an experiment that vaccination protects from small-pox. I would take 20 children, 10 unvaccinated and 10 efficiently vaccinated, place them in some hospital ward, and inoculate all of them with matter taken from a small-pox patient; then they would see that all the unvaccinated and none of the vaccinated took the disease. The experiment would be conclusive and *cadit quæstio*. Mr. Marson tells us that in 30 years no nurse or servant at the Small-pox Hospital has taken small-pox, he having taken care always to revaccinate them on their admission; and further, that when a large number of workpeople were employed for several months about the hospital, most of whom consented to be revaccinated, two only were attacked by small-pox and these were amongst the few who were not revaccinated. Anti-vaccinationists alone fail to see in these facts a proof of the protective power of vaccination. Possibly, if half the nurses had been anti-vaccinationists and unvaccinated, if all of these had been attacked and many of them had died whilst all the vaccinated escaped, they might be convinced; but it is more probable they would ignore all the facts and fall back on their stock arguments based on statistics. Now, statistics are only valuable when compiled with the greatest possible care, and in the matter of vaccination this care has not been exercised. When we bear in mind that in the early days of vaccination, when postmen, grooms, and others were often the operators, vaccinations in thousands of cases were mere shams; that, more recently, lymph was taken from the arm upon little ivory points and kept for weeks and months before it was used, by which time the lymph was as dry, hard, and inert as a naked ivory point; that even now some vaccinations are so inefficient that they leave only one or two imperfect marks, instead of the three, four, or five characteristic ones required by our experts, it is evident that if statistics include persons thus really and truly unvaccinated as vaccinated all arguments based upon and conclusions drawn from such statistics are utterly worthless. What we contend is that efficient vaccination and revaccination confer immunity from small-pox, and we challenge anti-vaccinationists to prove that it does not.—I am, Sirs, yours faithfully,

D. HOOPER, B.A., M.B., M.R.C.P. Lond.

Trinity-square, S.E., Nov. 9th, 1901.

To the Editors of THE LANCET.

SIRS,—As supplementary to, and confirmatory of, Mrs. E. Garrett Anderson's letter in THE LANCET of Nov. 9th (p. 1299), may I be allowed to draw the attention of your readers to a correspondence which has been going on in the *Times* with regard to the gross injustice under which the public generally and the medical profession labour owing to the National Vaccine Establishment refusing absolutely to supply calf vaccine to medical men for private vaccinations, so that the lymph from which these vaccinations are performed has to be obtained from outside sources about which nothing is known as to preparation, source, stock, purity, or quality, and this notwithstanding that the establishment is kept up by Imperial funds and for national purposes. Why should this lymph, about which at least we do know something, be reserved and supplied gratis only to that already well-paid monopolist, the public vaccinator? If "efficient" vaccination is a prophylactic against the ravages of small-pox, surely the largest factor in that efficiency is the purity and energy of the vaccine; the person, the mode, and the area being but minor factors compared with this, the essential agent of the process on which the subsequent immunity depends. I venture to say that if a medical practitioner were questioned by his patient as to the source of his lymph in most cases his knowledge would only extend to the agent or druggist from whom he obtained it. Would this be considered really satisfactory by the patient if he knew or cared about inquiring what was being inserted into him? In years gone by we knew something of the strain of babies and their parents from whom we used to vaccinate from arm to arm; are we not sinking further into the mire of ignorance by the way in which we are driven by the supineness or inertia of the nation's vaccine authorities to use the lymph as at present supplied? Again, are we not playing into the hands of the anti-vaccinationists and forging a weapon wherewith they may thrash us? Those who saw the correspondence will notice that one correspondent made the excuse that the principles of the administration of vaccination remain the same as 30 or more years ago, though material change has taken place in the practice; if so, then the sooner the organisation of the administration is brought

up to date the better, for at present there is an anomaly amounting to a scandal, or, as the *Times* puts it, a comedy which might easily be converted into a tragedy.

I am, Sirs, yours faithfully,

Nov. 9th, 1901.

R. B.

SCARLET FEVER, SMALL-POX, AND VACCINATION.

To the Editors of THE LANCET.

SIRS,—The invasion of small-pox calls for a careful survey of the forces available to meet it. I do not presume to enter upon the discussion of these forces in detail. I wish, however, to invite attention to one or two questions relating to the infective characters of scarlatina and small-pox and the action of vaccination which appear to have been overlooked.

As to the propagation of scarlatina.—In the *Medical Gazette*, 1850–51, I published a paper "On the Occurrence of a Muco-purulent Discharge in Scarlatina, and on the Importance of this Symptom in Relation to Forensic Medicine." The argument of this paper was based upon a case of scarlatina in a girl, aged about 16 years, which I had seen at the Hôtel-Dieu when a student under Chomel. After the decline of the eruptive stage, and when apparently convalescent, there occurred a muco-purulent discharge from the vagina similar to that which not uncommonly flows from the nares as one of the sequelæ of scarlatina. I afterwards saw a child, 11 years old, who was recovering from scarlatina. It was observed for the first time that she had a discharge from the vagina, and suspicion arose that she had been abused by a lad in the neighbourhood. Dr. Tweedie told me that his attention had never been directed to such an occurrence, and that when a purulent discharge from the vagina was noticed in scarlatinal patients he concluded it to be blennorrhagia.

