The tachycardia and other signs of irritability of the sympathetic nervous system are best treated by graduated exercises. It is an unfortunate fact that patients suffering in this way are extremely difficult subjects to convince that there are no organic signs of "heart disease." Such patients are best treated in hospitals specialised for heart conditions, in which the whole atmosphere of the patient is directed towards his realisation that his symptoms are in no way dangerous, and that by training they will cease to hinder his activities in after life.

Nomenclature.

In conclusion, it may be permissible perhaps to discuss the nomenclature of this condition, the instinct-distortion neurosis. The usual name, neurasthenia, is unfortunate, because it covers cases that are hysterical as well as those that are not, but which are the results of a strained emotional activity. But shell shock covers neither of these conditions completely; the most characteristic cases of the instinct-distortion neuroses may give no history of shell shock. On the other hand, what soldier patient that has been in the front line for any time has not been in the sphere of bursting shells? The name "shell disease" is applicable, for it is the direct disruptive effect of the explosion that produces the lesions of that condition, but shell shock, as a name applied to functional nervous breakdown in soldiers, cannot be justified.

Exposure to the sights and sounds of the modern battlefield may bring about hysteria manifestations or symptoms of the instinct-distortion neurosis. This latter name is clumsy, and "war neurosis" is too general a name to be applied to this disorder. The more specific name "terror-neurosis" is perhaps a little too drastic at the present time, and I would suggest using the condition described in the following pages "dysthymia" (δυσθυμία, depressed; ὀρθός, emotion).

We could then sum up the state of affairs as regards the factor of the exploding shell thus: The neurones usually met with, such as those reported in the present war, are dysthymia. Neither is exclusively the result of the war, but of the two, dysthymia is the nearer approach to a specific war neurosis. In neither need there be a history of a bursting shell or a collapsing trench; such a history may be present in both. The bursting shell and the collapsing trench have no specific value in the determination of these neuroses; they possess an adjuvant value only, and this value may be obvious or masked. Only in "shell disease," where there are demonstrable organic lesions, have these factors any specific value, and the resulting condition is not functional.

ON DISAPPOINTMENTS OF VACCINE THERAPY.

By H. G. ADAMSON, M.D., F.R.C.P., LOND., PHYSICIAN IN CHARGE OF THE SKIN DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL.

The value of prophylactic vaccination has long been firmly established, but in regard to the efficacy of vaccina- tion, there are differences of opinion, and many observers have expressed the view that no specific value, has been demonstrated by the results of vaccine treatment in the less chronic forms of staphylococcal infection of the skin, in recent furunculosis, and in pustular acne of long standing; but such results are by no means constant, and in the majority of cases there will be but temporary improvement, if really any improvement that cannot be attributed to other treatment carried out at the same time or to accidental coincidence with the natural course of events. In some cases the eruption will become worse.

And, again, it is certainly correct to say that most dermatologists will not now recommend tuberculin treatment as a likely cure for lupus vulgaris, and that many will avoid it in every case of lupus treated by tuberculin the disease has subsequently become less controllable than before the treatment was used.

Experience in Other Fields of Medicine.

If we compare the experience of dermatologists with that of others in other fields, we find much the same opinions to prevail. As has often been the case with new remedies, dermatologists were among the first to try vaccines, but the results have not satisfied their earlier hopes and expectations.

Experience of Dermatologists.

As has often been the case with new remedies, dermatology was one of the earliest fields for the trial of curative vaccines; and there are two affections of the skin, of microbic origin and difficult to cure, in the successful treatment of which vaccine therapy at one time seemed likely to hold its own even against the principle of warding off infection from the susceptible patient. The prophylactic vaccination "is the best of all methods of employing vaccines," and "treatment by vaccines" "at the best an ancillary method of treatment. And of course," he adds, "the same applies also to treatment by vaccine." These statements appear to indicate a distinct recession from the opinion, which he expressed in 1909, that—

"Prophylactic employment of vaccines is not only from the theoretical point of view the best of all methods of employing vaccines, but it is also the method which gives in practice the maximum advantage."

And again he stated—

"The principle of building up the resisting power of the system against the microbe which may have entered the body will ultimately hold its own even against the principle of warding off infection from the susceptible patient."

"Prophylactic vaccination "is the best of all methods of employing vaccines," and "treatment by vaccines" "at the best an ancillary method," "all loud talk notwithstanding."

Consideration of Comparative Failure of Curative Vaccination.

How are we to account for this comparative failure of curative vaccination as contrasted with the striking success of prophylactic vaccination? Is it not that in prophylactic vaccination we are dealing with a less intricate problem and a procedure which is better supported by known facts than that which confronts us when we attempt to cure an already existing infection by means of vaccines?

