The Harveian Oration

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON, JUNE 21ST, 1905.

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[ABSTRACT.]

[The first part of the oration was devoted to a sketch of the life and work of Harvey, the second part, in response to Harvey's injunction that there should be a commemoration of the benefactors of the College by name, was devoted to a short account of some of the most distinguished presidents, officers, and benefactors of the College. He then proceeded as follows:]

My next duty is to "exhort the Fellows and Members of this College to search and study out the secrets of Nature by way of experiment." What Harvey meant by "experiment" can hardly be strictly defined, but I presume he would include under the term the methods which he himself so successfully employed, as well as any others which might in the progress of events be subsequently discovered or developed for the purpose. His methods were careful, thorough, and systematic observation; dissection of the human body; comparative dissection of a large number and of all kinds of animals, as well as during fetal life; and unquestionably inspection of the heart and vessels, as well as experiments on living animals, or what we now speak of as "vivisection." It is hardly necessary for me to defend or justify the practice of vivisection before this College; that has already been done in previous orations with great thoroughness and ability. On this question the College itself has spoken out with no uncertain sound, though not rashly or without due consideration. In confirmation of this statement I need only remind you of the way in which the question was dealt with last year, referred from the Home Office, as to the necessity for experiments on living anaesthetized animals in the teaching of pharmacology.

There can be no doubt that Harvey regarded the College of Physicians as "the great centre from which the light of medical science and skill was to shed its lustre over England; he hoped that the College was to be the teacher of her people, the adviser of her rulers, and the training school of her medical men" (Barclay). It was a long time, however, before his hopeful anticipations were in any degree realized; and I have read a scathing rebuke in one of the former Harveian orations of the Fellows of the College, and of their narrow and exclusive jealousy, as being responsible for this result. Speaking generally, however, it may be stated that a prolonged interval elapsed after Harvey's time, on account of well-known causes, during which little or nothing was done in the way of research, and comparatively few of our Fellows contributed anything to the advance of his profession. Let us be thankful to-day that this is ancient history, and that the new scientific era completely altered the face of things, and has led progressively to the marvellous developments of which we now reap the fruits.

So far as this College itself is concerned as a body, its claim to aid modern scientific research chiefly rests on its association with the College of Surgeons in founding and working the laboratories at the Examination Hall, which were established early in 1890, but ceased to exist at the end of 1902, when the results of the practical experience gained there were handed over to the Metropolitan Asylums Board, while other parts of the building are now devoted to kindred work in the Army Medical School, and to the work of the Imperial Cancer Research. An interesting report has been recently published, for which we are indebted to our distinguished Fellow, Dr. Pye-Smith, in which a list is given of the investigations carried on in the laboratories during their existence, showing that much sound and important pathological and other work has been accomplished by the liberality of the Colleges, which has had a most beneficial, direct as well as indirect, bearing on the prevention and cure of disease.

If Harvey could come on the scene at the present time, and realize what is going on in the way of "teaching and studying out the secrets of Nature by way of experiment," surely he would be amazed and amply satisfied to see the extent and thoroughness with which his exhortation is being carried into effect in all directions. On all sides the cry is for

"research," usually accompanied with an appeal for "funds," and we see it carried out in relation to industrial enterprises, chemistry, physics, biology in all its branches, light, electricity, agriculture, and various other departments having no immediate bearing on our profession. Yet, even in some of these departments, new discoveries have been and are being made, and new forces or elements brought to light, not a few of which have already proved of decided value in diagnosis and treatment, and it is impossible to foretell or estimate what the future may bring forth.

Coming to the question of research in relation to the medical profession, more particularly, the existing conditions and indications are decidedly favourable and promising. In the first place the trend of modern medical education and training is distinctly of a progressively more and more scientific character, and aims at preparing the student so that he may be able in the future to carry on research with real advantage to himself and to others. The older universities have been roused into activity and revived, being now in the van of progress in this direction. At all our newer universities and in the medical schools laboratories for scientific observations and investigations of different kinds, in relation to physiology, pathology in all its aspects, including pathological chemistry bacteriology, pharmacology, and clinical investigation, are in active work. The tendency to centralize the preliminary scientific studies for the medical profession in London in a few institutions is a move decidedly in the right direction. I trust, however, that in carrying out this object, due regard will be paid to those institutions already possessing well-established and fully-equipped scientific departments, which have done excellent work in the past, and are thoroughly "up-to-date." In most hospitals also clinical laboratories are now in existence which are of great help in diagnosis, and thus of decided advantage to the patients, while, if properly utilized, they afford excellent opportunities for the scientific training of the student in the methods and objects of research in this direction.

