. He is bottle-fed and he had his first fit yesterday. It appears to be entirely due to gastric disturbance. Wassermann reaction is negative.

June 11. 12. Wallace O., aged 6. Epilepsy. His father drinks to excess but gives a negative history. Mother is alive and well. Four pregnancies. First, girl, aged 10, healthy. Second, girl, aged 9, healthy. Third, boy, aged  $7\frac{1}{2}$ , healthy. Fourth is patient. Fits began at the age of three years and occur at long intervals. There is nothing to suggest specific disease in any member of the family. Wassermann reaction is negative.

June 11. 12. Alexander A., aged 4. Tetany. Father alive and well. Mother is troubled with hyperchlorhydria from time to time, especially after eating fruit. Two pregnancies. First, Alexander, who has had tetany for a week. Wassermann reaction is negative. Second, boy, aged 1, healthy. There is no evidence of specific disease in the family.

June 11. 12. Jean S., aged 3. Rickets. Father alive and well. Mother alive and well. Three pregnancies. First, boy, aged 5, healthy. Second, Jean, who has anterior curving of both tibiae. There is much sweating of the head at night. Occasional diarrhoea. Wassermann reaction is negative. Third, girl, aged  $\frac{10}{12}$ , healthy.

- June 11. 12. Robert B., aged 2. Tubercular abscess. Father alive and well. Mother has had Tubercular glands in the neck excised on three occasions at the Royal Infirmary. Two pregnancies. First, John, aged 4, who has a patch of lupus on the face. It has been treated for six months but so far there has been no improvement. Wassermann reaction is negative. Second, Robert, who is pale, has long eyelashes and has a large tubercular abscess. There is no suspicion of specific disease. Wassermann reaction is negative.
- June 11. 12. Maggie S., aged  $2\frac{1}{2}$ , strabismus. Father died of phthisis. Mother alive and well. Patient is the first child: she has always been delicate since birth and strabismus came on gradually. Wassermann reaction is negative.
- June 11. 12. Annie S., aged 3. Staphyloma. Father alive and well. Mother had a vaginal discharge before the birth of the patient, and since then she has had acute attacks of pain in the pelvis from time to time. There is no evidence of specific disease in parents or child. Wassermann reaction is negative.
- June 11. 12. Henry W., aged 4. Gastro-enteritis. Father alive and well. Mother alive and well. Four pregnancies. First, boy, aged 7, healthy. Second, boy, aged  $5\frac{1}{2}$ , healthy. Third, Henry, whose attack began four days ago after eating unripe apples. Wassermann reaction is negative. Fourth, girl, aged 2, healthy.
- June 11. 12. Ella H., aged 3, Ophthalmia. Father has an attack of gonorrhoea. Mother is healthy. Two pregnancies. First is Ella, whose condition is serious. On microscopic examination a diplococcus was found and on growth the culture corresponded

to that of the gonococcus. Wassermann reaction is negative.

Second, boy, aged  $\frac{6}{12}$ , healthy.

June 11. 12. Nellie F., aged  $\frac{2}{12}$ . Convulsions. Father and Mother take alcohol to great excess. Four pregnancies. First, Thomas, aged 6, who seems in good health. Wassermann reaction is negative. Second, James, aged 3, He has psoriasis all over the body. Wassermann reaction is negative. Third, Robert, aged  $1\frac{1}{2}$ . There is a seborrhoeic dermatitis of head and buttocks. Wassermann reaction is negative. Fourth, Nellie, She is not well looked after: is bottle fed: the milk is not diluted and the bottle is not kept clean. There is nothing to suggest specific disease. Wassermann reaction is negative.

June 11. 12. James F., aged 8. Phthisis pulmonalis. Father alive and well. Mother died of phthisis soon after patient was born. There is no evidence of specific disease in Father or son. Wassermann reaction is negative.

June 15. 12. Helen L., aged 1. Diarrhoea and vomiting. Parents alive and well. Child gets improper food. She is the first child and the Wassermann reaction is negative.

June 15. 12. Mary McC., aged 2. Diarrhoea and vomiting. Father alive and well. Mother alive and well. Two pregnancies. First, girl, aged 4, healthy. Second is patient who gets unsuitable food. Wassermann reaction is negative.

June 15. 12. Lizzie F., aged  $\frac{10}{12}$ . Diarrhoea and vomiting. Father alive and well. Mother alive and well. This is the first child. Improperly feed. Wassermann reaction is negative.

- June 15. 12. Alexander H., aged 7. Cut on forehead. Father died of nephritis. Mother alive and well. Seven pregnancies. First, boy, aged 19, healthy. Second, boy, aged 17, healthy. Third, girl, aged 15, healthy. Fourth, boy, aged 12, healthy. Fifth, girl, aged  $9\frac{1}{2}$ , healthy. Sixth is patient: has always been healthy. Wassermann reaction is negative. Seventh, girl, aged 4, healthy. There is no suspicion of specific disease in any member of the family.
- June 15. 12. Bella W., aged 2. Vomiting. Father alive and well. Mother alive and well. Two pregnancies. First, girl, aged 5, healthy. Second is Bella. Improper feeding. Wassermann reaction is negative.
- June 15. 12. Charlotte W., aged 2. Malnutrition. Father alive and well. Mother alive and well. Four pregnancies. First, boy, aged 10, healthy. Second, girl, aged 7, healthy. Third, girl, aged 5, healthy. Fourth is patient. She gets unsuitable food and frequently vomits. Wassermann reaction is negative.
- June 15. 12. Lizzie W., aged 4. Genu Valgum. Father alive and well. Mother alive and well. Four pregnancies. First, girl, aged 6, healthy. Second, girl, aged 5, healthy. Third is patient. Signs of rickets. Wassermann reaction is negative. Fourth, girl, aged  $2\frac{1}{2}$ , healthy.
- June 15. 12. Helen McC., aged  $6\frac{1}{12}$ . Marasmus. Father alive and well. Mother alive and well. Two pregnancies. First, girl, aged 3, rickets. Second, Helen, she has frequent attacks of diarrhoea. Wassermann reaction is negative.

- June 15. 12. Willie J., aged  $\frac{1}{12}$ . Swelling of neck. Father alive and well. Mother alive and well. Patient is the first child: forceps used at birth. Swelling seems to be due to a haematoma in the sternomastoid muscle. No suspicion of syphilis. Wassermann reaction is negative.
- June 15. 12. Fred D., aged  $\frac{10}{12}$ . Vomiting. Father alive and well. Mother alive and well. Patient is the first child. Improper feeding. Wassermann reaction is negative.
- June 15. 12. Grace L., aged  $1\frac{1}{2}$ . Whooping cough. Father alive and well. Mother alive and well. Five pregnancies. First, girl, aged 10, healthy. Second, girl, aged 8, healthy. Third, boy, aged 5, healthy Whooping cough. Fourth, boy, aged 3, Whooping cough. Fifth, Grace. Wassermann reaction is negative.
- June 15. 12. Agnes P., aged  $2\frac{1}{2}$ . Bruise of right elbow. Father alive and well. Mother drinks to excess, and one night last week she accidentally knocked down the child. Patient is the only child of the marriage. A skiagram gives a negative result. Wassermann reaction is negative.
- June 15. 12. William McS., aged 1. Adenoids. Father alive and well. Mother alive and well. Three pregnancies. First, boy, aged 6, healthy. Second, girl, aged 4, healthy. Third is patient. He is a mouth breather. Wassermann reaction is negative.
- June 15. 12. Thomas T., aged 11. Abscess of foot. Father alive and well. Mother died of pneumonia. Two pregnancies. First is patient. Wassermann reaction is negative. Second, boy, aged 7, healthy.
- June 15. 12. Harriet W., aged 10. Vaginitis. Father alive and well. Mother alive and well. Seven pregnancies. First, Harriett.

- I obtained a culture which corresponded with the characters of the gonococcus. Wassermann reaction is negative. Second, boy, aged 8, healthy. Third, boy, aged 6, healthy. Fourth, boy, aged 4, healthy. Fifth, girl, aged 3, healthy. Sixth, girl, aged 2, healthy. Seventh, boy, aged 4 months, healthy.
- June 15. 12. George H., aged 6. Bronchitis. Father alive and well. Mother alive and well. Two pregnancies. First, George, Wassermann reaction is negative. Second, boy, aged  $2\frac{1}{2}$ , healthy.
- June 15. 12. Olive H., aged 5. Burn on neck. Father alive and well. Mother accidentally pushed the girl against the grate. Wassermann reaction is negative in the child. Second, boy, aged 3, healthy. Third, girl, aged 6 months, healthy.
- June 15. 12. Sarah S., aged 9, Bruised finger. Father alive and well. Mother alive and well. Five pregnancies. First, Sarah, Wassermann reaction is negative. Second, boy, aged 7, healthy. Third, girl, aged 5, healthy. Fourth, girl, aged 3, healthy. Fifth, girl, aged  $1\frac{1}{12}$ , healthy.
- June 15. 12. Martha McG., aged 5. Sprained ankle. Father alive and well. Mother alive and well. Eight pregnancies. First boy, aged 19, healthy. Second, girl, aged 16, healthy. Third, girl, aged 15, healthy. Fourth, girl, aged 13, healthy. Fifth, boy, aged 10, healthy. Sixth, girl, aged 8, healthy. Seventh, girl, aged  $6\frac{1}{2}$ , healthy. Eighth, is patient, who fell from a wall. Wassermann reaction is negative.
- June 17. 12. Rachel McC., aged 11. Tinea tonsurans. Father alive and well. Mother died of phthisis. First is patient. Wassermann reaction is negative. Second, girl, aged 8, healthy.

- Third, girl, aged 5, healthy. Fourth, boy, aged 2, healthy.
- June 17. 12. Charlie H., aged 6. Septic finger. Father alive and well. Mother died at the birth of patient (forceps were used) Father shows no evidence of syphilis. Wassermann reaction is negative in patient.
- June 17. 12. Fred W., aged 10. Enteritis. Father alive and well. Mother alive and well. Four pregnancies. First, girl, aged 13, healthy. Second, Fred, who has been eating unripe fruit. Wassermann reaction is negative. Third, boy, aged  $6\frac{1}{2}$ , healthy. Fourth, girl, aged  $2\frac{1}{2}$ , healthy.
- June 17. 12. Mary S., aged 1. Vomiting. Father alive and well. Mother alive and well. Only child: improperly fed. Wassermann reaction is negative.
- June 17. 12. John B., aged 12. Fracture of rib. Father alive and well. Mother alive and well. Three pregnancies. First, is patient, who fell from an apple tree. Wassermann reaction is negative. Second, boy, aged 9, healthy. Third, boy, aged  $5\frac{1}{2}$ , healthy.
- June 17. 12. Robert A., aged 2. Jaundice. Father alive and well. Mother alive and well. Patient is the first child. He has been treated for some weeks for gastro-intestinal catarrh. Jaundice developed about a week ago. Wassermann reaction is negative.
- June 17. 12. John C., aged 11. Epistaxis. Father alive and well. Mother has had three attacks of acute rheumatism. Three pregnancies. First, John, who has had frequent attacks of epistaxis for the past 2 years. Wassermann reaction is negative



- Second girl, aged 6, healthy. Third, girl, aged 1, healthy.
- June 17. 12. Fred L., aged 9. Paronychia. Father alive and well. Mother alive and well. Six pregnancies. First, boy, aged 12, healthy. Second, Fred, Wassermann reaction is negative. Third, boy, aged 7, healthy. Fourth, boy, aged 5, healthy. Fifth, girl, aged 3, healthy. Sixth, girl, aged 6 months, healthy.
- June 17. 12. John S., aged 7. Bronchitis. Father alive and well. Mother alive and well. Three pregnancies. First, John. Wassermann reaction is negative. Second, boy, aged 4, healthy. Third, boy, aged 8 months, healthy.
- June 17. 12. Robert W., aged  $\frac{6}{12}$ . Improper feeding. Father alive and well. Mother alive and well. Only child: badly nourished: frequent vomiting and diarrhoea. Wassermann reaction is negative.
- June 17. 12. Thomas P., aged 11. Scabies. Father alive and well. Mother has scabies. Four pregnancies. First, patient. Wassermann reaction is negative. Second, boy, aged 7, scabies. Third, girl, aged 3, scabies. Fourth, girl, healthy.
- June 17. 12. Robert C., aged 9. Cut foot. Father alive and well. Mother is anaemic. Five pregnancies. First is patient. Wassermann reaction is negative. Second, boy, aged 7, healthy. Third, boy, aged 5, healthy. Fourth, boy, aged  $2\frac{1}{2}$ , healthy. Fifth, boy, aged 8 months, healthy.
- June 17. 12. A. P. (Male). aged  $\frac{3}{12}$ . Vomiting. Father is an Italian. Mother alive and well. Only child. Fed too frequently. Wassermann reaction is negative.

- June 17. 12. Peter McB., aged 4. Scald on chest. Father alive and well. Mother alive and well. Two pregnancies. First, Peter, who pulled over a kettle of boiling water. Wassermann reaction is negative. Second, boy, aged 1, healthy.
- June 17. 12. L. L. (Female), aged 1. Gastro-enteritis. Father alive and well. Mother alive and well. Two pregnancies. First, girl, aged 3, healthy. Second, is patient. Signs of rickets. Wassermann reaction is negative.
- June 17. 12. John N., aged 4. Urethral calculus. Father alive and well. Mother alive and well. Three pregnancies. First is John. Wassermann reaction is negative. Second, boy, aged  $2\frac{1}{2}$ , healthy. Third, boy, aged  $1\frac{1}{2}$ , healthy.
- June 19. 12. Reuben C., aged  $2\frac{1}{2}$ . Rickets. Father alive and well. Mother alive and well. Patient is first child. Wassermann reaction is negative.
- June 19. 12. Mary C., aged 5. Osteomyelitis of fibula. Father alive and well. Mother alive and well. Three pregnancies. Two sisters alive and well. Wassermann reaction is negative.
- June 28. 12. Catherine M., aged 8. Raynaud's disease. Father alive and well. Mother alive and well. Parents show no sign of syphilis. This is the only child of the marriage. Wassermann reaction is negative.
- June 28. 12. Lily G., aged 10. Tubercular abscess. Father died of phthisis. Mother alive and well. Patient is an only child. Her left eye was removed 2 years ago. No evidence of syphilis in Mother or child. Wassermann reaction is negative.
- June 28. 12. Isa A., aged 6. Tubercular sinus. Parents are

dead. Child lives with an aunt from whom a negative history was obtained. Wassermann reaction is negative.

June 28. 12. Robert S., aged 12. Painful scar on foot. Parents alive and well. Patient has nothing suggestive of syphilis. Wassermann reaction is negative.

July 3. 12. Janet O., aged 4. Nephritis. Father alive and well. Mother alive and well. Two pregnancies. First, Janet, peeling of skin, ? Scarlet. Wassermann reaction is negative. Second, boy, aged 1, healthy.

July 3. 12. Lizzie McD., aged 10. Rickets. Father alive and well. Mother alive and well. There is marked curving of femora and tibiae. Wassermann reaction is negative.

July 3. 12. James R., aged 3. Malnutrition. Father alive and well. Mother alive and well. Three pregnancies. First, girl, aged 5, healthy. Second, James: heart and lungs normal: no diarrhoea: no vomiting: much emaciated. Parents seem quite healthy. Wassermann reaction is negative. Third, girl, aged 1, healthy.

July 3. 12. Hugh McB., aged 4. Whooping cough. Father alive and well. Mother alive and well. Two pregnancies. First is patient. Wassermann reaction is negative. Second, boy, aged  $1\frac{1}{2}$ , whooping cough.

July 3. 12. Martha A., aged 2. Measles. Father alive and well. Mother has an attack of measles. Only child. Wassermann reaction is negative.

July 10. 12. Joan H.T., aged 4. Cut cheek. Father alive and well. Mother alive and well. Two pregnancies. First is

patient. Wassermann reaction is negative. Second, girl, aged  $1\frac{1}{12}$ , healthy.

July 10. 12. Mina C., aged 6. Diarrhoea and vomiting. Father alive and well. Mother alive and well. Only child. Too frequent feeding. Wassermann reaction is negative.

July 10. 12. Helen T., aged 3. Carious teeth. Father alive and well. Mother alive and well. Four pregnancies. First, boy, aged 6, healthy. Second, girl, aged  $4\frac{1}{2}$ , healthy. Third is Helen: suffers from toothache. Wassermann reaction is negative. Fourth, girl, aged  $1\frac{1}{12}$ , healthy.

July 10. 12. James F., aged 5. Tuberculous dactylitis. Father alive and well. Mother has had repeated attacks of pleurisy. Three pregnancies. First, James, metacarpal of left thumb and first phalanx are affected. Wassermann reaction is negative. Second, boy, aged 3, healthy. Third, girl, aged 1, bronchitis.

July 12. 12. David A., aged 8. Tuberculous ankle. Father alive and well. Mother died of phtthisis. Patient is the only child. Wassermann reaction is negative.

July 12. 12. Donald McN., aged 11. Achondroplasia. Patient is an orphan but a negative history was obtained. He had the thymus excised some time ago. Growth much stunted, but no mental defect. Wassermann reaction is negative.

July 17. 12. Susan L., aged 7. Bruised finger. Father drinks to excess. Mother is alive and well. Four pregnancies. First is patient. Wassermann reaction is negative. Second, boy, aged 5, healthy. Third, boy, aged  $2\frac{1}{2}$ , healthy. Fourth, girl, aged  $\frac{5}{12}$ , healthy.

- July 17. 12. Mary F., aged 3. Diarrhoea and vomiting. Father alive and well. Mother has phthisis. Two pregnancies. First, Mary, who is given too many sweets. Wassermann reaction is negative. Second, boy, aged  $7/12$ , healthy.
- July 17. 12. Jane H., aged 6. Furunculosis. Father died of diabetes. Mother alive and well. Only child: urine normal. *Staphylococcus aureus* was obtained in pure culture. Wassermann reaction is negative.
- July 17. 12. Bridget C., aged 11. Tubercular hip. Father died of phthisis. Mother is alive and well. Patient is an only child. Wassermann reaction is negative.
- July 17. 12. Elizabeth H., aged 4. Syndactylitis. Father alive and well. One brother had same condition as child: also his grandmother is said to have had webbed toes. Mother alive and well. Three pregnancies. First, boy, aged  $6\frac{1}{2}$ , healthy. Second is patient. Second and third phalanges of left hand united, from base to tip. Wassermann reaction is negative. Third, girl, aged  $1\frac{1}{2}$ , healthy.
- July 17. 12. Sarah C., aged 2. Otitis media. Father alive and well. Mother alive and well. Six pregnancies. First, boy, aged 12, healthy. Second, girl, aged 10, measles. Third, girl, aged 8, healthy. Fourth, girl, aged 6, healthy. Fifth, boy, aged 4, had measles. Sixth, Sarah, had measles four weeks ago. Ear commenced to discharge 10 days ago: trace of albumen in the urine. Wassermann reaction is negative.
- July 17. 12. John C., aged 8. ? Phthisis/pulmonalis. Father died of phthisis. Mother in poor health, ? phthisis. Four

pregnancies. First, boy, aged 16, very tall and thin. Second, boy, aged 13, healthy. Third, girl, aged  $10\frac{1}{2}$ , healthy. Fourth John. Thin and poorly nourished: long eyelashes. Percussion note seems equal on the two sides. Faint crackling rales in right supraspinous region. Wassermann reaction is negative.

July 17. 12. Bella R., aged 6. Naevus of forehead. Father alive and well. Mother alive and well. Four pregnancies. First, boy, aged 8, healthy. Second, patient. Wassermann reaction is negative. Third, boy, aged 3, healthy. Fourth, boy, aged  $\frac{9}{12}$ . Evidence of rickets.

July 17. 12. George W., aged 3. R. Inguinal hernia. Father alive and well. Mother alive and well. Two pregnancies. First, George, who has a tight phimosis. Wassermann reaction is negative. Second, boy, aged  $\frac{6}{12}$ , healthy.

July 24. 12. Margaret McA., aged 13. Scarlatina. Patient was admitted to Ruchill Fever Hospital two weeks ago. Her serum was used as a negative control for the next two cases. Donath-Landsteiner reaction is negative. Wassermann reaction is negative.

July 24. 12. Robert B., aged 4. Scarlatinal nephritis. Admitted to Ruchill Fever Hospital on June 26. 1912. Illness of three weeks duration: desquamating on admission: no oedema: skin very dry. Urine - smoky. Blood and albumen present. July 4.12. Small quantity of albumen present: no blood. July 9.12. Blood present. July 11.12. No blood: trace albumen. August 8.12. Trace of albumen. An Eason, Donath-Landsteiner reaction was negative. Wassermann reaction is negative.

July 24. 12. Mary M., aged 10. Glomerular nephritis. Admitted to Ruchill Fever Hospital on April 11. 1912 with faucial diphtheria. April 20. 1912 Serum rash. May 13. 1912. Trace of albumen in the urine. May 22. 1912. Much blood in the urine. Blood and albumen intermittently present for weeks. July 29. 1912. Patient dismissed. An Eason, Donath-Landsteiner reaction was negative. Wassermann reaction is negative. I am indebted to Dr. Brownlee for the last three cases which were selected by him for me to carry out the reactions of Eason & Co.

**PART ONE.**

**SECTION II.**

**UNSELECTED CASES.**

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...of 101 children

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## SECTION II -

Unselected cases.  
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No systematic investigation into the prevalence of syphilis, controlled by the Wassermann reaction has been made in this country, hence it occurred to me that such an examination would produce some interesting results. The investigation was carried out on children obtained from three sources:- (1) Those attending the Dispensary of the Sick Children's Hospital, (2) Those attending the Central Dispensary, and (3) Children who were attending a country school in Ayrshire, and who were in apparently normal health. 464 cases in all were thus taken at random. 69 of these, however, were country children and a negative Wassermann reaction was obtained in each case. In the case of these country children every member of the family was examined with a like result, and in no instance was there suspicion aroused either in connection with the personal or family history or clinical examination of the patient.

Churchill, 1912, has made an examination of 101 children admitted to an American hospital - children who were admitted for diseases other than syphilis. The ages ranged from  $\frac{1}{12}$  to 12 years. Of the 101 he obtained a positive Wassermann reaction in 39 cases. Of these 39 cases suspicion of syphilis existed in 9 on account of family and personal history and clinical symptoms. Other 9 were suspicious on account of clinical appearances and family and personal histories. In 6 more the clinical appearances alone suggested syphilis and in 5 on account of family and personal histories only. In 6 syphilis could not be excluded with certainty and in 4 the Wassermann reaction

was the only evidence. Of the 62 negative cases 20 gave a suspicious family history. Thus of the 101 cases syphilis could be excluded with certainty in 42.

I have examined 464 cases taken at random. Of that number 342 gave a negative reaction, 80 were positive and 42 were doubtful. Of the 342 negative cases 317 were free from suspicion (69 of these however were country children) and 25 had either positive signs or a positive personal, or family, history. Of the 42 doubtful cases there was a clinical manifestation or a positive personal, or family, history in 16, a history of abortions in 3, and suspicious deaths in other two cases, leaving 21 doubtful cases in which syphilis could not be traced.

Therefore, excluding the normal country cases, and dealing with 395 cases attending hospital, 248 are free from syphilis, (1) according to the family, and personal, history, (2) clinical examination, and (3) the Wassermann reaction. In half of the doubtful cases, that is, in 21, the Wassermann reaction is the only suspicious factor present. In 80 cases with a positive Wassermann reaction, 16 were apparently normal at the time of examination but in only 6 instances was the Wassermann reaction the only evidence of syphilis. In 25 cases the Wassermann reaction is negative, but there is positive clinical and other evidence. In 21 doubtfuls there is other evidence. Therefore, there is evidence of syphilis in 126 cases. Briefly put, of the 395 cases there is evidence of syphilis in 126, 21 are doubtful and 248 are free from syphilis.

Thus of 464 cases examined there was evidence of syphilis in 27% but of 395 children attending hospital there is evidence of

syphilis in 31.9%.

In Churchill's 101 cases attending hospital there was evidence of syphilis (apart from the suspicious cases) in 38.6%.

Foot note. For the significance of doubtful reactions see section on Wassermann reactions.

PART ONE.

SECTION II.

UNSELECTED CASES.

**Subsection (a) Negative Town cases  
Without suspicion.**

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- July 17. 12. John D., aged 4. Strabismus. Father alive and well. Mother alive and well. Five pregnancies. First, girl, aged 10, well. Second, girl, aged 8, well. Third, boy, aged 6, well. Fourth, John, Wassermann reaction is negative. Fifth, boy, aged  $1\frac{1}{2}$ , well.
- July 17. 12. Hugh T., aged 5. Fracture of R. clavicle. Father alive and well. Mother alive and well. Three pregnancies. First, Hugh, Wassermann reaction is negative. Second, boy, aged  $2\frac{1}{2}$ , healthy. Third, girl, aged  $\frac{4}{12}$ , healthy.
- July 17. 12. Maggie H., aged 11. T.B. glands of neck. Father has several scars on neck. Mother died of phthisis seven years ago. Patient is an only child. Wassermann reaction is negative.
- July 17. 12. John S., aged 13. Dislocation of thumb. Father alive and well. Mother takes alcohol to excess and has left husband. Two pregnancies. First, John, Wassermann reaction is negative. Second, boy, aged 9, healthy.
- July 17. 12. Bella T., aged 11. Septic finger. Father alive and well. Mother unknown. Wassermann reaction negative in patient.
- July 23. 12. James G., aged 4. T.B. glands. Father drinks to excess. Mother has several scars on left side of neck. Two pregnancies. First, James, Wassermann reaction is negative. Second, girl, aged  $1\frac{1}{2}$  is healthy.
- July 23. 12. Agnes B., aged 5. T.B. sinus of R. elbow. Father alive and well. Mother alive and well. Three

pregnancies. First, Agnes, whose illness began after a fall. Wassermann reaction is negative. Second, boy, aged  $2\frac{1}{2}$ , healthy. Third, boy, aged  $\frac{4}{12}$ , healthy.

July 24. 12. Andrew B., aged 1. Vomiting. Father alive and well. Mother alive and well. Only child: fed too frequently. Wassermann reaction is negative.

July 24. 12. John M., aged  $\frac{10}{12}$ . Malnutrition. Father alive and well. Mother alive and well. Two pregnancies. First, girl, aged 4, healthy. Second, John, Wassermann reaction negative.

July 24. 12. Grace L., aged 4. Broncho-pneumonia. Father died of phthisis. Mother alive and well. Three pregnancies. First, girl, aged 8, healthy. Second, boy, aged 6, healthy. Third, Grace, who has had three attacks of Broncho-pneumonia. (? Phthisis). Wassermann reaction is negative.

July 24. 12. Jean G., aged  $\frac{2}{12}$ . Wasting. Father alive and well. Mother alive and well. First child; fed too frequently with improper feed: much diarrhoea, but no vomiting. Wassermann reaction is negative.

July 24. 12. George B., aged 11. T.B. scars on neck. Father died of Phthisis. Mother alive and well. Seven pregnancies. First, girl, aged 16, Anaemia. Second, girl, aged 14, Chorea. Third, girl, aged 12, healthy. Fourth, George, Wassermann reaction is negative. Fifth, girl, aged 9, healthy. Sixth, boy, aged 6, healthy. Seventh, boy, aged  $2\frac{1}{2}$ , healthy.

- July 30. 12. Hannah R., aged 9. Contracture of Fingers. Father alive and well. Mother alive and well. Three pregnancies. First, Hannah, who had fingers burned: tendons were involved. Wassermann reaction is negative. Second, boy, aged 5, healthy. Third, boy, aged 6 months, healthy.
- July 30. 12. Agnes B., aged  $6/12$ . Vomiting. Father alive and well. Mother alive and well. First child: too frequent feeding. Wassermann reaction is negative.
- July 30. 12. Abram McK., aged 12. Bruised Ankle. Parents alive and well: not seen. Six brothers and two sisters alive and well. Patient fell from a wall. Wassermann reaction is negative.
- July 30. 12. Hugh M., aged 11. Dislocated phalanx. Parents alive and well. Two sisters alive and well. Patient fell from a lorry. Wassermann reaction negative.
- July 30. 12. James M., aged  $6/12$ . Convulsions. Father alive and well. Mother alive and well. James is an only child and his bowels have been irregular for the past month. Liver and spleen not enlarged. Wassermann reaction is negative.
- August 1. 12. Isa R., aged 4. Rickets. Father alive and well. Mother alive and well. Two pregnancies. First, Isa. Wassermann reaction is negative. Second, girl, aged 1, healthy.

- August 1. 12. James K., aged 6. Bronchitis. Father died of phthisis. Mother very anaemic. Patient is an only child. Wassermann reaction is negative.
- August 1. 12. Jeanie McF., aged 4. T.B. glands. Father alive and well. Mother died of phthisis. Two pregnancies. First is patient. Wassermann reaction is negative. Second, Frank, aged  $1\frac{1}{2}$ , who seems healthy, Wassermann reaction is negative.
- August 2. 12. Margaret R., aged  $\frac{6}{12}$ . Malnutrition. Father not seen. Mother alive and well. Margaret is first child: fed too frequently: too much tea and indigestible food: she vomits frequently and the motions are offensive. Wassermann reaction is negative.
- August 2. 12. Ruth G., aged 9. Earache. Parents not seen, but are said to be healthy. Three sisters and one brother alive and well. Wassermann reaction is negative.
- August 2. 12. John H., aged 11. T.B. Elbow. Parents alive and well. Two brothers and three sisters alive and well. Patient is youngest. After a fall two years ago the elbow of the right side began to enlarge. The joint is involved and movement limited. There are three sinuses. Wassermann reaction is negative.
- August 2. 12. Linda M., aged 6. T.B. Abscess. Mother has three scars on neck, the right being lung has some small moist râles at the apex: she is anaemic and has a cough. Patient is the only child alive, one brother died of Broncho-pneumonia aged 2, and one sister died of acute



nephritis. But for the abscess patient seems healthy.

Wassermann reaction is negative.

August 7, 12. James J., aged  $\frac{4}{12}$ . Diarrhoea and vomiting. Father alive and well. Mother drinks to excess. Patient is an only child and not well looked after. He is bottle fed and little care is observed in the preparation of his food. Wassermann reaction is negative.

August 7, 12. Anna B., aged 4. Broncho-pneumonia. Father died after an accident. Mother is alive and well. Two pregnancies. First Anna who seems very ill. Wassermann reaction is negative. Second girl aged  $\frac{9}{12}$ , healthy.

August 7, 12. Katie O'D., aged 9. Scald. Parents alive and well: not seen. Two sisters and three brothers alive and well. One sister died of enteric fever. Patient pulled over a kettle of boiling water which ran over her right feet. Wassermann reaction is negative.

August 7, 12. Annie S., aged 3. Rickets. Father takes alcohol to excess. Mother is rachitic and her growth is stunted. Two pregnancies. First girl, delivered by forceps after prolonged labour (died half-an-hour after birth). Second, Annie, who is markedly rachitic. Wassermann reaction is negative.

August 7, 12. Isabella H., aged 12. Achondroplasia. Father is 4'11" in height. Mother is rachitic and patient was delivered by Caesarian section. She is much stunted but bright and intelligent. Wassermann reaction is negative.

August 17. 12. Charlette W., aged 7. Septic Foot. Parents alive and well; not seen. Three sisters and three brothers alive and well. Patient seems otherwise healthy.

Wassermann reaction is negative.

August 17. 12. Thomas E., aged 12. Cut finger. Parents alive and well. Two brothers and one sister alive and well. One brother died of Scarlatinal nephritis. Patient seems otherwise healthy. Wassermann reaction is negative.

August 19. 12. Patrick McC., aged 4. Rickets. Father alive and well. Mother alive and well. Three pregnancies. First, Patrick, who has Bronchitis and some gastro-intestinal catarrh, with very marked rickets. Wassermann reaction is negative. Second, boy, aged  $2\frac{1}{2}$ , healthy. Third, boy, aged 1, rickets.

August 22. 12. Marien M., aged 6. Ulcer on leg. Father alive and well. Mother alive and well. Three pregnancies. No suggestion of specific disease. First, William, aged 12, healthy. Wassermann reaction is negative. Second, Marion, Ulcer on leg seems to be tubercular. Wassermann reaction is negative. Third, Maggie, aged 1, healthy. Wassermann reaction is negative.

August 22. 12. Ewen H., aged 9. Mastoiditis (old) Father alive and well. Mother died of phthisis. Two brothers alive and well. Patient has disease of right mastoid, skin being broken and thin pus exuding. T.B. were found in the discharge. Wassermann reaction is negative.

- August 22. 12. Joe G., aged 11. Septic Heel. Parents alive and well. Two sisters and three brothers alive and well. Patient seems otherwise healthy. Wassermann reaction is negative.
- August 22. 12. Mary B., aged  $1\frac{1}{2}$ . Cervical abscess. Parents alive and well. Patient is an only child. Tonsils are enlarged. Wassermann reaction is negative.
- August 22. 12. Mary McG., aged  $2\frac{1}{2}$  Cervical abscess. Parents alive and well. An only child. Head is verminous and there are several crusts. Wassermann reaction is negative.
- August 22. 12. Lily McQ., aged 7. Blepharitis squamesa. Father died of pneumonia. Mother drinks to excess. Three pregnancies. First, Lily. Wassermann reaction is negative. Second, girl, aged 6, healthy. Third, girl, aged 4, genu valgum.
- August 22. 12. Nera H., aged 6. Blepharitis squamesa. Father in Canada. Mother died of phthisis. One sister died of meningitis. Patient seems in good general health. Wassermann reaction is negative.
- August 23. 12. Hugh W., aged 6. Chorea. Father has had two attacks of acute rheumatism; V.S. mitral murmur; some bronchitis. Mother died of phthisis. Two pregnancies. First, girl, aged 9, anaemia. Second, Hugh. No evidence of rheumatism or of cardiac disease. Wassermann reaction is negative.
- August 23. 12. Andrew B., aged  $\frac{6}{12}$ . Vomiting. Father alive and well. Mother alive and well. Two pregnancies. First,

girl, aged 3, healthy. Second, Andrew, who is bottle fed, milk undiluted. Wassermann reaction is negative.

August 23. 12. Maggie McF., aged 9. Acute rheumatism. Father alive and well. Mother has frequent epistaxis. Four pregnancies. First, girl, aged 10; has had three attacks of chorea. Second, Maggie: several joints have been affected: faint V.S. mitral murmur. Patient is very pale and the Wassermann reaction is negative. Third, girl, aged 7, healthy. Fourth, boy, aged 3, healthy.

August 23. 12. John K., aged  $2\frac{1}{2}$ . Pneumonia. Father alive and well. Mother alive and well. Three pregnancies. First, John, who has long eyelashes, has always been pale, puny, and frequently has a cough. Wassermann reaction is negative. Second, boy, aged  $1\frac{1}{2}$ , healthy. Third, boy, aged  $\frac{3}{12}$ , healthy.

August 23. 12. Mary McQ., aged  $\frac{6}{12}$ . Mumps. Parents alive and well. History negative. First child. Wassermann reaction is negative.

August 23. 12. John McN., aged 4. Whooping cough. Father alive and well. Mother alive and well. Three pregnancies. First, John, Wassermann reaction is negative. Second, boy, whooping cough. Third boy, healthy.

August 24. 12. James B., aged  $11\frac{1}{2}$ . Rheumatism, and Cardiac disease. Father alive and well. Mother has had several attacks of rheumatism: V.S. and A.S. mitral murmurs: some bronchitis. Two pregnancies. First, girl, died of scarlatinal nephritis. Second, James. He had Chorea  $3\frac{1}{2}$  years ago,

followed by acute rheumatism. Since then he has frequently had pains in the joints. He is pale, faints frequently, cardiac area enlarged: aortic regurgitation. Wassermann reaction is negative.

August 24, 12. John G., aged 1. Rickets. Father alive and well. Mother drinks to excess. Only child, bottle fed: diarrhoea from time to time: some bronchitis: cannot sit by herself. Wassermann reaction is negative.

August 24, 12. Fred A., aged 9. Rickets. Father aged 30, height 5'2 $\frac{1}{2}$ ". Negative history. Wassermann reaction is negative. Mother aged 27, 11 years married. Contracted ~~pelvic~~ (Rachitic). Six pregnancies. Wassermann reaction is negative. First, Fred, Rickets, Wassermann reaction is negative. Second, Grace, aged 7 $\frac{1}{2}$ , Rickets. Wassermann reaction is negative. Third, Adam, aged 6 $\frac{1}{2}$ , Rickets, Wassermann reaction is negative. Fourth, Christina, aged 5, Rickets, Wassermann reaction is negative. Fifth, Edward, aged 2 $\frac{1}{2}$ , Rickets, Wassermann reaction is negative. Sixth, Wallace, aged  $\frac{10}{12}$ , slight rickets, diarrhoea and vomiting. Bottle fed and too much tea. Wassermann reaction is negative.

August 24, 12. John S., aged 2. Diarrhoea and Vomiting. Father alive and well. Mother drinks to excess. First pregnancy. Child is not properly looked after: allowed run of the house. No evidence of specific disease. Wassermann reaction is negative.

- August 27. 12. John F., aged  $\frac{3}{12}$ . Pleurisy with effusion. Father alive and well. Mother died of phthisis one month ago. Two children died of Broncho-pneumonia. This is the only other child. Wassermann reaction is negative.
- August 27. 12. Minnie A., aged  $\frac{6}{12}$ . Broncho-pneumonia. Father alive and well. Mother alive and well. Two pregnancies. First girl, aged 3, healthy. Second, Minnie, who is comatose. Wassermann reaction is negative.
- August 27. 12. Marion H., aged 5. T.B. sinus of arm. Parents alive and well. Four pregnancies. No miscarriages. Patient had hemiplegia some time ago and is slowly recovering. Wassermann reaction is negative.
- August 30. 12. John F., aged 1. Diphtheria. Father alive and well. Mother alive and well. John is an only child. Very slight membrane seen: child extremely ill. From a swab almost a pure culture was seen under the microscope and a pure culture was isolated on Loeffler's serum. Wassermann reaction is negative.
- August 30. 12. John F., aged 3. Scarlatinal nephritis. Parents alive and well. Patient is the only child of the marriage. He had a slight attack of scarlatina four weeks ago. The urine contains much albumen. There is a band of oedematous tissue under the eyes. Wassermann reaction is negative.

August 30. 12. Annie H., aged 6. Mumps. Father alive and well. Mother alive and well. Three pregnancies. First, Annie. Wassermann reaction is negative. Second, boy, aged 3, healthy. Third, boy aged 6 months, healthy.

August 30. 12. John L., aged 2. Diarrhoea and vomiting. Parents alive and well. Patient is an only child and has been getting improper food. Wassermann reaction is negative.

August 30. 12. Hugh R., aged 3. Diarrhoea and vomiting. Father alive and well. Mother alive and well. Two pregnancies. First, Hugh, who is allowed "run of the house". Wassermann reaction is negative. Second, miscarriage at the seventh month (after an accident).

August 30. 12. Kate R., aged  $\frac{5}{12}$ . Marasmus. Father alive and well. Mother alive and well. Patient is the first child. Liver and spleen are not enlarged: there was sepsis of the cord after birth and since then she has been weakly. Wassermann reaction is negative.

August 30. 12. Margaret E., aged 9. Scabies. Father alive and well. Mother alive and has scabies. Four pregnancies. First, Margaret. Wassermann reaction is negative. Second, girl, aged 6, scabies. Third, girl, aged 3, scabies. Fourth, girl, aged 6 months, scabies.

August 30. 12. Rose Ann L., aged 3. Scabies. Father takes alcohol to excess. Mother is untidy and does not take an interest in her children. Two pregnancies. First, Rose, Wassermann reaction is negative. Second, Annie, aged  $1\frac{1}{2}$ .

Scabies. Wassermann reaction is negative.

August 30, 12. Jessie D., aged  $6/12$ . Pyloric Stenosis.

Father is a soldier. Mother drinks to excess. Patient is the first child of the marriage, and she weighs 9 lbs. She is much emaciated and the vomiting first commenced at the age of 6 weeks. Child died ten days afterwards when a P.M. examination confirmed the diagnosis.

Wassermann reaction is negative.

August 30, 12. John C., aged 3. Sarcoma of kidney. Father

died of chronic Bright's disease. Mother has phthisis.

Four pregnancies. First, girl, aged 9, healthy. Second, boy, aged 7, healthy. Third, boy, aged 5, healthy. Fourth, John. Diagnosis was confirmed by a P.M. examination.

Wassermann reaction is negative.

August 30, 12. Henry F., aged  $1^9/12$ . Phthisis. Mother alive and well. Father died of phthisis. Five pregnancies.

First, girl, aged 12, healthy. Second, girl, aged 10, healthy. Third, boy, died at 3 years of Hydrocephalus.

Fourth, boy, aged 4, Bronchitis. Fifth, Henry. He has had several attacks of Broncho-pneumonia. Wassermann reaction is negative.

August 30, 12. John F., aged 6. Phthisis. Father is in Canada. Mother alive and well. Three pregnancies.

First, boy, aged 11, healthy. Second, girl, aged 7, died of "decline of the bowels". Third, John. There is a patch of dullness at the right base and small moist râles are heard: eyelashes long: patient thin and ill



nourished. Wassermann reaction is negative.

August 30, 12. Hugh T., aged 7. Alveolar abscess. Father drinks to excess. Mother alive and well. Four pregnancies. First, Hugh. Wassermann reaction is negative. Second, boy, aged 5, healthy. Third, boy, aged 3, healthy. Fourth, boy, aged 10 months, healthy.

August 30, 12. Flora R., aged 1. Whooping cough. Parents unknown. No history. No evidence of specific disease. Wassermann reaction is negative.

August 30, 12. Thomas T., aged 2. Rickets. Father in Australia. Mother drinks to excess. Two pregnancies. First, girl, aged 4, alive and well. Second, Thomas. Wassermann reaction is negative.

August 30, 12. Alexander W., aged 3. Bronchitis. Father died of cardiac disease. Mother alive and well. Four pregnancies. First, girl, aged 11, healthy. Second, boy, aged 8, healthy. Third, boy, died of pneumonia. Fourth, Alexander, who has rickets, gastro-enteritis and bronchitis. Wassermann reaction is negative.

August 30, 12. Sarah A., aged 5. Gastritis. Father died of cancer. Mother alive and well. Twelve pregnancies. Eleven children are alive and well. Patient has had gastritis for over a week. Wassermann reaction is negative.

August 30, 12. Annie F., aged 1½. Ulcerative Stomatitis. Illegitimate child. No history. No suspicion of specific disease. Wassermann reaction is negative.

August 30. 12. Andrew D., aged 7. Lupus. Father died of phthisis. Mother died of pneumonia. Three brothers and three sisters alive and well. Wassermann reaction is negative.

August 30. 12. Jessie C., aged 12. Lupus of face. Father alive and well. Mother has psoriasis. Seven pregnancies. The other six children are in good health. Wassermann reaction is negative.

August 30. 12. Ann F., aged 6. T.B. spine. Father alive and well. Mother drinks to great excess, and has left her husband. No definite history could be obtained. There is nothing suggestive of specific disease in patient. Wassermann reaction is negative.

August 31. 12. Bridget J., aged 1. Gastro-enteritis. Father is in prison. Mother takes alcohol to excess. Three pregnancies. First, Jemima, aged 6, Lupus of face. Wassermann reaction is negative. Second, Annie, aged 4. Scabies. Wassermann reaction is negative. Third, Bridget, who passes about 7 foul smelling motions in 24 hours. Widal reaction is negative. Wassermann reaction is negative.

August 31. 12. James J., aged 2. Debility. Mother alive and well. Two pregnancies. First, girl, aged 5, healthy. Second, James. He has not been taking his feed well for some time. No lesion was found. Wassermann reaction is negative.

- August 31. 12. Fred B., aged  $1\frac{1}{2}$ . Cleft palate. Parents alive and well. Patient is an only child; both hard and soft palate are involved. Wassermann reaction is negative.
- August 31. 12. Joshua P., aged  $\frac{6}{12}$ . Double hare lip. Father alive and well. Mother had hare lip of left side which was operated upon. Three pregnancies. First, girl, aged 6, healthy. Second, girl, aged 3, healthy. Third, Joshua. Wassermann reaction is negative.
- August 31. 12. Maggie J., aged 2. Furunculosis. Parents alive and well. Patient is the only one of the marriage, and has been subject to boils for the past year. Urine normal. *Staphylococcus aureus* was isolated and a vaccine made: after 6 doses of 10 millions per cc. the condition was cured. Wassermann reaction is negative.
- August 31. 12. Matthew Y., aged  $\frac{3}{12}$ . Stomatitis. Parents unknown. No history was obtained. No suggestion of specific disease. Wassermann reaction is negative.
- August 31. 12. Mary Jane H., aged  $\frac{3}{12}$ . Ulcerative stomatitis. Father alive and well. Mother in Poor house. Two pregnancies. First, girl, aged 4 healthy. Second, patient. Wassermann reaction is negative.
- August 31. 12. Jane J., aged  $\frac{6}{12}$ . Follicular stomatitis. Father alive and well. Mother takes alcohol to excess. Two pregnancies. First, girl, aged 3, healthy. Second, Jane. Wassermann reaction is negative.

August 31, 12. Hannah P., aged  $\frac{1}{12}$ . Ovarian hernia.

Father alive and well. Mother alive and well. First pregnancy twins, a boy, healthy, and the patient.

Wassermann reaction is negative.

August 31, 12. Henry S., aged  $\frac{4}{12}$ . Hare lip. Parents alive and well. Three brothers and three sisters alive and well.

Wassermann reaction is negative.

September 3, 12. John G., aged 7. Tonsils and adenoids.

Parents alive and well. Four brothers alive and well.

No abortions. Wassermann reaction is negative.

September 3, 12. Susan R., aged  $\frac{6}{12}$ . Adenitis. Father alive

and well. Mother has several scars on the neck. Susan

is an only child and has slightly enlarged and very inflamed tonsils. Wassermann reaction is negative.

September 3, 12. John R., aged 4. Eczema. Parents not seen.

One sister, alive and well. Patient had scabies, 2 months ago, and has been followed <sup>by</sup> ~~an~~ eczema. Wassermann reaction is negative.

September 3, 12. Hugh L., aged  $2\frac{1}{2}$ . Laryngismus stridulus.

Parents alive and well. Three sisters and seven brothers alive and well. No abortions. Patient is suffering from mild rickets. There is great respiratory distress during a spasm. Wassermann reaction is negative.

September 3, 12. Florence V., aged 2. Rhinorrhoea. Parents alive

and well. One sister alive and well. Patient had good health till two months ago. No history of snuffles or rash. Inferior turbinates are thickened and congested.

Wassermann reaction is negative.

September 3, 12. Adam F., aged 2½. Nephritis. Father has scarlatina. Mother alive and well. Patient is the oldest and his skin is desquamating. During the past 24 hours he has passed only traces of urine which contains abundant albumen, and a trace of blood. Wassermann reaction is negative. A younger sister has also scarlatina.

September 7, 12. John C., aged 3. Diarrhoea and vomiting. Parents alive and well. One brother and nine sisters alive and well. Patient ate unripe fruit. Wassermann reaction is negative.

September 7, 12. Jane R., aged 7. Splenectomy. No history obtainable. There is no evidence of specific disease. The spleen was removed a week ago. There is a great increase in the red blood corpuscles. Wassermann reaction is negative.

September 7, 12. Nellie F., aged 4. Multiple Abscesses. Patient is one of a family of four. The abscesses are suggestive of a tubercular condition. Wassermann reaction is negative. Robert, aged 8, healthy. James, aged 6, healthy. Thomas, aged 2, has whooping cough.

September 11, 12. Ann D., aged 1½. Vomiting. Parents alive and well. One sister alive and well. Patient has rickets and frequent diarrhoea. Wassermann reaction is negative.

- September 11. 12. Hugh D., aged 6. Diphtheria. Parents alive and well. One brother died of diphtheria, three weeks ago. Patient has been under treatment for abscess of throat for the past 10 days. There is no evidence of membrane but there are several irregular raw surfaces seen. I isolated a pure culture of the diphtheria bacillus. Wassermann reaction is negative.
- September 11. 12. Abram H., aged  $\frac{4}{365}$ , Premature birth. Father alive and well, and shows no signs of specific disease. Mother saw a motor car knock down a child three weeks ago. Patient was born at  $7\frac{1}{2}$  months and does not seem very healthy. Wassermann reaction is negative. March 12, 13. Child was seen today. He seems quite healthy and is well nourished.
- September 11. 12. Maggie M., aged  $\frac{14}{585}$ . Jaundice. Father alive and well. Mother takes alcohol to great excess. Her husband says she was not sober for a week before the child was born. The jaundice was noticed 2 days after birth. Wassermann reaction is negative.
- September 11. 12. John S., aged 1. Convulsions. Parents alive and well. John is an only child, and does not get suitable food. He vomited for 2 days before the onset of the fits. Wassermann reaction is negative.
- September 11. 12. Robina H., aged 3. Catarrhal- Catarrhal jaundice. Parents alive and well. Two sisters alive and well. The jaundice came on gradually, and being a mild attack. Wassermann reaction is negative.

September 11. 12. Ann McK., aged 1. Stomatitis. Parents alive and well. No history of specific disease. Child is well nourished. Wassermann reaction is negative.

September 14. 12. Isaac R., aged 4. Subacute Rheumatism. Father alive and well. Mother has had five attacks of acute rheumatism. Five pregnancies. First, girl, aged 12, anaemia. Second, girl, aged 9, healthy. Third, boy, aged 6, healthy. Fourth, Isaac. There is very little tenderness over the joints. The heart seems enlarged and there is a soft blowing V.S. mitral murmur. Wassermann reaction is negative. Fifth, girl, aged 1, healthy.

September 14. 12. James McL., aged 2. Jaundice. Father alive and well. Mother died after an accident. Six brothers and one sister alive and well. Patient is youngest. Wassermann reaction is negative.

September 14. 12. Annie F., aged 2/365. Icterus neonatorum. Father alive and well. Mother takes alcohol to great excess. Nine pregnancies. No abortions. There is marked jaundice. Wassermann reaction is negative.

September 14. 12. Isa B., aged 10. Swelling of leg. Parents alive and well. Three brothers and four sisters alive and well. Patient hurt her leg while climbing over a fence 2 months ago. A skiagram does not show any thickening of the bone. Wassermann reaction is negative.

September 14. 12. Hugh E., aged 12. Rheumatism. Father alive and well. Mother has had several attacks of rheumatism. A.S. mitral murmur: some bronchitis (her father died of

kidney disease). Two pregnancies. First, Hugh, who has a mild attack of rheumatic fever with no evidence of cardiac involvement. Wassermann reaction is negative.

Second, girl, aged 8, healthy.

September 14 12. Emma R., aged 5. Headache. Parents alive and well. Nine sisters alive and well. Patient is the second youngest and her eyes are defective. Wassermann reaction is negative.

September 19. 12. James W., aged 4. Rheumatic pains. Father is in Canada. Mother has always been healthy. Three pregnancies. First, girl, died of pneumonia. Second, girl aged 7, healthy. Third, James. He is pale and anaemic. He screams when the joints are flexed. There is no evidence of cardiac disease. Wassermann reaction is negative.

September 19. 12. John McE., aged 10. Septic finger. Parents alive and well. Three sisters and eleven brothers alive and well. Patient is the thirteenth. Wassermann reaction is negative.

September 19. 12. Andres G., aged  $1/12$ . Aphthous stomatitis. Parents alive and well. Patient is the only child of the marriage. Wassermann reaction is negative.

September 19. 12. William E., aged 5. Epigastric pain. His parents were not seen. There is no suggestion of specific disease in the child. He has repeated attacks of vomiting, accompanied by great pain. Wassermann reaction is negative.

pregnancies. First, girl, aged 5, hydrocephalus. T.B. were found in the cerebro-spinal fluid. Second, boy, aged 4



September 25. 12. Alexander H., aged 2. Paraphimosis.

Parents alive and well. Three sisters alive and well.

Patient is the youngest. Wassermann reaction is negative.

September 25. 12. Joseph S., aged 3/365. Congenital R.

inguinal hernia. Father alive and well. Mother was not

seen. Patient is an only child and weighs  $8\frac{1}{2}$  lbs.

Wassermann reaction is negative.

September 25. 12. James S., aged 3/12. Vomiting. Parents

alive and well. Patient is the only child of the marriage.

He is fed too frequently. Wassermann reaction is negative.

September 25. 12. John M., aged  $\frac{2}{365}$ . Meningocele. Father

alive and well. Mother alive and well. Three pregnancies.

First, girl, aged 5, hare lip. Second, boy, aged  $2\frac{1}{2}$ ,

healthy. Third, John, who has a small cervical meningocele.

Wassermann reaction is negative.

September 25. 12. James J., aged 3. Cervical adenitis.

Father drinks to excess and has left his wife. Mother does

not take alcohol, but takes little interest in her children.

Four pregnancies. First, boy, aged 7, dirty and verminous.

Second, boy, aged 5, dirty and verminous. Third, girl, aged

4, crusts on head which is verminous. Fourth, James, who

has a mass of crusts on the head, which is verminous.

Wassermann reaction is negative.

September 28. 12. Jessie D., aged 2. Phthisis. Father in a city

hospital with phthisis. Mother pale and anaemic. Three

pregnancies. First, Girl, aged 6, hydrocephalus. T.B. were

found in the cerebro-spinal fluid. Second, boy, aged 4

- bronchitis. Third, Jessie. During the past year she has had repeated attacks of broncho-pneumonia. She is thin and perspires much at night. Wassermann reaction is negative.
- September 28. 12. Jean W., aged  $6/12$ . Dyspepsia. Father alive and well. Mother drinks to great excess. Child breast fed; cries a great deal: vomits frequently. Not properly looked after. Wassermann reaction negative.
- September 28. 12. Harry M., aged  $2/52$ . Aphthous stomatitis. Parents alive and well. Two sisters alive and well. Wassermann reaction is negative.
- September 28. 12. Mina R., aged 3. Eneuresis. Father suffers from rheumatism. Mother is hysterical. Two pregnancies. First, Mina, who is very nervous and highly strung, began to wet the bed at night 6 months ago. Wassermann reaction is negative. Second, girl, aged 1, healthy.
- September 28. 12. Dorothy G., aged 1. Malnutrition. Father in the army. Mother takes alcohol to excess. House dirty. Only child. Improper food. Frequent and offensive green motions. Vomiting. Wassermann reaction is negative.
- September 28. 12. James D.L., aged 6. Bronchial Catarrh. Father died of phthisis. Mother had a "bleeding of the lung" one year ago. There is evidence of pleural thickening. Three children died of hydrocephalus. One girl, aged 16, healthy. James has always been healthy till lately. Wassermann reaction is negative.

September 28. 12. Daniel A., aged 4. Ulcer on leg.

Father alive and well. Mother alive and well. Two pregnancies. First Daniel. There was an abrasion which became septic and is now ulcerated. Wassermann reaction is negative. Second boy, aged  $1\frac{1}{2}$ , healthy.

September 28. 12. Martha O'H., aged  $2\frac{1}{2}$ . Cervical adenitis.

Parents alive and well. Nine sisters and one brother alive and well. Patient has enlarged tonsils, which are ulcerated. Wassermann reaction is negative.

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October 4. 12. Annie D., aged 4. Rhinorrhoea. Father alive and well. Mother does not live with her husband. Patient is the only child of the marriage, (Mother has had other 3 children). The patient has a discharge from the nose, which is not offensive. Wassermann reaction is negative.

October 4. 12. James McC., aged 6. Sinuses of Knee. Father alive and well. Mother not seen. Two pregnancies. First, James. Knee began to swell two years ago, and began discharging six months ago. There are now three sinuses. Wassermann reaction is negative. Second, girl, aged 3, healthy.

October 5. 12. Sam McL., aged 4. Though weakly no definite legion was found. Two brothers and one sister alive and well. Wassermann reaction is negative.

October 5. 12. Lucy R., aged 2. Cough. Father alive, not seen. Mother alive and well. This is the only child of the marriage. Wassermann reaction is negative.

- October 5. 12. Flora McK., aged 2. Septic foot. Mother alive and well. Three brothers and one sister alive and well. Patient pulled over a jug of hot water, scalding the foot, which has become septic. Wassermann reaction is negative.
- October 5., 12. Hugh H., aged 6. Bronchial Catarrh. Father is abroad. Mother alive and well. Three pregnancies. First, boy, aged 12, healthy. Second, boy, aged  $8\frac{1}{2}$ , healthy. Third, Hugh. Wassermann reaction is negative.
- October 5. 12. John W., aged  $4\frac{1}{2}$ . Dyspepsia. Father alive and well. Mother is in an asylum. Three pregnancies. After each birth she was confined in an asylum for periods of 6 weeks, three months and nine months respectively. (Puerperal insanity). First, girl, aged 6, healthy. Second, John, who has had dyspepsia for over 2 years. Third, girl, aged  $2\frac{1}{2}$ , healthy. Patient gives a negative Wassermann reaction.
- October 5. 12. James D. McK., aged 1. Bronchitis. Parents alive and well. Patient is an only child and is very fat. Wassermann reaction is negative. October 8. 12. Mother - Wassermann reaction is negative.
- October 5. 12. Hugh D., aged 2. Rickets. Father not seen. Mother is of small stature and rachitic. Three pregnancies. First, boy, still birth after forceps. Second, boy, still birth after forceps. Third, Hugh. An instrument was used at birth. Wassermann reaction is negative.
- October 5. 12. James E., aged 4. Eczema of face. Mother suffers from Psoriasis. Wassermann reaction is negative. Child had seborrhoeic dermatitis when 6 months old.

The eczema does not involve the angles of the mouth.

Wassermann reaction is negative.

October 5. 12. John D., aged 11. Psoriasis. Parents not seen.

Three brothers alive and well. Two sisters died in infancy, cause unknown. Patient had rheumatism one year ago, gets short of breath when running about. A.S. mitral murmur.

Wassermann reaction is negative.

October 5. 12. Jessie G., aged 12. Subacute rheumatism. Mother

died of phthisis. Father has bronchitis. Patient is pale; has pains in the joints, but no cardiac lesion. Wassermann reaction is negative.

October 5., 12. Hugh G., aged 4. Bronchitis. Father not seen.

Mother suffers from eczema of the hands. Eleven pregnancies.

Three children died in infancy of scarlet fever. Patient has a short neck and the Wassermann reaction is negative.

October 10. 12. Ella B., aged 2. Diarrhoea and vomiting.

Mother alive and well, but drinks to excess. Ella is the first child, is not properly looked after, and gets unsuitable food.

Motions are offensive. Wassermann reaction is negative.

October 10. 12. Kate McM, aged 3. Diarrhoea and vomiting.

Parents alive and well. Seven pregnancies. First, boy, aged 14, healthy. Second, boy, died of measles. Third, cross birth, dead. Fourth, girl, aged 8, healthy. Fifth, girl, aged 5,

healthy. Sixth, Kate. Illness began suddenly one hour after eating an apple. Wassermann reaction is negative. Seventh,

girl, aged 1, rickets.

October 10. 12. Willie W., aged 9. Abscess of cheek. Parents not seen. Patient has a carious upper molar. There is no suggestion of specific disease. Wassermann reaction is negative.

October 10. 12. Susan O'R., aged 12. Cervical abscess. Parents not seen. Patient has long hair and her head is crusted and in a verminous condition. There is no suggestion of specific disease. Wassermann reaction is negative.

October 10. 12. John M., aged 11. Septic foot. There is no suggestion of specific disease. Wassermann reaction is negative.

October 10. 12. David B., aged 4. Septic foot. Parents drink to excess. Two brothers and two sisters alive and well. Patient is the second youngest. Wassermann reaction is negative.

October 10. 12. Henry Duff W., aged 8. T.B. glands. Mother died of phthisis. Three pregnancies. First, girl, died of meningitis. Second, boy, aged 12, healthy. Third, Henry. Glands have been twice operated on. Wassermann reaction is negative.

October 10. 12. Mary R., aged 12. Anaemia. Parents alive and well. Ten sisters and five brothers alive and well. Patient is the youngest. She has always been delicate. Wassermann reaction is negative. October 20. 12. Hb. 70%. R.B.C. 3,500,000. W.B.C. 11,600.

October 10. 12. Bessie W., aged 7. Septic finger and knee.

An illegitimate child who shows no evidence of specific disease. She fell from a wall 10 days ago. Wassermann reaction is negative.

October 10. 12. Thersa F., aged 9. Septic finger. There is

no suggestion of specific disease. Wassermann reaction is negative. Pat, aged 13, has a septic foot, but seems otherwise healthy.

October 11. 12. Hugh L., aged  $10/365$ . Naevus of Scalp. Parents

alive and well. Patient is an only child and the naevus is small. Wassermann reaction is negative.

October 11. 12. Annie C., aged  $10/12$ . Rickets. Child is fed

on the bottle: gets very little fresh air and too much tea and solid food. She has periodic attacks of diarrhoeas and vomiting. Wassermann reaction is negative.

October 11. 12. Thomas H., aged 3. Broncho-pneumonia.

Father is alive and well. Mother drinks to excess and has left her husband. Child seems very ill: heart sounds inaudible.

Wassermann reaction is negative. October 13. Child died.

October 11. 12. John W., aged 5. Tubercular peritonitis.

Patient thin and emaciated: abdomen greatly distended: evidence of fluid. Wassermann reaction is negative.

October 11. 12. Thomas F., aged 3. Eczema. Patient had scabies

two months ago: eczema followed. Wassermann reaction is negative. Peter, aged 5, eczema. He had scabies seven weeks ago, and since then has had eczema. Wassermann reaction is negative.

October 11. 12. Jane B., aged  $2/52$ . Jaundice. Mother takes alcohol to excess, and was under its influence when the child was born. Skin noticed yellow a few days after birth. Wassermann reaction is negative.

October 11. 12. Harriet W., aged 6. Gastritis. Father alive and well. Mother not seen. Three pregnancies. First, girl, aged 11, healthy. Second, boy, died of pneumonia. Third, Harriet. Wassermann reaction is negative.

October 11. 12. Jean McM., aged 4. Gastro-intestinal catarrh. Father not seen. Mother died of cardiac disease. Fourteen pregnancies. First, girl, died of meningitis. Second, boy, died of measles. Third, girl, died of pneumonia. Fourth, girl, aged 16, healthy. Fifth, sixth, seventh, eighth and ninth died in infancy of diarrhoea. Tenth, boy, aged 9, chorea. Eleventh, girl, aged 8, healthy. Twelfth, boy, aged 7, healthy. Thirteenth, aged  $5\frac{1}{2}$ , T.B. hip. Fourteenth, Jean. She is illnourished: abdomen prominent: enlarged glands palpable. Wassermann reaction is negative.

October 11. 12. Jeanie B., aged 7. Gastro-intestinal catarrh. Parents alive and well. There is a history of tubercular disease. Wassermann reaction is negative.

October 11. 12. Michael L., aged 3. Diarrhoea and vomiting. Child is fed too often and not at regular intervals. Wassermann reaction is negative.

When 9 months old. About a year afterwards gradual deafness set in. Mentally he seems quite sane. Wassermann reaction is negative.



October 11. 12. Jeanie L., aged 3. Malnutrition. Father drinks to excess. Mother is in an asylum. Patient is not well looked after: does not get enough food: is poorly clad and is verminous. Wassermann reaction is negative.

October 11. 12. John C., aged 2. Father is in prison. Mother is alive and well. Child is much bruised and is poorly nourished. Wassermann reaction is negative.

October 11. 12. Fred H., aged 6. Phthisis. Father in Australia. Mother alive and well. Four Pregnancies. First, girl, died of tubercular peritonitis. Second, girl, died of pneumonia. Third, boy, aged 9, healthy. Fourth, Fred who is pale, has a flat chest and some small moist râles can be made out. Wassermann reaction is negative.

October 15. 12. Christina Y., aged 10. Scarlatina. Parents alive and well. Six pregnancies. One child died of nephritis. Patient shows no evidence of specific disease. Wassermann reaction is negative.

October 15. 12. Mary R., aged 6/12. Stomatitis. Parents alive and well. This is the first child and she is bottle fed. Wassermann reaction is negative.

October 15. 12. William A., aged 6. Deaf and dumb. Parents alive and well, and give a negative history. Patient is the only one of the marriage. He had an attack of meningitis when 9 months old. About a year afterwards gradual deafness set in. Mentally he seems quite acute. Wassermann reaction is negative.

- October 15. 12. Violet S., aged 11. Anaemia. Parents alive and well. One sister died of phthisis and one brother of the meningitis. Violet is an only child alive. She suffers greatly from constipation. Hb. 75%. Wassermann reaction is negative.
- October 15. 12. Mary R., aged  $\frac{6}{12}$ . Cervical abscess. No history of specific disease in parents. Patient has foul smelling crusts on the head. Wassermann reaction is negative.
- October 15. 12. John S., aged  $\frac{9}{12}$ . Somatitis. Father alive and well. Mother lives with another man. Patient is the only child of the marriage, and has not done well since put on the bottle. Wassermann reaction is negative.
- October 15. 12. Annie F., aged 8. Septic thumb: deafness. Father alive and well. Mother alive and well. Three pregnancies. First, boy, aged 12, healthy. Second, boy, aged 10, morbus coxae. Third, Annie. At the age of 4 she had double otitis media which was followed by progressive deafness. Wassermann reaction is negative.
- October 16. 12. William C., aged 8. Injury to leg. Parents alive and well. Five sisters and three brothers alive and well. Patient was knocked down by a motor car: no fracture. Wassermann reaction is negative.
- October 16. 12. Margaret W., aged 7. Cervical abscess. Parents drinks to excess. Patient is in a verminous condition. There are crusts on the scalp and the hair is matted. Wassermann reaction is negative.

- October 16. 12. Joan M., aged 6. Anaemia. Father has bronchitis, and mitral stenosis. Mother is alive and well. Three children dead, one of pneumonia, one of measles and one of meningitis. Joan has a soft basal murmur and flexion of the joints causes pain. Wassermann reaction is negative.
- October 16. 12. Patrick M., aged 3. Gastro-intestinal catarrh. Father died of phthisis. Mother alive and well; two pregnancies. First, boy, died of meningitis. Second, Patrick. Mesenteric glands are palpable. Wassermann reaction is negative.
- October 16. 12. Hugh E., aged 4. Gastritis. Parents alive and well. Patient ate some unripe fruit four days ago. Wassermann reaction is negative.
- October 16. 12. John W., aged 6. Bronchitis. Parents alive and well. Eight children alive and well. Patient has severe bronchitis. Wassermann reaction is negative.
- October 16. 12. Agnes A., aged 4. Jaundice. Parents alive and well. Two sisters alive and well. One sister died of diphtheria. Patient has only slight jaundice. Wassermann reaction is negative.
- October 16. 12. Andrew D., aged 5. Scarlatinal Nephritis. Father is a miner and in good health. Mother is in prison. fifteen pregnancies; no miscarriages. Six children died in infancy; apparently not well looked after. Patient has abundant albumen in the urine. Wassermann reaction is negative.

- October 16. 12. Agnes D., aged 2. Constipation. Patient is an illegitimate child and shows no evidence of specific disease. Wassermann reaction is negative.
- October 16. 12. Jean N., aged 6. Anaemia. Father is a sailor. Mother unknown. Patient is not well looked after, and is under fed. Hb. 65%. There is no evidence of specific disease. Wassermann reaction is negative.
- October 18. 12. Bella S., aged  $10/365$ . Ovarian hernia. Parents alive and well. Bella is the first child: is well developed and weighs  $8\frac{1}{2}$  lbs. Wassermann reaction is negative.
- October 18. 12. Bessie D., aged 3. Bronchitis. Father died of heart disease. Mother is alive and well. Three pregnancies. First, boy, aged 10, chorea. Second, girl, aged 6, healthy. Third, Bessie, who is fat, and with rosy cheeks. Wassermann reaction is negative.
- October 18. 12. Jessie C., aged 5. Bronchitis. Father alive and well. Mother drinks to excess, and is in prison. Thirteen pregnancies. Seven children died in infancy: probably from want of care. Patient shows no evidence of specific disease. Wassermann reaction is negative.
- October 18. 12. Frederick J., aged 2. Marasmus. Patient is pale, thin and ill nourished but no definite lesion can be made out. There is no suspicion of specific disease. Wassermann reaction is negative.
- October 18. 12. Bridget McS., aged  $6/12$ . Marasmus. Father alive and well. Mother alive and well. Bridget is the first child.

She has always been weakly. Her food never seems to agree with her, but she has improved recently on Sister Laura's food. Wassermann reaction is negative.

October 22. <sup>12</sup>. Susan McG., aged 2. Ozoena. Parents alive and well. Three sisters alive and well. There is nothing suspicious in the family history. Wassermann reaction is negative.

October 22. 12. Peter P., aged 3. Tubercular hip-joint. Father alive and well. Mother has several scars on the neck, and the R.M. is deficient at the right apex. Patient is an only child. Wassermann reaction is negative.

October 22. 12. Isa H., aged 2½. Pleurisy. Father is alive and well. Mother has had several attacks of rheumatism. Four pregnancies. First, boy, aged 10, chorea. Second, girl, aged 7, healthy. Third, girl, aged 4½, healthy. Fourth, Isa. An unmeasured quantity of fluid was removed. Wassermann reaction is negative.

