

that no evidence to the contrary seems to be forthcoming. Dr. Ward tells us that most of the cases discharged from these sanatoria with "disease arrested" relapse within a short time; that to say that 20 per cent. of early cases are cured is probably to make an overstatement; that patients commonly lose ground on returning home more quickly than if they had remained at home; that those, of his series, who were longest in a sanatorium gave worse results than those who had been only a short time in one; and that no case which seems to be improving at home should be sent to a sanatorium.

Such an indictment, coming from a competent observer, calls imperatively for a pause in our public expenditure on phthisis sanatoria until the whole subject has been thoroughly investigated. Meanwhile there are some points which need to be considered.

1. Our sanatoria appear to be furnishing considerably worse results than might reasonably have been anticipated from the Nordrach experience. But Nordrach was singularly well placed and many of our sanatoria are remarkably badly placed. Abundant proof has been given of the importance of securing, especially in this country, sites well sheltered from the impact of strong, prevalent rain-bearing winds, yet practically no attention has been paid to this proof and until recently no serious attempt has been made to verify it. This inattention may be explained partly by the general inattention with which many members of the profession read their journals, partly by the great financial inconvenience of accepting the conclusion. The serious waste of public money on bad sites, now coming into view, may presently, however, make it even more inconvenient to ignore it. For there are certainly sanatoria which, from their faulty situation, may reasonably be regarded as death traps for their phthisical inmates, and such sanatoria should be scrapped forthwith.

2. I believe there are many cases for which the climates of this country are not so suitable as certain climates abroad, notably the climates of some high altitudes where windlessness is a feature—Davos for instance. Before the sanatorium boom began these climates were well recognised and highly valued by the medical profession.

3. Dealing with our poorer patients, for whom distant resorts are not available, we shall do well to remember Walther's view that sanatoria are useless for them, and Noy Scott's recently expressed opinion "that if much of the money, which has been spent on sanatoria, had been used to enforce by-laws regarding fresh air and sunlight in cottages we should have had better results."

4. In emphasising the results of sanatorium treatment and treatment outside, we shall, I am sure, become utterly confused unless we restrict ourselves to sanatoria in places sheltered from strong rain-bearing winds.

5. Lastly, we shall do well to make certain that all the "early cases cured" have been really tubercular; that some so classed have not been tubercular, I fancy most people are convinced.

I am, Sir, yours faithfully,
Exeter, June 25th, 1921. W. GORDON.

INTERNATIONAL SANATORIUM INSPECTION.

To the Editor of THE LANCET.

SIR,—Dr. E. Ward, in your issue of June 25th, repeats under the title "A Further Consideration of Sanatorium Controls," the valuable suggestion, made in your leading article of April 16th, that, in view of the unsatisfactory state of sanatorium treatment in this country, public sanatoriums should be inspected by a commission of experts who would investigate the conditions which at present make sanatorium treatment a byword and a reproach. With regard to the composition of such a commission I doubt whether Dr. Ward's trinity—a general practitioner, a surgeon, and an intelligent layman—would contribute more than a Gilbertian atmosphere to the proceedings;

we all know the non-expert inspector as an amiable old woman of either sex, who ambles round an institution, seeking knowledge and finding "eyewash." But I agree with Dr. Ward in distrusting a body composed solely of medical superintendents in this country; the accountant who audits his own figures is apt to do so with his tongue in his cheek. It is unfortunate that, in the United Kingdom, the names of the persons familiar with the modern treatment of tuberculosis do not, as a rule, carry much weight; and the persons whose names do carry weight are, with a few exceptions, unfamiliar with the modern treatment of tuberculosis. When we compare the remarkable achievements of foreign sanatoriums, such as Vejlebjerg and Loomis, with the disheartening records of our own sanatoriums, the question naturally arises: Could not the medical officers of foreign sanatoriums which have "delivered the goods" be induced to inspect and report on the public sanatoriums in this country? Of course, national pride would kick at such a notion. Last summer, when I met Prof. Saugman in London and he expressed a wish to visit a certain well-known sanatorium, national pride prompted me to divert him from his object, for I knew that this sanatorium was about 15 years behind the times in lung collapse treatment, in which Prof. Saugman is a pioneer. But we might, perhaps, circumvent our rather inconvenient national pride by making international inspection of sanatoriums reciprocal, and in sending our own medical superintendents to inspect and report on foreign sanatoriums, we should at once soothe their feelings and surreptitiously increase their knowledge and usefulness.

