

syndrome) are to be found. The arteries are thickened, palpable and firm, the pulse regular at times but more often slow and of irregular force and rhythm. When secondary to mitral disease and emphysema it is feeble, changeable and compressible. The heart is enlarged in all directions; its beats less forcible and more diffuse than in pure hypertrophy. The first sound is longer, duller and rarely heard at the base. The second sound is dull, muffled and prolonged. The prognosis is grave. Treatment is as for fatty degeneration, with the use of nitro-glycerine.

#### Endocardial changes :

1. Aortic changes are due to valvulitis, fibrosis, contractions and adhesions of the valve segments. The changes are most marked at the points of contract and the attachment to the fibrous ring of the aortic opening, and are induced by dilatation of the aorta, high tension, disordered cardiac nutrition and involvement of the coronaries.

(a) Aortic stenosis is diagnosed by a harsh, rough, sawing systolic murmur associated with cardiac thrill and hypertrophy and a small, slow, sustained pulse of fairly high tension. It occurs usually in older people. In simple cases the prognosis is good. Life may be long. Death results from exhaustion of the ventricle and syncope, or degeneration and asystole. It is usually associated with aortic regurgitation.

(b) Aortic regurgitation may be primary, following atheromatous and dilated aorta or due to relaxation in aortic stenosis. It comes on gradually and is usually found in younger or middle-aged people and accompanied by a murmur of relative stenosis. There is a great hypertrophy of the left ventricle, a diastolic murmur traceable to the aortic valve, throbbing arteries and Corrigan's water-hammer pulse. The prognosis is graver than in all other valvular troubles and angina is common. Cerebral embolism may occur. It leads sooner or later to dilatation and mitral insufficiency.

2. Mitral disease is due to increased ventricular pressure following circulatory obstruction and relaxation of an over-worked degenerating heart muscle. It also follows degenerative changes in the cords and papillary muscles and valves and the fibrous ring of the opening.

(a) Mitral regurgitation is the common result of all conditions which prevent a proper closure of the valve. Once the equilibrium is established it may persist for years. The signs are a mitral systolic murmur transmitted to the left and heard posteriorly, accentuated pulmonic second sound and hypertrophy of both sides of the heart. The pulse is small, of low tension and often dicrotic. The inevitable outcome is dilatation and its consequences.