the amount of work performed by the ventricles of the mammalian heart can be increased by ligaturing the aorta with a sliploop ligature, and drawing this ligature more or less tight, according to need. [This in an animal that has been narcotised and curarised and subjected to artificial respiration, the heart being exposed by making a window in the ribs.] In such a case as this, as shown by Professor Roy and me,* the behaviour of the cardiac muscle can be observed and recorded by an apparatus, of which I give a rough diagram. (See Fig. 1.) The ends of this apparatus are attached to the surface, say of the left ventricle, by fine threads, and now it is possible to observe upon the recording drum the extent of contraction of the portion of muscle between the two points under different pressures within the heart. Narrow the aorta by drawing the ligature tight and the pressure is increased. Under these conditions it is found that the ventricular muscle reacts exactly along the same lines as does the gastrocnemius of the frog.

Similar results are obtainable if, instead of increasing the pressure in the arterial system by narrowing the aorta, we increase the work of the heart by increasing the amount of blood passing through it, either temporarily, by pressure upon the abdomen, whereby a large quantity of blood is expelled from the abdominal viscera, or by injecting into venous circulation some few hundred cubic centimetres of defibrinated blood. The results in all these cases are the same. By the instrument just described it is easy to see that the heart is more filled in diastole, so that the two ends of the levers are pushed further apart, and that in systole the ends do not approximate so nearly as in the condition when there is less resistance or less blood pouring through the organ.

It is seen from these observations that with increased pressure within the ventricle the wall expands in diastole. There is dilatation of the heart. But with the increased load to contract against the fibres do not shorten to the

* Heart beat and pulse wave. *Practitioner*, February, 1894, p. 81.