EVALUATION OF A METHOD OF ESTIMATING THE BASAL METABOLIC RATE

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In 1946 Barman and Porcile published a method whereby an accurate "oxygen line" could be drawn by making the patient expire maximally at intervals during basal metabolism estimation with the Benedict Roth apparatus. They only claimed that it was of use in cases with an irregular respiratory rhythm.

The Barman and Porcile method is as follows.

While the patient is breathing normally into the spirometer he is instructed to make a deep expiration. It is important to ensure the maximal possible emptying of the lung so that all the reserve (supplemental) air will be expelled into the spirometer. To achieve this the subject must be stimulated to go on expelling air until the expiratory line flattens out. This process is repeated once or twice at two to six minute intervals. The oxygen line is traced by joining the points of extreme expiration.

Since March, 1948, this method has been used with an alcohol-tested Benedict Roth apparatus at the Liverpool Royal Infirmary, and was tried in 29 out of 151 estimations (18%) of basal metabolism with irregular breathing. The method was also used in several other estimations, in some of which I was the subject.

The first step was to evaluate the method when used on normal cooperative, intelligent persons. This was done in 10 cases including myself. The procedure adopted was to determine the basal metabolic rate using the usual method first and then the maximal expiration method. It was found that the oxygen consumption per minute was higher with the maximal expiration method in six out of the 10 cases. It was also found that the points at the end of each maximal expiration did not always form a straight line. In spite of these results it was felt that the drawing of an accurate "oxygen line" in some cases of irregular respiratory rhythm was so difficult that it was worth trying the maximal expiration method. It was soon discovered also that some patients were so unintelligent that they did not seem to be able to understand the simple instruction "breathe out as much as you can." Furthermore, some very nervous patients were confused by these instructions, and the oxygen consumption rose quite considerably after they had tried to carry them out.

Of the 17 patients on whom it was found possible to use the method, eight gave oxygen consumption results by the maximal expiration method which were, on an average, 20 ml. per minute lower than those obtained by drawing a line as best one could through the points of normal expiration. In the other seven patients the maximal expiration results were higher.

FIG. 1.—Specimen record in case of irregular respiration.

Summary

The method has been found to give inconsistent results, but may be helpful in a few isolated cases. It is emphasized that the patient should be intelligent enough to carry out the procedure.

REFERENCE

Barman, J. M., and Porcile, E. (1946). *J. Lab. clin. Med.*, **31**, 1254.