October 22. 12. Ronald R., aged 6. Gastro-enteritis. Father alive and well. Mother alive and well. Two brothers and six sisters alive and well. Three children died in infancy of "decline of the bowels". Patient is thin and ill nourished: vomits frequently: motions green and offensive. Wassermann reaction is negative.

October 22. 12. Henry D., aged 4. Marasmus. Child has been more or less delicate since birth. His food does not seem to agree with him. No suspicion of specific disease. Wassermann reaction is negative.

October 22. 12. Joan T., aged 3. Sinus of R. elbow.

Father has phthisis. Mother died of puerperal fever.

Patient is ill nourished and the condition suggests tubercle. Wassermann reaction is negative.

October 25. 12. John D., aged 4. Impetigo. Parents unknown.

Patient has several patches of impetigo and he has conjunctivitis of both eyes. There is no suspicion of specific disease. Wassermann reaction is negative.

October 29. 12. Alfred C., aged 4. Septic mouth. Father

alive and well. Mother alive and well. Two brothers and a sister alive and well. Patient cut his lip by a fall on a spike and the buccal surface is now ulcerating.

Wassermann reaction is negative.

October 29. 12. Alexander K., aged  $3\frac{1}{2}$  years. Bronchitis.

Father alive and well. Mother takes alcohol to excess and has been in prison. Three pregnancies. First, Alexander. He is fat and well nourished. Wassermann reaction is negative. Second, boy, aged 2, healthy. Third, girl, aged 2/12, healthy.

October 29. 12. Julia S., aged 5. Pediculosis. Parents were

not seen. Patient has long hair, which is matted and there are crusts on the scalp. There is no suspicion of specific disease. Wassermann reaction is negative.

October 29. 12. Maggie K., aged 9. Tinea tonsurans. Parents

not seen. Two sisters alive and well. Microscopic examination showed the large spored fungus. There is no suspicion of specific disease. Wassermann reaction is negative.

- October 30. 12. David C., aged  $1\frac{1}{2}$ . Rickets. Father alive and well. Mother is rachitic. Two pregnancies. First, boy, still born after forceps. Second, patient: leg bones bent. Patient cannot walk. Wassermann reaction is negative.
- October 30. 12. Annie C., aged 5. Rickets. Parents alive and well. Three sisters alive and well. Patient has genu valgum, flat vertex, rachitic rosary, and frequent bronchitis. Wassermann reaction is negative.
- October 30. 12. Sarah B., aged 10. Psoriasis. Parents not seen. Two sisters and 10 brothers alive and well. One sister died in infancy. Patient has psoriasis on body, limbs and head. Wassermann reaction is negative.
- October 30. 12. William B., aged 14. Psoriasis. Parents not seen. Seven brothers alive and well. There is no evidence of specific disease. Wassermann reaction is negative.
- October 30. 12. Jane R., aged 14. Eczema. Parents not seen. Four sisters and five brothers alive and well. One sister died of pneumonia. Patient has eczema of arms and legs. There is no evidence of specific disease. Wassermann reaction is negative.
- October 30. 12. Dan G., aged  $\frac{10}{52}$ . Naevus. Parents alive and well. Dan is the first child and has a small naevus on the scalp. He seems otherwise a well developed healthy child. Wassermann reaction is negative.
- October 30. 12. Susan N., aged  $\frac{3}{52}$ . Ovarian hernia. Parents alive and well. Patient is the first child and is well developed. Wassermann reaction is negative.

November 1. 12. Isa McL., aged 3. Conjunctivitis. Father alive and well. Mother alive and well. Two pregnancies. First, Isa. Wassermann reaction is negative. Second, boy, aged  $\frac{9}{12}$ , healthy.

November 5. 12. Kate L., aged  $\frac{6}{52}$ . Diarrhoea and vomiting. Father alive and well. Mother drinks to excess. Kate is the first child and is fed partly by breast and partly from a bottle, which is not kept properly clean. Motions are green and offensive. Child much emaciated and her weight is just over 5 lbs. Wassermann reaction is negative.

November 5. 12. Amy R., aged  $\frac{5}{12}$ . Enteritis. Father alive and well. Mother lives with another man. She takes alcohol to excess. Child is kept by an elder sister, while the father is at work. She gets improper food, which is largely composed of tea. Wassermann reaction is negative.

November 5. 12. Bathia S., aged 3. Cervical abscess. Parents drink to excess. Child is not well looked after. Head has numerous crusts, matting of hair and a verminous condition. Wassermann reaction is negative.

November 6. 12. William H., aged  $\frac{4}{12}$ . Vomiting. Parents alive and well. First child: improper feeding. Wassermann reaction is negative.

November 8. 12. Barbara McF., aged 5. Tonsillitis. Mother alive and well. Three pregnancies. First, Barbara, who has follicular tonsillitis, accompanied by a high temperature. Wassermann reaction is negative. Second, girl, aged  $2\frac{1}{2}$ , healthy. Third girl, aged  $\frac{2}{12}$ , healthy.



- November 8. 12. Sam McL., aged  $\frac{6}{12}$ . Enteritis. Father and Mother drink to excess. Eleven pregnancies. No abortions. Nine children died of diarrhoea, presumably from want of care. Child is poorly nourished: never gets milk at all. Wassermann reaction is negative. November 19. 12. Child died.
- November 8. 12. Joe C., aged  $\frac{5}{365}$ . Naevus. Father alive and well. Mother alive and well. Two pregnancies. First, girl, aged 4, healthy. Second Joe. There is a small naevus at the root of the nose and a dermoid of the forehead. Wassermann reaction is negative.
- November 8. 12. Sarah W., aged  $\frac{2}{12}$ . Dermoid. Father alive and well. Mother alive and well. Three pregnancies. First, girl, aged 6, healthy. Second, girl, aged  $3\frac{1}{2}$ , healthy. Third, Sarah. Wassermann reaction is negative.
- November 18. 12. George F., aged 7 and John F., aged 5. Scabies. Parents alive and well. Three brothers alive and well. Patients both give a negative Wassermann reaction.
- November 12. 12. John H., aged 10, and Albert H., aged 4. Scabies. Parents alive and well. Negative history. Patients both give a negative Wassermann reaction.
- November 13. 12. Agnes J., aged 2. Talipes. Father alive and well. Mother alive and well. Six pregnancies. First, boy, aged 14, healthy. Second, boy, aged  $11\frac{1}{2}$ , healthy. Third, girl, aged 9, healthy. Fourth, boy, aged 7, healthy. Fifth, boy, aged  $4\frac{1}{2}$ , bronchitis. Sixth, Agnes. Wassermann reaction is negative.

November 13. 12. Maggie W., aged  $2\frac{1}{2}$ . Talipes. Father alive and well. Mother suffers from rheumatism. Four pregnancies. First, girl, aged 10, had chorea six months ago. Second, boy, aged 6, healthy. Third, boy, aged 4, healthy. Fourth, Maggie. Wassermann reaction is negative.

November 13. 12. Flora T., aged 6. Broncho-pneumonia. Father subject to winter cough. Mother alive and well. Seven pregnancies. First, girl, died of pneumonia. Second, girl, aged 11, healthy. Third, boy, aged 9, healthy. Fourth, girl, aged  $7\frac{1}{2}$ , healthy. Fifth, Flora: child extremely ill: sent to hospital. Wassermann reaction is negative. Sixth, boy, died of diphtheria. Seventh, girl, aged  $1\frac{1}{2}$ , healthy.

November 13. 12. William T., aged  $6/52$ . Wasting. Father alive and well. Mother alive and well. Only child: bottle fed: milk not sufficiently diluted. Wassermann reaction is negative.

November 15. 12. Margaret McL., aged  $1\frac{1}{2}$ . Bronchitis. Mother alive and well. Wassermann reaction is negative. Two pregnancies. First, girl, aged 3, healthy. Second, Margaret, Wassermann reaction is negative.

November 15. 12. Hugh McG., aged  $1\frac{3}{12}$ . Rickets. Parents alive and well. Negative history. Mother six years married. Wassermann reaction is negative. Three pregnancies. Patient is the youngest and has a cough. Wassermann reaction is negative.

December 12. 12. aged  $4/12$ . Phimosis. Father not seen. Mother alive and well. James is the first child and has been very cross since birth. Wassermann reaction is negative.

- November 15. 12. George J., aged 9. Chorea. Parents were not seen. Jeanie McF., a cousin of the patient, gives a negative Wassermann reaction. Patient has a moderate attack of Chorea. No history of rheumatism: heart seems normal. Wassermann reaction is negative.
- November 23. 12. Annie McK., aged  $3/12$ . Eborrhoeic dermatitis. Mother gives a negative history and a negative Wassermann reaction. Child is affected over a wide spread area - buttocks, vulva, and thighs: colour is bright red. Wassermann reaction is negative.
- November 26. 12. George C., aged  $6/12$ . Syndactylitis. Father alive and well. Mother lives with another man. George is the only child of the marriage. The phalanges are united as far as the tips. Wassermann reaction is negative.
- November 26. 12. Sophia A., aged 2. Bronchitis. Parents alive and well. Only child: very fat. Wassermann reaction is negative.
- November 26. 12. Ann H., aged  $10/365$ . Dermoid. Father alive and well. Mother not seen. Only child. There is a large dermoid on the forehead. Wassermann reaction is negative.
- November 17. 12. Robert G., aged 3. Eczema. Father alive and well. Mother takes alcohol to excess. Child neglected. Crusts on head, which is verminous. Wassermann reaction is negative.
- December 12. 12. William D., aged 2. Cervical abscess. Father alive and well. Mother takes alcohol to excess. Child neglected. Crusts on head, which is verminous. Wassermann reaction is negative.
- December 12. 12. James L., aged  $2/12$ . Phimosi. Father not seen. Mother alive and well. James is the first child and has been very cross since birth. Wassermann reaction is negative.

December 12. 12. Hugh S., aged 7/365. Congenital hernia.

Father alive and well. Mother not seen. Fifteen pregnancies. One was a cross birth. One died of Whooping cough. One died of diphtheria. One died of nephritis and one of empyema. Hugh seems otherwise healthy and weighs  $8\frac{1}{4}$  lbs. Wassermann reaction is negative.

December 17. 12. Joseph B., aged 8. Phthisis. Mother alive and well. Four pregnancies. No abortions. Wassermann reaction is negative. Joseph is subject to cold and is thin and emaciated. Von Pirquet's test gives a doubtful reaction. Wassermann reaction is negative.

December 17. 12. Elizabeth T., aged 9. Alopecia. Parents were not seen. Patient has had alopecia for over a year. No spores were found on microscopic examination. There is no suspicion of specific disease. Wassermann reaction is negative.

December 17. 12. Andrew H., aged 9. Eruption on face. Two sisters alive and well. For the past three years patient has had a persistent eruption. It resembles acne but I did not find the acne bacillus. Some staphylococci albi were found. Wassermann reaction is negative.

December 17. 12. Robert C., aged 3. Empyema. Father alive and well. Mother died of phthisis. 2 children died of "decline" of the bowels. Patient had pneumonia six weeks ago. Diagnosis of empyema was confirmed by an exploratory puncture. No T.B. found: no pneumococci: cells are mononuclear. Wassermann reaction is negative.

November

December 17. 12. Jessie C., aged  $\frac{3}{365}$ . Dermoid. Father alive and well. Mother not seen. Two pregnancies. First, girl, aged  $3\frac{1}{2}$ , healthy. Second, patient. She weighs 8 lbs. Wassermann reaction is negative.

December 17. 12. John W., aged 5. Dactylitis. Father alive and well. Mother thin and subject to cold: flat chest: no areas of dullness. Seven pregnancies. First, girl, aged 15, healthy. Second, girl, died of tubercular meningitis. Third, boy, alive and well. Fourth, girl, alive and well. Fifth, boy, T.B. spine. Sixth, John. Metacarpals and phalanges are involved and there is a discharge of pus. Wassermann reaction is negative. Seventh, boy, healthy.

December 29. 12. James A., aged 16. Scabies. Father alive and well. Mother alive and well. Five pregnancies. First, boy, aged 14, healthy. Second, girl, aged 10, healthy. Third, girl, aged 8, healthy. Fourth, girl, died of phthisis. Fifth, is patient. Wassermann reaction is negative.

December 29. 12. Andrew L., aged 10. Eczema of foot. Father suffers from asthma. Mother alive and well. Seven children alive and well. Andrew has been running about with his bare feet all winter. Wassermann reaction is negative.

January 22. 13. Matilda A., aged 10. Pott's curvature. There is spastic paralysis of both legs. Knee jerks are increased: ankle clonus. Babinski's sign is negative. There are no specific stigmata. Wassermann reaction is negative.

February 6. 13. Robert P., aged 10. Spastic diplegia. The child is

quite intelligent, though the speech is rather defective. Arms and legs are rigid. There is some bronchitis. The right testicle is retained, and the penis is very small. Wassermann reaction is negative.

February 6. 13. Mary D., aged 10. Spina bifida. Patient was operated on when 3 weeks old. She was a full time child and is quite intelligent. There is anaesthesia round the anus and vulva and below the knees. There is also incontinence of urine and faeces. Wassermann reaction is negative.

February 6. 13. James W., aged 13. Spastic diplegia. Child is quite intelligent, though he speaks little. The arms and legs are rigid and he has no control over the bladder. Wassermann reaction is negative.

February 6. 13. John S., aged  $7\frac{1}{2}$ . Spastic diplegia. He has been paralysed since birth. There is no mental defect though he has difficulty in speaking. Reflexes increased: no specific stigmata. Wassermann reaction is negative.

March 8. 13. Archibald C., aged 11. Spastic diplegia. There was no difficulty at birth. He sat up at one year and walked at 4 years. There are no specific stigmata. Wassermann reaction is negative. Mrs. C. has always enjoyed good health. No miscarriages. Wassermann reaction is negative.

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July 5, 12, Annie M., aged 3, A normal child, Father alive and well, Mother alive and well, An only child, Wassermann reaction is negative.

August 17, 12, Thomas M., aged 1, A normal child, Father alive and well, Mother alive and well, An only child, Wassermann reaction is negative.

August 27, 12, John M., aged 7/12, A normal child, Father alive and well, Mother alive and well, Three pregnancies, all healthy, Wassermann reaction is negative.

PART ONE.

August 27, 12, John M., aged 7/12, A normal child, Father alive and well, Mother suffers from phthisis. This is the only child of the marriage, Wassermann reaction is negative.

SECTION II.

UNSELECTED CASES.

Subsection (b) Negative country cases without suspicion.

August 27, 12, John M., aged 7/12, A normal boy, Father died of phthisis negative, Mother alive and well, One brother alive and well, Wassermann reaction is negative.

August 27, 12, Robert M., aged 7, A normal girl, Father died of phthisis, Mother died of pneumonia, One brother alive and well, Wassermann reaction is negative.

August 27, 12, Mary J., aged 12, A normal girl, Parents not seen, Robert is an only child, Wassermann reaction is excellent, Wassermann reaction is negative.

August 27, 12, Barbara V., aged 7, A normal girl, Father is phthisical, Mother alive and well, Twelve pregnancies, One son and seven sisters alive and well, One sister died of phthisis, Patient is in excellent health, Wassermann reaction is negative.

- July 5. 12. Annie McK., aged 3. A normal child. Father alive and well. Mother alive and well. An only child. Wassermann reaction is negative.
- August 17. 12. Thomas M., aged 1. A normal child. Father alive and well. Mother alive and well. An only child. Wassermann reaction is negative.
- August 17. 12. John N., aged  $\frac{2}{12}$ . A normal child. Father alive and well. Mother alive and well. Three pregnancies, all being in good health. Wassermann reaction is negative.
- August 17. 12. Ann N., aged  $\frac{6}{12}$ . A normal child. Father drinks to excess. Mother suffers from phthisis. This is the only child of the marriage. Wassermann reaction is negative.
- August 17. 12. Percy H., aged 12. A normal boy. Father died of chronic nephritis. Mother alive and well. One brother alive and well. Patient seems in perfect health. Wassermann reaction is negative.
- August 17. 12. Isobel C., aged 7. A normal girl. Father died of diabetes. Mother died of pneumonia. One brother, alive and well. Wassermann reaction is negative.
- August 17. 12. Mary J.H. aged 11. A normal girl. Parents not seen. Patient is an only child and seems in excellent health. Wassermann reaction is negative.
- August 17. 12. Barbara C., aged 7. A normal girl. Father is in Australia. Mother alive and well. Twelve Pregnancies. Three brothers and seven sisters alive and well. One sister died of phthisis. Patient is in excellent health. Wassermann reaction is negative.



August 17. 12. Flora D., aged 9. A normal girl. Father alive and well. Mother alive and well, not seen. One sister and one brother alive and well. Two brothers died of diphtheria. Patient appears in excellent health. Wassermann reaction is negative.

August 24. 12. Jenny O., aged 10. A normal girl. Parents are dead. Patient is an only child. She had T.B. of the right knee six years ago and the limb was amputated. Her health seems excellent. Wassermann reaction is negative.

August 26. 12. James D., aged 2. A normal child. Father alive and well. Mother alive and well. An only child who seems in perfect health. Wassermann reaction is negative.

August 27. 12. Sam McN., aged  $\frac{6}{12}$ . A normal child. Father alive and well. Wassermann reaction is negative. Mother alive and well. Wassermann reaction is negative. Twelve pregnancies. First, Alexander, aged  $20\frac{1}{2}$ , healthy. Wassermann reaction is negative. Second, Christina, aged  $19\frac{1}{4}$ , healthy. Wassermann reaction is negative. Third, David, aged 18, healthy. Wassermann reaction is negative. Fourth, Grace, aged 17, healthy. Wassermann reaction is negative. Fifth, William, aged  $15\frac{3}{4}$ , healthy. Wassermann reaction is negative. Sixth, Matthew, aged 13, healthy. Wassermann reaction is negative. Seventh, Mary, aged 12, healthy. Wassermann reaction is negative. Eighth, Joan, aged  $10\frac{1}{3}$ , healthy. Wassermann reaction is negative. Ninth, Jemima, aged  $8\frac{5}{12}$ , healthy. Wassermann reaction is negative. Tenth, Jean, aged 6, healthy. Wassermann reaction is negative. Eleventh, Joseph,

aged  $3\frac{1}{2}$ , healthy. Wassermann reaction is negative.

Twelfth, Sam, who seems healthy. Wassermann reaction is negative  
August 31. 12. Hugh G., aged 9. A normal boy. Parents not seen.

Hugh says that he had three brothers and six sisters alive  
and well. One brother died of Whooping cough. Patient seems  
in very good health. Wassermann reaction is negative.

September 7. 12. John M., aged 4. A healthy child. Parents alive  
and well. Three sisters alive and well. Wassermann reaction  
is negative.

September 11. 12. Annie H., aged 3. A normal child. Parents  
alive and well. Two sisters alive and well. Wassermann  
reaction is negative.

September 11. 12. Maggie W., aged 2. A normal child. Father  
alive and well. Mother alive and well. Six pregnancies.  
All children are alive and in good health. Wassermann  
reaction is negative.

September 25. 12. Mina L., aged  $2/12$ . A normal child. Father  
was not at home. Mother alive and well. Wassermann reaction  
is negative. Four pregnancies. First, Grace, aged 11,  
healthy. Wassermann reaction is negative. Second, John, aged  
8, healthy. Wassermann reaction is negative. Third, Agnes,  
aged 4, healthy. Wassermann reaction is negative. Fourth,  
Mina, who seems a fine healthy baby. Wassermann reaction  
is negative.

September 25. 12. John W., aged  $3/12$ . A normal child. Father  
is a farmer and in good health. Wassermann reaction is  
negative. Mother has always lived in the country, is

healthy, and the Wassermann reaction is negative. An only child. Wassermann reaction is negative.

October 5. 12. Sam McL., aged 4. A normal child. Mother alive and well. Two brothers alive and well. The child seems quite healthy. Wassermann reaction is negative.

October 16. 12. John S., aged 6. A normal child. Father alive and well. Mother alive and well: not seen. Child seems quite healthy, and the Wassermann reaction is negative.

October 18. 12. William C., aged  $7\frac{1}{2}$ . A normal boy. Father alive and well. Mother alive and well. The boy seems in first rate health and the Wassermann reaction is negative.

October 30. 12. John C., aged  $\frac{6}{12}$ . A normal child. Parents alive and well. Three brothers and two sisters alive and well. The boy seems in excellent health, and the Wassermann reaction is negative.

November 19. 12. Christina W., aged 12. A normal girl. Father is alive: has always lived in the country: has had several attacks of sub-acute rheumatism. After the first attack he developed rheumatic g $\ddot{o}$ itre and the gland remained enlarged. Wassermann reaction is negative. Mother alive and well: has always lived in the country. Wassermann reaction is negative. Six pregnancies. First, Christina, healthy. Wassermann reaction is negative. Second, Annie, aged 10, healthy. Wassermann reaction is negative. Third, Maggie, aged 8, healthy. Wassermann reaction is negative. Fourth, Willie, aged 6, healthy, Wassermann reaction is negative. Fifth, James, aged 4, healthy, Wassermann reaction is negative. Sixth, John, aged 2, healthy. Wassermann reaction is negative.

November 19. 12. Jane A., aged 11. A normal girl. Father alive and well. Mother alive and well. Parents and children have always lived in the country. Five pregnancies. First, Jane, healthy, Wassermann reaction is negative. Second, Annie, aged 9, healthy, Wassermann reaction is negative. Third, William, aged 7, healthy, Wassermann reaction is negative. Fourth, Fanny, aged 5, healthy. Wassermann reaction is negative. Fifth, Sarah, aged  $2\frac{1}{2}$ , healthy. Wassermann reaction is negative. October-22. November 22. 12. The serum of Mrs. A. gives a negative Wassermann reaction.

November 19. 12. Jane A., aged 5. A normal child. Father alive and well. Mother alive and well. Parents and children have always resided in the country. Two pregnancies. First, Jane, healthy. Wassermann reaction is negative. Second, Annie, aged 2, healthy. Wassermann reaction is negative.

November 22. 12. John N., aged 6/52. A normal child. Father alive and well. Mother alive and well. Two pregnancies. First, Bella, aged 3, healthy. Wassermann reaction is negative. Second, John, who seems healthy. Wassermann reaction is negative. Parents and children have always lived in the country.

November 22. 12. Robert S., aged 7. A normal boy. Parents alive and well. Patient is an only child: had measles a year ago, but made a good recovery. Wassermann reaction is negative.

November 23. 12. Jane D., aged 14. A normal girl. Father alive and well. Mother alive and well. Parents and children

have always lived in the country. Three pregnancies. First, Jane, healthy. Wassermann reaction is negative. Second, Mary, aged  $11\frac{1}{2}$ , healthy. Wassermann reaction is negative. Third, Isa, aged 8, healthy. Wassermann reaction is negative.

November 22. 12. Isa H., aged  $\frac{2}{12}$ . A normal child. Father alive and well. Wassermann reaction is negative. Mother alive and well. Wassermann reaction is negative. Parents and child have always lived in the country. The child is breast-fed and is in excellent health. Wassermann reaction is negative.

November 22. 12. Willie A., aged  $\frac{6}{52}$ . A normal child. Parents alive and well, and have always lived in the country. Two pregnancies. First, Andrina, aged  $2\frac{1}{2}$ , a bright healthy child. Wassermann reaction is negative. Second, Willie, who is breast-fed and healthy, Wassermann reaction is negative.

November 22. 12. Jean W., aged 1. A normal child. Father alive and well. Mother alive and well. Patient is the first child of the marriage: is healthy and the Wassermann reaction is negative.

November 22. 12. Sarah T., aged 11. A normal girl. Parents alive and well. Sarah is well developed and in good health. Wassermann reaction is negative. Parents and girl have always resided in country.

December 20. 12. Jean W., aged 10. A normal girl. Parents alive and well. Three pregnancies. First, Jean, healthy. Wassermann reaction is negative. Second, Annie, aged 8, healthy. Wassermann reaction is negative. Third, Sally, aged  $5\frac{1}{2}$ . The tonsils are slightly enlarged. Wassermann reaction is negative.

December 25. 12. Henry E., aged  $2/12$ . A normal child. Father alive and well. Mother alive and well. Six pregnancies. First, boy, aged 12, healthy. Second, boy, aged 10, healthy. Third, boy, aged 8, healthy. Fourth, girl, aged 6, healthy. Fifth, girl, died of measles. Sixth, Henry, healthy. Wassermann reaction is negative.

December 25. 12. James D., aged 1. A normal child. Father alive and well. Mother alive and well. Four pregnancies. First, girl, died of pneumonia. Second, boy, aged 6, healthy. Third, boy, aged 3, healthy. Fourth, James, healthy. Wassermann reaction is negative.

December 25. 12. May B., aged  $5/12$ . A normal child. Father suffers from chronic bronchitis. Mother alive and well. Five pregnancies. First, girl, aged 9, healthy. Second, girl, aged 7, healthy. Third, girl, died of Scarlatinal nephritis. Fourth, girl, aged  $2\frac{1}{2}$ , healthy. Fifth, May, healthy. Wassermann reaction is negative.

December 25. 12. John H., aged  $6/52$ . A normal child. Father had an attack of acute rheumatism six years ago. Mother alive and well. Three pregnancies. First, girl, aged 8, healthy. Second, boy, aged 4, healthy. Third, John, healthy. Wassermann reaction is negative.

December 25. 12. David B., aged  $6/52$ . A normal child. Father alive and well. Mother alive and well. Wassermann reaction is negative. Two pregnancies. First, John, aged 3, healthy. Wassermann reaction is negative. Second, David, healthy. Wassermann reaction is negative.

June 17, 12. Miss G., aged 27 1/2. Congenital syphilis.  
Father had a chancre 7 years ago. Mother had a frequent  
vaginal discharge. Five pregnancies. First abortion at  
5 months. Second abortion at 3 months. Third abortion at  
4 months. Fourth abortion at 3 months. Fifth child. She  
had meningitis, convulsions, position of skin of hands and  
feet. No eruption on the neck. Subsequent reaction is

PART ONE.

Miss H., 24. Miss J., aged 28 1/2. Congenital syphilis.  
Father had a chancre about 7 years ago. Mother had a chancre  
soon after marriage. Patient is an only child. There is  
a position of the feet. No eruption on the neck.

SECTION II.

UNSELECTED CASES.

Subsection (c) Positive town cases  
with other signs.

June 19, 12. Miss K., aged 27. Congenital syphilis.  
intermittent fever. No eruption on the neck. No history  
obtained. Subsequent reaction is positive.  
June 25, 12. Miss L., aged 26. Congenital syphilis. Mother died  
of syphilis. No other signs or evidence of syphilis  
obtained. Subsequent reaction is positive.  
July 5, 12. Miss M., aged 25. Congenital syphilis. Mother died  
of syphilis. No other signs or evidence of syphilis  
obtained. Subsequent reaction is positive.  
July 8, 12. Miss N., aged 24. Congenital syphilis. Father had  
syphilis. Mother gave a positive history. Three  
pregnancies. First abortion at the fifth month. Second  
child died of meningitis at 3 months. Third child, 2 1/2

June 17. 12. Lizzie C., aged  $\frac{6}{12}$ . Congenital Syphilis.

Father had a chancre 7 years ago. Mother has a frequent vaginal discharge. Five pregnancies. First, abortion at 6 months. Second, abortion at 3 months. Third, abortion at 4 months. Fourth, abortion at 3 months. Fifth, Lizzie. She had condylomata, stomatitis, peeling of skin of hands and feet but no eruption on the nates. Wassermann reaction is positive.

June 17. 12. James D., aged  $\frac{4}{52}$ . Congenital syphilis.

Father had a chancre about 7 years ago. Mother had a labial sore after marriage. Patient is an only child. There is peeling of the skin of hands and feet and an eruption on the buttocks. Wassermann reaction is positive.

June 19. 12. Fred L., aged 10. Swelling of wrist: interstitial keratitis. Father not seen. Mother gives a suspicious history. The patient gives a positive Wassermann reaction.

June 19. 12. Mary R., aged 6. Painless swelling of knee: interstitial keratitis. Parents not seen. No history obtained. Wassermann reaction is positive.

June 19. 12. Jane A., aged 3. Swelling of knee. Mother died of phthisis. Father shows no definite evidence of syphilis but gives a positive history. The child shows no other evidence of syphilis. Wassermann reaction is positive.

July 3. 12. Belle R., aged 6. Wasting. Father denies specific disease. Mother gives a positive history. Three pregnancies. First, miscarriage at the fifth month. Second, child died of Meningitis at 6 months. Third, Belle, who



had an eruption at 6 months: no scarring at angles of mouth. Wassermann reaction is positive.

July 10. 12. John McN., aged 4. Blepharitis Squamosa.

Father alive and well. Admits specific disease. Mother was infected during her last pregnancy. Three pregnancies. First, John. Wassermann reaction is negative. Second, Jean, aged 2. Wassermann reaction is negative. October 4. 12. Agnes aged  $10/365$ . Wassermann reaction is positive. Mother gives a positive Wassermann reaction. The mother had a secondary rash when seen in July and was put on mercury.

July 12. 12. Alfred McG., aged  $6\frac{1}{2}$ . Syphilis. Father not seen. Mother gives a positive history. Four pregnancies. First, Alfred. Wassermann reaction is positive. Second, abortion at the 3 month. Third, girl, full time, still-born. Fourth, abortion at the 4 month.

July 23. 12. Jessie W., aged 11. Cut forehead. Mother does not live with her husband. Father had syphilis 20 years ago. Wassermann reaction is positive. Patient has Hutchinsonian teeth. Wassermann reaction is positive.

July 30. 12. James McI., aged 4. Diarrhoea and vomiting. Father alive and well. Mother alive and well. Two pregnancies. First, James who has been eating unripe fruit. Wassermann reaction is positive. Second, girl, aged 1, healthy. There is no evidence of specific disease in parents of children. and the history is negative.

August 1. 12. David F., aged  $4\frac{1}{2}$ . Spastic Diplegia. Five pregnancies. First, girl, aged 10, healthy. Second, boy, aged 9, healthy. Third, girl, aged 7, healthy. Fourth,

David: breech presentation: no cyanosis. Rash on chest and in armpits when 2 weeks old. Was treated with powders. Legs spastic. Knee jerks increased: no ankle clonus.

Babinski's sign present in both. Wassermann reaction is positive. Fifth, boy, aged 2, healthy. Wass

August 1. 12. Matthew H., aged 8. Cleft palate and hare lip. Patient is an illegitimate child. After birth there was peeling of skin of hands and feet: there was snuffles. For 3 years he was on mercury. Teeth normal. Wassermann reaction is positive.

August 7. 12. Susan McN., aged 11. Fracture of R. clavicle. Parents are in Canada. Patient lives with an Aunt who says her sister had 3 abortions before patient was born. Patient has notched incisors but otherwise seems a healthy girl. Wassermann reaction is positive.

August 16. 12. John H., aged 2. Ulcers on legs. Patient has nothing very suggestive of syphilis. The ulcers are fairly deep and are discharging and somewhat resemble Bazin's disease. His guardian says his skin peeled at 6 weeks and he had a rash. Wassermann reaction is positive.

William, aged  $3\frac{2}{12}$ . Seems healthy, though he had condylomata before he was 3 months old. Wassermann reaction is positive.

August 16. 12. Sarah W., aged 11. Cut eyebrow. Parents were not seen. Patient has one sister alive and well. There have been several miscarriages. Patient's teeth are normal. Wassermann reaction is positive.

August 22. 12. James H., aged 9. Cut head. Patient has nothing

very suggestive of syphilis, but his mother had 2 abortions. His serum gives a positive Wassermann reaction. John, aged 7, seems quite healthy. Wassermann reaction is negative.

August 22. 12. William McK., aged 8. Periostitis of Tibia. Father has a tertiary ulcer on the front of the R. leg. Mother died of bronchitis. Four pregnancies. First, boy, aged 18, not seen. Second, abortion at fourth month. Third, boy, full time, died of convulsions when 4 weeks old. Fourth, William. There is much thickening of the R. Tibia. Teeth are normal, saddle-shaped nose, interstitial keratitis. Wassermann reaction is positive.

August 23. 12. William B., aged 10. Pneumonia. Parents were not seen. Patient had condylomata when an infant. He has typical Hutchinsonian teeth. Wassermann reaction is positive.

August 24. 12. Daniel McK., aged 8. Periostitis. Father not seen. Mother healthy. Specific history. Three Pregnancies. First, Daniel. Thickening of the tibia began after he was kicked at school. Wassermann reaction is positive. Second, Boy, died at 2 months of convulsions. September 3rd. 12. Patrick, aged 4, apparently healthy. Wassermann reaction is positive.

August 27. 12. Fred M., aged  $1\frac{7}{12}$ . Periostitis. Patient had an eruption on the buttocks when 2 months old. There is definite thickening of both femora and there is a fluctuant swelling of the thigh which contained semi-fluid blood. Wassermann reaction is positive.

- August 30. 12. Emma B., aged  $2\frac{1}{2}$ . Congenital syphilis.  
 Father is a sailor. Mother shows no evidence of specific disease, and the Wassermann reaction is negative. Two pregnancies. First Emma. When first<sup>seen</sup> by Dr. Leonard Findlay over 2 years ago the spleen was enlarged. She had snuffles, and the lips were hacked. Since then she has been on mercury. Wassermann reaction is positive. Second, Alfred, aged  $\frac{5}{12}$ . He has never shown any manifestations and the Wassermann reaction is negative.
- September 9. 12. John G., aged 10. Interstitial keratitis.  
 Both parents give a specific history. Patient's teeth are normal: slight thickening of the right femur: dactylitis. No thickening of metacarpals or metatarsals metatarsals. Wassermann reaction is positive.
- September 11. 12. James S., aged 14. Swelling of L. acromioclavicular joint. I saw this case for Dr. Logan Taylor. ? gumma. There is no history of rheumatism. The teeth have slight notching. Wassermann reaction is positive.
- September 11. 12. Jane B., aged 6. Periostitis. Father alive and well. Denies specific disease. Mother gives a history of specific disease before marriage. Six pregnancies, first five being abortions. Patient is the sixth child. One notched incisor is just appearing. Wassermann reaction is positive.
- September 14. 12. Peter D., aged 11. Femoral adenitis. Parents unknown. Four children are dead, one from convulsions at 3 months: twins born at 7 month, died same day as born.

Patient has typical Hutchinsonian teeth. Wassermann reaction is positive.

September 19. 12. Ann H., aged 2. Strabismus. Father alive and well. Not seen. Three pregnancies. First, girl, aged 5, healthy. Second, Ann, healthy till 6 weeks old: had a rash then and peeling of skin. Squint developed gradually. Wassermann reaction is positive. Third died 1 month old.

September 19. 12. May B., aged 4. Interstitial keratitis. Father drinks to excess. Mother denies specific disease. Five pregnancies. First, boy, aged 12, healthy. Second, boy, aged 10, healthy. Third, boy, aged 7, healthy. Fourth, May: there is nothing to suggest syphilis except the eye condition. Wassermann reaction is positive. Fifth, girl, aged 1, healthy.

September 25. 12. Annie W., aged 6. Syphilis. Mother is unmarried: secondary eruption on arms: mouth ulcerated and snail tracts on fauces. Wassermann reaction is positive. The child became ill after the mother and has condylomata of anus and vulva. Wassermann reaction is positive.

October 5. 12. Baby S., aged  $\frac{6}{12}$ . Female. Syphilis. Mother had an eruption 2 years ago: hair fell out and she suffered from severe headaches. She was under treatment for 2 years. Wassermann reaction is positive. Jessie S., aged 4, seems healthy. Wassermann reaction is negative. The baby had an eruption on buttocks after birth and has been on grey powder ever since. Wassermann reaction is positive.

October 11. 12. Michael O'B., aged 3. Ulcer on leg. Patient has had an ulcer on the leg for several weeks and has

attended the Sick Childrens' Dispensary for the past 4 weeks. The ulcer did not heal with the ordinary remedy. Wassermann reaction is positive.

October 15. 12. Kate A., aged 6. Malnutrition. An illegitimate child. There is scarring at the angles of the mouth which suggests congenital syphilis. Spleen is not palpable. Hb. 65%. Wassermann reaction is positive.

October 16. 12. Mary S., aged  $2/12$ . Syphilis. Father is a steward and a well behaved man, holding a good position and being a total abstainer. The blood was examined on his arrival with his boat. Wassermann reaction is negative. The mother says she was infected while her husband was away. She takes alcohol to great excess and sometimes goes on the street. When first seen she had secondary symptoms. Wassermann reaction is positive. Six children are alive. First, Viola, aged 8, no evidence of specific disease. Wassermann reaction is negative. Second, Annie, aged 6, healthy. Wassermann reaction is negative. Third, Francis, aged  $4\frac{1}{2}$ , healthy. Wassermann reaction is negative. Fourth, Wallace, aged 3, healthy. Wassermann reaction is negative. Fifth, John, aged  $1\frac{9}{12}$ , healthy. Wassermann reaction is negative. Sixth, Mary. She has typical congenital syphilis. Wassermann reaction is positive.

October 18. 12. Isa S., aged  $6/52$ . Syphilis. Father not seen. Mother has had Seven pregnancies: all children are alive. She gives a negative history but a positive Wassermann reaction. The child has typical congenital syphilis.

Wassermann reaction is positive. November 1. 12. Mary, aged  $2\frac{4}{12}$ . A sister, health always good. Wassermann reaction is negative.

October 18. 12. Nellie C., aged  $2\frac{7}{12}$ . ? Rickets. I saw this case for Dr. Agnes Cameron. There are frontal and parietal bosses giving rise to the natiform cranium. The spleen is palpable. Wassermann reaction is positive. Child died a week later. ~~November~~ <sup>October</sup> 25. 12. Mother was seen today. Five pregnancies, 2 of which were miscarriages, one died of toxic measles and one of marasmus. Wassermann reaction is positive.

October 25. 12. Jemima W., aged 3. Syphilis. Patient has typical congenital syphilis. The spleen is palpable. Wassermann reaction is positive. The mother and another child were seen on October 16. 12. Mother has had Five pregnancies, three of which were abortions. Jeanie W. is the second child and has a septic thumb. She is well nourished and seems otherwise healthy. Wassermann reaction is doubtful.

October 25. 12. David C., aged 2. Syphilis. Patient has attended the Sick Childrens' Dispensary for nearly 2 years. He has been treated with grey powders and seems in good health. Wassermann reaction is positive.

October 26. 12. Agnes C., aged  $\frac{6}{12}$ . Syphilis. Parents unknown. Patient has a severe attack of congenital syphilis. Wassermann reaction is positive.

October 30. 12. Susie W., aged  $\frac{6}{12}$ . Syphilis. Father was not seen. Mother says she has been treated at the Royal

Infirmary for specific disease. This is an only child: has typical congenital syphilis with an enlarged spleen. Wassermann reaction is positive.

- November 1, 12. Jean M., aged  $2/12$ . Bronchitis. Mother drinks to excess. Two pregnancies. First, Annie, aged 2, healthy. Wassermann reaction is negative. Second, Jean. Buttocks, vulva and both thighs have a very marked coppery eczema. The spleen is palpable. Wassermann reaction is positive.
- November 1, 12. Jessie T., aged  $4/12$ . Syphilis. Father alive and well. Mother alive. Wassermann reaction is positive. Three pregnancies. First, miscarriage at 6 months. Second, miscarriage at 7 months. Third, Jessie. Full time. Health good till 6 weeks old. Was at breast till 2 months: rash appeared: snuffles. She has typical congenital syphilis. Wassermann reaction is positive.
- November 1, 12. Lizzie R., aged  $6/52$ . Syphilis. Father alive and well. Mother alive and well. Wassermann reaction is negative. Three pregnancies. First, miscarriage at 6 months. Mother had a rash and sore throat afterwards and was under treatment for a period of 3 years. Second, boy, aged 3, healthy. He had a rash at 6 weeks. Third, Lizzie. She had a rash on the buttocks one week after birth, followed by the usual symptoms of congenital syphilis. Wassermann reaction is positive.
- November 1, 12. Thomas L., aged  $6/12$ . Syphilis. Father alive and well. Mother alive and well. Wassermann reaction is positive. Three pregnancies. First, boy, died at 5 months. Second, boy, aged 2, alive and well. Third, Thomas. At 2 weeks he had a rash and he lost weight. Wassermann reaction is positive.



- November 13. 12. Baby McG., aged  $\frac{2}{12}$ . Syphilis. Mother is unmarried. She gives a positive history and the Wassermann reaction is positive. The child is much emaciated and has condylomata of anus. The spleen is enlarged. Wassermann reaction is positive.
- November 12. 12. Jessie K., aged  $1\frac{1}{2}$ . Syphilis. Father alive and well. Mother has had four pregnancies, 2 being miscarriages. Patient had typical congenital syphilis when first seen. Wassermann reaction is positive.
- November 12. 12. William M., aged 9. Tinea Tonsurans. Father alive and well. Mother alive and well. The diagnosis was confirmed by a microscopical examination. There have been several miscarriages. Patient has some small multiple abscesses on the leg. Wassermann reaction is positive.
- November 15. 12. Helen B., aged  $\frac{2}{12}$ . Syphilis. Father alive and well. Mother gives a negative history though she has a suspicious ulcer on the leg. Wassermann reaction is positive. Six pregnancies. First, full time, dead born. Second, boy, died of pneumonia at  $1\frac{1}{2}$  years. Third, girl, died of measles at 3 years. Fourth, boy, aged 4, healthy. Fifth, boy, died of hernia at 2 years. Sixth, Helen. Dr. Edington saw her 3 weeks ago when she had no rash. 2 weeks ago she had snuffles and she has now typical congenital syphilis. Wassermann reaction is positive.
- November 15. 12. Joseph McK., aged  $\frac{6}{52}$ . Syphilis. Mother alive and well. Negative history. Wassermann reaction is positive. Five pregnancies. First, died at 6 months of

convulsions. Second, still born. Third, aged 7, healthy. Fourth, boy, died of measles. Fifth, Joseph. He developed snuffles one week ago and at present has typical congenital syphilis. Wassermann reaction is positive.

November 23. 12. Lizzie J., aged 6. Syphilis. Father alive and well. Mother alive. Wassermann reaction is positive. Four pregnancies. First, Lizzie. She was healthy till 6 months old when the lips hacked and she became emaciated. She has cicatrices at the angles of the mouth: slight keratitis: osteitis of both humeri, left fibula and right tibia. There is much pain at night. Wassermann reaction is positive. Second, boy, died at 5 weeks. Third, Henry, aged  $3\frac{1}{4}$ . When 7 weeks old he attended the Sick Children's Hospital and was put on mercury. Wassermann reaction is positive. Fourth, girl, died at 4 weeks.

November 23. 12. Matilda C., aged 13. Syphilitic arthritis. Father died of pneumonia. Mother alive and well. Twelve pregnancies, two being miscarriages. Bella, aged 21, is married and gives a negative history and negative physical signs but the Wassermann reaction is doubtful. Matilda had measles 5 years ago and at that time a rash was noticed in the perineal region. Four months ago she had hydrops of both knees. There are cicatrices at angles of mouth: no teeth changes. An ~~X~~-ray plate shows surfaces of bone far apart. Otherwise negative. Wassermann reaction is positive.

November 26. 12. James D., aged 1. Wasting. Mother denies specific disease but shows evidence of it. Wassermann

reaction is positive. Two pregnancies. First, illegitimate, aged 3, healthy. Second, James. Mother's hair began to fall out after birth of child. At 2 months he had eczema of face and buttocks. He is much emaciated and there are cicatrices on the forehead. Wassermann reaction is positive.

November 26. 12. Leonard W., aged 2. Bronchitis. Father is in America. Mother lives with another man. No history. Child is emaciated and the spleen is much enlarged. There is no scarring at the angles of the mouth. Wassermann reaction is positive.

December 3. 12. Muriel M., aged 2. Rickets. Father not seen. Mother gives a negative history. Wassermann reaction is positive. Five pregnancies. First, girl, aged 9, alive and well. Second, boy, died of pneumonia. Third, boy, aged 6, alive and well. Fourth, boy, aged 4, alive and well. Fifth, Muriel. There is a tendency to hot-cross bun head which is regarded as suggestive of specific disease. Wassermann reaction is positive.

December 3. 12. Alick G., aged 7. Tinea circinata. Parents not seen. Patient has a large patch of ringworm on the left wrist. He has serrated upper incisors. There is eczema at the lobule of the left ear and at the right side of the nostril. Wassermann reaction is positive.

December 3. 12. Mary C., aged 9. Paroxysmal haemoglobinuria. Patient seems healthy, well nourished and without any definite stigmata of hereditary syphilis, although the upper central incisors are wide apart, short, and pegged.

The first attack of haemoglobinuria occurred at the age of  $2\frac{1}{2}$  years and there was no other for 6 months. Thereafter attacks became more frequent. The child had measles when 6 months old. During her second year her state of nutrition was apparently poor (She was said to suffer from "decline"), and she was affected with snuffles. The Wassermann reaction is positive.

December 9, 12. Mary C., aged 11. Chorea. Father alive and well. Mother alive and gives a positive Wassermann reaction. Three pregnancies. First, Mary, ~~Mary~~. She had her first attack one year ago and the second has lasted for three weeks. She shows no evidence of syphilis. Wassermann reaction is positive. Second, boy, aged 8, alive and well. Third was a still birth 2 years ago.

December 13, 12. Patrick C., aged 6. Syphilis. Father is a soldier. Mother takes alcohol to excess. Wassermann reaction is positive. Patient first came under observation for congenital syphilis. Wassermann reaction is positive.

December 20, 12. John James McI., aged 3. Syphilis. Mother died 7 months ago of phthisis. Patient has a coppery coloured squamous eruption on the face, neck, groins, sacrum and scrotum. There are corneal opacities. Wassermann reaction is positive. Maimie, aged 15, is a half sister. She has looked after him since the mother died. She has keratitis and tonsillitis. Wassermann reaction is positive. (The father of both children is the same).

December 20. 12. Christina C., aged  $\frac{6}{52}$ . Syphilis. Father alive and well. Mother gives a positive history and the Wassermann reaction is positive. Three pregnancies. First, still birth at 7 months. Second, full time, lived 6 hours. Third, Christina, who has typical congenital syphilis. Wassermann reaction is positive.

January 22. 13. John W., aged  $\frac{2}{12}$ . Syphilis. Father alive and well. Mother had syphilis six years ago. Six pregnancies. First, boy, died of meningitis. Second, boy, fulltime, still born. Third, an abortion. Fourth, girl, full time, still born. Fifth, Annie, aged 4. Scarring at angles of mouth, saddle-shaped nose. Sixth, John, lips cracked, coppery eczematous <sup>rash</sup> on face and buttocks, scaling of palms and soles: spleen palpable. Wassermann reaction is positive. January 23. 13. Annie. Wassermann reaction is positive.

June 19, 12. Patrick W., aged 5. A normal child. Father  
alive and well. Mother had an eruption before the child  
was born. The child had peeling of skin and an eruption  
on the buttocks soon after birth. Wassermann reaction is  
positive.

July 30, 12. Kate V., aged 6. A normal child. Father has  
held several good positions but has been unable to keep  
them. Present a ship's steward. He had venereal  
disease at 13 and was treated for a month in the Royal  
Infirmary, Glasgow. Wassermann reaction is positive.

PART ONE.

When 21 years old he married patient's mother. She had a  
labial sore after marriage. She has been married for 10  
years. There is no history of her having had a mis-  
carriage before she had any children. The Wassermann  
reaction is positive.

SECTION II.

UNSELECTED CASES.

Subsection (d) Town cases apparently  
normal but with a  
positive Wassermann  
reaction.

apparently healthy but with no evidence of specific disease.  
The Wassermann reaction is positive. Second, Kate,  
Wassermann reaction is positive. Third, Francis, aged 4,  
healthy, Wassermann reaction is negative. The fourth  
is a healthy boy, aged 14. Blood not examined.

October 5, 12. John M., aged 11. A normal boy. Parents and  
2 other children are alive and well. There is nothing  
suggestive in the family history of an physical examination.  
Wassermann reaction is positive.

October 5, 12. Jessie F., aged 10. A normal girl. Parents  
dead. Patient and her sister live with an aunt, Jessie

June 19. 12. Patrick M., aged 3. A normal child. Father alive and well. Mother had an eruption before the child was born. The child had peeling of skin and an eruption on the buttocks soon after birth. Wassermann reaction is positive.

July 30. 12. Kate W., aged 6. A normal child. Father has held several good positions but has been unable to keep them and is at present a ship's steward. He had venereal disease at 18 and was treated for a month in the Royal Infirmary, Glasgow. Wassermann reaction is positive. When 21 years old he married patient's mother. She had a labial sore after marriage. She has been married for 10 years. There is the suspicion of her having had a miscarriage before she had any children. The Wassermann reaction is positive. Four pregnancies. First, William, aged 8. Paroxysmal haemoglobinuria. He is a bright and apparently healthy boy with no evidence of specific disease. The Wassermann reaction is positive. Second, Kate. Wassermann reaction is positive. Third, Francis, aged 4, healthy. Wassermann reaction is negative. The fourth is a weakly boy, aged  $2\frac{1}{2}$ . Blood not examined.

October 5. 12. John M., aged 3. A normal boy. Parents and 2 other children are alive and well. There is nothing suggestive in the family history of on physical examination. Wassermann reaction is positive.

October 5. 12. Jessie F., aged 10. A normal girl. Parents dead. Patient and her sister live with an Aunt. Jessie

is sometimes troubled with constipation. Her Aunt says she is a splendid scholar and spends nearly all her time preparing her lessons. Her teeth are normal. Wassermann reaction is positive.

October 16. 12. Mary M., aged 7. Healthy. Patient is an illegitimate child and no history could be obtained. The left femur is slightly curved: genu valgum. She sweats greatly at night. There is nothing suspicious of syphilis. Wassermann reaction is positive.

November 26. 12. Hugh H., aged 5. A normal boy. Parents unknown. No history obtained. Child seems quite normal, and there is nothing suggestive of syphilis. Wassermann reaction is positive.

January 15. 13. Jessie K., aged 7. A normal girl. Father is a sailor. Mother died of cancer three years ago. Three pregnancies. First, boy, died of Meningitis. Second, Jessie, who seems healthy. Wassermann reaction is positive. Third, Agnes, aged 5, who seems healthy. Wassermann reaction is positive.

January 23. 13. Bessie D., aged 2. A normal child. Father alive and well. Mother alive and well. No history of specific disease. Patient is an only child and shows no evidence of syphilis. Wassermann reaction is positive.

February 20. 13. Minnie W., aged 9. A normal girl. Father alive and well. Denies specific disease. Wassermann reaction is positive. Mother denies specific disease. Wassermann reaction is positive. Six pregnancies. First,



Annie, aged 26. healthy. Wassermann reaction is positive. Second, Jane, aged 23, healthy. Wassermann reaction is positive. Third, Bella, aged 20, healthy. Wassermann reaction is positive. Fourth, Peter, aged 16, healthy. Wassermann reaction is positive. Fifth, Theresa, aged 13, healthy. Wassermann reaction is positive. Sixth, Minnie, aged 9, healthy. Wassermann reaction is positive.

Case No. 100. ... aged 8. ... Father died 1 year ... had a sore on right leg ... Mother was not seen. Patient ... all over the limbs, trunk and scalp. On the ... a suggestion of a squamous thick. Examination ...

PART ONE.

Case No. 101. John S., aged 6. Disease of tibia and knee joint. ... adapted at birth. Right tibia is thickened ... joint is involved. Examination indicates ... reaction is doubtful.

SECTION II.

Case No. 102. ... aged 1/2. ... Examination ... and well. The sister and two brothers alive ... reaction is doubtful.

UNSELECTED CASES.

Subsection (e) Doubtful Town cases.

Case No. 103. ... Mother alive and well. This is ... There are several ... on the legs. Examination reaction is ... in the other child not seen recently. ... reaction is doubtful.

Case No. 104. Jessie S., aged 14. ... First Jessie. Examination ... Second girl, aged 7, healthy. ... is at present suffering from ... which is showing a somewhat chronic type. Examination reaction is doubtful.

Case No. 105. Frank S., aged 11. Gastro-enteritis. Father ... Mother alive and well. Four

July 24. 12. Dora A., aged 8. Psoriasis. Father died 1 year ago: took alcohol to great excess: had a sore on right leg for some years before he died. Mother was not seen. Patient has psoriasis all over the limbs, trunk and scalp. On the limbs there is a suggestion of a coppery tint. Wassermann reaction is doubtful.

July 24. 12. John B., aged 6. Disease of tibia and knee joint. Parents unknown: adopted at birth. Right tibia is thickened in upper third and the joint is involved. Permanent incisors not yet erupted. Wassermann reaction is doubtful.

August 31. 12. John Joseph K., aged  $\frac{2}{12}$ . Congenital hydrocele. Parents alive and well. One sister and two brothers alive and well. Wassermann reaction is doubtful.

September 3. 12. George L., aged  $\frac{1}{12}$ . Debility and abscesses. Father is alive and well. Mother alive and well. This is the first pregnancy. Patient is a twin. There are several superficial abscesses on the legs. Wassermann reaction is doubtful. Annie is the other child and seems healthy, but the Wassermann reaction is doubtful.

September 3. 12. Jessie T., aged 10. Phthisis. Parents died of phthisis. Three pregnancies. First, Jessie. Wassermann reaction is doubtful. Second, girl, aged 7, healthy. Third, Davidina, aged 4, who is at present suffering from broncho-pneumonia which is assuming a somewhat chronic type. Wassermann reaction is doubtful.

September 3. 12. Frank B., aged  $1\frac{1}{2}$ . Gastro-enteritis. Father takes alcohol to excess. Mother alive and well. Four

pregnancies. First, Sarah, aged 6, healthy. Wassermann reaction is negative. Second, Gavin, aged 4, healthy. Wassermann reaction is doubtful. Third, Andrew, aged 3, gastro-enteritis. Wassermann reaction is negative. Fourth, Frank, Wassermann reaction is negative doubtful.

September 3. 12. Rachel H., aged 2. Diarrhoea and vomiting. Father alive and well. Mother takes alcohol to excess. Two pregnancies. First, Rachel: improperly fed. Wassermann reaction is doubtful. Second, girl, aged  $\frac{3}{12}$ , healthy.

September 3. 12. Sarah R., aged 3. Tonsillitis. Father alive and well. Mother alive and well. Three pregnancies. First, girl, aged  $5\frac{1}{2}$ , healthy. Second, Sarah. Snored at night: tonsils inflamed: adenoids. Wassermann reaction is doubtful. Third, abortion at  $4\frac{1}{2}$  months.

September 3. 12. Patrick McG., aged 3. Otitis Media. Father alive and well. Mother has measles. Other three children have measles. Patrick had measles. The ear began to discharge 2 days ago. Wassermann reaction is doubtful.

September 3. 12. Moses R., aged  $\frac{2}{12}$ . Pyloric stenosis. Father is a sailor. Mother suffers from sore throat. Three pregnancies. First, boy, died 24 hours after birth. Second, girl, died 3 days after birth. Third, Moses who is very thin, weighs  $4\frac{1}{2}$  lbs. vomits after every meal and is constipated. No definite thickening could be made out. He died 10 <sup>days</sup> later when the diagnosis was confirmed by a P.M. examination. Wassermann reaction is doubtful.

September 3. 12. Annie S., aged  $\frac{3}{12}$ . Umbilical hernia. Father alive and well. Mother has phthisis. Patient is an only child. Wassermann reaction is doubtful.

- September 3. 12. Robert R., aged  $\frac{4}{12}$ . Gastritis. Father alive and well. Mother alive and well. Three brothers and one sister alive and well. No miscarriages. The serum of the patient gives a doubtful Wassermann reaction.
- September 3. 12. Frederick J., aged 6. Cervical abscess. Father is in prison. Mother drinks to excess. Three pregnancies. First, abortion. Second, Frederick. Crusts on the head. Wassermann reaction is doubtful. Third, girl, aged 4, healthy.
- September 3. 12. Jane L., aged  $\frac{3}{12}$ . Fracture of R. clavicle. Father alive and well. Mother drinks to excess. She allowed the patient to fall from a high bed. Wassermann reaction is doubtful.
- September 3. 12. Agnes McQ., aged  $\frac{6}{12}$ . Torticollis. Parents alive and well. Patient is an only child. Wry neck is well marked. Wassermann reaction is doubtful.
- September 3. 12. Peter L., aged  $\frac{1}{12}$ . Hare lip. Father alive and well. Grandfather and 2 paternal Aunts had hare lip. Mother is healthy. Patient is an only child. Wassermann reaction is doubtful.
- September 3. 12. Harry McN., aged  $\frac{6}{12}$ . Anaemia. Father died of pernicious anaemia 4 months ago. Mother is alive and well. Patient is an only child. Spleen is enlarged. Hb. 38%, R.B.C. 2,760,000. W.B.C. 15,000. Wassermann reaction is doubtful.
- September 3. 12. Henry T., aged 6. Spinal caries. Father is in Stobhill with phthisis. Mother alive and well. Two pregnancies. First, boy, died of meningitis at 2 years. Second, Henry. Wassermann reaction is doubtful.

- September 3. 12. John P., aged 7. Lateral curvature. Parents alive and well. Three brothers alive and well. One brother and two sisters died of toxic measles. Patient has lateral curvature of the first degree. Wassermann reaction is doubtful.
- September 3. 12. Annie McP., aged  $2/12$ . Inguinal hernia. Father alive and well. Nine brothers and four sisters alive and well. One sister died of diphtheria. Patient seems to have a patent canal of Nuck. Wassermann reaction is doubtful.
- September 3. 12. Bella McP., aged 3. Mumps. Father alive and well. Mother died of phthisis. Two brothers and two sisters alive and well. The serum of patient gives a doubtful Wassermann reaction.
- September 3. 12. Hugh McQ., aged 2. Bronchitis. Father alive and well. Mother takes alcohol to excess. Patient is an only child: has marked rickets: diarrhoea from time to time. Wassermann reaction is doubtful.
- September 3. 12. Joseph D., aged  $2/12$ . Hydrocele and hernia. Father alive and well. Mother alive and well. Four pregnancies. First, Sarah, aged 4, healthy. Wassermann reaction is doubtful. Second, Felix, aged  $2\frac{1}{2}$ , epilepsy: no mental defect. Wassermann reaction is doubtful. Third, Henry, aged  $1\frac{2}{12}$ . Wakes convulsions. Wassermann reaction is doubtful. Fourth, Joseph, Wassermann reaction is doubtful.
- September 7. 12. James W., aged 2. Multiple abscesses. Father alive and well. Mother suffers from periodic sore throat. Three pregnancies. First, abortion at 2 months. Second, James. Wassermann reaction is doubtful. Third, abortion at 4 months.

September 14. 12. Peter C., aged  $10/12$ . Marasmus. Father had syphilis 9 years ago. Mother had slight symptoms after marriage. Four pregnancies. First, girl, aged 8, healthy. Second, boy, aged 6, healthy. Third, girl, aged 3, healthy. Fourth, Peter, Liver and spleen enlarged. Hb. 65%. Wassermann reaction is doubtful.

October 15. 12. John T., aged  $1^2/12$ . Rickets. Father is a soldier. Mother takes alcohol to excess. Two pregnancies. First, boy, died of meningitis, at 3 months. Second, John. Spleen palpable: scarring at angles of mouth: bronchitis. Wassermann reaction is doubtful.

October 15. 12. Robert T., aged  $8/12$ . Rhinitis. Father is a sailor, and was not seen. Mother drinks to excess. No abortions. Three children died of "decline" of bowels. Robert has always been healthy, except for the past month. Spleen seems normal. Wassermann reaction is doubtful.

October 15. 12. Frank F., aged 11. Ozoena. Parents unknown. Patient has had ozoena for the past 6 months. Typical Hutchinsonian teeth: slight dactylitis of the left middle phalanx: definite fissures at both angles of mouth. Wassermann reaction is doubtful.

October 16. 12. John McE., aged 6. Burn on leg. Parents unknown. Patient has a degree of blepharitis and photo-phobia: there are corneal opacities and some radiate scarring at the angles of the mouth. Wassermann reaction is doubtful.

October 18. 12. Isobel McG., aged 3. Interstitial keratitis. Mother has left her husband. Seven pregnancies. First, full

time, still birth. Second, full time, still birth. Third, abortion at the 4th month. Fifth, boy, died at 3 weeks of meningitis. Sixth, girl, died of an eruption. Seventh, Isobel. Wassermann reaction is doubtful.

October 18. 12. Annie D., aged 6. Blindness. Parents unknown. No history. Ground glass corneae: old dactylitis of second and finger of right hand: definite scarring in fissures at the angles of the mouth. Wassermann reaction is doubtful.

October 18. 12 David P., aged 6. Healthy. The mother gave a negative history. The child seems quite normal but the Wassermann reaction is doubtful.

October 25. 12. Elizabeth G., aged 9. Chorea. No history was obtained. Patient seems otherwise healthy: no suspicion of specific disease. Wassermann reaction is doubtful.

October 30. 12. Jessie T., aged  $1\frac{1}{2}$ . Syphilis. Patient has attended the Sick Childrens' Dispensary since she was 1 month old. At that time she was suffering from typical congenital syphilis. She was treated with mercury. Wassermann reaction is doubtful.

October 30. 12. John H., aged  $\frac{6}{52}$ . Congenital syphilis. Mother has had 3 pregnancies. First, boy, died of convulsions. Second, boy, full time, still born. Third, John. Slight peeling of skin and eruption on the buttock. Wassermann reaction is doubtful.

October  
November 5. 12. Flora R., aged  $\frac{10}{12}$ . Syphilis. Parents are unknown. Child was seen first 3 weeks after birth: spleen



enlarged: cracking of lips: coppery eczema of buttocks. She has been on mercury since then. Wassermann reaction is doubtful

November 5. 12. Ruth R., aged 2. Syphilis. Parents unknown.

Child first seen in April 1912. At that time she was emaciated pale, and the spleen was enlarged. There are fissures at the angles of the mouth. She has been on mercury. Wassermann reaction is doubtful.

November 13. 12. Andrew T., aged 1. Syphilis. Father had syphilis 10 years ago. Mother alive and well. Three pregnancies. First, girl, full time, still born. Second, boy, died of convulsions at 4 months. Third, Andrew. He had a rash soon after birth and was put on mercury. Wassermann reaction is doubtful.

November 26. 12. George L., aged 3. Syphilis. Father had syphilis before marriage. Mother was not seen. Patient has been on mercury. Wassermann reaction is doubtful.

November 29. 12. Henry G., aged  $10/12$ . Syphilis. Father is a sailor. Mother gives a positive history. There have been 3 abortions and nine still born children. Patient is the only living child. When first seen he had typical congenital syphilis. Wassermann reaction is doubtful.

December 17. 12. Nicholas O'B., aged 12. Psoriasis. Father alive and well. Mother died when patient was born from puerperal fever. Patient has had psoriasis for the past  $1\frac{1}{2}$  years and has not got well under the usual treatment. Wassermann reaction is doubtful.

March 16. 1913. James B., aged 9. Rickets. Father alive and well. Other four children in good health. Two children are dead. Patient has large head, which measures  $20\frac{1}{4}$  inches. He has "saddle" nose, but no cicatrices at the angles of the mouth. His upper central incisors are notched. Wassermann reaction is doubtful.

PAGE ONE.

EXCISE II.

UNSELECTED CASES.

Subscription (2) Negative Down cases  
with other signs.

August 27. 18. Agnes L., aged 10. Spastic hemiplegia. Parents are alive and well. Four pregnancies. First terminated in a miscarriage at the 2 months. Second issue. Cephalic presentation no difficulty at birth. Left leg and arm spastic. Babinski's sign is positive. Knee jerk increased. No dental defect. Wassermann reaction is negative. Third issue, aged 1 1/2, healthy. Wassermann reaction is negative. Fourth, aged 14 months, healthy.

PART ONE.

August 28. 18. Annie M., aged 11. Sarcoma. Father is in the army. Mother denies specific disease. Patient is an only child. No history of eruptions or anemias. The spleen is palpable. Wassermann reaction is negative.

SECTION II.

August 29. 18. Mrs. M. Sarcoma. Father takes alcohol in excess. Mother alive and well. Three pregnancies. First, boy, aged 2, healthy. Second, boy, aged 1 1/2, healthy. Third, child. Subsection (f) Negative Town cases with other signs.

UNSELECTED CASES.

Third child. Spleen is readily palpable. Wassermann reaction is negative.

August 30. 18. Anna M., aged 11. Sarcoma. Mother had specific disease. Father had a rash after marriage. Four pregnancies. First abortion at the third month. Second full term. Child of convulsions at 2 months. Third abortion at the fourth month. Fourth issue. Liver and spleen are palpable and there are elevations of the angles of the mouth. Wassermann reaction is negative.

August 31. 18. Agnes M., aged 11. Sarcoma. Father is a caller. Mother had specific disease after marriage. Two pregnancies. First abortion at the third month. Second is positive. There are elevations of the angles of the

August 27. 12. Agnes L., aged  $4\frac{1}{2}$ . Spastic hemiplegia. Parents are alive and well. Four pregnancies. First terminated in a miscarriage at the 6 months. Second, Agnes. Cranial presentation: no difficulty at birth. Left leg and arm spastic. Babinski's sign is positive. Knee jerks increased. No mental defect. Wassermann reaction is negative. Third, Grace, aged  $2\frac{3}{4}$ , healthy. Wassermann reaction is negative. Fourth, boy, aged 14 months, healthy.

August 30. 12. Annie H., aged  $\frac{3}{12}$ . Marasmus. Father is in the army. Mother denies specific disease. Patient is an only child. No history of eruptions or snuffles. The spleen is palpable. Wassermann reaction is negative.

August 30. 12. Helen McQ., aged  $\frac{2}{12}$ . Marasmus. Father takes alcohol to excess. Mother alive and well. Three pregnancies. First, boy, aged 5, healthy. Second, boy, aged  $2\frac{1}{2}$ , healthy. Third, Helen. Patient has no stigmata but the spleen is readily palpable. Wassermann reaction is negative.

August 30. 12. James McQ., aged  $\frac{4}{12}$ . Marasmus. Father had specific disease. Mother had a rash after marriage. Four pregnancies. First, abortion at the third month. Second, full time, died of convulsions at 2 months. Third, abortion at the fourth month. Fourth, James. Liver and spleen are palpable and there are fissures at the angles of the mouth. Wassermann reaction is negative.

August 30. 12. Johannes R., aged  $\frac{1}{12}$ . Marasmus. Father is a sailor. Mother had venereal disease after marriage. Two pregnancies. First, abortion at the third month. Second is patient. There is some desquamation of the spleen of the

feet. Wassermann reaction is negative.

August 30. 12. James R., aged 2. Measles. Father denies specific disease. He has 3 ulcers on the right leg, which suggest it and the glands in the groin are shotty.

Wassermann reaction is negative. Mother died of phthisis.

This is the only child of the marriage and he shows no evidence of specific disease. Wassermann reaction is negative.

September 3. 12. Fred L., aged 7. Abscess of leg. Father alive and well. Mother alive and well. Three pregnancies. First, abortion at the third month. Second, Fred. There is swelling of the inner side of the left thigh which seems connected with the bone. His teeth are peg-shaped. Wassermann reaction is negative. Third, abortion at the 4th month.

September 7. 12. Crissie A., aged 2. Ulcerations of mouth. Father had a hard chancre some years ago. Wassermann reaction is positive. Mother was not seen. The child had a rash after birth. There is nothing suggestive of specific disease. Wassermann reaction is negative.

September 7. 12. Thomas H., aged 8. Interstitial keratitis. No history was obtained. Patient has notched incisors and some scarring at the angles of the mouth. Wassermann reaction is negative.

September 14. 12. Peter P., aged 6. Periostitis of leg and arm. Father gives a negative history. Mother denies specific disease. Eight other children are alive and well. A twin boy died at  $2\frac{3}{4}$  years of convulsions. Patient is not

well nourished. Wassermann reaction is negative in the child, but positive in the mother.

September 28. 12. Ella W., aged 1. Marasmus. Father is a soldier. Mother has had 3 abortions. Patient is very much emaciated. Wassermann reaction is negative.

September 28. 12. Annie A., aged 3. Ulcers on legs. Patient is an illegitimate child. No history was obtained. There is scarring at the angles of the mouth and some deep fissures. The ulcers on the legs are multiple with healthy skin between them. Wassermann reaction is negative.

October 4. 12. Archibald W., aged  $2\frac{3}{4}$ . Sinuses of L. arm. Father not seen. Mother pale: chest flat: deficient R.M. at the apex of lung. Five pregnancies. First, girl, aged 12, healthy. Second, boy, aged 9, healthy. Third, girl, died of convulsions. Fourth, boy, aged  $4\frac{1}{2}$ . Epileptic. Fifth is the patient. There is definite thickening of the upper third of the radius and the elbow joint is involved. Wassermann reaction is negative.

October 11. 12. Joseph McL., aged  $\frac{3}{12}$ . Syphilis. Mother gives a specific history. Wassermann reaction is positive. Five pregnancies. One abortion: one child died of convulsions: another died when 2 weeks old. One healthy child was born before the mother was infected. Patient has a specific eruption. Wassermann reaction is negative.

October 25. 12. Albert C., aged  $\frac{9}{12}$ . Rickets. There have been fourteen children, seven of whom are alive. There was a miscarriage between the twelfth and thirteenth. Albert was

first seen on May 2. 12. when he was suffering from **stano-**  
**tabes:** spleen palpable: no rickets at that time. He was  
 put on mercury. He returned five months afterwards with  
 definite rickets. Wassermann reaction is negative.