I am, Sir, yours faithfully,

CLAUDE LILLINGSTON.

Gorleston-on-Sea, June 25th, 1921.

RESULTS OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—At this sanatorium we have excellent opportunities for finding out what happens to our cases after discharge. We find the following to be true: (1) that no case practically makes a recovery which does not show marked improvement whilst in the sanatorium; (2) that cases early in time, that is to say, cases which have exhibited symptoms of activity for a short time before admission, usually progress to complete recovery. I have come to the conclusion that all cases which will get well outside the sanatorium will get well in the sanatorium; in addition, many cases that will get progressively worse when outside will recover in the sanatorium; that the only chance for most bad cases is to admit them to the sanatorium. I attribute the difference in results obtained here in respect of early cases mainly to the liberal amount of rest in bed these cases obtain, and to the regulation of the amount of rest required by means of a carefully registered rectal temperature. The duration of residence of these cases is usually five calendar months, though in the case of pleurisy this may be in some cases reduced to three months; if they are sent in at once, the same might apply to cases of hæmoptysis. To produce any real lasting results the patients should on discharge be able to do without after-care except in so far as they can exercise it themselves, and should as a rule be able to go on with their previous occupations.

To understand this subject properly it is necessary to take very careful histories of these cases, for by this means it becomes possible to discover the time when these patients should first have been treated, and much valuable information will be gained which may prevent mistakes being made in the future. Thus if a patient has suffered from pleurisy five years previously, and we find that he has during that time developed into a typical case of chronic pulmonary tuberculosis, we should admit if we omitted to treat him properly in a sanatorium that we have committed a gross blunder. Whether a patient should be treated in a sanatorium or not will of course

depend on the presence or absence of fever, as indicated by the taking of a rectal temperature and the presence or absence of symptoms of active disease. Though the isolation of the advanced case should be encouraged where possible, it should be remembered that the treating of the early case is the proper way to eradicate the disease; for we must all surely admit that most cases which can be treated as advanced have been infectious often for long periods, and must during that time have infected a considerable number of people; furthermore, the prospect of segregation will cause many persons to hide their disabilities for as long as possible and thus cause spread of the disease.

In conclusion, I would urge that such sanatoriums as exist should be used for the purpose for which they were intended—that is, for the treatment of cases early in time and therefore for the most part curable, and that always the early case should be given the preference over the advanced; it should of course be remembered that if an early case be sent to a farm or the seaside for a few months before going to a sanatorium, at the expiration of that period it may be impossible to accomplish anything. In addition, it would be as well that when these patients do get admitted to a sanatorium they should be treated correctly. I may say that at a time when I had the admission of these cases in my own hands I had little difficulty in persuading patients to undergo treatment. Of the first 500 cases admitted to the Ayrshire Sanatorium who remained for five months 120 were in the first stage, and of these in 1921 77 per cent. were well; 182 were in the second stage, and of these 52 per cent. were alive, many at their previous occupations; and of 198 third stage cases only 17 per cent. were alive. The duration of time in these cases from their admission to when the calculation was made varying from July, 1906, to August, 1912, the calculation was made by Mr. Steven of Edinburgh in April, 1921. I am, Sir, yours faithfully,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock, June 25th, 1921.

CONCERNING THE ELECTRICAL ACTION OF THE HUMAN HEART.

To the Editor of THE LANCET.

SIR,—I greatly admire Prof. Bayliss's book entitled "Principles of General Physiology," and regard it as a valuable contribution to the advancement of physiological knowledge. It is the outcome of the matured thought of one of the leaders of the premier school of physiology in London and may be expected to serve for many years to come as a standard work of reference for many future workers and writers. The book presents an elaborate digest of modern physiological fact and doctrine, and forms a very convenient and accessible store-house of information. Not the least of its merits consists in the bibliographical accessories by which a very humanising quality is imparted to the text.

