

led to suppose by the writings of others. At the same time, of course, it may, and does, occur that an animal or human being is sensitised by a dose of foreign protein—e.g., serum—and dies suddenly on the administration subsequently of the smallest dose of the same protein after and within a certain time. It is, therefore, a matter of considerable importance that valuable lives should not be risked at the present time in the circumstances which now exist as regards serum production and therapy, when by simple measures all danger can be eliminated. Sera are given so often and with so little regard for the future—so far as the possibility of anaphylaxis is concerned—that it seems worth while to consider whether we should not take steps at once to mitigate the danger of which I have spoken.

Sera are, I believe, at present practically all taken from immunised horses. Surely it would be a wiser course to immunise several different species of the larger animals with the various organisms against which horses are now commonly immunised. If this were done anaphylaxis, which is absolutely specific to the serum of any given species, could be certainly guarded against by using the sera of different animals, immunised against the same organisms, when more than one dose of serum was administered to the same individual after a short interval and within, say, 12 months, and each individual so treated should receive a card, or be marked in some way, for the instruction of those who treat him subsequently.

The matter is one of urgency and gravity; either there is no such thing as anaphylaxis or the course I have mentioned should immediately be adopted by those responsible for the preparation of the various sera.

Meanwhile, it may be worth while to remember that it is said that the fatal phenomena of anaphylaxis can be avoided if the serum be administered while the patient is under the influence of ether. I think we may disregard the statement that to produce anaphylaxis the two injections must be made in identical sites—subcutaneous, intrathecal, &c.

I should also like to allude to another point concerning the administration of sera. Susceptible subjects may be made seriously ill with "serum sickness"; but this can be prevented, or subsequently mitigated, by the administration of large doses of calcium salts by the mouth; three doses, each consisting of two ounces of the liq. calcii lactat. B.P. Codex in half a pint of water, should be administered with four-hourly intervals on the day on which the serum is administered or the "sickness" develops. I can testify to the value of calcium lactate in these circumstances from a personal experience.—I am, Sir, yours faithfully,

Liverpool, Dec. 14th, 1914.

W. BLAIR BELL.

MEDICAL EDUCATION OF WOMEN IN LONDON.

To the Editor of THE LANCET.

SIR,—The increase in the number of women entering upon the study of medicine in London makes it urgently necessary to increase the laboratory accommodation of the London (Royal Free Hospital) School of Medicine for Women. This is not a war appeal, but it appears to the council of the school to be justified even at a time like this by the need of the country for more doctors in the near future, and by the fact that this school is the

only one in London at which women can obtain a medical education.

The school deserves help for its work in the past. Founded 40 years ago, when there were only two women on the British Medical Register, there are now about 1000, of whom over 600 are former students of the school.

The school deserves help for the work it is doing now. The annual entry has doubled in the last six years. 212 students are in attendance, and if the present annual entry be maintained this number will rapidly rise to 300. It is a school of the University of London in the Faculty of Medicine. It has beautiful and suitable premises built 1899–1900, but they are not large enough for the present number of students. Additions to the laboratories, new research rooms, and more lecture rooms are essential. An adjoining site has been secured. Plans are prepared and approved, and building is to begin directly after Christmas.

The school deserves help for the work of the future. The demand for medical women constantly increases. In public departments throughout this kingdom, in sanatoria, in Poor-law institutions, in hospitals both in England and India, and as medical missionaries all over the world, they work in ever-growing numbers. At the present time medical women are urgently called upon to fill the places and supplement the work of the medical men serving with the army, and they are doing this both in this country and in France, so far as their numbers permit. This demand will be increased in the near future owing to the number of young men now joining the army, who might otherwise have studied medicine. Were twice as many to qualify as qualify now, all would be absorbed by these and other needs.

The council must raise £25,000 to pay for the additional buildings required and their equipment, and ask those interested in the work and medical education of women to provide this sum. Donations or promises should be sent to the London (Royal Free Hospital) School of Medicine for Women, 8, Hunter-street, W.C., addressed to the honorary treasurer, Mr. M. J. Henderson, who joins with us in the appeal.

We are, Sir, yours faithfully,

E. GARRETT-ANDERSON, President.

F. D. ACLAND, Chairman.

LOUISA B. ALDRICH-BLAKE, Dean.

MAY THORNE, Hon. Secretary.

London (Royal Free Hospital) School of Medicine for Women,
Dec. 14th, 1914.

THE ETIOLOGY OF LEPROSY.

To the Editor of THE LANCET.

SIR,—The letters in THE LANCET during August and September under the heading of "The Relation of Fish to Leprosy" induce me to raise briefly the question of the etiology of leprosy, which goes rather beyond the question of fish, be it fresh, salt, decomposed, or other.

It is really high time that the consideration of a subject of such engrossing importance should be restricted to the recording of facts and to analogical reasoning. What is being done throughout the world to sift the family history of the leper? Speaking for parts of the tropics where leprosy occurs, and of which I have personal experience, I can say that existing conditions are little likely to favour the acquisition of etiological facts. A lamentable process through the magistrate's court, sometimes a stay in a police cell, may be the committal

portal for admission to the leper asylum; the medical officer to the institution has probably already a large district under his charge for general medical practice, and in the time devoted to the institution will be up to date no doubt in experimental drug treatment of his patients; an annual report is returned showing numbers of admissions and removals, and perhaps also the number of tea parties and magazines generously contributed by charity. But where is to be found the anamnesis in respect of a single case of leprosy?