It is easy to see that preventative vaccination has a sound foundation. The study of immunity reactions has established the fact that the animal into which a specific vaccine is injected becomes infected by a micro-organism it is rendered, after a period of incubation, specifically supersensitised to the toxins of that micro-organism—to use the expression of Von Pirquet, a condition
of allergy or altered reactivity is produced. As a result of this allergic condition the animal is protected against a second infection. An attempt to produce a second infection gives rise to a reaction more violent than the reaction to the first infection, which has a shorter incubation period and which ends in spontaneous cure. The efficacy of prophylactic vaccination is demonstrated in the results of preventive vaccination against small-pox and against enteric fever.

When we come to the cure of an already present infection we have altogether different conditions. The protection which has been acquired against a second infection varies in degree and in the length of time it endures in different diseases. In certain infections the reaction is such that it is not possible to protect the patient against a second invasion and remains henceforth protected against the disease. This occurs in small-pox and in scarlet fever, among other complaints.

In a second class of patients, although protected against a second invasion from without, yet remains infected and is liable to new infections from within—that is, to auto-inoculation. This occurs in tuberculosis and in syphilis.

In a third class the protection is apparently of but short duration, being overcome by an increased susceptibility, so that new infections may easily take place. This is seen in streptococcal and in staphylococcal infections and in influenza, for example.

What we require to know in regard to the second and third class is whether in a subject whose immunity development has been insufficient completely to overcome the infection we can by appropriate doses of vaccines so enhance the production of immune bodies,—i.e., so "build up" the resisting power of the system against a microbe which has entered the body—that the defeat of the invasion is assisted or completed; and whether we can do this without danger of disguising the mechanism of immunity and possibly lowering instead of raising the powers of resistance.

Production of Protective Bodies.

The early work of Wright's method of protective vaccination was that we could avoid the danger of over-stimulation and its risks of fresh infection, such as we became familiar with in the early days of treatment by Koch's old tuberculin, by regulation of the dosage, and that we were able to enhance the production of protective bodies without so disturbing the mechanism of immunity as to do harm.

This method was based upon the hypothesis—"That the blood of those who become the subject of a bacterial infection contains specific substances which may be called immunizing substances or opsonins. When in the production of corresponding bacterial vaccines the content of the blood in protective substances can in practically all cases be increased. The protective substances are the hypothetical substances in the serum which incite phagocytosis by action on bacteria"—i.e., opsonins. It was further maintained that the measure of the production of protective substances could be gauged by the observation of the opsonic index and the appropriate doses of vaccine measured accordingly.

This hypothesis is exceedingly simple, and if it expressed the whole problem of immunity vaccine treatment would be a straightforward proceeding. But in reality it is simple because it ignores a good many facts and current ideas in regard to immunity production.

It ignores the teaching that an infected organism develops specific immune bodies as a consequence of becoming infected, for according to Wright a patient suffering from an infection with lupus vulgaris, has a lower "opsonic index" than a normal uninfected person—that is the case, he has less protective substances in his blood. But according to the more generally accepted view a patient with lupus vulgaris is protected against fresh infection because he has attained immunity bodies which are absent in the normal person. Although the average "opsonic index" of lupus cases has been found to be 25 per cent. below normal, yet every case of lupus gives a "cut-reaction" to tuberculin, and thus indicates a body content of protective substances above the normal.

Again, in cases of enteric fever agglutinins are present in the blood which are absent or deficient in the normal. Yet the hypothesis of Wright supposes the blood of the enteric patient to be deficient in protective bodies as a result of infection, it yet supposes that these bodies can be developed as a result of vaccination, an attitude which seems contradictory.

It is doubtless perfectly true that the immunity reactions may be stimulated by vaccination, but we must not lose sight of the fact that a patient who has been in a state of allergy or altered reactivity or hypersensitivity towards the toxins of micro-organisms by which he is infected, so that the reaction which may result from even a minute dose of vaccine may be enormous in proportion to that which would occur from the same dose in an uninfected person, and that such an excessive reaction may be followed by a period of exhaustion of immunity or "anergy. And this seems to be the danger of the proceeding of so-called curative vaccination, that we cannot estimate the result of a vaccine in an already hypersensitive organism. The minute dose of vaccine may set up in an infected subject an explosive reaction whose force we are quite unable to predict or control.

The Opsonic Index.

According to Sir Almroth Wright's hypothesis the proper dose of a vaccine may be estimated by the opsonic index. But this hypothesis ignores the fact that in many infections the polynuclear leucocytes or phagocytes take little, if any, part in the defence against the invading micro-organisms.

In tuberculosis, for example, the cellular defence is a connective-tissue-cell defence and one in which the polynuclear leucocytes appear to take no part. And when we examine the results of determining the opsonic index as a measure of the production of protective bodies by vaccination we find that this has proved altogether unreliable. For in 1904 1/500–1/20 mg. of new tuberculin was regarded as an "extraordinarily small dose." In 1906 Sir Almroth Wright said:

"I now begin with a quantum of tuberculin corresponding to not more than 1/1000 milligram of T.B. powder and never advance to doses larger than 1/200 mg."

