

of 24 oz. of blasting powder from a cannon. Under certain conditions, however, such a mixture of coal dust and inert dust could be fired, and the later experiments at Eskmeals had been made with a view to discover how much gas must be added to this mixture to make it explosive. Though a definite figure had not yet been obtained it had been found that certainly over 2 per cent. gas would have to be added to the air to make the mixture explosive. In very gassy mines the proportion of inert dust would have to be increased, but it was now felt to be necessary to insist that this inert dust should be put in. It should be light, and so placed that whenever a concussion started up the coal dust, the inert dust would be raised at the same time. There would then be a mixture that would not explode, as the inert dust would cool it down below the ignition point. To illustrate his points to the audience, Professor Dixon repeated on a small scale some of the experiments which have been carried out at Eskmeals.

LIVERPOOL.

LIVERPOOL HOSPITALS.

THE Lord Mayor, who presided at the annual meeting of the Royal Southern Hospital on February 10th, outlined a scheme which he is preparing in order to place the Liverpool medical charities on a satisfactory financial basis. At present the financial condition of many of the charities gives rise to grave concern. The lists of subscribers to the various hospitals show the same names recurring time after time. The number of subscribers is small, though they give generously. Under the new scheme an effort will be made to reach the mass of the public who do not subscribe. An appeal will be made, not by the individual hospitals, but by the Lord Mayor on behalf of the medical charities as a whole. In connexion with each trade, profession, and business in the city, subcommittees will be formed to see that those of their own calling are fulfilling their duty in reference to the hospitals. Statistics are being prepared showing what classes of the community are supporting hospital work and what sources of revenue are still unbroached.

TUBERCULOSIS.

Some delay has occurred in the completion of the plans for the new Municipal Sanatorium for Tuberculosis at Fazakerley. The Hospitals Committee of the City Council is anxious to erect durable buildings adequate to the local estimate of the needs of the city. The Local Government Board, which, of course, contributes to the cost, relies on the statistics of the Astor Report, and is favouring some curtailment of building and of expense.

Special Correspondence.

BUDAPEST.

Epidemic Diseases in Hungary.

SOME interesting facts concerning the statistics of epidemic diseases in Hungary have been brought to light by Dr. Julius Pikler, whose book on this important subject is based upon the figures published by the Commission of the Hungarian Bureau of Statistics. The author points out that ever since the year 1874 the death-rate from epidemic diseases in Hungary has shown a steady decrease except in the case of scarlet fever, which has remained almost stationary since 1876. Small-pox, typhus exanthematicus and cholera, on the other hand, at present only appear sporadically, and are usually suppressed at once; moreover it should be remembered that these diseases are invariably imported into Budapest, the infection being traced in every case to some source without the city. Typhoid, on the whole, has been less frequent in Hungary since the improvement of the sewage system and waterworks. During the last two years, however, there has been an increase in the number of cases of typhoid in Budapest, and since the source of infection can hardly be in the city itself, every effort is made to obtain the history of each fresh case, so that measures may be taken to check the evil at the fountain head. Scarlet fever has also been more or less endemic in

Budapest for several decades. In a table showing the scarlet fever statistics for the last three years in forty-six European cities, Budapest ranks successively as the forty-first, forty-second, and forty-third, the only towns occupying a lower place on the list being Bukarest, Lemberg, Odessa, St. Petersburg, and Warsaw. The reason for these alarming figures is to be found in the terrible poverty prevailing in the lower quarters of Budapest and in the ignorance and indifference that too often accompanies it. From 85 to 90 per cent. of the deaths from scarlet fever in that city take place amongst the poorer classes, and are in great part due to the insanitary conditions in which they live and the overcrowding of their houses, the common practice of receiving a number of lodgers night after night in one room being a potent factor in the spread of disease as well as an obstacle to the isolation of the patient. Any material improvement in the condition of the poorer classes in Budapest, therefore, would do much to eliminate scarlet fever from their midst, or at any rate would help to solve a problem which threatens to become a very pressing one. In the meantime, however, the only effectual means of checking the spread of infection is strict isolation, whilst it is of the utmost importance that every case of scarlet fever should be reported at once to the proper authorities. At the present moment the statistical returns prove beyond all doubt that more than half the cases are never registered, and in the poorer quarters of the city the mortality is extremely high. The only remedy for this abuse would be to open a special "epidemic bureau," worked by energetic and reliable doctors, having under them a staff of men whose duty it would be to find out and report every case of scarlet fever in the city. The doctors, besides visiting the various cases, would be required to supervise the removal of patients to the fever hospital, the disinfection of their houses, etc., whilst not the least important part of their duties would be the discovery of the source of the epidemic. The work of an organization of this kind could be greatly facilitated by the systematic medical supervision of school children such as is now carried out in England and Germany.

