

**The Harveian oration : delivered before the Royal College of Physicians of London on June 21st, 1905 / by Frederick T. Roberts.**

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# THE HARVEIAN ORATION

1905

F. T. ROBERTS

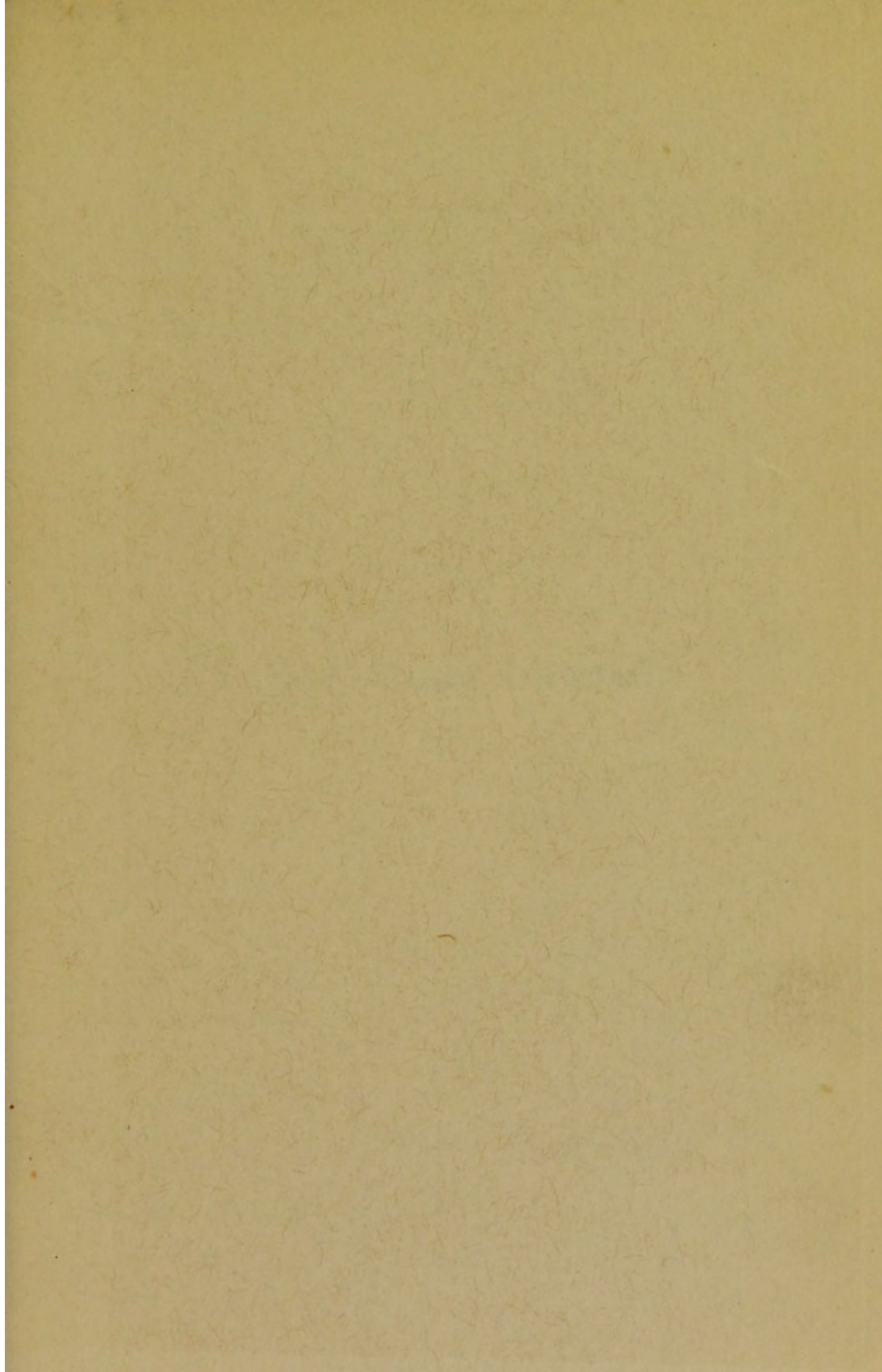
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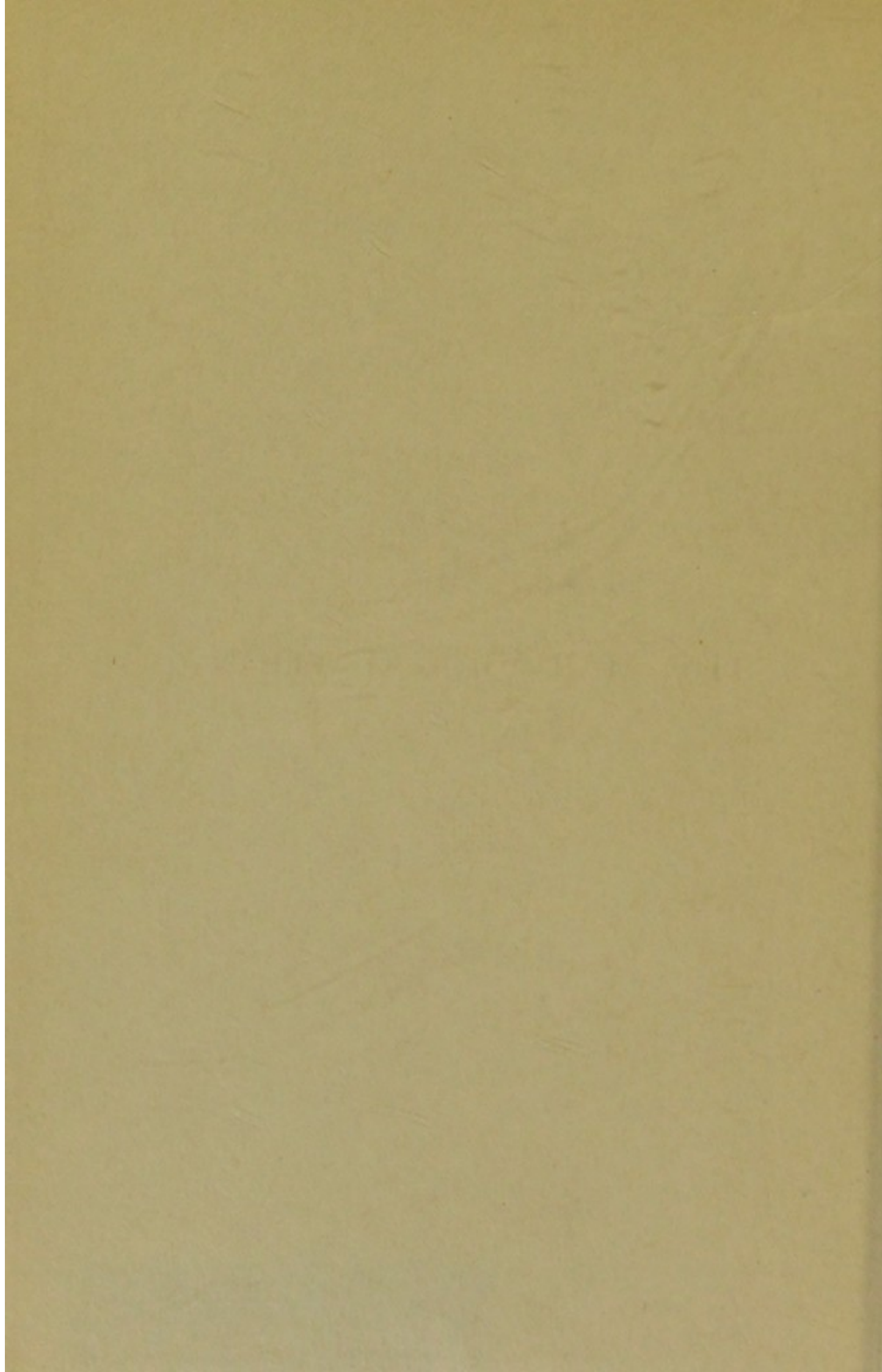
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THE HARVEIAN ORATION

