the body, an appreciable increase in muscular tone occurs.

Overfeeding, therefore, is not only a cause of glycosuria in diabetes, but also results in a progressive failure in metabolism with loss of strength. It appears to matter little whether the excess of food is in the form of carbohydrate, or protein, or even fat—the outcome is the same; but as the effects of an excess of fat are more insidious and difficult to recognize in the early stages it is necessary that particular care should be taken in regulating the fat allowance. Since I realized that fact and applied it in my clinical work I have obtained much better and more permanent results than formerly. It has also enabled me to recognize and deal with cases of recurrent glycosuria that would otherwise have been puzzling. As an example I may quote the case of a boy of 14 who was brought to me in October, 1916, by Dr. J. Howard Cook.

When he was first seen by Dr. Cook he was passing about 100 grams (5.5 per cent.) of sugar a day, but when he came to me the sugar excretion had fallen to about 10 grams a day. The patient's carbohydrate and protein tolerance were worked out, and he was put on a diet on which he remained sugar-free for about three months. A return of the glycosuria then occurred, but on his carbohydrate allowance being readjusted the sugar disappeared, and it remained absent for about four months. As the glycosuria then recurred it was evident that his carbohydrate tolerance was steadily falling, and the prognosis appeared to be bad. A further readjustment of both the carbohydrate and protein allowance kept him sugar-free for another four months, when sugar was again found. I went into the case very carefully with Dr. Cook, and we came to the conclusion that as the boy's weight was increasing more rapidly than would probably be accounted for by natural growth and a considerable amount of fat was being taken in the diet, it would be advisable to try the effect of reducing it. This was at once done, and I hear that he has since remained free from any trace of sugar although more starchy food has been taken, and that he has improved in strength and general condition.

The importance of a strict control of the fat content of the diet has been impressed upon me by a number of other cases, including several which had been submitted to the fasting treatment with immediately satisfactory results, but with ultimate return of the sugar. In some of these that have come under my care owing to the recurrence, I have found that an excess of protein was being taken, but in others careful chemical examination has shown that the fat content of the diet was the difficulty, and when it was adjusted to the patient's metabolic powers the glycosuria promptly ceased and did not return.

Patients who are steadily losing weight, as most diabetics are, naturally desire to put on flesh as quickly as possible, and are apt to judge the success or failure of any treatment they may undergo by the extent to which their wish is gratified; but, although we may understand and sympathize with their longing, it must not be gratified, and we should explain that gain in bulk is a sign of failure rather than of success. A steady weight that can be maintained without overtaxing the patient's defective metabolic powers should be aimed at, and any attempt to improve a bad situation by overfeeding, or even feeding up to the theoretical caloric requirements of the body, must be abandoned. Gain in weight must be sacrificed to well-being and satisfaction of the appetite to length of days. Individualization of the diet, in which the allowance of carbohydrate, protein, and fat is regulated by the tolerance of the patient for each, and by his powers of dealing with the diet as a whole, is the line along which the treatment of diabetes is developing, and, although it is very likely that we have not yet reached finality and that other considerations, such as the mineral content of the diet and the amino-acid make-up of various proteins, etc., will eventually have to be taken into account, it is clear that the older standards and empirical methods employed for so long are doomed, and will have to give place to scientific dieting based upon exact modern chemical research and knowledge.

REFERENCES.

- ¹ *Journ. Biol. Chem.*, 1916, xxvi, p. 417. ² *Ibid.*, 1915, xxi, p. 183. ³ *Arch. f. Anat. u. Physiol. Phys. Abstr.*, 1914, p. 213. ⁴ *Amer. Journ. Med. Sci.*, 1917, cliii, p. 313. ⁵ *Arch. Int. Med.*, September, 1917, p. 399.

THE American Women's Zionist Organization announces that Mrs. Peter J. Schweitzer of Brooklyn has given £5,000 for the building and maintenance of a model eye hospital in Palestine. A medical unit has left for Jerusalem.

AN OUTBREAK OF PHLEBOTOMUS FEVER.

BY

CAPTAIN J. A. HARTLEY, M.D.DUBL.,
R.A.M.C.(T.F.).

AN outbreak of phlebotomus fever (sandfly fever) occurred in a squadron of yeomanry on outpost duty in mid-Egypt in the middle of the summer of 1917. The post was on the western edge of the cultivation, and I was in medical charge of the unit. Of the total strength 86.4 per cent. were infected. The first to contract the illness were the men, non-commissioned officers next, and officers last. The first case was discovered on the thirty-seventh day in occupation, and from this there were three or four fresh cases daily for a week, and an average of six daily in the second week. For medical reasons the unit then moved about a mile and a half to a new camp on fresh ground, and, although it was impossible to avoid carrying the infection, better conditions followed. For military reasons it was desirable to maintain occupation of the first position, and after taking preventive measures additional to what had already been followed, a guard drawn from another unit was placed in it. Four days had scarcely elapsed when the non-commissioned officers and men who formed this presented symptoms of infection, and the illness spread through all of them.

The accommodation consisted of a dwelling-house and offices which the officers and non-commissioned officers occupied, and shelters constructed of wood and canvas for the men. All were placed compactly on an elevated site adjacent to a pool which covered about an acre and contained more or less stagnant water. Agricultural drains of muddy water were in touch. The sanitary arrangements were satisfactory except the drinking water, which was bad; the latrines and horse lines were at a reasonable distance. Preventive measures were adopted in the form of cresol spraying throughout, and the use of paraffin oil on breeding places. Everyone, officers and other ranks, had a mosquito net, but this could not be counted on as the midge is so small that it can pass through the mesh. They were plentiful, very small and midge-like, with hairy bodies. They were found on walls and in rubble, but the breeding places must be moist.

