

(6) The administration of insulin during malarial therapy produced indefinite effects as regards the number of parasites, but in 60% of instances the fever terminated after insulin had been given. Relapses followed, but differed from those following small doses of quinine in having a degree of pyrexia.

(7) It is inadvisable to give insulin if there is a possibility of a rise of temperature shortly after.

J. R. LORD.

Enumeration of Parasites in Therapeutic Malaria. (*Journ. of Trop. Med. and Hyg.*, January 1, 1927.) Rudolf, G. de M., and Ramsay, J. C.

Parasites enumerated by two different observers working independently were found to vary considerably in numbers in the peripheral blood-stream during the course of malaria in general paralytics.

In thirteen out of fourteen cases a decrease in the number occurred between the stages of sporulating and half-grown forms, and in ten out of the fourteen an increase in number took place as the parasites grew from young rings to older intra-corporal forms. The decrease and the increase were not constant in each patient. As development proceeded from half-grown to ring forms a decrease occurred in 97.9%, an increase in 2.1%. As development proceeded from ring to half-grown forms a decrease in numbers occurred in 24.8%, an increase in 60.9% and no change in 14.3%. For these calculations the assumption has been made that each sporulating parasite produces only ten merozoites, although the number is usually stated to be from fifteen to twenty. Despite this low estimate in a very high percentage young forms are not even ten times as numerous as the forms from which they originated. No doubt a number of the small rings would be overlooked, and few, if any, of the larger forms, but the difference in the number of parasites is too great for this to be the only explanation in many cases. The decrease in numbers as the parasites pass from three-quarter grown forms to sporulate and become small rings corresponds with the general biological law that where the mortality is high large numbers of eggs or young organisms are produced (see J. Arthur Thomson). The number of merozoites from each schizont is comparatively large, and so a high death-rate would be expected. This is what is found.

The cause of the increase in number as the parasites develop from the ring to the half-grown stage is obscure. Possibly, the older forms emerge from the internal organs; or numbers of merozoites take an abnormally long time to develop, or perhaps a combination of both occurrences is the correct explanation. In Case 3 a decrease in the number of different forms of the parasites took place just before and during the fever, and an increase occurred after the fever. If all the parasites disappeared into the internal organs, to reappear later, none should be found in the peripheral blood during the pyrexia; and yet they can be found. Whether the parasites enter the internal organs temporarily, whether some

merozoites take an abnormally long time to develop, or whether numbers of parasites are destroyed and others from the internal organs take their places, it is impossible to say. The increase as the parasites developed from the ring to the half-grown stage was present, at some period, in ten out of fourteen cases, but in 60.9% of the number of transitions from the one stage to the other.

In four patients the parasites remained very scanty during the first few days, suddenly to increase later. In five out of ten patients a relationship was found between the numbers of parasites and the degree of fever. In these five cases the same number of parasites was not accompanied by the same degree of fever in different patients, but as the temperature became greater the parasites increased, and decreased as the rises of temperature became smaller.

The number of gametocytes was enumerated in cases in Series 2 and 3. The error in Series 2 is 25%, as with the asexual forms. The curves are more regular than in the case of the asexual forms, but there is a tendency for the numbers of the gametocytes to vary with the numbers of the asexual types. J. R. LORD.

Basal Metabolism as Determined by the Respiratory Exchange. (Proc. Royal Soc., B, vol. ci.) Pickworth, F. A.

SUMMARY.—The numerous determinations of the basal metabolic rates by the bag method have involved certain variable and preventable factors, such as muscular tonus and attention, which may have considerably obscured the results; and the usual accepted limits by this method of up to 15% are too large, so that more refined methods of investigation are needed.

The paper shows how figures can be obtained which approach more nearly the true basal rate; and by reducing the magnitude of certain variable factors results more than 20% lower than those by the bag method are obtained with normal subjects.

The effect of various factors upon the metabolism has been studied and figures illustrating the effect of relaxation of mind and body sleep, fatigue, diet, irritation, hot baths, etc., are given.

J. R. LORD.

The Pathological Effects of Hypnotic Drugs upon the Central Nervous System of Animals. (Brit. Journ. Exper. Path., 1926.) Mott, Sir F. W., Woodhouse, D. L., and Pickworth, F. A.

The occurrence of mucinoid material in such remarkable amounts in the nervous system of the treated animals is the most interesting feature of the effects of continued treatment with hypnotic drugs.

Although the drugs sulphonal and veronal have been isolated from brain-tissue (Russel and Parker, 1914), and might be present in the nervous systems of animals treated as above, the mucinoid substance does not consist of these, but it shows entirely different physical properties. It also appears improbable that substances of such widely different chemical constitution as the barbitone and sulphonal groups of drugs would combine with the mucinoid material.