

namely, liver and peripheral tissues. It is of interest that the action of insulin is thought to be exerted upon such a process of diffusion.⁴

With this excellent method three physiological processes have been investigated in man by Amatuzio and his associates.⁵ As might be expected,⁶ 4 units of insulin given with the glucose intravenously were shown to increase the rate of disappearance of glucose from the blood by 110 per cent. In contrast, 0.5 mg. of epinephrine given subcutaneously thirty minutes prior to carrying out the test, led to a 66 per cent decrease in the disappearance rate of glucose. This decrease may be ascribed to increased glycogenolysis⁷ and/or peripheral inhibition of glucose utilization.⁸ While a rise in blood sugar levels following such a dose of epinephrine within 25 minutes and lasting up to 90 minutes had been demonstrated in man⁹ the effect upon the removal of added glucose from the blood had not been previously studied.

The glucose disappearance rate was investigated in 17 patients with moderate to severe hyperthyroidism and was found to be completely unrelated to the severity of the disease. In 15, the rate was high or normal. In 2, it was slow. This is not surprising because of the pathophysiology involved. Peripheral utilization of glucose is increased¹⁰ by the general acceleration of metabolism. Yet glucose storage in the liver is impaired due to a cirrhotic process¹¹ and impairment of beta-cell function from exhaustion is accompanied by a decrease in endogenous insulin production.¹² Thus glucose utilization is decreased. These facts might also explain why after treatment with radioactive iodine, an establishment of euthyroidism in the 15 patients with normal or fast rates of glucose disappearance, this became slower in 8, remained unchanged in 5, and rose slightly in 2, while in the 2 originally showing slower than normal rates of glucose disappearance it became faster in 1 and slower in the other.

The rapid intravenous glucose tolerance test as de-

veloped by Amatuzio and his colleagues lends itself admirably to further clinical investigation because of its relative simplicity, rapidity, and reproducibility.

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REFERENCES

- ¹ Amatuzio, D. S., Stutzman, F. L., Vanderbilt, M. J., and Nesbitt, S.: Interpretation of the rapid intravenous glucose tolerance test in normal individuals and in mild diabetes mellitus. *J. Clin. Invest.* 32:428-435, 1953.
- ² Tunbridge, R. E., and Allibone, E. C.: The intravenous dextrose tolerance test. *Quart. J. Med.* 9:111-116, 1940.
- ³ Thorn, G. W., Koepf, G. W., Lewis, R. A., and Olsen, E. F.: Carbohydrate metabolism and work capacity in Addison's disease. *J. Clin. Invest.* 19:813-832, 1940.
- ⁴ Levine, R., Goldstein, M. S., Huddleston, B., and Klein, S. P.: Action of insulin in the permeability of cells to free hexose, as studied by its effect on distribution of galactose. *Am. J. Physiol.* 163:70-76, 1950.
- ⁵ Amatuzio, D. S., Schultz, A. L., Vanderbilt, M. J., Rames, E. D., and Nesbitt, S.: The effect of epinephrine, insulin, and hyperthyroidism on the rapid intravenous glucose tolerance test. *J. Clin. Invest.* 33:97-102, 1954.
- ⁶ Drury, D. R., Wick, A. N., and MacKay, E. M.: Effect of insulin on glucose metabolism. *Am. J. Med.* 10:763-764, 1951.
- ⁷ Soskin, S.: The liver and carbohydrate metabolism. *Endocrinol.* 26:297-308, 1940.
- ⁸ Ingle, D. J., and Nesamis, J. E.: Effect of epinephrine upon the glucose tolerance and work performance of the eviscerated rat. *Endocrinol.* 46:14-20, 1950.
- ⁹ Fraser, R., Albright, F., and Smith, P. H.: The value of glucose tolerance tests, insulin tolerance tests, and the glucose-insulin tolerance test in the diagnosis of endocrinological disorders of glucose metabolism. *J. Clin. Endocrinol.* 1:298-306, 1941.
- ¹⁰ Mirsky, I. A., and Brohk Kalin, R. H.: The effect of experimental hyperthyroidism on carbohydrate metabolism. *Am. J. Physiol.* 117:6-12, 1936.
- ¹¹ Wallerstein, R. S., and Walker, W. J.: Hepatosplenomegaly and liver damage in grave's disease. *Ann. Int. Med.* 31:904-912, 1949.
- ¹² Houssay, B. A.: Thyroid and metathyroid diabetes. *Endocrinol.* 35:158-172, 1944.