November 1. 12. Conrad R., aged  $1^2/12$ . Syphilis. ~~#####~~

~~#####~~ She has been on potassium iodide and mercury  
 for several months. Wassermann reaction is negative. She  
 has been twice married. First family, three healthy children.  
 Second family, one child, the patient. When he was first  
 seen he had typical congenital syphilis: hacked lips:  
 snuffles: ulceration of the scrotum: enlarged testes:  
 peeling of palms and soles: a patch of eczema over the fore-  
 head and he was pale. Spleen palpable. Wassermann reaction  
 is negative. Annie, aged 9, a half sister. Debility: slight  
 cough and sweating at night: no enlarged glands: spleen not  
 palpable. Von Pirquet's test is negative. Wassermann  
 reaction is negative.

November 8. 12. Joy W., aged 4. Spastic diplegia. Her mother  
 is dead. There is a history of abortions in the first  
 family. Patient has ridged arms and legs but no apparent  
 mental defect. Wassermann reaction is negative.

November 29. 12. Bessie C., aged  $1^8/12$ . Rickets. Mother gives  
 a negative history but a positive Wassermann reaction. Five  
 pregnancies. First, a still birth. Second, boy, aged 6,  
 healthy. Third, a girl, aged 4, in poor health. Fourth, a  
 miscarriage. Fifth, Bessie. Marked rickets. Frontal and  
 parietal bosses: hot cross bun type of head. Wassermann

reaction is negative.

November 29. 12. James D., aged  $7/12$ . Sores on head. Mother is unmarried. Height  $3'11\frac{1}{2}"$ , with boots on. Caesarian section was performed at the Maternity Hospital. Wassermann reaction is negative. James is a delicate child. The sores on the head are suggestive of specific disease though he has no other manifestations. Wassermann reaction is negative.

November 29. 12. Marian S., aged 1. Syphilis. Parents unknown. An illegitimate child. When first seen patient had hacked lips, a coppery eczema of buttocks and face. She has been on treatment for some time. Wassermann reaction is negative.

December 13. 12. James V., aged  $17/12$ . Rickets. Father alive and well. Mother alive and well. Her hair has been coming out for some time. Two pregnancies. First, James. His condition suggests rickets but there is bossing on the parietal bones as in syphilis. His head resembles the hot-cross bun type. Spleen is not enlarged. Wassermann reaction is negative. Second, child aged 6 months. This child was not seen. December 16. 12. The serum of the mother gives a positive Wassermann reaction.

December 17. 12. Ester S., aged  $7/52$ . Atrophy. Father alive and well. Mother denies specific disease but gives a positive Wassermann reaction. Seven pregnancies: all are dead but patient. First, miscarriage at 8 months. Second, a miscarriage at 7 months. Third, a miscarriage at 5 months. Fourth, twins at 6 months. Fifth, full time, lived 2 years and died of measles. Sixth, a miscarriage at 8 months. Seventh is the patient who was born in the Maternity Hospital. She is small



and is much atrophied. Wassermann reaction is negative.

February 8. 13. Baby B., aged  $10/12$ . Dactylitis. Father alive and well. Mother six years married. Wassermann reaction is positive. One pregnancy. No abortions. Child is emaciated. Has long black hair: spleen palpable. Dactylitis of toes, thumb and metacarpal of thumb (the latter is suppurating).

Wassermann reaction is negative.

February 13. 13. James G., aged  $8/12$ . von Jaksch's anaemia.

Father not seen. Mother gives a negative history. Wassermann reaction is positive. Two pregnancies, First terminated in abortion. Second is the patient. The child is markedly anaemic and the spleen is much enlarged. Wassermann reaction is negative. February 16. 13. Father was seen today. He suffers from bronchitis, with occasional asthma. He denies specific disease. Wassermann reaction is negative.

March 2. 13. Ronald T., aged  $1\frac{1}{2}$ . ? Rickets. Patient is an illegitimate child. There is bulging of the temporal bones above the ears. There are frontal and parietal bosses with a hot-cross bun type of head, (which is regarded by many authorities as a syphilitic condition). Wassermann reaction is negative.

PART ONE.

SECTION III.

CONGENITAL HEART DISEASE.

## SECTION III. -

Cardiac disease.  
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In the past congenital heart disease has been almost universally regarded as a rheumatic endocarditis occurring during foetal life, and with a predilection for the right side of the heart. The British Literature contains no reference to syphilis as a causal factor and I have also been unable to find any reference to the syphilitic origin of congenital heart disease in the Literature of other countries. It is well known that acquired syphilis frequently affects the aorta and other vessels in the adult and for a considerable time it has been regarded as affecting the smaller brain vessels in the syphilitic foetus, giving rise to haemorrhage at birth in a proportion of cases, and thus giving rise to Little's disease. Thus it is difficult to understand why syphilis has not been suspected as a cause of congenital heart disease. The rarity with which infants with congenital syphilis are admitted to hospital and come to the post-mortem room may explain the omission. A further point explaining the failure to determine the cause of these cases is the fact which is described below, that congenital heart disease of syphilitic origin usually proves fatal within the first year of life.

Most clinicians, however, have observed that some congenital syphilitic children have a tendency to cyanosis.

Another result of my observations has led me to the opinion that there are at least two types of cardiac lesion met with in infants and children, (a) syphilitic, (b) rheumatic.

Foot note - These results were communicated to the Glasgow Medico-Chirurgical Society, February 21st. 1913.

In the syphilitic form the child is born of syphilitic parents and in most cases seems blue when born. Examination of the heart reveals a soft blowing pulmonic murmur. Later there may, or may not, be active manifestations of congenital syphilis such as peeling of the skin, eruption on the buttocks and snuffles. The condition of the heart gradually becomes worse, there being marked enlargement, and there is developed clubbing of the fingers and toes. In some instances of severe congenital syphilitic cardiac lesions, however, there are no peripheral evidences of syphilis - the lesions being entirely cardiac and visceral. The child is cyanosed at birth. In general it would appear that the lesions are so severe that the majority of the infants die before they attain the end of the first year after birth. There is thus usually a positive family history, clinical signs of syphilis and a positive Wassermann reaction. These children are by no means invariably breast fed.

In the rheumatic type there is a marked contrast to the above, in that the evidence of lesions appears not at, but shortly after, birth. The mother has been the subject of acute rheumatism during pregnancy, although there need not be active manifestations of rheumatism at or after the puerperium. The child is not observed to be cyanosed at birth but is weakly and pale, and blueness develops gradually from 3 to 10 days after birth. The child has been breast-fed by the mother in every case which I have seen. Though one has no proof that the infection is transmitted by the milk there are strong grounds for believing that to be the case. The Wassermann reaction is negative in all cases. The rheumatic class of cardiac lesion would thus appear not to be congenital in origin, but

appears to be acquired post-partum. The mortality is less than in congenital syphilitic cases, thus the child lives to be much older. The rheumatic condition is even rarer than the syphilitic form.

I have observed 25 cases of cardiac disease in children whose ages range from 7 days to 8 years. 17 give a positive Wassermann reaction, 7 give a negative result and one is doubtful. In the case of the positive results the ages range from 1 month to 3 years: the fathers of 10 of these children were examined, 7 being positive and 3 negative. The mothers of 14 positive cases were examined and all reacted positively to Wassermann's test. Only in one child (James C. Aug 7. 12.) where a positive reaction was obtained was no other member of the family examined: the child was illegitimate and had a rash and snuffles, while the mother gave a positive specific history. In the case of the doubtful Wassermann reaction, Baby H., aged 7 days (February 20.13.) the father was negative, the mother was positive and a brother was positive. Further it was stated that there were no children between the boy of 17 years and the child of 7 days. Thus 17 cases with a positive Wassermann reaction and one doubtful, but with syphilis in the family as shewn by the Wassermann reaction, were confirmed by other evidence of syphilis. In no case was the history or physical examination made before the result of the Wassermann reaction was obtained, as these cases were found among a large number of other cases which were taken at random.

The 7 negative cases all have a history of acute rheumatism

in the mother during pregnancy. No child was seen younger than 3 years of age, while the oldest seen was 8 years of age. In two cases no other member of the family was examined: of the 5 others in three cases the mothers were examined, all gave a negative reaction. In one case the father was examined and was negative; while in one case a sister was negative. No member of any family gave a positive reaction.

12 of the 18 syphilitic cases have died. 6 died under 4 months, 3 died under 6 months, one under one year, while one died at 2 years and one at three years. Thus of the 12 deaths 9 died under 6 months. The importance of obtaining post-mortem examinations was fully recognised but unfortunately this has not been possible in any case.



July 17. 12. George L., aged 3. Cardiac disease. Father alive and well. Mother has had three attacks of rheumatism: one during pregnancy, and the last since then. First pregnancy. Parents say the child was well when born, was put to the breast and seemed quite well till one week old, when some blueness was noticed. The fingers are clubbed and cyanosed: heart enlarged: loud rough murmur heard best at the base. Wassermann reaction is negative.

July 17. 12. Gordon, L., aged 5. Cardiac disease. Father died as the result of an injury. Mother has had five attacks of rheumatism, one being during her last pregnancy. Four pregnancies. First, boy, aged 11, healthy. Second, girl, aged 9, has had chorea for two months. Third, girl, aged 7, healthy. Fourth, Gordon. His mother says he seemed just like the other children till he was ten days old. At that time she noticed him slightly blue. He was breast-fed. At present all extremities are cyanosed, fingers clubbed: cardiac area enlarged: loud V.S. murmur heard in the pulmonic area. Wassermann reaction is negative.

August 7. 12. Fred K., aged 5. Cardiac disease. Father in Canada. Mother had chorea at 12, and since then five attacks of rheumatic fever, one being during her first, and only, pregnancy. She states that the child was pale when born but seemed quite well till 9 days old when the doctor discovered a cardiac lesion. Even at that time the child was still pale. He was breast-fed. There is marked clubbing of fingers and toes which are cyanosed. The cardiac area is



enlarged in both directions: loud, rough V.S. pulmonic murmur. Wassermann reaction is negative. The child was first seen a week ago with gastro-enteritis, and the mother's serum was examined on that date (August 2. 1912) Wassermann reaction is negative.

November 8. 12. Eliza F., aged 6. Cardiac disease. Father alive and well. Mother has had several attacks of rheumatic fever, one being during pregnancy. She died in Ward 8 of the Royal Infirmary of cardiac disease. Patient is an only child and was breast-fed. Father says she was pale and weakly when born. She was noticed blue when four days old. At present she is breathless, fingers and toes clubbed and cyanosed, skin of body is purplish and lips blue. There is a loud, rough murmur heard at the base. Wassermann reaction is negative. November 13. 1912. Serum of father gives a negative Wassermann reaction.

November 22. 1912. Annie S., aged 5. Cardiac disease. Father in Canada. Mother has had three attacks of acute rheumatism, one being during pregnancy. She suffers from bronchitis and there is a double murmur heard in the mitral area. Wassermann reaction is negative. Child was weakly when born and was pale for some days. She was breast-fed. Blueness was first noticed when she was ten days old. She is breathless, fingers and toes clubbed and cyanosed: lips and ears blue. There is a loud rough murmur heard at the pulmonic area. Wassermann reaction is negative.

December 18. 12. Susan R., aged 7. Cardiac disease. Father died of nephritis. Mother suffered from "growing pains" as a girl. From that time onward till her first pregnancy her health was good. During pregnancy she had an attack of acute rheumatism and was treated for threatened abortion. Patient had a second attack two years later and was a patient in Ward 8, Royal Infirmary when I was resident. At that time she had an A.S. murmur. At present she has a double mitral murmur. Wassermann reaction is negative. Susan is the only living child, two others died in infancy of "decline" of the bowels. Patient was first seen when the father was on a visit to his wife in Ward 8. At that time she had only slight cyanosis and clubbing of fingers and toes. I have seen her frequently since. The cyanosis is now more marked. Fingers are more clubbed and the murmur remains much the same. Wassermann reaction is negative. Her mother states that she was pale when born and first became blue one week afterwards. She was breast-fed.

December 18. 12. Lizzie F., aged 8. Cardiac disease. Father is in America. Mother died of Bronchitis. Her mother (grandmother) of the child) says she had an attack of rheumatism during pregnancy. When the child was born the mother developed a swelling on the front of the neck. ? rheumatism goitre. There were two children of the marriage. First, Sally, aged 11. She had an attack of chorea 10 months ago. Wassermann reaction is negative. Second, Lizzie, she was breast-fed, was noticed to be blue when one week old. At present the fingers and toes are clubbed and cyanosed. Cardiac area enlarged. Loud V.S. murmur in pulmonic area. Wassermann reaction is negative.

June 3, 1914. Jessie S., aged 12. Cardiac disease. Father  
 alive and well; denies specific disease. Wassermann reaction  
 is positive. Mother denies specific disease. Wassermann  
 reaction is positive. Four pregnancies. First, boy, died at  
 ten months of meningitis. Second, Annie, aged 7. Notched  
 incisors. Wassermann reaction is positive. Third, John, aged  
 7. Stomatitis at angles of mouth. Wassermann reaction is  
 positive. Fourth, Jessie. Patient has long black hair,  
 fingers and toes clubbed, much cyanosis, child breathless  
 when in lungs, no rattle, cardiac area enlarged to right  
 and left. Soft V.S. pulmonary murmur. Wassermann reaction is  
 positive.

PART ONE.

SECTION III.

CONGENITAL HEART DISEASE.

Subsection (b) Syphilitic.

September 5, 1914. John John McE., aged 8. Cardiac disease.  
 Father is a sailor. Mother denies specific disease. Patient  
 is the first child. Fingers and toes clubbed and cyanosed.  
 Cardiac area is enlarged, and a V.S. pulmonary murmur can be  
 made out. Wassermann reaction is positive. December 15, 1914.  
 Father was seen today. Wassermann reaction is positive.  
 Serum of mother gives a positive Wassermann reaction.

September 11, 1914. Mrs. James A., aged 24. Cardiac disease. Father's  
 abroad. Mother gives a positive history and a positive  
 Wassermann reaction. Thirteen pregnancies, 1-7 were mis-  
 carriage. Eighth, boy, died of meningitis. Ninth, girl, still

June 3. 1912. Jessie S., aged  $\frac{3}{12}$ . Cardiac disease. Father alive and well: denies specific disease. Wassermann reaction is positive. Mother denies specific disease. Wassermann reaction is positive. Four pregnancies. First, boy, died at two months of meningitis. Second, Annie, aged 7. Notched incisors. Wassermann reaction is positive. Third, John, aged  $3\frac{1}{2}$ . Fissures at angles of mouth. Wassermann reaction is positive. Fourth, Jessie. Patient has long black hair, fingers and toes clubbed: much cyanosis, child breathless: râles in lungs: no snuffles. Cardiac area enlarged to right and left. Soft V.S. pulmonic murmur. Wassermann reaction is positive.

August 7. 1912. James John C., aged  $\frac{1}{12}$ . Cardiac disease. Patient is an illegitimate child. Mother had a labial sore two years ago. Child has a specific rash and snuffles. The lips are blue: a faint murmur is heard in the pulmonic area. Wassermann reaction is positive.

September 3. 12. James John McC., aged 2. Cardiac disease. Father is a sailor. Mother denies specific disease. Patient is the first child. Fingers and toes clubbed and cyanosed. Cardiac area is enlarged, and a V.S. pulmonic murmur can be made out. Wassermann reaction is positive. December 12. 1912. Father was seen today. Wassermann reaction is positive. Serum of mother gives a positive Wassermann reaction.

September 11. 12. James A., aged 2. Cardiac disease. Father is abroad. Mother gives a positive history and a positive Wassermann reaction. Thirteen pregnancies. 1-7 were miscarriages. Eighth, boy, died of meningitis. Ninth, girl, still

born. Tenth, abortion. Eleventh, girl, still born. Twelfth, girl, died of convulsions. Thirteenth, James. Spleen palpable: cardiac area much enlarged: cyanosis of ears, lip and tip of nose. Soft pulmonic murmur. Wassermann reaction is positive.

September 14. 12. William B., aged  $\frac{3}{12}$ . Cardiac disease.

Mother unmarried: had two abortions before child was born. Wassermann reaction is positive. Child has bronchitis: enlarged cardiac area: V.S. murmur at base: fingers clubbed and cyanosed. Slight swelling at right elbow. Wassermann reaction is positive.

October 5. 12. Annie P., aged  $\frac{4}{12}$ . Cardiac disease. Father

denies specific disease. Wassermann reaction is positive.

Mother denies specific disease. Two pregnancies. First, girl, died of convulsions at three months. Second, is patient, who seems very ill. She was born at the eighth month. Cardiac area enlarged: V.S. pulmonic murmur. Extremities cyanosed.

Wassermann reaction is positive. October 8. 12. Serum of mother gives a positive Wassermann reaction.

October 16. 12. Hamilton W., aged 3. Cardiac disease. Father was

not seen. Mother is pregnant, this being the fifth. First, abortion. Second, abortion. Third, full time, still birth.

Fourth, Hamilton. He is breathless, cyanosed, fingers clubbed:

heart enlarged: V.S. pulmonic murmur. Wassermann reaction is

positive. February 22. 13. Mother confined three days ago:

full time, still birth. Wassermann reaction is positive.

November 13. 12. Minnie B., aged  $\frac{3}{12}$ . Cardiac disease. Father is

a miner. Mother alive and well. Two pregnancies. First, James,

October 18. 12. Jeanie J., aged  $1\frac{1}{12}$ . Cardiac disease. Father alive and well. Mother has had five pregnancies. First, abortion. Second, full time child. Third had congenital syphilis and lived four months. Fourth, Douglas, aged  $2\frac{1}{12}$ , healthy. Fifth, Jeanie. Blue at birth. Had rash at three weeks. Fingers cyanosed and clubbed. V.S. murmur at base. Wassermann reaction is positive. November 1, 12. Serum of mother gives a positive reaction. November 15. 12. Serum of Douglas gives a positive Wassermann reaction.

November 6. 12. Annie C., aged  $1\frac{1}{2}$ . Father had a chancre nine years ago. Wassermann reaction is positive. Mother denies specific disease. Wassermann reaction is positive. Two pregnancies. First, Annie. Lips very blue: fingers slightly clubbed. Cardiac area increased to right and left. V.S. pulmonic murmur. Wassermann reaction is positive. Second, girl, aged  $2\frac{1}{12}$ , hydro-cephalus. Wassermann reaction is positive.

November 6. 12. Annie H., aged  $1\frac{1}{2}$ . Cardiac disease. Father seems healthy. Wassermann reaction is positive. Mother suffers from nocturnal headache. Wassermann reaction is positive. Three pregnancies. First, girl, aged 4, healthy. Wassermann reaction is positive. Second, Annie. Extremities cyanosed: clubbing of fingers and toes. Cardiac area greatly increased. Soft V.S. pulmonic murmur. Wassermann reaction is positive. Third, girl, aged  $1\frac{1}{52}$ . Spleen palpable: child looks old. Wassermann reaction is positive.

November 13. 12. Minnie B., aged  $3\frac{1}{12}$ . Cardiac disease. Father is a miner. Mother alive and well. Two pregnancies. First, James,

aged 3, healthy. Second Minnie. Patient has a "black wig". Noticed to be blue at birth. Cardiac area increased to left. Soft V.S. pulmonic murmur. No clubbing of fingers. Wassermann reaction is positive. November 15. 12. Serum of James gives a positive Wassermann reaction.

November 15. 12. Jane W., aged  $\frac{3}{12}$ . Cardiac disease. Father alive and well; denies specific disease. Wassermann reaction is negative. Mother denies specific disease. Wassermann reaction is positive. Two pregnancies. First, John, aged 3, healthy. Second, Jane. Very blue after birth. Cardiac area extends outside the left nipple line: V.S. pulmonic murmur. Lips cyanosed: fingers and toes clubbed. Wassermann reaction is positive.

November 19. 12. Serum of John gives a positive Wassermann reaction.

November 29. 12. Annie A., aged  $\frac{3}{12}$ . Cardiac disease. Father was in India before marriage. Mother alive and well. Seven years married. One pregnancy. Patient had a convulsion one month ago. Cardiac area increased to right and left. Faint V.S. pulmonic murmur. Extremities cyanosed. Fingers much clubbed. Wassermann reaction is positive. December 6. 12. Serum of mother gives a positive Wassermann reaction. December 9. 12. Serum of father gives a positive Wassermann reaction.

December 3. 12. Sam W., aged  $1\frac{1}{2}$ . Cardiac disease. Father alive and well. Mother alive: Wassermann reaction is positive. Ten pregnancies. Second was an abortion at the third month. She had one miscarriage at the sixth month. Sam was the next child. Ninth child died of meningitis at four months (Dr. Leonard Findlay). Patient had convulsions at the age of 10 days and

meningitis when three weeks old (Dr. Leonard Findlay). Lips and ears are blue: fingers and toes clubbed and cyanosed. Cardiac area enlarged to right and left. Only a faint pulmonic murmur is heard. Wassermann reaction is positive. healthy.

February 1. 13. Anne C., aged  $\frac{5}{12}$ . Cardiac disease. Father is alive and well. Wassermann reaction is negative. Mother gives a negative history. Wassermann reaction is positive. Patient is the only child. She was blue when born. Cardiac area enlarged to right and left. A soft V.S. murmur is heard in the pulmonic area. Fingers and toes much clubbed and cyanosed. Wassermann reaction is positive.

February 6. 13. James H., aged  $\frac{4}{12}$ . Cardiac disease. Father not seen. Mother five years married. James is first child. Mother gives a negative history but a positive Wassermann reaction. Patient is cyanosed, emaciated and has bronchitis. Fingers are much clubbed: cardiac area is greatly enlarged: soft V.S. pulmonic murmur. Wassermann reaction is positive.

February 13. 13. Jemima McL., aged  $1\frac{1}{2}$ . Cardiac disease. Father has been abroad: denies specific disease. Wassermann reaction is positive. Mother died of pneumonia. Four pregnancies. First, girl, aged 8, healthy. Wassermann reaction is positive. Second, girl, aged 5, healthy. Wassermann reaction is positive. Third, girl, aged  $2\frac{1}{2}$ , healthy. Wassermann reaction is positive. Fourth, Jemima, child is poorly developed. Much cyanosis: clubbing of fingers and toes: heart enlarged: soft V.S. pulmonic murmur. Some bronchitis. Wassermann reaction is positive.



February 20. 13. Baby H., aged  $\frac{7}{365}$ . Cardiac disease. Father denies specific disease. Wassermann reaction is negative. Mother denies specific disease. Wassermann reaction is positive. Two pregnancies. First, boy, aged 17, healthy. Wassermann reaction is positive. Second, patient, who has an enlarged spleen: marked cyanosis of extremities: no evidence of cardiac enlargement. There is <sup>a</sup>blowing V.S. pulmonic murmur. Wassermann reaction is doubtful.

SECTION II.

RECORD OF VARIOUS CASES OF THE DISEASE.

ECZEMA OF VARIOUS PARTS OF THE FACE.

Finlay and Nelson have recently drawn attention to eczema as a manifestation of congenital syphilis. It is also worthy of note that the condition was discovered independently by the two writers. I saw my first case in September and under

PART ONE.

great there was rapid improvement. In November Dr. Leonard Finlay saw his case and told me he thought I might get a positive Wassermann reaction. When I examined his case I remarked that it had almost identical features to one in which I had obtained a positive result.

SECTION IV.

ECZEMA OF VARIOUS PARTS OF THE FACE.

Most of the cases show no specific stigmata. This reliance is placed on the positive Wassermann reaction. In my opinion the condition was not formerly regarded as a syphilitic condition and seems to have been classed along with pityriasis rosea, seborrhoeic dermatitis, perioral eczema, and tuberculous eczema.

The lesion is most commonly situated at one or both angles of the mouth, sometimes it surrounds the mouth, sometimes only the upper lip is involved. Other sites affected are the side of the nose, the eye, the lobes of the ears or the frontal region and less frequently other parts of the face. At the angles of the mouth it forms fan-shaped patches which radiate towards the cheek. They may be flame-shaped, with irregular edges, or may have a clean cut appearance. The inner margin as a rule involves the mucous membrane, giving rise to a puckered

## SECTION IV. -

Eczema of various parts of the face.  
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Findlay and Watson have recently drawn attention to eczema oris as a manifestation of congenital syphilis. It is also worthy of note that the condition was discovered independently by the two writers. I saw my first case in September and under antisyphilitic treatment there was rapid improvement. In November Dr. Leonard Findlay saw his case and told me he thought I might get a positive Wassermann reaction. When I examined his case I remarked that it had almost identical features to one in which I had obtained a positive result.

Most of the cases examined show no specific stigmata. Thus reliance is placed on the family history and a positive Wassermann reaction. In my opinion the condition was not formerly regarded as a syphilitic condition and seems to have been classed along with pityriasis sicca, seborrhoeic dermatitis, scrofulous eczema, and tuberculous eczema.

The lesion is most commonly situated at one or both angles of the mouth, sometimes it surrounds the mouth, sometimes only the upper lip is involved. Other sites affected are the side of the nose, the eyes, the lobes of the ears or the frontal region and less frequently other parts of the face. At the angles of the mouth it forms fan-shaped patches which radiate towards the cheek. They may be flame-shaped, with irregular edges, or may have a clean cut appearance. The inner margin as a rule involves the mucous membrane, giving rise to a puckered

appearance. The patch is hyperaemic, dry and scaly and may be indurated. When the upper lip is involved there is much swelling, there is a greater tendency to discharge and frequently crusts are present. In some cases it disappears for a time, in others it affects the nostrils, eyes or ears. In these places there is more crusting. Patches on the cheek and forehead show no difference from seborrhoeic dermatitis. In none of the situations is there a coppery appearance. As soon as the condition heals it breaks out again. It may improve with simple remedies but never entirely heals. A fair proportion of the cases have already become well with antispecific treatment, while the remainder are still undergoing treatment. Some of the cases were examined along with Dr. Leonard Findlay, to whom I am indebted for permission to make use of these, although I am responsible for all the Wassermann reactions. I am also indebted to Dr. R. Wilson Bruce for permission to examine the inmates of East Park Home for Cripple Children, from which I selected six cases. The remainder of the cases were seen at the Royal Hospital for Sick Children's Dispensary.

I have collected 39 cases, of that number 30 give a positive Wassermann reaction, 7 a negative and 2 are doubtful. Of the 7 negative cases the mother of 3 cases gives a positive Wassermann reaction: there is a specific history in another case, while three cases have no evidence of syphilis. Of these three negative cases the mother of one was negative (though one child died of spina bifida): a second had no eczema at the angles and no other member of the family was examined. In the

third no other member of the family was examined.

All the cases except one were due to congenital syphilis. Thus I am not in a position to say whether the condition is as common in acquired syphilis. My observations have not been extensive but "scrofulous eczema" appears to me to be due to syphilis.

November 12, 12. William B., aged 4. Syphilitic origin. Father not seen. Mother suffered shortly after marriage from sore throat, rash on body and alopecia. Wassermann reaction is positive. Three pregnancies. First, boy, aged 12, healthy. Second, a miscarriage at 6 weeks (12 years ago). Third, William. He was healthy when born. When 1½ years old he developed leucophaea of the face and since then he has been subject to an eczema of upper lip and round the mouth. It varies much in severity but never entirely disappears. He developed infantile paralysis of the right leg one year ago. There are no specific stigmata. At both angles of the mouth are patches of eczema. The skin is hyperaemic, discharging slightly with crust formation and some infiltration. Eczema is continuous with mucous membrane of the lips. Wassermann reaction is positive.

November 15, 12. Sam B., aged 10. Syphilitic origin. Father alive and well. Mother had specific disease. Seven pregnancies. First, girl, aged 12, healthy. Second, Sam. Patient came under observation for abdominal pain, when flame-shaped opalescent patches were seen at both angles of the mouth. There is a lesion in the right upper incisor. Wassermann

September 14. 12. Joseph R., aged 6. Eczema oris. Parents dead. Patient is the only child alive of a family of eleven, several being still born. Since he was two months old he has suffered from recurrent eczema at both angles of the mouth. Rapid improvement with antisppecific treatment. Wassermann reaction is positive.

November 12. 12. William B., aged  $4\frac{1}{4}$ . Eczema oris. Father not seen. Mother suffered shortly after marriage from sore throat, rash on body and alopecia. Wassermann reaction is positive. Three pregnancies. First, boy, aged 12, healthy. Second, a miscarriage at 6 weeks (11 years ago). Third, William. He was healthy when born. When  $1\frac{1}{2}$  years old he developed impetigo of the face and since then he has been subject to an eczema of upper lip and round the mouth: it varies much in severity but never entirely disappears. He developed infantile paralysis of the right leg one year ago. There are no specific stigmata. At both angles of the mouth are patches of eczema. The skin is hyperaemic, discharging slightly with crust formation and some infiltration. Eczema is continuous with mucous membrane of the lips. Wassermann reaction is positive.

November 15. 12. Sam T., aged 10. Eczema oris. Father alive and well. Mother denies specific disease. Seven pregnancies. First, girl, aged 12, healthy. Second, Sam. Patient came under observation for abdominal pain, when flame-shaped eczematous patches were seen at both angles of the mouth. There is a notch in the right upper incisor. Wassermann

reaction is positive. Third, boy, died of peritonitis. Fourth, Bella, onychia, ringworm of arm: pigeon-shaped chest. Fifth - Agnes, healthy. Sixth, boy, died of pneumonia. Seventh, an abortion. November 23. 12. Mrs. T. Wassermann reaction is **positive**. November 29. 12. Agnes. Wassermann reaction is negative.

December 3. 12. Minnie A., aged 10. Eczema oris. An illegitimate child. Parents unknown. Situated at the right angle of the mouth is a patch of eczema, involving the mucous membrane of the lips which shows much scarring. The bridge of the nose is flat and both upper central incisors are notched. Wassermann reaction is positive.

December 3. 12. Alexander G., aged 7. Eczema of lobule of left ear and eczema of nostrils. Parents not seen. No history obtained. His upper incisors are serrated. There is a moist patch of eczema at the lobule of the left ear. There is much eczema and crusting at the side of both nostrils. Wassermann reaction is positive.

December 3. 12. James McG., aged 10. Eczema of mouth and face. Father not seen. Mother alive and well: denies specific disease. Wassermann reaction is positive. Four pregnancies. First, James, who came under observation for abdominal pain. He has eczema round the mouth involving the mucous membrane and both angles. There are numerous small seborrhoeic patches all over the face. Wassermann reaction is negative. Second, girl, aged 7, healthy. Third, Robert, aged 5, healthy. Fourth, a miscarriage.

December 20. 12. Robert McG., aged 5. Eczema oris and eczema of forehead. Patient is a brother of the previous case. There was nothing suspicious of specific disease in infancy. Since then he has had a dry eczema round the mouth. At present there is a patch of dry, scaly eczema at the right angle which implicates the mucous membrane of the lip. On the forehead is a patch of seborrhoeic eczema. Wassermann reaction is negative.

December 3. 12. Martha T., aged 6. Eczema tarsi. Father alive and well. Mother alive and well; denies specific disease. Wassermann reaction is positive. Five pregnancies. First, girl, aged 7, healthy. Second, Martha. No stigmata. She frequently has facial eczema and especially round the mouth. At present she has eczema tarsi. Wassermann reaction is positive. Third - miscarriage at the seventh month. Fourth, boy, healthy. Fifth, girl, healthy.

December 11. 12. Andrina A., aged  $17\frac{1}{2}$ . Eczema oris. Mother died one year ago. Patient is an only child. She has a "saddle nose" and Hutchinsonian teeth. For some years she has suffered from recurrent eczema at the angles of the mouth with much scarring. Wassermann reaction is positive.

December 12. 12. Bridget O'F., aged  $16\frac{1}{2}$ . Eczema oris. Parents alive and well. Two pregnancies. First, twin sisters. Catherine, aged  $17\frac{1}{2}$  has had acquired syphilis. Wassermann reaction is positive. Susan, aged  $17\frac{1}{2}$  has had acquired syphilis. Wassermann reaction is positive. Second - Twin boy and girl, the boy died two hours after birth, and the girl



is Bridget. One year ago she contracted a labial sore which was followed by a secondary eruption and alopecia. Nine months ago an eczematous patch appeared at the left angle of the mouth: it varies in severity but never entirely disappears. Wassermann reaction is positive.

December 13. 12. Jessie H., aged 9. Eczema tarsi. Mother denies specific disease. Wassermann reaction is positive. First pregnancy, ended in abortion. Patient came next. She has had recurrent eczema oris which is healed at present, but there is well marked eczema tarsi. Wassermann reaction is positive.

December 16. 12. Matthew L., aged 11. Eczema oris. Mother alive and well. Wassermann reaction is positive, (Dec.13.1912). Nine pregnancies, one ending in an abortion at three months: one child died of enteric fever, and one died of meningitis. Patient is poorly developed, pale and emaciated. He is subject to bronchitis, for which he came under observation. He suffers from an eczematous condition round the mouth, which no sooner heals than it breaks out again. Wassermann reaction is positive.

December 18. 12. Elizabeth, aged 8, is quite healthy. Wassermann reaction is positive. Margaret, aged 7, is healthy. Wassermann reaction is positive.

December 17. 12. Bridget R., aged 17 $\frac{1}{2}$ . Eczema oris. Father in an asylum. Patient has "saddle nose", and scarring at the angles of the mouth. Teeth are normal. At both angles of the mouth is a patch of eczema involving the mucous membrane. Wassermann reaction is positive. Susan, aged 16, is very weak minded, facile and almost an imbecile. She is erotic and difficult to examine. Wassermann reaction is positive.

- December 27. 12. James F., aged 6. Eczema oris. Parents dead. Mother had nine miscarriages. Patient was the last and only living child. He is thin, pale, interstitial keratitis, scarring at the angles of the mouth and notched incisors. There is extensive eczema round the mouth with implication of the mucous membrane. Wassermann reaction is positive.
- December 29. 12. Amelia G., aged 6. Eczema of ear, nose and eczema tarsi. Father not seen. Mother admits specific disease. Wassermann reaction is positive. Six pregnancies. First, full time, still birth. Second, boy, aged 16, healthy. Wassermann reaction is positive. Third, girl, aged 14, notched incisors. Wassermann reaction is positive. Fourth, boy, aged 12, healthy. Wassermann reaction is positive. Fifth, girl, aged 9, healthy. Wassermann reaction is positive. Sixth, Amelia, who has eczema tarsi, eczema of the lobule of the left ear and a moist patch at the side of the nose. Wassermann reaction is positive.
- January 21. 13. John R., aged 6<sup>2</sup>/12. Eczema oris and eczema tarsi. Father alive and well. Mother denies specific disease. Wassermann reaction is positive. Four pregnancies. First, girl, aged 8, healthy. Second, John. He had measles one year ago and since then he has been frequently dull and out of sorts. No specific stigmata. There is a well marked eczema tarsi and an eczematous condition round the mouth, involving both angles. That round the mouth is dry and scaly and continuous with the mucous membrane of the lips, which are slightly swollen. On the forehead is a small scurfy patch. Wassermann reaction is positive.

January 21. 13. Robert McD., aged 9. Eczema oris. Father alive and well. Mother denies specific disease. Wassermann reaction is positive. Six pregnancies. First, Robert. He had chorea three years ago. He has had vomiting and diarrhoea for the past two days. No specific stigmata. At the right angle of the mouth is a fan-shaped patch of eczema, which is continuous with and implicates the mucous membrane of the lip. Wassermann reaction is positive. Second, boy, died of convulsions. Third, boy, died of measles. Fourth, girl, died of thrush. Fifth, boy, aged 3, healthy. Sixth, girl, died of marasmus.

January 21. 13. John M., aged 10. Eczema oris and eczema tarsi. Father alive and well. Mother denies specific disease. Wassermann reaction is positive. Eleven pregnancies. First, girl, aged 21, healthy. Second, twin boys, died at three months. Third, girl, died of T.B. peritonitis. Fourth, boy, aged 16, healthy. Fifth, girl, aged 14, healthy. Sixth, girl, aged 12, healthy. Seventh, John. He was healthy till 9 months when he began to be troubled with eruptions on face and hands. No specific stigmata. Over the face is an extensive dry, scaly eczema with the seat of maximum intensity round the mouth. At both angles there is some exudation. The condition involves the mucous membrane of the lips. There is eczema tarsi of the left side. He has some bronchitis. Wassermann reaction is positive. Eighth, boy, died of whooping cough. Ninth, girl, aged 4, healthy. Tenth and eleventh ended in abortions at three months.

January 22. 13. Mary D., aged 5 $\frac{1}{2}$ . Rickets with slight eczema of

upper lip. There is a rosary present and tibial curving. On the middle of the upper lip is a patch of dry, scaly eczema but none at the angles of the mouth. Wassermann reaction is negative.

January 25. 13. William B., aged  $8\frac{1}{2}$ . Eczema oris. Head is large with prominent frontal bosses and a marked furrow between, suggesting natiform cranium. He walks unsteadily and readily falls. Round the mouth is much scarring and a persistent eczematous condition, which is moist and involves the mucous membrane of the lips. The eczema is severe at both angles. Upper left incisor is notched. Patient is deaf. Wassermann reaction is positive.

January 25. 13. John C., aged  $5\frac{1}{2}$ . Eczema of face. Patient had hemiplegia of left side at  $1\frac{1}{2}$  years. He is poorly developed with a spastic, paretic condition of the left arm and leg. The appearance of the face is what might be described as scrofulous. There is eczema of both eyelids, chronic rhinitis with excoriation round the nostrils: swollen lips, with ulceration at both angles of the mouth and over the face several dry, scurfy patches of eczema. No specific stigmata. Wassermann reaction is positive.

January 25. 13. Robert P., aged 7. Eczema oris. Patient had infantile paralysis and as a result has paraplegia. No suggestion of specific disease. He has eczema round the mouth which never entirely disappears. Lips are considerably swollen. The eczema is continuous with the mucous membrane of the lips and varies in severity. Wassermann reaction is positive.

January 25. 13. James Q., aged 6. Eczema oris. No specific stigmata. Very severe rickets. There is a dry, eczematous condition of the skin round the mouth: it is more severe at the right angle where it is continuous with the mucous membrane. Wassermann reaction is positive.

January 25. 13. Jeanie B., aged 6. Eczema oris. No specific stigmata. Very severe rickets. There is a dry, eczematous condition of the skin round the mouth. It is most marked at both angles where it involves the mucous membrane. Wassermann reaction is positive.

January 25. 13. Helen F., aged 11. Eczema oris. No specific stigmata. Patient has Pott's curvature and deafness of the left ear after otitis media. There is a patch of dry eczema at the left angle of the mouth which involves the mucous membrane. It varies in severity but never entirely disappears. Wassermann reaction is positive.

February 1. 13. George N., aged 2. Eczema of face. Father alive and well. Mother denies specific disease. Wassermann reaction is positive. Two pregnancies. First, girl, aged 5, healthy. Second, George. No history of syphilis in infancy. Since May 1912 he has had frequent eczema of the face. No specific stigmata. All over the face are patches of eczema, which is moist in places. There is rhinitis, with excoriation of the skin round the nostrils and swelling of the upper lip. There is eczema tarsi of both sides. He frequently has eczema round the mouth but there is none at present. Wassermann reaction is positive.

- February 6. 13. Bessie F., aged 7. Eczema oris. Patient is suffering from lateral curvature. The head is of the hot cross bun type, while there is slight eczema round the mouth. Wassermann reaction is doubtful.
- February 13. 13. Leo F., aged 5. Eczema oris. Mother alive and well. Denies specific disease. Wassermann reaction is negative. Five pregnancies: one abortion. Patient is suffering from recurrent eczema of the upper lip. The angle and mucous membrane are not involved. Wassermann reaction is doubtful.
- March 8. 1913. Gerald, aged  $10/12$ , seems healthy. Wassermann reaction is negative.
- February 13. 13. Peter McG., aged 12. Eczema oris. Mother has been recently confined (not seen). Other five children are alive and well. Patient has severe eczema round the mouth, which involves the mucous membrane. Wassermann reaction is positive.
- February 13. 13. Jeanie T., aged  $1\frac{1}{2}$ . Eczema oris and eczema tarsi. Mother alive and well (was seen at the Royal Infirmary on January 23. 1913. Wassermann reaction is negative). Four pregnancies: one abortion. Child has slight eczema round the mouth and severe eczema tarsi. Wassermann reaction is positive.
- February 13. 13. John McA., aged  $10/12$ . Eczema oris. Father died of pneumonia. Mother denies specific disease. Wassermann reaction is positive. Three pregnancies. First, girl, aged 6, healthy. Second, girl, aged 4, healthy. Third, John. Head large: anterior fontanelle open. Eczema at the right angle of the mouth which involves the mucous membrane. Wassermann reaction is positive.

- March 8. 13. William L., aged 11. Eczema oris. Parents alive and well. There is a history of specific disease in the parents. One miscarriage. One child died of bronchitis. Patient has slight but definite eczema at the right angle of the mouth and a patch at the middle of the upper lip. Wassermann reaction is negative.
- March 8. 13. Joan M., aged  $9/12$ . Eczema oris. Mother gives a positive history. Wassermann reaction is positive. Three pregnancies. First, full time child. Second, an abortion at three months. Third, Joan. No stigmata. There is a patch of eczema at the right angle of the mouth. Mucous membrane not involved. Wassermann reaction is positive.
- March 8. 13. May McA., aged 5. Eczema oris. Parents alive and well. One child dead - spina bifida. Wassermann reaction negative in the mother. Patient has had recurrent eczema round the mouth for the past three years. Wassermann reaction is negative.
- March 8. 13. William McM., aged 3. Eczema tarsi, and eczema nasi. Mother denies specific disease. Wassermann reaction is positive. Eight pregnancies. First, died at 10 days. Second, died at 6 months. Third, died at 6 months. Fourth, still birth. Fifth, aged 7, alive and well. Sixth, aged 5, alive and well. Seventh, William. He has had eczema tarsi for the past twelve months. There is rhinitis with eczema of nostrils. Upper lip swollen. Bronchitis. Wassermann reaction is negative. Eighth, died of marasmus.
- March 14. 13. John A., aged 7. Eczema oris. Parents alive and well. Seven other children alive and well. Patient could not walk till

6 years old. He has severe rickets, <sup>ter</sup>lateral curvature and femoral and tibial curves. Teeth are carious. Wassermann reaction is negative.

March 14. 13. John V., aged 12. Eczema oris. Parents alive and well. Six pregnancies, one terminating in abortion. One child died at 3 years. Patient has definite eczema round the mouth which involves the mucous membrane. Wassermann reaction is positive.

March 16. 13. Catherine S., aged 3. Eczema of face. The head is small. There is severe eczema oris, eczema auris and four seborrhoeic patches on the face. Knee jerks increased: ankle clonus and Babinski's sign present on the right side. Wassermann reaction is positive.

April 27. 13. Margaret W., aged ?. Eczema oris and eczema nasi. Mother gives a negative history. Patient has extensive eczema round the mouth and is well marked at both angles. It is recurrent in nature. There is also a moist patch, with crusting, at the left nostril. Patient has no specific stigmata. Wassermann reaction is positive.

Some photographs illustrative of the conditions are shewn  
on another page.





Peter Mc G.



John V.



William B.



Margaret W.

Meningitis and Hydrocephalus.

Knopfelacher and Schwalbe, 1922, have examined 37 cases of

hydrocephalus, 8 of which gave a positive Wassermann reaction.

In this section the children were selected because they had

meningitis, or hydrocephalus, taken with a positive syphilitic

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history and in conjunction with clinical evidence

of syphilis in most cases. Thus, cases of epidemic cerebro-spinal

meningitis and cases of tubercular meningitis were obtained. No

attempt has been made here to compare the incidence of meningitis

and hydrocephalus of syphilitic origin, but a selection has been

made of 80 children in 20 cases, or 10

MENINGITIS AND HYDROCEPHALUS.

positive history in the mother. Of the 20 cases

examined 19 gave a positive Wassermann reaction and one was negative.

In the negative case one child of the same family died (according

to Dr. Leonard Findley) of specific meningitis. The mother was not

seen when the blood was taken from the child, hence a Wassermann

reaction on the parent was not obtained. In 12 instances the serum

of the mother was examined and with a positive result in 3 cases,

2 cases being doubtful and 7 were negative. In 7 instances where

was a positive history in the father, though in most cases the

father was not seen. Only in 2 instances was the serum of the

father tested, one being positive and the other negative. In one

case a sister showed clinical evidence, while one sister gave a

positive result, one a negative and in the remaining case a brother

gave a positive Wassermann reaction.

Meningitis and hydrocephalus.

Knopfmacher and Schwalbe, 1912, have examined 29 cases of hydrocephalus, 8 of which gave a positive Wassermann reaction.

In this section the children were selected because they had meningitis, or hydrocephalus, taken with a positive syphilitic personal or family history and in conjunction with clinical evidence of syphilis in most cases. Thus, cases of epidemic cerebro-spinal meningitis and cases of tubercular meningitis were excluded. No attempt has been made here to compute the incidence of meningitis and hydrocephalus of syphilitic origin, but a selection has been made of 20 children either with (a) signs - in 5 cases, or (b) a positive history in the mother - in 17 cases. Of the 20 cases examined 19 gave a positive Wassermann reaction and one was negative. In the negative case one child of the same family died (according to Dr. Leonard Findlay) of specific meningitis. The mother was not seen when the blood was taken from the child, hence a Wassermann reaction on the parent was not obtained. In 12 instances the serum of the mother was examined and with a positive result in 8 cases, 2 cases being doubtful and 2 are negative. In 7 instances there was a positive history in the father, though in most cases the father was not seen. Only in 2 instances was the serum of the father tested, one being positive and the other negative. In one case a sister showed clinical evidence, while one sister gave a positive result, one a negative and in the remaining case a brother gave a positive Wassermann reaction.

The results leave no doubt that meningitis and a slight degree of hydrocephalus are conditions of very frequent occurrence in children infected with syphilis and there is a very strong presumption that these conditions are directly due to the syphilitic virus.

Full term, still born. Fifth, full term, still birth. Sixth, abortion at four months. Seventh, still of convulsions. Eighth, abortion at three months. Ninth, full term, still birth. Patient had peeling of skin of palms and soles when two months old. Meningitis is well marked. July 1. 1901. Child died today.

August 15. 1901. George E., aged 12/200. Meningitis, with slight hydrocephalus. Father died six months ago of pneumonia. Mother had syphilis before marriage and was under treatment at the Royal Infirmary. She had 4 abortions: this is the only living child. Mother died five days after birth of patient (history from sister). Patient is pale and looks old; liver and spleen enlarged; swelling (puffiness) at right elbow and left wrist: there are bullae on the soles and peeling of skin of palms. Typical Meningitis with bulging of fontanelles. Wassermann reaction is positive.

August 15. 1901. Christine E., aged 6/25. Meningitis with hydrocephalus. Father had syphilis and I treated him in Glasgow Royal Infirmary (1900) for three weeks (venereal disease). Mother was infected from her husband. Hair fell out: were thinned at present: brownish macula patches. This is the third child. Patient had smother, a cough, sometimes profusion of the lacteals, internal strabismus, ophthalmia

June 19. 12. Wallace P., aged 4. Meningitis. Father had syphilis ten years ago. Mother suffers from severe headaches: ten pregnancies. First, abortion at four months. Second, abortion at three months. Third, abortion at three months. Fourth, full term, still birth. Fifth, full term, still birth. Sixth, abortion at four months. Seventh, died of convulsions. Eighth, abortion at three months. Ninth, full term, still birth. Patient had peeling of skin of palms and soles when two months old. Meningitis is well marked. July 1. 12. child died to-day.

August 16. 12. George H., aged  $12/365$ . Meningitis, with slight hydrocephalus. Father died six months ago of pneumonia. Mother had syphilis before marriage and was under treatment at the Royal Infirmary. She had 6 abortions: this is the only living child. Mother died five days after birth of patient (history from sister). Patient is pale and looks old: liver and spleen enlarged: swelling (boggy) at right elbow and left wrist: there are bullae on the soles and peeling of skin of palms. Typical Meningitis with bulging of fontanelles, Wassermann reaction is positive.

August 16. 12. Christina H., aged  $2/12$ . Meningitis with hydrocephalus. Father had syphilis and I treated him in Glasgow Royal Infirmary (1908) for three weeks (venereal wards). Mother was infected from her husband. Hair fell out: sore throat at present: hoarseness: mucous patches. This is the first child. Patient has snuffles, a coppery eczematous eruption on the buttocks, internal strabismus, cephalic

cry and positive kernig: head is retracted and the fontanelles are bulging. Parents refused to have their blood tested.

Wassermann reaction is positive. Child died one week later.

August 16. 12. Henry K., aged  $\frac{6}{52}$ . Hydro-cephalus. Father was not seen. Mother has had syphilis. 13 Pregnancies. Nine died at 2-10 months, all died of convulsions. Three children are alive and well, but had eruptions and snuffles: one child was seen with the mother on 30th. July, 1912 and he seemed normal but for an attack of pleurisy: he was sent to hospital (blood not tested). Mother on that date gave a negative reaction. Henry seemed quite healthy when seen at one month old. When six weeks old he had cracked lips, coppery eczematous patches on the face and buttocks and sore eyes: the fontanelles were bulging and the frontal bone was separated into its two primary components. August 18. 12. Patient has developed meningitis. He died one week later. Wassermann reaction is positive.

August 23. 12. Clara Y., aged  $\frac{6}{52}$ . Hydro-cephalus with meningitis. Father says he had syphilis. Mother had three abortions (3-5 months) before birth of patient. Patient is suffering from severe congenital syphilis. Head is much enlarged, anterior fontanelle is bulging: head is retracted: squint: paralysis of right leg. Patient died when two months. Wassermann reaction is positive.

August 23. 12. Ellen S., aged 3. Meningitis. Mother is unmarried, but gives a specific history. She has had three pregnancies (there is marked mental defects). First, abortion at fourth month. Second, abortion at third month. Third, Ellen, who had a rash on buttocks, had condylomata and was treated at Sick

Children's Dispensary for congenital syphilis. There is a positive kernig: retraction of the head and a cephalic cry. Wassermann reaction is positive. August 30. 12. child has now distinct hydrocephalus. Cerebro-spinal fluid is clear and has mononuclear cells: No T.B. found. September 5. 12. Patient died to-day.

August 31. 12. Hugh G., aged  $\frac{2}{12}$ . Meningitis, with slight hydrocephalus. Father had syphilis 14 years ago. Mother has had nine abortions (2-5 months). She refused to have blood examined. Patient is the only living child. Meningitis well marked: head is retracted and the fontanelles are bulging. Child died when nine weeks old. Wassermann reaction is positive. February 22. 12. Mother is again pregnant and has been on mercury since August 1912. Her serum gives a positive Wassermann reaction. Father refused to have his blood examined.

August 31. 12. Andrew S., aged  $\frac{3}{12}$ . Hydrocephalus with slight meningitis. Father is a sailor and was not seen. Mother has had four pregnancies. First, abortion at third month. Second, boy at full time, died of convulsions at three weeks. Third, boy, died of convulsions at three months. Fourth is Andrew. Circumference of head measures  $20\frac{3}{4}$  inches. Child irritable and objects to being handled. September 3. 12. Slight retraction of head. September 4. 12. Kernig positive. September 6. 12. Cephalic cry: internal strabismus. September 11. 12. Circumference of head is  $21\frac{1}{2}$  inches: marked retraction of the head. Child was not seen again. Wassermann reaction is positive. February 22. 12. Mother tells me the child died when four months old. Serum of mother gives a positive Wassermann reaction.

September 19. 12. John H., aged  $2\frac{1}{2}$ . Meningitis. I saw this case in private with Dr. M. who attended the child for congenital syphilis. Father is an army officer. Mother has had eleven miscarriages and died 9 ~~years~~ <sup>months</sup> ago after severe haemorrhage. Child has had meningitis for three weeks and was comatose when I saw him and died 2 hours afterwards. The cerebro-spinal fluid was clear, contained no T.B. and gave a positive Wassermann reaction.

September 25. 12. Lewis T., aged  $1\frac{1}{12}$ . Meningitis. Father had syphilis and I circumcised him in septic wards Royal Infirmary in 1908. Mother drinks to excess and was in prison for 4 months after child was born. Child has typical meningitis. Wassermann reaction is positive. September 30. 12. Meningitis more marked. Marked bulging of fontanelles. February 22. 12. Mother was seen four days ago and blood taken for testing. Wassermann reaction is positive.

October 15. 12. Mary McN., aged 3. Meningitis. Mother, aged 35, has conjunctivitis: evidence of iritis: left her husband: had venereal disease 8 years ago: three pregnancies. Wassermann reaction is doubtful. First, full term, dead born. Second, abortion at three months. Third, Mary: had a rash after birth. Nose is sunken: microcephalic head: great lack of intelligence (first seen one month ago). Meningitis set in one week ago and is now well marked. Wassermann reaction is positive. October 29. 12. Child died.

October 16. 12. Henry N., aged  $2\frac{1}{12}$ . Meningitis. Father drinks to excess. Mother gives a positive history: ten pregnancies,



nine of which ended as miscarriages. Patient is suffering from congenital syphilis with well marked meningitis and slight bulging of the fontanelles. Wassermann reaction is positive. October 22. 12. Serum of mother gives a positive Wassermann reaction.

October 18. 12. Isa M., aged  $\frac{3}{12}$ . Meningitis. Father alive and well (not seen). Mother has had two pregnancies. First, girl, died at four weeks of convulsions. Second, Isa: marked meningitis: no hydro-cephalus. Cerebro-spinal fluid is clear, no polymorphs. No T.B. Wassermann reaction is positive.

October 22. 12. Mother gives a positive Wassermann reaction.

November 5. 12. Ruth L., aged  $\frac{3}{52}$ . Meningitis. Father is a soldier and was not seen. Mother has had six pregnancies. First, premature at seven months. Second, abortion at three months. Third, premature, at eight months, died at two weeks of convulsions. Fourth, abortion at four months. Fifth, boy, died at two months of convulsions. Sixth, Ruth: coppery coloured patch of eczema on the forehead: slight snuffles: emaciated and old appearance. She has typical meningitis, with great bulging of the fontanelles. Wassermann reaction is positive. November 12. 12. Child died. November 8. 12. Serum of Mother gives a doubtful Wassermann reaction.

November 5. 12. Jessie S., aged  $\frac{5}{365}$ . Hydro-cephalus. Mother was not seen. A sister of Mrs. S. said that the latter had two abortions: one child died of convulsions and three are alive. Mary, aged 3, has definite fan-shaped scarring at the angles of the mouth. Wassermann reaction is positive. Jessie has had hydro-cephalus since birth: circumference of

head measures  $19\frac{1}{2}$  inches. There are no eruptions. Wassermann reaction is positive. December 6. 12. Marked meningitis. December 15. 12. Child died. April 13. 1913. Mother. - Wassermann reaction is negative. Father, Wassermann reaction is negative. Amy, aged 12, Epileptic, Wassermann reaction is negative.

November 6. 12. Dora C., aged  $2\frac{1}{12}$ . Hydro-cephalus. Father had a chancre nine years ago. Wassermann reaction is positive. Mother has always been well: two pregnancies and no abortions. Wassermann reaction is positive. First, Annie, aged  $1\frac{1}{2}$ : seems a weakly child: cardiac area enlarged. Wassermann reaction is positive. Second, Dora, Parents say she had a large head when born and has gradually increased in size: there is marked bulging of the fontanelles. Circumference of head is  $21\frac{3}{4}$  inches. Cerebro-spinal fluid is clear, contains mononuclear cells: no T.B. Fluid gives a positive Wassermann reaction. At the new year there was occasional squint and slight retraction of the head: Kernig indefinite. Child was very irritable.

November 12. 12. David B., aged  $3\frac{4}{12}$ . Hydro-cephalus. Mother gives a negative history. Wassermann reaction is positive. Patient is the first child. Labour was difficult: cranial presentation. Head began to enlarge at nine weeks. Circumference is  $25\frac{1}{2}$  inches. He has been crawling since June 1912 but makes no attempt at walking. Bowels are regular. Fontanelles are closed. Wassermann reaction is positive.

November 13. 12. James M., aged  $2/52$ . Hydro-cephalus. Father had syphilis when 18 years old. Mother was infected after marriage: three pregnancies. First, miscarriage at seven months. Second, John, aged 3. No suspicion of syphilis. Patient is a bright and apparently healthy boy. Wassermann reaction is positive. Third, James: head was noticed large at birth. Marked bulging of fontanelles. Cerebro-spinal fluid clear: mononuclear cells: no T.B. Wassermann reaction is positive. December 14. 12. Patient is very irritable. December 16. 12. Evidence of meningitis. December 20. 12. Well marked meningitis. December 28. 12. Child died.

November 13. 12. John M., aged  $16/365$ . Hydro-cephalus. Father is at sea. Mother alive: frequent nocturnal headache: sore throat: denies specific disease. Wassermann reaction is positive. Patient is the first child of the marriage (married seven years). Hydro-cephalus is very slight, and there is a trace of rigidity of neck muscles. Wassermann reaction is positive. November 20. 12. Kernig's sign is positive: slight strabismus. Circumference of head is 20 inches. Patient was not seen again.

March 2. 1913. Joseph I., aged  $6/12$ . Meningitis. Patient was healthy when born. Fits began at three weeks, the twitchings being limited to the left side. He is emaciated. Limbs are rigid. He is blind: head retracted. Kernig's sign is positive. He has difficulty in swallowing. Parents alive and well. Five pregnancies. No abortions. One child died of specific meningitis. Patient's serum gives a negative Wassermann reaction.

Mentally Defectives.

PART ONE.

SECTION VI.

MENTAL DEFICIENCY.

Few authorities on mental disease are agreed as to the part played by syphilis in causing mental deficiency. Thus epilepsy has been regarded as one of the oldest diseases of which there is accurate knowledge and still the sense has remained uninvolved by the syphilitic processes employed methods of investigation. On the other hand, it is highly suggestive that Dr. H. F. Foster, in a research on epilepsy without mental defect in which she made a very complete examination of other members of the family in cases which had yielded negative results with the Wassermann test, has shown that syphilis is present in every instance in her series.

The results of investigation work as those which are carried out would point to "heredity", "acquired toxicities", and "degeneracy" being the cause which lack of knowledge attaches in many cases to congenital syphilis.

In the past syphilis has been regarded as a relatively unimportant factor. Thus, Thomson, Ross, Sfort and Leshly, 1911, have examined 2000 cases of mental deficiency. In 17 cases there were found to be affected by syphilis by the Wassermann reaction to a single instance in 100 cases between 5 and 10 years they found 3.6% positive, in 100 cases between 10 and 15 years 1.1%.

Foot Note: - In a paper on the treatment of the insane, published in 1910, it is pointed out that in the majority of cases of insanity the cause was probably due to physical rather than merely to heredity and acquired toxicities.

## SECTION VI. -

Mentally defectives.  
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Few authorities on mental disease are agreed as to the part played by syphilis in causing mental deficiency. Thus epilepsy has been regarded as one of the oldest diseases of which there is accurate knowledge and still the cause has remained unsolved by the hitherto commonly employed methods of investigation. On the other hand, it is highly suggestive that Dr. Kate Fraser, in a research on epilepsy without mental defect in which she made a very complete examination of other members of the family in cases which had yielded negative results with the Wassermann test, has shown that syphilis is present in at least some other member of the family in every instance in her series.

The results of investigation such as those which are carried out would point to "heredity", "neuropathic tendencies", and "degeneracy" being the names which lack of knowledge attaches in many cases to congenital syphilis.

In the past syphilis has been regarded as a relatively unimportant factor. Thus, Thomsen, Boas, Hjort and Lesehly, 1911, have examined 2061 cases of mental defectives. In 13 cases under 5 years they failed to detect syphilis by the Wassermann reaction in a single instance. In 130 cases between 5 and 10 years they found 3.8% positive. In 420 cases between 10 and 15 years 1.4%.

Foot Note. - In a paper on the treatment of the insane, published in 1910, I pointed out that in the majority of cases of insanity the cause was probably due to physical rather than merely to heredity and neuropathic tendencies.

In 465 between 15 and 20 years 1.5%. In 514 between 20 and 30 years 1.7%. In 304 between 30 and 40 years 0.65%. In 214 over 40 years 0.96%. Thus of 2061 cases 31 gave a positive Wassermann reaction, or 1.5%. Six who gave a negative result had signs of congenital syphilis. Of the 31 who gave a positive reaction 5 had acquired syphilis, leaving 26 or 1.2% with congenital syphilis. Therefore, 26 with a positive result and 6 with a negative showed signs of syphilis. Of these 32 cases 13 had clinical signs of congenital syphilis, while 13 had syphilis as demonstrated by the Wassermann reaction. They conclude that results do not justify the view that syphilis is a dominating factor in mental deficiency, either in town or in country populations.

Among epileptics they examined 259 cases between 5 and 70 years of age. In only one case was a positive result obtained, or in 0.39%.

Among the blind they examined 146 cases and found no positive results.

Among the deaf and dumb they examined 344 cases between 5 and 40 years and found 3 with a positive Wassermann reaction, aged 8, 11 and 22 years.

They conclude that their investigation shows that syphilis does not play a greater part than was formerly supposed.

In order to determine what proportion of cases of mental defect was due to syphilis Dr. Kate Fraser carried out almost a simultaneous investigation with me. Her research was confined to children whose condition enabled them to attend a mentally

defective school, while I confined my attention generally to cases (1) where the mental condition was of such a nature as to prevent attendance at school, (2) where the children were infants, (3) cases which I had found to be mentally defective while assisting Dr. Oswald, in 1907, with his investigation for the Royal Commission on the feeble-minded.

I have examined 105 cases of various conditions of mental deficiency. The Wassermann reaction was positive in 51, negative in 45, and doubtful in 9. There were 52 cases in which there was no clinical evidence of any other condition being associated with the mental defect, and of these 28 gave a positive Wassermann reaction, 17 a negative, and 7 a doubtful. Thus, my positive results are equal to 53.8%. 53 cases were examined in which there was clinical evidence of some other defect as well as the mental one (this included epilepsy with mental defects). Of these 53 cases, 23 gave a positive Wassermann reaction, 28 a negative, and 2 a doubtful. Thus, the percentage of the positive results is 43.3. Therefore, taken all over, I have obtained 48.5% of positive results in the 105 cases examined.

Dr. Fraser's results are very nearly the same as my own. Thus, in 42 cases examined by her there were 20 positive results, 17 negative and 5 doubtful in cases of mental defect not associated with any physical defect. While in those associated with other physical defects (including epilepsy with mental defect) she examined 47 and 20 were positive, 21 negative and 6 doubtful. Therefore, of 89 cases of mentally defectives she obtained positive results in 40 cases or approximately 45%.

When it is considered that I examined many young infants and cases whose mental condition would exclude them from school there is very little difference between the results obtained by Dr. Fraser and by myself. Further I would point out that I have obtained positive results in a proportion of cases of mongolian idiocy - cases, which according to the generally accepted view, occur in the last children of large families or where the parents were old when the child was born.

I cannot offer any satisfactory explanation of the great difference in the results of Thomsen, Boas, Hjort and Lesehly and of Dr. Fraser and myself. The results in our cases have been so definite, however, that no doubt can be attached to them on technical grounds. I would, however, emphasise the importance of not restricting the investigation to the affected individuals. In order to trace syphilitic infection it is imperative to include as many members of the family as possible in the examination before concluding that negative results have been obtained.



July 2. 12. Christine W., aged 12. Mentally defective. Patient was born prematurely. She suffers from hysterical epilepsy. Physical condition is good. She is the fourth child; no syphilitic stigmata. Wassermann reaction is positive. Mother suffers from rheumatism. Seven pregnancies. Three had one miscarriage, one still birth at full term; one died of pneumonia.

PART ONE.

July 2. 12. [Name], aged 9. Mentally defective. Child is very nervous, holds her head down and refuses to speak. She has no physical defect. Wassermann reaction is positive. Mother is facile and simple, nervous, usually in dress, keeps a diary home and takes by [Name], is religious matters. Father suffers from [Name] [Name]. One died of pneumonia; April 12, 1911; father of mother gives a positive Wassermann reaction. Wassermann reaction is positive.

SECTION VI.

MENTAL DEFICIENCY.

Subsection (a) Without other defect.

July 2. 12. Albert G., aged 7. Mentally defective. Mother is blind to excess. Father unknown. Patient is the third illegitimate child. No physical defect. He is an imbecile. Teeth are crowded and breath offensive. Wassermann reaction is positive. One child was born prematurely.

July 2. 12. John F., aged 10. Mentally defective. Father is alive and well; one brother is mentally defective. Mother is mentally defective, talkative, irrational and incontinent. Four miscarriages. Patient is the second child. Teeth normal. Fracture of skull when young, severe headaches from time to time. Forehead is very low. Wassermann reaction is positive.

July 2. 12. Christina W., aged 12. Mentally defective. Patient was born prematurely. She suffers from hystero-epilepsy. Physical condition is good. She is the fourth child: no syphilitic stigmata. Wassermann reaction is positive. Mother suffers from rheumatism. Seven pregnancies. There was one miscarriage, one still birth at full time: one died of pneumonia.

July 2. 12. Jessie R., aged 8. Mentally defective. Child is very nervous, holds her head down and refuses to speak. She has no physical defect. Wassermann reaction is positive. Mother is facile and simple, nervous, untidy in dress, keeps a dirty house and takes too much interest in religious matters. Father suffers from rheumatism. Three pregnancies. One died of pneumonia. April 16. 12. Serum of Mother gives a positive Wassermann reaction. Agnes, aged 17, seems healthy. Wassermann reaction is negative.

July 2. 12. Albert O., aged 9. Mentally defective. Mother drinks to excess. Father unknown. Patient is the third illegitimate child. No physical defect. He is an imbecile. Teeth are eroded and breath offensive. Wassermann reaction is positive. One child was born prematurely.

July 2. 12. John B., aged 10. Mentally defective. Father is alive and well: one brother is morally defective. Mother is mentally defective, talkative, irrational and incoherent. Four miscarriages. Patient is the second child. Teeth normal. Fracture of skull when young, severe headaches from time to time. Forehead is very low. Wassermann reaction is positive.

August 7. 12. Peter W., aged 14. Mentally defective. Father had specific disease twenty-five years ago: he drinks to excess. Mother was infected from her husband after marriage. Seven pregnancies. First, miscarriage at five months. Second, abortion at three months. Third, full time, died of convulsions at six weeks. Fourth is patient who is an imbecile. Wassermann reaction is positive. Fifth, abortion at three months. Sixth, boy, full time, died of convulsions at two months. Seventh, Barbara, aged 8, said to be dull.

August 19. 12. Barbara W., aged 8, the dull child referred to under August 7. 12, was seen to-day. She is an imbecile with no physical defect. Wassermann reaction is positive.

August 23. 12. John H., aged 1. Mongol with diphtheria. Father admits specific disease. Mother died six months ago from bronchitis and cardiac disease. Twelve pregnancies. First, abortion at four months. Second, miscarriage at five months. Third, full time, died of convulsions. Fourth, full time, died of convulsions. Fifth, abortion at three months. Sixth, abortion at four months. Seventh, boy, died of meningitis. Eighth, girl, died of convulsions. Ninth, boy, died of measles. Tenth, girl, died one hour after birth. Eleventh, girl, died of convulsions. Twelfth, John, a mongol. Patient was comatose when seen and died next day: spleen palpable. Almost a pure culture of *Bacillus Diphtheriae* was obtained from the throat. Wassermann reaction is positive.

August 24. 12. Peter S., aged 4. Mongol. Father, aged 45, had a chancre  $5\frac{1}{2}$  years ago. Was treated with mercury for  $2\frac{1}{2}$  years.

Wassermann reaction is positive. Mother gives a negative history. Eight pregnancies: no abortions. Wassermann reaction is negative. First, Andrew, aged  $11\frac{4}{12}$ , Rickets. Wassermann reaction is negative. Second, George, aged  $10\frac{1}{2}$ , Rickets. Wassermann reaction is negative. Third, Bella, aged  $9\frac{1}{2}$ , Rickets. Wassermann reaction is negative. Fourth, Mary, aged  $8\frac{1}{2}$ , Rickets. Wassermann reaction is negative. Fifth, Walter, aged  $7\frac{1}{2}$ , Nephritis after scarlatina. Wassermann reaction is negative. Sixth, Frances, aged  $6\frac{1}{2}$ . Wassermann reaction is negative. Seventh, Jessie, aged  $5\frac{1}{2}$ . Rickets. Wassermann reaction is negative. Eighth, Peter, aged 4. Rickets. Skin peeled after birth: had an eruption on buttocks. Patient cannot walk. Typical mongol. Wassermann reaction is positive.

August 27. 12. James A., aged  $6\frac{1}{12}$ . Mentally defective. Parents drink to great excess and both admit specific disease: both refused to have blood examined. Nine pregnancies. Three were abortions: three still births, one lived one hour after birth and one died at two weeks of convulsions. Patient had snuffles and an eruption on the buttocks. Mental defects are well marked. Wassermann reaction is positive.

August 30. 12. Agnes G., aged 6. Mongol. Father alive and well and 52 when child born. Mother, aged 43 at birth of patient. Five pregnancies, three are healthy but one said to be defective. Patient is third youngest. There is no history of specific disease. Wassermann reaction is negative.

September 11. 12. Fanny G., aged 4. Sister of previous case.

She is a typical mongol. Wassermann reaction is negative.

James, aged 3, seems normal. Wassermann reaction is negative.

