About half a century ago, a physician named Desiderio Gross lived in Lima, Peru. He was interested in heart disease and initiated correspondence with me on some aspects of clinical cardiology. We never met. Every December, he sent me a Christmas card that was not heavy with impressive religious iconography, in gold and luminous stained-glass colors, but instead consisted of gaily colored symbols of a happy occasion. It always bore, in his old-fashioned writing, the words “Feliz Navidad. D. Gross.” After some years he ceased to write, and I surmised sadly that he was dead or disabled.

I have never forgotten Desiderio Gross, his interest in cardiology, and his Feliz Navidad cards. Especially, I have not forgotten his discussion of the respiratory manifestations of heart disease. In those days, we who were at the best teaching hospitals were accustomed to document improvement in respiratory distress during the treatment of chronic congestive heart failure by means of measurements of the vital capacity and of arm-to-tongue circulation time. Dr. Gross tried to popularize the method of documenting changes in respiratory function by measuring the distance at which the patient could just blow out a lighted candle. Of course, the test had to be carried out in quiet air, to avoid the confusing flickering of the flame. Dr. Gross recognized that there were too many variables in the procedure to permit valid comparisons between patients, but, in any one patient, the changes were valid. Dr. Gross’ efforts were received with widespread indifference plus some scorn. Nevertheless, the test worked.

Succeeding decades saw the transfer of devices such as motor-driven treadmills and bicycle ergometers from the research laboratory to the clinic in accordance with the belief that the use of devices invariably improved clinical practice. (This is usually called “making medicine more scientific”). However, there comes a time when some physicians become concerned about whether diagnostic devices accurately describe a clinical phenomenon or whether they so change the phenomenon as to introduce a new manifestation that more or less submerges the old. That time is now at hand as regards the study of respiratory manifestations of cardiac and pulmonary diseases.

For some years, there has been a belief prevalent among academicians and some others that evaluation of respiratory function in cardiac or pulmonary disease is best accomplished by studies on motor-driven treadmills or bicycle ergometers. These methods, although clearly unaccustomed and uncomfortable to many patients, usually involve increasing work loads and pacing, in accordance with arbitrary protocols, during the tests. Although the methods, since they are based on currently accepted theoretical concepts, have proved to be useful in evaluating theoretical concepts, their results do not accurately reflect the clinical status of dyspneic patients, a matter of interest at least to dyspneic patients. In the performance of these tests, the patient is expected to breathe normally with mouthpiece, nose-clip, tubing, etc, all of which aggravate the dyspnea that is supposed to be studied under normal conditions. Moreover, a not unexpected finding is that the first time any test of respiratory function, with or without unfamiliar apparatus, is carried out, the severity of dyspnea relative to the work done is considerably greater than the second, third or subsequent times that the test is done. This suggests the presence of psychologic factors in dyspnea, an occurrence that competent clinicians have long recognized, but have not been able to study scientifically.

If, as recent studies show, the motor-driven treadmill and bicycle ergometer do not provide information that clinicians want, recourse must be had to other methods. Two are now under consideration. One involves the use of one of several questionnaires; these usually give satisfactory information. However, their use implies a certain level of intelligence and perceptiveness in a patient, and an appreciation of the work loads of industry and of daily life by the physician.

Another approach is the walk test for the production of dyspnea. By now, it has been the object of much critical examination. At first, this test was performed in
a long corridor, but one group has shown that a treadmill, controlled in place by the patient himself, is more convenient. The walk-tests give end points that can be shown to be relevant to patients in the activities of their daily lives. The tests are simple and give reproducible end points that relate well to the results of questionnaires on dyspnea, (but, of course, these conclusions have no bearing on the significance of the data, provided by the devices discussed here, on research on coronary atherosclerosis and pain).

Dr. Desiderio Gross would probably be pleased by the studies of dyspnea.

REFERENCES