simple thoughtlessness, giving permission for their names to be added to the list in question.

I am, Sir, yours faithfully,

CHARLES W. HAYWARD,

Liverpool, Jan. 10th, 1911.

Barrister-at-Law, M.D., D.P.H., &c.

[ENCLOSURE.]

To the Clerical Organising Sec. Church Anti-Vivisection Society.

DEAR SIR—In reply to your circular asking me to allow you to add my name to a list of medical practitioners to be used by your league, I must emphatically decline to have my name included in such list.

I am as much against unnecessary cruelty to animals as anybody, but to entirely abolish the right to try the effects of drugs, &c., upon animals would restrict these experiments to being tried upon the human race, which is "out of the frying-pan into the fire!" The Anti-Vivisection Society publishes posters and literature showing that the sufferings of animals in any experiments are equal to similar proceedings with human beings. This is pure dishonesty, and for the purpose of trading upon the ignorance of the public, and raising violent prejudices founded entirely upon ignorant sentimentalism. Animals are saved the mental effects, which are the greater part of human suffering.

Your circular is also in very questionable taste. It asks for names of doctors—"not for publication"—and then offers a temptation to the meaner instincts by stating "we are often asked by Anti-Vivisectionists for the names of Anti-Vivisectionist doctors in their respective neighbourhoods"! Under these circumstances the allusion to "unconscious quackery" is humorous.

Yours faithfully,

CHARLES W. HAYWARD,

Jan. 9th, 1911.

Barrister-at-Law, M.D., D.P.H., &c.

THE USE OF IODINE AS A DISINFECTANT OF THE SKIN BEFORE OPERATIONS.

To the Editor of THE LANCET.

SIR,—Will you permit me to inform Mr. Willmott Evans that he is in error in stating "the first advocate of its use in this country was Mr. H. F. Waterhouse." My original paper was published in the *British Medical Journal* on August 14th, 1909, several months before Mr. H. F. Waterhouse's communication. I there stated that Dr. A. Grossich of Fiume had used liquor iodi, 10 per cent. solution. So far as I am aware, I was the first surgeon to use tincture of iodine, 2½ per cent. solution. May I also point out that, as I have insisted, shaving is unnecessary and the colour of the iodine is an advantage because it shows the limits of its application.—I am, Sir, yours faithfully,

J. LIONEL STRETTON,

Senior Surgeon, Kidderminster Infirmary and Children's Hospital.

Jan. 9th, 1911.

EHRlich's DIAZO REACTION.

To the Editor of THE LANCET.

SIR,—Some remarks in your review of "International Clinics" on p. 1881 of THE LANCET of Dec. 31st, 1910, remind me that I made a long series of experiments with Ehrlich's diazo reaction in various diseases during the early months of 1893. The article containing the results obtained appeared in the *Indian Medical Gazette* for June, 1893. The reaction was most marked in chronic diarrhoea and dysentery and was seen more or less in other diseases.

I am, Sir, yours faithfully,

J. H. TULL WALSH

Jan. 7th, 1911.

Lieutenant-Colonel, I.M.S. (retired).

A METHOD OF SERUM DIAGNOSIS FOR TUBERCLE.

To the Editor of THE LANCET.

SIR,—I was not aware that Dr. W. d'Este Emery was also working on this subject or I would have communicated with him before sending an account of my experiments to you. I had no previous knowledge of work on the subject, but followed the principles of the Bordet-Gengou reaction. Before completing the article I looked up "Hewlett's Bacteriology," and found the statement that Wassermann and Brück had experimented on this subject in 1906, and that they appear to have failed to find tuberculous antibodies in localised or latent tuberculosis, but that Brück had been more successful with acute miliary tuberculosis in the early stages. By the method I described these antibodies can be clearly shown to exist in localised tubercle.