September 11. 12. Fred R., aged  $\frac{8}{12}$ . Mongol. Father alive and well. Mother healthy, aged 39 when child born. Four other children alive and well. Wassermann reaction is negative. Child is a typical mongol: broad nose: slit like eyes: large tongue which hangs out: little fingers typically curved: V.S. murmur heard at the base. Thymus was given without improvement. Wassermann reaction is negative.

September 11. 12. Alfred S., aged  $\frac{6}{12}$ . Mongol. Father alive, aged 63. Mother, aged 43 at birth of child. This is the only pregnancy: 18 years married. Patient has a broad nose: badly formed head and ears. Circumference of head is  $16\frac{3}{4}$  inches: he is weakly and cannot raise his head. Wassermann reaction is negative.

September 19. 12. Jane R., aged  $1\frac{1}{2}$ . Mongol. Father, aged 46, 49, alive and well. Mother, aged  $41\frac{1}{2}$ . Twelve pregnancies. First a miscarriage. Patient cannot walk. Typical slit like eyes converging to nose: large epicanthic folds: large tongue: curving of little fingers. Circumference of head is  $17\frac{1}{4}$  inches: improving on thymus. Wassermann reaction is negative.

September 28. 12. Michael S., aged 7. Imbecile. Father has not been heard of since child was born: he drank to excess and is said to have had venereal disease. Mother had four abortions and died from excessive bleeding. Patient is a low grade imbecile: covered with vermin. Wassermann reaction is negative.

October 29. 12. Annie S., aged 5. Mongol. Mother alive and well.

Was 43 when child born. Eight pregnancies. Three children dead, one of enteritis, one of measles and one of whooping cough. The third pregnancy terminated in abortion at the third month. The mother has a high palate and teeth are markedly irregular. Wassermann reaction is positive. Annie is a typical mongol. Large epicanthic folds: large tongue which hangs out: curving of little fingers. Circumference of head is  $17\frac{1}{2}$  inches. She was put on thymus but did not improve. Wassermann reaction is negative. October 30. 12. Father, aged 50, says he contracted venereal disease when in the army. There is a tertiary ulcer on the right leg. After nine injections of salvarsan the ulcer disappeared.

November 12. 12. Elsie H., aged 8. Mentally defective. Vaginitis.

Father alive: both feet removed after an accident. Mother gives a negative history, but a positive Wassermann reaction. Five pregnancies - no abortions. First, Elsie. Marked mental defect. Wassermann reaction is positive. Second, Ester, aged 6, healthy. Third, John, aged 4, healthy. Fourth, Andrew, aged  $2\frac{1}{2}$ . Wassermann reaction is positive. Fifth, William, aged  $5/12$ , healthy. On December 7. 1911, Elsie and Andrew were seen by Drs. Girdwood and Rutherford who agreed that they were cretins. No improvement with thyroid. Elsie was never bright: never seemed well. Walked at 15 months. Teeth came at  $1\frac{1}{2}$  years. She had no temporary incisors above and no incisors nor canines below: she is backward, forgetful and dull: she has a convergent squint: frequently has eczema oris: hands and is thin, illnourished, feeble and very weak-minded. Typical

feet shake when she is doing anything: no cicatrices and no keratitis. Gonococci were found in discharge. Andrew had a bad rupture. He developed very slowly. November 15. 12. William. Wassermann reaction is positive. November 23. 12. Ester, Wassermann reaction is positive.

November 23. 12. Angus G., aged 1<sup>10</sup>/12. Mongol. Father alive and well, aged 43 when child born. Mother alive and well, aged 38 when child born. Four pregnancies. First was an abortion. Second lived only 6 hours. Third is patient. Typical mongol. He has also syndactylitis of fingers and toes. Wassermann reaction is positive. Fourth, healthy - not seen. November 29. 12. Mother - Wassermann reaction is positive.

November 23. 12. James S., aged 1. Mongol. Father takes alcohol to excess. Mother died of pneumonia six months ago: also took alcohol to great excess. Three pregnancies. First, May, aged 5 $\frac{1}{2}$ , spastic diplegia. No mental defect. Wassermann reaction is negative. Second, Ella, aged 3, typical mongol: large fissured tongue which hangs out: slit like eyes: broad nose. Wassermann reaction is negative. Third, James. Typical mongol: slit like converging eyes: broad nose, large epicanthic folds, typical curving of little fingers: no teeth: takes no notice of anybody. Wassermann reaction is negative.

November 23. 12. Isa C., aged 15 $\frac{1}{2}$ . Mentally defective. An illegitimate child. She is very feeble-minded, facile and erotic. Wassermann reaction is positive.

November 26. 12. Euphemia H., aged 16. Mentally defective. Parents alive and well. Two brothers alive and well. Patient is thin, illnourished, facile and very weak-minded. Typical

- Hutchinsonian teeth. Wassermann reaction is positive, Eyes  
 December 3. 12. Minnie McC., aged 17<sup>4</sup>/<sub>12</sub>. Mentally defective.  
 Patient lives with an aunt who has no control over her. She is  
 feeble minded, facile and erotic. She has had acquired  
 syphilis. Wassermann reaction is positive. Father  
 December 9. 12. Lily T., aged 17. Mentally defective. Father dead.  
 Mother is immoral. History is negative. Wassermann reaction  
 is positive. 1st, girl, died of convulsions. Fourth, girl,  
 December 17. 12. Susan R., aged 16. Mentally defective. Patient is  
 an illegitimate child. Her father is insane and confined in an  
 Asylum. Patient is very weak minded, facile and practically  
 an imbecile. She is erotic and difficult to examine. She had an  
 abortion a few months ago. Her teeth are notched and the palate  
 is high and narrow. Wassermann reaction is positive. Bridget  
 R. a sister has scarring at the angles of the mouth and a  
 "saddle nose" but no evidence of mental defect. Wassermann  
 reaction is positive. 1st, girl, died of convulsions. Two children  
 December 18. 12. Annie C., aged 17. Mentally defective. Patient  
 is feeble minded, facile and erotic. She cannot answer the  
 simplest questions. Wassermann reaction is positive. Mother  
 December 20. 12. Lizzie G., aged 11<sup>1</sup>/<sub>12</sub>. Mongol. Father was 37  
 at birth of child. Mother was 38. Child older than patient  
 was born 5 years before. Since the birth of patient mother  
 has been very melancholic and lately was almost certified to  
 be insane. Wassermann reaction is negative. Five children  
 dead. First, aged 3, congestion of the lungs. Second, "lump  
 on throat". Third, at 8 months. Fourth, at 2<sup>1</sup>/<sub>2</sub> years and fifth



at  $1\frac{1}{2}$  years of whooping cough. Patient is youngest. Eyes characteristic: little fingers curved: does not increase in weight: no teeth: takes no notice of other children.

Wassermann reaction is negative.

February 6. 13. Annie L., aged 12. Mentally defective. Father gives a positive history. Mother alive and well. Eight pregnancies. First, girl, married. Second, Grace, aged 18, healthy. Third, girl, died of convulsions. Fourth, girl, died in infancy. Fifth, Lizzie, aged 13. Sixth Annie. No physical defect but a very marked mental defect. Wassermann reaction is positive. Seventh, Georgina, aged 9, healthy. Eighth, Robina, aged 7, healthy. April 20. Mrs. L. Wassermann reaction is positive. Georgina, Wassermann reaction is positive. Robina, Wassermann reaction is positive. Mr. L. Wassermann reaction is positive.

February 6. 13. Gilbert S., aged 13. Mentally defective. Father alive and well. Mother gives a positive history. Two children died of convulsions. Patient was the next child, he took convulsions in infancy but none since. There is much mental defect. Wassermann reaction is negative. February 27. Mother - serum gives a negative Wassermann reaction.

February 6. 13. James D., aged 12. Mentally defective. Patient was under treatment for 4 years at Sick Children's Dispensary. There is a positive specific history. Wassermann reaction is positive.

February 6. 13. Cecilia S., aged 14. Mentally defective.

Mother alive and well. Five pregnancies. Two abortions. Patient is very feeble minded and impulsive. He was late in walking and talking. Wassermann reaction is positive.

February 6. 13. Thomas S., aged  $10\frac{1}{2}$ . Mentally defective. Father not seen. Mother takes alcohol to excess. Patient is impulsive, dour, self-willed and very feeble minded. Wassermann reaction is positive.

February 13. 13. Sarah McL., aged  $9\frac{1}{2}$ . Mentally defective. Father alive and well. Mother died of phthisis. Patient is an only child. She is dull, stupid and fond of mischief. There is no physical defect. Wassermann reaction is doubtful.

February 13. 13. Lizzie R., aged 14. Mentally defective. Father died of phthisis. Her mother is feeble minded. She gives a negative history. Patient took convulsions when 3 months old but none since. Wassermann reaction is positive.

February 13. 13. Arthur S., aged 11. Mentally defective. Father dead. Mother alive and well. History is negative. Patient is an only child. He is dour and impulsive and morally defective. Wassermann reaction is doubtful.

February 13. 13. Susan J., aged 7. Mongol. Father drinks to excess. Mother is deformed and gives a specific history. Patient cannot speak. Wassermann reaction is negative.

February 13. 13. Jeh- Henry D., aged 3. Mentally defective. Father not seen. Mother gives a positive history. Patient is an idiot. There is scarring at the right angle of the mouth. Wassermann reaction is positive.

February 13. 13. James B., aged  $2\frac{1}{2}$ . Mentally defective. Father irritable and impulsive. No specific etiology. Wassermann

alive and well. Mother is confined in an asylum. She had one abortion. Patient is markedly defective, taking little notice of his surroundings. Wassermann reaction is doubtful.

February 13. 13. Elizabeth R., aged 5. Mentally defective. Parents alive and well. Three pregnancies: no abortions. Patient did not speak till a few months ago and did not walk till 2 years of age. There is no physical defect but the mental defect is evident. Wassermann reaction is doubtful.

February 20. 13. Samuel C., aged  $4\frac{1}{2}$ . Mentally defective. Father alive and well. Mother had diabetes during pregnancy. No abortions. Patient takes little notice of any one. Wassermann reaction is negative.

February 20. 13. Fred H., aged 3. Mentally defective. Parents alive and well. Three brothers and four sisters alive and well. Negative history. Patient is an imbecile. There is no physical defect. Wassermann reaction is negative.

February 20. 13. Heet Jeanie L., aged 7. Mentally defective. Father alive and well. Denies specific disease. Wassermann reaction is positive. Mother denies specific disease. Wassermann reaction is positive. Four pregnancies. First, Jeanie, who is an imbecile. Wassermann reaction is negative. Second, John, aged 5, healthy. Wassermann reaction is positive. Third, Fanny, aged 4, healthy. Wassermann reaction is negative. Fourth, William, aged 2, healthy. Wassermann reaction is negative.

February 27. 13. John McP., aged 14. Mentally defective. Father alive and well. Mother died of phthisis. Patient is restless, irritable and impulsive. No specific stigmata. Wassermann

reaction is doubtful.

- February 27. 13. John M., aged 13. Mentally defective. Father alive and well. Mother alive and well. Negative history. Patient is morally defective. She He is also very weak minded. Wassermann reaction is doubtful.
- February 27. 13. Lizzie F., aged 14. Mentally defective. Parents alive and well. Nine brothers and two sisters alive and well. Patient is the youngest and is a high grade imbecile. Wassermann reaction is negative.
- February 27. 13. James G., aged 14. Mentally defective. Parents alive and well. Negative history. Patient shows no stigmata. He is very backward and his speech is defective. Wassermann reaction is negative.
- February 27. 13. Cathie T., aged 3. Mongol. Father alive and well. Mother was 44 when child was born. No miscarriages. Child is a typical mongol with broad nose, slit like eyes, large epicanthic folds and large fissured tongue which hangs out. Wassermann reaction is negative.
- February 27. 13. Mary D., aged 14. Mentally defective. Father died of phthsis. Mother takes alcohol to excess. Three abortions: patient came next. Central incisors notched: scarring at angles of mouth. She is feeble minded and excessively erotic. Wassermann reaction is positive.
- March 5. 13. Charles H., aged 13. Mentally defective. Father not seen. Mother drinks to excess but denies specific disease. Patient has typical Hutchinsonian teeth and scarring at the angles of the mouth. Wassermann reaction is doubtful.
- March 5. 13. Andrew M., aged 13. Mentally defective. Father drinks

to excess. Mother is an epileptic. Negative history. Child has no specific stigmata but is practically an imbecile.

Wassermann reaction is negative.

March 2. 13. George G., aged  $7\frac{1}{2}$ . Mentally defective (word blindness). Father alive and well. Mother alive and well. Wassermann reaction is positive. Three pregnancies. No miscarriages. Other 2 children alive and well. No mental disease in the family. Patient is the oldest of the family: walked at 13 months and talked at 18 months. Health good till 4 years old. When he went to school it was noticed that he could not learn. He is not now at any school, and he cannot recognise pictures of ordinary animals: cannot go messages or tell where he lives. He does not know letters nor figures. No specific stigmata. Infantile in his ways - wanting to touch everything. Does not play with other children. Takes fits of passion, smashes dishes, and tears his clothes. Wassermann reaction is positive. Since the date of the above reaction patient has had several intravenous injections of neo-salvarsan by Dr. Leonard Findlay, with the result that the child now plays with other members of the family and has had fewer passionate fits.

June 15, 1915. ... Mentally defective and physically defective. Father is in Australia. Mother gives a possible history. Five pregnancies. First, abortion at three months. Second, abortion at three months. Third, miscarriage at six months. Fourth, still born, still birth. Fifth is ...

PART ONE.

SECTION VI.

MENTAL DEFICIENCY.

Subsection (b) With other defect.

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July 5, 1915. ... Mentally and physically defective. Father ... Three months of patient are insane. Mother is feeble and feeble-minded. Five pregnancies. First, patient. Physical and mental defects. Examination reaction is positive. Second, ... Third, ... Fourth, ... Fifth, ...

June 15. 12. Fanny F., aged 1<sup>3</sup>/<sub>12</sub>. Mentally defective and physically defective. Father is in Australia. Mother gives a positive history. Five pregnancies. First, abortion at three months. Second, abortion at three months. Third, miscarriage at six months. Fourth, full time, still birth. Fifth is Fanny. Patient had an eruption on the face when two months old. At three months she had meningitis. (Dr. Leonard Findlay). Her recovery was slow and she is now very defective, both physically and mentally. There is scarring at the angles of the mouth and the spleen is palpable. Wassermann reaction is positive.

July 2. 12. Charles McG., aged 11. Mentally and physically defective. Maternal aunt insane. Paternal aunt insane. Mother has a weak chest. Three pregnancies: no abortions. One child died of hydro-cephalus, aged 14/12. Patient is the youngest (born 5 years after last). Patient had convulsions when one year old, followed by a hemiplegia (right). He was late in teething, walking and talking. Wassermann reaction is positive.

July 2. 12. William A., aged 13. Mentally and physically defective. Father drinks to excess. Three uncles of patient are insane. Mother is facile and feeble-minded. Five pregnancies. First, patient. Physical and mental defects. Wassermann reaction is positive. Second, Sam, aged 12, healthy. Third, Bertie, aged 10, healthy. Fourth, James, aged 8, healthy. Fifth, Martha, aged 6, not so bright as she was when younger. April 6. 13.

Mrs. Anderson, aged 33. Wassermann reaction is positive. Sam, Wassermann reaction is positive. Bertie, Wassermann reaction

is doubtful. James, Wassermann reaction is doubtful. Martha, Wassermann reaction is positive.

July 2. 12. Hugh S., aged 9. Micro-cephalus with mental defect. Circumference of head measures  $16\frac{3}{4}$  inches. Patient is thin: enlarged tonsils with adenoids. At the age of two years he had his head injured. Wassermann reaction is positive. Mother is alive and well. Five pregnancies - no miscarriages. Patient is oldest. History is negative.

July 2. 12. Hugh M., aged  $8\frac{1}{2}$  Epilepsy with mental defect. Mother was not seen. Three pregnancies: one terminated in abortion. Patient is the youngest and is a twin: an instrument was used at birth and during the first week he had frequent convulsions: since then he has developed more severe fits which occur mostly during the day. He is restless, impulsive and stupid: memory poor. Wassermann reaction is positive. An uncle is a deaf mute.

August 1. 12. John G., aged  $\frac{2}{12}$ . Mentally and physically defective. Parents are in Canada. George, aged 23, a brother, says his parents drink to excess and that they left for Canada a month ago but has heard nothing of them since they left. The baby is being kept by an aunt. Wassermann reaction is positive. August 8. 12. Serum of George gives a positive Wassermann reaction.

August 16. 12. George S., aged 3. Mentally defective with epilepsy. Father drinks to excess. Mother says she was infected from her husband. Nine pregnancies. Six terminated in miscarriages (3-5 months). Seventh, boy, full time, died of convulsions at two months. Eighth is patient. He had encephalitis one year ago. (Dr. Bankier Sloan). Since then he has become mentally



dull and takes frequent fits. At present there is nothing suggestive of meningitis further than defective hearing.

Wassermann reaction is positive. Ninth; abortion at third month.

August 22. 12. Mary H., aged 7. Mentally and physically defective.

Parents were not seen. Patient had infantile paralysis 4 years ago. Wassermann reaction is negative. August 23. 12. Maggie, aged 5, sister. Seems quite healthy. Wassermann reaction is negative.

August 22. 12. Lizzie W., aged  $4\frac{1}{2}$ . Mentally and physically

defective. Father alive and well. Mother anaemic, frequent pains in back and sore throat: loss of hair: no skin eruptions.

Three pregnancies. No miscarriages. First, Lizzie. Instrument used at birth: internal strabismus. Both legs spastic: arms slightly spastic. Cannot sit nor stand. Very obvious mental defect. Wassermann reaction is negative. Second, boy, aged 3, healthy. Third, girl, aged  $1\frac{1}{2}$ , healthy.

August 26. 12. Joseph E., aged  $1\frac{1}{2}$ . Congenital imbecile with epilepsy.

Father drinks to great excess. Mother is separated from her husband. Patient is an only child: typical low grade imbecile: frequent fits during both day and night: Wassermann reaction is positive.

August 27. 12. Rose Ann R., aged 3. Mentally defective with spastic

diplegia. Father alive and well. Mother had a brother died of hydro-cephalus. Two pregnancies. First is patient: cannot walk.

Instrument used at birth: labour lasted two days: child did not breathe till one hour after birth. She is dirty in habits and requires to be spoon fed. Babinski's sign present on right side.

Wassermann reaction is negative. Second, girl, aged 1 year, healthy.

August 27. 12. David J., aged 7. Mentally defective with spastic diplegia. Father died of nephritis. Mother alive and well. Twelve pregnancies. First, boy, aged 20, healthy. Second, boy, aged 18, healthy. Third, boy, died at 7 of "chill". Fourth, abortion at <sup>four</sup> three months. Fifth, abortion at three months. Sixth, boy, died at  $1\frac{1}{2}$  of pneumonia. Seventh, eighth, ninth and tenth miscarriages. Eleventh, boy, aged 10, healthy. Twelfth, twins: one died at 24 hours: other is patient. Labour was easy and natural. Child did not develop: habits dirty: cannot sit nor stand: great mental defect: arms and legs rigid: reflexes increased. Babinski's sign positive. Wassermann reaction is negative.

August 30. 12. Thomas McC., aged 11. Cerebral diplegia, with mental defect. There is a history of stiffness and weakness since birth, though the rigidity of the limbs is less marked than usual. Knee jerks are exaggerated and Babinski's sign is positive on the two sides. Wassermann reaction is negative.

August 30. 12. Gordon S., aged 12. Juvenile general paralysis. I saw this boy at the Eye Infirmary for Dr. Fergus and took blood for a Wassermann reaction. There is optic atrophy: sluggish eye reflexes and absence of knee jerks. No history could be obtained. Wassermann reaction is positive.

September 19. 12. James McK., aged  $1\frac{13}{12}$ . Mentally defective with osteo-genesis imperfecta. Parents alive and well. No suspicion of syphilis. Two pregnancies. First, girl, aged  $3\frac{1}{2}$ , healthy.

Second, James. During the pregnancy the mother was very anaemic. It was noticed at birth that the legs were bent. (Dr. Leonard Findlay). Head is large: fontanelle open: bulging above each ear. Humeri and femora curved. Wassermann reaction is negative.

October 15. 12. Mary McN., aged 3. Micro-cephalus with mental defect. Mother left her husband. She had venereal disease eight years ago. Wassermann reaction is doubtful. Three pregnancies. First, full term still birth. Second, abortion at three months. Third, Mary. Rash after birth. Saddle-shaped nose: head small, palate high and narrow: great lack of intelligence. Wassermann reaction is positive.

October 25. 12. Agnes McG., aged 2. Mentally defective with epilepsy. Father alive and well. Mother, aged 44, alive and well. Wassermann reaction is doubtful. Fourteen children and two abortions. She had once twins. Five children dead. Agnes has taken fits for the past year. When one year old she fell on the back of her head. During the fit there is an attack of laryngismus stridulus as well as the classical signs. Wassermann reaction is doubtful.

October 30. 12. Sara W., aged 2. Mentally defective with spastic diplegia. Father alive and well. Mother alive and well: slight rickets. Patient is the first child. Labour prolonged: instrument used: child did not breathe for 15 minutes: was very blue. She cannot walk: takes no notice of anything: dirty in habits. Arms and legs rigid. Babinski's sign present. Wassermann reaction is negative.

November 1. 12. John McG., aged 4. Mentally and physically defective. Patient shows signs of cerebellar disease, probably a tumour of

tubercular nature. There is marked mental defect. Eyes normal. History of tubercle in the family. Wassermann reaction is negative.

November 5. 12. John N., aged  $2\frac{1}{2}$ . Congenital imbecility, with epilepsy. Father alive and well. Mother has cicatrices at angles of mouth. Wassermann reaction is negative. Two pregnancies. First, John. Head circumference is  $20\frac{1}{4}$  inches. Convergent squint of left eye. He does not hear and he cannot speak: teeth regular. Babinski's sign is negative. He is a very fat child. Wassermann reaction is negative. Second, girl, aged 3 months, healthy.

November 8. 12. Robert P., aged  $2\frac{4}{12}$ . Mentally and physically defective. Father is employed at the Western Infirmary: denies specific disease. Wassermann reaction is negative. Mother was not seen. Five pregnancies. First, miscarriage at seven months. Second, spina bifida died at 4 weeks. Third, girl, aged  $4\frac{1}{2}$ , healthy. Fourth, Robert, At four months the right arm was paralysed. At present he can raise it but cannot grasp. Labour was easy and a cranial presentation. Head measures  $20\frac{1}{2}$  inches in circumference. There is marked bulging above the left ear. Right leg is slightly spastic. Babinski's sign is positive. Mental defects are slight. Wassermann reaction is negative.

November 8. 12. Daniel D., aged 2. Mentally defective with spastic diplegia. Father alive and well. Mother alive and well. Wassermann reaction is negative. Two pregnancies. First, boy, aged 3, healthy. Second, Daniel, cranial presentation: no instrument required. Marked rigidity of arms and legs. Babinski's sign is positive. He cannot stand and he cannot speak and takes little

- notice of his surroundings. Wassermann reaction is negative.
- November 23. 12. James J., aged 4. Congenital Imbecile, with epilepsy. Mother gave a negative history and negative examination. Wassermann reaction is negative. James takes convulsions at long intervals. His mental defects are very marked. Wassermann reaction is positive.
- November 29. 12. John G., aged 10. Imbecility with epilepsy. Father has phthisis. Mother denies specific disease, but gives a positive Wassermann reaction. Nine pregnancies. First, girl, aged 20, alive and well. Second, still birth (premature). Third, boy, premature, still born. Fourth, an abortion. Fifth, John. Has taken fits since birth. Had encephalitis. (Dr. Leonard Findlay). He is very ill tempered and impulsive. Convulsions limited to left side. Wassermann reaction is negative. Sixth, girl, died of pneumonia at  $1^2/12$ . Seventh, Robert, aged 8, healthy. Wassermann reaction is negative. Eighth, girl, died of whooping cough at  $1^3/12$ . Ninth, Niven, aged  $2\frac{1}{2}$ . Impetigo of face. Wassermann reaction is negative.
- December 3. 12. Jane M., aged 5. Mentally defective with hemiplegia. Father alive and well. Mother alive and well: hair falls out from time to time. Wassermann reaction is positive. Five pregnancies. First, girl, aged 7, healthy. Second, boy, aged 6, healthy. Third, Jane. Takes little interest in anything: weakness of right arm and leg: first noticed when one year old: no ankle clonus. Babinski's sign is negative. Wassermann reaction is positive. Fourth, boy, aged 3, healthy. Fifth, boy, aged  $1^4/12$ , healthy.

January 25. 13. William B., aged  $8\frac{1}{2}$ . Mentally and physically defective. The head is large with prominent frontal bosses and a deep furrow between. His gait is unsteady and he readily falls. There is much scarring round the mouth. The upper left incisor is notched. Patient has great mental defect and he is deaf. Wassermann reaction is positive.

January 25. 13. John C., aged  $5\frac{1}{2}$ . Mentally and physically defective. Patient developed a left sided hemiplegia when  $1\frac{1}{2}$  years old. He is feeble minded, very exciteable and if he receives a fright falls down in an unconscious condition, with convulsive movements which are limited to the muscles of the face. He has eczema of both eye-lids but no specific stigmata. Wassermann reaction is positive.

February 6. 13. William B., aged 11. Mentally and physically defective. Father died of phthisis. Mother alive and well. Negative history. Five pregnancies. One abortion. Patient is an imbecile. Wassermann reaction is positive.

February 6. 13. Henry McG., aged 3. Mentally and physically defective. Father is confined in an asylum. Mother alive and well. He is an only child and he developed infantile paralysis one year ago. There is great mental defect. Wassermann reaction is negative.

February 6. 13. Annie W., aged 14. Mentally and physically defective. Patient has been parlysed since birth. There is a spastic condition of arms and legs: ankle clonus: incontinence of urine at times. No specific stigmata. Wassermann reaction is negative.

- February 6. 13. Henry D., aged  $12\frac{1}{2}$ . Mentally and physically defective. Patient speaks badly, there being paralysis of the lip. Increased knee jerks: no ankle clonus: sensation normal. No specific history. Wassermann reaction is negative.
- February 6. 13. David McL., aged  $9\frac{1}{2}$ . Mentally and physically defective. Arms and legs very rigid. Knee jerks increased. Babinski's sign negative. No specific stigmata. Wassermann reaction is positive.
- February 6. 13. Mary F., aged 9. Mentally and physically defective. Patient was not seen by a Doctor till several hours after birth. She has spastic diplegia: there is incontinence of urine and faeces. There are fissures at the angles of the mouth. Wassermann reaction is positive.
- February 6. 13. John S., aged 10. Mentally and physically defective. Father dead. Mother has phthisis. Only child. He has taken epileptic seizures since he was three months old. The fits occur both day and night. He is impulsive and weak minded. Wassermann reaction is positive.
- February 6. 13. George D., aged 11. Mentally and physically defective. Mother gives a specific history. One abortion. Patient has spastic diplegia. During the first month he took convulsions but not since. He has a marked speech defect. Wassermann reaction is negative.
- February 6. 13. John H., aged  $7\frac{1}{2}$ . Mentally and physically defective. Patient has spina bifida. He was operated on when 2 days old. He has paralysis of the lower limbs and incontinence of urine and faeces. Hydrocephalus gradually

developed. Head measures  $23\frac{1}{2}$  inches. Upper central incisors are notched. Wassermann reaction is positive.

February 13. 13. John C., aged 8. Mentally and physically defective. Mother gives a positive specific history. Two abortions. Patient had hemiplegia when 3 years old and is said to have had convulsions. Teeth normal. Wassermann reaction is positive.

February 13. 13. Mary Y., aged 6. Mentally and physically defective. Father is confined in an asylum. Mother has had two abortions. Patient had infantile paralysis at  $1\frac{1}{2}$  years and she has a marked speech defect. Wassermann reaction is negative.

February 13. 13. Helen C., aged 5. Mentally and physically defective. Her father is insane. Mother gives a negative history. Four children died a few hours after birth. Patient is anaemic and has defective speech and is deaf. Wassermann reaction is negative.

February 20. 13. Ellen S., aged 3. Mentally and physically defective. Father not seen. Mother gives a negative history. First child: forceps used: did not breathe for some time. Right arm and leg spastic. Patient cannot walk nor speak. Wassermann reaction is negative.

February 20. 13. James F., aged  $2\frac{1}{2}$ . Mentally and physically defective. Father alive and well. Mother alive and well. Forceps used at birth. Arms and legs rigid. Marked mental defect. Wassermann reaction is negative.

February 20. 13. Hector M., aged 7. Congenital Imbecility,



with epilepsy. Parents not seen. No history obtained.

No specific stigmata. Wassermann reaction is negative.

February 20. 13. David F., aged 2. Congenital imbecility with epilepsy. Mother drinks to excess. Negative history. Patient is a low grade imbecile. Wassermann reaction is negative.

February 27. 13. Annie H., aged 5. Mentally and physically defective. Mother alive and well. Two pregnancies. First, Annie. Forceps used; child blue when born: legs and arms spastic: slight mental defect. Wassermann reaction is negative. Second, a baby, healthy.

February 27. 13. Joseph C., aged 2. Mentally and physically defective. Father in Canada. Mother drinks to excess: lives with another man (has three illegitimate children). Patient had infantile paralysis six months ago. He is practically an imbecile. Wassermann reaction is positive.

February 27. 13. Jessie B., aged 15. Mentally and physically defective. Mother alive and well. Negative history. Patient is the oldest. Forceps used at birth. She has spastic diplegia and is dirty in habits. Mental defect is slight. Wassermann reaction is negative.

February 27. 13. Charlie K., aged 3. Mentally and physically defective. Father died of pneumonia. Mother alive and well. Only child. Prolonged labour. Forceps used at birth. Child blue when born. Typical marked spastic diplegia with mental defect. Wassermann reaction is negative.

February 27. 13. Janet P., aged 2. Mentally and physically defective. Father not seen. Mother alive and well. Negative

history. First child: prolonged labour. Instrument used at birth. Child did not breath for half an hour. Left arm and leg spastic. Slight mental defect. Wassermann reaction is negative.

March 2. 13. Robert W., aged  $4\frac{1}{2}$  Mentally and physically defective. Mother not seen. No definite history. Patient has some paresis of the right side. There is marked mental defect. Wassermann reaction is doubtful.

March 5. 13. Maggie M., aged 14. Mentally and physically defective. Mother died of phthisis. Father drinks to excess. Denies specific disease. Wassermann reaction is positive. Maggie has taken fits since she was three months old. She is suffering from dementia praecox. Wassermann reaction is positive.

March 5. 13. Marion G., aged 12. Mentally and physically defective. Father alive and well. Mother alive and well, but drinks to excess. Two pregnancies. First, Marion. Defective speech: deafness. Wassermann reaction is negative. Second, Duncan, aged 10, dull and stupid and takes little interest in anything. Wassermann reaction is negative.

March 5. 13. Robert C., aged 15. Mentally and physically defective. Father not seen. Mother gives a positive specific history. Patient had infantile paralysis at  $1\frac{1}{2}$  years. Mental defect is marked. Wassermann reaction is positive.

Children of Tramps, Tinkers and Gipsies.

When the investigation of families of tramps, tinkers and gipsies was undertaken, it was not at all anticipated that remarkable results would be obtained. The examination of this class was carried out in the first instance because the large material was available in an Archdiocesan District and because these people have generally always considerable numbers of children.

PART ONE.

I have examined in all 20 families, including 40 children, 14 mothers and 10 fathers. The Wassermann reaction is definitely positive in every case tested. In 10 children there is no clinical evidence of syphilis but a positive Wassermann reaction was also obtained in every instance of the family. In every family, except one, the history, or physical examination of the members, quite apart from the Wassermann reaction. In the single family with the negative history and negative clinical examination (Baby G. December 11. 1911) the father and mother take alcohol to great excess and both give a positive Wassermann reaction. The question of alcoholism has been gone into in view of the fact that Morris has established the influence of taking alcohol to excess in its relationship to other irregular habits. These results are very striking and merit discussion.

SECTION VII.

CHILDREN OF TRAMPS, TINKERS, AND GIPSIES.

1. In the first place it must be emphasized that the Wassermann reactions obtained in these cases were in every instance well worked positives and were controlled by an independent observer who had no knowledge of the source of the sera. 2. This might raise the question as to the validity of the Wassermann reaction

## SECTION VII. -

Children of Tramps, Tinkers and Gipsies.

When the investigation of families of tramps, tinkers and wandering gipsies was undertaken, it was not at all anticipated that remarkable results would be obtained. The examination of this class was carried out in the first instance because the large material was available in an Ayrshire District and because these people have practically always considerable numbers of children.

I have examined in all 18 families, including 85 children, 14 mothers and 10 fathers. The Wassermann reaction is definitely positive in every case tested. In 58 children there is no clinical evidence of syphilis but a positive Wassermann reaction was also obtained in other members of the family. In every family, except one, there is evidence of syphilis as shown by the family history, or physical examination of the members, quite apart from the Wassermann reaction. In the single family with the negative history and negative clinical examination (Baby G. December 11. 12) the father and mother take alcohol to great excess and both give a positive Wassermann reaction. The question of alcoholism has been gone into in view of the fact that Morris has emphasised the significance of taking alcohol to excess in its relationship to other irregular habits. These results are very striking and merit discussion. 1. In the first place it must be emphasised that the Wassermann reactions obtained in these cases were in every instance well marked positives and were controlled by an independent observer who had no knowledge of the source of the sera. 2. This might raise the question as to the validity of the Wassermann reaction

as a sign of syphilitic infection. But it is to be noted that careful inquiry has elicited confirmatory evidence of syphilis in the great majority of cases so that in the remainder one is justified in concluding that the Wassermann reaction has led to the detection of syphilitic infection which could not otherwise have been determined. Section I has shown that positive Wassermann reactions are not obtained in children of other classes in which there is no somatic evidence and no suspicious family, or individual, history. Accordingly there is no ground for the hypothesis that a positive Wassermann reaction occurs in this class of people apart from syphilitic infection. 3. The almost universal prevalence of syphilitic infection in this class being thus demonstrated, it is highly interesting to note how the clinical manifestations differ materially in some points from the classical phenomena of syphilis. Thus abortions are exceptional and large families the rule, for example, Abram K. (October 26. 12) is one of a family of 18 children. He is suffering from von Jaksch's anaemia and is the only member of the family who shows evidence of syphilis. There were 16 pregnancies, including multiple pregnancies on two occasions and there were no abortions. In a paper on "Unusual fertility in syphilitic parents, associated with anomalous involvement of the children", I have drawn attention to the following points. 1. Both parents deny specific disease. 2. Both show evidence of syphilis which is only revealed on very minute physical examination. 3. Parents and children all give a positive Wassermann reaction. 4. Manifestations of syphilis appear to be more severe with successive pregnancies. 5. There have been no abortions. 6. Successive multiple pregnancies (thrice twins).

7. Six children born in 22 months. Sir Jonathan Hutchinson refers to cases in which there are no abortions at the beginning of the family in which the parents are syphilitic, but where the disease gradually becomes more virulent with successive pregnancies, so that if abortions occurred at all it would be at the end of a fairly large family.

In mild cases of congenital syphilis the disease soon passes into a latent stage and for a time there may be no other evidence of syphilis: the mother may regard the symptoms as "hives", thus a medical examination is frequently not made. I have found in three cases of children with paroxysmal haemoglobinuria that they seem perfectly healthy and presented no clinical evidence of syphilis, yet clinical evidence was found in other members of the family. Browning and Cruickshank refer to a case of Kerr Love's in which four children were deaf but only one member of the family of seven gave a positive Wassermann reaction. It is therefore most important to examine other members of the family, indeed it is seldom that I have found all the members of a family negative where a child has given a positive Wassermann reaction.

It may be that in the particular class of people examined in this section syphilis is especially mitigated but, in general the far reaching, grave effects of the disease, especially when untreated or insufficiently treated, can scarcely be exaggerated. So that every means at disposal should be utilised to ascertain the prevalence of syphilis. This section helps to establish the paramount value of the Wassermann reaction for such purposes.

It has been suggested by Wassermann that the serum of every

woman admitted to a lying-in hospital should be treated. Mott suggests that a Wassermann reaction should be done in all infants born of parents who are syphilitic or who present suspicion, whether the infants present symptoms or not. I would even go further than that by suggesting that the serum of every new born child and the serum of every foreigner who arrives in this country should be tested. If these suggestions were adopted it is certain that a large proportion of positive results would <sup>be</sup> elicited in cases which presented no other evidence of syphilis.

August 24. 12. Bella S., aged  $\frac{2}{12}$ . Syphilis. Mother is a tramp and unmarried: smokes and drinks to excess. Wassermann reaction is positive. Five pregnancies. First, abortion at five months, second, abortion at three months, Third, abortion at three months. Fourth boy, full time, died at two weeks of convulsions. Fifth, Bella. Marked coppery eruption on the nates and peeling of skin of palms and soles. Wassermann reaction is positive.

October 22. 12. Henry R., aged  $4\frac{1}{2}$ . Periostitis. Mother is a tramp, takes alcohol to excess, smokes 4 ozs. black tobacco each week and admits specific disease. She is unmarried and has two illegitimate children. Henry has thickening of both femora and there is scarring at the angles of the mouth. Wassermann reaction is positive. James aged  $2\frac{3}{4}$ , Periostitis. He is a half brother. There is thickening of both humeri and of the right tibia. Wassermann reaction is positive.

October 26. 12. James C., aged  $\frac{5}{12}$ . Bronchitis. Father is a tramp: makes birch brooms, and heather pot ringers. He takes alcohol to great excess and says he has frequently exposed himself (as a young man) to venereal infection. Wassermann reaction is positive. Mother alive and well. Wassermann reaction is positive. Seven pregnancies. First, full time, still birth. Second Mary, aged 12, Hutchinsonian teeth. Wassermann reaction is positive. Third John, aged 10, fissures at angles of mouth. Wassermann reaction is positive. Fourth Fanny, aged 8, healthy. Wassermann reaction is positive. Fifth Jane, aged 6., healthy. Wassermann reaction is positive.



Sixth Bella aged 3, healthy. Wassermann reaction is positive.

Seventh James, very fat child. Wassermann reaction is positive.

October 26. 12. Bella C., aged 15. Apparently normal. Father is a tinker: makes tin cooking utensils. Denies specific disease, but has a large scar on the penis: glands indurated. Wassermann reaction is positive. Mother says she had venereal disease before marriage. Wassermann reaction is positive. Eight pregnancies. First Bella. Wassermann reaction is positive. Second Mary, aged 14, healthy. Wassermann reaction is positive. Third twins, premature. Fourth Joan, aged 12, healthy. Wassermann reaction is positive. Fifth Lizzie, aged 11, healthy. Wassermann reaction is positive. Sixth boy, died of convulsions. Seventh Ethel aged 8, healthy. Wassermann reaction is positive. Eighth Sarah, aged  $6\frac{1}{2}$ , healthy. Wassermann reaction is positive.

October 26. 12. Abram K., aged  $8\frac{1}{12}$ . Marasmus. Father is a well known Irish tinker, who wanders about South Ayrshire and Dumfries-shire. (His father was a tinker, drank to excess, was under my care in Ayr District Asylum, where he died). No evidence of specific disease. Wassermann reaction is positive. Mother denies specific disease, but has occasional sore throat. Wassermann reaction is positive. All children are healthy, except the youngest. Sixteen pregnancies. First James, aged 15. Wassermann reaction is positive. Second twins, Jessie and Agnes, aged 14. Wassermann reaction is positive. Third twins, Abel and Joan, aged  $13\frac{1}{12}$ , Wassermann reaction is positive. Fourth Mary, aged  $12\frac{1}{6}$ . Wassermann reaction is positive.

Fifth Henry, aged  $11\frac{1}{4}$ . Wassermann reaction is positive.

Sixth Wallace, aged  $10\frac{1}{4}$ , Wassermann reaction is positive.

Seventh Fergus, aged  $9\frac{1}{3}$ , Wassermann reaction is positive.

Eighth Annie, aged  $8\frac{5}{12}$ . Wassermann reaction is positive.

Ninth Mina, aged  $7\frac{5}{12}$ . Wassermann reaction is positive.

Tenth Martha, aged  $6\frac{1}{2}$ . Wassermann reaction is positive.

Eleventh Matilda, aged  $5\frac{1}{2}$ . Wassermann reaction is positive.

Twelfth Hugh, aged  $4\frac{1}{2}$ . Wassermann reaction is positive.

Thirteenth John, aged  $3\frac{7}{12}$ . Wassermann reaction is positive.

Fourteenth Philip, aged  $2\frac{7}{12}$ . Wassermann reaction is positive.

Fifteenth, Robert, aged  $1\frac{3}{4}$ . Wassermann reaction is positive.

Sixteenth Abram, pale and much emaciated. Spleen is much enlarged. Hb. 40%. R.B.C's. 3,000,000. W.B.C's 14,700.

Wassermann reaction is positive.

October 30. 12. Marie and Wilse W., aged  $11\frac{1}{2}$  months. Dactylitis and periostitis. Father is a wandering gipsy: came to Scotland in 1910. Denies venereal disease, though there is a scar on the penis. Pupils irregular in outline: very slight inequality: knee jerks exaggerated: speech slow and a tremor of lips. A case of early general paralysis. Wassermann reaction is positive. Mother denies specific disease. Wassermann reaction is positive. Three pregnancies. No abortions. First twins, Bete, aged  $1\frac{11}{12}$ . No stigmata. Wassermann reaction is positive. Sames aged  $1\frac{11}{12}$ . A healthy child. Wassermann reaction is positive. Second twins, Marie, thickening of both humeri, right femur and left fibula. Had an eruption when six weeks old. Wassermann reaction is positive.

Wilse, multiple dactylitis of phalanges: no evident thickening of metacarpals nor metatarsals: no suppuration.

Wassermann reaction is positive. Third twins, Adren, aged  $\frac{6}{52}$ . Typical congenital syphilis, snuffles, hacked lips, peeling of skin, large patch of coppery coloured eczema on cheek. Wassermann reaction is positive. Josse aged  $\frac{6}{52}$ .

Eczema tarsi, condylomata: snuffles: hacked lips: peeling of skin: very diffuse eruption on body. Wassermann reaction is positive.

November 5. 12. Annie C., aged  $\frac{7}{12}$ . Marmmus. Mother is a tramp: health good: denies specific disease. Wassermann reaction is positive. Child is emaciated and pale: spleen enlarged: never any eruptions and no scarring at angles of mouth. Wassermann reaction is positive.

November 6. 12. Baby H., aged  $\frac{1}{52}$ . Female child. Father is a tinker. Denies specific disease. Wassermann reaction is positive. Mother suffers from nocturnal headache. Wassermann reaction is positive. Three pregnancies: no abortions. First Flora, aged 4, healthy. Wassermann reaction is positive. Second, annie, aged  $1\frac{1}{12}$ . Cardiac disease. Wassermann reaction is positive. Third, is patient, who has long black hair, a pale face and has an old appearance: organs healthy. Bullae on soles of feet. Spleen not palpable. Wassermann reaction is positive.

November 6. 12. Annie C., aged  $1\frac{1}{2}$ . Cardiac disease. Father is a tinker and makes cooking utensils. He had syphilis nine years ago. Wassermann reaction is positive. Mother is alive

and well. Wassermann reaction is positive. Two pregnancies. No abortions. First Annie, Wassermann reaction is positive. Second Dora, aged  $\frac{2}{12}$ . Hydrocephalus. Later she developed Meningitis but was lost trace of. Wassermann reaction is positive.

November 22. 12. Bella McG., aged 1. Periostitis. Mother is a tramp and unmarried. Drinks to excess and often sleeps in hay sheds, behind hedges and in woods. She denies specific disease and shows no evidence of it. Wassermann reaction is positive. Bella has much spindle shaped thickening of the right femur. At the right angle of the mouth there is much scarring. Wassermann reaction is positive.

November 27. 12. Mary D., aged 8. Syphilis. Foster Mother, Mary D., aged 47, is a tramp. She has been in bad health all summer. Swelling in groin (not seen). Sore throat, flat nose: ulcers on palate. Two illegitimate children. Wassermann reaction is positive. Child (Illegitimate) has been with guardian since three weeks old. Nasal bones are much thickened: deafness: abscesses on both legs: notched incisors. Wassermann reaction is positive.

December 5. 12. David, aged 7, illegitimate child of Mary D. No evidence of syphilis. Wassermann reaction is positive. Willie, aged 6, a half brother, healthy. Wassermann reaction is positive.

December 6. 12. Mary C., aged  $\frac{7^1}{3}$ . Syphilis. Mother is a tramp: denies specific disease: hair is thin and falling

out. Wassermann reaction is positive. Patient is an illegitimate child. There is much scarring at the angles of the mouth: face pale: child ill nourished. Teeth irregular and serrated. Wassermann reaction is positive.

December 11. 12. Baby G., aged  $10/12$ , healthy. Father is <sup>a</sup> tramp: takes alcohol to great excess: denies specific disease.

Wassermann reaction is positive. Mother drinks to excess and is a heavy smoker: denies specific disease. Wassermann reaction is positive. Child has no name. She seems healthy: no rashes and nothing suggestive of specific disease.

Wassermann reaction is positive.

December 29. 12. William R., aged 14. Apparently normal. Father is a well known wandering tinker, who frequents South Ayrshire. He denies specific disease, but Wassermann reaction is positive. His wife has left him. He says she had syphilis before marriage. She had eleven pregnancies. First, abortion (some months). Second, William, Healthy. Wassermann reaction is positive. Third, David, aged 13, healthy. Wassermann reaction is positive. Fourth James, aged  $11\frac{1}{2}$ , healthy. Wassermann reaction is positive. Fifth Patrick, aged 10, healthy, Wassermann reaction is positive. Sixth Leonard, aged 9, notched incisors. Wassermann reaction is positive. Seventh Sophia, aged 8, Scarring at angles of the mouth. Wassermann reaction is positive. Eighth Bridget, aged  $6\frac{1}{2}$ . One notched incisor is appearing. Wassermann reaction is positive. Ninth Anne, aged  $5\frac{1}{2}$ , healthy. Wassermann reaction is positive. Tenth Maria, aged 4, Scarring at angles of the

mouth. Wassermann reaction is positive. Eleventh, Hannah, aged  $2\frac{1}{2}$ , healthy. Wassermann reaction is positive.

December 29. 12. Peter M., aged 12. Syphilis. Parents are tramps but were not seen. (It is a common habit in the country to send poorly clad children to do the begging). No definite history obtained. Patient is the oldest alive but thinks he has heard his mother say there were three before him. He shows evidence of congenital syphilis. Wassermann reaction is positive. James, aged 11, has typical notched incisors. Wassermann reaction is positive. John aged 9, has serrated incisors and scarring at the right angle of the mouth. Wassermann reaction is positive. William aged 7, healthy. Wassermann reaction is positive. Mary aged  $5\frac{1}{2}$ , Twin, healthy. Wassermann reaction is positive. Maggie aged  $5\frac{1}{2}$ , twin, fissures and scarring at the angles of the mouth. Wassermann reaction is positive.

December 29. 12. Pietro G., aged 14. Syphilis. Father is a wandering gipsy (not seen). Mother gives a positive history. Wassermann reaction is positive. Six pregnancies. First - full time - still born. Second Carlo, aged 16, healthy. Wassermann reaction is positive. Third, patient, scarring at left angle of mouth, Hutchinsonian teeth. Wassermann reaction is positive. Fourth Antonio, aged 12, healthy. Wassermann reaction is positive. Fifth Julia, aged 9, healthy. Wassermann reaction is positive. Sixth Amelia, aged 6, has eczema tarsi, eczema of lobule of left ear and a moist patch at side of nose. Wassermann reaction is positive.

February 13. 13. Grace McL., aged 8. Normal. Father is a travelling tinker, and has been several times abroad. Denies specific disease. Wassermann reaction is positive. His wife died one year ago. ? pneumonia. Four children of the marriage. First, Grace, a bright, healthy child. Wassermann reaction is positive. Second, Matilda, aged 5, teeth irregular in outline and serrated. Wassermann reaction is positive. Third, Frances, aged  $2\frac{1}{2}$ . Teeth irregular in outline and serrated. Wassermann reaction is positive. Fourth, Jemima, aged  $1\frac{1}{2}$ , cardiac disease. Wassermann reaction is positive.

February 16. 13. Marie L., aged 18, healthy. Father is a tinker. Had syphilis twenty years ago. Wassermann reaction is positive. Mother has a tertiary ulcer on the left leg. Wassermann reaction is positive. Eleven pregnancies. First, and second terminated in abortion. Third, Marie, Wassermann reaction is positive. Fourth, Pete, aged 17, notched incisors. Wassermann reaction is positive. Fifth, Anna, aged 16, serrated incisors. Wassermann reaction is positive. Sixth, Fegue, aged  $14\frac{1}{2}$ . Irregular and serrated incisors. Wassermann reaction is positive. Seventh, Max, aged  $13\frac{1}{2}$ , healthy. Wassermann reaction is positive. Eighth, Zyene, aged  $12\frac{1}{2}$ , healthy. Wassermann reaction is positive. Ninth Susse, aged 10, healthy. Wassermann reaction is positive. Tenth Znike, aged 9, healthy. Wassermann reaction is positive. Eleventh, Sabe, aged 5, scarring at angles of mouth and some deep fissures. Wassermann reaction is positive.

Prostitutes.

As has already been mentioned, the primary object of this work was to investigate the frequency of syphilis in children; but circumstances PART ONE. after my notice several cases of prostitutes who were very young and the results obtained in the examination of these led me to extend my observations on this class in Glasgow.

The material examined fell into two classes (a) 30 cases taken from the best residential parts of the city and (b) 21 cases drawn from the very lowest slum. The investigation was specially connected with cases between the ages of 14 and 25 years; the 10% cases above mentioned the very SECTION VIII. 200 cases were selected from 277 individuals who were under 25 years of age.

PROSTITUTES.

In the first place, ----- admitted prostitution. In the second, most thought they had come for treatment. Consequently one is prepared to find a large number with a positive Wassermann reaction. The physical examination was very imperfectly conducted in that, except in one case where an ulcer was seen on the leg, it was confined to the nose and head. Hence the clinical evidence is wanting in a large proportion of cases, though the Wassermann reaction was positive in every case tested. The results were controlled throughout by an independent chemist.

In the case of Glasgow it is assumed I am not aware that any official figures are available, yet from an unofficial source I learn that there are 17,000 prostitutes known to the Glasgow police.

Pinakke is of opinion that in Berlin every day who affects



## SECTION VIII. -

Prostitutes.  
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As has already been mentioned, the primary object of this work was to investigate the frequency of syphilis in children; but circumstances brought under my notice several cases of prostitutes who were very young and the results obtained in the examination of these led me to extend my observations on this class in Glasgow.

The material examined fell into two classes (a) 53 cases taken from the best residential parts of the city and (b) 51 cases drawn from the very lowest classes. The investigation was specially concerned with cases between the ages of 14 and 18 years: and the 104 cases above mentioned who were within these age limits were selected from 277 individuals who came under notice.

In the first place, all cases admitted prostitution. In the second, most thought they had come for treatment. Consequently one is prepared to find a large number with a positive Wassermann reaction. The physical examination was very imperfectly conducted in that, except in one case where an ulcer was seen on the leg, it was confined to the arms and head. Hence the clinical evidence is wanting in a large proportion of cases, though the Wassermann reaction was positive in every case tested. (The results were controlled throughout by an independent observer).

So far as Glasgow is concerned I am not aware that any official figures are available, yet from an unofficial source I learn that there are 17,000 prostitutes known to the Glasgow police.

Blaschko is of opinion that in Berlin every man who attains

(on an average) the age of 30 has had gonorrhoea twice and every fourth or fifth man has had syphilis.

McDonagh says 90% of syphilitic infections take place when under the influence of alcohol.

It has been estimated that in Britain 1,500,000 persons are infected with syphilis every year, and since the abolition of the regulation of prostitution in 1886 there has been a marked increase of syphilis. Major French says that in India in 1895, while the Act was temporarily relaxed, out of every 1000 cases of illness in the Army 537 were due to venereal disease.

Of the 104 cases which I examined 71 have, in addition to a positive Wassermann reaction, either clinical evidence or a positive personal history, 3 are congenital cases and 3 at least are definitely feeble minded.

October 10, 12. Anne S., aged 17. A prostitute. In illegitimate child. She was brought up strangers who illused her and sold her on the streets. Patient is not aware of having had venereal disease. On the front of the right leg is a specific ulcer. She has frequent nocturnal headaches. Her teeth are normal and well preserved. Wassermann reaction is positive.

October 22, 12. Mary G., aged 16<sup>11</sup>/<sub>16</sub>. A prostitute. Father alive and well. Mother alive and well. Patient is a shop-girl; very poorly paid and goes on the streets at night. She does not take alcohol and is regularly at work during the day, but has been a prostitute at night for the past seven months. During the past two months she has suffered from severe nocturnal headaches and slight sore throat; teeth are normal. Wassermann reaction is positive.

- August 24. 12. Flora S., aged 16<sup>4</sup>/12. A prostitute. Patient says her mother was a prostitute: that she drank to excess and died of acute pneumonia three months ago. There is a positive history: labial sore and secondary symptoms. Teeth are normal. Wassermann reaction is positive.
- August 24. 12. Annie W., aged 17. A prostitute. Patient had a rash two years ago: sore throat: alopecia: rheumatic pains in right knee from time to time. Her throat is congested: teeth normal and well preserved. Wassermann reaction is positive.
- August 24. 12. Cissie McC., aged 17<sup>2</sup>/12. A prostitute. Her father is an Irish Lawyer. Mother drank to excess and was divorced. Patient lives with her mother who has fifteen young women of this type staying with her. Her teeth seem normal. Wassermann reaction is positive.
- October 10. 12. Agnes S., aged 17. A prostitute. An illegitimate child. She was brought up <sup>by</sup> strangers who illused her and sent her on the streets. Patient is not aware of having had venereal disease. On the front of the right leg is a specific ulcer. She has frequent nocturnal headache. Her teeth are normal and well preserved. Wassermann reaction is positive.
- October 22. 12. Mary C., aged 16<sup>11</sup>/12. A prostitute. Father alive and well. Mother alive and well. Patient is a shop-girl: very poorly paid and goes on the streets at night. She does not take alcohol and is regularly at work during the day, but has been a prostitute at night for the past seven months. During the past two months she has suffered from severe nocturnal headache and slight sore throat: teeth are normal. Wassermann reaction is positive.

- October 25. 12. Fanny R., aged 17<sup>2</sup>/12. A prostitute. Patient is a serving-maid in a high class restaurant. She has an attractive appearance. She is poorly paid and goes out at night with men who lunch in the place. She denies specific disease. Her teeth are normal. Wassermann reaction is positive.
- October 25. 12. Annie M., aged 17<sup>9</sup>/12. A prostitute. Patient is also a serving-maid in a high class restaurant: very attractive appearance: poorly paid: goes out at night with day lunchers. She denies specific disease: teeth normal. Wassermann reaction is positive.
- October 30. 12. Catherine D., aged 15. A prostitute. Parents dead. Patient has never been to any employment and she states that she went on the streets a year ago. There is no history of specific disease. Her teeth seem normal. Wassermann reaction is positive.
- October 30. 12. Jemima P., aged 16<sup>10</sup>/12. A prostitute. Parents dead. One brother, aged 25, is in the army. Patient takes alcohol to excess. There is a specific history: she had an abortion four months ago. There is frequent sore throat and at present she is quite hoarse. Her teeth are normal. Wassermann reaction is positive.
- October 30. 12. Julia T., aged 18. A prostitute. Parents are respectable people. Patient was a shop-girl: stole articles of dress: went on the streets. She drinks to great excess but denies specific disease. Her teeth are normal. Wassermann reaction is positive.
- November 5. 12. Maggie Ann R., aged 17<sup>8</sup>/12. A prostitute. She was born in Ireland. Left her people and came to Glasgow: could

not find employment: got into bad company and began her downward career. She had a specific eruption one year ago: sore throat: alopecia: specific arthritis of right knee.

Her teeth are normal. Wassermann reaction is positive.

November 8. 12. Joan McL., aged 16. A prostitute. Came from the Highlands six months ago: did not like her situation: refused to go home: went on the streets. She had a genital sore four and a half months ago, followed by a secondary rash, sore throat, very severe headache and a vaginal discharge. Her teeth seem normal. Wassermann reaction is positive.

November 22. 12. Jessie S., aged 15<sup>11</sup>/12. A prostitute. Patient is a twin. She serves in a city tea shop: began to go out with customers one year ago. There is no history of specific disease and her teeth are normal. Wassermann reaction is positive.

November 22. 12. Jane S., aged 15<sup>11</sup>/12. A prostitute. Patient is the twin sister of the previous case. She keeps house for her sister and invalid father. She became a prostitute on the advice of her sister. She had an abortion two months ago. Her teeth are normal. Wassermann reaction is positive.

November 22. 12. Flora S., aged 18. A prostitute. Patient was a maid servant till one year ago. Her father is a crofter. Patient had an illegitimate child. She is very hoarse and there are mucous patches on the fauces, and an eruption on the arm. Her teeth are normal. Wassermann reaction is positive.

November 23. 12. Jessie McQ., aged 16. A prostitute. Patient has an Irish accent: refused to give any particulars of her people. She denies specific disease. Her teeth are normal and

well preserved. She has been a prostitute for a year.

Wassermann reaction is positive.

November 23. 12. Flora L., aged  $16\frac{1}{12}$ . A prostitute. One sister alive and well. Patient ran away from home as soon as she left school. She lives in a house of ill-repute with three others (I.S., M.J., and I.C.) She has a vaginal discharge but no scalding micturition. Her teeth are normal. Wassermann reaction is positive.

November 23. 12. Isobel S., aged  $16\frac{1}{2}$ . A prostitute. Parents alive and well. Patient ran away from home three months ago and resides in the same house as the previous case. There is a specific eruption on the arms: mucous patches on the soft palate and is very hoarse and apparently very ill. Her teeth are normal and well preserved. Wassermann reaction is positive.

November 23. 12. Mabel J., aged 18. A prostitute. She says she has been a prostitute for three years. She takes charge of younger girls and lives in the same house as the previous two cases. She dresses extravagantly but does not take alcohol. Her height is 5 ft. 10 ins. She denies specific disease. Her teeth are normal. Wassermann reaction is positive.

November 23. 12. Isa C., aged  $15\frac{1}{2}$ . A prostitute. An illegitimate child, who knows nothing of her parentage. She lives with the three previous cases. She is poorly educated: very feeble minded: facile and erotic. She does not appear to be responsible for her actions. Her upper teeth are irregular in outline but the incisors are not notched. Wassermann reaction is positive.

November 26. 12. Susan M., aged 15<sup>4</sup>/12. A prostitute. Patient ran away from home: no occupation. She says she has been a prostitute for 14 months. There was a specific eruption three months ago, followed by sore throat and headache. Her teeth are normal. Wassermann reaction is positive.

November 26. 12. Euphemia H., aged 16. A prostitute. Her parents are alive and well: two brothers alive and well. She says her mother is a prostitute. Patient is thin, ill-nourished: very feeble minded and facile, and has typical Hutchinsonian teeth. Wassermann reaction is positive.

November 26. 12. Helen W., aged 18. A prostitute. Patient was a bar-maid: gave way to drink and finally went on the streets. She came from England to the Exhibition, 1911. She says she had a labial sore two years ago, followed by secondary symptoms. Teeth normal and well preserved. Wassermann reaction is positive.

November 27. 12. Mary H., aged 17<sup>2</sup>/12. A prostitute. Patient left home after she failed to pass the medical preliminary examination at the University. When she got into financial difficulties she went on the streets. Her father is a Clergyman. Her mother died of cardiac disease. Patient has frequent sore throat and there is some alopecia. Teeth are normal. Wassermann reaction is positive.

November 27. 12. Phyllis C., aged 17<sup>8</sup>/12. A prostitute. Patient was born in England: came to the Exhibition, 1911. Her father is a banker. She first fell into evil habits when on holiday in Paris: she had a chancre. A bubo formed which was operated on. She had the usual secondary symptoms. Wassermann reaction is positive.

- December 3. 12. Minnie McC., aged  $17\frac{4}{12}$ . A prostitute. She lives with an aunt who has no control over her. She says she hates work but likes being on the streets. She is feeble minded and extremely facile. She had gonorrhoea at the age of 14 and had a hard sore at the age of  $14\frac{1}{2}$ , followed by secondary symptoms. Her throat is much congested. Wassermann reaction is positive.
- December 5. 12. Nettie W., aged 16. A prostitute. Father is an invalid. Mother died a year ago. Two brothers alive and well. She became a prostitute to save breaking up her home. There is frequent nocturnal headache and occasional sore throat. Her teeth are normal. Wassermann reaction is positive.
- December 5. 12. Minnie B., aged 17. A prostitute. She says she has been on the streets for over three years. She takes alcohol to great excess, but denies specific disease. Her father is a Clergyman. The serum of the patient gives a positive Wassermann reaction.
- December 5. 12. Mina S., aged  $16\frac{3}{12}$ . A prostitute. Her parents both take alcohol to excess. Patient says she was put to the streets over two years ago. She says she goes to a theatre every night and afterwards she frequents a restaurant. She denies specific disease. Teeth seem normal. Wassermann reaction is positive.
- December 5. 12. Edith B., aged  $17\frac{8}{12}$ . A prostitute. An illegitimate child. She says her father was a Roman Catholic Clergyman but has not heard of him for several years. She went on the streets at the age of  $14\frac{1}{2}$ ; had an illegitimate child at the age of 16 and since then has had two abortions. Her teeth are normal. Wassermann reaction is positive.



December 5. 12. Mary J., aged 16<sup>8</sup>/12. A prostitute. Her father is a schoolmaster. Patient left home because her father insisted on her training as a teacher. She has been on the streets for the past two months and she says she has a large sore on the privates. Her teeth are normal. Wassermann reaction is positive.

December 6. 12. Winifred Emma S., aged 17<sup>1</sup>/12. A prostitute. She was born in England, where her father was a Vicar, but died many years ago. She is an only child. Her mother died four years ago. Patient could not get on well with her aunt: ran away: came to the Exhibition, 1911. She had an abortion five months ago. At present she has a specific rash: sore throat and specific arthritis of the left knee. Teeth are normal. Wassermann reaction is positive.

December 6. 12. Edna L., aged 17<sup>11</sup>/12. A prostitute. Her father is an army officer. Her mother is dead. Her father re-married: had a divorce and was married a third time. Patient ran away from a boarding school with an army officer but he left her and went abroad. She had a child a year ago and has had two abortions since. Her teeth are normal. Wassermann reaction is positive.

December 9. 12. Bridget J., aged 17<sup>10</sup>/12. A prostitute. Her father and mother take alcohol to excess. Patient never goes home: was a shop girl for a year. Since the age of 16 she has been a prostitute, and she has had one illegitimate child. She has also had one abortion. For the past three weeks she has had a sero-sanguineous discharge. Her teeth are normal. Wassermann reaction is positive.

December 9. 12. Isa D., aged 16<sup>11</sup>/<sub>12</sub>. A prostitute. Parents drink to excess. Patient says she was sent to the streets before she had attained the age of 14. She has severe nocturnal headache. There are numerous mucous patches on the fauces. Her teeth are normal. Wassermann reaction is positive.

December 9. 12. Flora G., aged 17<sup>10</sup>/<sub>12</sub>. A prostitute. Her father is a crofter. Patient came to Glasgow to take up nursing, but she was advised by her relatives to go on the streets. She states that she has been under treatment for syphilis. Her teeth are well preserved. Wassermann reaction is positive.

December 9. 12. Lily T., aged 16<sup>11</sup>/<sub>12</sub>. A prostitute. Father is dead. Mother is a prostitute. Three sisters prostitutes in London. Patient and her mother came to the Exhibition, 1911. Her teeth are irregular in outline and one incisor is definitely notched. She is somewhat feeble minded. Wassermann reaction is positive.

December 9. 12. Bridget O'H., aged 18. A prostitute. She came from Ireland two years ago: could not find work: went on the streets. She suffers from nocturnal headache. Her teeth are normal. Wassermann reaction is positive.

December 9. 12. Sara Ann G., aged 17<sup>1</sup>/<sub>2</sub>. A prostitute. Patient came from Ireland: was a potato-digger: hated work: went on the streets. She has one illegitimate child 10 months old. Patient gives a positive history. Teeth normal. Wassermann reaction is positive.

December 9. 12. Susan McG., aged 16. A prostitute. She came from Ireland about a year ago: got into bad company and gave way to prostitution. She denies specific disease and her teeth are normal. Wassermann reaction is positive.

- December 9. 12. Felix S., aged 15. A prostitute. Parents alive and well. She is an only child and has always had too much of her own way: has been on the streets for over 6 months and had an abortion two months ago, followed by severe flooding. Since that time she has had severe headaches and sore throat. Wassermann reaction is positive.
- December 9. 12. Janie G., aged 16<sup>2</sup>/12. A prostitute. Parents dead. One sister, aged 13, alive and well. Patient attends Picture Houses. She denies specific disease and her teeth are normal. Wassermann reaction is positive.
- December 11. 12. Mary O'R., aged 17<sup>11</sup>/12. A prostitute. She came from Ireland at the age of 15: lived in a house of ill-fame and gave way to bad habits. Five others live in the same house. (M.O'H., E.H., M.H., E.P., and A.A.) She denies specific disease: teeth normal. Wassermann reaction is positive.
- December 11. 12. Maggie O'H., aged 18. A prostitute. Patient lives in the same house as the previous case: has been there for over a year. She gives a positive history. Wassermann reaction is positive.
- December 11. 12. Ester H., aged 17<sup>2</sup>/12. A prostitute. Lives in the same house as previous two cases. She came from England to the Exhibition, 1911. There are mucous patches on the fauces. Wassermann reaction is positive.
- December 11. 12. Margaret H., aged 17<sup>1</sup>/<sub>2</sub>. A prostitute. Lives in the same house as the previous three cases. Father is an Army Officer. Mother divorced and lives with another Officer. Patient says she left home to earn her own living: later she

became a prostitute when she could not find work. She admits specific disease. Wassermann reaction is positive.

December 11. 12. Elizabeth P., aged 15 $\frac{1}{2}$ . A prostitute. Lives in same house as previous four cases. Patient kept late hours for over a year and her father put her out. For the past three months she has had severe nocturnal headaches. Teeth normal. Wassermann reaction is positive.

December 11. 12. Andrina A., aged 17 $\frac{1}{2}$ . A prostitute. Lives in same house as previous five cases. Mother was a prostitute and died a year ago. Patient is an only child. She has a saddle-shaped nose and typical notched incisors. There is a patch of eczema round the mouth. Wassermann reaction is positive.

December 11. 12. Isa F., aged 14. A prostitute. Patient has lived with Helen G. for three months. She says she is an illegitimate child and has been only twice on the streets. She is suffering from severe secondary symptoms. Wassermann reaction is positive.

December 11. 12. Joan M., aged 14 $\frac{1}{2}$ . A prostitute. Patient is a cousin of the previous case and lives in the same house. Her father is a Lawyer. Her mother died at child birth. There is a well marked secondary eruption. Teeth normal. Wassermann reaction is positive.

December 11. 12. Helen G., aged 18. A prostitute. She says she has initiated over two hundred young girls into the method of "making money", and that she herself was initiated into the method by an aunt when she was 13 years of age. She paid twenty pounds for the custody of Isa F. She denies specific disease. Teeth normal. Wassermann reaction is positive.

- December 12. 12. Agnes M., aged 17. A prostitute. Patient was born in Ireland and is a twin. Her father drinks to excess. He put his two children to the streets: thrashed them when they returned without money and sent them out again. Both girls left home and came to the Exhibition, 1911. No specific history. Teeth normal. Wassermann reaction is positive.
- December 12. 12. Jane M., aged 17. A prostitute. She is the twin sister of the previous case. She suffers from severe nocturnal headache: never any rash, nor sore throat. Teeth normal. Wassermann reaction is positive.
- December 12. 12. Catherine O'F., aged 17½. A prostitute. Patient was born in Ireland and is a twin. Parents take alcohol to great excess. The three daughters were ill-treated and they left home and came to the Exhibition, 1911. Patient suffers from severe headaches and sore throat. Teeth normal. Wassermann reaction is positive.
- December 12. 12. Susan O'F., aged 17½. A prostitute. She is the twin sister of the previous case. She had a rash six months ago: with sore throat and loss of hair. Teeth normal. Wassermann reaction is positive.
- December 12. 12. Bridget O'F., aged 16½. A prostitute. She is a sister of the previous two cases. She was a twin, (her brother died two hours after birth). Patient gives a positive history. About six months ago an eczematous patch appeared at the left angle of the mouth. Her teeth are normal and well preserved. Wassermann reaction is positive.
- December 12. 12. Rachel O'S., aged 18. A prostitute. Patient

was born in Ireland and is a twin. She came to Scotland at the age of 14: she became a prostitute at the age of 15. For the past 2 years she has suffered from nocturnal headache. Her teeth are normal. Wassermann reaction is positive.

December 12. 12. Joan O'S., aged 18. A prostitute. She is the twin sister of the previous case. She denies specific disease, and her teeth seem normal. Wassermann reaction is positive.