In 1851 I published in the *Medical Gazette* a paper "On the Occurrence of a Muco-purulent Discharge from the Vagina as a Consequence of Small-pox," and I pointed out that leucorrhœa so arising may be the foundation of persistent leucorrhœa and lead to confirmed inflammation and hypertrophy of the cervix uteri. The etiological error and the disease may be avoided, and the disease be readily subdued if detected early. It is interesting evidence of the action of the zymotic poison throughout the system. I insisted on the expediency of making strict investigation into the state of the vaginal canal, especially at the period of the decline of the febrile symptoms. In order to fix attention upon the origin of leucorrhœa from zymotic disease I proposed to distinguish them by the terms "scarlatinal leucorrhœa" and "variola leucorrhœa." I am not able to determine to what extent these forms of leucorrhœa have been recognised. But there is reason to think that they have not received the attention they deserve from pathological, therapeutical, or medico-legal aspects. It is not mentioned in Quain's Dictionary. But Graves, Scanzoni, and others have since confirmed my observations. A striking example of this oversight may be seen in the report of the Fever Hospital Committee of the Royal College of Physicians in 1900. In discussing the infectivity of mucous discharges, "otorrhœa" and "rhinorrhœa" are mentioned, but no mention is made of the discharges from the vagina or other mucous canals. To this committee which undoubtedly represents the knowledge of the profession in general, the variola and scarlatinal leucorrhœas are but hidden constituents of what I have called "occult leucorrhœa."

How long does the infective property of these vaginal discharges last?—I am not able to answer this question, but it may be assumed that it lasts quite as long as that of the skin and perhaps longer. And without reckoning direct contact with the poison at its seat in the vagina, the deposit of the poison on linen, clothes, and w.c.'s, and other modes of diffusion, must be admitted as probable modes of infection.

How to avoid or minimise this danger?—I have always advocated the use of warm baths, simple or charged with small additions of iodide or carbolic acid. In very persistent cases a small plug of sponge or lint impregnated with a weak solution of iodine may be introduced into the vagina. As the infective poison may be absorbed from the vagina so may the antitoxin.

I think it useful to add a caution as to vaccination. I have seen serious illness follow upon vaccination in adult women. In young healthy children the vaccine matter works its simple course, but in some subjects, especially those in whom some morbid process is at work,

a complicated reaction takes place, an unlooked-for fermentation results in a form of toxæmia involving danger to life. Cases of this kind are sure to be seized upon as the ground for "conscientious objection" by the faddists who do not recognise their duty to their neighbours. The conclusion is that the fitness of the individual to go through vaccination soundly must be well weighed. This is especially proper in the case of revaccination. I am afraid there is not only the fault of non-vaccination to contend with, but there is also the fault of indiscriminate vaccination.

I am, Sirs, yours faithfully,

Nov. 13th.

ROBERT BARNES.

THE SANATORIUM IN THE TREATMENT OF PHTHISIS.

To the Editors of THE LANCET.

SIRS,—Among the many weighty questions raised by Professor Allbutt in his eloquent address on the above subject (published in your last issue) not the least important is that relating to the use of gymnastics in phthisis. After observing that the subject is "little understood," and that in the more active stages of pulmonary disease "gymnastics must be inappropriate," Professor Allbutt continues: "In healing stages, when softening has ceased and the lung is drying and laying down protective fibre, may not gymnastics, under supervision as skilled as for cardiac disease, do much to expand and thus to call into healthy function the parts which the tubercle has spared? I seek the answer from those who are dealing daily with these problems."

This question is, I think, capable of a decisive answer. In no form of lung disease, not even excepting extensive collapse left by a vanished pleural effusion, are special exercises for the purpose of bringing about pulmonary expansion either needful or desirable. The fact is that in all cases of lung disease sufficiently pronounced to cause dyspnoea the organism of its own accord puts into operation, by virtue of the dyspnoea, a process by which the lungs are expanded just so much as is desirable. Now, in phthisis dyspnoea, even though it should be absent during complete rest, is readily provoked by even moderate exercise, and, therefore, no special exercises are required to promote pulmonary expansion in this disease.

The expanding force which operates in dyspnoea results from the powerful contraction of the inspiratory, as compared with the expiratory, muscles. In acute dyspnoea resulting from sudden occlusion of the trachea and similar causes there may, it is true, be very powerful expirations—indeed, in dyspnoea thus induced the entire muscular system may be involved in violent contractions—but in the ordinary pulmonary and cardiac dyspnoea, as we see it in the sick-room, we shall find that the inspiratory muscles act much more vigorously than the expiratory. Why this is so I shall not stop to discuss; it is sufficient for my purpose simply to state the fact. Inspirations are vigorous, proceeding, it may be, to their limit; expirations are comparatively shallow; so that, if the lungs permit, there is an increase in the mean size of these organs. If much lung has been destroyed the total lung capacity may, of course, be subnormal, but often it may be normal, and sometimes, especially in chronic cases, even supranormal.