*With the Harveian Orator's Compliments.*

THE  
HARVEIAN ORATION

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

BY

FREDERICK T. ROBERTS

M.D. LOND.; B.Sc.; F.R.C.P. LOND.

FELLOW OF UNIVERSITY COLL.; EMERITUS PROFESSOR OF MEDICINE  
AND CLINICAL MEDICINE; CONSULTING PHYSICIAN TO  
UNIVERSITY COLLEGE HOSPITAL, ETC.

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## THE HARVEIAN ORATION.

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MR. PRESIDENT, FELLOWS OF THE COLLEGE,  
AND VISITORS,

Your predecessor, Sir, in the Presidential Chair of this College did me the honour, which I highly appreciate and gratefully acknowledge, of inviting and nominating me to deliver the Harveian Oration for the present year. Had I followed my natural inclination to keep in retirement, especially on such a prominent occasion as this must necessarily be, I should have declined the invitation, being but too conscious of my unfitness for the position, my incapacity for fulfilling adequately the important function which it involves, and my inability to do anything like justice to the great and immortal personality whom we commemorate to-day. I have, however, always been guided by the principle to do what I am asked by those in authority, and therefore in a rash and thoughtless moment I consented, without duly considering or realising the responsibilities or difficulties of the task I was undertaking. Notwithstanding my misgivings and shortcomings, however, I venture to comfort myself with the assurance, remembering

our long and intimate friendship, that you, Sir, will be ready to acquiesce in my selection, and at the same time to extend to me your kindly sympathy and encouragement in the trying position in which I am placed. And as this is the first occasion on which you make what I may call a public appearance in this College as President, I trust it may not be considered out of place if, for myself and on behalf of the Fellows generally, I offer you our cordial congratulations on attaining to such an eminent and distinguished position, which you have so well and honourably earned by following in Harvey's footsteps, and which I feel confident you will most worthily adorn.