December 12. 12. Sara M., aged 15<sup>9</sup>/12. A prostitute. Parents dead. One brother, aged 19, healthy. One sister, aged 12, healthy. Patient says she went on the streets at the age of 13 $\frac{1}{2}$  and that she frequents an Ice-cream shop. She had a rash at the age of 14: took mercury for 1 $\frac{1}{2}$  years but not for the last three months. Her teeth are well preserved. Her throat is congested. Wassermann reaction is positive.

December 12. 12. Clara S., aged 14. A prostitute. Father alive and well. Mother alive: takes alcohol to great excess. Patient is the oldest of a family of four. Boy, aged 13, healthy. Boy, aged 11, healthy. Girl, aged 9, healthy. Patient acquired the art of masturbation at a Boarding School: she and three others were expelled. From that time they have been prostitutes. Her teeth seem normal. Wassermann reaction is positive.

December 12. 12. Agnes L., aged 17<sup>11</sup>/12. A prostitute. Her parents live in Ireland. Patient was one of the four expelled from a Boarding School. She has a secondary rash. Wassermann reaction is positive.

December 12. 12. Kate G., aged 17<sup>8</sup>/12. A prostitute. Patient was born in England. She was one of the four expelled from a

Boarding School. She is very hoarse and has a specific rash. Wassermann reaction is positive.

December 12. 12. Nora W., aged 18. A prostitute. Patient is an only child. She was one of the four expelled from a Boarding School. She has mucous patches on the fauces. Wassermann reaction is positive.

December 16. 12. Mina W., aged 17<sup>10</sup>/12. A prostitute. Patient was a baby's nurse for 2 years. She had an abortion 9 months ago. She denies specific disease. Teeth seem normal. Wassermann reaction is positive.

December 17. 12. Alexina S., aged 18. A prostitute. Parents dead. One sister alive and well. Patient was born in England and came to the Exhibition, 1911. She has excruciating headaches at night. Teeth seem normal. Wassermann reaction is positive.

December 17. 12. Bethia S., aged 17<sup>1</sup>/12. A prostitute. Patient is the sister of the previous case. She came to the Exhibition, 1911. She gives a specific history. Teeth are normal. Wassermann reaction is positive.

December 17. 12. Jemima M., aged 17. A prostitute. Patient is a triplet and was born in Ireland. Her parents are unknown. The three sisters came to Scotland when 12 years of age. Patient has a specific rash. Teeth are normal. Wassermann reaction is positive.

December 17. 12. Marion M., aged 17. A prostitute. Patient is a sister of the previous case. She had a specific eruption 3 years ago. Teeth normal. Wassermann reaction is positive.

December 17. 12. Agnes M., aged 17. A prostitute. Patient is a

- sister of the two previous cases. She gives a positive history. Wassermann reaction is positive.
- December 17. 12. Susan R., aged 16. A prostitute. An illegitimate child. Her father is in an asylum. Patient is very feeble minded. Her intelligence is of a low standard: her memory is poor: she is very erotic and difficult to examine. She had an abortion some months ago. Her incisor teeth are notched, irregular in outline and the palate is high and narrow. Wassermann reaction is positive.
- December 17. 12. Bridget R., aged 17<sup>2</sup>/12. A prostitute. She is an older sister of the previous case. She says her mother had three illegitimate children. Patient has eczema oris. There is no evident mental defect. She has had 3 abortions. Wassermann reaction is positive.
- December 17. 12. Julia P., aged 17<sup>5</sup>/12. A prostitute. Parents dead. Patient is an only child. She gives a negative history. Her teeth are normal. Wassermann reaction is positive.
- December 18. 12. Annie H., aged 17<sup>11</sup>/12. A prostitute. Father is a tailor and drinks to excess. Mother takes alcohol to excess, and has been several times in prison. Three brothers alive and well: two sisters are prostitutes. Two of them became prostitutes during the time of the Exhibition, 1911. Patient drinks and smokes to excess. Her teeth are normal and well preserved. Wassermann reaction is positive.
- December 18. 12. Maria H., aged 16<sup>9</sup>/12. A prostitute. A sister of the previous case. She is very anaemic and gives a specific history. Wassermann reaction is positive.



- December 18. 12. Bella H., aged  $15\frac{1}{2}$ . A prostitute. A sister of the two previous cases. Her teeth are normal. She gives a negative history. Wassermann reaction is positive.
- December 18. 12. Susanna W., aged 18. A prostitute. Her father is a licensed grocer. Her mother died of bronchitis. Patient is an only child: used to assist in the shop: began to drink: finally became a prostitute. She denies specific disease, though her hair is very thin. Her teeth are carious. Wassermann reaction is positive.
- December 18. 12. Florence C., aged  $17\frac{2}{12}$ . A prostitute. Patient is the oldest of a family of three illegitimate girls - all are prostitutes. Patient gives a positive history. She is pale and anaemic. Wassermann reaction is positive.
- December 18. 12. Martha C., aged  $16\frac{3}{12}$ . A prostitute. Patient is a sister of the previous case. She denies specific disease and her teeth seem normal. Wassermann reaction is positive.
- December 18. 12. Joan C., aged  $15\frac{4}{12}$ . A prostitute. Patient is a sister of the two previous cases. She says she has a sore on the privates and a lump in the groin (she walks with a limp). Teeth are normal. Wassermann reaction is positive.
- December 18. 12. Annie C., aged 17. A prostitute. Patient was born in Ireland. She is erotic and facile and it is difficult to obtain a history. Teeth are normal. Wassermann reaction is positive.
- December 20. 12. Matilda G., aged  $17\frac{10}{12}$ . A prostitute. Patient was born in Belfast, and came to the Exhibition, 1911. She gives a specific history. Wassermann reaction is positive.

December 20. 12. Clara H., aged  $17\frac{2}{12}$ . A prostitute. Patient was born in Ireland and is the oldest of a family of seven. She was a lady's companion for a short time: fell into evil ways: drinks to excess. She had a labial sore 6 months ago. Wassermann reaction is positive.

December 20. 12. Ina C., aged 16. A prostitute. Parents dead. One brother is a schoolmaster, three brothers are at banking, one sister died of pneumonia. Patient fell into bad habits while at a Boarding School, and her craving for excitement tempted her to go on the streets. She denies specific disease. Her teeth are normal. Wassermann reaction is positive.

December 25. 12. Blanche D., aged  $16\frac{7}{12}$ . A prostitute. Parents alive and well. Her eldest brother is an army captain. One brother is a shipping agent, two sisters are married and in good positions, another sister is a teacher of cookery, while her younger brother is at engineering. Patient is the youngest. She says she was born to be the "Black sheep". She began prostitution at the age of  $12\frac{1}{2}$ . She gives a negative history. Her teeth are normal. Wassermann reaction is positive.

December 25. 12. Mary W., aged  $17\frac{11}{12}$ . A prostitute. Parents alive. Her education is poor. Takes alcohol to excess and smokes 30 cigarettes daily. She gives a specific history and has frequent nocturnal headache. Teeth are well preserved. Wassermann reaction is positive.

December 25. 12. Patricia O'N., aged  $17\frac{1}{2}$ . A prostitute. She came from Ireland to the Exhibition, 1911. She is an illegitimate child. Had syphilis two years ago and was under treatment.

Teeth are normal. Wassermann reaction is positive.

December 25. 12. Bridget F., aged 18. A prostitute. Patient was born in Ireland and came to the Exhibition, 1911. Her parents and three of a family are alive and well. She denies specific disease. Her teeth are normal. Wassermann reaction is positive.

December 25. 12. Katie F., aged 17<sup>11</sup>/<sub>12</sub>. A prostitute. Father is a shoemaker and drinks to excess. Mother died of enteric fever. Her father put her to the streets at the age of 13<sup>1</sup>/<sub>2</sub>. She gives a positive history. Wassermann reaction is positive.

December 25. 12. Jean H., aged 16. A prostitute. Father died of phthisis. Mother is an invalid. Three sisters and two brothers died of phthisis. Patient takes alcohol to excess, but denies specific disease. Her teeth are well preserved. Wassermann reaction is positive.

December 25. 12. Theresa L., aged 17. A prostitute. Father and mother unknown. Patient refused to give any history. Teeth normal. Wassermann reaction is positive.

December 25. 12. Jemima C., aged 15<sup>3</sup>/<sub>12</sub>. A prostitute. An illegitimate child. Frequently takes alcohol to excess and has smoked for the past two years. Very severe headaches at times. Eyes seem normal. Teeth are well preserved. Wassermann reaction is positive.

December 25. 12. Robina R., aged 18. A prostitute. She is a twin and illegitimate. She gives a positive history. Takes alcohol to excess. Wassermann reaction is positive.

December 25. 12. Susan R., aged 18. A prostitute. She is the twin sister of the previous case. Denies specific disease, but

suffers from severe nocturnal headache. Teeth normal. Wassermann reaction is positive.

December 25. 12. Maggie G., aged 16. A prostitute. Father suffers from chronic nephritis. Patient is oldest of a family of eight. She became a prostitute to prevent breaking up the house. She denies specific disease and her teeth appear normal. Wassermann reaction is positive.

December 25. 12. Catherine G., aged 14 $\frac{1}{2}$ . A prostitute. An illegitimate child. Her guardian sent her to the streets at the age of 13. She has a specific rash, sore throat and hoarseness. Wassermann reaction is positive.

December 25. 12. Margaret McI., aged 17 $\frac{1}{2}$ . A prostitute. Patient came from the Highlands in answer to the following advertisement - "a splendid opportunity for young country girls to be trained as gentlewomen, good salary and board". Patient lives in a house with several other prostitutes. She gives a positive history. Wassermann reaction is positive.

December 25. 12. Joan M., aged 17 $\frac{5}{12}$ . A prostitute. Patient lives at the same house as the previous case. She came from the Highlands and confirms the statement of the previous case. She gives a positive history. Wassermann reaction is positive.

December 25. 12. Joan B., aged 17. A prostitute. Patient lives at the same house as the previous two cases. She came from the Highlands and corroborates their statement. She gives a positive history. Wassermann reaction is positive.

December 27. 12. Flora C., aged 17 $\frac{1}{12}$ . A prostitute. An illegitimate child. She denies specific disease, and her teeth seem

normal. Wassermann reaction is positive.

December 27. 12. Jeanie G., aged  $17\frac{1}{2}$ . A prostitute. Patient came from the Highlands six months ago. She has a slight rash on both arms and her throat is much congested. Her hair is thin. Wassermann reaction is positive.

December 27. 12. Eliza C., aged 18. A prostitute. An adopted child. There were eleven of a family. Ten others are at home and in good health. Patient became a prostitute during the Exhibition, 1911. She has had frequent nocturnal headache and suffers much from specific arthritis of the left elbow joint. She is poorly nourished. Wassermann reaction is positive.

December 27. 12. Jemima F., aged  $17\frac{1}{2}$ . A prostitute. One sister died of pneumonia two years ago. Two younger brothers are alive and well. Patient gives a positive history. Wassermann reaction is positive.

December 27. 12. Ada L.K., aged 18. A prostitute. Father is a butcher and drinks to excess. Patient and her mother left him four years ago. Both became prostitutes. The mother died in the Royal Infirmary two years ago. Patient had a labial sore and a rash two years ago. She suffers from nocturnal headache and frequent sore throat. Her teeth are normal and well preserved. Wassermann reaction is positive.

December 27. 12. Helen C., aged 16. A prostitute. Parents alive and well. An only child. She smokes and drinks to excess. She denies specific disease. Teeth are normal. Wassermann reaction is positive.

In order to make this investigation more complete the results obtained in a small number of interesting adult cases are included. Three negative cases and 3 normal negative controls are included.

PART ONE.

(1) optic neuritis, (2) diabetes, (3) tumour of the orbit, (4) granuloma of knee, (5) peripheral neuritis, (6) endocarditis. The tumour of the orbit and the granuloma of the knee are cases in which the value of the Wassermann reaction has been demonstrated.

SECTION IX.

These are 8 cases. (1) Specific disease in 5 instances. (2) Locomotor ataxia in 2 cases, (3) Enlargement of testis, (4) Syphilitic testicle. (5) A case of tertiary syphilis. In one of the cases of locomotor ataxia the symptoms first appeared 10 years previously. The case with testicular enlargement is also of particular interest, when taken along with the condition of the patient's ribs. It is also of interest to note that the last case of the series - a case seen with Dr. E. E. Jack - was one in which the diagnosis was not quite clear at the time the case was first seen, but the Wassermann reaction gave confirmatory evidence of the condition.

## SECTION IX. -

Adults.  
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In order to make this investigation more complete the results obtained in a small number of interesting adult cases are included. Thus 6 negative cases and 3 normal negative controls are included.

(1) Optic neuritis, (2) diabetes, (3) tumour of the orbit, (4) granuloma of knee, (5) peripheral neuritis, (6) endocarditis. The tumour of the orbit and the granuloma of the knee are cases in which the value of the Wassermann reaction has been demonstrated.

There are 8 cases with positive results included in this section. (1) Specific disease in 3 instances. (2) Locomotor ataxia in 2 cases, (3) Erosion of arm. (4) Syphilitic testicle. (5) A case of tertiary syphilis. In one of the cases of locomotor ataxia the symptoms first appeared 10 years previously. The case with testicular enlargement is also of particular interest, when taken along with the condition of the patient's rib. It is also of interest to note that the last case of the series - a case seen with Dr. W. R. Jack - was one in which the diagnosis was not quite clear at the time the case was first seen, but the Wassermann reaction gave confirmatory evidence of the condition.

July 5, 12. M.F.W., age 226. (Writer). Had rheumatic fever in 1907. Wassermann reaction is negative. October 23, 12. Wassermann reaction is negative. January 15, 13. Wassermann reaction is negative.

July 5, 12. G.H.B. (Clinical Laboratory) Normal. Wassermann reaction is negative.

September 14. Jane N. 7 yrs. Optic neuritis. The history is PART ONE. is no suspicion of specific disease. Wassermann reaction is negative.

September 19, 12. Mrs. K., aged 40. Diabetes. The history is negative. There is no suspicion of specific disease. Wassermann reaction is negative.

#### SECTION IX.

September 23, 12. Mrs. R. Labour of orbit. I saw this case for Dr. Farrow at ADULTS. Jefferson. Patient denies specific disease and shows no evidence of it. Five pregnancies. All children are alive. Wassermann reaction is negative.

#### Subsection (a) Negative cases.

September 25, 12. Mrs. E.H., aged 50. Grandchild of Isaac. I saw this case for Dr. Logan Taylor. There is a negative history. There is no suspicion of specific disease on physical examination. All her children are alive and well. Wassermann reaction is negative.

November 22, 12. James A.W., aged 28. Normal. He is my brother. Has always lived in the country and has never had any illness except measles in infancy. Wassermann reaction is negative.

December 9, 12. Lewis B., aged 42. Peripheral neuritis. Patient takes alcohol to excess. Negative history. No evidence of specific disease. Wassermann reaction is negative.



July 5. 12. H.F.W., healthy. (Writer). Had rheumatic fever in 1907. Wassermann reaction is negative. October 26. 12.

Wassermann reaction is negative. January 15, 13. Wassermann reaction is negative.

July 5. 12. C.H.B. (Clinical Laboratory) Normal. Wassermann reaction is negative.

September 14. Jane M. ? age. Optic neuritis. The history is negative. There is no suspicion of specific disease. Wassermann reaction is negative.

September 19. 12. Mrs. H., aged 46. Diabetes. The history is negative. There is no suspicion of specific disease. Wassermann reaction is negative.

September 25. 12. Mrs. D., aged 35. Tumour of orbit. I saw this case for Dr. Fergus at the Eye Infirmary. Patient denies specific disease and shows no evidence of it. Five pregnancies. All children are alive and well. Wassermann reaction is negative.

September 25. 12. Mrs. McL., aged 52. Granuloma of Knee. I saw this case for Dr. Logan Taylor. There is a negative history. There is no suspicion of specific disease on physical examination. All her children are alive and well. Wassermann reaction is negative.

November 22. 12. James A.W., aged 28. Normal. He is my brother. Has always lived in the country and has never had any illness except measles in infancy. Wassermann reaction is negative.

December 9. 12. Lewis R., aged 42. Peripheral neuritis. Patient takes alcohol to excess. Negative history. No evidence of specific disease. Wassermann reaction is negative.

December 9. 12. Patrick H., aged 52. Bronchitis and endocarditis. Patient gives a negative history: on physical examination there is no evidence of specific disease. Wassermann reaction is negative.

September 14, 18. M.S., P. 229. Syphilitic disease.

Patient contracted syphilis during the Fair holidays: sore throat; rash on body and loss of hair. Wassermann reaction is positive.

September 14, 18. Hugh A., aged 42. Locomotor ataxia. Patient has a staggering gait. Romberg's sign is positive. Westphal's sign is positive. Optic neuritis. Wassermann reaction is positive.

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September 17, 18. Andrew W., aged 37. Locomotor ataxia. Patient had syphilitic disease 15 years ago. Symptoms of disease first appeared 10 years ago. Wassermann reaction is positive.

September 19, 18. Berley S., aged 50. Syphilitic testicle.

SECTION IX.

Patient had syphilitic disease 20 years ago. In addition to the testicular condition there is swelling of a rib on the right side. Wassermann reaction is positive.

ADULTS.

Subsection (b) Positive cases.

September 19, 18. J. J. J. aged 35. Syphilitic disease of arm. Patient had gonorrhoea 22 years ago but says he never had syphilis. There is an extensive crusting area on the right arm. Wassermann reaction is positive.

September 19, 18. George N., aged 47. Syphilitic. Patient has various patches of the mouth and fingers; condylomata, and a physiological eruption. Wassermann reaction is positive.

November 18, 18. Robert S., aged 20. Old-standing syphilis. Patient is unmarried. He had a chancre 3 years ago and stopped treatment as soon as the symptoms disappeared. Wassermann reaction is positive.

September 14. 12. M.S., Female. ? age. Specific disease.

Patient contracted syphilis during the Fair holidays: sore throat: rash on body and loss of hair. Wassermann reaction is positive.

September 14. 12. Hugh A., aged 42. Locomotor Ataxia. Patient has a staggering gait. Romberg's sign is positive. Westphal's sign is positive. Optic neuritis. Wassermann reaction is positive.

September 19. 12. Andrew W., aged 37. Locomotor Ataxia. Patient had specific disease 15 years ago. Symptoms of disease first appeared 10 years ago. Wassermann reaction is positive.

September 19. 12. Barclay C., aged 30. Syphilitic testicle.

Patient had specific disease 20 years ago. In addition to the testicular condition there is swelling of a rib on the right side. Wassermann reaction is positive.

September 19. 12. James E., aged 40. Erosion of arm. Patient had gonorrhoea 21 years ago but says he never had syphilis. There is an extensive eroding area on the right arm. Wassermann reaction is positive.

September 19. 12. George N., aged 49. Syphilis. Patient has mucous patches of the mouth and fauces: condylomata, and a papulo-squamous eruption. Wassermann reaction is positive.

November 12. 12. Robert H., aged 30. Old standing syphilis.

Patient is unmarried. He had a chancre 3 years ago and stopped treatment as soon as the symptoms disappeared.

Wassermann reaction is positive.

- September 14. 12. M. S. Female. ? age. Specific disease. Patient contracted syphilis during the Fair holidays: sore throat: rash on body and loss of hair. Wassermann reaction is positive.
- September 14. 12. Hugh A., aged 42. Locomotor Ataxia. Patient has a staggering gait. Romberg's sign is positive. Westphal's sign is positive. Optic neuritis. Wassermann reaction is positive.
- September 19. 12. Andrew W., aged 37. Locomotor Ataxia. Patient had specific disease 15 years ago. Symptoms of disease first appeared 10 years ago. Wassermann reaction is positive.
- September 19. 12. Barclay C., aged 30. Syphilitic testicle. Patient had specific disease 20 years ago. In addition to the testicular condition there is swelling of a rib on the right side. Wassermann reaction is positive.
- September 19. 12. James E., aged 40. Erosion of arm. Patient had gonorrhoea 21 years ago but says he never had syphilis. There is an extensive eroding area on the right arm. Wassermann reaction is positive.
- September 19. 12. George N., aged 49. Syphilis. Patient has mucous patches of the mouth and fauces: condylomata, and a papulo-squamous eruption. Wassermann reaction is positive.
- Septem-  
November 12. 12. Robert H., aged 30. Old standing syphilis. Patient is unmarried. He had a chancre 3 years ago and stopped treatment as soon as the symptoms disappeared. Wassermann reaction is positive.

December 29. 12. Mary Y., aged 50. Tertiary syphilis. Husband is dead. Four children alive and well. No miscarriages. First girl, aged 24, healthy. Second girl, aged 21, healthy. Third girl, aged 18, healthy. Fourth girl, aged 15, healthy. About 16 years ago patient had rheumatism of the right knee, which lasted for 6 months. At that time she had severe nocturnal headaches: sore throat: her hair fell out. At present her hair is thin and there is a large ulcerating coppery patch on the vertex of the head. Wassermann reaction is positive.

SECTION I.

Treated cases.

Observations regarding the effect of the specific treatment of syphilis on the manifestations of the disease and on the Wassermann reaction do not constitute a primary object of this work; but a

PART ONE.

considerable number of cases have been followed during the progress of treatment. (The details of treatment wherever available have been fully given under the individual cases.) Thus there are 15 congenital cases and 3 acquired. Of congenital 11 and 3 acquired were treated with mercury alone and 11 congenital and the 3 acquired are still positive. 7 are negative and 2 are doubtful.

SECTION X.

TREATED CASES.

Of the 15 congenital and 1 acquired have had salvarsan in addition to mercurial treatment; 1 congenital and the acquired give a positive reaction, 2 are negative and 3 are doubtful. 3 congenital cases had salvarsan without mercury and of these 2 are positive and 1 is negative. Of the 3 positive one, which on two previous occasions was markedly positive, now gives a very weak positive reaction, while the other positive case was not again tested after 2 injections of salvarsan.

The results in the series of congenital cases show clearly the tenacity with which the infection, as shown by a positive Wassermann reaction, persists. Thus of the 15 treated cases 11 remain positive, 7 negative, and 7 are doubtful. This confirms the experience of other observers (earlier literature is fully given by Browning and Kosterlitz). Among later results Waide, 1915, describes 15 cases which have been clinically cured but only 4 give a negative Wassermann reaction. It goes on to result in a case 2 years old and also in

## SECTION X. -

Treated cases.  
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Observations regarding the effect of the specific treatment of syphilis on the manifestations of the disease and on the Wassermann reaction do not constitute a primary object of this work: but a considerable number of cases have been followed during the progress of treatment. (The details of treatment wherever available have been fully given under the individual cases.) Thus there are 45 congenital cases and 3 acquired. 32 congenital and 2 acquired were treated with mercury alone and 28 congenital and the 2 acquired are still positive, 2 are negative and 2 are doubtful. 8 congenital and 1 acquired have had salvarsan in addition to mercurial treatment; 1 congenital and the acquired give a positive Wassermann reaction, 2 are negative and 5 are doubtful. 5 congenital cases had salvarsan without mercury and of these 2 are positive and 3 are negative. Of the 2 positives one, which on two previous occasions was markedly positive, now gives a very weak positive reaction, while the other positive case was not again tested after 5 injections of salvarsan.

The results in the series of congenital cases shew clearly the tenacity with which the infection, as shewn by a positive Wassermann reaction, persists. Thus of the 45 treated cases 31 remain positive, 7 negative, and 7 are doubtful. This confirms the experience of other observers (earlier literature is fully given by Browning and Mackenzie). Among later results Welde, 1912, describes 15 cases which have been clinically cured but only 4 give a negative Wassermann reaction. He got no result in a case of idiocy 2 years old and also in



a case of hydrocephalus  $1\frac{1}{2}$  years old.

Dunzelmann describes his results in 12 children who had salvarsan intravenously. 6 remained positive, 3 of these in spite of mercury in addition, while 5 became negative.

Thomsen and Boas, 1912, state that the Wassermann reaction persists tenaciously in congenital syphilis even after intense mercury treatment. These authors think that the reaction is more easily transformed to negative in older individuals. In manifestations of congenital syphilis, provided that specific treatment has not immediately preceded, the Wassermann reaction is positive in 100%.

I do not agree with their last statement as will be seen from the results in the subsection where I have obtained a proportion of negative results in cases either with clinical symptoms or a positive family history. This failure to obtain a positive Wassermann reaction, even on repeated examination, in cases manifestly suffering from active congenital syphilitic infection is of some importance since it would appear from the statements of Thomsen and Boas that a negative reaction justifies the exclusion of syphilis. At the same time it is evident that negatively reacting cases constitute only a small minority of those with active congenital syphilitic lesions.

The results of treatment confirm the view that salvarsan either alone or in combination with mercury gives a negative Wassermann reaction in a shorter time than with mercury alone.

Foot Note. - Cases with acquired syphilis are marked with a Star.

- June 19. 12. Mary R., aged 6. Painless swelling of left knee. Interstitial keratitis. Patient has greatly improved under mercurial treatment, but Wassermann reaction is positive.
- August 1. 12. David F., aged  $4\frac{1}{2}$ . Spastic diplegia. When two weeks old he had a specific eruption and was treated with grey powder for over a year. Wassermann reaction is positive.
- August 1. 12. Matthew H., aged 8. Cleft palate and hare lip. After birth patient had snuffles and an eruption. He was under treatment at the Sick Children's Dispensary for a period of three years. Wassermann reaction is positive.
- August 22. 12. William W., aged 8. Paroxysmal haemoglobinuria. The first attack occurred in March 1912. In May 1912 the Wassermann reaction was positive. While in the Royal Infirmary, from May till August 1912, he had three injections of neo-salvarsan. From August onwards he has had mercurial inunctions. On August 22. the Wassermann reaction was still positive. He remained well till the beginning of November when there was recurrence of attacks.
- August 30. 12. Emma B., aged  $2\frac{1}{2}$ . Congenital syphilis. Patient was first seen on June 29. 1910 by Dr. Leonard Findlay. She was put on mercurial treatment. On August 30. 1912 Wassermann reaction was positive. After that date she had four injections of neo-salvarsan. February 1. 1913 Wassermann reaction is doubtful. Since that date she has had six injections of neo-salvarsan. March 2. 1913 Wassermann reaction is negative.
- September 3. 12. Harry McN., aged  $\frac{6}{12}$ . Anaemia. Spleen palpable. W.B.C. 15,000. R.B.C. 2,760,000. Hb. 38%. Wassermann reaction is doubtful. Patient was put on inunctions of mercury.

December 12. 1912. Spleen slightly palpable. Anaemia greatly improved. W.B.R. 12,000. R.B.C. 4,350,000. Hb. 80%.

September 14. 12. Joseph R., aged 6. Eczema oris. Patient has had recurrent attacks of eczema at the angles of the mouth since he was two months old. Wassermann reaction is positive. Since that date he has had antisppecific treatment and there is very marked improvement.

September 19. 12. May B., aged 4. Interstitial keratitis.

Wassermann reaction is positive. Patient had five injections of salvarsan and was then lost trace of.

October 4. 12. Agnes McN., aged  $10/365$ . The mother was first seen in July when she had a specific eruption. She was put on mercury. Wassermann reaction is positive in mother and child.

October 5. 12. Baby S., aged  $6/12$ . Congenital syphilis. The mother has been under treatment for two years and still gives a positive Wassermann reaction. The baby has been on grey powder since birth and the Wassermann reaction is still positive.

October 11. 12. Michael O'B., aged 3. Specific ulcer. Patient was treated at the Sick Children's Dispensary for four weeks with simple treatment. The ulcer did not heal. Wassermann reaction is positive. Since then he has had mercurial treatment. November 1. 1912, ulcer is now better.

October 18. 12. Isa S., aged  $6/52$ . Congenital syphilis. When the child was first seen she had typical congenital syphilis. Wassermann reaction was positive. Since that date she has had five injections of neo-salvarsan. February 1. 1913. Wassermann reaction is positive. She has had five more injections of

neo-salvarsan. April 27. 1913. Wassermann reaction is negative.

October 25. 12. Albert C., aged  $9/12$ . Congenital syphilis. When patient was first seen he had an enlarged spleen and cranio-tabes. He was put on mercury and has been on it for 5 months.

Wassermann reaction is negative.

October 25. 12. David C., aged 2. Congenital syphilis. Patient has been under treatment since birth. At present he seems quite a healthy boy but the Wassermann reaction is positive.

October 30. 12. John H., aged  $6/52$ . Congenital syphilis. The mother has been on mercurial treatment for the past  $1\frac{1}{2}$  years except during the last month of pregnancy. The child has been treated with mercury since birth. The Wassermann reaction is doubtful.

October 30. 12. Jessie T., aged  $1\frac{1}{2}$ . Congenital syphilis. Patient has attended the Sick Children's Dispensary since she was a month old. She has been treated with mercurial inunctions. During the past two months she has had five intravenous injection of old salvarsan and she now seems quite healthy. Wassermann reaction is doubtful.

November 1. 12. Conrad R., aged  $1^2/12$ . Congenital syphilis. Patient was first seen when 3 weeks old. At that time he was suffering from congenital syphilis. He has been on mercurial treatment for the past year. Wassermann reaction is negative.

November 1. 12. Jessie T., aged  $4/12$ . Congenital Syphilis. Patient has been treated with mercurial ointment since she was six weeks old. She now seems very well but the Wassermann reaction is positive.

entirely disappears. There are no specific stigmas.  
 November 1. 12. Lizzie R., aged  $\frac{6}{52}$ . Congenital syphilis.

The mother of the patient has been under mercurial treatment for the past three years and gives a negative Wassermann reaction. Patient has never had any treatment. She has typical congenital syphilis. Wassermann reaction is positive.

November 1. 12. Thomas L., aged  $\frac{6}{12}$ . Congenital syphilis. He had a specific eruption when two weeks old. He was put on mercury and improved rapidly. He developed broncho-pneumonia and was treated in hospital, where he had no mercury. At four months the rash reappeared and he has been on mercury since. Wassermann reaction is positive.

November 5. 12. Ruth R., aged 2. Congenital syphilis. Patient was first seen on April 1912 and was put on mercurial inunctions and grey powder. May 4. 1912 salvarsan given intravenously. June 3. 1912. Salvarsan given. July 2. 1912. Salvarsan given. August 3. 1912. Salvarsan given. September 4. 1912. Salvarsan given. (Child very ill for some days afterwards) September 9. 1912 Mercury stopped. October 22. 1912 Salvarsan given. Wassermann reaction is doubtful.

November 5. 12. Flora R., aged  $\frac{10}{12}$ . Congenital syphilis. Patient was first seen when three weeks old and was put on mercurial treatment. I have given her four intramuscular injections and eight intravenous injections of neo-salvarsan. Wassermann reaction is doubtful.

November 12. 12. William B., aged  $\frac{4\frac{3}{4}}{12}$ . Eczema oris. Patient had infantile paralysis one year ago and has eczema of the upper lip and round the mouth. It varies in severity but never

entirely disappears. There are no specific stigmata.

November 19. 12. Henry U., aged 10/12. Congenital syphilis. Wassermann reaction is positive. Patient has had four injections of neo-salvarsan. February 1. 1913. Wassermann reaction is negative.

November 12. 12. Jessie K., aged 1 $\frac{1}{2}$ . Congenital syphilis. Patient has been treated with mercury for the past five months. Wassermann reaction is positive.

November 12. 12. \* Robert H., aged 30. Patient had syphilis three years ago. He was treated with mercury but stopped treatment as soon as the symptoms disappeared. Wassermann reaction is positive.

November 13. 12. Andrew T., aged 1. Congenital syphilis. Patient has been on mercury since he was six weeks old. He has had three injections of neo-salvarsan. Wassermann reaction is doubtful.

November 15. 12. Helen B., aged 2/12. Congenital syphilis. Patient was first seen by Dr. Edington three weeks ago. At that time she seemed quite healthy. Two weeks ago she developed snuffles. Since then she has been on mercury. Wassermann reaction is positive.

November 23. 12. Lizzie J., aged 6. Congenital syphilis. When first seen she had congenital syphilis. Wassermann reaction is positive. Patient has recently had six injections of salvarsan. March 2. 1913. The serum now gives a weak positive Wassermann reaction.

November 26. 12. George L., aged 3. Congenital syphilis. Patient has been more or less on mercurial treatment since he was six weeks old. Wassermann reaction is doubtful.

November 29. 12. Henry G., aged 10/12. Congenital syphilis.

When first seen he was suffering from typical congenital syphilis and was put on mercurial treatment. At eight months he had an intravenous injection of neo-salvarsan. Since then he has had two more injections, the last two weeks ago.

Wassermann reaction is doubtful.

November 29. 12. Marion S., aged 1. Congenital syphilis.

Patient had typical congenital syphilis when first seen. She has had nine intravenous injections of old salvarsan. She has never had any mercury. Wassermann reaction is negative.

December 3. 12. Martha T., aged 6. Eczema tarsi. Patient has

had recurrent eczema for some time. Wassermann reaction is positive. She has had four injections of neo-salvarsan.

(intramuscularly) February 1. 1913. Wassermann reaction is negative.

December 12. 12. \*Sara M., aged 15<sup>9</sup>/12. Acquired syphilis.

Patient has taken mercury for 1½ years but not for the last three months. She seems in quite good health. Wassermann reaction is positive.

January 15. 13. Jane H., aged 6/12. Congenital syphilis. Patient has been under mercurial treatment since she was four weeks old.

Wassermann reaction is positive.

January 15. 13. Ann B., aged 3. Congenital syphilis. Patient has been under mercurial treatment since shortly after birth.

Wassermann reaction is positive.

January 21. 13. \*John D., aged 24. Acquired syphilis. Patient

developed a specific rash in June 1912 and was put on mercury.

During August 1912 he developed sore lips, bleeding gums and some stomatitis. In December 1912 he had sore throat and mucous patches on the palate. December 24, 1912. An intravenous injection of salvarsan was given. December 29, 12. A second injection was given. In January Wassermann reaction was positive.

January 21, 13. John R., aged  $6\frac{2}{12}$ . Eczema oris. Patient has no specific stigmata. In addition to the eczema involving the mouth there is a well marked eczema tarsi. Wassermann reaction is positive. Since then he has had antispecific treatment with very marked improvement.

January 21, 13. Agnes McD., aged  $5\frac{1}{12}$ . Congenital syphilis. Patient has been on mercurial treatment since six weeks old. Wassermann reaction is positive.

January 23, 13. Rose J., aged  $2\frac{1}{2}$ . Congenital syphilis. Patient has been under almost continuous mercurial treatment since birth. Wassermann reaction is positive.

January 23, 13. Fred F., aged  $6\frac{1}{12}$ . Congenital syphilis. Patient has been under mercurial treatment since one month old. Wassermann reaction is positive.

January 23, 13. Sarah C., aged  $3\frac{1}{12}$ . Congenital syphilis. Patient has been on mercurial treatment for the past six weeks. Wassermann reaction is positive.

January 23, 13. John C., aged 4. Apparently healthy. Patient has been on mercurial treatment for the past  $1\frac{1}{2}$  years and at present he seems quite a healthy boy. Wassermann reaction is positive.



- February 1. 13. George N., aged 2. Eczema oris. There are no specific stigmata. Face "broke out" in May 1912. In addition to the eczema round the mouth there are patches all over the face, which are moist in places. He has rhinitis with excoriation of skin round the nostrils: swelling of upper lip and severe ophthalmia tarsi. Wassermann reaction is positive. There has been very rapid improvement under antispesific treatment.
- February 1. 13. James McG., aged  $\frac{2}{12}$ . Congenital syphilis. Mother gives a positive Wassermann reaction. Child has typical congenital syphilis and has been under treatment for the past month. Wassermann reaction is positive.
- February 16. 13. John M., aged  $1\frac{1}{2}$ . Congenital syphilis. Patient has been under mercurial treatment since he was two months old. Wassermann reaction is positive.
- March 5. 13. Baby S., aged 1. Congenital syphilis. Mother gives a positive Wassermann reaction. Patient has been under treatment with mercury since he was three months old. He now seems quite healthy. Wassermann reaction is positive.
- March 14. 13. Allan C., aged  $\frac{5}{12}$ . Congenital syphilis. Mother gives a positive Wassermann reaction. Child has been under mercurial treatment since he was six weeks old. Wassermann reaction is positive.
- March 14. 13. Wm. R., aged  $1\frac{1}{2}$ . Congenital syphilis. Patient has been under mercurial treatment since he was two months old. Wassermann reaction is positive.

Notes on the technique of the Wassermann reaction.

METHOD.

For the purpose of this investigation I have carried out the Wassermann test in 1,000 cases of those 1,000 are more referred to in the "PART ONE" section; the remainder comprising 500 other cases of the families to which cases being not 100 are omitted.

The method followed has throughout been that recommended by Krawitz, Grubischnitz and Mackenzie, which is fully described in their work ("Recent Methods in the Diagnosis and Treatment of Syphilis, London; 1915"), so that it is not necessary to enter into details of the procedure here.

SECTION XI.

NOTES ON THE TECHNIQUE OF THE WASSERMANN REACTION.

The criteria of a positive result are three-fold and consist in the facts that (1) a mixture of syphilitic serum (tested previously for half an hour at 37°C) and lecithin emulsion of suitable characteristics of maximum turbidity deviates much more complement (guinea pig's serum) than does a similar mixture containing, instead of syphilitic serum, both non-syphilitic serum. The test for complement being the occurrence of lysis on the introduction of ox blood suspension sensitized with immune body from the rabbit, (2) when the syphilitic serum is not extremely powerful in its action the occurrence of a positive result is shown by the fact that when parallel mixtures of (a) serum and lecithin - characterized as (a) and (b) Serum and lecithin emulsion of similar strength to the one employed in series (a) but without cholesterin are used, then more complement is deviated in the presence of cholesterin

## SECTION XI. -

Notes on the technique of the Wassermann reaction.  
-----METHODS.

For the purposes of this investigation I have carried out the Wassermann test in 1,560 cases; of these 1,010 are cases referred to in the subsequent sections; the remainder comprise 390 other members of the families to which cases belong and 160 are controls.

The method followed has throughout been that recommended by Browning, Cruickshank and Mackenzie, which is fully described in their work ("Recent Methods in the Diagnosis and Treatment of Syphilis, London, 1911"). So that it is not necessary to enter into details of the procedure here.

The criteria of a positive reaction are two-fold and consist in the facts that (1) a mixture of syphilitic serum (heated previously for half-an-hour at 55°C.) along with an emulsion of Lecithin-Cholesterin of maximum turbidity deviates much more complement (guinea pig's serum) than does a similar mixture containing, instead of syphilitic serum, known non-syphilitic serum. The test for complement being the occurrence of lysis on the introduction of ox blood suspension sensitized with immune body from the rabbit. (2) When the syphilitic serum is not extremely powerful in its action the occurrence of a positive result is shown by the fact that where parallel mixtures of (a) serum and Lecithin - Cholesterin emulsion and (b) Serum and lecithin emulsion of similar strength to the lecithin employed in series (a) but without cholesterin are used, then more complement is deviated in the presence of cholesterin

than when it is absent.

The unreliable factor in the Wassermann test is, of course, the complement. Thus with a relatively non deviable complement known syphilitic sera may fail to give a positive reaction. To obviate this fallacy a known positive and a known negative serum were included in every series of tests which I carried out, and if the behaviour of these controls raised any suspicion as to the suitability of the specimen of complement employed then the whole series of bloods were retested on another occasion. In this way many sera were retested more than once. So that the total number of reactions performed amounted to 2144. It may be said that while a positive serum might be readily missed under unsuitable conditions, the erroneous return of a negative serum as positive amounts to a practical impossibility under the conditions observed.

I wish to draw attention here of considerable importance to one single condition. Sometimes the result, though running in parallel, is drawn out. For example, take the case of John T., October 15, 1912.

		Amounts of complement in each tube.								Serum controls.
		1.	2.	3.	4.	5.	6.	7.	8.	
		0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02	
0.3 c.c. Lecithin ) emulsion.)	v.m.	a.c.	a.c.	j.c.						
0.3 c.c. Lecithin- ) Cholesterin ) emulsion )	-	a.c.	a.c.	j.c.	c.	c.	j.c.	c.		

With the same doses of complement there is no difference between the lecithin-cholesterin series and the lecithin series, hence such

a result has always been read as a negative or at most a doubtful reaction. It has been observed, however, that such a result is obtained in many of the treated cases when known negatives included in the same series of tests gave a characteristic negative reaction. Consequently there can be little doubt that the existence of syphilis is the common cause of anomalous reaction, that is, greater deviation of complement by the mixture of serum and lecithin than occurs with normal sera and at the same time, failure of the cholesterolin to cause any further increase in the amount of complement deviation.

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Explanation of contractions used in the tables.

c. = complete.	d. = distinct.
a.c. = almost complete.	t. = trace.
j.c. = just complete.	f.t. = faint trace.
m. = marked.	v.f.t. = very faint trace.
v.m. = very marked.	0. = no lysis.

-----

248.  
June 3. 1912.

		1.	2.	3.	4.	5.	6.	7	8
		0.01	0.02	0.032	0.045	0.065	0.09	0.01	0.02
John G.	L.	a.c.	c.					a.c.	c
	L.C.	-	c.						
	L.	v.m.	j.c.						
Jane G.	L.C.	-	j.c.					a.c.	
	L.	v.m.	j.c.						
Willie A.	L.C.	-	j.c.					v.m.	j.c
	L.	m.	a.c.	c.					
Maggie D.	L.C.	-	v.m.	j.c.				m.	j.c
	L.	v.m.	j.c.						
Sarah S.	L.C.	-	a.c.	c.				v.m.	a.c
	L.	c.							
Mina T.	L.C.	-	c.					c.	
	L.	a.c.	c.						
George H.	L.C.	-	a.c.	c.				c.	
	L.	v.m.	j.c.						
Maggie H.	L.C.	-	a.c.	c.				c.	
	L.	v.m.	j.c.						
Hannah W.	L.C.	-	j.c.					a.c.	
	L.	a.c.	j.c.						
Joan W.	L.C.	-	a.c.	c.				c.	
	L.	j.c.							
Martha W.	L.C.	-	j.c.					j.c.	
	L.	0	0	v.f.t.	c.				
Jessie S.	L.C.	-	0	0	0	0	M	j.c.	
	L.	0	0	0	0				
Annie S.	L.C.	-	0	0	0	0	t.	a.c.	
	L.	0	t.	d.	c.				
John S.	L.C.	-	0	t.	t.	m.	v.m.	c.	
	L.	0	t.	c.					
Mr. S.	L.C.	-	0	0	v.f.t.	m.	c.	c.	
	L.	0	a.c.	c.					
Mrs. S.	L.C.	-	0	0	v.f.t.	m.	a.c.	c.	
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	j.c.	

Emulsion controls	1.	2.	3.
	1	2	3
	0.01	0.02	0.032
L. a.c.		c.	
L.C.a.c.		c.	
Complement dose 1:4	1	2	3
	1	2	3
	0.01	0.02	0.03
	0.04		
a.c.		c.	

June 4. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Annie C.	L.	0.01	0.022	0.035	0.055	0.075	0.1	0.01	0.02
	L.C.	-	c.					c.	
Jane W.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Isa W.	L.	j.c.	c.						
	L.C.	-	c.					c.	
James M.	L.	v.m.	c.						
	L.C.	-	c.					c.	
John M.	L.	v.m.	c.						
	L.C.	-	v.m.	c.				c.	
Susan P.	L.	m.	c.						
	L.C.	-	v.m.	a.c.	c.			c.	
Hugh B.	L.	d.	c.						
	L.C.	-	a.c.	c.				c.	
Joshua A.	L.	j.c.	c.						
	L.C.	-	c.					c.	
Annie A.	L.	m.	c.						
	L.C.	-	v.m.	c.				c.	
Jane T.	L.	m.	c.						
	L.C.	-	v.m.	c.				c.	
Positive control	L.	0	0	m.	c.				
	L.C.	-	0	0	0	t.	m.	c.	

Emulsion controls	1.	2.	3.
	0.01	0.022	0.035
L.	c.		
L.C.	v.m.	c.	

Complement dose 1:4	1.	2.	3.	4.
	0.01	0.012	0.03	0.04
L.	v.m.	c.		

June 11. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Jemima P.	L.	0.012	0.024	0.035	0.055	0.075	0.12	0.01	0.02
	L.C.	m.	c.						
	L.C.	-	v.m.	c.				c.	
Willie P.	L.	v.m.	j.c.						
	L.C.	-	j.c.					c.	
Annie P.	L.	c.							
	L.C.	-	c.					c.	
Andrew W.	L.	c.							
	L.C.	-	c.					c.	
Wallace O.	L.	c.							
	L.C.	-	c.					c.	
Alex. A.	L.	m.	c.						
	L.C.	-	v.m.	c.				c.	
Jean S.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Robert B.	L.	m.	c.						
	L.C.	-	m.	c.				c.	
John B.	L.	v.m.	j.c.						
	L.C.	-	v.m.	c.				c.	
Maggie S.	L.	m.	c.						
	L.C.	-	v.m.	c.				c.	
Annie S.	L.	c.							
	L.C.	-	c.					c.	
Henry W.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				c.	
Ella H.	L.	j.c.							
	L.C.	-	j.c.					c.	
Positive Control	L.	0	0	d.	v.m.	0	0	t.	c.
	L.C.	-	0	0	0	0	0	t.	c.

Emulsion controls 1. 2. 3.  
0.012 0.024 0.035  
L. a.c. c.  
L.C. v.m. c.  
Complement dose 1:4 0.01 0.012 0.02 0.03  
t. m. v.m. j.c.



June 13. 1912.

	1.	2.	3.	4.	5.	6.	7.	8.
Helen L.	L. 0.01	L. 0.025	L. 0.035	L. 0.055	L. 0.075	L. 0.11	L. 0.01	L. 0.02
Nellie F.	L. t.	L. d.	L. j.c.					
	L.C. -	L.C. d.	L.C. j.c.				L.C. c.	
Robert F.	L. d.	L. v.m.	L. a.c.	L. c.				
	L.C. -	L.C. m.	L.C. v.m.	L.C. c.			L.C. c.	
James F.	L. d.	L. m.	L. v.m.	L. c.				
	L.C. -	L.C. m.	L.C. v.m.	L.C. c.			L.C. c.	
Thomas F.	L. t.	L. d.	L. c.					
	L.C. -	L.C. d.	L.C. j.c.				L.C. c.	
James F.	L. t.	L. d.	L. c.					
	L.C. -	L.C. d.	L.C. j.c.				L.C. c.	
Positive Control	L. 0	L. 0	L. 0	L. t.				
	L.C. -	L.C. 0	L.C. 0	L.C. 0	L.C. 0	L.C. v.f.t	L.C. c.	

Emulsion controls 1. 2. 3.  
 0.01 0.025 0.035  
 L. d. c.  
 L.C. d. c.

Complement dose 1. 2. 3. 4.  
 0.01 0.012 0.03 0.04  
 t. v.m. c.

Emulsion controls 1. 2. 3.  
 0.01 0.02 0.03  
 L. c.  
 L.C. c.  
 Complement dose 1. 2. 3.  
 0.01 0.025 0.03  
 c.

June 15. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.02	0.03	0.055	0.07	0.1	0.01	0.02.
Helen L.	L.	c.							
	L.C.	-	c.					c.	
Mary McC.	L.	c.							
	L.C.	-	c.					c.	
Lizzie F.	L.	c.							
	L.C.	-	c.					c.	
Alex. H.	L.	c.							
	L.C.	-	c.					c.	
Bella W.	L.	c.							
	L.C.	-	c.					c.	
Ch'tte W.	L.	C.							
	L.C.	-	c.					c.	
Lizzie W.	L.	c.							
	L.C.	-	c.					c.	
Helen McC.	L.	c.							
	L.C.	-	c.					c.	
Willie J.	L.	c.							
	L.C.	-	c.					c.	
Fred. D.	L.	c.							
	L.C.	-	c.					c.	
Grace L.	L.	c.							
	L.C.	-	c.					c.	
Agnes P.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				c.	
Wm. McS.	L.	c.							
	L.C.	-	c.					c.	
Thomas T.	L.	c.							
	L.C.	-	c.					c.	
Harriet W.	L.	a.c.	c.						
	L.C.	-	c.					c.	
George H.	L.	c.							
	L.C.	-	c.					c.	
Fanny F.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	c	
Olive H.	L.	m.	c.						
	L.C.	-	c.					c.	
Sarah S.	L.	a.c.	c.						
	L.C.	c.	c.					c.	
Martha McG.	L.	j.c.							
	L.C.	-	c.					c.	
Positive	L.	0	0	0	t.				
Control	L.C.	-	0	0	t.	t.	t.	c.	

Emulsion controls 1. 2. 3.  
 0.01 0.02 0.03  
 Complement dose 1:4 1. 2. 3.  
 0.01 0.025 0.03  
 c.

June 17. 12.

		1. 0.01	2. 0.02	3. 0.03	4. 0.05	5. 0.075	6. 0.1	7. 0.01	8. 0.02
Rachel McC.	L.	c.							
	L.C.	-	c.					c.	
Charlie H.	L.	c.							
	L.C.	-	c.					c.	
Fred. W.	L.	c.							
	L.C.	-	c.					c.	
Mary S.	L.	c.							
	L.C.	-	c.					c.	
John B.	L.	c.							
	L.C.	-	c.					c.	
Robert A.	L.	j.c.							
	L.C.	-	c.					c.	
John C.	L.	c.							
	L.C.	-	c.					c.	
Fred. L.	L.	C.							
	L.C.	-	c.					c.	
John S.	L.	c.							
	L.C.	-	c.					c.	
Robert W.	L.	a.c.	c.						
	L.C.	-	c.					c.	
Thomas P.	L.	c.							
	L.C.	-	c.					c.	
Robert C.	L.	a.c.	c.						
	L.C.	-	c.					c.	
A.P.(Male)	L.	c.							
	L.C.	-	c.					c.	
Peter McB.	L.	c.							
	L.C.	-	c.					c.	
L.L.(Fem.)	L.	c.							
	L.C.	-	c.					c.	
John N.	L.	c.							
	L.C.	-	c.					c.	
Lizzie C.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	t.	c.	
James D.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	c.	
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	f.t.	c.	

Emulsion controls 1. 2. 3.  
0.01 0.02 0.03  
L. a.c. c.  
L.C. a.c. c.

Complement dose 1:4 1. 2. 3. 4.  
0.01 0.02 0.03 0.04  
m. a.c. c.

June 19. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Rueben C.	L.	0.015	0.025	0.04	0.06	0.085	0.12	0.01	0.02
	L.C.	-	d.	d.	c.			j.c.	
Mary C.	L.	t.	v.m.	j.c.					
	L.C.	-	f.t.	a.c.	c.			c.	
Fred L.	L.	0	f.t.	f.t.	t.				
	L.C.	-	0	0	0	0	0	c.	
Mary R.	L.	t.	c.						
	L.C.	-	m.	v.m.	c.			j.c.	
Jane A.	L.	d.	d.	c.					
	L.C.	-	0	0	f.t.	f.t.	a.c.	j.c.	
Wallace P.	L.	0	0	f.t.	m.				
	L.C.	-	0	0	0	0	0	c.	
Patrick M.	L.	0	f.t.	f.t.	d.				
	L.C.	-	0	0	0	0	f.t.	c.	
Positive Control	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	c.	

Emulsion controls 1. 2. 3.  
 0.015 0.025 0.04  
 L. j.c.  
 L.C. c.

Complement dose 1:4 1. 2. 3.  
 0.01 0.02 0.03  
 m. a.c. c

June 28. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Catherine M.	L.	0.013	0.026	0.038	0.052	0.075	0.11	0.01	0.02
	L.C.	a.c.	c.						
Lily G.	L.	t.	m.	j.c.					
	L.C.	-	a.c.	j.c.				j.c.	
Isa A.	L.	v.m.	j.c.						
	L.C.	-	j.c.					a.c.	c.
Robert S.	L.	a.c.	c.						
	L.C.	-	j.c.						c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	c.	

Emulsion controls 1. 2. 3.  
0.013 0.026 0.038

L. v.m. j.c.  
L.C.v.m. c.

Complement dose 1:4 1. 2. 3. 4.  
0.01 0.02 0.03 0.04

Emulsion controls 1. 2. 3.  
a.c. c.

Complement dose 1:4 1. 2. 3. 4.  
0.01 0.02 0.03 0.04

July 2. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Christina W.	L.	0.012	0.024	0.038	0.055	0.075	0.11	0.01	0.02
	L.C.	f.t.	t.	v.m.	j.c.				
	L.C.	-	0	f.t.	t.	a.c.	c.	a.c.	c.
Jessie R.	L.	t.	d.	j.c.					
	L.C.	-	0	0	0	0	a.c.	m.	c.
Charles McG.	L.	0	0	0	v.m.				
	L.C.	-	0	0	0	t.	c.	a.c.	c.
William A.	L.	f.t.	m.	c.					
	L.C.	-	0	d.	a.c.	a.c.	c.	c.	
Hugh S.	L.	0	t.	d.	c.				
	L.C.	-	0	t.	a.c.	c.		c.	
Hugh McC.	L.	0	t.	v.m.	a.c.				
	L.C.	-	0	0	d.	c.	c.	c.	
Albert O.	L.	v.m.	c.						
	L.C.	-	f.t.	v.m.	c.			c.	
John B.	L.	0	f.t.	c.					
	L.C.	-	0	0	m.	c.		a.c.	c.
Negative control	L.	c.							
	L.C.	a.c.	c.					a.c.	c.

Emulsion controls

	1.	2.	3.
	0.012	0.024	0.038
L.	j.c.		
L.C.	j.c.		

Complement dose 1:4

	1.	2.	3.	4.
	0.012	0.02	0.03	0.04
	a.c.	c.		

July 3. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Belle R.	L.	0.012	0.024	0.038	0.055	0.075	0.11	0.01	0.02
	L.C.	-	t.	a.c.	c.			a.c.	c.
Janet O.	L.	v.m.	j.c.						
	L.C.	-	j.c.					j.c.	
Lizzie McD.	L.	v.m.	j.c.						
	L.C.	-	c.					j.c.	
James R.	L.	a.c.	c.						
	L.C.	-	j.c.					v.m.	c.
Hugh McB.	L.	v.m.	j.c.	0.038	0.055	0.075	0.11	0.14	0.02
	L.C.	-	c.						j.c.
Martha A.	L.	a.c.	c.						
	L.C.	a.c.	c.						a.c. c.
Positive control	L.	t.	m.	a.c.	c.				
	L.C.	-	-	0	0	0	0		j.c.

Emulsion controls 1. 2. 3.  
0.012 0.024 0.038

Complement L. v.m. c. 2. 3. 4.  
L.C.broken c. 0.02 0.03 0.04

Complement dose 1:4 1. 2. 3. 4.  
0.01 0.02 0.03 0.04  
a.c. c.

July 5. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
H.F.W.	L.	0.02	0.03	0.045	0.06			0.01	0.02
	L.C.	d.	d.					a.c.	c.
	L.C.	m.	j.c.						
C.H.B.	L.	t.	m.	j.c.					
	L.C.	m.	a.c.	c.				a.c.	c.
Annie McK.	L.	m.	j.c.	c.					
	L.C.	t.	v.m.	a.c.	c.			m.	c.
Negative control	L.	m.	v.m.	j.c.					
	L.C.	d.	v.m.	j.c.				a.c.	c.
	L.C.	0.012	0.024	0.038	0.055	0.075	0.11	0.14	0.02
Positive control	L.	0	f.t.	f.t.	v.m.	j.c.			
	L.C.	-	-	0	0	0	0	0	j.c.

Emulsion controls

	1.	2.	3.
	0.012	0.024	0.038
L.	a.c.	c.	
L.C.	a.c.	j.c.	

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	m.	v.m.	a.c.	c.

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	m.	v.m.	j.c.	



July 10. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
John McN.	L.	0.012	0.024	0.035	0.055	0.075	0.1	0.01	0.02
	L.C.	-	c.					c.	
Jean McN.	L.	m.	j.c.						
	L.C.	-	a.c.	c.				c.	
Joan H.T.	L.	v.m.	j.c.						
	K.C.	-	j.c.					c.	
Mina C.	L.	m.	c.						
	L.C.	-	j.c.					c.	
Helen T.	L.	m.	a.c.	c.					
	L.C.	-	j.c.					c.	
James F.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Positive control	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	f.t.	c.	

Emulsion controls 1. 2. 3. 0.025  
 0.012 0.024 0.035  
 L. m. j.c. c.  
 L.C. m. a.c. c.

Complement dose 1:4 1. 2. 3. 4.  
 0.01 0.02 0.03 0.035  
 m. v.m. j.c.

July 12. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Susan L.	L.C.	0.01	0.005	0.005	0.005	0.005	0.1	0.01	0.02
Alfred McG.	L.	0.01	0.015	0.02	0.03	0.035	0.07	0.01	0.02
	L.C.	-	0	f.t.	t.	d.	m.	c.	
David A.	L.	c.							
	L.C.	-	c.					c.	
Donald McN.	L.	c.							
	L.C.	-	c.					c.	
Positive control	L.	0	0	0	0	0	0	c.	
	L.C.	-	0	0	0	0	0	c.	
Emulsion controls									
		1.	2.	3.					
		0.01	0.015	0.02					
	L.	c.							
	L.C.	c.							
Complement dose 1:4									
		1.	2.	3.	4.				
		0.01	0.015	0.02	0.025				
		c.							

Emulsion controls									
		1.	2.	3.					
		0.01	0.025	0.035					
	L.	c.							
	L.C.	c.							
Complement dose 1:4									
		1.	2.	3.	4.				
		0.01	0.014	0.02	0.03				
		t.	d.	m.	l.c.				

July 17, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.025	0.035	0.055	0.075	0.1	0.01	0.02
Susan L.	L.	t.	m.	c.					
	L.C.	-	m.	c.				c.	
Mary F.	L.	t.	v.m.	c.					
	L.C.	-	m.	c.				c.	
Jane H.	L.	d.	v.m.	c.					
	L.C.	-	m.	c.				c.	
Bridget C.	L.	m.	v.m.	c.					
	L.C.	-	v.m.	c.				c.	
Eliz. H.	L.	m.	a.c.	c.					
	L.C.	-	j.c.					c.	
George L.	L.	t.	a.c.	c.					
	L.C.	-	v.m.	c.				c.	
Sarah C.	L.	d.	c.						
	L.C.	-	c.					c.	
John C.	L.	t.	a.c.	c.					
	L.C.	-	a.c.	c.				c.	
Bella R.	L.	t.	v.m.	c.					
	L.C.	-	m.	c.				c.	
George W.	L.	t.	m.	c.					
	L.C.	-	v.m.	c.				c.	
John D.	L.	d.	a.c.	c.					
	L.C.	-	m.	c.				c.	
Gordon L.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Hugh T.	L.	a.c.	c.						
	L.C.	-	c.					c.	
Maggie H.	L.	d.	c.						
	L.C.	-	a.c.	c.				c.	
John S.	L.	d.	c.						
	L.C.	-	c.					c.	
Bella T.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				c.	
Positive control	L.	0	0	0					
	L.C.	-	0	0	0	0	t.	c.	

Emulsion controls	1.	2.	3.
	0.01	0.025	0.035
L.	a.c.	c.	
L.C.	a.c.	c.	

Complement dose 1:4	1.	2.	3.	4.
	0.01	0.014	0.02	0.03
	t.	d.	m.	j.c.

July 23. 1912.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
Andrew B.	0.015	0.025	0.04	0.08	0.085	0.12	0.015	0.025	
John M.	0.0125	0.02	0.03	0.04	0.055	0.07	0.09	0.01	0.02
James G.	L. a.c.	c.							
	L.C. m.	v.m.	c.						c.
Agnes B.	L. c.								
	L.C. f.t.	c.							c.
Jessie W.	L. 0	t.	j.c.						
	L.C. -	-	0	0	t.	v.m.	a.c.	c.	
Mr. W.	L. 0	0	0	0					
	L.C. -	0	0	0	0	0	0	0	c.

Emulsion controls	1.	2.	3.
	0.0125	0.02	0.03
L.	a.c.	c.	
L.C.	m.	a.c.	j.c.

Complement dose 1:4	1.	2.	3.	4.
	0.01	0.018	0.02	0.03
	m.	j.c.		

Emulsion controls	1.	2.	3.
	0.015	0.025	0.04
L.	j.c.		
L.C.	j.c.		

Complement dose 1:4	1.	2.	3.	4.
	0.02	0.024	0.03	0.04
	L.	m.	v.m.	j.c.

July 24. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.015	0.025	0.04	0.06	0.085	0.12	0.015	0.025
Andrew B.	L.	t.	d.	v.m.	c.				
	L.C.	0	t.	v.m.	c.			j.c.	
John M.	L.	0	t.	d.	c.				
	L.C.	-	t.	d.	c.			j.c.	
Grace L.	L.	m.	j.c.						
	L.C.	-	a.c.	c.				c.	
Joan G.	L.	t.	d.	j.c.					
	L.C.	-	d.	c.				a.c.	c.
Dora A.	L.	0	t.	m.	a.c.				
	L.C.	-	t.	m.	a.c.	c.		c.	
John B.	L.	0	t.	a.c.	j.c.				
	L.C.	-	t.	m.	c.			c.	
Mary M.	L.	0	t.	v.m.	c.				
	L.C.	-	d.	c.				c.	
Robert B.	L.	0	t.	c.					
	L.C.	-	t.	c.				j.c.	
Margt. McA.	L.	t.	v.m.	j.c.					
	L.C.	-	c.					c.	
Positive control	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	a.c.	a.c.	c.

Emulsion controls

	1.	2.	3.
	0.015	0.025	0.04
L.	j.c.		
L.C.	j.c.		

Complement dose 1:4

	1.	2.	3.	4.
	0.02	0.024	0.03	0.04
t.		m.	v.m.	j.c.

Emulsion controls

	0.01	0.02
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L.  
L.C.

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
a.c.		c.		

July 30. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
George B.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	c.	c.	c.	c.	c.	c.	c.	c.
James McI.	L.	0	0	0	0	0	0	c.	
	L.C.	-	0	0	0	0	0	c.	
Hannah R.	L.	c.							
	L.C.	-	a.c.	c.				c.	
Joseph W.	L.	c.							
	L.C.	-	a.c.	c.				c.	
Mr. W.	L.	a.c.	c.						
	L.C.	-	c.	v.m.	a.c.	c.	d.	j.c.	j.c.
Mrs. W.	L.	v.m.	c.						
	L.C.	-	t.	m.	j.c.	0	0	j.c.	j.c.
Kate W.	L.	0	0	0	a.c.				
control	L.C.	-	0	0	v.m.	t.	t.	j.c.	a.c.
Mrs. Kerr,	L.	c.							
	L.C.	-	c.						c.
Agnes B.	L.	c.							
	L.C.	-	c.						c.
Abram McK.	L.	c.							
	L.C.	-	c.						c.
Hugh McF.	L.	c.							
	L.C.	-	c.						c.
James M.	L.	a.c.	c.						
	L.C.	c.	c.						c.
Negative control	L.	c.							
	L.C.	c.							c.

Emulsion controls

	1.	2.
	0.01	0.02
L.	j.c.	
L.C.	c.	

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	a.c.	c.		

August 1. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.038	0.05	0.07	0.1	0.01	0.02
David F.	L.	0	0	f.t.	t.				
	L.C.	-	0	f.t.	d.	a.c.	c.	m.	c.
Isa R.	L.	t.	c.						
	L.C.	-	c.					j.c.	
James K.	L.	t.	a.c.	c.					
	L.C.	-	c.					c.	
Jeanie McF.	L.	t.	m.	c.					
	L.C.	-	a.c.	c.				a.c.	j.c.
John G.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	t.	d.	a.c.	j.c.
Matthew H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	j.c.
Positive control	L.	0	t.	d.	a.c.				
	L.C.	-	0	t.	v.m.	c.		a.c.	j.c.

Emulsion controls

	1.	2.	3.
	0.012	0.024	0.038

L.	v.m.	a.c.	j.c.
L.C.	c.		

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04

m.	v.m.	j.c.	
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August 2. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.038	0.05	0.07	0.1	0.01	0.02
Margt. R.	L.	v.m.	j.c.						
	L.C.	-	j.c.					j.c.	
Mrs. K.	L.	v.m.	c.						
	L.C.	v.m.	c.					a.c.	c.
George G.	L.	t.	v.m.	j.c.					
	L.C.	-	t.	d.	v.m.	c.		a.c.	c.
Frank McF.	L.	v.m.	j.c.						
	L.C.	-	c.					a.c.	c.
Ruth G.	L.	j.c.							
	L.C.	-	c.					j.c.	
John H.	L.	v.m.	c.						
	L.C.	-	c.					a.c.	c.
Linda M.	L.	v.m.	c.						
	L.C.	-	c.					a.c.	c.
Positive control	L.	0	0	0	0	0	0	t.	c.
	L.C.	-	0	0	0	0	0		

Emulsion controls

	1.	2.	3.
	0.012	0.024	0.038

L. c.  
L.C. c.

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	v.m.	a.c.	a.c.	c.

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.025	0.05	0.075



August 7. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.02	0.03	0.05	0.075	0.1	0.01	0.02
Peter W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
James J.	L.	t.	c.						
	L.C.	-	m.	c.				c.	
Anna B.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				c.	
Kate O'D.	L.	c.							
	L.C.	-	j.c.					c.	
Fred K.	L.	a.c.	c.						
	L.C.	-	m.	c.				c.	
James C.	L.	0	0	0	t.	0			
	L.C.	-	0	0	0	0	c.	c.	
Annie S.	L.	c.							
	L.C.	-	m.	c.				c.	
Isabella H.	L.	c.							
	L.C.	-	j.c.					c.	
Susan McN.	L.	0	m.	m.	c.				
	L.C.	-	0	0	0	0	t.	c.	
Positive Control	L.	0	0	t.	t.				
	L.C.	-	0	0	0,	0	t.	c.	
Emulsion controls		1.	2.	3.					
		0.01	0.02	0.03					
	L.	c.							
	L.C.	a.c.	c.						
Complement dose 1:4		1.	2.	3.	4.				
		0.01	0.025	0.05	0.075				
		m.	c.						

August 16. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.015	0.025	0.035	0.05	0.075	0.01	0.02
George H.	L.	0	t.	m.	m.				
	L.C.	-	0	t.	m.	m.	a.c.	m.	j.c.
Christina H.	L.	0	0	0	v.m.				
	L.C.	-	0	0	d.	a.c.	c.	c.	
John H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Sarah W.	L.	0	0	t.	j.c.				
	L.C.	-	0	0	0	0	f.t.	c.	
George S.	L.	d.	m.	a.c.	c.				
	L.C.	-	0	f.t.	m.	a.c.	c.	c.	
Henry K.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Negative Control	L.	a.c.	c.						
	L.C.	a.c.	c.					c.	

Barbara C.	L.								
	L.C.								
Mary D.	L.	Emulsion controls			1.	2.	3.		
	L.C.				0.01	0.015	0.025		
Thomas E.	L.				L.	c.			
	L.C.				L.C.	v.m.	c.		
Positive Control	L.	Complement dose 1:4			1.	2.	3.	4.	
	L.C.				0.01	0.012	0.02	0.03	
					c.	d.	c.		

		0.01	0.02	0.03				
		1.	2.	3.				
		L.	c.					
		L.C.	a.c.	c.				
		Complement dose 1:4			1.	2.	3.	4.
					0.01	0.012	0.02	0.03
					a.c.	j.c.		

August 17. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.02	0.03	0.05	0.075	0.1	0.01	0.02
Thomas M.	L.	m.	v.m.	c.					
	L.C.	-	m.	c.				c.	
John N.	L.	m.	c.						
	L.C.	-	c.					c.	
Ann N.	L.	m.	c.						
	L.C.	-	c.					c.	
Charlotte W.	L.	m.	c.						
	L.C.	-	a.c.	c.				c.	
Percy H.	L.	m.	c.						
	L.C.	-	a.c.	c.				c.	
Isobel C.	L.	m.	c.						
	L.C.	-	m.	c.				c.	
Mary J.H.	L.	m.	c.						
	L.C.	-	m.	c.				c.	
Barbara C.	L.	m.	c.						
	L.C.	-	c.					c.	
Flora D.	L.	c.							
	L.C.	-	a.c.	c.				c.	
Thomas E.	L.	a.c.	c.						
	L.C.	-	j.c.					c.	
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	t.	d.	c.	

Emulsion controls      0.01   0.02   0.03  
                                  1.     2.     3.  
 L.     c.  
 L.C.   a.c.   c.

Complement dose 1:4    1.     2.     3.     4.  
                                  0.01   0.012   0.02   0.03  
                                  a.c.   j.c.

August 19. 1912.

	L.	1.	2.	3.	4.	5.	6.	7.	8.
William M.	L.C.								
Barion M.	L.C.								
Evan H.	L.C.	0.01	0.02	0.035	0.055	0.075	0.1	0.01	0.02
Barbara W.	L.	t.	t.	t.	t.				
James H.	L.C.	-	v.f.t.	v.f.t.	v.f.t.	t.	t.	c.	
Patrick McC.	L.	c.							
Joe G.	L.C.	-	f.t.	c.				c.	
Negative control	L.	a.c.	c.						
	L.C.	-	d.	c.			a.c.	c	
Mary McG.	L.								
Lily McG.	L.								
		Emulsion controls			1.	2.	3.		
					0.01	0.02	0.035		
				L.	c.				
				L.C.	t.	c.			
		Complement dose 1:4			1.	2.	3.	4.	
					0.01	0.02	0.03	0.04	
					t.	d.	m.	j.c.	
Maria W.	L.								
	L.C.								
William H.	L.								
	L.C.								
William F.	L.								
	L.C.								
Negative control	L.								
	L.C.								
Emulsion controls		1.	2.						
		0.01	0.02						
	L.	c.							
	L.C.	c.							