In 1910 the doses recommended were 1/50,000 mg. to 1/4000 mg. These doses were from the beginning controlled by observation of the opsonic index, and the earlier cases were reported as doing well with doses which were a very much smaller than the doses which were afterwards advised to be used.

If we turn now to staphylococcal infections in the defence against which the polynuclear leucocytes do take an important part, and in which the opsonic index might more reasonably have been supposed to be of assistance, we find the same difference between the earlier and the later dosage. In 1903 the opsonic index told us the proper dose was from 2500–5000 million staphylococci, and that the measure of the production of protective bodies by vaccination was completed; but in 1908 the dose was reduced to 100–250 millions. So that we must begin to doubt the value of this control even in cases of staphylococcal infection, and to ask, "Have we any reliable means of knowing the proper dose of a vaccine?"

Further Criticism.

Viewed again from another aspect, the rationale of vaccine treatment for chronic staphylococcal infection seems to be at fault. In staphylococcal infections of the skin the protection against a new infection varies with the severity of the primary infection. In the case of a carbuncle the patient is protected against a new infection and the lesion generally remains single. In the case of a boil the protection is of short duration, for it often happens that a second or more boils appear before the first has disappeared; and cases are common in which there are repeated crops of boils over months or years, or a continuous infection of fresh hair follicles, as in syphilitic "meningitis. In these cases, in spite of the repeated stimulation of fresh infections, although there are intervals of improvement, yet the immunity reactions do not produce a cure; and it is difficult to account for the fact that the repeated reinfections fail to do. In practice we find this to be the case, and, at any rate in my own experience, we but rarely, if ever, succeed in curing a case of chronic staphylococcal infection by vaccines, and it is in danger of becoming prejudiced by over-stimulation.

It has already been said that in practice the treatment of lupus by vaccines is proved to be highly dangerous. In the treatment of staphylococcal infections the danger of doing injury is probably less, but it may be that the staphylococcal infections of the skin is so uncertain in its results that it seems to have fallen into disuse in dermatological practice almost equally with tuberculin treatment.
As Sir Almroth Wright has put it— "The body has the machinery for immunisation, and you can play tunes upon it if you know the laws. If you do not happen to know the laws when playing upon it, it may be quite injurious."

The uncertainty of the results, for most part the disappoointment of vaccine treatments, should perhaps make us pause and ask: Are we at present in a position to play tunes upon the machinery of immunisation by means of vaccines after the machinery has already been set in motion as a result of previous infections?

It may be that vaccine treatment sometimes gives dramatically successful results, and we are perhaps justified in giving this treatment a trial in certain cases of infection where other treatments have failed. But the still prevalent tendency to regard vaccine treatments in itself a panacea is unjustified. Indeed, if any complaints should be deprecated, because we are not really in a position to know when we may do good and when we may do harm by this treatment, since we have no means of estimating its effects in a person whose reactivity has been altered, perhaps profoundly altered, as the result of previous microbic infection.

The almost equally prevalent use of vaccines in diseases of non-microbic origin is perhaps of less consequence, but it is apt to delay the employment of a treatment more suited to the case and more efficient.


Sophia Jex-Blake was born to be a pioneer. Whether she was born to be a doctor is, of course, another question. Her adoption of medicine as the profession in which she could carry on her struggle for the rights of women and for her own freedom seems to have been something of an accident; but she was born to struggle and to struggle through. From childhood she was determined to do something or other. She sometimes felt itself in storms, or what is called "cataracts," and which undoubtedly caused unhappiness as well as happiness. Perhaps the unhappiness was chiefly for herself; if her intense and vehement affections did not always make her understand the people she loved, still less did they make her intelligible to them. She suffered accordingly, as those who give everything except calm, and accomplish everything except self-control, are bound to do. The tragedy began in childhood, when she was sent from one school to another, and a series of excellent, religious, affectionate, but (one fears) stupid, schoolmistresses found her unmanageable, while her effect on her delicate mother's nerves was such that for long periods it was not considered possible for her to be kept at home. The tragedy went on in youth, when she put her whole heart into a friendship absorbing as a good novel. It is not only full of information, but is as absorbing as a good novel. I. B. O'M.

Subscriptions to the Second Appeal. The following subscriptions and donations to the Fund have been received during the week ending August 6th:

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Per Dr. A. H. Des Voeux

Subscriptions to the Second Appeal should be sent to the treasurer of the Fund, Dr. H. A. Des Voeux, at 14, Buckingham Gate, London, S.W.1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, c/o Crossley Bank, Limited.