

Studies in metabolism have shown us how badly balanced is the diet of the average prosperous city dweller of our day. Excess of proteids and deficiency of carbohydrates, and sometimes of salines, is the rule. When the defenses fail, conversion of the proteins into the proper amino-acids is incomplete and the substances produced may act as nerve poisons. In these cases the caloric needs of the body may find better fulfilment in an abundant diet of carbohydrates within the limits of hepatic tolerance. An addition to the fats may also be beneficial within limits. Of the latter, those selected should be of low melting point, otherwise in neurotic patients, intestinal sand, a misnomer, for in reality the grains are soap, may form and a mucoscolitis appear. This, of course, connotes a wastage of the intestinal secretions used in saponification. The best fats are olive oil and butter fat. But the carbohydrates should be the mainstay as a rule.

Unfortunately too many of the modern consumer's carbohydrates are supplied in a form which emasculates from them substances of great advantage. It is a pity that experimental proof of this opinion has been lacking until recently, so that due weight was not given it by most physicians. Even then extensive clinical and laboratory investigation conducted in England recently to establish the relative merits of bread made from commercial flour and that from whole wheat, permitted of no definite conclusion; for attention was too largely confined to the caloric value of the result in bread. But that there is a substance of great importance for nutrition in that part of the cereal which is usually rejected in commercial preparation is now experimentally proved by the production of nerve degeneration in animals fed solely upon polished rice.

Almost in the nature of an experiment is the abolition of beri-beri in the compounds where coolies receive unpolished rice instead of the polished product under the consumption of which beri-beri prevailed. The former supposition that the disease arose from a fungus in the rice seems to have been disposed of by these experiments. Moreover, the substance which prevents the beri-beri, if we may accept the nerve degeneration in animals as of the

same nature, is separable from the rice polish by solution in alcohol and water, although its nature is not yet ascertained.

Further evidence that whole cereals contain a nutritive substance of importance for the internal secretions is furnished by Chalmers Watson's researches into the growth of the thyroid gland under different diets. He showed that on an exclusively flesh diet, thyroid gland of young rats underwent hypoplasia, whereas when oatmeal was the exclusive diet, the gland developed freely. The latter animals greatly exceeded in growth and capacity those fed only on flesh.

Although I do not know of experimental verification, it is legitimate to infer from the foregoing facts (as we know that an animal fed on carbohydrates alone emaciates and dies quickly) that a substance of great value to the nervous system in particular is removed in the milling of grains, and that this cannot be replaced adequately by the addition of flesh. Whether this substance exerts its action as a direct nutrient, or through the medium of the haemopoietic or other glands of internal secretion we do not know; but to the therapist, this is of less interest than the conclusion itself. For in the regulation of the activity of the nervous system the secretion of the thyroid gland is an essential. Many cases formerly designated neurasthenia and hysteria are now known to be merely due to changes in thyroid secretion.

Were one to speculate, it might be supposed that the prevalence in our day of hyperthyroidism expressed the response of this gland to a vascular environment which insufficiently supplies it with pabulum for the work the body requires of it: and that it responds by a secretion which makes up in abundance for what it lacks in quality, and thus inaugurates a vicious circle which maintains itself.

One cannot *here* enter into the qualifying factors of this hypothesis, those, for example, furnished by fear and anxiety in stimulating the thyroid secretion. (See *Mo. Cyclopædia*, May, 1912.)

Other important substances in the portion commercially removed from grain are calcium and the phosphates. Although these are present also in flesh, yet to obtain them in adequate amount from this alone would entail a greatly excessive ingestion