August 23. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Maggie M.	L.	0.01	0.02	0.035	0.05	0.075	0.1	0.01	0.02
	L.C.	a.c.	c.					a.c.	j.c.
	L.C.	-	j.c.						
John H.	L.	m.	a.c.	c.					
	L.C.	-	v.m.	c.				c.	
Maggie H.	L.	c.							
	L.C.	-	a.c.	c.				j.c.	
Hugh W.	L.	a.c.	c.						
	L.C.	-	c.					c.	
Clara Y.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	v.f.t.	c.	
Andrew B.	L.	j.c.	c.						
	L.C.	-	j.c.					c.	
Maggie McF.	L.	a.c.	c.						
	L.C.	-	c.					c.	
William B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	f.t.	c.	
Ellen S.	L.	0	v.m.	c.					
	L.C.	-	0	0	v.m.	v.m.	a.c.	c.	
John K.	L.	v.m.	a.c.	c.					
	L.C.	-	v.m.	a.c.	c.			v.m.	c.
John H.	L.	0	0	t.	c.				
	L.C.	-	0	0	m.	c.		c.	
Mary McQ.	L.	v.m.	c.						
	L.C.	-	c.					c.	
John McN.	L.	c.							
	L.C.	-	c.					c.	
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	

Emulsion controls 1. 2.  
 0.01 0.02  
 L. c.  
 L.C. v.m. c.

Complement dose 1:4 1. 2. 3.  
 0.01 0.012 0.02  
 j.c. c.

August 24, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.02	0.03	0.05	0.075	0.1	0.01	0.02
Jenny O.	L.	0	v.m.	c.					
	L.C.	-	t.	a.c.	c.			m.	c.
James B.	L.	0	a.c.	c.					
	L.C.	-	v.m.	j.c.				d.	c.
John G.	L.	0	a.c.	c.					
	L.C.	-	a.c.	c.				m.	c.
Andrew S.	L.	0	a.c.	c.					
	L.C.	-	m.	j.c.				m.	c.
George S.	L.	0	v.m.	c.					
	L.C.	-	v.m.	v.m.	c.			m.	c.
Mrs. S.	L.	0	v.m.	c.					
	L.C.	-	m.	a.c.	c.			m.	c.
Peter S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	c.
John S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Bella S.	L.	0	m.	c.					
	L.C.	-	0	a.c.	c.			d.	c.
Mary S.	L.	0	v.m.	c.					
	L.C.	-	0	v.m.	j.c.			d.	j.c.
Walter S.	L.	t.	v.m.	c.					
	L.C.	-	v.m.	c.				m.	c.
Frances S.	L.	0	m.	c.					
	L.C.	-	d.	v.m.	c.			m.	c.
Jessie S.	L.	t.	a.c.	c.					
	L.C.	-	d.	c.				a.c.	c.
Fred A.	L.	0	m.	c.					
	L.C.	-	d.	m.	c.			m.	c.
Grace A.	L.	0	d.	m.	c.				
	L.C.	-	t.	v.m.	c.			d.	c.
Adam A.	L.	0	m.	a.c.	c.				
	L.C.	-	d.	v.m.	c.			m.	c.
Christina A.	L.	0	d.	v.m.	c.				
	L.C.	-	0	d.	c.			d.	j.c.

August 24. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Edward A.	L.	t.	v.m.	j.c.					
	L.C.	-	t.	v.m.	c.			m.	j.c.
Wallace A.	L.	t.	v.m.	j.c.					
	L.C.	-	t.	v.m.	c.			m.	j.c.
Mrs. A.	L.	0	m.	a.c.	c.				
	L.C.	-	v.m.	j.c.				d.	c.
Mr. A.	L.	0	m.	c.					
	L.C.	-	d.	a.c.				d.	c.
Flora S.	L.	0	0	0	0				
	L.C.	-	0	0	0	t.	t.	-	c.
Annie W.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	-	a.c.
Bella S.	L.	0	0	0	t.				
	L.C.	-	0	0	0	t.	d.	-	j.c.
Ann S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.
Cissie McC.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
John S.	L.	m.	c.						
	L.C.	-	j.c.					c.	
Dan McK.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.

## Emulsion controls

	1.	2.	3.
	0.01	0.02	0.03
L.	m.	j.c.	
L.C.	d.	a.c.	j.c.

## Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	0	t.	d.	j.c.





August 27. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.02	0.035	0.05	0.075	0.1	0.01	0.02
James A.	L.	v.m.	a.c.	c.					
	L.C.	-	0	0	d.	j.c.		c.	
Fred M.	L.	v.m.	a.c.	c.				c.	
	L.C.	-	0	v.m.	v.m.	j.c.		c.	
John F.	L.	j.c.						c.	
	L.C.	-	c.					c.	
Minnie A.	L.	c.						c.	
	L.C.	-	j.c.					c.	
Rose Ann R.	L.	j.c.						c.	
	L.C.	-	j.c.					c.	
David J.	L.	c.						c.	
	L.C.	-	a.c.	c.				c.	
Agnes L.	L.	v.m.	c.					c.	
	L.C.	-	j.c.					c.	
Grace L.	L.	c.						c.	
	L.C.	-	c.					c.	
Marion H.	L.	c.						c.	
	L.C.	-	c.					c.	
Alexr. McN.	L.	d.	c.					c.	
	L.C.	-	c.					c.	
Christina McN.	L.	m.	c.					c.	
	L.C.	-	c.					c.	
David McN.	L.	v.m.	c.					c.	
	L.C.	-	c.					c.	
Grace McN.	L.	c.						c.	
	L.C.	-	c.					c.	
Mr. McN.	L.	c.						c.	
	L.C.	-	c.					c.	
Mrs. McN.	L.	c.						c.	
	L.C.	-	c.					c.	
William McN.	L.	c.						c.	
	L.C.	-	c.					c.	
Matthew McN.	L.	c.						c.	
	L.C.	-	c.					c.	

August 27th. 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mary McN.	L.	c.							
	L.C.	-	c.					c.	
Joan McN.	L.	c.							
	L.C.	-	c.					c.	
Jemima McN.	L.	c.							
	L.C.	-	c.					c.	
Jean McN.	L.	c.							
	L.C.	-	c.					c.	
Joseph McN.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Sam. McN.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	c.	

Emulsion controls	1.	2.	3.
	0.01	0.02	0.035
L.	c.		
L.C.	c.		

Complement dose 1:4	1.	2.	3.	4.
	0.01	0.012	0.02	0.03
	a.c.	c.		

Gordon S.  
 Jean H.  
 Hugh R.  
 Kate R.  
 Maud H.  
 Helen McR.  
 James McV.  
 Frances R.  
 Margaret B.

August 30th. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Thomas McC.	L.	0.01							
	L.C.	c.	j.c.					c.	
John T.	L.	a.c.	c.						
	L.C.	-	c.					c.	
Mrs. B.	L.	c.							
	L.C.	-	c.					c.	
Emma B.	L.	a.c.	j.c.						
	L.C.	-	0	0	0	v.m.	c.	c.	
Alfred B.	L.	j.c.							
	L.C.	-	c.					c.	
Agnes G.	L.	c.							
	L.C.	-	j.c.					c.	
John F.	L.	t.	v.m.	c.					
	L.C.	-	c.					c.	
Annie H.	L.	c.							
	L.C.	-	c.					c.	
Gordon S.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	c.	
John L.	L.	c.							
	L.C.	-	j.c.					c.	
Hugh R.	L.	j.c.							
	L.C.	-	j.c.					c.	
Kate R.	L.	c.							
	L.C.	-	v.m.					c.	
Annie H.	L.	d.	c.						
	L.C.	-	j.c.					c.	
Helen McQ.	L.	0	c.						
	L.C.	-	c.					c.	
James McQ.	L.	j.c.							
	L.C.	-	j.c.					c.	
Johannes R.	L.	v.m.	j.c.						
	L.C.	-	j.c.					c.	
Margaret E.	L.	v.m.	c.						
	L.C.	-	c.					c.	

August 30th. 1912. (Contd.)

			1.	2.	3.	4.	5.	6.	7.	8.
Rose Ann L.	L.	v.m.	c.							
	L.C.	-	j.c.						c.	
Annie L.	L.	v.m.	j.c.							
	L.C.	-	j.c.						c.	
Jessie D.	L.	c.								
	L.C.	-	c.						c.	
John C.	L.	a.c.	c.							
	L.C.	-	c.						c.	
Henry F.	L.	c.								
	L.C.	-	c.						c.	
John F.	L.	v.m.	c.							
	L.C.	-	v.m.	c.					c.	
Hugh T.	L.	v.m.	c.							
	L.C.	-	c.						c.	
James R.	L.	v.m.	c.							
	L.C.	-	v.m.	c.					c.	
Mr. R.	L.	c.								
	L.C.	-	c.						c.	
Flora R.	L.	c.								
	L.C.	-	c.						c.	
Thomas T.	L.	v.m.	c.							
	L.C.	-	v.m.	c.					c.	
Alexr. W.	L.	v.m.	c.							
	L.C.	-	c.						c.	
Sarah A.	L.	v.m.	c.							
	L.C.	-	c.						c.	
Annie F.	L.	a.c.	c.							
	L.C.	-	j.c.						c.	
Andrew D.	L.	c.								
	L.C.	-	c.						c.	
Jessie C.	L.	a.c.	c.							
	L.C.	-	c.						c.	

August 31, 1912.

August 30th. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Jessie J.	L. L.C.						0.12	0.312	0.02
Ann F.	L. L.C.	j.c.	c.		0.1	0.12	0.15	c.	c.
Positive control	L. L.C.	0	0	0	j.c. 0	0	a.c.	c.c.	c.
James J.	L. L.C.								
Fred B.	L. L.C.								
		Emulsion controls			1.	2.	3.		
					0.01	0.02	0.025		
Walter P.	L. L.C.	v.c.	v.c.	L. L.C.	c. c.				
Maggie J.	L. L.C.	Complement dose 1:4			1.	2.	3.	4.	
					0.008	0.01	0.012	0.016	
Matthew Y.	L. L.C.				j.c.				
Lily Jane H.	L. L.C.								
Sam J.	L. L.C.								
John Joseph K.	L. L.C.								
Margaret P.	L. L.C.								
Hugh G.	L. L.C.								
Hugh G.	L. L.C.	0	0	0	0	0	0	0	c.
Henry S.	L. L.C.								
Henry S.	L. L.C.	0	0	1.	2.	0	0	0	c.

August 31. 1912.

5 = 01

		1.	2.	3.	4.	5.	6.	7.	8.
Jemima J.	L.	0.012	0.024	0.035	0.055	0.075	0.12	0.012	0.02
	L.C.	m.	a.c.	c.					
		-	v.m.	c.				v.m.	c.
Annie J.	L.	v.m.	c.						
	L.C.	-	v.m.	c.				a.c.	c.
Bridget J.	L.	v.m.	j.c.						
	L.C.	-	a.c.	c.				a.c.	c.
James J.	L.	m.	v.m.	c.					
	L.C.	-	m.	c.				c.	
Fred B.	L.	v.m.	a.c.	c.					
	L.C.	-	m.	c.				c.	
Johhusa P.	L.	v.m.	v.m.	c.					
	L.C.	-	a.c.	c.				c.	
Maggie J.	L.	d.	v.m.	c.					
	L.C.	-	v.m.	c.				c.	
Matthew Y.	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	j.c.				c.	
Mary Jane H.	L.	m.	v.m.	c.					
	L.C.	-	m.	j.c.				c.	
Jane J.	L.	m.	v.m.	c.					
	L.C.	-	m.	j.c.				c.	
John Joseph K.	L.	m.	v.m.	c.					
	L.C.	-	m.	a.c.	j.c.			c.	
Hannah P.	L.	m.	v.m.	c.					
	L.C.	-	m.	j.c.				c.	
Hugh G.	L.	m.	v.m.	a.c.	c.				
	L.C.	-	v.m.	v.m.	a.c.	c.		c.	
Hugh G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Henry S.	L.	m.	c.						
	L.C.	-	c.					c.	
Andrew S.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	0	c.	





September 3. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Patrick McK.	L.	0.01	0.02	0.035	0.055	0.08	0.12	0.01	0.02
	L.C.	0	0	0	t.				
		-	0	0	t.	d.	a.c.	m.	a.c.
George L.	L.	t.	v.m.	c.					
	L.C.	-	t.	m.	a.c.	c.		v.m.	c.
Annie L.	L.	t.	v.m.	c.					
	L.C.	-	0	v.m.	a.c.	c.		v.m.	c.
Fred L.	L.	d.	v.m.	a.c.	c.				
	L.C.	-	t.	m.	c.			m.	c.
Jessie T.	L.	t.	t.	a.c.	c.				
	L.C.	-	0	m.	a.c.	c.		v.m.	c.
Davidina T.	L.	t.	v.m.	c.					
	L.C.	-	t.	d.	c.			v.m.	c.
James John McC.	L.	t.	d.	a.c.	c.				
	L.C.	-	v.f.t.	v.f.t.	v.f.t.	t.	c.	m.	c.
Frank B.	L.	t.	m.	a.c.	c.				
	L.C.	-	t.	v.m.	a.c.	c.		m.	c.
Andrew B.	L.	t.	v.m.	c.					
	L.C.	-	0	a.c.	a.c.	j.c.		v.m.	c.
Gavin B.	L.	t.	m.	j.c.					
	L.C.	-	t.	v.m.	a.c.	c.		m.	c.
Sarah B.	L.	t.	d.	a.c.	c.				
	L.C.	-	t.	v.m.	a.c.	c.		v.m.	c.
Rachel H.	L.	t.	d.	c.					
	L.C.	-	t.	m.	a.c.	c.		m.	c.
Sarah R.	L.	t.	d.	c.					
	L.C.	-	t.	d.	v.m.	c.		v.m.	c.
John G.	L.	t.	v.m.	c.					
	L.C.	-	d.	j.c.				m.	c.
Patrick McG.	L.	0	m.	j.c.					
	L.C.	-	t.	m.	a.c.	c.		m.	c.
Moses R.	L.	t.	m.	c.					
	L.C.	-	t.	m.	v.m.	c.		a.c.	c.

September 3, 1912. (Contd.)

290:01

		1.	2.	3.	4.	5.	6.	7.	8.
Annie S.	L.	t.	m.	c.					
	L.C.	-	t.	v.m.	a.c.	c.		m.	c.
Robert R.	L.	t.	v.m.	c.					
	L.C.	-	t.	m.	-	c.		m.	c.
Susan R.	L.	d.	a.c.	c.					
	L.C.	-	v.d.	j.c.				v.m.	c.
Fredk. J.	L.	m.	a.c.	c.					
	L.C.	-	d.	v.m.	c.			v.m.	c.
John R.	L.	m.	a.c.	c.					
	L.C.	-	v.m.	m.	j.c.			v.m.	c.
Hugh L.	L.	t.	v.m.	j.c.					
	L.C.	-	v.m.	j.c.				v.m.	c.
Jane L.	L.	d.	m.	j.c.					
	L.C.	-	d.	v.m.	a.c.	c.		v.m.	c.
Agnes McQ.	L.	d.	v.m.	c.					
	L.C.	-	m.	v.m.	c.			m.	c.
Peter L.	L.	t.	d.	c.					
	L.C.	-	t.	v.m.	a.c.	c.		m.	c.
Harry McN.	L.	t.	d.	a.c.	c.				
	L.C.	-	t.	v.m.	a.c.	c.		m.	c.
Florence V.	L.	d.	m.	a.c.	c.				
	L.C.	-	t.	a.c.	c.			a.c.	c.
Adam F.	L.	d.	m.	j.c.					
	L.C.	-	t.	j.c.				c.	
Henry T.	L.	t.	v.m.	c.					
	L.C.	-	t.	v.m.	c.			v.m.	c.
John P.	L.	t.	d.	v.m.	c.				
	L.C.	-	t.	d.	m.	c.		m.	c.
Annie McP.	L.	d.	m.	a.c.	c.				
	L.C.	-	t.	m.	a.c.	c.		m.	c.
Bella McP.	L.	t.	m.	j.c.					
	L.C.	-	t.	v.m.	j.c.			v.m.	c.

September 3. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Hugh McQ.	L.	t.	v.m.	a.c.	c.				
	L.C.	-	t.	v.m.	j.c.			m.	c.
Joseph D.	L.	f.t.	m.	j.c.					
	L.C.	-	t.	v.m.	a.c.	c.		m.	c.
Henry D.	L.	t.	v.m.	c.					
	L.C.	-	t.	m.	a.c.	c.		v.m.	c.
Felix D.	L.	d.	m.	v.m.	c.				
	L.C.	-	t.	m.	v.m.	c.		m.	c.
Sarah D.	L.	d.	v.m.	v.m.	c.				
	L.C.	-	t.	v.m.	v.m.	c.		v.m.	c.
Positive control	L.	0	0	v.m.	c.				
	L.C.	-	0	0	t.	v.m.	j.c.	v.m.	c.

		1.	2.	3.	4.	5.
Emulsion controls	L.					
	L.C.			0.01	0.02	0.035
		L.	d.	j.c.		
Complement dose 1:4	L.					
	L.C.			0.01	0.02	0.025
		L.	t.	v.m.	a.c.	
Emulsion controls	L.					
	L.C.			0.01	0.02	0.035
		L.	f.t.	m.		
Complement dose 1:4	L.					
	L.C.			0.01	0.02	0.025
		L.	t.	v.m.	a.c.	

September 7. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
James G.	L.C.	0.01	0.02	0.035	0.055	0.075	0.1	0.01	0.02
Mr. A.	L.	0	0	0	t.				
	L.C.	-	0	0	0	t.	j.c.	t.	c.
Crissie A.	L.	0	t.	a.c.	c.				
	L.C.	-	f.t.	v.m.	c.			t.	c.
John C.	L.	0	v.m.	c.					
	L.C.	-	v.m.	c.				t.	c.
Jane R.	L.	0	m.	j.c.					
	L.C.	-	d.	a.c.	c.			t.	c.
John McK.	L.	0	t.	c.					
	L.C.	-	d.	c.				d.	c.
Nellie F.	L.	0	t.	c.					
	L.C.	-	d.	c.				a.c.	c.
Thomas H.	L.	0	0	a.c.	c.				
	L.C.	-	t.	a.c.	c.			d.	c.
John G.	L.	0	0	v.f.t.	a.c.	c.			
	L.C.	-	0	0	0	v.m.	c.	d.	c.
James W.	L.	t.	t.	d.	c.				
	L.C.	-	t.	d.	c.			a.c.	c.
Negative control	L.	0	0	a.c.	c.				
	L.C.	-	t.	a.c.	c.			a.c.	c.

Emulsion controls

	1.	2.	3.
	0.01	0.02	0.035
L.	0	m.	c.
L.C.	f.t.	m.	c.

Complement dose 1:4

	1.	2.	3.	4.
	0.014	0.02	0.03	0.04
	0	m.	v.m.	a.c.

September 11. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.025	0.04	0.065	0.1	0.14	0.01	0.02
James G.	L.	t.	j.c.						
	L.C.	-	a.c.	c.				c.	
Fanny G.	L.	v.m.	c.						
	L.C.	-	v.m.	c.	0.1			c.	
Annie H.	L.	v.m.	c.			0.12	0.14		
	L.C.	-	a.c.	c.				c.	
Maggie W.	L.	d.	j.c.						
	L.C.	-	a.c.	c.				c.	
James S.	L.	t.	c.						
	L.C.	-	0	0	0	v.m.	v.m.	c.	
Ann D.	L.	a.c.	c.		0.012	0.025	0.04		
	L.C.	-	c.		L. v.m.	c.		c.	
Hugh D.	L.	a.c.	c.						
	L.C.	-	c.					c.	
Abram H.	L.	c.			1.	2.	3.	4.	5.
	L.C.	-	c.		0.01	0.012	0.014	c.02	0.03
Maggie McM.	L.	c.				v.m.	a.c.	c.	j.c.
	L.C.	-	c.					c.	
John S.	L.	c.							
	L.C.	-	c.					c.	
Jane B.	L.	0	0	m.	c.				
	L.C.	-	0	d.	m.	v.m.	v.m.	c.	
Robina H.	L.	c.							
	L.C.	-	c.					c.	
James A.	L.	0	0	0	a.c.				
	L.C.	-	0	0	0	v.m.	a.c.	c.	
Mrs. A.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	c.	
Ann McK.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Mrs. R.	L.	v.m.	j.c.						
	L.C.	-	a.c.	c.				c.	
Fred R.	L.	v.m.	c.						
	L.C.	-	c.					c.	

September 11. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Alfred S.	L.	m.	c.						
	L.C.	-	c.					c.	
Positive control	L.	0	0	0	0.1	0.12	0.14		
	L.C.	-	-	0	0	0	m.	a.c.	c.

Emulsion controls

	1.	2.	3.
Peter C.	0.012	0.025	0.04
	L. v.m.	c.	
	L.C. v.m.	c.	

Complement dose 1:4

	1.	2.	3.	4.	5.
	0.01	0.012	0.014	0.02	0.03
	d.	v.m.	a.c.	a.c.	j.c.

Isaac H. L. a.c. c.  
 L.C. - a.c. c.  
 James McI. L. v.m. c.  
 L.C. - a.c. c.  
 Anna F. L. a.c. a.c. c.  
 L.C. - a.c. j.c.  
 Isa H. L.C. - d. c.  
 William H. L. 0 0 0  
 L.C. - 0 0 0 v.f.t. t. a.c.  
 Mrs. H. L. 0 0 0 0  
 L.C. - 0 0 0 0 c.  
 Joseph R. L. a.c. c.  
 L.C. - d. m. v.m. v.m. c.  
 Peter H. L. t. d. c.  
 L.C. - m. m. v.m. a.c. j.c. c.  
 Peter F. L. j.c.  
 L.C. - d. c.  
 Mrs. F. L. 0 0 0 v.m.  
 L.C. 0 0 0 d. m. c.  
 Hugh E. L. 0 d. c.  
 L.C. - m. c.  
 Mrs. R. L. 0 v.m. a.c. c.  
 L.C. - v.m. c.  
 Positive control L. d. v.m. j.c.  
 L.C. - v.m. c.

September 14, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
M. S. (Female)	I.	0.01	0.02	0.03	0.05	0.06	0.075	0.01	0.02
	L.C.	0	0	0	0	0		a.c.	c.
Jane M.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				c.	
Hugh A.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	v.f.t.	v.f.t.	c.
Isaac R.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				a.c.	c.
James McI.	L.	v.m.	c.						
	L.C.	-	c.						c.
Peter C.	L.	0	d.	v.m.	a.c.				
	L.C.	-	0	v.m.	a.c.	c.			c.
Annie F.	L.	a.c.	a.c.	c.					
	L.C.	-	m.	j.c.				a.c.	c.
Isa B.	L.	v.m.	a.c.	c.					
	L.C.	-	d.	c.					c.
William B.	L.	0	0	0	t.				
	L.C.	-	0	0	0	v.f.t.	t.		m. a.c.
Mrs. B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0		c.
Joseph R.	L.	a.c.	c.						
	L.C.	-	d.	m.	m.	v.m.	v.m.		c.
Peter D.	L.	t.	d.	c.					
	L.C.	-	m.	m.	v.m.	a.c.	j.c.		c.
Peter P.	L.	j.c.							
	L.C.	-	c.						c.
Mrs. P.	L.	0	0	m.	v.m.				
	L.C.	0	0	0	d.	m.			c.
Hugh E.	L.	0	d.	c.					
	L.C.	-	m.	c.					c.
Emma R.	L.	0	v.m.	a.c.	c.				
	L.C.	-	v.m.	c.					c.
Negative control	L.	d.	v.m.	j.c.					
	L.C.	-	v.m.	c.					c.

Emulsion controls 1. 2. 3. Dose of C. = 0.005.  
0.01 0.02 0.03

September 25, 1912.

September 19, 1912.

0.01. 0.02. 0.035. 0.055. 0.075. 0.1. 0.01. 0.02.

		1.	2.	3.	4.	5.	6.	7.	8.
Alexander H.	L.								
	L.C.	0.01	0.02	0.035	0.055	0.075	0.1	0.01	0.02
James McK.	L.	v.m.	c.						
	L.C.	-	a.c.	c.				c.c.	
John H.	L.	0	0	m.	j.c.				
	L.C.	-	0	t.	v.m.	a.c.	0	c.	c.c.
James W.	L.	c.	0	0	0	0	0		
	L.C.	-	a.c.	c.	0	0	0	c.c.	
Ann H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	c.c.
May B.	L.	0	0	t.	c.				
	L.C.	-	0	0	0	t.	c.	c.c.	
John McC.	L.	j.c.							
	L.C.	-	j.c.					c.c.	
Andres G.	L.	c.							
	L.C.	-	c.					c.c.	
William E.	L.	c.							
	L.C.	-	c.					c.c.	
Mrs. H.	L.	v.m.	c.						
	L.C.	-	a.c.	c.				c.c.	
Andrew W.	L.	v.m.	a.c.	c.					
	L.C.	-	0	0	t.	d.	m.	c.c.	
Barclay C.	L.	0	0	d.	d.				
	L.C.	-	0	0	0	0	0	c.c.	
James E.	L.	f.t.	t.	t.	r.				
	L.C.	-	0	0	0	0	0	c.c.	
George N.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	c.c.	
Jeanie R.	L.	a.c.	c.						
	L.C.	-	j.c.					c.c.	
Positive control	L.	0	0	0	0	0	0	m.	j.c.
	L.C.	0	0	0	0	0	0		
Emulsion controls		1.	2.						
		0.01	0.02						
	L.	c.							
	L.C.	t.	c.						

Dose of C. = 0.01



September 25th, 1912. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Alexander H.	L. 0.01.	0.01.	0.02.	0.035.	0.055.	0.075.	0.1.	0.01.	0.02.
	L.C. -	c.						c.	
Mrs. D.	L. a.c.	c.							
	L.C. -	c.						c.	
Lewis T.	L. 0	0	0	0					
	L.C. -	0	0	0	0	0	0	c.	
Mrs. W.	L. 0	0	0	T					
	L.C. -	0	0	0	0	0	0	c.	
Annie W.	L. d	m	c						
	L.C. -	0	0	0	0	0	t	c.	
Grace L.	L. c								
	L.C. -	c.						c.	
John L.	L. c								
	L.C. -	c.						c.	
Agnes L.	L. c								
	L.C. -	c.						c.	
Mina L.	L. c								
	L.C. -	c.						c.	
Mrs. L.	L. a.c.	c.							
	L.C. -	c.						c.	
Joseph S.	L. v.m.	c.							
	L.C. -	a.c.	c.					c.	
James S.	L. c								
	L.C. -	c.						c.	
John M.	L. c								
	L.C. -	c.						c.	
James J.	L. c								
	L.C. -	c.						c.	
Mrs. McL.	L. c								
	L.C. -	c.						c.	
Mr. W.	L. c								
	L.C. -	c.						c.	
John W.	L. c								
	L.C. -	c.						c.	
Mrs. W.	L. c								
	L.C. -	c.						c.	

676.  
September 25th, 1912. (Contd.)

~~September 28th, 1912.~~

		1.	2.	3.	4.	5.	6.	7.	8.
Positive control	L.	0	0	0	0	0	0	0	0
	L.C.	-	0.01	0.02	0.025	0.04	f.t.	t.	a.c.
Negative control	L.	c.	-	-	-	-	-	-	-
	L.C.	-	c.	-	-	-	-	-	c.

Emulsion controls		1.	2.	3.
L.C.	-	0.01	0.02	0.035
L.	-	d.	c.	-
L.C.	-	j.c.	c.	-

Complement dose 1:4		1.	2.	3.	4.
L.	-	0.01	0.012	0.02	0.03
L.C.	-	d.	m.	v.m.	c.

James D.L.	L.	v.m.	c.	-	-	-	-	-	-
	L.C.	-	a.c.	c.	-	-	-	-	-
Annie E.	L.	v.m.	j.c.	-	-	-	-	-	-
	L.C.	-	a.c.	c.	-	-	-	-	-
Daniel A.	L.	j.c.	-	-	-	-	-	-	-
	L.C.	-	a.c.	c.	-	-	-	-	-
Martha O'H.	L.	a.c.	c.	-	-	-	-	-	-
	L.C.	-	a.c.	c.	-	-	-	-	-
Michael S.	L.	v.m.	c.	-	-	-	-	-	-
	L.C.	-	j.c.	-	-	-	-	-	-
Positive control	L.	0	0	0	1.	0	0	0	0
	L.C.	-	0	0	0	0	f.t.	c.	-

Emulsion controls		1.	2.	3.
L.	-	0.01	0.02	0.025
L.C.	-	m.	j.c.	-
		m.	a.c.	c.

Complement dose 1:4		1.	2.	3.	4.
L.	-	0.01	0.02	0.03	0.04
L.C.	-	m.	j.c.	-	-

September 28th. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Jessie D.	L.	0.01 a.c.	0.02 c.	0.025	0.04	0.055	0.09	0.01	0.02
	L.C.	-	c.					c.	
Ella W.	L.	j.c.				f.t.	t.	j.c.	
	L.C.	-	c.					c.	
Jean W.	L.	v.m.	c.						
	L.C.	-	c.					a.c.	c.
Harry M.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
Mina R.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Dorothy G.	L.	a.c.	c.						
	L.C.	-	c.					c.	
James D.L.	L.	v.m.	c.						
	L.C.	-	a.c.	c.				c.	
Annie A.	L.	v.m.	j.c.						
	L.C.	-	a.c.	c.				c.	
Daniel A.	L.	j.c.		0.01	0.015	0.025			
	L.C.	-	a.c.	c.				c.	
Martha O'H.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				c.	
Michael S.	L.	v.m.	c.	0.008	0.01	0.0125	0.016		
	L.C.	-	j.c.					a.c.	c.
Positive control	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	f.t.	c.	

Emulsion controls

	1.	2.	3.
	0.01	0.02	0.025
L.	m.	j.c.	
L.C.	m.	a.c.	c.

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	m.	j.c.		

October 4. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. McN.	L.	0	0	0	0	0.06	0.09	0.01	0.02
	L.C.	-	0	0	0	0	0	j.c.	
Agnes McN.	L.	0	0	0	0				
	L.C.	-	0	0	0	f.t.	t.	j.c.	
Annie D.	L.	v.m.	j.c.						
	L.C.	-	c.					c.	
Archd. W.	L.	j.c.							
	L.C.	-	c.					c.	
James McC.	L.	a.c.	c.						
	L.C.	-	c.					a.c.	c.
Positive control	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	t.	m.	c.	
Negative control	L.	j.c.							
	L.C.	-	c.					j.c.	

## Emulsion controls

	1.	2.	3.
	0.01	0.015	0.025
L.	c.		
L.C.	c.		

## Complement dose 1:4

	1.	2.	3.	4.
	0.008	0.01	0.0125	0.016
	0	d.	m.	a.c.

October 5, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.01	0.025	0.035	0.06	0.075	0.1	0.01	0.02
John M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	m.	c.
Sam. McL.	L.	a.c.	c.						
	L.C.	-	c.					m.	j.c.
Lucy R.	L.	v.m.	j.c.						
	L.C.	-	a.c.	c.				m.	c.
Flora McK.	L.	m.	a.c.	c.					
	L.C.	-	a.c.	j.c.				v.m.	c.
Hugh H.	L.	m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				m.	j.c.
John W.	L.	m.	a.c.	c.					
	L.C.	-	v.m.	j.c.				m.	c.
James D. McK.	L.	j.c.							
	L.C.	-	j.c.					a.c.	c.
Hugh D.	L.	v.m.	a.c.	c.					
	L.C.	-	v.m.	j.c.				m.	j.c.
Annie P.	L.	0	0	t.	m.				
	L.C.	-	0	0	0	t.	d.	v.m.	c.
Mr. P.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	j.c.
James E.	L.	m.	a.c.	j.c.					
	L.C.	-	m.	a.c.	c.			d.	a.c.
Mrs. E.	L.	a.c.	j.c.						
	L.C.	-	a.c.	j.c.				m.	j.c.
Mrs. S.	L.	0	0	d.	c.				
	L.C.	-	0	0	0	t.	v.m.	m.	c.
Baby S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.
Jessie S.	L.	m.	a.c.	c.					
	L.C.	-	j.c.					v.m.	j.c.
John D.	L.	m.	j.c.						
	L.C.	-	a.c.	c.				m.	c.

October 5. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Jessie G.	L.	m.	a.c.	c.					
	L.C.	-	v.m.	a.c.	c.			d.	a.c.
Jessie F.	L.	0	0	c.					
	L.C.	-	0	0	0	d.	c.	m.	c.
Hugh G.	L.	a.c.	c.						
	L.C.	-	j.c.					m.	c.
Positive control	L.	0	0	0	f.t.				
	L.C.	-	0	0	f.t.	m.	a.c.	d.	c.
Negative control	L.								
	L.C.								

Emulsion controls		1.	2.	3.
		0.01	0.025	0.035
	L.	m.	a.c.	c.
Emulsion controls	L.C.	d.	v.m.	c.

Complement dose 1:4		1.	2.	3.	4.
		0.01	0.018	0.03	0.04
		d.	m.	a.c.	c.

October 8, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Jeanie F.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	m.	j.c.	c.				v.m.	j.c.
Mrs. McK.	L.	d.	v.m.	c.					
	L.C.	-	m.	j.c.				v.m.	a.c.
Mrs. P.	L.	t.	d.	v.m.	c.				
	L.C.	-	0	t.	d.	m.	j.c.	v.m.	j.c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	v.f.t.	f.t.	a.c.	c.
Negative control	L.	j.c.							
	L.C.	-	c.					j.c.	c.

David B.	L.	v.m.	c.						
	L.C.	-	j.c.					a.c.	j.c.

Emulsion controls		1.	2.	3.		
	L.	0	0.012	0.034	0.036	a.c. c.
	L.C.	-	L.	a.c.	j.c.	
Henry D.W.	L.	v.m.	L.C.	v.m.	j.c.	a.c. c.
	L.C.	-				

Complement dose 1:4		1.	2.	3.	4.		
	L.	0.012	0.02	0.032	0.04	a.c. c.	
	L.C.	-	v.m.	a.c.	c.		
Bessie W.	L.	a.c.	a.c.	j.c.			
	L.C.	-	a.c.	j.c.			j.c.

Theresa F.	L.	a.c.	c.				
	L.C.	-	j.c.				
Pat P.	L.	j.c.					
	L.C.	-	c.				

Positive control	L.	0	0	0	m.		
	L.C.	-	0	0	0	m.	a.c. c.
Negative control	L.	a.c.	c.				
	L.C.	-	c.				j.c.

Emulsion controls		1.	2.	3.		
	L.	0.02	0.025	0.055		
	L.C.	-	a.c.	j.c.		
Complement dose 1:4		1.	2.	3.	4.	
	L.	0.02	0.025	0.03	0.04	
	L.C.	-	a.c.	j.c.		

October 10. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Ella B.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	d.	a.c.	c.				a.c.	c.
		-	v.m.	j.c.					
Kate McM.	L.	a.c.	c.						
	L.C.	-	j.c.					j.c.	
William W.	L.	a.c.	c.						
	L.C.	-	j.c.					c.	
Susan O'R.	L.	a.c.	c.						
	L.C.	-	j.c.					a.c.	c.
John M.	L.	c.							
	L.C.	-	j.c.					a.c.	c.
David B.	L.	v.m.	c.						
	L.C.	-	j.c.					a.c.	j.c.
Agnes S.	L.	t.	v.m.	v.m.	v.m.				
	L.C.	-	0	t.	t.	d.	a.c.	c.	
Henry D.W.	L.	v.m.	a.c.	c.					
	L.C.	-	c.					a.c.	c.
Mary R.	L.	v.m.	a.c.	c.					
	L.C.	-	v.m.	j.c.				a.c.	c.
Bessie W.	L.	a.c.	a.c.	c.					
	L.C.	-	a.c.	j.c.				j.c.	
Thersa F.	L.	a.c.	c.						
	L.C.	-	j.c.					c.	
Pat F.	L.	j.c.							
	L.C.	-	c.					t.	v.m.
Positive control	L.	0	0	0	m.				
	L.C.	-	0	0	0	0	m.	a.c.	c.
Negative control	L.	a.c.	c.						
	L.C.	-	c.					j.c.	

## Emulsion controls

	1.	2.	3.
	0.02	0.025	0.036

L.	a.c.	j.c.
L.C.	a.c.	j.c.

## Complement dose 1:4

	1.	2.	3.	4.
	0.02	0.025	0.03	0.04
	a.c.	a.c.	j.c.	



October 11, 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Hugh L.	L.	0.012							
	L.C.	c.							
Annie C.	L.	-	c.						
	L.C.	-	c.						
Thomas H.	L.	c.							
	L.C.	-	c.						
John W.	L.	c.							
	L.C.	-	c.						
Michael O'B.	L.	m.	j.c.						
	L.C.	-	a.c.	a.c.	a.c.	j.c.			
Thomas F.	L.	c.							
	L.C.	-	c.						
Peter F.	L.	c.							
	L.C.	-	c.						
Jane B.	L.	c.							
	L.C.	-	c.						
Harriet W.	L.	c.							
	L.C.	-	c.						
Jean McM.	L.	c.							
	L.C.	-	c.						
Jeanie B.	L.	j.c.							
	L.C.	-	c.						
Michael L.	L.	c.							
	L.C.	-	c.						
Mrs. McI.	L.	c.							
	L.C.	-	0	0	0	t.	d.		c.
Joseph McI.	L.	c.							
	L.C.	-	c.						
Jeanie L.	L.	j.c.							
	L.C.	-	c.						
John C.	L.	j.c.							
	L.C.	-	c.						j.c.
Fred H.	L.	c.							
	L.C.	-	j.c.						c.

October 11. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Positive control	L.	-	c.						
	L.C.	-	-	t.	a.c.	c.		c.	
Negative control	L.	c.	a.c.	c.					
	L.C.	j.c.	0	0	t.	c.		a.c.	c.

John T.	L.	v.m.	a.c.	a.c.	j.c.				
	L.C.	-	a.c.	a.c.	j.c.			j.c.	
Mary B.	L.	j.c.							
	L.C.	-	c.					j.c.	

**Emulsion controls**

		1.	2.	3.
William A.	L.	0.012	0.024	0.036
	L.C.	-		
Violet S.	L.	a.c.		
	L.C.	-	j.c.	

**Complement dose 1:4**

		1.	2.	3.	4.
Mary B.	L.	0.02	0.026	0.032	0.04
	L.C.	j.c.			
John S.	L.	a.c.	c.		
	L.C.	-	j.c.		j.c.

Mary McN.	L.	0	t.	d.	j.c.				
	L.C.	-	f.t.	t.	a.c.	j.c.	a.c.		
Mrs. McN.	L.	a.c.	a.c.	c.					
	L.C.	-	v.m.	j.c.	j.c.	c.		c.	
Robert T.	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				j.c.	
Frank F.	L.	a.c.	j.c.	j.c.					
	L.C.	-	t.	j.c.				j.c.	
Negative control	L.	j.c.							
	L.C.	-	c.					c.	
Positive control	L.	d.	j.c.	0	0	t.	v.m.		
	L.C.	-	0	0					

**Emulsion controls**

		1.	2.	3.
	L.	0.012	0.024	0.036
	L.C.	a.c.	j.c.	

**Complement dose 1:4**

		1.	2.	3.	4.
	L.	0.01	0.02	0.03	0.04
	L.C.	a.c.	a.c.	j.c.	

October 15, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Christina Y.	L.	0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
	L.C.	j.c.	-	j.c.				j.c.	
Kate A.	L.	t.	a.c.	c.					
	L.C.	-	0	0	t.	c.		a.c.	c.
John T.	L.	v.m.	a.c.	a.c.	j.c.				
	L.C.	-	a.c.	a.c.	j.c.			j.c.	
Mary R.	L.	j.c.							
	L.C.	-	c.					j.c.	
William A.	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	
Violet S.	L.	a.c.	c.						
	L.C.	-	j.c.					j.c.	
Mary R.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
John S.	L.	a.c.	c.						
	L.C.	-	j.c.					j.c.	
Mary McN.	L.	0	t.	d.	j.c.				
	L.C.	-	f.t.	t.	a.c.	j.c.		a.c.	c
Mrs. McN.	L.	a.c.	a.c.	c.					
	L.C.	-	v.m.	j.c.	j.c.	c.		c.	
Robert T.	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				j.c.	
Frank F.	L.	a.c.	j.c.	j.c.					
	L.C.	-	t.	j.c.				j.c.	
Negative control	L.	j.c.							
	L.C.	-	c.					a.c.	
Positive control	L.	d.	j.c.						
	L.C.	-	0	0	t.	v.m.		j.c.	

Emulsion controls

	1.	2.	3.
	0.012	0.024	0.035

	L.	L.C.
	a.c.	j.c.
	a.c.	j.c.

Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	a.c.	a.c.	j.c.	

OCTOBER 16, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. S.	L.	0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
	L.C.	t.	d.	a.c.	j.c.				
	L.C.	-	0	0	t.	t.	a.c.	j.c.	
Mr. S.	L.	m.	c.						
	L.C.	-	c.					v.m.	v.
Mary S.	L.	0	t.	m.	v.m.				
	L.C.	-	0	t.	t.	t.	v.m.	j.c.	
John S.	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				j.c.	
Wallace S.	L.	a.c.	c.						
	L.C.	-	j.c.					j.c.	
Francis S.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
Annie S.	L.	0	a.c.	c.					
	L.C.	-	a.c.	c.				j.c.	
Viola S.	L.	a.c.	j.c.						
	L.C.	-	c.					c.	
John S.	L.	m.	j.c.						
	L.C.	-	a.c.	j.c.				c.	
Mary M.	L.	d.	v.m.	c.					
	L.C.	-	0	t.	v.m.	v.m.	a.c.	c.	
Annie F.	L.	v.m.	j.c.						
	L.C.	-	j.c.					j.c.	
William C.	L.	m.	a.c.	c.					
	L.C.	-	j.c.					a.c.	j.c.
John McE.	L.	t.	v.m.	j.c.					
	L.C.	-	v.m.	a.c.	a.c.	j.c.		a.c.	j.c.
Jeanie W.	L.	d.	a.c.	j.c.					
	L.C.	-	v.m.	a.c.	j.c.			j.c.	
Margaret W.	L.	v.m.	c.						
	L.C.	-	j.c.					j.c.	
Joan M.	L.	j.c.							
	L.C.	-	j.c.					j.c.	

OCTOBER 16. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Patrick M.	L.	a.c.	c.	0.035	0.05	0.07	0.1	0.01	0.02
	L.C.	-	j.c.	1.1	1.1	0	f.t.	a.c.	c.
Hugh E.	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	c.				j.c.	
Hamilton W.	L.	v.m.	j.c.						
	L.C.	-	m.	a.c.	a.c.	j.c.		j.c.	
John W.	L.	m.	j.c.						
	L.C.	-	a.c.	j.c.				j.c.	
Agnes A.	L.	v.m.	j.c.						
	L.C.	-	a.c.	c.				a.c.	c.
Andrew D.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				j.c.	
Agnes D.	L.	a.c.	j.c.						
	L.C.	-	a.c.	c.				v.m.	j.c.
John N.	L.	a.c.	c.						
	L.C.	-	c.					c.	
Henry N.	L.	0	v.m.	j.c.					
	L.C.	-	d.	m.	v.m.	a.c.	j.c.	j.c.	
Positive control	L.	d.	v.m.	j.c.					
	L.C.	-	f.t.	t.	v.m.	a.c.	c.	j.c.	
Negative control	L.	c.							
	L.C.	-	c.					j.c.	

Emulsion controls 1. 2. 3.  
0.012 0.024 0.035

L. j.c.  
L.C. a.c. j.c.

Complement dose 1:4 1. 2. 3. 4.  
0.01 0.02 0.03 0.04  
d. c.

Emulsion controls 1. 2. 3.  
0.012 0.024 0.035

L. a.c. j.c.  
L.C. a.c. j.c.

Complement dose = 0.005.

OCTOBER 18. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. S.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	0	0	f.t.	t.	0	f.t.	c.	
Isa S.	L.	0	0	0	v.f.t.				
	L.C.	-	0	0	0	0	v.f.t.	j.c.	
Nellie C.	L.	0	f.t.	t.	d.				
	L.C.	-	0	0	t.	d.	c.	a.c.	c.
Isabel McG.	L.	d.	m.	a.c.	j.c.				
	L.C.	-	v.m.	j.c.	j.c.			j.c.	
Annie D.	L.	f.t.	v.m.	a.c.	j.c.				
	L.C.	-	t.	m.	j.c.			j.c.	
Bella S.	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	
Isa M.	L.	v.m.	a.c.	j.c.					
	L.C.	-	0	f.t.	m.	j.c.		j.c.	
Bessie D.	L.	v.m.	a.c.	j.c.					
	L.C.	-	v.m.	j.c.				j.c.	
Jessie C.	L.	d.	v.m.	a.c.	j.c.				
	L.C.	-	v.m.	j.c.				a.c.	j.c.
Frederick J.	L.	v.m.	j.c.						
	L.C.	-	v.m.	j.c.				c.	
Bridget McS.	L.	v.m.	j.c.						
	L.C.	-	v.m.	c.				j.c.	
Jeanie J.	L.	0	f.t.	f.t.	d.				
	L.C.	-	0	0	t.	a.c.	c.	c.	
William C.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
David P.	L.	0	f.t.	a.c.					
	L.C.	-	f.t.	a.c.	c.			j.c.	
Positive control	L.	v.f.t.	f.t.	t.	m.				
	L.C.	-	0	0	t.	t.	t.	c.	

Emulsion controls      1.      2.      3.  
    0.012 0.024 0.036  
    L.      a.c.      j.c.  
    L.C.      a.c.      j.c.

Complement dose = 0.005.



OCTOBER 25. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. C.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	0	t.	m.	v.m.				
	L.C.	-	0	t.	d.	v.m.	c.	a.c.	c.
Elizabeth G.	L.	0	v.m.	j.c.					
	L.C.	-	f.t.	v.m.	c.			v.m.	c.
John D.	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	
Albert C.	L.	a.c.	j.c.						
	L.C.	-	c.					c.	
Agnes McG.	L.	d.	a.c.	c.					
	L.C.	-	v.m.	j.c.				a.c.	c.
Mrs. McG.	L.	m.	j.c.						
	L.C.	-	m.	j.c.				a.c.	c.
David C.	L.	t.	v.m.	j.c.					
	L.C.	-	t.	m.	j.c.			a.c.	c.
Jemima W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	j.c.
Fanny R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	c.	
Annie M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Positive control	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	v.m.	c.
Negative control	L.	a.c.	c.						
	L.C.	-	j.c.					c.	

## Emulsion controls

	1.	2.	3.
	0.012	0.024	0.036
	L.	a.c.	c.
	L.C.	j.c.	

## Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.016	0.02	0.03
	d.	m.	j.c.	



OCTOBER 26. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
Agnes C.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0	c.	
H.F.W.	L.	c.							
	L.C.	-	c.					c.	
Mary C.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	c.	
John C.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	c.	
Fanny C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Jane C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Bella C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	a.c.	c.
James C.	L.	0	0	0	0				
	L.C.	-	0	0	0	t.	t.	c.	
Mr. C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mrs. C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mr. C.	L.	v.m.	c.						
	L.C.	-	0	0	0	0	0	c.	
Mrs. C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Bella C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mary C.	L.	0	0	0	t.				
	L.C.	-	0	0	0	f.t.	f.t.	c.	
Joan C.	L.	0	0	f.t.	f.t.				
	L.C.	-	0	0	0	v.f.t.	v.f.t.	c.	
Lizzie C.	L.	0	0	t.	t.				
	L.C.	-	0	0	0	0	0	a.c.	c.

OCTOBER 26. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Ethel C.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	c.	
Sarah C.	L.	0	v.f.t.	t.	c.				
	L.C.	-	0	0	0	0	t.	c.	
Mr. K.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	c.	
Mrs. K.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
James K.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	c.	
Jessie K.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	t.	d.	a.c.	c.
Agnes K.	L.	0	0	f.t.	t.				
	L.C.	-	0	0	0	0	0	c.	
Abel K.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Joan K.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	0	c.	
Mary K.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Henry K.	L.	0	t.	t.	t.				
	L.C.	0	0	0	0	0	0	c.	
Wallace K.	L.	0	t.	d.	m.				
	L.C.	-	0	0	0	t.	t.	c.	
Fergus K.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	c.	
Annie K.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mina K.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Martha K.	L.	0	t.	t.	d.				
	L.C.	-	0	0	v.f.t.	t.	d.	c.	

OCTOBER 26. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Matilda K.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	c.	
Hugh K.	L.	0	0	0	0	0	0	0	
	L.C.	-	0	0	0	0	0	k.	
John K.	L.	0	0	0	0	0	0	0	
	L.C.	0	0	0	0	0	0	c.	
Philip K.	L.	0	0	0	0	0	0	0	
	L.C.	-	0	0	0	0	t.	c.	
Robert K.	L.	0	0	0	t.	0	0	0	
	L.C.	-	0	0	0	0	t.	c.	
Abram K.	L.	0	t.	m.	c.	0	0	0	
	L.C.	-	0	0	t.	m.	a.c.	c.	
Positive control	L.	0	0	0	t.	0	0	0	
	L.C.	-	0	0	0	0	t.	c.	
Negative control	L.	j.c.							
	L.C.	-	c.					c.	

## Emulsion controls

	1.	2.	3.
	0.012	0.024	0.036
L.	a.c.	c.	
L.C.	v.m.	c.	

## Complement dose 1:4

	1.	2.	3.	4.
	0.01	0.02	0.03	0.04
	m.	v.m.	j.c.	

OCTOBER 28. 1910.

		1.	2.	3.	4.	5.	6.	7.	8.
Alfred C.	L.	0.015	0.025	0.04	0.06	0.085	0.12	0.01	0.02
	L.C.	c.	-	c.					
Annie S.	L.	a.c.	j.c.					v.m.	c.
	L.C.	-	j.c.						
Mrs. S.	L.	0	0	0	t.			v.m.	j.c.
	L.C.	-	0	0	0	0	0	c.	
Alexander K.	L.	a.c.	j.c.						
	L.C.	-	j.c.						
Julia S.	L.	a.c.	c.					a.c.	c.
	L.C.	-	j.c.						
Maggie K.	L.	j.c.	c.					j.c.	
	L.C.	-	j.c.						
Positive control	L.	t.	t.	v.m.	a.c.				
	L.C.	-	0	0	0	f.t.	a.c.	c.	
Negative control	L.	c.							
	L.C.	-	c.					a.c.	j.c.

Emulsion controls

	1.	2.	3.
L.	0.015	0.025	0.04
L.C.	a.c.	j.c.	
	a.c.	j.c.	

Complement dose 1:4

	1.	2.	3.	4.
	0.03	0.04	0.05	0.06
	j.e.			

OCTOBER 30. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Jemima P.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	0	f.t.	v.m.	a.c.				
	L.C.	-	0	0	t.	v.m.	j.c.	m.	a.c.
Julia T.	L.	0	m.	j.c.					
	L.C.	-	0	t.	v.m.	j.c.		d.	j.c.
David C.	L.	v.m.	v.m.	j.c.					
	L.C.	-	m.	j.c.				0	j.c.
Annie C.	L.	0	v.m.	a.c.	j.c.				
	L.C.	-	a.c.	j.c.				j.c.	
Mrs. W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	d.	t.	j.c.
Mr. W.	L.	0	0	0	0				
	L.C.	-	0	0	0	v.f.t.	v.f.t.	m.	j.c.
Bete W.	L.	0	0	0	t.				
	L.C.	-	0	0	0	f.t.	d.	t.	v.m.
Sames W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	v.m.
Marie W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	a.c.
Wilse W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	a.c.
Adren W.	L.	0	0	0	t.				
	L.C.	-	0	0	0	f.t.	t.	t.	a.c.
Josse W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	j.c.
Sara W.	L.	d.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				t.	j.c.
Sarah B.	L.	0	m.	a.c.	j.c.				
	L.C.	-	m.	a.c.	j.c.			m.	j.c.
William B.	L.	a.c.	a.c.	j.c.					
	L.C.	-	j.c.					a.c.	j.c.
Jane R.	L.	d.	v.m.	j.c.					
	L.C.	-	m.	j.c.				a.c.	j.c.

OCTOBER 30. 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mr. S.	L. L.C.	t. -	d. m.	c. v.m.	a.c.	a.c.	c.	d.	a.c.
Jessie T.	L. L.C.	d. -	m. m.	a.c. a.c.	j.c. j.c.			v.m.	j.c.
Dan. G.	L. L.C.	d. -	v.m. a.c.	a.c. j.c.	j.c.			a.c.	j.c.
John H.	L. L.C.	t. -	m. t.	a.c. v.m.	j.c. a.c.		c.	t.	v.m.
Susan N.	L. L.C.	t. -	v.m. v.m.	v.m. j.c.	j.c.			v.m.	j.c.
Susie W.	L. L.C.	t. -	t. t.	v.m. v.m.	j.c. j.c.		j.c.	v.m.	j.c.
John C.	L. L.C.	m. -	v.m. a.c.	v.m. a.c.	a.c. j.c.		j.c.	a.c.	j.c.
Catherine D.	L. L.C.	0 -	0 0	0 0	0 0		0 0	-	j.c.
Positive control	L. L.C.	0 -	0 0	0 0	0 0		0 0	d.	a.c.
Negative control	L. L.C.	m. -	v.m. a.c.	c. j.c.				j.c.	

Emulsion controls		1.	2.	3.
		0.012	0.024	0.036
L.		a.c.	j.c.	
L.C.		a.c.	j.c.	

Complement dose 1:4		1.	2.	3.	4.
		0.012	0.024	0.03	0.04
		t.	d.	j.c.	

Mrs. R.	L. L.C.								
Mrs. R.	L. L.C.								
Mrs. S.	L. L.C.								
John H.	L. L.C.								
Negative control	L. L.C.								
Emulsion controls	L. L.C.	0.012	0.024						

NOVEMBER 1, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.	
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02	
Isa McL.	L.	c.								
	L.C.	-	a.c.	j.c.				c.		
Jean M.	L.	0	0	f.t.	t.					
	L.C.	-	0	0	0	0	v.m.	c.		
Annie M.	L.	a.c.	j.c.							
	L.C.	-	j.c.					c.		
Mrs. R.	L.	a.c.	j.c.							
	L.C.	-	a.c.	j.c.				c.		
Annie R.	L.	j.c.								
	L.C.	-	j.c.					c.		
Conrad R.	L.	a.c.	j.c.							
	L.C.	-	j.c.					c.		
Mrs. J.	L.	t.	t.	t.	v.m.					
	L.C.	-	0	0	0	0	f.t.	c.		
Mrs. L.	L.	t.	d.	m.	v.m.					
	L.C.	-	0	0	0	m.	j.c.	c.		
Thomas L.	L.	0	0	0	t.					
	L.C.	-	0	0	0	0	d.	c.		
Mrs. T.	L.	f.t.	t.	d.	m.					
	L.C.	-	0	0	0	f.t.	t.	c.		
Jessie T.	L.	0	0	0	0					
	L.C.	-	0	0	0	0	0	c.		
Mrs. R.	L.	t.	v.m.	a.c.	c.					
	L.C.	-	v.m.	j.c.				j.c.		
Lizzie R.	L.	t.	t.	v.m.	v.m.					
	L.C.	-	v.f.t.	v.f.t.	v.f.t.	v.m.	c.	c.		
Mary S.	L.	j.c.								
	L.C.	-	j.c.					c.		
John McG.	L.	c.								
	L.C.	-	c.					c.		
Negative control	L.	c.								
	L.C.	c.						c.		
Emulsion controls		0.012	0.024		Complement dose = 0.01					
	L.	a.c.	j.c.							
	L.C.	c.								

NOVEMBER 5. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Maggie A.R.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	-	-	-	-	-	-	-	-
		t.	d.	m.	v.m.				
		-	t.	d.	m.	j.c.		v.m.	a.c.
Kate L.	L.	v.m.	a.c.	j.c.					
	L.C.	-	v.m.	a.c.	j.c.			v.m.	j.c.
Ruth L.	L.	0	t.	t.	d.				
	L.C.	-	0	0	0	0	t.	m.	a.c.
Mary S.	L.	0	0	0	c.				
	L.C.	-	0	0	0	0	f.t.	c.	
Jessie S.	L.	t.	d.	v.m.	c.				
	L.C.	-	0	0	t.	m.	c.	v.m.	j.c.
Amy R.	L.	0	f.t.	j.c.					
	L.C.	-	f.t.	j.c.				a.c.	c.
Flora R.	L.	m.	v.m.	j.c.					
	L.C.	-	v.m.	j.c.				v.m.	j.c.
Bethia S.	L.	Negative result.							
	L.C.	Rack removed before result entered.							
Ruth R.	L.	0	t.	v.m.	a.c.				
	L.C.	-	t.	d.	a.c.	j.c.		v.m.	a.c.
Annie C.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	v.m.	a.c.
Mrs. C.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	m.	a.c.
John N.	L.	Negative result.							
	L.C.	Rack removed before result entered.							
Mrs. N.	L.	Negative result.							
	L.C.	Rack removed before result entered.							
Positive control	L.	0	f.t.	f.t.	f.t.				
	L.C.	-	f.t.	f.t.	f.t.	f.t.	f.t.	d.	a.c.
Negative control	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	c.				v.m.	c.
Emulsion controls		0.012	0.024	Complement dose = 0.0125					
	L.	a.c.	j.c.						
	L.C.	j.c.							



NOVEMBER 6. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. C.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	0	0	t.	d.				
	L.C.	-	0	0	f.t.	t.	v.m.	t.	m.
Mr. C.	L.	v.f.t.	f.t.	t.	v.m.				
	L.C.	-	t.	m.	v.m.	c.		t.	m.
Annie C.	L.	f.t.	f.t.	t.	d.				
	L.C.	-	0	t.	v.m.	c.		d.	v.m.
Dora C.	L.	0	v.f.t.	t.	d.				
	L.C.	-	0	0	f.t.	d.	v.m.	j.c.	
William H.	L.	t.	d.	m.	v.m.				
	L.C.	-	m.	a.c.	c.			v.m.	a.c.
Mrs. H.	L.	0	0	0	t.				
	L.C.	-	0	0	0	t.	v.m.	f.t.	m.
Mr. H.	L.	0	f.t.	t.	m.				
	L.C.	-	0	0	t.	d.	m.	t.	m.
Flora H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	m.
Baby H.	L.	f.t.	f.t.	t.	v.m.				
	L.C.	-	0	0	0	f.t.	a.c.	d.	v.m.
Annie H.	L.	0	0	f.t.	t.				
	L.C.	-	0	0	t.	a.c.	c.	t.	m.
Positive control	L.	t.	d.	v.m.	a.c.				
	L.C.	-	0	0	0	d.	c.	t.	v.m.
Negative control	L.	m.	a.c.	j.c.					
	L.C.	-	v.m.	j.c.				v.m.	a.c.

Emulsion controls

1. 2. 3.  
0.012 0.024 0.036L. a.c. j.c.  
L.C. a.c. j.c.

Complement dose 1:4

1. 2. 3. 4.  
0.012 0.024 0.032 0.04  
t. d. a.c. c.

NOVEMBER 8. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mr. P.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	a.c.	c.					a.c.	c.
		-	j.c.						
Robert P.	L.	a.c.	j.c.						
	L.C.	-	c.					j.c.	
Joy W.	L.	v.m.	j.c.						
	L.C.	-	j.c.					a.c.	j.c.
William B.	L.	a.c.	j.c.						
	L.C.	-	c.					a.c.	c.
Mrs. B.	L.	m.	a.c.	c.					
	L.C.	-	t.	m.	j.c.			j.c.	
Daniel D.	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	
Mrs. D.	L.	a.c.	j.c.						
	L.C.	-	j.c.					c.	
Mrs. H.	L.	v.m.	j.c.						
	L.C.	-	a.c.	j.c.				j.c.	
Elsie H.	L.	v.m.	a.c.	j.c.					
	L.C.	-	j.c.					j.c.	
Andrew H.	L.	a.c.	j.c.						
	L.C.	-	j.c.					v.m.	c.
David B.	L.	m.	a.c.	c.					
	L.C.	-	c.					j.c.	
Euphemia McG.	L.	a.c.	j.c.						
	L.C.	-	m.	j.c.				a.c.	c.
Baby McG.	L.	a.c.	j.c.						
	L.C.	-	m.	j.c.				a.c.	c.
Barbara McF.	L.	a.c.	j.c.						
	L.C.	-	c.					j.c.	
Sam. McL.	L.	a.c.	c.						
	L.C.	-	c.					a.c.	c.
Joe C.	L.	m.	j.c.						
	L.C.	-	a.c.	c.				a.c.	c.

NOVEMBER 8. 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Joan McK.	L.	0	m.	v.m.	a.c.				
	L.C.	-	f.t.	t.	t.	t.	t.	v.m.	c.
Sarah W.	L.	t.	v.m.	j.c.					
	L.C.	-	d.	j.c.					c.
Eliza F.	L.	a.c.	j.c.						
	L.C.	-	c.						c.
Mrs. L.	L.	0	0	t.	c.				
	L.C.	-	0	0	0	0	t.		c.
Negative control	L.	j.c.							
	L.C.	j.c.							j.c.

Emulsion controls	1.	2.	3.
	0.012	0.024	0.036
L.	a.c.	j.c.	
L.C.	a.c.	j.c.	

Complement dose 1:4	1.	2.	3.	4.
	0.01	0.015	0.02	0.03
	t.	m.	v.m.	j.c.

Andrew B.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	0	0	c.
David B.	L.	0	0	0	v.t.t.				
	L.C.	-	0	0	0	0	0	0	c.
Mrs. B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	c.
William B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	c.

Emulsion controls	1.	2.	3.	
	0.012	0.024	0.036	
L.	a.c.	j.c.		
L.C.	v.m.	j.c.		
Complement dose 1:4	1.	2.	3.	4.
	0.01	0.015	0.024	0.03
	t.	d.	v.m.	j.c.

NOVEMBER 12, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Jessie K.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	0	0	v.f.t.	f.t.				
	L.C.	-	0	0	0	0	0	c.	
Robert H.	L.	0	0	f.t.	f.t.				
	L.C.	-	0	0	0	0	f.t.	c.	
William McG.	L.	0	f.t.	d.	m.				
	L.C.	-	0	f.t.	t.	c.			c.
George F.	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	c.					c.
John F.	L.	v.m.	a.c.	c.					
	L.C.	-	v.m.	j.c.					c.
John H.	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	a.c.	c.				c.
Albert H.	L.	d.	c.						
	L.C.	-	t.	m.	c.				c.
Mrs. H.	L.	t.	d.	v.m.	c.				
	L.C.	-	0	0	0	v.f.t.	v.m.	c.	
Elsie H.	L.	t.	t.	d.	j.c.				
	L.C.	-	t.	0	0	0	v.m.	c.	
Andrew H.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	0	c.	
David B.	L.	0	0	0	v.f.t.				
	L.C.	-	0	0	0	0	0	c.	
Mrs. B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
William B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Positive Control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mrs. Emulsion controls		1.	2.	3.					
		0.012	0.024	0.036					
	L.	a.c.	j.c.						
	L.C.	v.m.	j.c.						
Complement dose 1:4		1.	2.	3.	4.				
		0.01	0.016	0.024	0.03				
		t.	d.	v.m.	j.c.				

(Contd.)  
NOVEMBER 13. 1912.

		1.	2.	3.	4.	5.	6.	7.	8
Euphemia McG.	L.	0	0	0	a.c.				
control	L.C.	-	0	0	0	0	0	a.c.	c.
Baby McG.	L.	0	0	t.	a.c.				
	L.C.	-	0	0	0	t.	j.c.	a.c.	c.
Albert H.	L.	v.m.	c.						
	L.C.	-	j.c.					j.c.	
Agnes J.	L.	a.c.	j.c.						
	L.C.	-	a.c.	j.c.				j.c.	
Minnie B.	L.	v.m.	a.c.	c.					
	L.C.	-	m.	v.m.	a.c.	j.c.		a.c.	c.
James B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
James F.	L.	d.	a.c.	c.					
	L.C.	-	j.c.					a.c.	c.
Maggie W.	L.	a.c.	c.						
	L.C.	-	c.					a.c.	c.
Flora T.	L.	m.	a.c.	c.					
	L.C.	-	m.	a.c.	c.			v.m.	j.c.
Andrew T.	L.	v.m.	a.c.	c.					
	L.C.	-	d.	v.m.	c.			c.	
William T.	L.	v.m.	j.c.						
	L.C.	-	m.	a.c.	c.			v.m.	j.c.
John M.	L.	t.	d.	j.c.					
	L.C.	-	0.	d.	m.	j.c.		m.	j.c.
James M.	L.	0	t.	a.c.					
	L.C.	-	0	f.t.	v.m.	c.		d.	a.c.
John M.	L.	0	t.	j.c.					
	L.C.	-	0	t.	v.m.	c.		t.	j.c.
Mrs. M.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	m.	j.c.
Positive	L.	0	0	0	a.c.				
	L.C.	-	0	0	t.	t.	t.	a.c.	c.

320.  
321  
NOVEMBER 13. 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Negative control	L. L.C.	a.c. -	c. c.					j.c.	
Maryt. McL.	L. L.C.	a.c. -	c. c.					j.c.	
Mrs. McG.									
	Emulsion controls				1. 0.012	2. 0.024	3. 0.036		
Hugh McG.	L. L.C.	a.c. -	c. c.	L. L.C.	a.c. a.c.	a.c. a.c.	c. c.		
Jessie McF.	L. L.C.	a.c. -	c. c.						
	Complement dose 1:4				1. 0.012	2. 0.024	3. 0.03	4. 0.036	
George J.	L. L.C.	a.c. -	c. c.		t.	d.	m.	c.	
Mrs. B.	L. L.C.	a.c. -	c. c.					j.c.	
Helen B.	L. L.C.	a.c. -	c. c.					j.c.	
Sam. T.	L. L.C.	a.c. -	c. c.					c.	
Douglas J.	L. L.C.	a.c. -	c. c.					j.c.	
Mrs. McK.	L. L.C.	a.c. -	c. c.						
Joseph McK.	L. L.C.	a.c. -	c. c.					a.c.	
William H.	L. L.C.	a.c. -	c. c.					c.	
Jane W.	L. L.C.	a.c. -	c. c.		v.f.t. v.f.t.	a.c. a.c.			c.
Mrs. W.	L. L.C.	a.c. -	c. c.				t.	d.	c.
Mrs. B.	L. L.C.	a.c. -	c. c.						a.c. c.

NOVEMBER 15. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. McL.	L.	0.0135	0.028	0.04	0.06	0.09	0.12	0.01	0.02
	L.C.	a.c.	c.					j.c.	
		v.m.	c.						
Margt. McL.	L.	a.c.	c.						
	L.C.	v.m.	c.					j.c.	
Mrs. McG.	L.	t.	v.m.	j.c.					
	L.C.	0	t.	j.c.				c.	
Hugh McG.	L.	j.c.							
	L.C.	a.c.	c.						c.
Jeanie McF.	L.	d.	a.c.	c.					
	L.C.	-	c.						c.
George J.	L.	j.c.							
	L.C.	-	c.						c.
Mrs. B.	L.	d.	a.c.	c.					
	L.C.	-	t.	m.	a.c.	c.			j.c.
Helen B.	L.	0	0	t.	a.c.				
	L.C.	-	0	0	m.	c.			j.c.
Sam. T.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0		c.
Douglas J.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0		j.c.
Mrs. McK.	L.	0	0	f.t.	m.				
	L.C.	-	0	0	0	0	d.	m.	a.c.
Joseph McK.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
William H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0		c.
Jane W.	L.	0	0	v.f.t.	a.c.				
	L.C.	-	0	v.f.t.	a.c.	c.			c.
Mrs. W.	L.	0	0	t.	c.				
	L.C.	-	0	0	0	t.	d.		c.
Mr. W.	L.	c.							
	L.C.	-	j.c.					a.c.	c.

NOVEMBER 15. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Christina W.	L.								
Positive control	L.	0	0	0	v.m.				
	L.C.	-	0	0	0	m.	c.	c.	
Negative control	L.	a.c.	c.						
	L.C.	a.c.	c.					c.	

Emulsion controls

		1.	2.	3.
James W.	L.	0.0135	0.028	0.04
	L.C.	a.c.	c.	
	L.C.	c.		

Complement dose 1:4

		1.	2.	3.	4.
Mrs. F.	L.	0.01	0.02	0.036	0.04
	L.C.	d.	m.	j.c.	

Mr. W.	L.	a.c.	j.c.						
	L.C.	a.c.	c.					a.c.	c.
Jane A.	L.	t.	j.c.						
	L.C.	j.c.						j.c.	
Annie A.	L.	a.c.	j.c.						
	L.C.	a.c.	j.c.						c.
Willie A.	L.	a.c.	j.c.						
	L.C.	c.							c.
Penny A.	L.	a.c.	j.c.						
	L.C.	a.c.	j.c.						c.
Sarah A.	L.	a.c.	j.c.						
	L.C.	j.c.							j.c.
Jane A.	L.	0	a.c.	c.					
	L.C.	-	c.						j.c.
Annie A.	L.	m.	a.c.	j.c.					
	L.C.	-	c.						j.c.
John W.	L.	0	0	f.t.	c.				
	L.C.	-	0	0	f.t.	a.c.	c.		a.c.
Mrs. McG.	L.	a.c.	c.						
	L.C.	-	a.c.	c.					j.c.