With regard to the isolation of scarlet-fever patients, there is no doubt that the question is often complicated by the fact that it is not always easy to diagnose the disease in its early stages, particularly where there is little or no rash. Much of this difficulty might be overcome if the medical course included six months' attendance at a fever hospital. It is very important that club doctors, above all, should be capable of recognizing the earliest signs of scarlet fever, since their examination of their patients must of necessity be very rapid and the symptoms of incipient disease might be easily overlooked by one who was not an expert in diagnosis. Competent club doctors are particularly necessary in Budapest, where out of a population of 1,000,000 more than 400,000 persons are members of sick clubs. But a correct diagnosis, important as it is, is not everything; and when the doctor has notified his case he has often considerable difficulty in isolating his patient.

A warning label on the front door may keep away visitors, but the different members of the household will probably continue to go to their offices or workshops, and to travel in public conveyances, thus scattering infection broadcast amongst all whom they meet. The poor, who regard the doctrine of infection and disinfection as a superstition of the rich, resent their bedding being taken to the dispensary for fumigation, and evade the law by hiding it in the house of a neighbour, who probably falls a victim to his generosity, and in his turn helps to spread the disease in a similar manner. There can be no doubt that, except in those cases where the patient and his nurse can be completely isolated from the rest of the family, and the doctor can rely upon the intelligent co-operation of the entire household, the proper place for a case of scarlet fever is the fever hospital. This fact has at last been recognized by the State, and a number of fever hospitals for the accommodation of patients during an epidemic will shortly be erected, whilst every effort is to be made to overcome popular prejudice against such institutions by most careful attention to the comfort and well-being of their inmates. One cause for the dislike of hospitals entertained by the general public is the fear of infection from other patients. That this fear is not wholly

groundless is proved by Dr. Preisich, who, in an article which appeared in the *Gyógyászat*, states that during the year 1912 as many as 137 persons suffering from scarlet fever caught other diseases, such as measles, diphtheria, varicella, etc., and in some cases more than one; whilst 81 cases of diphtheria and varicella caught scarlet fever. This danger, of course, can be avoided only by building special hospitals for every form of contagious disease. At the present moment the chief source of infection is the provinces, where, owing to the defective hygiene, sporadic cases of scarlet fever are constantly occurring, and may easily become the precursors of a formidable epidemic throughout the whole country. The utmost vigilance, therefore, should be maintained in country districts, and every precaution taken to prevent the infection being carried into towns. The same care should be observed with regard to diphtheria, which is as much a menace to the public health as scarlet fever, though, thanks to the modern treatment of this disease by serums, the mortality is now considerably less.

Correspondence.

THE NATURE OF PREGNANCY.

SIR,—Dr. Ballantyne's exceedingly interesting paper in the *JOURNAL* of February 14th invites discussion on many grounds. I wish more particularly to comment on the immunological bearings of pregnancy to which he has referred.

There is one sentence with which especially I am in disagreement;

Even if it be proved that in some respects pregnancy is an instance of reaction to an antigen, it does not necessarily follow that from all points of view it is to be grouped with diseases.

Now I am sure that all workers in immunology will at once certify that where an immunity relation is discovered between two bodies it is the very essence of any reaction between the two. By immunity reaction I mean one or other of those standard laboratory tests which are being so fully worked out in matters of acquired or artificial immunity. Inherent or natural immunity is a problem still more subtle and elusive, and, for present purposes, need not be further mentioned.

Hormonal changes no doubt are associated with all questions of immunity, but the prime and essential thing is the immunity reaction *per se*. This alone gives reason for classing the relationship as immunological.

The question for Dr. Ballantyne, then, is not: What bearing has proof of immunity reactions on the question at issue? but, Have immunity reactions been certainly demonstrated? Grant that these have been demonstrated and all that remains is nomenclature—which, after all, is a matter of secondary importance. To label a healthy pregnant woman as the subject of an immunity reaction in relation to the ovum is to state a fact, but to label her as "suffering from a disease" seems unnecessarily incongruous. There is no such incongruity, however, in expressing the relationship as one of host and parasite, and for this reason I have always preferred what Dr. Ballantyne considers a less subtle term.

