

quotient, however, seldom rose significantly above 1.0; above this value there is no doubt that fat is being synthesized in the body. In two fat young women, who were grossly overfed on a diet rich in carbohydrates for eight days, and who each gained nearly 3 kg. in body weight, the respiratory quotients increased steadily from a value of 0.85 at the beginning to between 1.00 and 1.05 at the end of the experiment. The authors conclude that fat is not synthesized promptly after carbohydrate has been ingested. They suggest that any excess of carbohydrate in the diet is first stored in the muscles as glycogen, and that only when these stores are full is it converted into fat. In the two women the final amounts of glycogen in the muscles were calculated to be 1.2 g. and 2.9 g. per 100 g.

Little is known about the glycogen content of human muscle and the factors which influence it, and the observations of Passmore and his colleagues will be useful in reminding us of our ignorance. But the inferences drawn from their results need to be confirmed, though this would be difficult to do without hurting the subjects, who were volunteers. Thus, as the authors point out, the full number of estimations of the amount of glycogen in their muscles would have involved "a veritable pin-cushion of punctures."

Several minor criticisms of this study may be made. First the quantity and nature of the intestinal contents before over-feeding may have been considerably different from that afterwards. Unless this can be ruled out some of the ingested carbohydrate may still have been lying unabsorbed in the gut when the balance sheet was compiled. The second criticism concerns the short duration of the experiments. The formation of fat from carbohydrate is undoubtedly a complicated process, which demands the co-operation of several biochemical systems for whose maintenance the metabolism of protein may be essential. It may be too much to expect the body, in response to sudden and heavy carbohydrate feeding, promptly to reorganize its metabolic processes to utilize only carbohydrate both for immediate energy and for the formation of fat, with such efficiency that the respiratory quotient is raised above 1. Finally we may question whether carbohydrates should have been singled out as of paramount importance for the deposition of fat in the body. According to Passmore and Y. E. Swindells, "Every woman knows that carbohydrate is fattening: this is a piece of common knowledge, which few nutritionists would dispute."<sup>4</sup> But we must remember that one gramme of fat represents about 9 calories, whereas the same amount of carbohydrate or protein represents only 4 calories. The conversion of carbohydrate to fat should therefore involve "burning up" more than half the carbohydrate. According to B. Harrow and C. P. Sherwin, pigs, which can form fat with noteworthy efficiency, require to ingest 274 g. of glucose to form 100 g. of fat.<sup>6</sup> On the other hand dietary fat can be stored in the adipose tissues without any changes which entail a heavy expenditure of energy. Thus, theoretically, to make 1 g. of body fat only 1 g. of dietary fat is required. The conclusion seems inescapable that weight for weight fat is nearly three times as fattening as carbohydrate.

Fundamentally it is eating too many calories and not a particular class of foodstuff that causes adiposity. On the

practical side, of course, people with big appetites may be particularly attracted by sweet and starchy foods, so that carbohydrates may certainly be their chief enemy. To that extent most nutritionists may well be in substantial agreement.

## The Salisbury Medical School

African countries need more and more doctors and the need is urgent. Unhappily, the dissolution of the Federation of Rhodesia and Nyasaland may seriously interfere with the projected creation of a teaching hospital and medical school in Salisbury, Southern Rhodesia. The cost of this had been included in the estimates of the Government of the Federation. But now the Governments of Nyasaland and Northern Rhodesia have dissociated themselves from these schemes. In Salisbury a modern university has been brought into being in special relationship with the University of London, and with it a medical faculty has been formed and affiliated with the University of Birmingham. The prediction of the Nuffield Foundation that the schools in the Federation would provide suitable candidates has been fulfilled. Twenty-six applicants were admitted to the Faculty of Medicine a year ago and thirty-three this year—of both European and African stock. These students will eventually obtain Birmingham degrees and be admitted to the *Medical Register*. Traditionally they have obtained their medical training in South Africa and Britain, at least for the most part. But the former is unwilling to admit African students to her schools. In Britain there is a shortage of places for home demands—and a shortage of doctors. African doctors trained abroad may be reluctant to return to their own country to practise, and in any event it is better that doctors who are to work in Africa among Africans should be trained there.

For these and many other reasons it is imperative that the plans for the teaching hospital and medical school should go ahead as quickly as possible. The new 350-bed multi-racial teaching hospital is needed to train doctors, medical students, nurses, midwives, and the many professional auxiliaries required in a modern hospital. And of course there are the growing needs of the population for expert therapeutic care and preventive medicine. The plans of the consultant architects, Messrs. Llewelyn Davies and Weeks, have reached their final stage.

The survival of the Rhodesian Medical Faculty may well depend on the authorization of the new teaching hospital: which means the provision of money and the reconstitution of the Board of Governors. The situation is made urgent by the fact that the Federal Liquidating Agency is to be wound up on 30 June this year. The present hospital secretary and the senior academic staff are being maintained by the Agency. The 50 to 60 students are the most the African hospital at Harari can cater for. If the British Government here at home and the Government of Southern Rhodesia fail to provide the necessary finance for the construction of the new hospital, admissions of students next year must cease or be severely cut down. It would be deplorable—indeed unthinkable—that the authorization for this project should fail, for it opens up such great possibilities for the future welfare of Central Africa, and not least for the continuation and strengthening of the links that bind Britain to a vast continent where rapid change is the order of the day.

<sup>1</sup> Emerson, R. G., *Brit. med. J.*, 1962, 2, 516.

<sup>2</sup> *Ibid.*, 1963, 2, 764.

<sup>3</sup> *Ibid.*, 1958, 2, 1581.

<sup>4</sup> Passmore, R., and Swindells, Y. E., *Brit. J. Nutr.*, 1963, 17, 331.

<sup>5</sup> ——— Strong, J. A., Swindells, Y. E., and Din, N. el, *ibid.*, 1963, 17, 373.

<sup>6</sup> Harrow, B., and Sherwin, C. P., *Textbook of Biochemistry*, 1935, p. 553. Saunders, London.