

the heart, when during each pulsation a wounded artery spurted blood out instead of drawing in air.

Again of the pores in the ventricle for the passage of blood, he says, "for in the first place—*Ey Hercules!* there are no such porosities, and if there were how could one ventricle draw from the other since both contract at once? And if the pulmonary vein carry spirits one way and fuliginous vapours another why are they not mixed?"

These and other difficulties set Harvey to work examining the movements of the heart in animals. These movements he at first found so confusing by reason of their rapidity that he almost despaired of understanding their sequence, but finally by patience and perseverance he convinced himself that the active phase of the heart was its systole, not its diastole, that at the systole the heart contracted in all its diameters and became visibly paler, and that with this systole there came the swelling of the vessels, long thought to be a part of their heart's diastole, consequently, he concludes that the arteries have no pulsating power of their own, but distend before the blood as the finger of a glove distends when blown full of air.

Before Harvey the auricles had been regarded as chambers of the veins, but he observed that in a dying heart the auricle died hardest and while it continued to contract, a wound made in the ventricle showed a spurt of blood with each pulsation of the auricle.

The rapid succession of movements in auricle, ventricle and arteries he compares to the mechanism of a musket where at the touch of the trigger the flint comes down, strikes the steel, knocks fire into the powder which explodes and drives the bullet to its mark.

With this as a beginning he takes up the stages of the circulation in order, first demanding: How is the blood carried from the veins to the arteries or from the right to the left ventricle? Here his immense amount of experiment upon various animals gives him his proof.

In fish, he says, which have no lungs and but a single ventricle, and in frogs and serpents which have lungs, the blood may be readily seen to pass to the heart by veins and leave by arteries, and if where lungs exist the blood may be shown to pass to them from the right and from them to the left ventricle, surely it must be admitted that it passes through the lung tissue!

From this demonstration Harvey approaches what is his most revolutionary statement. He argues thus: At each beat a certain amount of blood passes from the veins to the arteries. Even at its very least calculation, estimating from the altered capacity of the dilated and contracted ventricle, it must in a short time amount to more blood than