

pains of influenza (or other developing fevers) is responsible, I am sure, for some of the cases of cardiac failure and sudden death occurring in this disease.

The treatment of the heart in fever is *complex*, because etiologicaly considered, it involves a knowledge of the specific action of the various infections upon the heart and circulation. In diphtheria, typhoid fever and other fevers the most competent authorities as yet are unable to give us the precise information that would enable us to apportion at all definitely the relative importance to attach to the heart and vasomotor mechanism for the resulting circulatory embarrassment. In other words, we lack the exact knowledge of the pathology of the condition which would enable us to direct our therapeutic aims against a definite objective point. We have, therefore, to rely to a large extent upon clinical experience, and resort to symptomatic treatment for the circulatory trouble, whether due to the effects of the toxins upon the heart itself, the vasomotor centres or the vessels. In fact, recent investigations tend to show that in the circulatory failure of the acute infections, vasoparesis from poisoning of the nerve centres is perhaps of greater moment than primary cardiac depression. The two conditions, however, usually occur together and "the functions of the heart and vessels reciprocally effect each other to a marked degree."

It is manifestly impossible to discuss in detail the changes in the heart, with their variations in character and degree, in different infections. These may include cloudy swelling, fatty and hyaline degeneration of the muscle cells, congestion and thrombosis of the vessels, hemorrhages into the connective tissue, leucocytic infiltration, connective tissue proliferation, inflammation of the endocardium and epicardium, with extension of the inflammatory process along the supporting connective tissue between the muscle fibres. These changes are important chiefly to the degree in which they weaken the efficiency of the heart muscle in maintaining circulation. It is very important for us to bear in mind that owing to the tremendous degree of reserve power possessed by the cardiac muscle, extensive pathological changes may be present without symptoms or signs of circulatory embarrassment to indicate them, at least before evidences of muscle insufficiency manifest themselves.

The mental attitude of the physician towards the dangers in the fever heart should be similar to that in regard to hemorrhage or perforation in typhoid fever—a clinical alertness based on a knowledge of pathology, which recognizes serious possibilities and takes measures to guard against them, even in the absence of all symptoms.

For this reason I believe that a knowledge of the pathological