The establishment of independent laboratories for pathological work and research is another advance by which great results have already been achieved, and from which we may anticipate incalculable benefits in the future. These institutions are now met with all over the world, and I cannot avoid mentioning specially the "Pasteur Institut" in Paris, where those of us who recently visited that city were so kindly received, and took part in the interesting ceremony carried out on that occasion. It is certainly a wonderful place, and a worthy memorial to the great yet simple-minded personality—Pasteur—whose name may fitly be ranked with that of Harvey.

In this city we have also an institution associated with an equally honoured name, which is revered and always received with acclamation in every part of the world—namely, the "Lister Institute of Preventive Medicine," which has recently been admitted as a school of the University of London in the faculty of medicine for the purpose of research in hygiene and pathology. In many of our chief provincial cities and towns similar developments are taking place, and, indeed, they give London an example of progress in this direction with which it is very difficult to keep up. Remembering the direct interests which this vast Empire has in almost all parts of the world, it is encouraging to note that institutes for research have been or are being established in our different colonies, in India, and in various tropical regions. This brings me to another important and promising feature, namely, the application of scientific research for particular purposes, and for the study of special subjects, among the most prominent of which may be mentioned tuberculosis, cancer, tropical diseases, and nervous affections, sanitation and hygiene. Other aids and encouragements to research, which I can now only enumerate without any comment, are the presentation of research scholarships to deserving individuals, by the British Medical Association, certain city corporations and other bodies, or private persons; the contribution of large donations by wealthy and sensible persons, who are well-disposed towards the medical profession and are beginning to realize their responsibilities, to particular institutions or for particular purposes; and the fact that Their Most Gracious Majesties King Edward and Queen Alexandra, as well as other members of the Royal Family, take such a warm and practical interest in research work, and in its results in certain directions.

As immediately relevant to our commemoration of Harvey to-day, it would be entirely within my province to discuss in historical sequence the progress that has been made with

regard to the circulatory system since his time, and to indicate the present state of knowledge and practice in relation to that system. To enter upon this subject, however, at any length is obviously out of the question within the time at my disposal, and I must content myself with a very general summary, leaving further discussion for the published oration.

At the onset it is necessary to bear in mind what Harvey really did discover and demonstrate, and thus to have some definite starting point for studying the results of further investigation and progress. Of course, many anatomical facts relating to the heart and vessels, as well as that there was a movement of the blood, were well known before Harvey appeared on the scene, and these facts he fully appreciated and utilized, at the same time correcting anatomical errors and controverting the erroneous conclusions and theories of his predecessors. I take it for granted that this learned assembly is familiar with the details of the work and teaching of Harvey, in establishing among other points the muscular structure and contractility of the heart, whether known before or not, and in demonstrating its mode of action and mechanism, and the effects thereby produced; at the same time proving that the blood moved in a constant stream and in a definite direction, there being a complete double circulation, pulmonary and general. He sums the matter up in the words: "By the impulse of the heart there is a perpetual movement of the blood in a circle." Though he had absolute proof that the blood did somehow find its way from the terminal arteries into the commencing veins, he did not know how, and conjectured that it was the result of percolation through the organs and tissues. With his simple magnifying lens or perspicillum he could not see the delicate network of capillaries, which were only observed when the microscope was sufficiently developed. The capillary circulation in the frog's lung and mesentery was first observed by Malpighi, and the definite continuity of the circulation thus established. Nor did Harvey understand the meaning of the pulmonary circulation, knowing nothing about the mechanism or chemistry of respiration, which were only discovered at a much later period; this constituted a most important advance. Although discovered in his time, Harvey would not acknowledge the existence of a distinct absorbent system.

[Dr. Roberts then proceeded to summarize the methods by which knowledge and practice in relation to the circulatory system had been advanced since Harvey's time, and especially those of more modern date. He insisted upon the essential value of *post-mortem* examinations in this connexion, and of the systematic study and teaching of morbid anatomy, which no doubt Harvey thoroughly recognized, but which for a long period afterwards was entirely neglected; and also nowadays of morbid histology. He further pointed out how much had been achieved by intelligent clinical observation and investigation; and how far progress had been aided by the introduction of the stethoscope, and by other instruments or special apparatus of various kinds for demonstrating or recording the movements of the blood, the arterial tension and blood pressure, and other phenomena connected with the circulation. The chief methods of examining the blood were briefly referred to.