I need scarcely remind you that, in accordance with Harvey's express direction, the Oration was, until within a comparatively modern period, composed and delivered in Latin. It is just forty years ago since the change was made to our native English tongue, and it may be interesting to recall the fact that on the first occasion when this change was adopted—namely, in 1865—the Orator was Dr. (afterwards Sir) Henry Acland, whose eminent position and excellent work at Oxford are familiar to all; and the President was Dr. Thomas Watson, soon afterwards created a Baronet, whose classical and finished writings earned for him the title of the "Cicero of English Medicine," who was above all others revered and

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beloved by his contemporaries, and has been fitly styled "the greatest physician of his time," and who will ever stand out and be remembered as one of the most distinguished, learned, and high-principled members of the medical profession in this or any other age or country. The change to which I have just referred seems, with one or two exceptions, to have met with general approval and acceptance by the Harveian Orators since that time, many of whom were classical scholars of high repute, and fully competent to address such a distinguished audience as this in choicest Latin. Personally, for reasons which I need not specify, I certainly do not feel inclined to make any protest against the present practice. At the same time I take this opportunity of expressing my opinion that it would be a great mistake to do away with classical instruction as an essential part of the early training and general culture required for the medical profession, which seems to be the present tendency in certain quarters. Still less do I feel inclined to fall in with the views of those whose desire and aim is "to see the classical and historical scheme of education entirely abandoned, and its place taken by a scheme of education in the knowledge of nature." I would further take this opportunity of emphasising the essential value and importance at the present day of an adequate knowledge of modern languages, particularly French and German, in the

case of those who aim at a high position in scientific and practical medicine.

Before entering upon the task of preparing what, in my case, can only be euphemistically described as an "oration," I naturally endeavoured to derive some guidance and inspiration from the perusal of the thoughts and utterances of the eminent and distinguished Fellows who have in succession occupied my present position during this intervening period of forty years. My first impression was certainly not one of encouragement, for I at once fully realised that I could not hope to approach, even within measurable distance, the high standard which most of them reached, either as regards the instructive and interesting character of their themes, or the scholarly, polished, and often truly eloquent language in which they were expressed. Moreover, my difficulties were not diminished when I found that almost every possible subject which could be dragged in relating to Harvey had been dealt with again and again, from every conceivable aspect, and it seemed hopeless to attempt to strike out any new line, or to indulge in vain repetition, without weakening and spoiling what had already been so well said. One encouraging suggestion, however, I gained from my perusal—namely, that not a few of the Orators by no means adhered strictly to Harvey's injunctions in the selection of the subject-matter of their discourse, or at least gave

them a very wide interpretation ; while in several instances particular subjects were discussed which happened to be prominent at the time, or in which the individual Orator was personally specially interested.

#### SKETCH OF HARVEY'S WORK AND CAREER.

To-day we commemorate the "immortal Harvey" for many reasons and from different aspects. Several of the previous orations have been devoted mainly or entirely to the study of Harvey himself, or to a consideration of his work from various points of view. His physical personality has been graphically portrayed ; while he has been amply discussed as regards his intellectual endowments, his upright and noble personal qualities, his relation to the times in which he lived and to the great minds with which he was brought into contact, and the influence exerted upon him by his immediate predecessors, as well as by leaders and high authorities in medicine and science, whose example and teaching had come down from more or less remote antiquity, especially Aristotle, Hippocrates, and Galen. All this is very attractive and interesting, but to me it appears not to be in strict accordance with Harvey's intention or desire ; and therefore I do not propose to address you on these lines, though by way of introduction I think it desirable to allude briefly to his work, and

to the main events of his career, even though they be quite familiar to all present.

As regards the work which Harvey accomplished, his fame must always be pre-eminently associated with his great discovery of what is commonly spoken of as the "Circulation of the Blood," though his published treatise is really on the "Movements of the Heart and of the Blood." His activity as an observer and investigator ranged, however, over a far wider field than this, but it will suffice to mention his work on "Generation," which was the outcome of patient and extensive observations and experiments, and a work of conspicuous originality and interest; while it is well known that he put together materials under the heading, "Medical Observations and Pathology," no doubt of great practical value, and probably intended for publication, but which unfortunately were either destroyed or dispersed by the fury of a revolutionary mob, or consumed in the Fire of London. Assuming that I may speak on your behalf, I once more affirm that we implicitly and unhesitatingly believe in the absolute priority of Harvey's claim to the discovery of the circulation of the blood, a claim which has been amply and eloquently demonstrated and vindicated in this place by previous Harveian Orators, as well as by others elsewhere, both in speech and writing, who have a right to speak with unimpeachable authority. Its magnitude and far-reaching effects have been described in

