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We all know how the heart works, pumping blood around our body to all our organs. But this wasn't always common knowledge, it's thanks to 16th-century scientist, William Harvey that we discovered the real purpose of the heart. Helen Cowan tells of the discovery of the heartbeat.

What we now know about the heart

When you feel your pulse at your wrist, it's reflecting the **pumping action** of your heart. Blood moves round the body in **two circuits**: one from the heart to the lungs and back again (the pulmonary circulation); and one from the heart, through the aorta, to every organ in the body and back again (the systemic circulation).

We take for granted that the heart drives the circulation, moving blood in continuous circuits—not being consumed by the body organs but recycled. It is very well known today. Yet, without a little known scientist named William Harvey, we might still believe some very strange ideas about our inner workings.

What we used to think about the heart

The ancient Egyptians recognised the importance of the heart as a source of emotions and personality (and so today, we still speak of being 'heartbroken', 'disheartened' and 'hard-hearted'). During mummification, other organs were removed and the brain thrown away as its only function was thought to be to pass mucus to the nose. The heart however, was left in the body with significance in the afterlife.

No value was, however, given to the heart in circulation: instead the **liver** was thought to be at the centre of the circulatory system, just as it was once claimed that the earth was at the centre of the solar system. Blood was thought to be made in the liver, ebbing and flowing in sea-like waves from the liver to all the body organs where it was consumed.

Once in the heart, the blood was thought to 'boil' changing in colour from blue blood to red blood. We now know, of course, that the change in blood colour is due to the blood actually leaving the right side of the heart, picking up

oxygen from the lungs and returning to the left side of the heart.

How Harvey transformed our thinking

Speaking in Latin, accompanied by lutes, Harvey would perform dissections in front of packed lecture theatres. Operating on more than eighty species of mammal, he would cut or clamp the main artery and vein attached to the heart, subsequently showering the audience with blood as the heart beat or completely emptying the heart and ceasing the circulation. A rather graphic way to demonstrate that the heart did beat and thus drive the circulation around the body.

Transparent cold blooded fish (whose hearts beat more slowly than humans) would be held up for observation, to show the heart in action, whilst one unfortunate man with a chest injury that exposed his heart offered a rare insight.

Harvey's discovery in 1628 demolished theories that had stood for more than a thousand years. His hard work and courage to challenge opinion paid off. Oh, and the fact that he was physician to King James I and King Charles I probably helped him too – sometimes it's what you know as well as who you know that matters.

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