

**MODERN DEVELOPMENTS OF
HARVEY'S WORK: THE HARVEIAN
ORATION, 1894, DELIVERED
BEFORE THE ROYAL COLLEGE OF
PHYSICIANS, OCTOBER 18TH, 1894**

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T. LAUDER BRUNTON

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HARVEY'S WORK: THE HARVEIAN
ORATION, 1894, DELIVERED
BEFORE THE ROYAL COLLEGE OF
PHYSICIANS, OCTOBER 18TH, 1894**

TO
J. RUSSELL REYNOLDS, M.D., F.R.S.,

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS,
PHYSICIAN IN ORDINARY TO HER MAJESTY'S HOUSEHOLD,

THIS ORATION,
DELIVERED AT HIS DESIRE,
IS DEDICATED
WITH PROFOUND RESPECT AND KIND REGARDS.

THE HARVEIAN ORATION,
1894.

By T. LAUDE BRUNTON, F.R.S.

MR. PRESIDENT, FELLOWS, AND GENTLEMEN,

This annual meeting in memory of Harvey is usually associated with feelings of pleasure and happiness, for it was intended by its immortal founder to commemorate the benefactors of the College and to encourage good fellowship amongst us.

Such commemoration of those who have benefited the College in the past, although it necessarily recalls many who have passed away, is, notwithstanding, on ordinary occasions pleasant instead of painful, because the feeling of loss through their death is completely overpowered by the recollection of the good they have done in their lifetime. To-day the case is very different, for the first thought that must needs occur to every one present here is that on this occasion last year our late President showed for the first time what seemed to be imperfect fulfilment of his duty to the College by being late in his attendance at the meeting. Perhaps nothing else could have shown more clearly his deep concern for the welfare of the College, and his thorough devotion of every faculty of mind and body to its interests, than the fact that no duty, no pleasure, and no press of occupation could tempt him to leave one iota of his work in the College undone. The only thing that did keep him back was the hand of Death, which, although at the last meeting he and we knew it not, was already laid upon him. Though his death was less happy than that of the great Harvey, inasmuch as he

lingered on for days instead of hours after he was first struck down, yet their deaths were alike in this respect that, up to the time of the fatal attack, each was in the full possession of his faculties, each was in the enjoyment of his life. Like Radcliffe and Mead, like Halford and Baillie, and like many other distinguished Fellows of this College, the greatness of Clark is to be estimated not by the published works which he has left behind, but by the influence he exerted on his contemporaries. For the very estimation in which his professional skill was held led to his whole time being taken up in giving advice, and prevented him from having the leisure to work out or record the results of the pathological and clinical observations which both his useful publications and his later career showed him to be specially fitted to make. I might say very much more about him, but it has already been said much better than I could possibly do it by yourself Mr. President, in your annual address, and in the eloquent and heart-stirring words which you addressed to the College on the occasion of your taking the presidential chair rendered vacant by the death of Sir Andrew Clark.

But while we are saddened by the death of our late President, we hope to be gladdened by the presence amongst us again of one whom we all reverence not only as a former President of this College, but as one of the greatest leaders of clinical medicine in this century, Sir William Jenner. Like Harvey, Sir William Jenner is honoured by his College, by his country, by his Sovereign, and by the world at large. In time of trial and danger the lives of the Royal children were committed to the keeping of Harvey by his King; and to-day the care not only of her own life, but of that of her nearest and dearest, is committed to Sir William Jenner by his Sovereign, in the full and well-grounded assurance that in no other hands could they be more safe. The great clinician, Graves, wished to have as his epitaph "He fed fevers"; but

Jenner has advanced much beyond Graves, and, by showing us how to feed the different kind of fevers, has saved thousands of valuable lives. To-day this College is acknowledging his right to rank with Sydenham, Heberden, Bright and Garrod, by bestowing upon him the Moxon medal for clinical research. In numbering Sir William amongst its medallists, the College honours itself as well as him, and in acknowledging the great services he has rendered, it is, on this occasion, acting as the mouth-piece of the medical profession, not only in this country but in the world at large.

It was with the wish to keep green the memory of the benefactors of the College that this oration was instituted by Harvey, and not at all with the intention that it should be devoted to his own praise. But Harvey stands out so high above all others, that it is only natural that in the numerous orations which have been yearly given before the College of Physicians, the subject matter should have been to a great extent confined to a consideration of Harvey and his works. On looking over many of these orations, I find that everything that I could say about Harvey, his person, his circumstances, his character, and his works, has already been said so fully and eloquently that I could not add to it any further, nor could I hope to express it even so well. I purpose, therefore, to consider to-day some of the modern developments of Harvey's work, more especially in relation to the treatment of diseases of the heart and circulation. There is, I think, a certain advantage in this also, inasmuch as one is apt, by considering Harvey's work only as he left it, to overlook the enormous extent to which it now influences our thoughts and actions; and thus to comprehend its value very imperfectly.