As illustrating the advances made in our knowledge in relation to the nature, etiology, and pathology of morbid conditions of the circulatory system, the orator referred to gross organic lesions of the heart and vessels; the different forms of acute endocarditis; acute and chronic changes affecting the myocardium; functional disorders, and their relation to the nervous system; thrombosis and embolism; the mutual pathological effects produced between the cardiovascular and other systems; the principal changes and diseases associated with the blood; and certain special morbid processes or lesions with which the circulatory system is concerned. Dealing with clinical investigation in relation to the heart and vessels, while fully recognizing the value of the various instruments and apparatus already referred to, he insisted upon the importance and sufficiency of the simpler physical methods in ordinary use as a matter of general routine, and incidentally referred to the essential help not uncommonly afforded by direct auscultation, with which Harvey was certainly acquainted. For adequate examination of the blood, special methods were, he said, usually essential, in addition to the mere use of the microscope, and the help of a skilled expert was not uncommonly required. Reference was made to the employment of the Roentgen rays in examining the heart and pericardium in certain cases, and in the diagnosis of aneurysm.

With regard to treatment, after alluding to Harvey as a practitioner, and to the remedial measures which he seemed chiefly to employ, Dr. Roberts dwelt upon the great advances which had been made in the therapeutics of the circulatory system within modern experience; how definite our knowledge now was as to what we could and could not accomplish; and how largely we are indebted to experimental pharmacology by vivisection, as well as to physiological investigation and observation, and the systematic and intelligent study of clinical therapeutics. Dealing with particular methods and agents, he glanced at the value of drugs and of the reliable active principles now to be obtained; the great importance of hypodermic and intravenous injection; the remarkable effects of certain glandular structures or their products on the circulatory system, as strikingly exemplified by suprarenal extract and adrenalin; the treatment of cardiac affections by physical or balneological methods, or a combination of both; the essential importance of rest under a variety of circumstances; the rational use of blood-letting and local removal of blood; the beneficial effects of transfusion of blood under special circumstances; and the extreme value of the modern treatment by injection or infusion of saline solution in certain grave conditions. Dr. Roberts also dealt briefly with the therapeutics of the blood, and made a passing allusion to operative treatment in relation to the circulatory system. He then referred to some of the more prominent examples of the beneficial results on an extensive scale of scientific and practical research, and drew special attention, as being closely connected with the circulatory system, to the "brilliant victories" which have been achieved against malaria in different countries and regions, many of them forming an integral part of this vast Empire. While paying a tribute of respect and admiration to all those who at the risk of life and health have gone forth to dangerous climates to study and combat this and other tropical diseases, he mentioned personally Dr. Dutton, the latest "martyr to science," as he had been aptly called, whose lamented death recently occurred on the Congo, where he had gone to study sleeping sickness on behalf of the Liverpool School of Tropical Medicine. Dr. Roberts expressed, on behalf of the College, their deep sense of the great services which Dr. Dutton had rendered to the medical profession and to humanity, their profound regret at the premature cutting-off of such a valuable life and promising career, and their heartfelt sympathy with his bereaved family and friends.]

CONCLUSION.

The last and most agreeable duty laid upon me by Harvey's direction is to "exhort the Fellows and members, for the honour of the profession, to continue in mutual love and affection among themselves, without which neither the dignity of the College can be maintained, nor yet particular men receive that benefit by their admission into the College which they might expect, ever remembering that *Concordia res parvae crescunt, discordia magnae dilabuntur*. Who so fitted as Harvey to give us this exhortation at the close of his noble career! Though he could be justly indignant on occasion, his whole life was an example of simple and unassuming dignity, true courtesy and politeness, unselfishness, kindness of heart, and Christian charity, and whatever may have been the state of things in days gone by, it is a satisfaction to think that we may now congratulate ourselves on fulfilling Harvey's exhortation in a fairly adequate degree. A spirit of good-fellowship prevails amongst us; and I firmly believe that we are all cordially united by the bonds of mutual respect and esteem. Thus the dignity of the College is fully maintained; and an increasing influence for good is being exerted upon the medical profession as well as in other directions. With regard to the future position and reputation of this College in relation to scientific research and the progress of medicine there can be no doubt or misgiving, when we see amongst our younger Fellows and members so many who are endowed with great abilities, who are full of energy, intellectual vigour, and enthusiasm in their works, and whose achievements have already brought them into conspicuous prominence, and in some cases into the foremost ranks of our profession. May we not confidently hope that they will also ever keep in mind Harvey's last exhortation, and unflinchingly strive to maintain the high standard of character and conduct which he has placed before them. But should they at any time feel the need of an example or a stimulus, let them steadily fix their attention and thoughts upon the personality, the life, and the work of our "immortal and beloved Harvey," whom it is our privilege and pride and happiness to commemorate to day.