

by prosecuting his study to create an important epoch in the history of medicine.

Homage is also due to the author of the work entitled, "A new Method for the Recognition of Internal Diseases of the Chest by the Percussion of this Cavity," which appeared more than half a century before the publication of Laennec's treatise on auscultation. It does not detract from the honor which belongs to Avenbrugger, that an adequate recognition of the value of the method of examination which he originated, followed, and was in a great measure attributable to, the labors of Laennec in behalf of auscultation.

The zeal and the industry as well as the genius of Laennec are evidenced by the accuracy of his descriptions of auscultatory phenomena, and by the fact that the verity of the physical signs which he discovered has, in the main, been confirmed by subsequent observers in all countries. That he should have cultivated this field of study so thoroughly as to gather all the products which it is capable of producing, was not to have been expected. The marvel is that he was able to render it so productive by his own labours during his short life. It is no disparagement to say that he was led into some errors, that this mode of study was in certain respects defective, and that parts of the field were left uncultivated.

Since the time of Laennec much has been added to our knowledge of auscultation and percussion. It must be said, however, that the enlargement of the scope and the increase in the precision of their application to diagnosis, have not been commensurate with the study given to them, and with the space which they have filled in medical literature. A considerable share of the attention which they have received has been directed to the mechanism of physical signs—a highly interesting branch of inquiry, but not essential to the practical utility, and involving much liability to error. The number of signs has by some writers been needlessly increased. There have been over-refinements of description and of interpretation. The nomenclature has been open to criticism. Names have not been used by different writers with uniformity as regards signification. The names applied to some signs have conveyed not merely imperfect but erroneous ideas. Some writers have even designated signs by the names of authors who have described them. Hence it is that the study of auscultation and percussion, and their practical employment in diagnosis, have seemed to involve peculiar difficulties, and to be necessarily restricted to a few practitioners. It is common enough for physicians to say, without any sense of self-reproach, that they do not profess to be adepts in physical diagnosis, and to consider with complacency that it properly belongs to a specialty. As opposed to this view, I claim that by a simple method of study, which, for the sake of distinction, I have called analytical, the characters distinctive of physical signs are rendered clear, precise, and readily appreciable, so that the practical advantages of auscultation and

percussion may be made available in diagnosis with a moderate amount of time and attention on the part of the student and the practitioner.

By the analytical method of study, I mean the analysis and comparison of physical signs in respect of the few obvious points of difference by which, practically, musical and other sounds are commonly discriminated. The most important of these points of difference relate to the intensity, the pitch, and the quality of sounds. It is unnecessary to define these terms, except to say that under the name quality I include all the differences in character which are exclusive of pitch and intensity. The innumerable variations embraced under the name quality, as thus defined, may be illustrated by the diversities of the human voice. Of many thousand persons, few, if any, are to be found with voices so alike as not to be distinguishable from each other, aside from differences relating to pitch and intensity. In the study of the signs furnished by auscultation and percussion, the differential points, in addition to those pertaining to intensity, pitch, and quality, are few and easily appreciated. They relate to apparent distance from, or nearness to, the ear, moisture or dryness, the rhythmical succession and the interruption of the continuity of sounds.

It is to be assumed that morbid physical signs represent morbid physical conditions, and not diseases—that is, they are diagnostic of the latter only in so far as the physical conditions which they represent are characteristic of particular diseases. It is also to be assumed that the sole reliable basis of our knowledge of the significance of the signs is experience. Certain morbid signs denote particular abnormal morbid conditions, because the former are found to be constantly associated with the latter. The only solid foundation of the knowledge which underlies the practical application to diagnosis of auscultation and percussion, therefore, is in clinical and autopsical observations. It is, of course, desirable to ascertain the mechanism of the signs, but it is by no means a *sine qua non* in order to establish their validity. For example, is the so-called bronchial respiration due to consonance, according to the theory of Skoda; or is it produced by the current of air within the bronchial tubes, as held by Laennec; or is it the laryngo-tracheal respiration conducted by solidified lung? These questions need not be answered in order to appreciate the significance of the sign, or to recognize it by means of its distinctive characters. To infer from the acoustic characters of signs that, according to the laws of physics, certain morbid conditions must exist, or, on the other hand, to determine *a priori* the signs which should be represented by certain conditions, has proved, and will continue to prove, a source of fallacies. The endeavor to make the laws of acoustics the basis of the clinical significance of physical signs, has tended, as it seems to me, to retard not a little the advancement and diffusion of the practical knowledge of auscultation and percussion. Basing