Points regarding leprosy that are known, humanly, are: It is a disease of man; amongst animals the nearest approach to leprosy is found in the rat; there is sufficient evidence to justify the belief that it spreads from man to man; it has been believed to be a hereditary disease, a point indicative of contagion; the means of contagion are probably personally intimate; the incubation period of the disease is probably long; its occurrence in childhood is very rare; no proof is forthcoming of specific infection being derived from food of any sort whatever, though food as a vehicle of convection from man to man cannot be eliminated; experimentally at least, if not in nature, the bacilli have been demonstrated in certain blood-sucking "insects."

The inquiry has to be a domestic investigation on the same lines as are followed by the health officer in relation to typhoid, diphtheria, tuberculosis. When our colonies can boast of an organised department of preventive medicine we may expect accumulation of records which should demonstrate inevitably the etiology of leprosy; as inevitably as the microscope shows the bacillus. Until then, perhaps, the millions available in the hands of the great pioneers of private research might be directed to the organised field investigation of leprosy as they now are of other diseases.

A leper institution is an awful thing.

I am, Sir, yours faithfully,

ANGUS MACDONALD, M.D. Edin.,
Grenada, B.W.I., Nov. 23rd, 1914. Medical Officer in Charge.

THE MORPHOLOGY OF THE TYPES OF TUBERCLE BACILLI FOUND IN MAN.

To the Editor of THE LANCET.

SIR,—In his interesting article which appeared in THE LANCET of Nov. 21st, Dr. Horace R. Wilson calls attention to the importance of observing the morphological characters of the tubercle bacilli in a tuberculous case as an aid in prognosis.

For many years past the great importance in prognosis of such observations has been emphasised by Carl Spengler in his published researches on tuberculosis.¹ In the routine examination of tuberculous material by his methods careful attention is always given to the determination of the degree of injury manifested by the sheaths of the tubercle bacilli. Sheath injury may arise from causes other than an increase of the immunity of the patient; hence care must be taken to minimise errors due to such causes. In the lectures on the bacteriology of tuberculosis delivered by me during the past two years in the bacteriological laboratories of King's College much attention has been devoted to the qualitative investigation—as distinct from the usual quantitative examination—of tubercle bacilli in tuberculous material. It may be helpful to note that Spengler's "pikrin" method and the

modifications of it introduced by Kirchenstein and by the writer are specially adapted for the qualitative and structural investigations referred to; the Ziehl method is unsuitable.

Dr. Wilson mentions that two distinctly different types of tubercle bacilli are found in human sputa—viz., Type 1, short, plump bacilli taking a uniform stain; Type 2, longer, thinner bacilli with clear (unstained) spaces numerous and well marked, the stain less deeply taken. It is important to note that the two types of tubercle bacilli which Spengler has described, and which he has isolated from human sputa, have characters quite different from Types 1 and 2 mentioned above. Spengler maintains that in most cases it is possible to isolate two types of tubercle bacilli from tuberculous man—viz., *typus humanus brevis* (Koch), and *typus humano-longus* (Spengler). From his investigations he has concluded that by his methods it is possible microscopically to distinguish between these two types if the bacilli are fully developed.² The characteristics of the types have been given in a comparative form in previous contributions on the subject³; the following is a brief summary of the more important of the morphological details: 1. *Humanus brevis* is a thin, short type of tubercle bacillus. 2. *Humano-longus* is thicker and longer than *humanus brevis*; it is a bovinoid type of tubercle bacillus, closely related to, but not identical with, the true bovine tubercle bacillus of cattle. Both types when uninjured and fully developed stain uniformly with the "pikrin" method. Splitter formation—the so-called "beading"—occurs in both types and is associated with degenerative changes in the bacillary sheath to which allusion has already been made.

Although, as Dr. Wilson states, some investigators have been unable by their methods to distinguish microscopically between the bovine and human types of tubercle bacilli as defined by these workers, nevertheless it must be noted that up to the present no researches have been conducted by them upon the two types of tubercle bacilli in tuberculous man as described by Spengler.

In future investigations it seems very desirable that the subject should be approached from Spengler's standpoint.

I am, Sir, yours faithfully,

WALTER H. FEARIS.
Cardiff and County Public Health Laboratory, Dec. 11th, 1914.

THE INCIDENCE OF PLAGUE IN EUROPE.

To the Editor of THE LANCET.

SIR,—My attention has been called to an article by Mr. C. Strickland entitled "The Incidence of Plague in Europe" in THE LANCET of Nov. 14th last, in which he states that the probability of a plague epizootic occurring among brown rats in this country is 250 times less in the summer than in the winter. This conclusion is based upon data extracted from reports made to the Local Government Board in connexion with the epizootics of rat plague which occurred in East Anglia in the winter of 1910 and the autumn of 1911 respectively.

Mr. Strickland's argument appears to be somewhat as follows: Martin and Rowland found in the winter of 1910 a flea-rate of 1 flea per rat associated with an 11 per cent. plague epizootic,

² Spengler: Zeitschrift für Experimentelle Pathologie und Therapie, 1909, Band vi.; Deutsche Medicinische Wochenschrift, 1907, No. 3.

³ W. H. Fearis: The Treatment of Tuberculosis by Means of Immune Substances (I.K.). An introduction to Spengler's work on Tuberculosis and Immunity (John Murray), p. 3 et seq. Brit. Med. Jour., March 14th, 1914, p. 625.

¹ Spengler: Deutsche Medicinische Wochenschrift, 1907, No. 9;