The incubation period was from four to seven days. The onset was very sudden, accompanied with severe malaise, headache, and suffusion about the eyes and post-orbital pain. Pain in the lumbar region was generally intense, and pain and cramp in the limbs occurred. Constipation was nearly always present and profuse sweating. The temperature rose quickly to 102.5° or 103°, and on a few occasions to 105°. After twenty-four hours the pyrexia diminished, and at the end of three days fell to normal. The pulse was not correspondingly accelerated—it was seldom above 80; it became soft and weak and the cardiac condition required attention.

The suddenness of the onset was the marked feature. A man to all appearances in normal health was on duty at 9 a.m., and an hour later reported ill with giddiness and inability to carry on. His temperature was 103° F.; other symptoms developed in the course of an hour or two. One night another was found on horseback wandering up and down the road, unable to recall to mind the way he was accustomed to take to reach camp. He was feeling dazed and ill, and his temperature was 103.2°. An hour earlier, feeling all right, he had left head quarters of the regiment, two miles back.

Phlebotomus fever had not previously been prevalent, nor were contacts from outside found. One or two subjects of malaria were on the strength. From dengue the condition is differentiated by the suffused eyes, absence of rash and of secondary rise in the temperature after a few days running normal. In paratyphoid the pyrexia seldom runs so high, and has not the characteristic third-day drop to normal. Severity of the rigor and fall of the temperature in a matter of hours distinguish it from malaria; enlargement of the spleen is also to be remembered.

Most cases were evacuated to hospital. Those remaining in the lines were kept together apart from the uninfected; they were given a purgative and sodium salicylate, phenacetin, or opium for the relief of the pyrexia and aching limbs. Subsequent debility was a marked feature

considering the shortness of the acute stage, but many managed to recover sufficiently to return to light duty after fourteen days.

CLINICAL NOTES ON PHLEBOTOMUS FEVER.

BY

CAPTAIN J. A. DELMEGE, R.A.M.C.,

AND

CAPTAIN C. S. STADDON, R.A.M.C.

PHLEBOTOMUS FEVER occurred in Macedonia as an epidemic which attacked certain units camped in the vicinity of some old ruined buildings.

The *Phlebotomus papatasi* fly was very numerous in the tents and dug-outs, and bites were inflicted both by day and night. Exposed parts were most affected—the

CHART 1.

CHART 2.

CHART 3.

backs of the hands, the forearms, especially the flexor surfaces, the ankles, and the face. A small irritable papule was produced; in one case the papules were so numerous as to simulate a definite rash.

It was found impossible to make any accurate observations as to the fly's radius of action, but whether by actual flight, or more probably by conveyance on wagons and limbers, it was certainly not less than 300 yards, or more than 500.

The Incubation Period.—This varied from four to six days, and was marked by a feeling of malaise and irritability of temper.

The onset was almost invariably sudden, and was usually accompanied by slight shivering; no definite

fur on the dorsum, but was clean at the tip and at the edges. The pulse was in many cases slow; rates of 55 and 50 were common, and in one case the rate fell to 40 during both of two attacks.

The temperature usually rose suddenly to 103° (105° was the highest noted), remained between 102° and 103° for about twenty-four to thirty-six hours, terminating, in the large majority of cases, by a critical fall, and remaining subnormal for three or four days.

The temperature charts showed three main types, depending on the fall and subsequent course of the temperature curve. In the accompanying charts the whole pyrexial period is not shown.

1. Curve showing a critical fall, or much more rarely a gradual one, on the second, third, or fourth day, and remaining subsequently subnormal or normal. (See Chart 1.)

2. Curve showing a critical fall to normal or subnormal, followed by a further rise, either immediate or after a day

or two, the temperature remaining up for one or two days. (See Charts 2 and 3.)

3. Curve showing a critical fall, followed by more than one post-critical rise of temperature occurring at irregular intervals. (See Charts 4 and 5.)

Course.—The prostration became more and more marked as the pyrexia continued, and by the time it subsided might have become very severe. The headache disappeared with the fall of temperature, but the backache and the pains in the limbs frequently persisted for several days afterwards; in several cases the pain only became marked after the fall in temperature had taken place. The slowness of the pulse often persisted for four or five days after the temperature fell. Appetite returned gradually,

CHART 4.

CHART 5.

rigors, however, were observed in any case. A slight degree of nasal catarrh, lasting for the first day or two of the fever, occurred in some.

Symptoms.—Severe headache, either frontal or post-orbital, was invariable; abdominal discomfort—not amounting to pain—backache (very marked in some cases), pains in the limbs, and anorexia usually accompanied it.

Signs.—The face was usually uniformly flushed, but though this flush was in no way typical, it did not in any way suggest the dark, flushed, bloated facies of relapsing fever. The conjunctivæ were injected, but the amount of injection varied, being in some cases extremely marked and hardly noticeable in others. It bore no relation to the severity of the infection. The eyeballs were usually tender on palpation. The tongue showed a thick brownish

but convalescence was slow, and the patient remained debilitated for a week or ten days or even more.

The complications observed were:

Conjunctivitis.—This was quite severe in one case.

Epistaxis.—This occurred in several cases.

Sore Throat.—This, associated with faucial injection, was observed in several cases.

Vomiting.—This was quite marked in one case, and was not due apparently to any outside cause.

Reinfections were comparatively common. They were almost invariably milder; the temperature seldom rose above 100° F. (101.8° F. was the highest noted), and the rise lasted only one or at most two days. The symptoms and subsequent debility were also much less marked, and no complications were noted. No case of more than one reinfection was observed.