Uniform perfection of treatment over so extensive a field is hardly to be expected of any writer, however learned and industrious he may be, and as the author himself states in his preface "Important points have most probably escaped notice and I shall be very grateful to readers who will inform me of these omissions and also for criticism in general."

So I shall take the liberty of calling attention to an omission in the account of the electrical action of the human heart. In the section (third edition, pp. 656 et seq.) dealing with the electrical changes of the heart Prof. Bayliss gives an account of the subject that does not contain any allusion to my own discovery of the primary facts in 1887 which formed the point of departure for a long series of investigations by many physiologists and physicians. Nor does he include in his bibliography any one of the several papers on the subject published by me during the period 1887-89. Of these papers the first was published in the *Journal of Physiology*, Vol. VIII., p. 229, and the last and most complete in the *Philosophical*

Transactions of the Royal Society, p. 169, 1889, under the title: "On the Electromotive Changes connected with the Beat of the Mammalian Heart, and of the Human Heart in particular." The subject was taken up and extended by Einthoven, whose first paper appeared in 1895 in *Pfugger's Archiv*, Vol. LX., p. 101, under the title "Ueber die Form des menschlichen Electrocardiogrammes," and the opening sentence of this paper contains a perfectly clear and frank acknowledgment, as is customary between men of science, which runs as follows: "Vor mehr als 6 Jahren bereicherte Augustus D. Waller, die Wissenschaft mit der Kenntniss des menschlichen Electrocardiogrammes. Er zeigte, dass die rhythmischen Schwankungen, welche der electricische Spannungsunterschied zwischen den verschiedenen Stellen des Körpers erfahrt, aus keine andere Weise als durch die electromotorischen Wirkungen des Herzmuskels verursacht werden."

I am, Sir, yours faithfully,

A. D. WALLER.

Physiological Laboratory, University of London,
South Kensington, June 18th, 1921.

To the Editor of THE LANCET.

SIR,—I am obliged to you for letting me see in advance a communication from Prof. A. D. Waller. I regret to have omitted to refer to the fact that Prof. Waller was the first to show that an electrical change associated with the beat of the human heart can be detected by leading off appropriate points on the surface of the skin to a sufficiently delicate recording instrument, and will endeavour to correct a new edition accordingly. I think, however, that it will be obvious that in a book dealing with general principles a detailed historical account would be out of place in the case in point. My object was to give as briefly as possible such a description as would enable a reader to understand the modern use of the electrocardiogram as a means of diagnosis. Prof. Waller has no ground of complaint in my references to other work of his in which results adding to our comprehension of the phenomena described were obtained. I am, Sir, yours faithfully,

June 27th, 1921.

W. M. BAYLISS.

THE DEBT OF OUR TROPICAL DEPENDENCIES TO MEDICINE.

To the Editor of THE LANCET.

SIR,—All interested in the advance of tropical medicine and hygiene will welcome the prominence lately given to the much-needed recognition of their importance as essential and potent factors in the prosperity of our colonies and dependencies. Attention has rightly been drawn to the urgency of measures for prevention and treatment, and the call for research into the numerous problems presented by the extensive range of disease in the tropics. The baffling solution of many of these problems has been left too long to very occasional special commissions, or to the unaided and often thankless efforts of individual workers. It is, indeed, becoming more and more incumbent upon the Government not only to give wider support, by special sanction and State grant, to the elucidation and treatment of disease in the schools of tropical medicine at home, but also by establishing additional research and training institutions in our Crown Colonies, to assist the work of individuals, and to spread the gospel of hygiene among the native races. The very important medical side of our colonial missions, hitherto solely dependent on voluntary aid, has justly proved its claim to Government support. That this is the case has been well shown by Dr. J. B. Christopherson in an article on the medical work of the Universities' Mission to Central Africa, contributed to the society's journal of May, 1921. He emphasises the important rôle which this branch of the Mission has filled in the advance of tropical medicine, and the alleviation of