As he himself says, "From a small seed springs a mighty tree; from the minute gemmule or apex of the acorn, how wide does the gnarled oak at length extend his arms, how

loftily does he lift his branches to the sky, how deeply do his roots strike down into the ground!"¹

How very minute is the gemmule from which has sprung everything that is definite in medical science, for this gemmule is no other than the idea which Harvey records in in these simple words: "I began to think whether there might not be A MOTION AS IT WERE IN A CIRCLE."²

Out of this idea has grown all our knowledge of the processes of human life in health and disease, of the signs and symptoms which indicate disease, of the mode of action of the drugs and appliances which we use, and the proper means of employing them in the cure of disease. In the works that have come down to us, we find that Harvey developed his idea physiologically in several directions. He discussed its application to the absorption and distribution of nourishment through the body, the mixing of blood from various parts, the maintenance and distribution of animal heat, and excretion through the kidneys. How far he developed it in the direction of pathology and therapeutics we do not know, as the results of his labours on these subjects have, unfortunately, been lost to us by the destruction of his manuscripts during the Civil War.

We are proud to reckon Harvey as an Englishman by birth, but he is far too great to belong exclusively to any country; men of various nations and scattered all over the face of the earth acknowledge him as their teacher, and have played, or are playing, a part in developing his discovery in its various branches of physiology, pathology, pharmacology, semiology, and therapeutics. Americans, Austrians, Danes, Dutchmen, French, Germans, Italians, Norwegians, Russians and Swedes have all shared in the work, and so numerous are they that it would be impossible for me to name them all. Stephen Hales, however, deserves special mention, for he was the first to measure the pressure

¹ "The Works of W. Harvey," Sydenham Society's edition, p. 320.

² *Ibid.* p. 46.

of blood in the arteries, and the resistance offered to the circulation of the blood by the capillaries was investigated by Thomas Young, a Fellow of this College, who ranks with Harvey, Newton, and Darwin as one of the greatest scientific men that England has ever produced, and whose undulatory theory has been as fertile of results in physics as Harvey's idea of circulation has been in physiology and medicine.

Harvey's desire that those who had done good work should not be forgotten was founded upon his knowledge of mankind, and of the tendency there is to forget what has already been done by those who have gone before us. The opposite condition often prevails, and the past is glorified at the expense of the present. But sometimes the present is wrongly glorified at the expense of the past, and past work or past benefits are forgotten.

Good examples of this are afforded by physiological views regarding the action of the vena cava and pulmonary veins and the causation of the cardiac sounds. Harvey appears to have thought that the vena cava and pulmonary veins were simply dilated passively by the passage of blood into them; but the fact that they possess a power of independent pulsation was known to Haller,³ and was brought prominently forward by Senac,⁴ who regards the vena cava as the starting-point of the whole circulation. He says: "The vena cava is therefore the first motor cause which dilates the cavities of the heart; it fills the auricles, and extends their walls in every direction."

These observations appear to have been almost forgotten until they were again made independently a few years ago,⁵ and in one of the latest and most accurate physiological treatises which now exist, the description of the cardiac

³ Haller, "Elementa Physiologie," 1757, tome 1, pp. 410 and 399.

⁴ Senac, "De la Structure du cœur," livre iv., ch. iii., p. 24.

⁵ *Proc. Roy. Soc.*, 1876, No. 172.

cycle is nearly the same as that given by Senac. "A complete beat of the whole heart, or cardiac cycle, may be observed to take place as follows :

"The great veins, inferior and superior venæ cavæ and pulmonary veins are seen, while full of blood, to contract in the neighbourhood of the heart ; the contraction runs in a peristaltic wave towards the auricles, increasing in intensity as it goes."⁶

The pulsation of these veins, however, cannot be a constant phenomenon, or it would have been noticed by such a keen observer as Harvey.

The sounds of the heart were discovered by Harvey, or at least were known to him, for he speaks of the sound caused in the œsophagus of the horse by drinking, and says, "In the same way it is with each motion of the heart, when there is a delivery of blood from the veins of the arteries that a pulse takes place and can be heard within the chest."⁷

This observation remained, as far as we know, without any further development until the time of Laennec, who introduced the practice of auscultation ; but it was a Fellow of this College, Dr. Wollaston,⁸ who first discovered that muscles during contraction give out a sound. Although many observations were made regarding cardiac murmurs by Corrigan, Bouillaud, and Piorry, it was chiefly by Fellows of this College, Dr. Clendinning, Dr. C. J. B. Williams, and Dr. Todd, that the question was finally settled, and the conclusions at which they arrived are those now accepted as correct, viz. that "the first or systolic sound is essentially caused by the sudden and forcible tightening of the muscular fibres of the ventricle when they contract ; and that the second sound which accompanies the diastole of the ventricle depends solely

⁶ M. Foster, "Text-book of Physiology," 6th edition, part i., ch. iv., p. 237.

⁷ Harvey's Works, Sydenham Society's Edition, p. 32.

⁸ Wollaston, "Phil. Trans." 1810, p. 2.