

COLLECTION OF TEST MEALS.

SOME ESSENTIAL POINTS IN THE FRACTIONAL TEST MEAL.

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THE fractional method of gastric analysis was first introduced about 30 years ago, and during this time it has fully proved its value as an aid to gastric investigation. To-day, the method employed is very largely the same as that when it was first used. Certain minor modifications have been introduced, but the essential principle remains unaltered. What perhaps is not as fully appreciated as it deserves is that the collection of the specimens in the ward is every bit as important as the subsequent analysis in the laboratory. Unfortunately, in these days of shortage of ward staff, the tinkle of the "Gastric's" bell every quarter of an hour represents a very real additional burden to the already overworked Nursing Staff. However, the manner in which the samples are collected can have a very considerable bearing on the value of the analysis, and, furthermore, test meals are apt to be unpopular with patients, so complete confidence in the operator is essential for success. The stomach secretes gastric juice continuously, but a fasting stomach is unlikely to secrete sufficient for analysis, so it is necessary to give a stimulus to secretion. This stimulus is usually food, though alcohol or subcutaneous injections of histamine may in certain circumstances be employed. It is obvious that different foods are going to stimulate the gastric secretion to a varying degree, and on the grounds of uniformity "standard test meals" are employed.

The Meal.

Two types of "test meal" are commonly employed. The first of these (the Ewald), consisting of 1½ oz. of dry toast and ½ pint of milkless tea, is usually employed in conjunction with the one-hour test meal. This method has now been very largely abandoned in favour of the more valuable fractional technique. In this case, the Boas test meal is used, consisting of oatmeal gruel; it has many advantages: it is colourless, a valuable help in analysis, and, properly made, the consistency is such that it does not block the stomach tube. The method of preparation of the meal is important: Two tablespoons of oatmeal are mixed with a quart of cold water and slowly boiled down to a pint. The whole mass should then be passed through muslin, and sugar, but not salt, added to taste. War-time rationing has introduced a slight complication; true oatmeal is not always obtainable, and the ordinary hospital porridge appears to give quite satisfactory results.

Collection of Samples.

With the fractional method, up to 12 gastric samples are required; the first is obtained with the patient fasting, the whole of the gastric contents removed, and the specimen labelled "Resting Juice." It is not necessary to send the whole specimen for analysis; frequently as much as 50 c.c. of resting juice may be obtained. A sample of about 5 c.c., together with a note of the total volume removed, is all that is required. The meal is then given with the tube still in position, and 5 c.c. collected at quarter-hourly intervals, till 11 samples have been obtained, these being marked I to II. In the case of a rapid-emptying stomach the full number will not be

obtained. The patient must, of course, be fasted overnight and during the period of the test. Two types of tube are nowadays employed—the Ryle and the Rehffuss; in this country the Ryle appears to be much preferred. The Ryle tube is a flexible rubber tube about $\frac{3}{8}$ in. in diameter, and is marked at 16 in., 20 in., and 24 in. from the tip; frequently these markings are in the form of rings—one for 16 in., two for 20 in., and three for 24 in. Sometimes the mistake is made of regarding the indicators as definite evidence that the tube is in the correct position. This is quite wrong; they should be taken only as a rough guide. In different people, particularly those with pathological lesions in the stomach, the distance from the incisor teeth to the stomach varies quite considerably. The principal difference between the two tubes is in the tip; in the Ryle, this is a rubber-covered metal end-piece, while the Rehffuss has an unprotected metal end. Before use it is desirable to boil the tube, and for its passage it may be lightly lubricated with liquid paraffin. The actual passing of the tube is largely a matter of experience, and has already been mentioned. Confidence of the patient in the operator is essential. Frequently it is necessary to assure the patient that the passage of the tube will do no harm; if possible, it should be regarded as a common occurrence rather than a special investigation.

A start is made by placing the tip of the tube at the back of the patient's tongue, the patient being asked to swallow and at the same time breathe deeply through the nose. Sometimes during the early stages of the passage a sense of nausea may overcome the patient; this can be lessened by encouraging the taking of deep breaths; it is important that the tube should never be gripped by the teeth—only the lips. It is essential to encourage the patient himself, as far as possible, to pass the tube. He is much less likely to irritate the soft palate than the operator, and, by giving him an active share in the proceedings, will encourage a feeling of confidence. Usually the tube will be found to be in position between the second and third rings—that is, between 20 in. and 24 in. A check aspiration should be made, and, if no fluid is obtained, a further length of the tube swallowed until the correct position is found. Aspiration is made by means of a 10 c.c. or 20 c.c. Record syringe, connected to the end of the tube. After the whole of the resting juice has been removed and the meal given, specimens are collected every quarter of an hour, 5 c.c. of gastric juice being obtained at each collection. Occasionally trouble will arise through the tube becoming blocked; usually this can be dealt with by gently moving it around, at the same time forcing a little air back. In obstinate cases it may be necessary to remove the tube, clean it, and repass. After the collection of each specimen a little air should always be forced back into the tube, otherwise the following specimen will largely consist of contents drawn up from the previous collection and left in the tube. The tube is closed after the collection of each specimen. On no account must the patient be permitted to drink during the collection; though it would facilitate removal of the gastric contents, it would render the subsequent analysis quite useless. The patient must also be encouraged to use his sputum mug and not swallow sputum. The dietary preparation includes fasting from the overnight meal.

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