education and technical training, and you must of necessity reorganise the system of examination, for examination can test nothing but the standard of knowledge acquired by the candidate and the degree of skill attained by him.

I am delighted that the question has been raised by so great an authority. No matter of greater importance can come within the purview of those interested in the impending general reconstruction than medical education, and I sincerely hope that, especially under the present Minister of Reconstruction, it will take a prominent position in his programme. Any mere change the College might make in its present system of examining students endeavouring to qualify for the Fellowship would not, I submit, meet the difficulties known to exist. Urgent reforms in the education of the student must first be taken in hand. The student's mental equipment, technical training, and skill cannot, under present conditions, provide what the examiner is looking for, or is supposed to be eliciting, and examiner and examinee alike are disappointed.

The essentials for reform and for the removal of injustice as regards the real student are, I believe (1) the standardisation of the amount of knowledge and of the degree of skill a student should possess, and (2) the assurance that an examiner confines himself to discovering whether a student attains such recognised standard in knowledge and in technical skill.

Until some such agreement is reached what other result than that recorded—namely, 27 out of 34 candidates rejected at our last examination, can be expected!

I am, Sir, yours faithfully,

JOSEPH GRIFFITHS,
Colonel.

Cambridge, May 21st 1918.

THE DIFFERENTIATION OF DYSENTERY BACILLI.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 20th Major F. W. Andrewes reports on the differentiation of 100 or more strains of dysentery bacilli derived from laboratories in France and home dysentery hospitals, concluding that "a large proportion of the forms which have masqueraded as atypical dysentery bacilli can readily be distinguished by appropriate tests." There appear to be two questions at issue: (1) Are the Shiga and Flexner-Y types of dysentery bacilli well-defined entities with fermentative and serological characters sufficiently constant to enable them to be identified with a great degree of regularity by competent bacteriologists? and (2) are these classical types of organisms to be regarded as the sole cause of dysentery of bacillary type?

As regards the first point, Major Andrewes's general conclusion in the affirmative will be concurred in by practically everyone. With reference to the second question, as to whether other organisms not conforming to either of these types may be regarded as causal agents in dysentery, I wish to summarise the conclusions¹ arrived at by Dr. T. J. Mackie as the result of two years' work in Egypt.

Dealing with the freshly evacuated faeces from cases of (non-amoebic) dysentery within the first few days of illness, he found that in a large proportion of instances none of the classical dysentery organisms were found, but that there occurred, often in almost pure culture, a variety of organisms each with biological characters which were stable when once acquired—viz., they were Gram-negative, non-motile bacilli, did not liquefy gelatin, and always fermented glucose without gas-production; but different strains varied as regards fermentation of lactose, dulcitol, saccharose, mannitol, and maltose (although gas was never formed from any sugar), and in the formation of indol, and they were not agglutinated by a Y, a Flexner, or Shiga serum (only a small proportion of organisms which were at first inagglutinable ever became agglutinable by these sera after repeated subculture). All the various types were proved to be extremely virulent by intravenous or intraperitoneal injection of rabbits, producing a characteristic hæmorrhagic enteritis, most marked in or limited to the small intestine. To take one example, a strain, differing from B. Shiga in the production of indol, was distinctly more virulent than a recently isolated true B. Shiga when tested in this way. It is to be noted that after the first few days of the illness all such organisms tended to be replaced

in the faeces by a variety of other organisms—e.g., B. Morgan No. 1 and allied types, *B. faecalis alkaligenes*, and *B. paracoli* types, &c.; hence, the examination of late cases or convalescents alone would have given no idea of the bacterial flora of the intestine at the commencement of the illness. Although these atypical organisms were on the whole associated with the milder cases, just as B. Shiga occurred in the most severe, this was by no means an invariable rule, and severe types of dysentery were not infrequently met with, apparently due to these atypical varieties. In the case of infections with B. Shiga and Flexner the agglutination reaction of the patient's serum was found to be so variable and unreliable and so frequently absent, except in such low titres (1:50 or less) as to introduce the fallacy of a normal serum effect, that no investigation of this reaction was carried out in the case of the atypical infections.

The conclusion is reached, therefore, by Dr. Mackie, that from their occurrence in large numbers in early cases of acute dysentery, in the absence of the classical types, and from their characteristic effects in animal experiments (which were found to be similar to those produced with the classical Shiga and Flexner-Y types), together with their close biological similarity to organisms of the typical dysentery group, these atypical organisms are to be regarded as true dysentery bacilli (in the etiological sense of the term).

As we have recently stated, the question remains to be settled whether all or any of those organisms represent specific types which are highly pathogenic and are transmitted from person to person, causing disease in a considerable proportion of those whose intestines they reach, or whether, on the other hand, they are organisms normally present in the intestines of the individual, which in ordinary circumstances are held in check by the common flora, but under conditions not yet understood are capable of replacing the usual coli-types and of initiating lesions.² The multiplicity of these organisms, however, suggests strongly that they do not have the epidemiological significance of the classical Shiga and Flexner-Y types. Hence the prevention of the considerable proportion of cases of dysentery in the east due to those atypical bacilli may present special and peculiar problems.

I am, Sir, yours faithfully,

The Middlesex Hospital, May 14th, 1918. C. H. BROWNING.

"TUBERCULOSIS IN DUBLIN."

To the Editor of THE LANCET.

SIR,—May I claim your indulgence to reply to Sir John Moore's letter of April 27th commenting on a paragraph which appeared in a recent issue of your valuable journal regarding the new arrangements made for the treatment of insured persons in the city of Dublin under the National Health Insurance Acts?

Sir John Moore sets out by stating: "With some amusement and more indignation I have read the paragraph with the above heading in the letter from Ireland published in THE LANCET of April 20th (p. 582)." Whilst Sir John Moore rejoices that the reading of the paragraph referred to, which, be it noted, deals with the treatment of unfortunate sufferers from the "white plague," afforded him "some amusement," it appears to me the only justification he had for writing his letter, apart from his evident desire to ventilate his opinion on the wisdom of the Dublin Insurance Committee making new arrangements, is that "obstacles" were placed in the way of a hospital patient of his (an insured person) obtaining sanatorium benefit. This allegation is not well founded, as I will proceed to show.

Sir John Moore is a member of the staff of the Meath Hospital, also known as the County Dublin Infirmary and Central Tuberculosis Dispensary, and which is part of the machinery for treatment under the tuberculosis scheme for the county of Dublin. He is also a medical certifier in respect of all diseases, including tuberculosis, for purposes of the Insurance Act under special arrangements made between the hospitals and the Commissioners. His professional, if not his personal, interest should therefore have made him familiar with the recognised procedure for obtaining sanatorium benefit for any suitable case he might come across. He must surely know that even if the agreement with the corporation—the termination of which he deprecates—were still in operation an insured person could not obtain

¹ Owing to Dr. Mackie's absence from the country he entrusted me with his manuscript, which will be published in the forthcoming number of the Journal of Pathology and Bacteriology.

² Browning, Mackie, and Thornton, in "Applied Bacteriology, London, 1918, p. 47.