

TUBERCULOSIS DISPENSARIES.

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THE dietetic treatment (Zomotherapy of Richet) of pulmonary tuberculosis has of recent years received considerable attention, and been the subject of a great deal of experimental work. It forms an important part of sanatorium and domiciliary treatment. No apology is therefore necessary for alluding to the rationale of some of its more important features. The old system of 'forced' feeding has been entirely abandoned and more scientific methods have taken its place.

Certain physiological points are of importance. Pawlow has demonstrated experimentally that food has the power of exciting salivary and gastric secretion reflexly through the nerves of special sense and pneumogastrics, before it reaches the mouth. These 'appetite juices' start the process of digestion and the absorbed products of their action—albumoses and peptones—stimulate the glandular cells directly to continue secretion and so digestion goes on. As digestion proceeds the liquid contents of the stomach are moved on into the duodenum. Solid particles in the chyle cause reflex closure of the pylorus so that less easily digested food tends to remain a long time in the stomach. The acid stomach contents are passed on gradually into the duodenum the pylorus closing reflexly after each ejection and remaining closed till the fluid is neutralised before it allows a fresh quantity to pass. The acidity of the contents has another effect. It calls forth a copious secretion of pancreatic juice and stimulates the bile excreting mechanism. The more acid the chyle the more pronounced are these effects.

Of the actual chemical process of digestion and assimilation it is only necessary to mention one or two points. Proteins are converted by pepsin and trypsin into albumoses and peptones. These are still further broken up into single amido-acids (peptides), by the erepsin of the intestinal mucosa and in this state absorbed. The liver then abstracts the nitrogen to form urea and passes the carbon and hydrogen on to the tissues. Some of the nitrogenous material must however escape for it is necessary for making up tissue waste. Possibly peptides only escape, or peptides and some amido-acids. However this may be the quantity that escapes appears to depend upon the amount that enters the portal circulation at one time. Hence it is that raw proteins (meat-eggs) that are rapidly digested and rapidly absorbed result in a greater donation of nitrogenous material to the tissues than in the case of cooked proteins whose digestion is more gradual and prolonged. Certain experiments performed by Dr. J. J. Galbraith bear upon this point. He put two healthy persons and two sanatorium patients on a fixed diet and estimated their nitrogen intake and output. For part of the time protein was given raw for the remainder cooked. During the raw meat period the amount of nitrogen retained,

and presumably built up into the tissues, was greater than during the cooked meat period.

We may now proceed to consider some points in connection with certain kinds of food. Pawlow has demonstrated experimentally—and clinical experience bears out his results—that raw eggs taken on an empty stomach do not stimulate gastric secretion but pass straight through into the intestine there to be rapidly absorbed. Clinical experience with tuberculosis dyspeptics shows that an egg taken in the early morning has a remarkable stimulating effect on the appetite for breakfast probably by carrying germ laden mucus on into the intestine. Similarly a glass of hot water taken in sips half an hour to an hour before food induces contractions of the stomach and washes its contents out into the duodenum. Raw meat calls forth an abundant supply of highly acid gastric juice. It is very easily digestible and remains a very short time in the stomach. The great acidity and thorough and rapid emptying of the organ tends to render it relatively sterile and permits of an early return to normal diet. So too the stimulating effect of the acid on the duodenum results reflexly in an abundant supply of pancreatic secretion and bile. Raw meat does not, in a tuberculosis dyspeptic, give rise to decomposition in the intestines and to diarrhoea, as would a similar dose of cooked proteins, except when all reasonable limits of dosage are exceeded or the administration kept up too long. Being rapidly digested it is rapidly absorbed and, since the amount of peptides or amido-acids or both that escape the liver appears to depend on the amount present at any one time in the portal circulation, contributes more largely to the repair of tissue waste than cooked proteins. A fact that is emphasised by Dr. J. J. Galbraith's experiments on nitrogen intake and output just referred to. Cooked (coagulated) proteins deprived of their extractives cause a very scanty secretion of gastric juice compared with that of raw meat. Apart from this they take much longer to digest. They therefore lie longer in the stomach and tend to exhaust it. Dr. J. J. Galbraith, in a series of experiments with test meals on tuberculosis patients, has been able to demonstrate cooked mince, in a largely undigested condition still in the stomach at the end of an hour; while, in the same patient, after a meal of raw meat, the organ was entirely empty when examined after the same time. Still more interesting was the fact that after a course of raw meat dieting a test meal of cooked meat showed a marked rise in secretory activity of the stomach. Thus it would appear that not only does a particular kind of food call forth a particular kind of secretion but that the stomach can be educated into secreting a more powerful digestive juice.

(To be continued.)