

general condition. The apex was 8 cm. from the median line; a soft systolic murmur was heard all over the cardiac area in the recumbent position, disappearing at the apex in erect posture and at the base on deep inspiration. The diastolic murmur had remained absent.

The observations of Hugh A. Stewart\* have proven the importance of the part played by the ring of muscle below the aortic valve in the closure of the orifice. And just as Stewart has been able to produce an aortic insufficiency by mechanical injury to this ring of muscle without lesion of the valves, so in some cases it is but natural that a weak and diseased heart muscle should result in aortic as well as mitral insufficiency.

*Pulmonary insufficiency*, independent of valvular disease, is also a condition commoner than has been generally recognized. It is met with, as Graham Steel has pointed out, in connection with cases of dilatation of the right ventricle, usually following old mitral disease, and is associated with a soft diastolic murmur heard along the left sternal margin, in much the same area as that occupied by the murmur of aortic insufficiency. The murmur has also a similar character. One may suspect the nature of such a murmur by the absence of other signs of aortic disease (character of the pulse and of the second aortic sound at the base and in the carotids), the presence of marked dilatation of the right ventricle, and sometimes by the disappearance of the sound with improvement in the patient's condition. That such murmurs may be associated with dilatation of the pulmonic orifice, in absence of aortic changes, has been proven frequently by necropsia. Two cases of this character have already been demonstrated at our clinical and pathological conference during this term. It goes, however, without saying that these murmurs are indicative of pathological changes in the heart muscle—changes from which there may be improvement, and perhaps, indeed, actual recovery, as in some cases of exophthalmic goitre or after acute infections. They do not, however, represent purely functional murmurs in normal individuals.

Let us then return to the commoner forms of truly functional murmurs in normal individuals, viz.:

1. The basic "pulmonary" systolic murmurs.
2. The apical systolic murmurs disappearing in the erect posture.
3. The cardio-respiratory murmurs.

From careful observation we know that these murmurs have

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\*As yet unpublished.