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THE BODY-WEIGHT CURVE IN CHRONIC DISEASES.

The significance of the temperature curve for diagnostic, prognostic and therapeutic purposes in the acute and subacute diseases, is generally recognized. The clinical thermometer is diligently used by every practicing physician, by the trained nurse, and often by the laity independently of physician or nurse.

It was Gerhardt who first emphasized the fact that the body-weight curve is as important for the study of the nature, progress and treatment of the chronic diseases as the temperature curve is for the study of the more acute maladies. Nothing is more true than Gerhardt's statement, and yet it is but rarely in hospital or private practice that the advantages of keeping accurately a body-weight record over a longer period are fully appreciated. Many elaborate methods have been devised for studying the "total metabolism" in health and in disease. The methods are extremely difficult in application; the composition of the food and its energy-value in calories has to be determined; the relation of the incoming to the outgoing nitrogen has to be studied; the amount of carbon burned and of oxygen absorbed must be ascertained. As a substitute for these metabolic analyses, the procedure of direct calorimetry may be resorted to in the manner so well carried out by Atwater in this country. The more rapid and less circumstantial method of studying oxidation processes introduced by Zuntz and Geppert, in which the so-called "respiratory-quotient" is determined while the patient is fasting and at rest, while it has yielded results of scientific value concerning the temporary effects of work, food and drugs on metabolism, can yield us no reliable information regarding the total metabolism over a longer period than a few hours, or, if any, only clues as to the coarsest kind of deviation from the metabolic normal.

For a complete judgment regarding the measure of the oxidation processes in the body and the questions as to whether the total metabolism is pathologically high or low, and as to whether a given regimen is sufficient, is overabundant or is deficient, it is necessary to keep the patient for at least twenty-four hours at a time in a respiratory apparatus or a calorimeter, and, beside carefully analyzing the food, to make quantitative estimations of the nitrogen and carbon given off in the urine and feces. It is obvious that the necessary data for such a judgment could be obtained only in hospitals with outfits especially adapted for the purpose (like that of Pro-

fessor Jaquet's in Basel), and that in ordinary hospital and private practice such things can not be thought of.

These complete experiments, desirable as they are for rigid scientific investigations, are totally impracticable, and, beside, wholly unnecessary in general practice, where, as a matter of fact, an approximate estimation of the metabolic relations is all, in the present state of our knowledge, that the physician needs in this connection to guide him in advising his patient; and such an approximate estimation, provided the kind and amount of food be known, is afforded by the simple observation of the body weight over a certain period.

In studying the body-weight curve, as Fr. Müller¹ has emphasized, certain details must be considered, such as the temporary changes in the content of the bladder and intestine, and, especially, the variations in the amount of water in the body which take place when a patient changes from one kind of diet to another, or in fever, in profuse sweating, in diminished water-absorption (as in stenosis of the esophagus or pylorus) and in the accumulation or absorption of exudates and edemas. Taking these things into account, the observation for a considerable length of time of the body-weight curve is one of the best means we have of judging the metabolic activities of the body. When the patient takes an ordinary diet, it is easy to estimate the nutritional value (i. e., to determine the energy-value in calories) of the food eaten, with sufficient accuracy for clinical purposes, by referring to Schwenkenbecher's tables.² A healthy resting man needs daily 33 calories per kilo of body weight; if his occupation is sedentary, 35 calories; if moderately active, 41, and if involving hard labor, about 48.

Not infrequently in people who are losing flesh without apparent cause, an estimation of the energy-value of the food taken in reveals the fact that, though the patients believe they are taking enough food and of the right kind, they are really not doing so; in such cases a readjustment of the diet usually brings the body-weight curve back to normal. Or, again, when on a well-arranged diet, fully sufficient in energy-value for the maintenance of the body weight of a healthy individual, a patient continues to lose flesh, a consuming disease of some kind, even when no other symptoms are obvious, may be safely predicated. A man with latent tuberculosis, even in the afebrile stage, may lose weight on a diet, the energy-value of which exceeds 50 calories per kilo. In locomotor ataxia and certain other chronic affections, the patients usually remain thin and pale, in spite of an abundant food supply, while in Basedow's disease, a patient with ravenous appetite, consuming food with an energy-value of from 60 to 70 calories per kilo of body weight, may progressively emaciate.

1. Müller, Fr.: *Allgemeine Pathologie der Ernährung*. v. Leyden's *Handbuch der Ernährungstherapie und Diätetik*, second ed., p. 189.

2. Schwenkenbecher, A.: *Ueber die Nährwerthberechnung tischfertiger Speisen*. *Zeitschr. f. diätet. u. physikal. Therap.*, vol. iv, p. 380.