BOOK REVIEWS

NUTRITION AND PHYSICAL FITNESS: By L. Jean Bogert, Ph.D., Formerly Instructor in the Department of Medicine, University of Chicago; Instructor in Experimental Medicine, Yale Medical School, and Lecturer in Chemistry, Connecticut Training-School for Nurses, New

Haven; Professor of Food Economics and Nutrition, Kansas State Agricultural College, Manhattan; Research Chemist, Obstetrical Department, Henry Ford Hospital, Detroit. \$4.50, pp. 664, illustrated. W. B. Saunders Company, Philadelphia, Pa., 1954.

The appearance of the sixth edition of this important work on *Nutrition and Physical Fitness* by a recognized

authority in the field of nutrition, L. Jean Bogert from Berkeley, California, is a happy event. Those who have read and used the earlier editions will find in this latest text a large amount of new material. In the preface the author indicates that more than 60 per cent of this volume is entirely new and the remainder has been completely revised. In no field of medical science in the past decade has there been greater activity of importance than in the field of nutrition and metabolism.

The book is divided into four parts dealing with Body Needs, Body Processes, Meal Planning, and Diet for Special Conditions. At the end of each chapter there is a section on questions and problems which should be exceedingly helpful to teachers of nutrition. The list of supplementary reading suggested at the end of the chapters, while not inclusive, nevertheless contains many of the more important references pertinent to the material discussed in the chapter. The chapter on carbohydrates, fats, and proteins contains the standard information. The chapter on basal metabolism and temperature regulation is exceedingly well done. The discussion on protein requirements and protein balance fails to mention the work of Kountz and others on the protein requirements of individuals in the higher years.

It is unfortunate that the important topic of Diet After Forty did not receive the critical attention that this rapidly expanding area merits. The relationship be-

tween continued vitality and vigor in the mature and higher years of life and nutrition is being studied by a number of investigators. The relationship between nutrition, particularly total intake, fat content of the diet, and vascular degeneration merits careful evaluation in any book on nutrition.

The chapter on Overweight accepts the traditional interpretation of weight control. There is a passing reference to the experiments of Jean Mayer, but no mention is made of the pioneer work of John Brobeck and his associates, who were among the first to identify areas in the hypothalamus as centers for the control of body weight and appetite.

At the end of the book there are the usual appendices with reference to the nutritive value of foods in average servings. There are also the usual tables of Weight-Height-Age approximations of normal.

The author has added to her stature as an authority in the field of nutrition by the appearance of this useful volume. The publishers are to be congratulated on the attractive format and the clearness of printing. The illustrations, an increase to 111 over the preceding 96, might have been reproduced with greater clarity.

This book is recommended to teachers of nutrition and students who hope for better understanding of basic facts concerning the nutritional needs of the human body.

The Search For Hidden Diabetes

The protean specter of diabetes mellitus haunts the consulting room of every practicing physician. It lurks behind the folliculitis, furunculosis, and pruritus ani in the office of the dermatologist. It peers out from retinal microaneurysms, pigmentation, hemorrhages, and retinitis proliferans at the ophthalmologist. It hides behind altered sensation and reflexes in the clinic of the neurologist, and leers through an albuminous cloud in the test tube of the urologist. It troubles the sleep of the surgeon concerned about ketosis and wound healing; and of the obstetrician vacillating between forceps and cesarean. It hides behind the cough of the phthisical, and the elevated T-wave on the cardiogram. It complicates the peaceful diagnostic life of practitioner and specialist alike.

It is the responsibility of medical men to be wary of this dissimulator; it is also the responsibility of the profession to discover diabetes as early as possible and

to institute proper management. Poor control of diabetes usually results in a high incidence of complications: infection, acidosis, retinitis, nephropathy, vascular calcifications, and neuropathy. Good control reduces the incidence of these complications and increases longevity in the diabetic.

For the early detection of diabetes, each physician-practitioner and specialist alike—must perform a screening test, even though it be only a urine test for glucose one hour after a high carbohydrate meal, on every patient he sees.

Each of us owes it to the community to cooperate with the intensive campaign of diabetes detection and education; but let us not forget that this is a year-round program.

Milton R. Weed, M.D., in
the *Detroit Medical News*,
Nov. 16, 1953.