NOVEMBER 19. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Christina W.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	d.	c.					c.	
		m.	c.						
Annie W.	L.	j.c.							
	L.C.	c.						c.	
Maggie W.	L.	c.							
	L.C.	c.						c.	
Willie W.	L.	j.c.							
	L.C.	j.c.						c.	
James W.	L.	c.							
	L.C.	j.c.						c.	
John W.	L.	c.							
	L.C.	c.						c.	
Mrs. W.	L.	a.c.	c.						
	L.C.	j.c.						c.	
Mr. W.	L.	a.c.	j.c.						
	L.C.	a.c.	c.					a.c.	c.
Jane A.	L.	t.	j.c.						
	L.C.	j.c.						j.c.	
Annie A.	L.	a.c.	j.c.						
	L.C.	a.c.	j.c.					c.	
Willie A.	L.	a.c.	j.c.						
	L.C.	c.						c.	
Fanny A.	L.	a.c.	j.c.						
	L.C.	a.c.	j.c.					c.	
Sarah A.	L.	a.c.	j.c.						
	L.C.	j.c.						j.c.	
Jane A.	L.	0	a.c.	c.					
	L.C.	-	c.					j.c.	
Annie A.	L.	m.	a.c.	j.c.					
	L.C.	-	c.					j.c.	
John W.	L.	0	0	f.t.	c.				
	L.C.	-	0	0	f.t.	a.c.	c.	a.c.	c.
Mrs. McG.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				j.c.	

NOVEMBER 19. 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
John H.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Mrs. B.	L.	v.m.	a.c.	c.					
	L.C.	-	0	f.t.	m.	a.c.	j.c.	j.c.	
Positive control	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	f.t.	f.t.	j.c.	
Negative control	L.	a.c.	c.						
	L.C.	-	c.				a.c.	c.	
Jessie S.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Jane B.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Flora S.	L.	0	0	L.	j.c.				
	L.C.	0	0	L.C.	j.c.				
Isa H.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Mrs. H.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Mr. H.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Robert S.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Jane D.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Mary D.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Isa D.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Jesse A.W.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Positive control	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	0
Emulsion control	L.	0	t.	v.m.	Complement dose = 0.01				
	L.C.	0	v.m.	a.c.					

All were re-tested.

NOVEMBER 20. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
John N.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Jean W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	t.
Sara T.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	a.c.
Bella A.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	a.c.
Jessie S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	0
Jane S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	0
Flora S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	0	0
Isa H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	v.m.
Mrs. H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	m.
Mr. H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
Robert S.	L.	0	0	0	0	0.06	0.08	0.12	
	L.C.	-	0	0	0	0	0	0	0 t.
Jane D.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	d.
Mary D.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	a.c.
Isa D.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	j.c.
James A.W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	v.m.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	c.
Emulsion control	L.	0	t.	v.m.	Complement dose = 0.01				
	L.C.	t.	v.m.	a.c.					

All were re-tested.

NOVEMBER 22. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
Annie S.	L.	0	m.	c.					
	L.C.	0	m.	c.				m.	c.
Mrs. S.	L.	f.t.	m.	c.					
	L.C.	t.	m.	c.				d.	j.c.
Bella N.	L.	t.	v.m.	c.					
	L.C.	0	v.m.	c.				a.c.	c.
Mrs. A.	L.	0	v.m.	c.					
	L.C.	0	v.m.	c.				v.m.	c.
Andrina A.	L.	0	v.m.	c.					
	L.C.	t.	v.m.	c.				v.m.	c.
Willie A.	L.	t.	v.m.	c.					
	L.C.	t.	m.	c.				c.	
James A.W.	L.	v.m.	c.						
	L.C.	m.	c.					a.c.	c.
Robert S.	L.	t.	v.m.	w.					
	L.C.	0	m.	c.				m.	j.c.
Bella McG.	L.	0	0	t.	c.				
	L.C.	-	0	0	t.	m.	v.m.	c.	
Mrs. McG.	L.	0	t.	t.	c.				
	L.C.	-	0	0	m.	v.m.	a.c.	c.	
John N.	L.	t.	c.						
	L.C.	-	v.m.	c.				v.m.	c.
Mrs. L.	L.	c.							
	L.C.	-	a.c.	c.				a.c.	c.
Mrs. A.	L.	a.c.	c.						
	L.C.	-	j.c.					c.	
Mrs. H.	L.	t.	t.	t.	c.				
	L.C.	-	0	0	t.	m.	c.	c.	
Louise C.	L.	t.	v.m.	c.					
	L.C.	-	m.	c.				c.	
Jean W.	L.	d.	v.m.	c.					
	L.C.	-	v.m.	j.c.				c.	
Sara T.	L.	v.m.	j.c.						
	L.C.	-	a.c.	c.				c.	

NOVEMBER 22. 1912 (Contd).

		1.	2.	3.	4.	5.	6.	7.	8.
Jessie S.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	t.	c.	
Jane S.	L.	0	0	0	0	0	0	0	
	L.C.	-	0	0	0	0	0	c.	
Flora S.	L.	0	0	0	0	0	0	0	
	L.C.	-	0	0	0	0	t.	c.	
Isa H.	L.	m.	c.						
	L.C.	-	a.c.	c.				c.	
Mrs. H.	L.	m.	c.						
	L.C.	-	a.c.	c.				c.	
Mr. H.	L.	m.	j.c.						
	L.C.	-	a.c.	c.				c.	
Positive control	L.	0	0	0	0	0	0	0	
	L.C.	-	0	0	0	0	0	c.	

Emulsion controls

	1.	2.	3.
James J.	0.012	0.024	0.036
	L. v. m.	c.	
	L.C. v. m.	c.	

Complement dose 1:4

	1.	2.	3.	4.
Angus G.	0.012	0.016	0.02	0.03
	m.	a.c.	a.c.	j.c.
Matilda D.				
Bella G.				
Jean D.				
Mary D.				
Isa D.				
Jessie G.				

NOVEMBER 23, 1912.

		1. 0.012	2. 0.024	3. 0.036	4. 0.05	5. 0.07	6. 0.1	7. 0.01	8. 0.02
Mrs. J.	L.	0	f.t.	d.	a.c.				
	L.C.	-	0	0	f.t.	t.	a.c.	v.m.	c.
Lizzie J.	L.	t.	d.	a.c.	c.				
	L.C.	-	0	0	t.	d.	c.	v.m.	c.
Henry J.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.
Ester H.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	v.m.	c.
John H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	m.	c.
Mrs. McK.	L.	m.	j.c.						
	L.C.	-	a.c.	c.				a.c.	c.
Annie McK.	L.	a.c.	c.						
	L.C.	-	j.c.					a.c.	c.
Mrs. J.	L.	d.	j.c.						
	L.C.	-	v.m.	c.				v.m.	c.
James J.	L.	d.	j.c.						
	L.C.	-	j.c.					m.	c.
Mrs. T.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.
Angus G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	v.m.	c.
Matilda C.	L.	0	t.	m.	a.c.				
	L.C.	-	0	0	0	0	t.	v.m.	c.
Bella C.	L.	m.	v.m.	c.					
	L.C.	-	v.m.	a.c.	c.			v.m.	c.
Jane D.	L.	m.	j.c.						
	L.C.	-	j.c.					a.c.	c.
Mary D.	L.	m.	j.c.						
	L.C.	-	j.c.					a.c.	c.
Isa D.	L.	d.	v.m.	c.					
	L.C.	-	v.m.	c.				j.c.	
Jessie Q.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	v.m.	c.

NOVEMBER 23, 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Flora L.	L.	0	t.	t.	d.				
	L.C.	-	0	0	0	f.t.	f.t.	m.	c.
Mrs. D.									
Isobel S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	c.
James D.									
Mabel J.	L.	0	0	f.t.	t.				
	L.C.	-	0	0	0	0	t.	a.c.	c.
Susan W.									
Isa C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Euphonia H.									
James S.	L.	m.	a.c.	c.					
	L.C.	-	a.c.	c.				a.c.	c.
Helen W.									
Ella S.	L.	m.	a.c.	c.					
	L.C.	-	m.	c.					c.
George G.									
Mary S.	L.	v.m.	c.						
	L.C.	-	m.	c.					c.
Hugh H.									
Negative control	L.	m.	j.c.						
	L.C.	-	j.c.					a.c.	c.

## Emulsion controls

	1.	2.	3.
	0.012	0.024	0.036

L.	j.c.
L.C.	j.c.

## Complement dose 1:4

	1.	2.	3.	4.
	0.012	0.02	0.03	0.04

m.	a.c.	j.c.	
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## Emulsion controls

	1.	2.	3.
	0.012	0.024	0.036

L.	j.c.
L.C.	c.

## Complement dose 1:4

	1.	2.	3.	4.
	0.012	0.02	0.03	0.04

t.	m.	a.c.	j.c.
----	----	------	------

NOVEMBER 26. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. D.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	-	0	0	t.	a.c.	c.	0	t.
James D.	L.	0	t.	a.c.	c.				
	L.C.	-	0	0	0	0	d.	v.m.	c.
Susan M.	L.	0	0	0	t.				
	L.C.	-	0	0	t.	d.	c.	c.	
Euphemia H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	c.	
Helen W.	L.	0	v.f.t.	v.f.t.	t.	d.			
	L.C.	-	0	v.f.t.	t.	d.	c.	a.c.	c.
George C.	L.	a.c.	a.c.	c.					
	L.C.	-	d.	c.				c.	
Hugh H.	L.	t.	d.	v.m.	a.c.				
	L.C.	-	t.	0	a.c.	a.c.	c.	a.c.	c.
Leonard W.	L.	m.	v.m.	a.c.	c.				
	L.C.	-	t.	t.	d.	v.m.	j.c.	a.c.	c.
George L.	L.	t.	m.	a.c.	c.				
	L.C.	-	m.	a.c.	c.			m.	c.
Sophia A.	L.	m.	a.c.	c.					
	L.C.	-	a.c.	c.				c.	
Ann H.	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	c.				v.m.	c.
Positive control	L.	0	t.	t.	d.				
	L.C.	-	0	t.	d.	a.c.	c.	j.c.	
Negative control	L.	t.	d.	j.c.					
	L.C.	-	m.	c.				c.	

Emulsion controls

	1.	2.	3.
L.	0.012	0.024	0.036
L.C.	a.c.	j.c.	c.

Complement dose 1:4

	1.	2.	3.	4.
L.	0.012	0.02	0.03	0.04
L.C.	t.	m.	a.c.	j.c.



NOVEMBER 27. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Phyllis C.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	0	0	0	0	0	0	m.	v.m.
Mrs. D.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	a.c.
Mary D.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	a.c.
Mary H.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	v.m.	c.
Positive control	L.	-	m.	v.m.	a.c.	c.			
	L.C.	-	-	m.	a.c.	c.		v.m.	c.
Negative control	L.	j.c.							
	L.C.	-	a.c.	c.				a.c.	c.

John G. L. v.m. L.C. j.c.

Emulsion controls

		1.	2.	3.
Robert G.	L.	0.012	0.024	0.036
	L.C.			
Hiram G.	L.			
	L.C.			

Complement dose 1:4

		1.	2.	3.	4.
Agnes T.	L.	0.012	0.02	0.03	0.04
	L.C.				
Mrs. G.	L.				
	L.C.				
Eveline C.	L.				
	L.C.				
Mrs. G.	L.	0	0	0	0
	L.C.	-	0	0	0
Isa D.	L.	d.	v.m.		
	L.C.	-	j.c.		
James D.	L.	a.c.	j.c.		
	L.C.	-	j.c.		
Mrs. A.	L.	0	0	0	0
	L.C.	-	0	0	0

NOVEMBER 29. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Annie A.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	-	0	t.	-	a.c.	c.	j.c.	
Mrs. S.	L.	t.	j.c.						
	L.C.	-	c.					j.c.	
Mrs. S.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
Mrs. O'B.	L.	t.	d.	c.					
	L.C.	-	c.					j.c.	
Julia P.	L.	v.m.	a.c.	c.					
	L.C.	-	c.					j.c.	
Mrs. G.	L.	0	-	0	j.c.				
	L.C.	-	0	0	0	0	0	v.m.	c.
John G.	L.	v.m.	c.						
	L.C.	-	j.c.					c.	
Robert G.	L.	c.							
	L.C.	-	c.					c.	
Niven G.	L.	c.							
	L.C.	-	c.					c.	
Agnes T.	L.	c.							
	L.C.	-	c.					j.c.	
Mrs. C.	L.	t.	t.	m.	j.c.				
	L.C.	-	t.	v.m.	a.c.	j.c.	c.	a.c.	c.
Bessie C.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
Mrs. G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	f.t.	v.m.	c.
Isa D.	L.	d.	v.m.	c.					
	L.C.	-	j.c.					c.	
James D.	L.	a.c.	j.c.						
	L.C.	-	j.c.					c.	
Mrs. A.	L.	0	0	0	v.m.				
	L.C.	-	0	0	0	d.	c.	c.	

NOVEMBER 29, 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Henry G.	L.	t.	m.	j.c.					
	L.C.	-	d.	a.c.	j.c.			j.c.	
Marion S.	L.	d.	a.c.	c.					
	L.C.	-	j.c.					j.c.	
Positive control	L.	0	0	0	d.				
	L.C.	-	0	0	t.	m.	a.c.	j.c.	
Negative control	L.	v.m.	c.						
	L.C.	-	j.c.					j.c.	
Emulsion controls					1.	2.	3.		
					0.012	0.024	0.036		
					L.	j.c.			
					L.C.	c.			
Complement dose 1:4					1.	2.	3.	4.	
					0.01	0.012	0.02	0.03	
					t.	m.	a.c.	j.c.	

DECEMBER 3, 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
		0.015	0.025	0.04	0.06	0.09	0.12	0.012	0.024
Mrs. M.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	v.m.	a.c.
Muriel M.	L.	0	0	0	f.t.				
	L.C.	0	0	0	f.t.			v.m.	a.c.
Minnie A.	L.	0	f.t.	d.	v.m.				
	L.C.	-	0	f.t.	f.t.	d.	d.	v.m.	j.c.
Alick G.	L.	t.	d.	v.m.	j.c.				
	L.C.	0	t.	d.	a.c.			v.m.	a.c.
Mrs. M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0		v.m.	a.c.
Jane M.	L.	0	0	0	0				
	L.C.	-	0	0	0	f.t.		m.	a.c.
Mrs. O'B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	v.m.
James A.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	m.	v.m.
Martha T.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	v.m.
Mrs. T.	L.	0	0	0	0	t.			
	L.C.	-	0	0	0	f.t.	f.t.	v.m.	j.c.
James McG.	L.	t.	v.m.	j.c.					
	L.C.	-	v.m.	j.c.				v.m.	c.
Mrs. McG.	L.	0	0	d.	d.				
	L.C.	-	0	0	d.	d.	d.	a.c.	j.c.
Mrs. W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	v.m.
Sam W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	v.m.
Minnie McC.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	v.m.
Mrs. A.	L.	a.c.	j.c.						
	L.C.	-	c.					a.c.	c.

DECEMBER 3, 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
David D.	L.								
Mary C.	L.C.	0	0	0	0	0	0	d.	c.
	L.C.	-	0	0	0	0	0	d.	c.
Positive control	L.C.	0	0	0	f.t.	0	0	m.	a.c.
	L.C.	-	0	0	0	d.	a.c.	v.m.	a.c.
Negative control	L.C.	m.	a.c.	c.				v.m.	a.c.
	L.C.	-	v.m.	j.c.				m.	j.c.
Mrs. G.	L.	0	0	0	t.	d.			
	L.C.	-	0	0	0	0	v.m.	d.	v.m.
		Emulsion controls			1.	2.	3.		
Mrs. McN.	L.				0.015	0.025	0.04		
	L.C.	-			L. v.m.	a.c.	c.		
	L.C.	-			L.C. c.				
Missie H.	L.	0	0	0	t.	d.			
	L.C.	-	0	0	0	0	v.m.	d.	v.m.
		Complement dose 1:4			1.	2.	3.	4.	
Miss S.	L.	0	0	v.f.t.	0.024	0.032	0.04	0.052	
	L.C.	-	0	0	t.	a.c.	j.c.	c.	
Miss B.	L.	0	0	0	0	0	0	t.	v.m.
	L.C.	-	0	0	0	0	0	t.	v.m.
Mary J.	L.	0	0	0	0	0	0	c.	
	L.C.	-	0	0	0	0	0	c.	
Positive control	L.	0	f.t.	d.	v.m.				
	L.C.	-	0	t.	d.	a.c.	j.c.	d.	a.c.
Negative control	L.	t.	v.m.	j.c.					
	L.C.	-	v.m.	j.c.				d.	a.c.
		Emulsion controls			1.	2.	3.		
	L.				0.012	0.024	0.036		
	L.C.	-			L. v.m.	a.c.	j.c.		
	L.C.	-			L.C. v.m.	a.c.	j.c.		
		Complement dose 1:4			1.	2.	3.	4.	
	L.				0.01	0.02	0.03	0.04	
	L.C.	-			0	t.	d.	a.c.	

DECEMBER 5, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
David D.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	f.t.	t.	m.	v.m.				
	L.C.	-	f.t.	t.	m.	a.c.	j.c.	d.	a.c.
Willie D.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	a.c.
Mrs. C.	L.	d.	a.c.						
	L.C.	-	j.c.					v.m.	a.c.
Mary C.	L.	0	t.	d.					
	L.C.	-	0	t.	d.	m.		f.t.	t.
Mrs. G.	L.	0	0	0	t.	d.			
	L.C.	-	0	0	0	0	v.m.	d.	v.m.
Mrs. McN.	L.	t.	m.	j.c.					
	L.C.	-	m.	v.m.	a.c.	a.c.	j.c.	t.	a.c.
Nettie W.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	t.	j.c.
Minnie B.	L.	0	0	f.t.	f.t.				
	L.C.	-	0	0	0	0	f.t.	m.	c.
Mina S.	L.	0	0	v.f.t.	t.				
	L.C.	-	0	0	0	0	0	m.	j.c.
Edith B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	v.m.
Mary J.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	a.c.
Positive control	L.	0	f.t.	d.	v.m.				
	L.C.	-	0	t.	d.	a.c.	j.c.	d.	a.c.
Negative control	L.	t.	v.m.	j.c.					
	L.C.	-	v.m.	j.c.				d.	a.c.

Emulsion controls 1. 2. 3.

0.012 0.024 0.036

L. v.m. a.c. j.c.

L.C. v.m. a.c. j.c.

Complement dose 1:4 1. 2. 3. 4.

0.01 0.02 0.03 0.04

0 t. d. a.c.

DECEMBER 6. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.015	0.025	0.04	0.06	0.09	0.12	0.012	0.024
Sybil T.	L.	0	t.	m.	j.c.				
	L.C.	-	t.	a.c.	j.c.			d.	c.
Mrs. H.	L.	0	0	0	t.				
	L.C.	-	0	0	t.	m.	m.	t.	v.m.
Mrs. A.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	m.	m.	a.c.
Mary C.	L.	0	0	0	f.t.				
	L.C.	-	0	0	t.	c.		t.	m.
Mrs. C.	L.	0	t.	v.m.	a.c.				
	L.C.	-	t.	d.	v.m.	c.		d.	a.c.
Winifred E.S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	d.
Mrs. McL.	L.	0	0	0	f.t.				
	L.C.	-	0	0	f.t.	v.m.	a.c.	d.	v.m.
Mrs. McN.	L.	0	0	t.	t.				
	L.C.	-	t.	t.	t.	m.	c.	t.	v.m.
Edna L.	L.	0	0	t.	m.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. C.	L.	c.							
	L.C.	-	j.c.					c.	
Positive control	L.	0	f.t.	d.	a.c.				
	L.C.	-	0	t.	t.	v.m.	a.c.	t.	a.c.
Negative control	L.	v.m.	c.						
	L.C.	v.m.	a.c.	c.				j.c.	

Emulsion controls	1.	2.	3.
	0.015	0.025	0.04
L.	v.m.	c.	
L.C.	m.	a.c.	c.

Complement dose 1:4	1.	2.	3.	4.
	0.02	0.03	0.04	0.044
	0	t.	d.	j.c.

DECEMBER 9, 1912. (contd.)

		1. 0.015	2. 0.025	3. 0.04	4. 0.06	5. 0.09	6. 0.12	7. 0.015	8. 0.025
Mr. A.	L.	0	t.	m.	j.c.				
	L.C.	-	0	0	t.	v.m.	c.	v.m.	a.c.
Mrs. C.	L.	0	d.	a.c.	j.c.				
	L.C.	-	0	t.	v.m.	j.c.		v.m.	a.c.
Mary C.	L.	t.	d.	a.c.	j.c.				
	L.C.	-	0	t.	m.	v.m.	a.c.	a.c.	j.c.
Bridget J.	L.	f.t.	f.t.	f.t.	v.m.				
	L.C.	-	0	t.	d.	v.m.	a.c.	m.	a.c.
Isa D.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	c.
Flora G.	L.	v.m.	a.c.	c.	v.m.	j.c.			
	L.C.	-	d.	m.	v.m.	j.c.		m.	c.
Lily T.	L.	d.	m.	a.c.	j.c.				
	L.C.	-	0	t.	t.	d.	m.	v.m.	j.c.
Bridget O'H.	L.	f.t.	v.m.	a.c.	j.c.				
	L.C.	-	0	t.	d.	a.c.		m.	a.c.
Sarah G.	L.	0	f.t.	m.	v.m.				
	L.C.	-	0	0	f.t.	t.	d.	d.	v.m.
Lewis R.	L.	v.m.	a.c.	j.c.					
	L.C.	-	v.m.	a.c.	j.c.			v.m.	j.c.
Janie G.	L.	0	f.t.	v.m.	c.				
	L.C.	-	0	t.	m.	v.m.	a.c.	d.	v.m.
Patrick H.	L.	m.	v.m.	j.c.					
	L.C.	-	m.	v.m.	c.			v.m.	j.c.
Susan McG.	L.	0	0	t.	c.				
	L.C.	-	0	0	0	t.	t.	a.c.	c.
Felix S.	L.	0	0	0	c.				
	L.C.	-	0	0	0	t.	d.	v.m.	c.
Positive control	L.	0	0	0	m.				
	L.C.	-	0	0	0	d.	a.c.	v.m.	a.c.



DECEMBER 9. 1913 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Negative control	L.	m.	v.m.	j.c.					
	L.C.	-	m.	a.c.	j.c.			v.m.	a.c.
Margie C.W.	L.	0	0	0	0	0	0	d.	v.m.
	L.C.	-	0	0	0	0	0		
Ester H.	L.	0	0	0	0	0	0	m.	a.c.
	L.C.	-	0	0	0	0	0		
Emulsion controls				1.	2.	3.			
	L.			0.015	0.025	0.04			
	L.C.			L.	a.c.	j.c.			
				L.C.	v.m.	a.c.	j.c.		
Margt. H.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
Ellie P.	L.	0	0	0	f.t.	0	f.t.	v.m.	j.c.
	L.C.	-	0	0	0	0	0		
Complement dose 1:4				1.	2.	3.	4.		
	L.			0.03	0.04	0.05	0.06		
	L.C.			0	t.	m.	a.c.		
Mrs. G.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
Mr. G.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
John G.	L.	0	0	0	a.c.				
	L.C.	-	0	0	a.c.	j.c.			
Lee P.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
Walter G.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
John M.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
Positive control	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
Negative control	L.	d.	v.m.	j.c.					
	L.C.	-	j.c.						
Emulsion controls				1.	2.	3.			
	L.			0.012	0.024	0.036			
	L.C.			L.	a.c.	c.			
				L.C.	v.m.	j.c.			
Complement dose 1:4				1.	2.	3.	4.		
	L.			0.012	0.014	0.02	0.03		
	L.C.			m.	v.m.	j.c.			

DECEMBER 11. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
Mary O'R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	v.m.
Maggie O'H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	v.m.
Ester H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	a.c.
Margt. H.	L.	0	0	0	d.				
	L.C.	-	0	0	0	0	t.	j.c.	
Eliz. P.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	f.t.	v.m.	j.c.
Andrina A.	L.	0	0	f.t.	t.				
	L.C.	-	0	0	t.	j.c.		m.	j.c.
Mrs. G.	L.	0	0	m.	m.				
	L.C.	-	0	0	0	d.	c.	m.	j.c.
Mr. G.	L.	0	0	t.	d.				
	L.C.	-	0	0	m.	c.		m.	j.c.
Baby G.	L.	0	0	t.	a.c.				
	L.C.	-	0	t.	a.c.	j.c.		m.	a.c.
Isa F.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	f.t.	m.	v.m.
Helen G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Joan M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	v.m.	j.c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Negative control	L.	d.	v.m.	j.c.					
	L.C.	-	j.c.				j.c.		

## Emulsion controls

	1.	2.	3.
	0.012	0.024	0.036

	L.	L.C.
	m. a.c.	c.
	v.m.	j.c.

## Complement dose 1:4

	1.	2.	3.	4.
	0.012	0.014	0.02	0.03
	m.	v.m.	j.c.	

DECEMBER 12. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Agnes M.	L.	0.015	0.025	0.04	0.06	0.09	0.12	0.012	0.024
	L.C.	0	0	0	c.	0	0	t.	c.
Jane M.	L.	0	t.	d.	c.				
	L.C.	-	0	0	0	f.t.	d.	a.c.	c.
Catherine O'F.	L.	0	t.	d.	c.				
	L.C.	-	0	0	t.	d.	m.	c.	
Susan O'F.	L.	0	0	t.	c.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Bridget O'F.	L.	0	d.	d.	c.				
	L.C.	-	0	0	0	m.	v.m.	c.	
Rachel O'S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Joan O'S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Sara M.	L.	0	t.	d.	c.				
	L.C.	-	0	0	0	t.	d.	c.	
Clara S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Agnes L.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Kate G.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	0	c.	
Nora W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
William D.	L.	a.c.	c.						
	L.C.	-	c.					c.	
James L.	L.	c.							
	L.C.	-	c.					a.c.	c.
Hugh S.	L.	c.							
	L.C.	-	c.					j.c.	
Mr. McC.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mrs. McC.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	a.c.	c.

DECEMBER 12. 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. C.	L:	0.012	0.024	0.036	0.05	0.07	0.1	0.15	0.2
Negative control	L:	a.c.	c.	c.	a.c.	j.c.	v.m.	j.c.	
	L.C:	-	c.					c.	
Positive control	L:	0	0	0	0	0	a.c.	j.c.	
	L.C:	-	0	0	0	0	t.	a.c.	c.

Mrs. V.	L:	v.m.	a.c.	j.c.					
	L.C:	-							
James Y.	L:	v.m.	a.c.	j.c.	L.	a.c.	c.		
	L.C:	-	v.m.		L.C.	a.c.	c.	a.c.	c.

Mrs. L.	L:	t.	t.	d.	j.c.				
	L.C:	-	t.	t.	v.m.	j.c.	a.c.	c.	
Mrs. J.	L:	0	t.t.	t.t.	v.m.	0.016	0.024	0.032	0.044
	L.C:	-	0	t.t.	t.	t.	m.	v.m.	j.c.

Patrick C.	L:	0	0	t.	d.				
	L.C:	-	0	0	t.t.	t.	v.m.	a.c.	
Mrs. H.	L:	0	0	0	0	0	0	m.	j.c.
	L.C:	-	0	0	0	0	0		

Jessie H.	L:	m.	a.c.						
	L.C:	-	0	0	t.	j.c.	a.c.	j.c.	
Positive control	L:	0	0	0	0	0	0	a.c.	c.
	L.C:	-	0	0	0	0	0		
Negative control	L:	a.c.	j.c.						
	L.C:	-	j.c.						

Emulsion controls	1.	2.	3.
	0.012	0.024	0.036
L.	a.c.	c.	
L.C.	v.m.	j.c.	

Complement dose 1:4	1.	2.	3.	4.
	0.012	0.016	0.02	0.03
	t.	d.	v.m.	a.c.

DECEMBER 13. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. C.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	m.	a.c.	j.c.					
Mrs. D.	L.	f.t.	d.	a.c.	j.c.				
	L.C.	-	f.t.	m.	j.c.			a.c.	j.c.
Mrs. W.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
Mrs. V.	L.	v.m.	a.c.	j.c.					
	L.C.	-	d.	a.c.	a.c.	j.c.		-	c.
James V.	L.	v.m.	a.c.	j.c.					
	L.C.	-	v.m.	t.				a.c.	c.
Mrs. L.	L.	t.	t.	d.	j.c.				
	L.C.	-	t.	t.	v.m.	j.c.		a.c.	c.
Mrs. C.	L.	0	f.t.	f.t.	v.m.				
	L.C.	-	0	f.t.	t.	a.c.	c.	j.c.	
Patrick C.	L.	0	0	t.	d.				
	L.C.	-	0	0	f.t.	t.	v.m.	c.	
Mrs. H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	j.c.
Jessie H.	L.	m.	a.c.						
	L.C.	-	0	0	t.	j.c.		a.c.	j.c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Negative control	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	

Emulsion controls	1.	2.	3.
	0.012	0.024	0.036
L.	a.c.	c.	
L.C.	v.m.	j.c.	

Complement dose 1:4	1.	2.	3.	4.
	0.012	0.016	0.02	0.03
	t.	d.	v.m.	a.c.

DECEMBER 16, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. C.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
	L.C.	-	m.	v.m.	j.c.			v.m.	j.c.
Mrs. W.	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				a.c.	j.c.
Mrs. D.	L.	0	v.m.	j.c.					
	L.C.	-	m.	c.				v.m.	j.c.
James V.	L.	v.m.	a.c.	j.c.					
	L.C.	-	f.t.	d.	m.	v.m.	a.c.	a.c.	j.c.
Matthew L.	L.	m.	v.m.	a.c.	j.c.				
	L.C.	-	t.	t.	m.	v.m.	a.c.	v.m.	a.c.
Elizabeth L.	L.	v.m.	j.c.						
	L.C.	-	m.	v.m.	c.			a.c.	j.c.
Margt. L.	L.	m.	j.c.						
	L.C.	-	m.	v.m.	j.c.			v.m.	a.c.
Mina W.	L.	0	0	0	j.c.				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	a.c.
Negative control	L.	v.m.	j.c.						
	L.C.	-	v.m.	c.				a.c.	j.c.

	1.	2.	3.
Emulsion controls	0.012	0.024	0.036
L.	a.c.	j.c.	
L.C.	a.c.	a.c.	j.c.

	1.	2.	3.	4.
Complement dose 1:4	0.016	0.024	0.03	0.04
L.	m.	a.c.	j.c.	

DECEMBER 17. 1912.

(Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. S.	L.	0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
Jessie	L.C.	0	0	0	t.	t.	a.c.	d.	j.c.
Ester S.	L.	m.	j.c.						
John W.	L.C.	-	c.					j.c.	
Mrs. B.	L.	0	0	t.	j.c.				
	L.C.	-	t.	d.	j.c.			d.	j.c.
Joseph B.	L.	f.t.	f.t.	t.	j.c.				
	L.C.	-	f.t.	m.	j.c.			d.	j.c.
Elizabeth T.	L.	0	m.	a.c.	t.				
	L.C.	-	d.	j.c.				a.c.	c.
Nicholas O'B.	L.	0	f.t.	a.c.	c.				
	L.C.	-	f.t.	t.	a.c.	c.		v.m.	c.
Andrew H.	L.	m.	j.c.						
	L.C.	-	a.c.	c.				d.	j.c.
Robert C.	L.	d.	j.c.						
	L.C.	-	a.c.	j.c.				m.	c.
Alexina S.	L.	0	f.t.	a.c.	c.				
	L.C.	-	0	0	t.	d.	v.m.	t.	a.c.
Bethia S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	t.	a.c.
Julia P.	L.	0	0	t.	v.m.				
	L.C.	-	0	0	0	t.	v.m.	v.m.	j.c.
Jemima M.	L.	t.	m.	a.c.	c.				
	L.C.	-	0	f.t.	t.	j.c.		d.	j.c.
Marion M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	v.m.
Agnes M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	t.	t.	v.m.
Susan R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	v.m.
Bridget R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	a.c.

DECEMBER 17. 1912 (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.	
Elizabeth L.	L.	f.t.	d.	v.m.	j.c.					
Jessie C.	L.C.	t.	m.	c.				t.	a.c.	
Margaret L.	L.	t.	m.	a.c.	c.					
John W.	L.C.	f.t.	t.	v.m.	c.			m.	j.c.	
Positive control	L.	0	d.	j.c.						
	L.C.	-	0	0	0	t.	a.c.	t.	a.c.	
Negative control	L.	t.	a.c.	j.c.						
	L.C.	f.t.	m.	j.c.				v.m.	j.c.	
Amie H.	L.									
	L.C.	-	0	0	0	0	0	v.m.	j.c.	
Suzanna W.	L.									
	L.C.	-	0	0	0	0	0		j.c.	
		Emulsion controls			1.	2.	3.			
Florence G.	L.				0.012	0.024	0.036			
	L.C.	-	0	L.	a.c.	j.c.				
				L.C.	v.m.	j.c.				
Martha G.	L.	f.t.	j.c.							
	L.C.	-	0	0	t.	j.c.	v.m.	c.		
Jean G.	Complement dose 1:4				1.	2.	3.	4.		
	L.C.	-	0	0	0.012	0.024	0.03	0.04		
					t.	v.m.	a.c.	j.c.		
Annie G.	L.	0	0	0	0	0	0			
	L.C.	-	0	0	0	0	0			
Susan R.	L.									
	L.C.	-								
Mrs. R.	L.	v.m.	c.							
	L.C.	-	c.							
Hannie P.	L.	d.	a.c.	j.c.						
	L.C.	-	v.d.	j.c.				v.m.	j.c.	
Sally F.	L.	t.	a.c.	j.c.						
	L.C.	-	v.m.	j.c.				v.m.	j.c.	
Positive control	L.	0	0	0	0	0	0			
	L.C.	-	0	0	0	0	0	v.m.	j.c.	
Negative control	L.	a.c.	c.							
	L.C.	c.								
		Emulsion controls			0.012	0.024	Complement dose = 0.01			
	L.			j.c.						
	L.C.			c.						



DECEMBER 18. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
Elizabeth L.	L.	d.	j.c.						
	L.C.	-	0	m.	a.c.	a.c.	c.	v.m.	c.
Margaret L.	L.	t.	j.c.						
	L.C.	-	0	f.t.	f.t.	m.	c.	j.c.	
Maria H.	L.	0	f.t.	m.	a.c.				
	L.C.	-	0	0	f.t.	t.	v.m.	a.c.	c.
Bella H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Annie H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
Susanna W.	L.	t.	a.c.	c.					
	L.C.	-	0	t.	m.	c.		j.c.	
Florence C.	L.	0	0	f.t.	a.c.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Martha C.	L.	f.t.	j.c.						
	L.C.	-	0	0	t.	j.c.		v.m.	c.
Joan C.	L.	f.t.	a.c.	c.					
	L.C.	-	0	0	d.	j.c.		j.c.	
Annie C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0		d.	c.
Susan R.	L.	m.	c.						
	L.C.	-	c.					a.c.	c.
Mrs. R.	L.	v.m.	c.						
	L.C.	-	c.					c.	
Lizzie F.	L.	d.	a.c.	j.c.					
	L.C.	-	v.m.	j.c.				v.m.	j.c.
Sally F.	L.	t.	a.c.	j.c.					
	L.C.	-	v.m.	j.c.				v.m.	j.c.
Positive control	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
Negative control	L.	a.c.	c.						
	L.C.	c.							
Emulsion controls		0.012	0.024						
	L.	j.c.							
	L.C.	c.							
Complement dose = 0.01									

DECEMBER 19. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. C.	L.	0	f.t.	t.	t.				
	L.C.	-	0	f.t.	f.t.	f.t.	m.	c.	
Mrs. H.	L.	0	f.t.	f.t.	f.t.				
	L.C.	-	0	f.t.	f.t.	t.	t.	d.	v.m.
Mrs. G.	L.	0	f.t.	t.	d.				
	L.C.	-	0	0	0	f.t.	t.	a.c.	c.
Mrs. McD.	L.	0	f.t.	f.t.	t.				
	L.C.	-	0	0	0	0	m.	c.	
Mrs. H.	L.	0	f.t.	m.	a.c.				
	L.C.	-	0	f.t.	f.t.	t.	j.c.	a.c.	c.
Positive control	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	m.	c.
Negative control	L.	v.f.t.	f.t.	t.	m.				
	L.C.	f.t.	t.	d.	a.c.	c.	j.c.	j.c.	

Emulsion controls 1. 2. 3.  
0.012 0.024 0.036

L. 0 0 0  
L.C. 0 0 0

Complement dose 1:4 1. 2. 3. 4.  
0.012 0.016 0.02 0.03  
d. a.c. j.c.

All were retested.

DECEMBER 20. 1912.

		1. 0.015	2. 0.025	3. 0.04	4. 0.06	5. 0.09	6. 0.12	7. 0.012	8. 0.024
Matilda G.	L.	0	f.t.	m.	a.c.				
	L.C.	-	0	0	t.	c.		0	m.
Clara H.	L.	0	0	f.t.	j.c.				
	L.C.	-	0	0	t.	t.	c.	0	v.m.
Ina C.	L.	0	f.t.	d.	j.c.				
	L.C.	-	0	0	0	d.	c.	0	d.
Robert McG.	L.	0	m.	j.c.					
	L.C.	-	t.	a.c.	c.			j.c.	c.
Mrs. G.	L.	m.	a.c.	j.c.					
	L.C.	-	0	m.	j.c.			j.c.	c.
Lizzie G.	L.	a.c.	a.c.	j.c.					
	L.C.	-	v.m.	j.c.				a.c.	j.c.
Maimie McI.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
James J. McI.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	a.c.
Mrs. C.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	a.c.	j.c.
Christina C.	L.	0	0	0	m.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Jean W.	L.	v.m.	a.c.	j.c.					
	L.C.	-	m.	j.c.				a.c.	j.c.
Annie W.	L.	0	v.m.	a.c.	c.				
	L.C.	-	f.t.	v.m.	c.			v.m.	j.c.
Sally W.	L.	v.m.	a.c.	c.					
	L.C.	-	m.	c.				j.c.	
Mrs. G.	L.	0	0	f.t.	t.				
	L.C.	-	0	0	0	0	t.	j.c.	
Mrs. H.	L.	0	0	t.	v.m.				
	L.C.	-	0	0	0	0	0	m.	j.c.
Mrs. McD.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	v.m.	j.c.

DECEMBER 20, 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Blanche D.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. C.	L.	0	0	0	v.m.				
	L.C.	-	0	0	0	0	0	m.	a.c.
Mrs. H.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	m.	m.	v.m.
Positive control	L.	0	0	0	m.				
	L.C.	-	0	0	0	d.	c.	f.t.	m.
Negative control	L.	c.							
	L.C.	j.c.						j.c.	

Emulsion controls 1. 2. 3.  
 0.015 0.025 0.04  
 L. a.c. j.c.  
 L.C. j.c.

Complement dose 1:4 1. 2. 3. 4.  
 0.032 0.044  
 a.c. j.c.

DECEMBER 25, 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
Blanche D.	L.	0	f.t.	c.					
	L.C.	-	0	0	m.	v.m.	a.c.	t.	j.c.
Henry E.	L.	v.m.	c.						
	L.C.	-	c.					a.c.	c.
Mary W.	L.	t.	d.	c.					
	L.C.	-	0	t.	d.	v.m.	c.	c.	
James D.	L.	c.							
	L.C.	-	c.					c.	
Patricia O'N.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0	t.	a.c.
Bridget F.	L.	c.							
	L.C.	-	0	t.	a.c.	c.		c.	
May B.	L.	d.	c.						
	L.C.	-	c.					c.	
Katie F.	L.	t.	c.						
	L.C.	-	0	0	0	a.c.	j.c.	c.	
Jean H.	L.	t.	d.	c.					
	L.C.	-	0	t.	m.	a.c.	c.	c.	
John H.	L.	c.							
	L.C.	-	c.					c.	
Theresa L.	L.	0	t.	c.					
	L.C.	-	0	t.	m.	v.m.	a.c.	a.c.	c.
Jemima C.	L.	0	0	c.					
	L.C.	-	0	0	t.	v.m.	a.c.	c.	
Mrs. B.	L.	c.							
	L.C.	-	c.					c.	
John B.	L.	c.							
	L.C.	-	c.					c.	
David B.	L.	j.c.							
	L.C.	-	c.					c.	
Robina R.	L.	0	d.	c.					
	L.C.	-	0	t.	m.	v.m.	a.c.	c.	

DECEMBER 25. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Susan R.	L.	0	0	t.	m.				
	L.C.	-	0	0	0	0	t.	c.	
Maggie G.	L.	0	0	t.	j.c.				
	L.C.	-	0	0	0	v.m.	a.c.	c.	
Catherine G.	L.	0	t.	c.					
	L.C.	-	0	t.	d.	j.c.		c.	
Margaret McI.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Joan M.	L.	0	d.	c.					
	L.C.	-	0	t.	m.	j.c.		c.	
Joan B.	L.	f.t.	t.	c.					
	L.C.	-	0	f.t.	d.	m.	a.c.	c.	
Positive control	L.	t.	c.						
	L.C.	-	f.t.	t.	a.c.	c.		c.	
Negative control	L.	c.							
	L.C.	-	c.					c.	

Emulsion controls      1.      2.      3.  
    0.012 0.024 0.036  
    L.      c.  
    L.C.    c. (brown)

Complement dose 1:4    1.      2.      3.      4.  
    0.016 0.024 0.032 0.04  
    v.m. j.c.

DECEMBER 27. 1912.

		1.	2.	3.	4.	5.	6.	7.	8.
Flora C.	L.	0.015	0.025	0.04	0.06	0.09	0.12	0.012	0.024
	L.C.	0	0	0	0	0	0	c.	
Jeanie G.	L.	0	0	0	0	0	t.	c.	
	L.C.	-	0	0	0	0	t.	c.	
Eliza C.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Jemima F.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Helen C.	L.	0	t.	c.					
	L.C.	-	0	0	0	t.	d.	c.	
Ada L. E.	L.	0	t.	c.					
	L.C.	-	0	0	0	0	0	a.c.	c.
James F.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Negative control	L.	j.c.							
	L.C.	j.c.						c.	
David R.	L.								
	L.C.	-						t.	j.c.
James R.	L.	Emulsion controls			1.	2.	3.		
	L.C.	-			0.015	0.025	0.04		j.c.
					L.	a.c.	c.		
Patrick R.	L.				L.C.	a.c.	c.		
	L.C.	-							v.m. j.c.
Leonard R.	L.	Complement dose 1:4			1.	2.	3.	4.	
	L.C.	-			0.012	0.024	0.032	0.044	
					t.	d.	v.m.	c.	
Sophia R.	L.	0	0	0	0	0	0		
	L.C.	-	0	0	0	0	0		
Bridget R.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	t.	a.c.	
Anne R.	L.	0	t.	c.					
	L.C.	-	0	0	0	t.	t.	j.c.	
Maria R.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	a.	a.c.	c.

DECEMBER 29. 1912.

		1. 0.012	2. 0.024	3. 0.036	4. 0.05	5. 0.07	6. 0.1	7. 0.01	8. 0.02
Mrs. W.	L.	0	t.	a.c.	c.				
	L.C.	-	0	0	t.	d.	m.	a.c.	c.
Janet R.	L.	0	0	0	a.c.				
	L.C.	-	0	0	0	m.	a.c.	d.	j.c.
Mrs. C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	j.c.
Mrs. C.	L.	m.	c.						
	L.C.	-	c.					a.c.	c.
James A.	L.	a.c.	c.						
	L.C.	-	c.					v.m.	c.
Andrew L.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				v.m.	c.
Mary Y.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.
William R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
David R.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	j.c.	
James R.	L.	0	0	0	d.				
	L.C.	-	0	0	0	0	t.	j.c.	
Patrick R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
Leonard R.	L.	0	0	0	d.				
	L.C.	-	0	0	0	t.	m.	a.c.	c.
Sophia R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Bridget R.	L.	0	0	t.	d.				
	L.C.	-	0	0	0	0	t.	a.c.	c.
Anne R.	L.	0	t.	m.	c.				
	L.C.	-	0	0	0	t.	t.	j.c.	
Maria R.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	m.	a.c.	c.



DECEMBER 29. 1912. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Hannah R.	L.	0	c.						
	L.C.	-	0	0	0	a.c.	c.	m.	a.c.
Mr. R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	c.
Peter M.	L.	0	t.	d.	c.				
	L.C.	-	0	0	0	t.	a.c.	v.m.	c.
James M.	L.	0	0	c.					
	L.C.	-	0	0	0	m.	j.c.	c.	
John M.	L.	0	0	0	a.c.				
	L.C.	-	0	0	0	d.	m.	c.	
William M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	j.c.
Mary M.	L.	0	t.	d.	v.m.				
	L.C.	-	0	0	0	0	m.	v.m.	j.c.
Maggie M.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	j.c.	
Pietro G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	c.
Carlo G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	c.
Antonio G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Julia G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	c.
Amelia G.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Negative control	L.	t.	a.c.	c.					
	L.C.	t.	a.c.	c.				v.m.	c.

Emulsion controls 0.012 0.024 0.036 Complement dose = 0.01  
L. d. j.c. c.  
L.C. d. a.c. e.



JANUARY 18. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
Mrs. McD.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Robert McD.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mrs. M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
John M.	L.	0	t.	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	c.
John R.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Agnes McD.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mrs. W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Mrs. S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. McK.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Mrs. T.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Charlotte C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
H.F.W.	L.	c.							
	L.C.	c.						a.c.	c.
Bessie D.	L.	0	m.	v.m.	j.c.				
	L.C.	-	0	0	f.t.	d.	c.	j.c.	
Annie W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
John W.	L.	f.t.	f.t.	f.t.	t.				
	L.C.	-	0,	f.t.	t.	d.	j.c.	j.c.	

JANUARY 18. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Positive control	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	j.c.	
Negative control	L.	f.t.	f.t.	t.	v.m.				
	L.C.	-	0	0	0	0	0	0	0

Emulsion controls		1.	2.	3.
	L.	0.012	0.024	0.035
	L.C.	v.m.	d.	c.
	L.C.	m.	0	0

Complement dose 1:4		1.	2.	3.	4.
	L.	0.012	0.024	0.03	0.04
	L.C.	m.	v.m.	j.c.	

At the end of two hours the serum of H.F.W. was completely lysed. There was no lysis in any of the other sera. All were incubated for six hours. All were retested.

Mrs. McD.	L.	0	0	0	0	0	0	0	0
	L.C.	0	0	0	0	0	0	0	j.c.
Robert McD.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Positive control	L.	c.	d.	m.	v.m.	c.	j.c.		
	L.C.	-							
Negative control	L.	c.							
	L.C.	-	j.c.						
Emulsion controls		0.012	0.024	Complement dose = 0.0025					
	L.	c.							
	L.C.	j.c.							

JANUARY 21. 1913.

		1. 0.012	2. 0.024	3. 0.035	4. 0.05	5. 0.07	6. 0.1	7. 0.01	8. 0.02
John D.	L.	c.							
	L.C.	-	v.f.t.	v.f.t.	v.m.	v.m.	j.c.	c.	
Mrs. W.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	v.m.	c.
Mrs. S.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	c.	
Mrs. McK.	L.	0	0	f.t.	m.				
	L.C.	-	0	0	0	0	0	c.	
Mrs. T.	L.	t.	a.c.	c.					
	L.C.	-	0	0	t.	d.	v.m.	c.	
Charlotte C.	L.	0	t.	c.					
	L.C.	-	0	0	f.t.	t.	a.c.	c.	
Agnes McD.	L.	m.	c.						
	L.C.	-	0	0	t.	m.	c.	c.	
Mrs. R.	L.	0	0	0	f.t.	0			
	L.C.	-	0	0	0	0	0	a.c.	c.
John R.	L.	0	0	0	0	0			
	L.C.	-	0	0	0	0	0	a.c.	c.
John M.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. M.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. McD.	L.	0	0	0	0				
	L.C.	0	0	0	0	0	0	j.c.	
Robert McD.	L.	0	0	t.	t.				
	L.C.	-	0	0	0	0	0	c.	
Positive control	L.	c.							
	L.C.	-	d.	m.	v.m.	c.		j.c.	
Negative control	L.	c.							
	L.C.	-	j.c.					c.	

Emulsion controls 0.012 0.024 Complement dose = 0.0075  
 L. c.  
 L.C. j.c.

JANUARY 22, 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Matilda A.	L.	0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
	L.C.	v.m.	j.c.					v.m.	c.
Mary D.	L.	t.	a.c.	c.					
	L.C.	-	c.					a.c.	c.
Helen F.	L.	d.	c.						
	L.C.	-	v.m.	j.c.				a.c.	c.
Jeanie B.	L.	m.	c.						
	L.C.	-	v.m.	c.				j.c.	
John C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	a.c.
James Q.	L.	m.	a.c.	c.					
	L.C.	-	v.m.	j.c.				m.	c.
Robert R.	L.	v.m.	c.						
	L.C.	-	v.m.	j.c.				j.c.	
William B.	L.	0	0	f.t.	t.				
	L.C.	-	0	0	0	0	0	v.m.	c.
John W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Positive control	L.	t.	d.	c.					
	L.C.	-	t.	a.c.	c.			m.	c.
Negative control	L.	m.	j.c.						
	L.C.	m.	j.c.					v.m.	c.

## Emulsion controls

	1.	2.	3.
	0.012	0.024	0.035
L.	a.c.	c.	
L.C.	c.		

## Complement dose 1:4

	1.	2.	3.	4.
	0.012	0.024	0.032	0.04
L.	d.	a.c.	j.c.	
L.C.				

JANUARY 23. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Bessie D.	L.	0.01	0.015	0.023	0.035	0.053	0.075	0.01	0.018
	L.C.	0	0	0	t.	0	0	j.c.	
Mrs. H.	L.	c.							
	L.C.	-	c.					a.c.	c.
Mrs. McB.	L.	c.							
	L.C.	-	j.c.					j.c.	
Mrs. T.	L.	j.c.							
	L.C.	-	c.					j.c.	
Mrs Martha T.	L.	a.c.	j.c.						
	L.C.	-	c.					j.c.	
Mrs. C.	L.	a.c.	j.c.						
	L.C.	-	c.						c.
Mrs. A.	L.	0	0	0	v.m.				
	L.C.	-	0	0	0	t.	c.		c.
Mrs. H.	L.	d.	a.c.	j.c.					
	L.C.	-	m.	v.m.	c.			a.c.	c.
Mrs. J.	L.	m.	a.c.	j.c.					
	L.C.	-	v.m.	j.c.	c.			v.m.	a.c.
Mrs. S.	L.	d.	v.m.	j.c.					
	L.C.	-	m.	v.m.	c.			a.c.	c.
Mrs. G.	L.	a.c.	j.c.						
	L.C.	-	j.c.					v.m.	c.
Annie W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	m.	j.c.
Rose J.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	f.t.	m.	j.c.
Fred F.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	a.c.
Sarah C.	L.	0	0	0	d.				
	L.C.	-	0	0	0	0	t.	j.c.	
John C.	L.	0	0	0	d.				
	L.C.	-	0	0	0	0	t.	t.	v.m.

JANUARY 23. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Positive control	L.	0	0	f.t.	a.c.	0.07	0.1	0.01	0.02
	L.C.	-	0	0	0	f.t.	t.	j.c.	
Negative control	L.	a.c.	j.c.						
	L.C.	-	c.						jc.
Robert R.	L.	v.m.	j.c.						
	L.C.	-	t.	t.	v.m.	a.c.			
James Q.	L.	0	t.	a.	a.c.				
	L.C.								
		Emulsion controls			1.	2.	3.		
					0.01	0.015	0.023		
William B.	L.	0	0	0	L.	j.c.			
	L.C.	-	0	0	L.C.	c.			
Helen F.	L.	a.c.	j.c.						
	L.C.	-							
Preliminary dose of complement = 0.003									
Jennie B.	L.	0	t.	v.m.	a.c.				
	L.C.	-	0	0	f.t.	f.t.	t.	a.c.	j.c.
Mrs. J.	L.	t.	c.						
	L.C.	-	t.	j.c.					j.c.
Mrs. H.	L.	j.c.							
	L.C.	-	0	f.t.	t.	v.m.	j.c.		
Mrs. T.	L.	a.c.	j.c.						
	L.C.	-	a.c.	j.c.					
Martha T.	L.	v.m.	j.c.						
	L.C.	-	j.c.						
Mrs. S.	L.	a.c.	c.						
	L.C.	-	v.m.	c.					
Mrs. G.	L.	m.	c.						
	L.C.	-	c.						
Mrs. C.	L.	m.	c.						
	L.C.	-	j.c.						
Positive control	L.	t.	v.m.	j.c.					
	L.C.	-	0	0	t.	v.m.	t.	j.c.	



JANUARY 25, 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
Matilda A.	L.	a.c.	c.						
	L.C.	-	c.					a.c.	c.
John C.	L.	0	0	0	v.m.				
	L.C.	-	0	0	0	0	0	j.c.	
Robert R.	L.	v.m.	j.c.						
	L.C.	-	t.	t.	v.m.	a.c.	c.	c.	
James Q.	L.	0	t.	m.	a.c.				
	L.C.	-	t.	t.	v.m.	a.c.	c.	j.c.	
William B.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Helen F.	L.	a.c.	j.c.						
	L.C.	-	m.	m.	v.m.	j.c.		j.c.	
Jeanie B.	L.	0	t.	v.m.	a.c.				
	L.C.	-	0	0	f.t.	f.t.	t.	a.c.	j.c.
Mrs. J.	L.	t.	c.						
	L.C.	-	t.	j.c.				j.c.	
Mrs. H.	L.	j.c.							
	L.C.	-	0	f.t.	t.	m.	v.m.	j.c.	
Mrs. T.	L.	a.c.	j.c.						
	L.C.	-	a.c.	j.c.				c.	
Martha T.	L.	v.m.	j.c.						
	L.C.	-	j.c.					a.c.	c.
Mrs. S.	L.	a.c.	c.						
	L.C.	-	m.	c.				c.	
Mrs. G.	L.	m.	c.						
	L.C.	-	c.					c.	
Mrs. C.	L.	m.	c.						
	L.C.	-	j.c.					c.	
Positive control	L.	t.	v.m.	j.c.					
	L.C.	-	0	0	t.	v.m.	t.	j.c.	

JANUARY 25. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Negative control.	L.	0	0	0	0	0	0	0	0
	L.C.	a.c.	c.					a.c.	c.
Mrs. H.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. H.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. P.	L.	0	0	0	0	0	0	0	0
	L.C.								
		Emulsion controls							
					1.	2.	3.		
					0.012	0.024	0.035		
Mary D.	L.	0	0	0	L.	d.	a.c.	c.	
	L.C.	-	0	0	L.C.	0	t.	j.c.	
Mrs. C.	L.	0	0	0	0	0	0	0	0
	L.C.								
		Complement dose 1:4							
Mrs. McG.	L.	0	0	0	1.	2.	3.	4.	
	L.C.	-	0	0	0.012	0.024	0.03	0.04	
					d.	j.c.	j.c.	j.c.	
Mrs. McG.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Baby McG.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
George N.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. H.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Negative control	L.	v.f.t.	v.f.t.	v.f.t.	v.f.t.	v.f.t.	v.f.t.	v.f.t.	v.f.t.
	L.C.	-	0	0	0	0	0	0	0

Emulsion controls

Complement dose 1:4

Incubated for 18 hours.

All work repeated.

JANUARY 29. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.015	0.025	0.04	0.06	0.09	0.12	0.012	0.024
Mrs. McM.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. R.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. H.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. F.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mary D.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. C.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. McN.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. McG.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Baby McG.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
George N.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. N.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Negative control	L.	v.f.t.	v.f.t.	v.f.t.	v.f.t.				
	L.C.	-	0	0	0	0	0	0	0

Emulsion controls

	1.	2.	3.
	0.015	0.025	0.04
L.	0	0	0
L.C.	-	0	0

Complement dose 1:4

	1.	2.	3.	4.
	0.02	0.032	0.044	0.052
	0	0	0	0

Incubated for 18 hours.

All were retested.

FEBRUARY 1. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
Anne C.	L.	0	0	0	t.				
George B.	L.C.	-	0	0	0	0	a.c.	c.	
Mrs. C.	L.	0	0	0	t.				
Mrs. R.	L.C.	-	0	0	0	0	0	c.	
Mr. C.	L.	a.c.	j.c.						
Regalys.	L.C.	-	c.					j.c.	
Mrs. McN.	L.	t.	v.m.	j.c.					
Positive	L.C.	-	0	d.	v.m.	c.		j.c.	
control									
James McG.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	d.	j.c.	
Mrs. McG.	L.	0	0	t.	v.m.				
	L.C.	-	0	0	0	t.	c.	j.c.	
Martha T.	L.	v.m.	j.c.						
	L.C.	-	j.c.					j.c.	
Emma B.	L.	m.	a.c.	a.c.	c.				
	L.C.	-	0	d.	a.c.	c.		j.c.	
Isa S.,	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
William B.	L.	c.							
	L.C.	-	c.					c.	
Mrs. H.	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	
Mrs. F.	L.	t.	v.m.	c.					
	L.C.	-	0	d.	v.m.	a.e.	c.	a.c.	c.
Mrs. McM.	L.	v.m.	c.						
	L.C.	-	a.c.	c.				j.c.	
Mrs. H.	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	c.				j.c.	
Mary D.	L.	t.	m.	a.c.	j.c.				
	L.C.	-	0	d.	v.m.	j.c.		a.c.	j.c.
Mrs. N.	L.	0	t.	v.m.	a.c.				
	L.C.	-	0	0	f.t.	m.	a.c.	a.c.	c.

FEBRUARY 1. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. McK.									
George N.	L.	0	f.t.	v.m.	a.c.				
	L.C.	-	0	0	f.t.	m.	c.	j.c.	
Mrs. R.	L.	v.m.	0.						
	L.C.	-	a.c.	j.c.				a.c.	c.
Negative control	L.	j.c.							
	L.C.	-	c.					j.c.	
Positive control	L.	m.	c.						
	L.C.	-	t.	v.m.	c.			j.c.	
Emulsion controls									
				1.	2.	3.			
				0.012	0.024	0.035			
Gilbert B.	L.			L.	a.c.	j.c.			
	L.C.			L.C.	a.c.	j.c.			
Complement dose 1:4									
				1.	2.	3.	4.		
				0.012	0.024	0.032	0.04		
				t.	m.	j.c.	j.c.		
William B.	L.								
	L.C.								
Robert P.	L.	t.	j.c.						
	L.C.	v.m.	j.c.						
Russle F.	L.	a.c.	a.c.	j.c.					
	L.C.	v.m.	a.c.	a.c.	j.c.				
Cecilia S.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0				
Henry McG.	L.	j.c.	j.c.						
	L.C.	-	a.c.	j.c.					
Annie W.	L.	t.	a.c.	j.c.					
	L.C.	m.	a.c.	c.					
Mary D.	L.	t.	a.c.	a.c.					
	L.C.	a.c.	j.c.						
Mary D.	L.	a.c.	c.						
	L.C.	a.c.	j.c.						
James W.	L.	a.c.	c.						
	L.C.	a.c.	j.c.						

FEBRUARY 6. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
Mrs. McK.	L.	0	f.t.	d.	v.m.				
David McK.	L.C.	-	t.	d.	d.	c.		c.	
John H.	L.	0	0	t.	d.				
Mary F.	L.C.	-	0	0	0	d.	j.c.	c.	
Mrs. B.	L.	a.c.	c.						
John B.	L.C.	-	c.					j.c.	
Mrs. L.	L.	0	f.t.	t.	t.				
John L.	L.C.	-	0	t.	t.	d.	j.c.	c.	
Mrs. S.	L.	a.c.	c.						
George S.	L.C.	-	j.c.					j.c.	
Annie L.	L.	0	f.t.	t.	d.				
Thomas L.	L.C.	-	0	0	f.t.	t.	d.	c.	
Gilbert S.	L.	t.	a.c.	c.					
John G.	L.C.	-	m.	j.c.				j.c.	
James D.	L.	0	f.t.	t.	t.				
Mrs. M.	L.C.	-	0	0	0	f.t.	v.m.	c.	
William B.	L.	0	0	f.t.	t.				
Mrs. M.F.	L.C.	-	0	0	0	0	j.c.	j.c.	
Robert P.	L.	t.	j.c.						
Mrs. D.	L.C.	v.m.	j.c.					c.	
Bessie F.	L.	a.c.	a.c.	j.c.					
Mrs. U.	L.C.	v.m.	a.c.	a.c.	j.c.			a.c.	c.
Cecilia S.	L.	0	0	0	f.t.				
Mrs. G.	L.C.	-	0	0	0	0	t.	j.c.	
Henry McG.	L.	j.c.	j.c.						
Mrs. H.	L.C.	-	a.c.	j.c.				c.	
Annie W.	L.	t.	a.c.	j.c.					
James H.	L.C.	m.	a.c.	c.				a.c.	c.
Mary D.	L.	t.	a.c.	a.c.	c.				
Mrs. H.	L.C.	a.c.	j.c.					a.c.	c.
Henry D.	L.	a.c.	c.						
Positive Control	L.C.	a.c.	j.c.					j.c.	
James W.	L.	a.c.	c.						
	L.C.	a.c.	j.c.					j.c.	

FEBRUARY 6. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
David McL.	L.	0	0	0	0				
	L.C.	0	0	0	0	f.t.		a.c.	c.
Mary F.	L.	0	0	0	0				
	L.C.	0	0	0	0	0		a.c.	c.
John S.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	f.t.	m.	a.c.	c.
John S.	L.	v.m.	c.						
	L.C.	-	j.c.					j.c.	
George D.	L.	m.	v.m.	c.					
	L.C.	-	j.c.					j.c.	
Thomas S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	a.c.
John H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. M.	L.	a.c.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				j.c.	
Mrs. McF.	L.	0	v.m.	a.c.	c.				
	L.C.	-	m.	j.c.				a.c.	c.
Mrs. D.	L.	m.	a.c.	c.					
	L.C.	-	m.	j.c.				v.m.	a.c.
Mrs. C.	L.	a.c.	c.						
	L.C.	-	c.					j.c.	
Mrs. O.	L.	v.m.	j.c.						
	L.C.	-	a.c.	j.c.				j.c.	
Mrs. H.	L.	v.m.	a.c.	c.					
	L.C.	-	j.c.	c.				a.c.	c.
James H.	L.	0	0	0	t.				
	L.C.	0	0	0	f.t.	t.		c.	
Mrs. H.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Positive control	L.	0	0	t.	v.m.				
	L.C.	-	0	f.t.	d.	v.m.	c.	a.c.	c.

FEBRUARY 6. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.	
Negative control	L.	c.	0.012	0.024	0.035	0.03	0.07	0.1	0.01	0.02
	L.C.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Ruby B.	L.	c.	c.	c.	c.	c.	c.	c.	c.	c.
	L.C.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Gilbert B.	L.	c.	c.	c.	c.	c.	c.	c.	c.	c.
	L.C.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Positive control	L.	j.c.			L.	v.m.	j.c.			
	L.C.	c.			L.C.	j.c.				
Negative control	L.	c.								
	L.C.	c.								

Emulsion controls	1.	2.	3.	
	0.012	0.024	0.035	
Complement dose 1:4	1.	2.	3.	4.
	0.012	0.02	0.03	0.04
	t.	m.	a.c.	j.c.

Emulsion controls	1.	2.	3.
	0.012	0.024	0.035
L.	c.		
L.C.	c.		

Complement dose 1:4	1.	2.	3.	4.
	0.02	0.03	0.04	0.05
	c.			



FEBRUARY 8. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. G.	L.	0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
Mrs. B.	L.	0	c.						
	L.C.	-	t.	a.c.	c.			c.	
Baby B.	L.	c.							
	L.C.	-	c.					c.	
Gilbert S.	L.	m.	c.						
	L.C.	-	f.t.	d.	c.			c.	
Positive control	L.	j.c.							
	L.C.	-	m.	j.c.				c.	
Negative control	L.	c.							
	L.C.	c.						c.	

Emulsion controls      1.      2.      3.  
 0.012 0.024 0.035  
 L.      c.  
 L.C.    c.

Complement dose 1:4    1.      2.      3.      4.  
 0.02    0.03    0.04    0.05  
 L.C.    c.

Mrs. McA.	L.	0	c.	d.c.	c.				
	L.C.	-	0	0	0	0	1.	v.m.	c.
John McA.	L.	0	0	0	0	0	0	a.c.	c.
	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. McC.	L.	d.	j.c.						
	L.C.	-	c.						
Mrs. Jessie McC.	L.	d.	a.c.	a.c.					
	L.C.	-	t.	v.m.	j.c.			v.m.	c.
Mrs. McC.	L.	a.c.	c.						
	L.C.	-	c.						
Mrs. B.	L.	j.c.							
	L.C.	-	j.c.					j.c.	
Sarah McI.	L.	d.	j.c.						
	L.C.	-	t.	j.c.	j.c.			v.m.	c.
Lizzie K.	L.	v.m.	j.c.						
	L.C.	-	0	m.	c.			v.m.	j.c.
Arthur B.	L.	v.m.	j.c.						
	L.C.	-	d.	c.				j.c.	
Susan J.	L.	v.m.	j.c.						
	L.C.	-	m.	c.				a.c.	c.

FEBRUARY 13. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
John G.	L.	0.012	0.023	0.035	0.05	0.07	0.1	0.01	0.02
Mrs. G.	L.	t.	m.	j.c.					
Henry D.	L.C.	-	0	f.t.	t.	v.m.	c.	j.c.	
James G.	L.	t.	a.c.	c.					
Mary Y.	L.C.	-	a.c.	j.c.				a.c.	c.
Peter McG.	L.	t.	v.m.	j.c.					
Helen G.	L.C.	-	0	0	f.t.	m.	a.c.	a.c.	c.
Leo F.	L.	v.m.	j.c.	j.c.					
James B.	L.C.	-	t.	v.m.	j.c.			j.c.	
Mrs. F.	L.	a.c.	j.c.						
Ellis R.	L.C.	-	j.c.					a.c.	c.
Jeanie T.	L.	0	0	t.	a.c.				
Mr. McH.	L.C.	-	0	0	0	0	t.	a.c.	c.
Mrs. McA.	L.	0	m.	a.c.	c.				
Jessie McA.	L.C.	-	0	0	0	0	t.	v.m.	c.
John McA.	L.	0	0	0	0				
Frances McA.	L.C.	-	0	0	0	0	0	a.c.	c.
Mrs. McG.	L.	d.	j.c.						
Matilda McA.	L.C.	-	c.					c.	
Mrs. Jessie McF.	L.	d.	a.c.	a.c.					
Grace McF.	L.C.	-	t.	v.m.	j.c.			v.m.	c.
Mrs. McC.	L.	a.c.	c.						
Positive Control	L.C.	-	c.					c.	
Mrs. B.	L.	j.c.							
Negative Control	L.C.	-	j.c.					j.c.	
Sarah McI.	L.	d.	j.c.						
Emulsion Control	L.C.	-	t.	j.c.	j.c.			v.m.	c.
Lizzie R.	L.	v.m.	j.c.						
	L.C.	-	0	m.	a.c.	c.		v.m.	j.c.
Arthur S.	L.	v.m.	j.c.						
	L.C.	-	d.	c.				j.c.	
Susan J.	L.	v.m.	j.c.						
	L.C.	-	m.	c.				a.c.	c.

FEBRUARY 13. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
John C.	L.	v.m.	c.						
	L.C.	-	t.	v.m.	c.			j.c.	
Marie L.	L.								
Henry D.	L.	t.	a.c.	c.					
	L.C.	-	0	m.	j.c.			v.m.	c.
Pete L.	L.								
Mary Y.	L.	a.c.	c.						
	L.C.	-	j.c.					j.c.	
Joe L.	L.								
Helen C.	L.	v.m.	j.c.						
	L.C.	-	v.m.	c.				v.m.	c.
Mrs. L.	L.								
James B.	L.	m.	j.c.	j.c.					
	L.C.	-	t.	a.c.	c.			a.c.	c.
Mr. L.	L.								
Eliz. R.	L.	t.	a.c.	c.					
	L.C.	-	t.	j.c.	j.c.			t.	a.c.
Wagon L.	L.								
Mr. McL.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	d.	0	a.c.
Max L.	L.								
Jemima McL.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	a.c.
Evans L.	L.								
Frances McL.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Wass L.	L.								
Matilda McL.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
Blake L.	L.								
Grace McL.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	a.c.
Sabo L.	L.								
Positive control	L.	a.c.	c.						
	L.C.	-	d.	v.m.	c.			j.c.	
Negative control	L.	a.c.	j.c.						
	L.C.	-	c.					a.c.	c.

Emulsion controls 1. 2. 3.  
 0.012 0.023 0.035  
 L. a.c. c.  
 L.C. a.c. j.c.

Complement dose 1:4 1. 2. 3. 4.  
 0.02 0.03 0.04 0.05  
 Emulsion controls a.c. a.c. j.c. j.c.