The first point Dr. Emery raises is the standardisation of the fresh tubercle emulsion. My procedure has been to prepare an emulsion on the lines employed for the "opsonic index." I gauge the strength by the appearance. This gives a rough but working standard. I do not find that standardisation of the emulsion is of such extreme importance, for I have obtained equally satisfactory results when

employing 5 c.mm., 10 c.mm., and 20 c.mm. of the same emulsion, with 10 c.mm. of unheated and 40 c.mm. of heated serum. But I fully agree with Dr. Emery that there comes a point when, through an excess of the tubercle emulsion, normal human serum loses its power of hæmolyzing sheep's corpuscles (probably due to fixation of the complement).

Dr. Emery states that 1/500th dilution of his emulsion fixed the complement in one of his tubercle cases in 10 minutes; this, I think, shows that there is a large working range. I also agree with him that even a small quantity of tubercle emulsion decomplements to some degree normal serum, which is shown when equal quantities of normal serum and tubercle emulsion are mixed together. But when heated serum is also employed this decomplementing is to some extent masked, owing no doubt to the increased quantity of sheep's amboceptor present, intensifying the activity of the complement. Also, whereas the loss of complement in 5 c.mm. may be so great as to fail to produce hæmolysis, this is not the case with 10 c.mm. I find that the complement present in 2½ c.mm. is the minimal which will produce a trace of hæmolysis. Hence, if half the complement in 5 c.mm. of normal serum is deflected there will be no hæmolysis, but if half is removed from 10 c.mm. there will be hæmolysis. Dr. Emery does not state the quantity of serum he employs. The anti-complementary substances in serum appear to be removed by heating; Nagouchi also mentions this point in connexion with the syphilis test. I always read a trace of hæmolysis as a negative result, if the salt tube has only faintly hæmolyzed. I also agree with Dr. Emery that an old emulsion gives poor results; this I think is due to the growth of a short broad bacillus.

So as to simplify the technique, I have employed during the last week an emulsion of tubercle bacilli in 5 per cent. carbolic and 1 per cent. salt. This I have standardised with normal and tuberculous sera. I think that this emulsion will keep active for some weeks. Dr. Emery records his results by the length of time required to deflect the complement, and he obtains the extremely interesting result that this can occur in 2½ minutes.

On Dec. 21st, 1910, and again later experimenting with my own serum and a few other normals, ten minutes from drawing the blood, I found the following. 1. That from 2½ to 3 c.mm. were required to show some hæmolysis, this being complete with 5 c.mm. (0.5 c.mm. of sheep's corpuscles). 2. That when the serum was incubated with 20 parts 0.75 per cent. salt for one hour at 98° F., and then the sheep's corpuscles added, there was no trace of hæmolysis with 6 c.mm. of serum, from 7 to 9 c.mm. being necessary to produce a faint tinge (incubated for one hour with the sheep's red cells). That is to say, fresh serum loses a considerable degree of hæmolyzing power when warmed to 98° F. for one hour. 3. That when the serum has stood for one hour over the clot the hæmolyzing substances appear to gain stability and not to lose by warming to 98° F. Hence, the age of the serum is an important detail, serum from three to six hours old being the best, for though some complement is lost there is a marked gain in stability. By diluting human blood with 9 volumes of 1.5 per cent. salt clotting is prevented, and some of this plasma (equal to 10 c.mm. of pure plasma) diluted with 20 parts of 1 per cent. salt and mixed with sheep's corpuscles produced no hæmolysis.

From these experiments (though too few in number) I infer that the quantity of complement in circulating blood is much less than that in serum, and that clot gives to the serum some substances (complement or amboceptor) which increase its hæmolytic activity for sheep's corpuscles. Dr. Emery states that with normal serum in the presence of tubercle emulsion complement is absorbed in 15 to 25 minutes when warmed in the incubator. He does not mention the quantity of serum employed, but if 5 c.mm. I can quite understand if the serum is fresh that this loss will occur with 1 per cent. salt also. I find that a temperature of 125° F. decomplements serum in 10 minutes. In view of these latter results I now leave the serum and tubercle emulsion at room temperature (60° F.) for one and a half hours before adding the sheep's corpuscles; and, when preparing the decomplemented serum, employ a temperature of 125° F. for 10 minutes, as a greater temperature and time may damage the immune bodies.

As regards the immunity index, I have only put this forward tentatively, suggesting it as some indication of