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various and glowing terms. Thus, it has been spoken of as "the most momentous event in the history of medicine since the time of Galen"; as the "foundation stone of scientific medicine"; as "a new power which afforded a point of new departure, becoming the central idea dominating and enshrined by medical knowledge for all time"; and as "inaugurating the era of rational medicine and reconstituting the face of physiology." To us of more mature years who can look back upon and realise in some degree the marvellous progress which has been made since Harvey's time in physiology, pathology, and scientific and practical medicine and surgery, these expressions appear in no way exaggerated, for they but declare the absolute and solemn truth. I wonder whether the modern medical student, to whom the "circulation of the blood" is one of the most elementary and familiar facts impressed upon his youthful and receptive brain almost at the outset of his career, ever gives a thought to the discoverer or to the grandeur of his discovery, or has the faintest notion of where we should have been as a profession had it not been for this stupendous epoch in the history and progress of scientific investigation and knowledge? Nor must we forget the formidable difficulties under which Harvey carried out his investigations, and established on a sure foundation the great revelation which no doubt had previously impressed itself on his active and eager brain; the profound errors



supported by long tradition and by the highest authorities, past and present, which he had to combat, refute, and overthrow, and the confusion he had to clear away; the intelligence and indomitable perseverance with which he worked out, and proved to absolute demonstration, the positive facts and new truths which he had to present in their stead; and the masterly, but at the same time, courteous manner in which he disputed and ultimately overcame the objections which from various powerful quarters had been raised against his views.

To Folkestone belongs the indisputable honour of having been the birthplace of Harvey, in April 1578, according to Willis on the first day of that month. Though somewhat late in the day, the town acknowledged the honour by erecting a tercentenary memorial statue in bronze of its illustrious townsman, which was unveiled in August 1881 by Professor Richard Owen, in the presence of representatives of the medical profession from all parts of the globe. Harvey was the eldest of a large family, and, like most great men, he had a noble-minded woman for his mother, as recorded in the beautiful inscription on her monumental tablet in Folkestone Church, where she is spoken of as a "godly harmless woman," "a careful tender-hearted mother," and "reverenced of her children." I mention her more particularly, as this year happens to be the tercentenary of her death, which took place on

November 8th, 1605, in the fiftieth year of her age. No doubt she guided and encouraged her son during his early life, and under her supervision he is supposed to have acquired the rudiments of an English education. Harvey belonged to a well-to-do, prosperous, and happily united family, and appears always to have had abundant means to pursue any course which he might select. He began his studies at an early period of life, and no doubt soon became an ardent and devoted worker. He entered the grammar school of Canterbury when ten years old, and in May 1593, having just entered upon his sixteenth year, became a pensioner at Caius-Gonville College at Cambridge. In 1597, when nineteen years of age, he took his degree of B.A. of the University of Cambridge. Harvey then proceeded to Padua to prepare for the profession of medicine, where under Fabricius and other able masters, as Willis says, "he drank in the elementary knowledge which served him as a foundation for that induction which has made his name immortal." In April 1602, when in the twenty-fifth year of his age, he obtained his diploma as Doctor of Physic of that university, with "licence to practise and to teach arts and medicine in every land and seat of learning." Harvey then returned to England and received his Doctor's degree from the University of Cambridge in 1603. He settled in London in 1604, and entered on the practice of his profession. In the same year

Harvey married the daughter of Dr. Lancelot Browne, who had been physician to Queen Elizabeth, but had no family to embarrass him in his work.

As regards Harvey's subsequent active career, no doubt he exhibited from the first an ardent love for, and devotion to, his professional work. He appears not to have confined himself to medicine, but also to have attended cases of surgery and midwifery, and even to have performed operations. For a number of years his practice was probably among the poor, taking great pains without any prospect of pecuniary reward. Subsequently under favouring circumstances it rapidly increased, and became extensive and remunerative, many of the most distinguished men of the age, including Lord Chancellor Bacon and Thomas Howard, Earl of Arundel, having been among his patients. For certain obvious reasons, however, he does not seem to have had a lengthy harvest in this respect. It has been frequently affirmed, apparently on Harvey's own authority, that after his work on the "Circulation of the Blood" came out, and as the direct result of his new doctrines, he fell mightily in his practice. The statement has, however, been strenuously disputed, and other explanations have been brought forward to account for the fact. Anyhow he must have had a lucrative practice for a time, before the Civil War broke out, during which he appears to have accumulated a fair amount of

capital, which was employed by his brother Eliab to such purpose that the doctor actually died a rich man.

