

Cardio-respiratory murmurs are by no means limited to inspiration. They may occur at other phases of the respiration as well, and sometimes may be noticeable when the breath is held. In many instances, no matter at what phase of the respiration it may be present, a cardio-respiratory murmur may be recognized by a distinct difference between its timbre and that of the usual endocardial murmur, its superficial, short, rustling character, especially its lack of direct association with one of the cardiac sounds which it *accompanies rather than modifies*. This may be appreciated by making a young individual take vigorous exercise, and listening when his heart is beating rapidly and forcibly and the respiration is accelerated. Here, a short post-systolic whiff is not uncommonly heard, usually during the middle of inspiration—a sound which, on careful study, is obviously of pulmonary origin. Familiarity with the commoner post-systolic cardio-respiratory murmurs may not infrequently bring comfort and assurance to the examiner who meets with similar sounds at other phases of the respiration.

One fact which again should especially be emphasized is that cardio-respiratory murmurs are not infrequently audible in the back, and may here give rise to serious misapprehension by the unskilled observer.

Now, in addition to these three more definite types, there are observed in healthy individuals many cardiac murmurs which experience and time may and do justify the clinician in regarding on the first or on later examinations as of functional character. The judgment as to the significance of many of these sounds must be formed in the individual case. Such decisions are often of the most delicate and important duties which fall to the physician.

In a general way, murmurs which are limited to a single phase of the respiration may be regarded as of no pathological significance. Soft systolic murmurs which occur at the apex as a slight whiff, after a first sound which seems clean-cut and of a normal character, in hearts which are of normal size and without undue accentuation of the pulmonic second sound, may, as a rule, be regarded as functional, even if they do persist in the erect posture and on full inspiration. These cases, however, do not form a definite recognizable clinical picture, as in the three groups above mentioned.

Again, there are instances in which systolic functional murmurs at the apex are present in the erect posture alone and absent in the recumbent posture.