Complement dose 1:4 1. 2. 3. 4.  
 0.02 0.03 0.04 0.05

FEBRUARY 16. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
Mrs. C.	L.	0	0	0	0	0	0	0	0
Marie L.	L.C.	-	0	0	0	0	0	a.c.	c.
Pete L.	L.	0	0	0	0	0	0	t.	v.m.
	L.C.	-	0	0	0	0	0		
Ana L.	L.	0	0	0	0	0	0	a.c.	c.
	L.C.	-	0	0	0	0	0		
Mrs. L.	L.	0	0	0	0	0	0	a.c.	c.
	L.C.	-	0	0	0	0	0		
Mr. L.	L.	0	0	0	0	0	0	j.c.	
	L.C.	-	0	0	0	0	0		
Fegue L.	L.	0	0	0	0	0	0	v.m.	j.c.
	L.C.	-	0	0	0	0	0		
Max L.	L.	0	0	0	0	0	0	a.c.	c.
	L.C.	-	0	0	0	0	0		
Xylene L.	L.	0	0	0	0	0	0	j.c.	
	L.C.	-	0	0	0	0	0		
Susse L.	L.	0	0	0	0	0	0	a.c.	c.
	L.C.	-	0	0	0	0	0		
Znike L.	L.	0	0	0	0	0	0	j.c.	
	L.C.	-	0	0	0	0	0		
Sabe L.	L.	0	0	0	0	0	0	a.c.	c.
	L.C.	-	0	0	0	0	0		
Mr. G.	L.	d.	v.m.	a.c.	c.				
	L.C.	-	m.	j.c.				a.c.	c.
John M.	L.	0	0	0	t.				
	L.C.	-	0	0	f.t.	v.m.	c.	m.	a.c.
Positive control	L.	t.	v.m.	a.c.	c.				
	L.C.	-	m.	v.m.	j.c.			j.c.	
Negative control	L.	a.c.	j.c.						
	L.C.	a.c.	j.c.					j.c.	
Emulsion controls		1.	2.	3.					
		0.012	0.024	0.035					
	L.	t.	a.c.	j.c.					
	L.C.	m.	a.c.	c.					
Complement dose 1:4		1.	0.02.	0.03.	0.04.				
		a.c.	j.c.						

FEBRUARY 20. 1913. (Contd.)

		1. 0.012	2. 0.024	3. 0.035	4. 0.05	5. 0.07	6. 0.1	7. 0.01	8. 0.02
Mrs. C.	L.	v.m.	j.c.						
	L.C.	-	v.m.	j.c.	j.c.			v.m.	j.c.
Mrs. C.	L.	v.m.	j.c.						
	L.C.	-	j.c.	j.c.				m.	j.c.
Mrs. M.	L.	m.	c.						
	L.C.	-	t.	j.c.	j.c.			v.m.	c.
Mrs. McC.	L.	m.	j.c.						
	L.C.	-	j.c.					v.m.	c.
Eliz. G.	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	c.				v.m.	c.
Mrs. W.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	0	m.	a.c.
Mrs. McF.	L.	t.	a.c.	c.					
	L.C.	-	v.m.	a.c.	a.c.	j.c.		v.m.	c.
Samuel C.	L.	v.m.	j.c.						
	L.C.	-	v.m.	c.				v.m.	c.
Ellen S.	L.	v.m.	c.						
	L.C.	-	m.	c.				v.m.	c.
James F.	L.	m.	a.c.	c.					
	L.C.	-	v.m.	j.c.				v.m.	c.
Fred H.	L.	d.	j.c.						
	L.C.	-	d.	j.c.				v.m.	c.
Hector M.	L.	v.m.	a.c.	c.					
	L.C.	-	m.	a.c.	j.c.			a.c.	c.
David F.	L.	v.m.	j.c.						
	L.C.	-	t.	j.c.				v.m.	c.
Mrs. H.	L.	0	t.	v.m.	c.				
	L.C.	-	t.	j.c.	c.			v.m.	c.
Mr. H.	L.	0	0	t.	d.				
	L.C.	-	0	t.	a.c.	j.c.		v.m.	c.
John H.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	t.	a.c.
Baby H.	L.	0	v.m.	a.c.	j.c.				
	L.C.	-	m.	v.m.	j.c.			d.	a.c.

FEBRUARY 20. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mr. W.	L.	t.	v.m.	a.c.	j.c.				
	L.C.	-	t.	m.	a.c.	j.c.		m.	c.
Mrs. W.	L.	0	f.t.	t.	t.				
	L.C.	-	0	0	0	d.	j.c.	t.	j.c.
Annie W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	t.	v.m.
Jane W.	L.	t.	m.	v.m.	j.c.				
	L.C.	-	0	t.	m.	v.m.	j.c.	v.m.	j.c.
Bella W.	L.	t.	d.	v.m.	a.c.				
	L.C.	-	t.	v.m.	a.c.	j.c.		v.m.	c.
Peter W.	L.	f.t.	d.	v.m.	j.c.				
	L.C.	-	0	t.	a.c.	j.c.		a.c.	c.
Theresa W.	L.	0	0	f.t.	t.				
	L.C.	-	0	f.t.	t.	m.	j.c.	a.c.	j.c.
Minnie W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	d.	v.m.
Mr. G.	L.	d.	c.						
	L.C.	-	t.	v.m.	j.c.			v.m.	c.
Positive control	L.	v.m.	j.c.						
	L.C.	-	t.	m.	v.m.	c.		a.c.	c.
Negative control	L.	v.m.	c.						
	L.C.	m.	c.					v.m.	c.

Emulsion controls 1. 2. 3.  
 0.012 0.024 0.035  
 L. j.c.  
 L.C. j.c.

Complement dose 1:4 1. 2. 3. 4.  
 0.02 0.032 0.04 0.05  
 a.c. j.c.

FEBRUARY 22. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
Mr. L.	L.	0	0	v.m.	c.				
	L.C.	-	0	0	t.	j.c.		v.m.	j.c.
Mrs. L.	L.	0	0	t.	j.c.				
	L.C.	-	0	0	0	t.	v.m.	v.m.	j.c.
Jeanie L.	L.	d.	c.						
	L.C.	-	c.					a.c.	c.
John L.	L.	0	0	0	f.t.				
	L.C.	-	0	0	0	0	0	v.m.	c.
Fanny L.	L.	0	d.	a.c.	j.c.				
	L.C.	-	0	j.c.				a.c.	c.
William L.	L.	v.m.	a.c.	c.					
	L.C.	-	j.c.					a.c.	c.
Mrs. S.	L.	d.	v.m.	j.c.					
	L.C.	-	d.	v.m.	j.c.	j.c.		v.m.	j.c.
Mrs. G.	L.	t.	t.	v.m.	c.				
	L.C.	-	0	t.	t.	v.m.	c.	j.c.	
Mrs. W.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	j.c.	
Mrs. T.	L.	d.	v.m.	a.c.	j.c.				
	L.C.	-	0	0	t.	d.	v.m.	a.c.	j.c.
Positive control	L.	t.	v.m.	a.c.	c.				
	L.C.	-	0	0	t.	v.m.	a.c.	j.c.	
Negative control	L.	a.c.	c.						
	L.C.	j.c.						j.c.	
Positive control	L.	f.t.	d.	a.c.	c.				
	L.C.								
Negative control	L.	v.m.	j.c.						
	L.C.	v.m.	c.						
		Emulsion controls			1.	2.	3.		
					0.012	0.024	0.035		
		L.	v.m.	a.c.	j.c.				
		L.C.	f.t.	a.c.	j.c.				
		Complement dose 1:4			1.	2.	3.	4.	
					0.01	0.02	0.03	0.04	
					t.	m.	v.m.	a.c.	
		Complement dose 1:4			1.	2.	3.		
					0.02	0.03	0.04		
					a.c.	j.c.			

FEBRUARY 27. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Annie H.	L.	0.01 v.m.	0.02 j.c.	0.03	0.045	0.06	0.085	0.01	0.02
	L.C.	-	m.	j.c.				a.c.	c.
John McP.	L.	d.	v.m.	c.					
	L.C.	-	t.	a.c.	j.c.			v.m.	c.
Mrs. S.	L.	t.	a.c.	c.					
	L.C.	-	a.c.	j.c.				t.	c.
John M.	L.	d.	a.c.	c.					
	L.C.	-	m.	j.c.	j.c.			j.c.	
Joseph C.	L.	t.	j.c.						
	L.C.	-	f.t.	v.m.	j.c.			v.m.	c.
Jessie B.	L.	m.	j.c.						
	L.C.	-	d.	j.c.				v.m.	c.
Lizzie F.	L.	v.m.	c.						
	L.C.	-	d.	j.c.				a.c.	c.
James G.	L.	d.	v.m.	c.					
	L.C.	-	a.c.	j.c.				d.	c.
Cathie T.	L.	v.m.	j.c.						
	L.C.	-	v.m.	j.c.				v.m.	c.
Mary D.	L.	t.	a.c.	c.					
	L.C.	-	t.	m.	a.c.	c.		v.m.	c.
Charlie K.	L.	t.	c.						
	L.C.	-	j.c.					d.	c.
Janet P.	L.	d.	a.c.	c.					
	L.C.	-	a.c.	j.c.				d.	c.
Positive control	L.	f.t.	d.	a.c.	c.				
	L.C.	-	0	t.	m.	c.		a.c.	c.
Negative control	L.	m.	j.c.						
	L.C.	v.m.	c.					j.c.	

Emulsion controls

	1.	2.	3.
L.	0.01	0.02	0.03
L.C.			

L.	v.m.	a.c.	c.
L.C.	a.c.	a.c.	j.c.

	1:4	1.	2.	3.
Complement dose	0.02	0.03	0.04	
	a.c.	j.c.		



MARCH 2. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. A.	L.	0.01	0.02	0.03	0.045	0.06	0.09	0.01	0.02
	L.C.	v.m.	a.c.	c.	j.c.	j.c.		j.c.	
Mrs. C.	L.	0	a.c.	c.					
	L.C.	-	0	t.	j.c.	j.c.		j.c.	
Mrs. W.	L.	f.t.	v.m.	c.					
	L.C.	-	d.	a.c.	j.c.			c.	
Mrs. N.	L.	0	m.	c.					
	L.C.	-	0	0	0	j.c.		c.	
Mrs. C.	L.	0	0	m.	c.	0.02	0.02	0.03	
	L.C.	-	0	f.t.	d.	a.c.	c.	c.	
Mrs. W.	L.	m.	c.						
	L.C.	-	m.	a.c.	j.c.			v.m.	c.
Mrs. H.	L.	0	f.t.	a.c.	c.				
	L.C.	-	0	0	v.m.	a.c.	c.	c.	c.
Alfred B.	L.	c.							
	L.C.	-	c.					c.	
Emma B.	L.	c.							
	L.C.	-	c.					c.	
Joseph I.	L.	c.							
	L.C.	-	v.m.	j.c.				c.	
Ronald T.	L.	c.							
	L.C.	-	j.c.					c.	
Mrs. G.	L.	0	m.	a.c.	j.c.				
	L.C.	-	0	0	0	f.t.	c.	j.c.	
George G.	L.	0	0	f.t.	d.				
	L.C.	-	0	0	0	0	0	v.m.	a.c.
Lizzie J.	L.	v.m.	c.						
	L.C.	-	t.	a.c.	c.			c.	
Robert W.	L.	c.							
	L.C.	-	t.	a.c.	c.			c.	
Positive control	L.	0	0	v.f.t.	v.f.t.				
	L.C.	-	0	0	0	0	0	m.	j.c.

MARCH 2. 1913. (Contd.)

		1.	2.	3.	4.	5.	6.	7.	8.
Negative control	L.	a.c.	c.						
	L.C.	a.c.	j.c.					j.c.	
Robert G.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Marion G.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Duncan G.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Emulsion controls									
Mr. M.	L.	0.01	0.02	0.03					
	L.C.	-	-	-	L.	c.			
					L.C.	c.			
Maggie M.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Complement dose 1:4									
Charles H.	L.	0.012	0.024	0.032	0.04				
	L.C.	-	-	-	-	t.	v.m.	c.	
Mrs. S.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Baby B.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. A.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. W.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. G.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Mrs. W.	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Positive control	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Negative control	L.	0	0	0	0	0	0	0	0
	L.C.	-	0	0	0	0	0	0	0
Emulsion controls									
	L.	0.012	0.024						
	L.C.	-	-	t.	v.m.	c.			

Complement dose = 0.0125

MARCH 5, 1913.

		1. 0.012	2. 0.024	3. 0.034	4. 0.046	5. 0.065	6. 0.09	7. 0.01	8. 0.02
Andrew M.	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	
Robert C.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Marion G.	L.	a.c.	j.c.						
	L.C.	-	j.c.					c.	
Duncan G.	L.	j.c.							
	L.C.	-	j.c.					c.	
Mr. M.	L.	v.m.	j.c.						
	L.C.	-	t.	v.m.	a.c.	j.c.		v.m.	c.
Maggie M.	L.	a.c.	j.c.						
	L.C.	-	d.	v.m.	j.c.			a.c.	c.
Charles H.	L.	a.c.	c.						
	L.C.	-	v.m.	j.c.				a.c.	c.
Mrs. S.	L.	d.	m.	a.c.	c.				
	L.C.	-	0	0	0	0	0	a.c.	c.
Baby S.	L.	v.m.	a.c.	c.					
	L.C.	-	0	0	t.	d.	m.	a.c.	c.
Mrs. A.	L.	v.m.	a.c.	j.c.					
	L.C.	-	j.c.					a.c.	j.c.
Mrs. W.	L.	d.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				m.	a.c.
Mrs. C.	L.	0	t.	t.	t.				
	L.C.	-	0	0	0	0	0	v.m.	j.c.
Mrs. W.	L.	v.m.	a.c.	j.c.					
	L.C.	-	j.c.					v.m.	j.c.
Positive control	L.	t.	d.	v.m.	j.c.				
	L.C.	-	0	0	0	t.	j.c.	a.c.	c.
Negative control	L.	a.c.	c.						
	L.C.	a.c.	c.						
Emulsion controls		1. 0.012	2. 0.024						
	L.	a.c.	c.						
	L.C.	t.	c.						

Complement dose = 0.0125

MARCH 8, 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. McD.	L.	0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
	L.C.	a.c.	j.c.					a.c.	c.
Mrs. P.	L.								
	L.C.	-	c.					j.c.	
Mrs. H.	L.	0	0	0	t.				
	L.C.	-	0	0	0	f.t.	m.	v.m.	a.c.
William L.	L.	v.m.	j.c.						
	L.C.	-	j.c.					a.c.	c.
Gerald F.	L.	v.m.	c.						
	L.C.	-	j.c.					a.c.	c.
Mrs. C.	L.	v.m.	v.m.	j.c.					
	L.C.	-	j.c.					j.c.	
Archd. C.	L.	a.c.	j.c.						
	L.C.	-	c.					j.c.	
Mrs. McA.	L.	v.m.	a.c.	c.					
	L.C.	-	a.c.	j.c.				v.m.	a.c.
May McA.	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				v.m.	j.c.
Mrs. M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	a.c.	c.
Joan M.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	v.m.	c.
Mrs. McM.	L.	m.	a.c.	j.c.					
	L.C.	-	v.m.	v.m.	a.c.	j.c.		a.c.	j.c.
William McM.	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.				v.m.	c.
Positive control	L.	0	f.t.	t.	m.				
	L.C.	-	0	0	0	t.	c.	a.c.	c.
Negative control	L.	a.c.	c.						
	L.	v.m.	j.c.					a.c.	c.

Emulsion controls 1. 2.

0.012 0.024

L. a.c. j.c.

L.C. j.c. c.

Complement dose = 0.015



MARCH 16. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Catherine S.	L.	0.012	0.024	0.035	0.05	0.07	0.1	0.01	0.02
	L.C.	0	t.	d.	c.				
	L.C.	-	0	0	0	m.	j.c.	c.	
John A.	L.	c.							
	L.C.	-	c.					c.	
James B.	L.	a.c.	c.						
	L.C.	-	a.c.	c.				c.	
Mrs. H.	L.	d.	m.	v.m.	c.				
	L.C.	-	0	0	0	d.	a.c.	c.	
Mrs. H.	L.	c.							
	L.C.	-	c.					c.	
Mrs. G.	L.	v.m.	j.c.						
	L.C.	-	0	0	0	t.	j.c.	c.	
Bessie S.	L.	0	0	0	v.m.				
	L.C.	-	0	0	0	0	t.	c.	
William S.	L.	0	0	0	0				
	L.C.	-	0	0	0	0	0	c.	
Mrs. McC.	L.	c.							
	L.C.	-	c.					c.	
Sam L.	L.	0	0	f.t.	d.				
	L.C.	-	0	0	0	0	t.	c.	
Mary L.	L.	0	0	f.t.	t.				
	L.C.	-	0	0	0	0	d.	c.	
Positive control	L.	c.							
	L.C.	-	0	d.	a.c.	c.		c.	
Negative control	L.	c.							
	L.C.	c.						c.	

Emulsion controls      1.      2.      3.  
                                  0.012 0.024 0.035  
                                  L.      c.  
                                  L.C.    c.

Complement dose 1:4    1.      2.      3.      4.  
                                  0.02    0.025 0.034 0.044  
                                  j.c.

APRIL 2. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. H.		0.01	0.02	0.03	0.045	0.065	0.09	0.01	0.02
Mrs. B.	L.	a.c.	j.c.						
	L.C.	-	j.c.					j.c.	
Mrs. M.	L.	j.c.							
	L.C.	-	c.					c.	
Mrs. McG.	L.	0	f.t.	f.t.	f.t.				
	L.C.	-	0	0	0	0	0	c.	
Positive control	L.	0	m.	j.c.					
	L.C.	-	0	0	0	0	a.c.	j.c.	
Negative control	L.	j.c.							
	L.C.	-	c.					c.	

Mrs. K.	L.	0	d.	v.m.					
	L.C.	-	0	0	f.t.	0	a.c.	c.	

		1.	2.	3.
Mrs. K.	L.	0.01	0.02	0.03
	L.C.	-	c.	
Positive control	L.	a.c.	j.c.	
	L.C.	j.c.	j.c.	

		1.	2.	3.	4.
Negative control	L.	Complement dose 1:4			
	L.C.	0.015	0.02	0.025	0.035
		a.c.	a.c.	a.c.	a.c.

		1.	2.	3.
Emulsion controls	L.	0.012	0.024	0.036
	L.C.	a.c.	j.c.	

		1.	2.	3.	4.
Complement dose 1:4	L.	0.02	0.03	0.04	0.05
	L.C.	c.			

APRIL 6. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. R.	L.	0.012	0.024	0.035	0.05	0.065	0.09	0.01	0.02
	L.C.	t.	v.m.	d.	c.				
Agnes R.	L.	-	0	0	t.	d.	a.c.	c.	
	L.C.								
Mrs. A.	L.	c.							
	L.C.	-	c.						
Sam A.	L.	v.m.	c.						
	L.C.	-	f.t.	v.m.	c.				c.
Bertie A.	L.	a.c.	c.						
	L.C.	-	f.t.	v.m.	c.				c.
James A.	L.	j.c.							
	L.C.	-	d.	c.					c.
Martha A.	L.	j.c.							
	L.C.	-	m.	c.					c.
Mrs. K.	L.	0	d.	v.m.	c.				
	L.C.	-	0	0	f.t.	t.	a.c.	c.	
Positive control	L.	j.c.							
	L.C.	-	c.						c.
Negative control	L.	t.	d.	m.	c.				
	L.C.	-	0	0	t.	t.	v.m.	c.	

Emulsion controls	1.	2.	3.	4.
	0.012	0.024	0.035	0.04
L.	j.c.			
L.C.	a.c.	j.c.		

Complement dose 1:4	1.	2.	3.	4.
	0.02	0.03	0.04	0.05
	c.			



APRIL 13. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. G.	L.	0.012	0.024	0.034	0.05	0.065	0.095	0.01	0.02
	L.C.	0	f.t.	f.t.	m.				
Mr. G.	L.	-	0	0	d.	v.m.	c.	c.	
	L.C.	-	c.						
Mary G.	L.	a.c.	c.						
	L.C.	-	c.						c.
Mr. S.	L.	t.	v.m.	a.c.	j.c.				
	L.C.	-	t.	v.m.	v.m.	c.			c.
Mrs. S.	L.	t.	a.c.	a.c.	j.c.				
	L.C.	-	a.c.	a.c.	j.c.				j.c.
Amy S.	L.	m.	v.m.	a.c.	a.c.				
	L.C.	-	a.c.	a.c.	c.				c.
Positive control	L.	a.c.	c.						
	L.C.	-	c.						c.
Negative control	L.	0	f.t.	t.	d.				
	L.C.	-	0	0	f.t.	m.	a.c.		c.
Emulsion controls	L.	v.m.	a.c.	j.c.					
	L.C.	-	a.c.	j.c.					c.

Emulsion controls      1.      2.      3.  
                                  0.012 0.024 0.034  
                                  L.      j.c.  
                                  L.C.    j.c.

Complement dose 1:4    1.      2.      3.      4.  
                                  0.016 0.024 0.032 0.04  
                                  t.      m.      j.c.

APRIL 20. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Mrs. L.	L.	0.01	0.02	0.034	0.05	0.065	0.09	0.01	0.02
	L.C.	0	m.	j.c.					
Baby M.	L.	-	0	t.	m.	v.m.	j.c.	c.	0.02
	L.C.	-	0	0	d.	m.	a.c.	a.c.	c.
Mr. L.	L.	0	t.	d.	c.				
	L.C.	-	0	0	d.	m.	a.c.	a.c.	c.
John G.	L.	0	0	a.c.	c.				
	L.C.	-	0	f.t.	d.	c.		c.	
Grace I.	L.	0	t.	d.	j.c.				
	L.C.	-	0	0	0	0	t.	c.	
Willie G.	L.	0	0	m.	c.				
	L.C.	-	0	0	0	t.	d.	c.	
Georgina L.	L.	0	0	m.	c.				
	L.C.	-	0	0	0	t.	d.	c.	
Baby Nell	L.	f.t.	t.	v.m.	a.c.				
	L.C.	-	v.f.t.	t.	d.	a.c.	c.	c.	
Robina L.	L.	a.c.	j.c.						
	L.C.	a.c.	j.c.					c.	
Margaret W.	L.	a.c.	j.c.						
	L.C.	a.c.	j.c.					c.	

Emulsion controls		1.	2.	3.
Positive control	L.	0.01	0.02	0.034
	L.C.			
Negative control	L.	v.m.	j.c.	
	L.C.	m.	a.c.	j.c.

Complement dose 1:4		1.	2.	3.	4.
		0.01	0.022	0.032	0.04
		a.c.	c.		

Complement dose 1:4		1.	2.	3.	4.
		0.02	0.03	0.04	0.05
		a.c.	c.		

APRIL 27 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
Baby M.	L.	0.012	0.024	0.036	0.05	0.068	0.098	0.01	0.02
	L.C.	0	d.	j.c.					
	L.C.	-	f.t.	t.	d.	m.	j.c.	c.	
John G.	L.	0	0	0	t.				
	L.C.	-	0	0	0	0	t.	c.	
Willie C.	L.	m.	j.c.						
	L.C.	-	a.c.	a.c.	j.c.			c.	
Baby McN.	L.	m.	j.c.						
	L.C.	-	m.	v.m.	j.c.	j.c.		c.	
Margaret W.	L.	0	0	t.	a.c.				
	L.C.	-	0	0	0	t.	a.c.	c.	
James H.	L.	m.	j.c.						
	L.C.	-	m.	a.c.	j.c.			c.	
Isa S.	L.	c.							
	L.C.	-	c.					c.	
Positive control	L.	0	0	f.t.	t.				
	L.C.	-	0	0	0	t.	a.c.	c.	
Negative control	L.	j.c.							
	L.C.	-	c.					c.	

Emulsion controls      1.      2.      3.  
                                  0.012 0.024 0.036  
                                  L.      c.  
                                  L.C.    j.c.

Complement dose 1:4    1.      2.      3.      4.  
                                  0.02    0.03    0.04    0.05  
                                  a.c.    c.

350.  
MAY 17. 1913.

		1.	2.	3.	4.	5.	6.	7.	8.
		0.012	0.024	0.036	0.05	0.07	0.1	0.01	0.02
Ruth H.	L.	0	0	0	0				
	L.C.	-	0	0	0	t.	t.	v.m.	c.
Bella H., (Mother)	L.	t.	a.c.	c.					
	L.C.	-	t.	v.m.	a.c.	c.		j.c.	
George C.	L.	t.	d.	j.c.					
	L.C.	-	t.	j.c.				j.c.	
Positive control	L.	0	f.t.	t.	j.c.				
	L.C.	-	0	0	m.	c.		j.c.	
Negative control	L.	d.	j.c.						
	L.C.	d.	j.c.					v.m.	c.

Emulsion controls

	1.	2.	3.
	0.012	0.024	0.036
L.	a.c.	c.	
L.C.	a.c.	c.	

Complement dose 1:4

	1.	2.
	0.024	0.032
	a.c.	j.c.

Paroxysmal Haemoglobinuria is a somewhat rare disease.

It runs a chronic course and is characterized by the occasional excretion of haemoglobin in the urine. It is now accepted as a fact that PART TWO. in these cases the haemoglobinuria is determined by exposure to cold, though less frequently it may follow mental or physical exertion.

The chief clinical features of the disease are as follows:—  
 Prodromal symptoms precede the attack, such as shivering, a feeling of cold in the limbs, which are frequently swollen, there may be a rigor, frequently fever, sickness, vomiting and diarrhoea, and a dull pain in the lumbar region. This is followed by the excretion of claret-coloured or porter-like urine. The paroxysm occurs in from 10 minutes to 5 hours, when the patient soon recovers. If the paroxysm be of a mild nature there may be only albumen found in the urine. In other conditions there may be alternately albumen and free haemoglobin. In a typical paroxysm the microscope reveals the presence of granular debris, and a few blood cells and epithelium. On spectroscopic examination bands characteristic of oxyhaemoglobin or met-haemoglobin are seen. Destruction of the red blood corpuscles is an essential feature, and the Raynaud phenomenon play an important part. It has been noted that Raynaud's disease is frequently associated with haemoglobinuria. Hearn states that haemoglobinuria in Raynaud's disease is only met with during local cyanosis.

Paroxysmal Haemoglobinuria is a somewhat rare disease.

It runs a chronic course and is characterised by the occasional excretion of haemoglobin in the urine. It is now accepted as a fact that in most cases the haemoglobinuria is determined by exposure to cold, though less frequently it may follow mental or physical exertion.

The chief clinical features of the disease are as follow:-

Prodromal symptoms precede the attack, such as shivering, a feeling of cold in the limbs, which are frequently cyanosed, there may be a rigor, frequently fever, yawning, drowsiness, sickness, vomiting and diarrhoea, and a dull pain in the lumbar region. This is followed by the excretion of claret-coloured or porter-like urine. The paroxysm occurs in from 10 minutes to 8 hours, when the patient soon recovers. If the paroxysm be of a mild nature there may be only albumen found in the urine. In other conditions there may be alternately albumen and free haemoglobin. In a typical paroxysm the microscope reveals the presence of granular debris, and a few blood cells and epithelium. On spectroscopic examination bands characteristic of oxyhaemoglobin or met-haemoglobin are seen. Destruction of the red blood corpuscles is an essential feature, and the Raynaud phenomena play an important part. It has been noted that Raynaud's disease is frequently associated with haemoglobinuria. Monroe states that haemoglobinuria in Raynaud's disease is only met with during local cyanosis.

Grawitz states that there is a granular degeneration of cells not associated with haemoglobinuria and a plasmolytic change in the blood causing haemolysis and haemoglobinuria.

Eason has described experiments which show that the serum of cases of paroxysmal haemoglobinuria has the power of dissolving normal and also paroxysmal haemoglobinuric's blood corpuscles at ordinary room temperature, while it fails to do so at the body temperature. Therefore the serum was both isolytic and autolytic.

Donath failed to confirm Eason's view.

Later Donath and Landsteiner demonstrated the haemolytic property of paroxysmal haemoglobinuria blood serum when a mixture of the two was exposed for half-an-hour at 0°C., followed by incubating for three hours at 37°C. They also showed that even a lesser degree of cold favoured haemolysis.

I have examined 5 cases for the Eason, Donath-Landsteiner phenomenon, the method adopted is briefly as follows. A 0.25% solution of Potassium oxalate in 0.85% saline is made up. 5c.c. are put in a test tube and heated to 37°C. Into this solution 2.5 c.c. of blood are placed. This is put into a "thermos" flask and is thus kept at body temperature till the experiments are carried out in the Laboratory. Into another test tube some blood is placed which is also kept at 37°C but is not mixed with potassium oxalate solution, thus the portion of blood is allowed to clot.

The potassium oxalate mixture is rapidly centrifuged and the supernatant fluid is removed by a pipette. The sediment of human blood corpuscles is washed twice with normal saline at 37°C to remove the serum. The clotted blood in the other tube is also

centrifuged in order to get serum free from clot.

#### EXPERIMENT I.

A 1:2 dilution of the paroxysmal haemoglobinuric red blood corpuscles is made. Into a very narrow tube is placed 0.01 c.c. of the diluted corpuscles plus 0.2 c.c. haemoglobinuria serum and this is placed at a temperature of 0°C for  $\frac{3}{4}$  hour, and then incubated for 2 hours at 37°C. In a positive Eason, Donath-Landsteiner reaction the corpuscles are lysed.

#### EXPERIMENT II (Control)

0.01 c.c. of diluted paroxysmal haemoglobinuria red blood corpuscles plus 0.2 c.c. of paroxysmal haemoglobinuria serum is put into the incubator at 37°C for two hours. The cold stage is thus omitted. In this case no lysis takes place, thus proving that a cold stage is necessary to produce haemolysis.

Before proceeding to further experiments it will be convenient at this stage to review the literature on the subject.

It has been known for a considerable time that there is a relationship between paroxysmal haemoglobinuria and syphilis in a certain number of cases.

Ehrlich, in 1881, described the case of a woman with paroxysmal haemoglobinuria who was in the secondary stage of syphilis.

Murri also described cases which were ultimately cured by antispecific treatment.

Királyfi Geza describes a case of paroxysmal haemoglobinuria in which there had been syphilis 30 years previously.

In such a case it is somewhat difficult to prove the



association of syphilis with paroxysmal haemoglobinuria owing to the great interval between the occurrence of the syphilitic infection and the onset of the attacks of paroxysmal haemoglobinuria.

Macalister has collected 39 cases from the records of Guy's Hospital and in these there was a syphilitic history in 60%.

Stempel has collected 77 cases and gives the percentage as 29.

Thus the evidence of the association of paroxysmal haemoglobinuria with syphilis is far from being conclusively established. No doubt this is due to the fact that till quite recently the evidence of a syphilitic infection was based on clinical manifestations and on a positive family history. Frequently the patient denies having had syphilis and in so-called latent syphilis there are no clinical manifestations. It is also recognised that a considerable number of children suffering from congenital syphilis show no clinical evidence.

Thus opinion seems to be somewhat diverse regarding the causation of paroxysmal haemoglobinuria. Herringham says:- "there are certain factors which predispose to haemoglobinuria, one is undoubtedly syphilis". Garrod says:- "in some cases this malady would appear to have a syphilitic origin but not infrequently no such antecedent cause can be traced."

Since the discovery of the syphilis reaction of Wassermann, Neisser and Bruck in 1907 more light has been thrown on the subject. Many obscure conditions not thought to be due to syphilis have now been proved to have a syphilitic origin. Browning and the Writer have examined a number of cases of paroxysmal haemoglobinuria and

I append here the results of experiments which I have personally carried out.

In three out of the 5 cases which I have tested the Donath-Landsteiner reaction was positive. One of the negative cases also gave a negative Wassermann reaction, while the other gave a positive Wassermann reaction.

EXPERIMENTS ON THE PROPERTIES OF THE SERUM FROM  
PAROXYSMAL HAEMOGLOBINURIA.

Certain properties of paroxysmal haemoglobinuric serum have been investigated, regarding which work done hitherto is deficient or contradictory.

As regards the thermo-resistance of the immune body the serum is first inactivated for half-an-hour at 55°C. The immune body may or may not persist.

In one case the inactivated serum 0.2 c.c. was placed in contact with 0.01 c.c. of a 1:2 dilution of human red blood corpuscles for three quarters of an hour at 0°C. This was centrifuged, the serum removed and washed with ice cold saline. Fresh normal serum 0.2 c.c. was added and on incubation for 2 hours at 37°C lysis occurred. A control experiment shewed that the normal serum by itself had no lytic action on the red cells employed. In a second case the heated serum had practically no sensitizing power, even when exposing the corpuscles at 0°C to a mixture of heated haemoglobinuric serum and fresh normal serum, (as suggested by Moss).

The dissociation of immune body was demonstrated by taking 0.01 c.c. of diluted corpuscles of the second case which were

exposed to  $0^{\circ}\text{C}$  for three quarters of an hour, with 0.2 c.c. serum, washed with ice cold saline and then incubated at  $37^{\circ}\text{C}$  for three quarters of an hour with 0.2 c.c. of normal saline solution. The mixture was then centrifuged, the supernatant fluid removed and complement added but no haemolysis took place. This experiment proves that dissociation of the immune body had occurred. With the same serum and the diluted corpuscles of another patient a similar experiment was carried out but failed to produce dissociation. Dissociation could also be brought about with the corpuscles of the first case when sensitized with 0.2 c.c. of its own fresh serum. Thus it is shewn that in the action of the lysins there is considerable individual variation.

Sachs and Bolkowska have shewn that red blood corpuscles along with excess of immune body may absorb certain constituents of complement at  $0^{\circ}\text{C}$ . Thus when carbonic acid gas is passed through serum the complement is separated into middle piece and end piece. In their experiment middle piece is absorbed.

Fresh haemoglobinuric serum in one case was treated with an equal volume of washed human red blood corpuscles at  $0^{\circ}\text{C}$  for  $1\frac{1}{2}$  hours, and then rapidly centrifuged. This constituted treated serum. 0.2<sup>cc</sup> of this treated serum was then added to 0.01 c.c of 1:2 diluted corpuscles which had previously been kept at  $0^{\circ}\text{C}$  for three quarters of an hour with 0.01 c.c. of haemoglobinuric serum, and the haemoglobinuric serum centrifuged and pipetted off before the addition of the treated serum. No haemolysis occurred. The failure to cause haemolysis was due to the fact that certain constituents

of the complement had been removed from the fresh serum along with the immune body by the corpuscles during the process of treating at  $0^{\circ}\text{C}$ . The red corpuscles which had been treated with the fresh haemoglobinuric serum at  $0^{\circ}\text{C}$  were washed, incubated at  $37^{\circ}\text{C}$ , without haemolysis, but were lysed on the addition of 0.2 c.c. treated serum.

It was found that middle-piece did not restore the complementing action of the treated serum for human red blood corpuscles sensitized with inactivated haemoglobinuric serum or for sensitized ox blood corpuscles.

When fresh haemoglobinuric serum was treated with human blood corpuscles at  $37^{\circ}\text{C}$  it was found this did not remove either the immune body or the complement.

In the case of Robert P., aged 16 years the serum gave a positive Donath-Landsteiner reaction 2 years after an attack, thus proving that the autohaemolysin may persist long after an attack of paroxysmal haemoglobinuria has ceased.

In the literature various writers refer to cases of paroxysmal haemoglobinuria examined for the Wassermann reaction. Thus Grafe and Muller, 1908, quote the case of a man, aged 66, who had his first attack of haemoglobinuria 5 years previously. No evidence of syphilis; negative family history. Second wife childless. Wassermann reaction is positive.

Moro, Noda and Benjamin, 1909. Boy, aged 4. First attack two years before. Two brothers older in good health. Patient has no stigmata. Wassermann reaction is positive.

Moss, 1911, quotes three cases. The first is that of a negress, aged 8. First attack of haemoglobinuria at age of 3. Child is small but well nourished. Teeth are normal. There is exophthalmos but thyroid not enlarged. Liver and spleen enlarged. Superficial glands enlarged. Three older children are dead. One died of diphtheria. A second died of umbilical haemorrhage when a few days old, while the third had an umbilical haemorrhage when 12 hours old. Within the next month two more haemorrhages occurred and the child died. Patient was the fourth child. Fifth child alive and well. Sixth pregnancy was a still birth. Father alive and well. Wassermann reaction is negative. Mother is alive but is subject to asthma and excessive haemorrhage at the menstrual periods and at child birth.

The second case is that of a negro, aged 7. His first attack occurred at the age of  $4\frac{1}{2}$ . Teeth are normal; no specific stigmata. Wassermann reaction is positive. Father alive and well. Wassermann reaction is negative. Mother alive and well: 4 abortions and a suspicious death at the age of two months.

The third case was that of a man, aged 32, whose first attack occurred at 24. Wassermann reaction is positive.

Glaessner and Pick, 1911. A male patient, aged 48, whose first attack occurred at the age of 41. His pupils are narrow and unequal, reacting sluggishly to light. Wassermann reaction is positive.

Takahara, 1910, examined 5 Japanese children and he obtained a positive Wassermann reaction in 4.

Burger, 1912. I. A male patient, aged 42. First attack when 34. He admits having had gonorrhoea and had severe rheumatism in

1886. Wassermann reaction is markedly positive. Donath and Landsteiner reaction is positive. II. A male patient, aged 31. Towards the end of the year 1910 he met with an accident but was able to walk home. In five days he resumed work though there was slight pain in the back. Two months later he had a rigor, giddiness and vomiting. He had an inclination to pass urine and it was of a dark colour. His wife and two children are alive and well. No abortions. Family history and physical examination are negative. The cerebro-spinal fluid gives a negative Wassermann reaction, while the blood serum gives a markedly positive result. After an attack the urine contained a trace of albumen and some scanty granular tube casts. The lungs appeared normal, though he had repeated attacks of haemoptysis. III. Of 182 cases with a positive Wassermann reaction one gave a positive Donath-Landsteiner reaction. A female patient, aged 20, stated that her brother had periodic attacks of passing dark coloured urine. It is worthy of note that the serum of the girl only lysed the red blood corpuscles of other people - an isolytic phenomenon.

Kumagai and Inoue, 1912, of 20 cases examined 7 had acquired syphilis (age ranged from 27 to 53). All gave a positive Wassermann reaction. Of 10 cases in which the syphilis was of congenital origin (age ranged from 6 to 42) 6 gave a positive result, while in the remaining 3 cases (aged 14, 24 and 49) the Wassermann reaction was markedly positive, though there was no clinical evidence and the family histories were negative.

Grafe, 1911, quotes the case of a boy, aged 10, whose first attack occurred at 5 years. Attacks became more frequent, occurred

even in Summer or while the patient lay in bed in a warm room. (It is interesting to bear in mind the well established fact that haemoglobinuria sometimes occurs in healthy individuals as the result of excessive heat applied to the surface of the body, such as occurs in some extensive burns even of a mild degree. Such corpuscular destruction may be produced in an entirely different manner, but it is possible we have to do in both cases with the action of a toxin). The patient gave a markedly positive Wassermann reaction. Serum of father is markedly positive, that of mother is negative.

Matsuo, 1912, describes 11 cases. 10 gave a positive Wassermann reaction. The negative case gave a positive specific history. Of the 10 positive cases there was evidence of syphilis either from the family history or from clinical examination in 8 cases (6 of the cases were of congenital origin). Thus Matsuo has confirmed the view held by Herringham and others that there is a hereditary predisposition to paroxysmal haemoglobinuria, for example, a father had an attack of acquired syphilis. There were three children of the marriage and of these 2 suffered from paroxysmal haemoglobinuria. In another case the child had paroxysmal haemoglobinuria, the father had had syphilis and later had haemoglobinuria before the birth of the child.

Cooke, 1912, describes the case of a negro, aged 38, who showed no clinical evidence of syphilis but who gave a positive Wassermann reaction.

Betti describes the case of a man, aged 41, who had acquired syphilis at the age of 19 and who gave a positive Wassermann reaction.

Accordingly the results of the Wassermann reaction in the cases here recorded, as well as those in the literature when taken along with the evidence afforded by other methods of examination (family history, &c.) leave no doubt that paroxysmal haemoglobinuria e frigore is practically always the result of syphilitic infection; although how the syphilis brings about this disease is quite obscure.

I have personally investigated the conditions in 7 cases of paroxysmal haemoglobinuria. In each case the family and individual history was gone into, a clinical examination made, a Wassermann reaction done on the serum of the patient in all cases and in every instance but one on some other members of the family. In 5 instances the Eason, Donath-Landsteiner phenomenon was tested for - three positive and two negative results being obtained.

Of the 7 cases 6 gave a positive Wassermann reaction and one was negative (Lizzie J., April, 1912). The mother of the negative case showed no clinical evidence of syphilis but her first 3 pregnancies terminated in abortion, the fourth child died at 14 months, presumably from convulsions, the next child is mentally dull, has clinical evidence of syphilis and the Wassermann reaction is positive.

It is, therefore, evident in paroxysmal haemoglobinuria, as in other conditions that a negative Wassermann reaction in the patient is not sufficient grounds for saying that the condition is not due to syphilis.



March 1911. Alexander K., aged 27. The first attack of haemoglobinuria occurred three years ago. Attacks occur only in very cold weather, on exposure to damp in pursuit of his occupation as a tile-layer, which the patient has followed since the age of fourteen. Outdoor work as a labourer in cold weather does not cause attacks, provided that the patient maintains his heat by continuous exercise. The Wassermann reaction is positive. The patient suffered from a penile sore at the age of seventeen. He was treated for a fortnight only. He was married at twenty. Of four children, three are alive and well, aged  $6\frac{1}{2}$ ,  $5\frac{1}{2}$  and 2 (not examined). The fourth died of pneumonia. Patient's wife has had no miscarriages, and her serum gives a negative Wassermann reaction.

December 1911. Edith S., aged  $5\frac{1}{2}$ . A well-nourished girl with no evidence of disease in any organ and with no appearance at all suggestive of specific disease. The child never had any eruptions, and enjoyed good health except for an attack of pneumonia when two years old. The first attack of haemoglobinuria occurred at the age of three, after being out of doors in cold weather. The attacks at first occurred several times a week. After exposure to cold, shivering occurred, and then the child fell asleep; on waking, the first specimen of urine which was passed contained haemoglobin; later the haemoglobinuria persisted for about 12 hours. Attacks occurred throughout the winter of 1909 and 1910. The child was admitted to hospital for the first time in the spring of 1911. In April, 1911, an attack was brought on by a cold foot-bath; the haemoglobinuria

which occurred lasted for 48 hours. Attacks ceased during the spring and summer, but in October they occurred again, the first appearance of haemoglobinuria occurring 10 minutes after the shivering. In November, 1911, attacks occurred twice daily, even although the child was kept entirely in bed. The Wassermann reaction with the blood-serum was positive on several occasions in April 1911; in December 1911, the reaction was negative or only weakly positive on repeated tests. A positive Eason, Donath-Landsteiner phenomenon was repeatedly obtained with the patient's serum. From November, 1911, to January 30th. 1912, she was again resident in the hospital. Regular outdoor exercise in cold weather during this period produced no haemoglobinuria; but on the day of dismissal an attack occurred which lasted for three days. Family history.- The patient's mother is aged 35; she has been twice married. Of the first marriage the three eldest children are alive and well; the fourth died at  $2\frac{1}{2}$  years of pneumonia; the fifth pregnancy ended in a still birth at the seventh month. During this pregnancy the husband suffered from venereal infection and his hair fell out; the wife was troubled with sore throat, continuous headache, and a persistent, blood-stained, purulent vaginal discharge. She is not aware of any rash having been present. The sixth pregnancy resulted in a miscarriage. The seventh foetus was born at full time and died aged 3 months, with an eruption on the nates. Of the second marriage the first child was born at full time; a bullous eruption appeared on its feet at the age of 2 weeks; the child did not thrive and died at 3 months. The second child is

the patient. The third child aged  $3\frac{1}{6}$  years, was born at full time and has always been healthy, with no stigmata suggesting syphilis; the Wassermann reaction is positive. The fourth child is 15 months old and in poor health (blood not tested). The mother's serum reacted positively to the Wassermann test in March, 1911, but negatively on repeated examination in December, 1911. The second husband, father of the patient, presented no signs of the disease and had never shown any evidence of syphilis. In December, 1911, his blood gave a negative Wassermann reaction. March, 1912. Robert P., aged 17. Wassermann reaction is positive. The central incisors are short, broad, and wide apart, with the suggestion of a notch. The patient is mentally somewhat dull. Height 5 feet, 5 inches; weight 7 stone 4 lbs. The first attack of paroxysmal haemoglobinuria occurred at the age of 12, two months after pneumonia. The attacks were induced by cold, especially along with excitement, e.g., after outdoor games at school. The attacks occurred, on an average, at intervals of 5 weeks, but were more frequent in very cold weather. Shivering occurred about eight hours before the haemoglobinuria; other prodromal symptoms were frontal headache, a feeling of numbness all over the body, and blueness of the lips. On admission to hospital at that time it was noted that the patient's feet were blue, but there was no oedema, and no casts were present in the urine. Profuse sweating occurred two to three days after the attacks. The paroxysms of haemoglobinuria continued to occur for two years. At the age of 14 he began to work as a miner; the last attack occurred  $2\frac{1}{2}$  years ago and lasted for one day.

It is interesting to note that the Donath-Landsteiner reaction is still given at the age of 17, although no haemoglobinuric attacks have occurred for such a prolonged period. Family history.- Patient's father is a miner. His mother is alive and well. Their house is somewhat untidy. The sera of both parents give a negative Wassermann reaction. There have been no miscarriages. There is only one other child, a boy, aged 14, who has an enlarged heart. His serum gives a negative Wassermann reaction.

April, 1912. Lizzie J., aged 6½. The first attack of haemoglobinuria occurred seven months before. On physical examination there is no evidence of specific disease. The Wassermann reaction is negative. A Donath-Landsteiner reaction was not obtained, even when human complement was added from another patient. Family history.- Father not examined. He was a soldier, being in the South African War. He is now a sailor and his ship trades with China. Mother, aged 39, shows no manifestations of syphilis. Wassermann reaction is negative. The first three pregnancies resulted in abortions; the fourth pregnancy resulted in a child which died after 14 months (from teething!); the fifth child, a girl, aged 16, is well, but appears mentally dull and has teeth of the Hutchinsonian type; her serum gives a positive Wassermann reaction. The sixth, aged 13, was suffering from rheumatic fever and chorea at the time of examination. Wassermann reaction is negative. Seventh child died when one year old from convulsions. The eighth is the patient. The ninth died, aged 6 months, with convulsions. The tenth is a baby, who seems in poor health (serum not tested).

May 1912. William W., aged 8. Patient is a bright and apparently healthy boy, with no evidence of specific disease. The Wassermann reaction is positive. The Donath-Landsteiner reaction is positive. The first attack of haemoglobinuria occurred in March 1912. Attacks were associated with shivering, headache, vomiting and cyanosis of the lips and ears. Family history.— Father had venereal disease at 18; his hair fell out in patches and he suffered from severe headache; he was treated for a month in the Royal Infirmary, Glasgow. The Wassermann reaction is positive. When 21 years old he married patient's mother. She had a labial sore after marriage. She has been married for 10 years. There is the suspicion of her having had a miscarriage before she had any children. The Wassermann reaction is positive. The first child is the patient. The second child, Kate, aged 6, looks healthy and bright with no stigmata of specific disease. Wassermann reaction is positive. The third is a boy, Francis, aged 4, healthy. Wassermann reaction is negative. The fourth child is 2½ (not examined). The house is clean and tidy.

December, 1912. Mary C., aged 9. Patient seems healthy, well nourished and without any definite stigmata of hereditary syphilis, although the upper central incisors are wide apart, short, and pegged. The first attack of haemoglobinuria occurred at the age of 2½ years and there was no other for 6 months. Thereafter attacks became more frequent. The child had measles when 6 months old. During her second year her state of nutrition was apparently poor, (She was said to suffer from "decline"), and she was affected with snuffles. The Wassermann reaction is

positive. The Donath-Landsteiner phenomenon is positive.

Family history.— The father had syphilis. The first three children were born dead. The fourth child, aged 8, the fifth, aged 6, and the seventh, aged 5 months, died almost simultaneously, all probably from cerebro-spinal meningitis. The patient is the sixth child.

May, 1913. Ruth H., aged 3. Patient is an illegitimate child. The mother, aged 21, is in poor health and is employed in tea rooms. She has two illegitimate children. First, Ruth. Second, a boy of 7 months. Patient seems a healthy child, mentally bright but somewhat "peevish" and irritable. She presents no specific stigmata. She was breast-fed for 2 months, walked at one year and talked about the same time. Her first attack of haemoglobinuria occurred in October 1912 (the date of the Autumn holiday). The day was very cold and the mother and child sailed to Rothesay in the fore part of the steamer. On the way the child had "shivering turns" and had an inclination to pass urine. The lips became blue and the hands were visibly swollen. The child fell asleep before Rothesay was reached and, though there had been inclination to pass urine, no micturition took place till the port of destination was reached, when the mother noticed the urine was like port wine. Since then there have been several attacks. With each attack there is slight swelling of the hands, especially the left, which become cyanosed. Patient was admitted to Hospital on April 16, 1913. Since then there has been only one attack, which occurred on May 7, 1913. Under the microscope only a few red blood cells are seen. The

specimen contained much colouring matter being dark reddish-brown in colour. All systems are normal. R.B.C. 4,800,000, W.B.C. 7000, Hb. 70%. Donath-Landsteiner reaction is negative. Wassermann reaction is positive. The mother is pale and anaemic. She suffers from severe nocturnal headache, has frequent sore throat, which sometimes lasts for a month at a time, and occasionally has a sero-sanguineous discharge. At present she is hoarse and the fauces are markedly hyperaemic. The Wassermann reaction is positive.

#### SUMMARY.

1. Seven cases have been examined - 6 children and one adult, and 5 of the children and the adult give a positive Wassermann reaction.
2. The mother of the negative case has had several abortions and the oldest living child of the family has specific stigmata and a positive Wassermann reaction.
3. The adult patient gives a definite history of acquired syphilis, along with a positive Wassermann reaction.
4. All the children, except one, present no evidence of syphilis, and seem in fairly normal general health.
5. Robert P. has suspicious appearances of the upper central incisors. His brother has an enlarged heart (Dr. Cowan, Royal Infirmary confirms this opinion). In the other 5 children there is evidence of syphilis in the parents.
6. The mothers of three children had abortions.
7. In the literature there are records in which the Wassermann reaction was done in 59 instances, and 53 gave a

positive result or 92%.

8. The occurrence of a positive Wassermann reaction with the serum of the majority of cases of paroxysmal haemoglobinuria, along with the collateral evidence afforded by the presence of a positive Wassermann reaction with the sera of other members of families, even where the patient reacts negatively as in the case of Lizzie J., the history pointing to syphilis in the parents of haemoglobinuric children, and the stigmata of congenital syphilis in brothers and sisters, although absent in the patients themselves, constitute a very strong basis for the opinion that syphilitic infection is practically invariably present in cases of paroxysmal haemoglobinuria e frigore.

I have much pleasure in offering my thanks to Professor Hunter, and Drs. Cowan, Monro and Ness for their kindness in placing these cases at my disposal.



The fact that human serum may exert an accelerating or retarding action in cobra venom haemolysis is now well recognized. A considerable amount of attention has been paid to the analytical action of human serum in cobra venom on haemolysis, especially with a view to establishing the existence of characteristic

### PART THREE.

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### in the presence of COBRA VENOM HAEMOLYSIN.

A review of the work of Calmette, Maschl and Gratow, of v. Szabli, of Ritter and Steck would lead one to believe that in tuberculous sera in the auxiliary action of the serum in cobra venom haemolysis a relatively reliable diagnostic reaction.

Unfortunately the results of other investigators indicate a lesser constancy of the reaction and Fauer and Lehndorff showed that the reaction was found more commonly in diseased conditions generally than in the case of the healthy.

This phenomenon has also been investigated in relation to pregnancy; for example, Bauer and Lehndorff obtained a positive reaction with the serum separated from the retro-placental blood at parturition in practically all cases investigated.

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The fact that human serum may exert an accelerating or retarding action in cobra venom haemolysis is now well recognised. A considerable amount of attention has been paid to the auxiliary action of human serum on cobra venom on haemolysis, especially with a view to establishing the existence of characteristic reactions for diagnosis of certain diseases. Many striking results have been published by various Authors. Perhaps, the most important of these are the observations regarding the power the sera of tuberculous subjects to produce lysis of horses' red blood corpuscles (which are comparatively insusceptible to venom by itself) in the presence of cobra venom.

A review of the work of Calmette, Massol and Breton, of v. Szaboki, of Eitner and Stoerk would lead one to believe that in tuberculosis we have in the auxiliary action of the serum in cobra venom haemolysis a relatively reliable diagnostic reaction. Unfortunately the results of other investigators indicate a lesser constancy of the reaction and Bauer and Lehndorff shewed that the reaction was found more commonly in diseased conditions generally than in the case of the healthy.

This phenomenon has also been investigated in relation to pregnancy; for example, Bauer and Lehndorff obtained a positive reaction with the serum separated from the retro-placental blood at parturition in practically all cases investigated.

The work of v. Graff and v. Zubrzycki and also of Romer is

in agreement with these results.

V. Graff and v. Zubrzycki found that a large proportion of sera from cases of carcinoma give a positive reaction.

H.G. and A.S. Grunbaum carried out experiments on the effect of heated human serum in causing haemolysis of guinea pigs' red blood corpuscles with cobra venom. They found that serum from cases of syphilis, phthisis, leukaemia and certain other diseases exercised a somewhat inhibitory action while sera from cases of sarcoma, pneumonia and appendicitis shewed a distinct auxiliary effect. A very interesting phenomenon was elicited by these workers in relation to the reaction of the serum to vaccines. They found that the auxilytic effect of the serum corresponded with the negative phase in the opsonic test.

Another important branch of work on this subject is that carried out by various investigators on mental conditions. Much and Holzmann took as their index the action of fresh human serum on the lysis of human blood corpuscles by cobra venom (human blood corpuscles being susceptible to the lytic action of venom by itself) They found that in cases of Dementia.Precox of the Kraepelin type and Motor Melancholia (depressive manic insanity) the serum was markedly antilytic. The constancy of their results led them to believe that this effect was diagnostic of these mental conditions. Ross and others, however, have found that this phenomenon was not sufficiently constant to be regarded as a specific reaction.

On reviewing the whole subject certain contradictions have come to light and therefore it appeared to be of importance to

carry out a systematic examination of the behaviour of the sera of patients suffering from a large number of different mental and general diseases. The sera employed for this research were obtained from various sources (a) Dykebar Asylum, (where I was Assistant Medical Superintendent) (b) General Hospital and Maternity Hospital, Glasgow. The Asylum cases included every condition commonly found in a District Asylum. The material for the second part of the investigation was obtained from the Royal, Western, and Eye Infirmaries, Glasgow, and the Maternity Hospital, Glasgow.

The method employed was as follows:- The test corpuscles used were those of the ox which are insusceptible to the action of cobra venom by itself. A 5 per cent. suspension of washed ox blood was used, and in most of the experiments was sensitised with cobra venom in the proportion of 0.1 c.c. of 1:1000 venom to 10 c.c. blood suspension. The patient's serum was taken at various times before and after meals. The action of both fresh serum and of serum heated at 57°C for half-an-hour was made the subject of observation. In the tests with sera from the mental cases, as a rule heated sera were alone used.

The tests were carried out by adding to a series of tubes containing 0.5 c.c. of ox blood suspension, plus venom, varying quantities of the heated serum from 0.01 c.c. to 0.2 c.c. The mixture was incubated at 37°C. usually for 2 hours (occasionally from varying periods up to 18 hours), being shaken several times during this period. The tubes were then allowed to stand till next day when the results were read. In this way an estimate was made

of the lytic effect of the serum.

In the tables only the minimum haemolytic dose and the maximum non haemolytic doses are given. The results of the examination of 525 cases shew in the clearest fashion that human serum which has been heated at 55-57°C. only very rarely possesses the property of "activating" cobra venom lysin for ox corpuscles. Certain sera do, however, exert a powerful action. Thus 0.02 c.c. of the heated serum of the case "W.R.M." in a number of tests caused complete lysis of 0.5 c.c. venomised ox blood corpuscles. Control experiments shewed that the serum by itself in an amount of 0.25 c.c. was not lytic for the test corpuscles. This powerful lytic action of serum "W.R.M." did not depend on an unusual susceptibility of the ox corpuscles employed on these occasions since a number of other heated sera in amounts of 0.25 c.c. were without lytic action for the same corpuscles plus venom. "W.R.M." was a case of general paralysis of the insane, the diagnosis being confirmed by the examination of the brain post-mortem. It is interesting to note in contrast to the results of Calmette, Massol and Breton and to those of v. Graff and v. Zubrzycki that no lesion of tubercular or of tumour character was found in this patient.

Control experiments in a number of cases have shewn that heated sera which caused lysis along with cobra venom were also haemolytic on the test corpuscles by themselves - the amount of lysis in the series with and without venom being practically equal. Thus the normal lysin for ox corpuscles occasionally present in human serum is comparatively thermo-stable. As most of the workers on this subject make no definite mention of such control experiments

it is possible that undestroyed normal lysin for the test corpuscles employed may be responsible for some of their results.

As the tables shew a wide variety of mental and of general diseases were tested, and no characteristic alteration of the serum as regards its venom activating property was found in any particular disease. The examination of 20 women in the puerperium also failed to yield evidence of any alteration in the sera.

The possibility of venom activating properties of serum being due to lipid content was kept in view. Accordingly several "milky" sera were centrifugalised for a long time so as to produce marked separation into an upper creamy layer and a lower clear stratum. No difference was found in the venom activating power of the top and bottom layers, each of which was moderately active.

The results in most of the cases of mental disease are appended in tables as they illustrate what has been found in general. In view of the negative character of the observations the details of cases of general diseases and eye conditions are omitted. 50 cases of various eye diseases and 320 cases of diseases found in general hospital were investigated. The following list shews how the latter was made up:-

Bronchitis .....	31
Carcinoma .....	19
Cardiac disease .....	53
Cerebral Haemorrhage .....	39
Chorea .....	11
Diabetes .....	9
Dilated stomach .....	13

General diseases (contd.)

Lysis	Disseminated Sclerosis .....	23	of ex blood
plus 0.00005	Hodgkin's disease .....	2	
Serum	Leukaemia .....	4	use.
	Locomotor ataxia .....	21	
Dose	Nephritis (acute and chronic) ...	25	
	Paroxysmal haemoglobinuria .....	3	Result.
J.L.F.,	Phthisis Pulmonalis .....	12	
J.H.,	Pneumonia .....	32	0
G.W.,	Rheumatism .....	10	
M.B.,	Syphilis .....	10	0
J.M.,	Tumours of brain .....	<u>3</u>	0
M.B.,	0.01 c.c.	Total	0.15 c.c. 320
J.M.,	0.1	-----	0.15 c.c. f.t.
R.H.,	0.05 c.c.	0	0.15 c.c. m.
K.D.,	0.025 c.c.	0	0.15 c.c. t.

Contractions used in the Tables.

J.S.,	c. = complete.	f.t.	t. = trace.	c.
J.C.,	j.c. = just complete.	0	f.t. = faint trace.	0
J.D.,	a.c. = almost complete.	0	v.f.t. = very faint trace.	
M.R.,	m. = marked.	t.	d. = distinct.	t.
M.H.,	v.m. = very marked.	0	0 = no lysis.	f.t.

W.K.,	0.05 c.c.	-----	0.15 c.c.	t.
J.H.,	0.01 c.c.	0	0.15 c.c.	v.f.t.
M.C.,	0.01 c.c.	0	0.15 c.c.	v.f.t.
W.H.,	0.1 c.c.	0	0.15 c.c.	f.t.

TABLE I.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

Dementia (Primary and Secondary).

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
J.L.F.,	0.01 c.c.	0	0.1 c.c.	t.
J.H.,	0.01 c.c.	0	0.15 c.c.	0
G.W.,	0.01 c.c.	0	0.04	c.
M.B.,	0.01 c.c.	0	0.15 c.c.	0
J.M.,	0.01 c.c.	0	0.15 c.c.	0
M.B.,	0.01 c.c.	0	0.15 c.c.	0
J.M.,	0.1 c.c.	0	0.15 c.c.	f.t.
R.W.,	0.06 c.c.	0	0.15 c.c.	m.
K.B.,	0.025 c.c.	0	0.15 c.c.	t.
H.L.,	0.01 c.c.	0	0.1 c.c.	c.
J.W.,	0.01 c.c.	f.t.	0.1 c.c.	c.
J.C.,	0.01 c.c.	0	0.15 c.c.	0
J.D.,	0.01 c.c.	0	0.15 c.c.	0
M.R.,	0.01 c.c.	t.	0.15 c.c.	t.
H.L.,	0.1 c.c.	0	0.15 c.c.	v.f.t.
W.K.,	0.06 c.c.	0	0.15 c.c.	t.
J.H.,	0.01 c.c.	0	0.15 c.c.	v.f.t.
M.C.,	0.01 c.c.	0	0.15 c.c.	v.f.t.
W.L.,	0.1 c.c.	0	0.15 c.c.	f.t.



TABLE I. (Contd.)

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
H.L.,	0.1 c.c.	0	0.15 c.c.	f.t.
C.C.,	0.06	0	0.15	f.t.
G.W.,	0.01	d.	0.025	c.
K.B.,	0.04	0	0.15	m.
R.M.,	0.01	0	0.15	j.c.
G.W.,	0.01	0	0.06	j.c.
G.W.,	0.01 1 hr. 57°C	0	0.04	a.c.
G.W.,	0.01 2 hr. 57°C	0	0.04	a.c.
W.L.,	0.1 $\frac{1}{2}$ hr. 57°C	0	0.15	f.t.
W.L.,	0.1 1 hr. 57°C	0	0.15	0
W.L.,	0.1 2 hr. 57°C	0	0.15	0

TABLE II.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

Mania (acute and chronic)

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
A.R.,	0.005 c.c.	0	0.075 c.c.	0
A.G.,	0.0005	0	0.075	t.
A.T.,	0.01	d.	0.1	j.c.
A.T.,	0.01	t.	0.1	a.c.
W. McG.,	0.01	c.	0.15	m.
W. McG.,	0.01 ox blood I	m.	0.025	c.
W. McG.,	0.01 " " II	m.	0.15	v.m.
W. McG.,	0.01 " " VI	c.	0.15	m.
W. McG.,	0.025	0	0.15	m.
S.S.,	0.1	0	0.15	t.
S.S.,	0.01	0	0.15	0
R.G.,	0.01	0	0.15	0
A.G.,	0.01	0	0.1	j.c.
W. McG.,	0.1	0	0.15	v.f.t.
A.R.F.,	0.01	0	0.15	t.
C.C.,	0.01	0	0.15	0
M.F.,	0.01	0	0.15	0
W. McG.,	0.01	0	0.15	0
W. McG.,	0.025	0	0.15	a.c.

TABLE III.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

General Paralysis.

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
C.D.,	0.005 c.c.	0	0.075 c.c.	t.
A.R.W.,	0.005	0	0.03	c.
C.D.,	0.025	0	0.15	t.
C.D.,	0.06	0	0.15	t.
A.R.W.,	0.06	0	0.15	m.
J.R.,	0.06	0	0.15	t.
C.D.,	0.06	0	0.15	f.t.
J.P.,	0.06	0	0.15	m.
Lecithin control	0.025	0	0.06	j.c.

Foot Note. -

The Lecithin is made in such a way that there is no turbidity, thus 0.1 of 0.75 per cent. is quickly blown from a pipette into 2.9 c.c. of a 0.85 per cent. solution of sodium chloride

TABLE IV.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

Melancholia.

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
D.M.,	0.01 c.c.	0	0.15 c.c.	0
R.D.,	0.01	0	0.1	c.
R.W.,	0.01	0	0.15	0
R.D.,	0.01	0	0.15	m.
R.W.,	0.1	0	0.15	t.
G.C.,	0.01	c.	0.15	f.t.
A.C.G.,	0.1	0	0.15	t.
P.C.,	0.1	0	0.15	f.t.
G.C.,	0.025	0	0.15	a.c.
R.D.,	0.01	0	0.1	j.c.
R.D.,	0.1	0	0.15	t.
M.C.D.,	0.06	0	0.15	v.m.
J. McN.B.,	0.01	0	0.15	0
J.G.,	0.4	0	0.15	t.

TABLE V.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

IMBECILITY.

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Dose.</u>	<u>Dose.</u>	<u>Result.</u>
R.C.,	0.01 c.c.	d.	0.15	0.15	0	0
C.W.,	0.04	0	0.15	0.15	t.	d.
T. McA.,	0.01	v.m.	0.15	0.1	0	m.
T.O.,	0.01	t.	0.15	0.15	t.	t.
S.G.,	0.1	0	0.15	0.15	0	t.
W.Y.,	0.01	0	0.15	0.15	0	0
T.O.,	0.01	0	0.15	0.15	0	0
M.D.F.,	0.01	0	0.15	0.15	v.m.	0
R.A.M.,	0.01	0	0.15	0.15	0	0
T.O.,	0.01	0	0.15	0.15	0	0
Lecithin control	0.01	0	0.05	0.035	c.	c.

TABLE VI.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood  
plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

(a). Delusional Insanity, (b). Recurrent Insanity,  
(c). Paranoia, (d). Senile Insanity.

Epileptic Insanity.

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
W.C.,	0.01 c.c.	0	0.15 c.c.	0
P.S.,	0.01	m.	0.15	t.
C.R.,	0.01	0	0.15	0
R. McG.,	0.06	0	0.15	t.
W.C.,	0.01	0	0.15	0
J.M.,	0.01	0	0.15	0
W.C.,	0.01	0	0.15	0
R. McG.,	0.04	0	0.15	v.m.
R. McG.,	0.01	0	0.15	0
M.D.F.,	0.01	0	0.15	0
Lecithin control	0.035	0	0.05	c.
Lecithin control	0.01	v.f.t.	0.05	c.

TABLE VII.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

Incubated at 37°C. for 18 hours.

(a). Delusional Insanity, (b). Recurrent Insanity,

(c). Paranoia, (d). Senile Insanity.

(a) Delusional Insanity.

	<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
J. McK.,	0.01 c.c.	a.c.	0.15	t.
C.N.,	0.1	0	0.15	v.f.t.

(b) Recurrent Insanity.

J.G.,	0.025	0	0.1	d.
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(c) Paranoia.

T. McG.,	0.01	t.	0.15	0
T. McG.,	0.1	0	0.15	t.

(d) Senile Insanity.

Mrs. A.	0.01	0	0.15	m.
Mrs. A.	0.06	0	0.15	d.
Mrs. A.	0.01	0	0.15	0
Lecithin control	0.01	v.f.t.	0.05	c.

TABLE VIII.

Lysis of 0.5 c.c. of 5 per cent. suspension of ox blood plus 0.00005 gram cobra venom.

Serum heated for half-an-hour at 57°C. before use.

Incubated at 37°C. for 18 hours.

Various conditions of Insanity.

		<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
M.D.F.,	Cong. Imbecility,	0.01 c.c.	0	0.15 c.c.	m.
Mrs. A.,	Senile Insanity,	0.025	t.	0.04	c.
M. R.,	Dementia,	0.01	t.	0.025	c.
A.R.F.,	Acute Mania,	0.025	0	0.1	c.
M.C.D.,	Melancholia,	0.01	0	0.06	c.
C.C.,	Mania,	0.01	0	0.15	d.
J.M.B.,	Melancholia,	0.01	0	0.15	0
M.F.,	Acute Mania,	0.06	0	0.15	a.c.
R.A.M.,	Cong. Imbecility,	0.04	0	0.15	a.c.
G.W.,	Dementia,	0.01	0	0.025	j.c.
T.O.,	Cong. Imbecility,	0.01	0	0.15	0
Lecithin control		0.01	0	0.02	c.



TABLE IX.

Lysis of 1 c.c. of 5 per cent. suspension of ox blood plus 0.00001 gram cobra venom.

(a) Serum heated 1 hour at 57°C. before use.

Various conditions of Insanity.

		<u>Dose.</u>	<u>Result.</u>	<u>Dose.</u>	<u>Result.</u>
M.C.,	General paralysis,	0.25 c.c.	0	0.5 c.c.	v.m.
M.L.,	General paralysis,	0.25	0	0.5	t.
M.C.,	General paralysis,	0.01	0	0.2) 0.1)	j.c.) m.)
W.R.M.,	General paralysis,	0.025	0	0.3	j.c.
M.P.,	Mania,	0.2	0	0.5	f.t.
M.G.,	Cerebral-tumour,	0.2	0	0.5	f.t.
(b) Fresh sera plus venom.					
M.C.,	General Paralysis,	0.025	0	0.1	t.
M.L.,	General Paralysis,	0.025	0	0.1	T.
M.C.,	General Paralysis,	0.01	0	0.1	m.
W.R.M.,	General Paralysis,	0.01	0	0.1	t.
M.P.,	Mania,	0.01	0	0.1	t.
(c) Fresh sera without venom.					
M.C.,	General Paralysis,	0.05	0	0.1	0
M.L.,	General Paralysis,	0.05	0	0.1	f.t.
M.C.,	General Paralysis,	0.05	0	0.1	0.
W.R.M.	General Paralysis,	0.05	0	0.1	0
M.P.,	Mania,	0.05	0	0.1	0

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