Harvey's connection with this College demands more than a passing notice. In 1604 his name appears on the roll of candidates for the Fellowship, and in 1607, after having passed through his term of probation, he was duly admitted a Fellow. In 1615, when thirty-six years old, Harvey was appointed *Lumleian Lecturer*, to deliver the lectures on anatomy and physiology, a position which he held until 1656. In the very first course he presented a detailed exposition of his views concerning the circulation of the blood, which continued to form one of the subjects of his lectures for nine or ten years before he published his celebrated treatise in 1628, and he had gone on demonstrating the subject before his learned oratory, illustrating it by new and additional arguments, and freeing it from the objections raised by the skilful amongst anatomists. Harvey held the office of Treasurer for one year, from 1628 to 1629. He served three times as Censor. In 1652 this College placed his statue, with a complimentary inscription on the pedestal, in its hall at Amen Corner, which, unfortunately, was destroyed by the Great Fire of London. About this time Harvey commenced the erection at his own cost of a handsome addition to the College of Physicians, and also furnished the library with books, and the

museum with numerous objects of curiosity and a variety of surgical instruments. The ceremony of opening took place on February 2nd, 1653, and on the occasion Harvey provided a sumptuous entertainment at his own expense, at which he received the President and Fellows, and made over to them on the spot his whole interest in the structure. In the next year he was unanimously elected President in his absence. He attended the Comitia of the College next day, but in graceful terms declined the honour, regarding the concerns of the College, which had greatly prospered under the preceding President, Dr. Prujean, as being too weighty to be intrusted to one like him, laden with years and infirm in health, and in compliance with his desire Dr. Prujean was re-elected. Harvey accepted, however, the office of *consiliarius*, which he again held in the two following years. In July 1656, Harvey delivered to the College a formal deed, by which he bestowed upon it as a free gift his paternal estate at Burmarsh in Kent, worth at that time £56 per annum, with special provision settling one sum by way of salary for the librarian, and another sum for the delivery of a solemn oration annually. The College of Physicians was justly proud of Harvey, and he was undoubtedly greatly attached to the College, which he regarded as a grand foundation, and where "he consorted with his nearest and dearest friends, seeking to

bind in close friendship those who met in solemn conclave to determine the great questions of the day, while he received from all those marks of respectful consideration that were so justly his due." Moreover, he did not forget the College in his will, providing money "to be raised and laid out upon that building which I have already begun to erect within the College of Physicians in London as will serve to finish the same according to the designs already made." He further bequeathed all his books and papers, and certain articles for the ornament of the meeting room he had erected for that purpose; directing Drs. Scarborough and Ent to select from his library and collections such as "they shall think fit to present to the College, and the rest to be sold, and with the money buy better."

On October 14th, 1609, Harvey was formally elected physician to St. Bartholomew's Hospital, when in his thirty-second year. For this and other reasons I venture to express our cordial wishes and hopes that the special appeal for funds for rebuilding, which is now being made on behalf of this ancient institution and great Hospital, may receive generous support.

With regard to Harvey's connection with the Court, which began in 1618, he having been in succession physician to James I. and Charles I., it will suffice to offer the following general remarks. No doubt at first this connection was to his advantage, but

owing to the interruptions by travel and the well-known events associated with the Civil War, his ordinary professional pursuits and avocations must have been seriously interrupted. From the year 1633 he appears to have devoted much of his time to Charles and to the retainers of the Court, and from 1636 to have been personally attached to the King in his various expeditions. He is said, however, to have kept himself aloof from all the intrigues and dealings of the party with which he was connected, and to have held himself exclusively to the discharge of his professional duties. Harvey informs us, that after the rupture between Charles and the Parliament, he attended the King, not only with the consent but by the desire of the Parliament. His coolness and remarkable want of solicitude on the occasion of the Battle of Edgehill is familiar history, when he sat under a hedge in charge of the Prince and the Duke of York, and read a book, until a bullet from a great gun grazed the ground near him, which made him remove his station. Whatever the short-comings of his Sovereign may have been, the sentiments between him and Harvey seem to have been those of mutual love and respect; while, as is well known, Charles, as well as the Queen and Court, took a deep personal interest in his investigations and dissections. The incident of the young nobleman who, owing to a fracture of his ribs on the left side, had a large opening in that region, through

which the heart protruded, and who was demonstrated by Harvey to the King, must always be remembered as an interesting event, from more than one point of view. He took him "so that His Majesty might with his own eyes behold this wonderful case," this "man alive and well," in whom he might, "without detriment to the individual, observe the movement of his heart and with his proper hand even touch the ventricles as they contracted." Having done so, Harvey says: "His most excellent Majesty, as well as myself, acknowledged that the heart was without sense of touch, for the youth never knew when we touched his heart except by the sight or the sensation he had through the external integument." We can well imagine what delight this demonstration would have afforded to Harvey.