This over-action of the inspiratory muscles in dyspnoea I can vouch for from having for some years past carefully examined a large number of cases, with a view to studying the behaviour of the respiratory muscles in this condition. Often the expiratory muscles seem scarcely to act at all, expiration occurring essentially by passive recoil; sometimes, indeed, they do unmistakably contract, but these cases form a special group any further reference to which would lead me from my point. So eloquent a testimony of dyspnoea is this inspiratory over-action that it is quite easy for anyone to diagnose blindfold a minute degree of it—all that is needful is to place a finger over the scaleni: the intensity of their contractions is an accurate measure of the intensity of the dyspnoea.

I trust, Sirs, that the above considerations make it clear that special gymnastic exercises for the purpose of favouring pulmonary expansion are needless in case of lung disease, inasmuch as the organism secures unaided all the expansion that is desirable; and even this expansion may have as a necessary consequence the induction of a considerable degree of emphysema.

I am, Sirs, yours faithfully.

Wimpole-street, W., Nov. 10th, 1901.

HARRY CAMPBELL.

THE REORGANISATION OF THE ARMY MEDICAL SERVICES.

To the Editors of THE LANCET.

SIRS,—In view of the light thrown upon the report of the War Office Committee by the letter of Sir Frederick Treves in THE LANCET of Nov. 2nd (p. 1226) and elsewhere to the effect that "it provides no more than a framework upon which it is hoped that a system of reconstruction may be based," I would, with your permission, before the scheme takes a definite official form, make a few remarks on two of the headings contained in the communication referred to, and I limit myself to details only, as my opinion is that the scheme is a valuable one, based on right principles, and contains elements capable of being worked out to a successful issue.

And, first, touching the Advisory Board. The necessity for such a body is apparent in view of the conclusions of the Royal Commission on the desirability of a committee of experts for making out the details of its recommendations and the omission of the War Office Committee to comply therewith except on the one detail of the provision of a peace medical *personnel*. That the duties placed upon it are of a high order and of great importance will not be doubted, but what one may doubt is the advisability of placing upon it so many civil medical men, equalling the army medical men, considering that some of the duties it has to undertake, such as drawing up a scheme for ambulance, transport, and field medical organisation for war, and consideration of the fitness for promotion and retention of officers in the service are hardly such as are likely to be met with the necessary personal knowledge on the part of the civil section for a satisfactory result. The range of duties is certainly not covered by the qualifying prefix "advisory," inasmuch as some of these duties are essentially constructive in nature and some are as much "executive" in character as those usually performed by the Director-General, such as arrangement of examinations, inspection of hospitals, control of nursing service, and consideration of the names of those judged worthy of advancement. And in respect to this last function, while we may agree with Sir F. Treves that Paragraph 18 states that the Director-General is responsible among other matters for promotion, yet, if words mean anything, this responsibility is not solely delegated to him, but by Paragraphs 14 and 19 is shared also by the board. Unless this be the intention of the scheme Paragraph 14 is both meaningless and misleading. Moreover, the combined conclusion is not finite, as submission to the Commander-in-Chief is yet an essential part of the process. And as bearing on this matter we have by the new Order in Council for Army Administration the Commander-in-Chief charged with the duty of promotion in the service generally, a subject which, departmentally limited, has no place in Section V. relating to the duties of the Director-General, and I venture to think that the experience of some of our Director-Generals would not support the view that the execution of this duty in respect to the Army Medical Services by Commanders-in-Chief can be regarded as merely nominal in character and likely to be performed in a perfunctory way. That the responsibility for promotion and the power should rest with the Director-General will doubtless obtain a general concurrence, yet were this the opinion of the committee it is difficult to account for the introduction of the qualifying fourteenth paragraph; but as the matter now stands the responsibility is surely a divided one, and as such constitutes a great blot in the scheme.

And, secondly, touching the proposed system of examinations. While we may agree with Sir F. Treves on the purpose of the examinations we yet may doubt the advisability or the necessity of such frequency as is intended. Possibly and probably an examination is the best test for the junior executive ranks, but the desirability of subjecting middle-aged professional men to a third scholastic trial for determining their fitness for administrative duties may be questioned, especially as a possibly better substitute—selection from shown practical administrative ability—has been and is again advocated. And if it be asked what is the proposed basis for selection I would say, the same as that guarding the administrative posts—personal knowledge and honest, competent full reports. What is valuable and sufficient in the one case is equally so in the other. Sir F. Treves comments adversely on the "unjust and objectionable system of 'confidential reports,'" yet if we refer to Paragraph 21 of the scheme bearing on the admission of