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FEEDING OLYMPIC ATHLETES

Long before nutrition was the subject of serious study as a separate branch of science athletes were obsessed with the importance of their food in helping them to triumph. As Sir Adolphe Abrahams pointed out at a recent meeting of the Nutrition Society reported elsewhere in this issue (p. 219), the aim of the old-time trainer was to fill his men with beef and beer and then make them work these vital ingredients "into the system." According to Schenk[1] the feeding arrangements for the 1936 Olympic games at Berlin followed this traditional pattern. The average daily food consumption is said to have been 7,300 calories, provided by three times as much protein, five times as much fat, and one and a half times as much carbohydrate as an ordinary man was supposed to require in those far-off days of plenty. Almost all the competitors are reported to have been heavy meat eaters, and the ingestion of large underdone steaks twice daily was not considered excessive or unusual. The allowance of milk was two pints daily, and liberal amounts of eggs, fruit, salads, sugar, honey, and white bread were consumed.

British competitors in this year's games by way of contrast are to be given one pint above the usual allowance of milk, twice the normal rations of fat and cheese, one and a half times the ration of meat, and three times the usual ration of bread. These amounts are those allowed in this country for heavy industrial workers, but they fall far short of the gargantuan feasts which must have been enjoyed in Berlin in 1936. In those days, presumably, the present weekly meat ration would have disappeared at one sitting. On purely theoretical grounds it is not easy to understand why Olympic competitors should need such enormous amounts of foods. A sprinter may do work corresponding to the output of some 400 calories in his daily training, and in a race lasting ten seconds may use up perhaps 20 to 30 calories. A long-distance runner may use up 2,000 calories in a marathon race, although he will not maintain this level of activity in his daily training. In spite of the greater daily energy output of the long-distance runner, however, his appetite will probably be considerably less than that of the sprinter. It is apparent, therefore, that food is not only needed as a fuel but also for the purpose of building up a musculature appropriate for the particular athletic event. When viewed beside the sprinter, or beside the brawny weight-lifter or heavy-weight wrestler, the long-distance runner often appears so lean as to give an impression of undernourishment.

The need to build up muscle may well explain the athlete's desire for meat even though his energy requirements might be satisfied equally well by carbohydrates. Other possible theories are that meat may be important as a source of B vitamins, which are necessary to sustain an increased rate of carbohydrate metabolism in the muscles, or of creatine, which is also concerned in muscular contraction. Psychological factors must be borne in mind, too, for athletes who are inclined to worry and fret about their coming ordeal may be consoled and morally fortified by having plenty of good meat to eat. A craving for sugar, which is sometimes experienced by athletes after strenuous exertion, and which is also familiar to mountaineers, is probably associated with a reduced level of glucose in the blood. While most authorities agree that some Olympic competitors have huge appetites, the data reported by Schenk have been received with some scepticism. Doubts have been raised, indeed, whether members of the British teams have ever eaten quite such spectacular quantities of food.

If this year most of our Olympic athletes are subsisting on the diet which has been allowed them by the Ministry of Food, and have not greatly augmented their supplies from other sources, we may well follow their exploits not only with sporting enthusiasm but also with keen scientific interest. A generally high standard of performance on their part must make obsolete the belief that large quantities of meat provide the best foundation for athletic prowess. Dismal failure on the other hand may make us wonder whether the diet which is now consumed by our heavy manual workers is fully adequate to sustain them in their labours.

[1] *Münch. med. Wschr.*, 1936, **83**, 1535.

MODERN VIEWS ON DIABETES

The modern trend in the treatment of diabetes mellitus is in the direction of standardization and simplification and the elimination of what Dr. G. M. Wauchope, in her paper which appears elsewhere in this issue (p. 191), calls "time-consuming or fussy procedures." This process of simplification has been applied both to diet and to the arrangement of insulin therapy—in the former by the use of a more generous allowance of carbohydrate and free protein and fat, and in the latter by the single injection treatment made possible by the introduction of prolonged-action insulins. In both aspects of the treatment of diabetes there is a real danger of over-simplification at the expense of good control of the disease, a tendency rendered the more dangerous by the fact that the consequences of inadequate treatment are often not at once apparent and may become so only after a period of apparently uneventful years, when there may arise irreversible complications such as retinitis and arterial and renal disease. It is important, therefore, that the carbohydrate content of the diet, however large, should be kept relatively constant and that insulin should be given in sufficient quantity and at sufficiently frequent intervals to produce a normal blood-sugar level over the period of maximum insulin action.

Wauchope describes the results obtained in the treatment of 366 ambulant diabetics with a single, morning injection of globin insulin (G.I.). This substance, as the author points out, resembles Hagedorn's protamine or

[1] *Yale J. Biol. Med.*, 1945, **17**, 705.
[2] *Amer. J. Path.*, 1936, **12**, 33.