Harvey went with the King and Court to Oxford, where he was everywhere handsomely received and entertained; and not only was the honorary degree of Doctor of Physic conferred upon him, but in 1645 he was elected Warden of Merton College, resigning his charge, however, in the following year, after the surrender of Oxford, and returning to London. He then, being sixty-eight years old, retired from active life, resigning his appointments, relinquishing the cares of practice, and spending his later days with one or other of his brothers in learned retirement, but not in indolence. Harvey was fond



of travelling, and is said to have travelled to Italy at the advanced age of seventy-one, but this is doubtful. In 1651, however, when he was seventy-three years old, his work on "Generation" was published, as the result of the solicitations and persuasion of his friend Sir George Ent. The account which Ent gives of his interview with Harvey, when he obtained his consent to publish the work, is highly dramatic, interesting, and pathetic. Although long afflicted with gout, Harvey appears to have maintained his mental activity and the integrity of his intellectual faculties to a late period of his life, if not to the last. He died in his eightieth year, in June 1657, and was buried with great honour in his brother Eliab's vault, in the parish church of Hempstead, in Essex. On October 18th, 1883, by the piety of this College, his remains were removed from the dilapidated vault, and with befitting solemnity were re-interred in the marble sarcophagus in the Harvey Chapel attached to the same church, eight Fellows bearing his body, "lapped in lead," to his final resting-place.

#### HARVEY'S FIRST INJUNCTION—THE COMMEMORATION OF BENEFACTORS.

In the deed by which Harvey conveyed to the College his estate, he laid down what may be regarded as three distinct and definite instructions or injunctions with respect to the subject-matter of

this oration, and I regard it as my duty to follow these injunctions in the main, as texts upon which to base the remarks I propose to submit for your consideration. The first injunction is that "there shall be a commemoration of all the benefactors of the said College by name, and what in particular they have done for the benefit of the said College, with an exhortation to others to imitate these benefactors and to contribute their endeavours for the advancement of the society according to the example of those benefactors." During Harvey's life and long after this portion of the oration need not have occupied much time, but to-day it is a very different matter, and it is obviously impossible to deal with it within the limited time at my disposal in anything like an adequate manner.

Within quite a recent period the chief benefactors of our College have been commemorated in chronological order by more than one Harveian Orator, but I propose to deal with this part of my subject on somewhat different lines. I may note in the first place that the College is in possession of a large number of gifts of various kinds from many donors, past and present, in the way of portraits, including that of Harvey himself (which was one of three pictures saved from the Fire in a damaged condition and restored in modern times), busts, articles of furniture, and miscellaneous objects, which are open to the view of all who may be disposed to inspect

them. Of these gifts those now before you are deserving of special mention—namely, the silver caduceus, the emblem of the President's office, and carried by each one, given by Dr. John Caius; the handsome mace borne before the President, presented by Dr. John Lawson in 1683, made expressly for the College, and bearing the hall-mark of that year; and this bust of Harvey, for which we are indebted to Dr. Richard Mead. I may in this connection also bring to your notice an interesting gift recently presented by the Worshipful Company of Barbers, who have generously restored to the College an *inspeximus* Charter of Charles II., granted to the College, but which had come into the possession of this Company.

When we come to consider the large number of benefactors to whom this College has been under obligation in the past, it is obviously out of the question to mention them all individually, and I must generalise more or less, though a few of the most prominent amongst them ought never to be ignored on this anniversary.

HARVEY—LINACRE—CAIUS.

First and foremost as a matter of course comes Harvey himself, who to-day we place on a pinnacle above all others, not only for the actual and tangible benefits which he has conferred upon us, but also for the greatness of his work and immortal discovery,

his noble character and personal qualities, and the lasting and inextinguishable glory and distinction which he has reflected upon this College.

Then we can never forget Thomas Linacre, the practical founder of the College of Physicians, which was inaugurated by charter in 1518, and who became its first President, continuing to hold this office until 1525. He has been well styled by our learned Librarian "the intellectual grandfather of Harvey." The College meetings were held in his private house, which he made over to the Physicians, and it was subsequently enlarged and used until 1614. Linacre also laid the foundation of our library. He translated Aristotle and Galen; and has been called "The Ornament of his Age," on account of his wisdom, scholarship and moral excellence.

The name of John Caius also stands out during the latter half of the sixteenth century as one of the most noteworthy men our profession has ever produced. He refounded Gonville Hall at Cambridge; and was the first to introduce and to teach practical anatomy in England. Dr. J. F. Payne has suggested that Harvey's lines of thought and study were probably much projected under the posthumous influence of the second founder of his College at Cambridge. Caius was President of this College from 1555 to 1561, and again in 1562 and 1571. The College is further indebted to him for first instituting its annals, and for a revision of its statutes.

The earlier records of the annals he collected and wrote out in his own hand ; and subsequently to his own election as a Fellow he gave a fully detailed account of the College doings. He was, in fact, our first Registrar, and set an example to all succeeding Registrars, which is certainly most faithfully and ably maintained at the present time.

OFFICIALS OF THE COLLEGE.