The same difficulty is met with in labour—the culmination of pregnancy. This is a physiological process, yet no product of conception can be discharged without the formation of a large and, at first, unprotected "wound"—the placental site.

So long, then, as we fully appreciate the intimate and essential nature of the reaction, the dangerous possibilities that may arise from a lack of its full development, and that our treatment of symptoms when they arise is to be based on our knowledge of immunological processes in general, may not nomenclature be left to take care of itself?

Personally, after more than three years' work on the subject, I am fully convinced that there is an immunity reaction between the mother and the ovum. My earliest positive results were obtained without a knowledge of, and by a different technique from, those of Fieux and Mauriac, and since that time a mass of work from recognized laboratories has made it clear that sensitization reactions

and complement fixation tests are in reality positive during some or other period of pregnancy. These two I consider the most important; the significance of Abderhalden's results I am more ready to leave to the judgement of future years.

Still further, it seems to me that Dr. Ballantyne has scarcely differentiated sufficiently between the ovum and the fetus. At no time does the latter show any of the cytological inco-ordination which characterizes the invading trophoblast. There is, too, much clinical evidence that the fetus suffers *pari passu* with the mother in toxic pregnancy. In my article, to which Dr. Ballantyne has so kindly referred, I attempted to explain away the sensitization which occurs on injection of fetal (as distinguished from placental) extracts into the same species. Since then I have obtained evidence that not only the pregnant guinea-pig, but also the newly-born guinea-pig, is sensitive to homologous placenta. If this be confirmed much of the anomaly and confusion will be cleared up. Mother and fetus may then be admitted as existing in harmony, as Paul Bar has for years insisted, and every one who (like myself) has had the privilege of his clinic must always be appreciative of his work. There remains the placental link between the two, and in this we have now, I take it, full proof of an antigen character.

It is difficult to compress within the compass of a letter all that one would like to say on the subject, but I trust that I have made it plain that the admission of an immunity reaction between the mother and any part of the ovum has a significance which cannot be gainsaid by any "more welcome hypothesis" of "bracing strain."—I am, etc.,

Liverpool, Feb. 17th.

H. LEITH MURRAY.

SIR,—The address by Dr. Ballantyne in the *JOURNAL* of February 14th on the nature of pregnancy and its practical bearings, is not only well conceived, but pregnant of facts and suggestions which it is to be hoped will bear fruit. Professor Bar's views are interesting to me, and further research is sure to clear up many present difficulties in regard to the ailments during pregnancy. The danger signals of pregnancy which Dr. Ballantyne thinks the pre-maternity nurse should look for are haemorrhage, excessive vomiting, extreme constipation, persistent headache. From my experiments and observations I have little doubt that all the ailments of pregnancy, as well as the great bulk of disease generally, are due to deficient elimination. Whatever view may be held as to the effect of the child upon the mother, the fact that the menstrual discharge ceases when pregnancy occurs, points to a great change, which must affect every organ. When in practice I used the sphygmograph, and found that the tension was increased during the pregnant state, the tracing resembling that from a case of Bright's disease of the kidney. Albuminuria is supposed to be in some way connected with eclampsia in the puerperal state. With a pulse of high tension as the normal pulse of pregnancy, it may require very little to increase the tension and cause disease. I find that the tension of the pulse varies with the food even in health, and a pulse of high tension can be very quickly reduced by attention to diet. Albuminuria may occur during pregnancy without eclampsia. I have seen the urine boil solid, and the confinement quite normal; so that in pregnancy we may have not only a pulse of high tension, but albumin in the urine and no eclampsia. From that fact we may infer that some other organ than the kidney is at fault when eclampsia occurs. I saw a case of eclampsia in which the convulsions continued after delivery, and jaundice was noticed as well as dropsy. Leucin and tyrosin were found in the urine, and a grave prognosis given by the consultant; nevertheless, by the action of a diuretic, the dropsy disappeared and recovery was uninterrupted. In that case elimination was at fault, and there can be little doubt that the copious diuresis saved the patient. If that case we had not only renal but hepatic stasis, both due, there can be little doubt, to intestinal stasis; and I feel sure that if the pregnant woman knew how to live so as to keep all the eliminating organs active, her health would not suffer.

As to the decreasing birth-rate, if our marriage laws were altered, and every woman had one child, we would have more children, but unless our luxurious habits and