and their activities controlled—though probably only by the concerted action of medical men.

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Glucose Tolerance in Bed

The effect of exercise in reducing glycosuria and blood sugar in diabetics was clearly demonstrated in the pre-insulin era by F. M. Allen.[1] R. D. Lawrence[2] added the observation that exercise potentiated the hypoglycaemic effect of insulin, information which should be, but unfortunately is not always, communicated to all diabetics when insulin therapy is begun. Recently D. M. Klachko and colleagues[3] have used the technique of continuous blood-glucose monitoring to follow the effects of graded exercise on diabetics who require insulin and on non-diabetics. Moderate exercise—walking on a treadmill—had a more profound effect on blood glucose levels in the diabetics. The degree of fall seemed to depend on the level of blood glucose at the onset of exercise as well as the amount of exercise taken. Furthermore, in the diabetics there was no rebound rise of blood glucose after the exercise, a phenomenon observed in several studies of non-diabetics.[3-5]

In non-diabetics the effects of exercise on the blood glucose level are variable and depend on a number of factors. J. R. Sutton and colleagues[6] found that vigorous exercise on a bicycle ergometer caused a rise in blood glucose in fit people but a fall, followed by a rise in the rest period, in the unfit. J. K. McKechnie and colleagues[7] studied fit long-distance runners and noted an apparent effect of diet before the race. When the athletes were on a sugar-free diet, the blood glucose was lower at the end of the race than before it began, whereas when they were on an unrestricted sugar intake the blood glucose was higher at the end than at the start. F. Schwarz and colleagues[8] studied normal and obese people performing bicycle ergometer exercise and noted that the blood glucose remained stable in all those of normal weight. However, in 4 out of 10 obese people the blood glucose rose. It is probably significant that the obese people had much more difficulty in performing the exercise. That the kind of exercise and the element of competition or difficulty may also be important is further supported by the observation of considerable rises in blood glucose levels in squash rackets and badminton players during play.[9]

There is little evidence that, under ordinary circumstances, exercise affects glucose tolerance. P. Björntorp and colleagues[10] studied ten obese patients who were subjected to fairly intensive physiological training over a period of eight weeks, resulting in increased maximal oxygen consumption and increased isometric muscle strength. Weight actually increased, primarily owing to an increase in body fat. Blood glucose levels in oral glucose tolerance tests performed before and after the training period were not significantly different. However, insulin levels were strikingly lower in the second test, suggesting that the physical training had somehow removed the insulin insensitivity associated with obesity. When physical activity is much diminished, however, glucose tolerance both intravenous[11] and oral is impaired. This has recently been studied by R. L. Lipman and colleagues,[12] who confirmed that bed rest impaired glucose tolerance and showed that the impairment was associated with reduced peripheral uptake of glucose. Significant impairment of glucose tolerance could be observed after as little as three days' bed rest, so this factor must clearly be considered in the interpretation of glucose tolerance tests in the bedridden patient. Exercise in the supine position for only one hour a day diminished but did not completely abolish the glucose intolerance, suggesting that it was lack of exercise as such and not the effects of the prolonged supine position which had this effect. Exactly how physical exercise affects glucose intolerance remains to be established, though M. S. Goldstein[13] has found in animal experiments a humoral factor, released from exercising muscle, which has a hypoglycaemic effect.

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Hunter Reports

Mention management or administration to the average doctor and he tends to bristle. Perhaps this is because a doctor is trained to make quick decisions—often on his own—and tedious bureaucratic procedures with seemingly dilatory concensus decisions are anathema to him. Administrators are needed, however; the Health Service employs 900,000 people, making it one of the largest employers in the world, so that even when reorganized and integrated it will still be a complex structure. A constructive relationship between clinical medicine and administration is more probable if the N.H.S. contains appropriately trained medically-qualified administrators at all levels—an important plank in the B.M.A.'s policy on N.H.S. reorganization.

Decisions in the N.H.S. cannot just be handed down from the boardroom via the management; most of those that really matter are made night and day in surgeries, homes, and wards. Fortunately, the recently published report on medical administration by the Hunter Working Party,[1] summarized in the *Supplement* this week (p. 143), appreciates this situation. Its task of reviewing "the functions of medical administrators in the health services" and making recommendations about their training could not have been easy, however, when the working party had no clear idea of the form of the reorganized N.H.S. at area and district levels. This was being worked out simultaneously by a McKinsey-