Amongst the benefactors of this College whom we should undoubtedly honour on this occasion are those who have held important offices, and to whom we are indebted in such large measure for the position it holds to-day, its practical working, and its continued and increasing prosperity and usefulness. Naturally our Presidents claim special recognition. The office of President of the Royal College of Physicians of London is not only one of great influence and high dignity, but at the present day, at any rate, entails serious responsibility, and no small amount of anxious thought and labour. He has to pay special personal attention, not only to important and sometimes difficult questions relating to the affairs of the College itself, but also to matters referred to us by the State, or from other quarters, and the work seems to be ever on the increase.

On looking down the list of those who occupied the position of President during the sixteenth, seventeenth, and eighteenth centuries, while all, no doubt, were men

of culture and high character, there are some well-known names which arrest our attention, as belonging to those who contributed conspicuously to the progress of science or medicine in their time, or who had been of special service to this College. In addition to Linacre, Caius, and Prujean, already referred to, may be specially mentioned the names of Richard Caldwell, who helped to found the Lumleian Lectures; William Gilbert, who "opened the modern era by treating magnetism and electricity on a scientific basis," who was also Treasurer for some time, and who made valuable bequests to the College; Francis Glisson, who added to the knowledge of anatomy and pathology, and whose name is so intimately associated with rickets; Sir George Ent, whose relation to Harvey has already been alluded to, and who also made a pecuniary bequest to the College; Sir Hans Sloane; William Pitcairn; and Sir George Baker, greatly honoured in his day as a scholar and practical physician, and famed for his research on the nature of Devonshire colic.

In the nineteenth century the presidential chair was occupied by some of the most eminent physicians of their day, including before 1860 Lucas Pepys, Francis Milman, John Latham, Henry Halford, John Paris, and Thomas Mayo. Many here present will remember with deepest respect and affection personal friends or acquaintances who most ably filled that position during the latter portion of this century, and I need

only mention the names of Thomas Watson, James Alderson, George Burrows, Risdon Bennett, William Jenner, Andrew Clark, Russell Reynolds, and Samuel Wilks. But I feel sure it would not be your wish that I should close this reference to the past Presidents of the College without specially expressing our cordial appreciation of, and deep gratitude for, the devoted and most able and efficient manner in which our latest outgoing President, Sir William Selby Church, has fulfilled the duties of his office during the six years he has occupied it, and the thoroughness, dignity, and tact with which he has grappled with the numerous difficult and complex questions with which he has had to deal.

I must not omit, further, to call to your remembrance to-day a venerable figure, whose prolonged and devoted services to this College can never be forgotten, and who, if he lives until the 1st of July next, will have reached the great age of ninety-seven.\* I allude, of course, to Sir Henry Pitman, our Emeritus Registrar, the oldest Fellow of this College, having been elected in 1845, and one of its most honoured officers. He held the appointment of Registrar from 1858 to 1889, and during that period was rarely absent from a meeting of the College. In all matters of college reform and administration which came under consideration during his long term of

\* Sir Henry Pitman duly passed his ninety-seventh birthday, and it is a pleasure to note is still well and cheerful.

office Sir Henry Pitman's views and advocacy were influential, and contributed in no small degree to the settlement of many debatable points. For long after his retirement he took the keenest interest in all that related to the College and its welfare. I am given to understand that this interest is still in great measure maintained, and that Sir Henry would, if permitted, be only too ready to attend the meetings of the Comitia and give us the benefit of his advice.

ENDOWED LECTURESHIPS—PRIZES—MEDALS—SCHOLARSHIPS.

A group of benefactors who strongly appeal to our practical interest on this occasion, and whom we gladly commemorate, are those who, either themselves or through their influence upon others, or by subscribing together a substantial sum, have been the means of founding lectureships at this College, or who have given endowments for prizes, medals, or scholarships, either to be awarded by this College alone, or in association with other institutions. Although most of these benefactions have been brought under our notice by previous Harveian Orators within a recent period, I have thought it might be worth while, and possibly interesting, to take stock of our actual present position from this point of view, and to submit a complete and up-to-date summary, first of the lectureships, and afterwards of the other endowments which the College



now possesses, and to indicate briefly their origin, nature, and intention. It may be stated generally that their objects are to reward merit for scientific or clinical work already accomplished ; to encourage medical education and training ; and to stimulate investigation and research, either generally or in relation to particular subjects. While giving due honour to the donors, we must also not forget to pay tribute to those distinguished men in whose memory some of these endowments were established, all of whom, with one exception, were either Fellows or Members of this College, who in their day occupied a high position in our profession, and rendered excellent service in their several spheres and ways ; while at the same time they reflected honour upon this College, and were ever ready to promote its best interests.

1. *Lumleian Lectures*.—These lectures were founded in 1581 by Dr. Richard Caldwell, in conjunction with Lord Lumley. They were originally established for surgery, being commonly called in the annals The Chirurgical Lecture ; and the donors endowed the lectureship with a rent-charge of £40 a year on their lands and on those of their heirs for ever. The College took £100 out of their public stock to build the College rooms more ample and spacious, for the better celebration of this most solemn lecture. Harvey was the fourth holder of this lectureship, and retained it for forty-one years, as

has already been mentioned. At the present day it has entirely changed its character, three lectures being delivered annually by one of the Fellows, and they deal with a variety of subjects, selected by the lecturer himself.

2. *Goulstonian Lectures*.—In 1632 Dr. Theodore Goulston, a Fellow of the College, left £200 to purchase a rent-charge for the maintenance of a lecture to be delivered annually within the College of Physicians, and with this sum an annual rent of £12 charged on land in Essex was purchased by his widow, and conveyed to the College, July 24th, 1635, in trust. This lectureship was evidently intended to give encouragement and opportunity to the juniors, for it was directed that the lecture should be read by one of the four youngest doctors in physic. It was further directed by Goulston that it should be on two or three or more diseases; and afterwards, by the widow, that the lecture should be read between Michaelmas and Easter, on three days together, both forenoon and afternoon, on some dead body, if possibly it can be procured, which shall then and there be dissected for the diseases treated of, and shall afterwards be buried. This lectureship is now held by one of the four most recently elected Fellows, who may also choose his own subject within certain limits, and he is not expected to procure a dead body for dissection. It is interesting to note to what a high position in the

profession those who have delivered the Goulstonian Lectures in modern times have attained. Goulston was an intimate friend of Harvey, and occupied the position of Censor when the latter was appointed Lumleian Lecturer, while afterwards they were associated as Censors.

3. *Croonian Lectures*.—This lectureship has a somewhat curious and interesting history. Dr. William Croone, a fellow of the College, left behind him at his death, in 1684, a plan for two lectureships which he had designed to found—one to be read yearly before the College of Physicians, with a sermon to be preached at St. Mary-le-Bow; the other to be delivered before the Royal Society. He made no provision in his will, however, for their endowment; and it was left for his widow, who subsequently married Sir Edward Sadler, Bart., later on to carry out his intention. In her will, dated September 21st, 1706, she left the "King's Head" Tavern, in the City of London, to her husband for life, and after his decease to her executors in trust, to settle four parts out of five thereof upon the College of Physicians, to found an annual lecture, now called the Croonian Lecture. At this time the amount of the legacy only reached £10 per annum. In the year 1885, through the expiration of a ninety-nine years' building lease, the College was fortunate enough to come into possession of an annual income increased to £200. A committee was appointed to

consider what should be done with this improved rental; and on their recommendation it was resolved by the Comitia in June 1886, that in future the course should consist of not less than four lectures on one or more subjects in Anatomy, Physiology, and Pathology, with a view to the prevention, control, and cure of diseases, with an honorarium of one hundred guineas for the Lecturer; and that the remainder of the fund be employed for original investigation by a past or present Croonian Lecturer. This endowment has been the means of encouraging excellent work, and the results brought before the College by the several lecturers have not only been of much interest, but many of them have also been of considerable value from a practical point of view.

4. *Bradshaw Lecture*.—A long interval elapsed during which the endowment of lectureships entirely ceased, but in 1875 a revival took place in this direction. In that year £1,000 Three-per-cent. Consols was bequeathed by will by the late Mrs. Bradshaw, widow of Dr. W. Wood Bradshaw, M.A., D.C.L. Oxford, a former Member of this College, in trust, to found the Bradshaw Lecture in memory of her husband. It was directed that the lecture should be delivered annually on August 18th, the anniversary of the death of Dr. Bradshaw, on some subject connected with Medicine or Surgery, by some person appointed by the President. In 1891, however, the sanction of the Charity Commissioners

was obtained to vary the date of delivery. The bequest was received in 1881, and the first Bradshaw Lecture was given in that year by Dr. Vivian Poore, whose recent death in the prime of life we all so deeply deplore, and whose genial personality will be greatly missed at this College. Since that time interesting and instructive Bradshaw Lectures on a variety of subjects have been delivered by distinguished Fellows of this College, who have given us the benefit of their special knowledge and experience.

5. *Milroy Lectures.*—In 1886 Dr. Gavin Milroy, a Fellow of the College, by his will bequeathed “to the President and Council of the Royal College of Physicians for the time being a sum of £2,000, for the purpose of founding and continuing a yearly Lectureship of three or more lectures in State Medicine and Public Hygiene, on trust, to invest the same . . . and pay the income thereof to a Lecturer to be appointed by them from time to time.” A point of practical interest relating to this lectureship is that Dr. Milroy gave absolute discretion to the President and Council to vary the investments, and at all times to manage, appropriate, and dispose of the said funds and the income thereof as they shall think fit. He left “suggestions” with regard to the subjects of the lectures, which are kept in print for the guidance of lecturers. By a resolution of the College, the lectures are now known as

“The Milroy Lectures in State Medicine and Public Health,” and the course comprises not less than three nor more than six lectures. This lectureship has already proved of great service, and is likely to become progressively more and more useful in the future, in proportion as the preventive aspect of the work of the medical profession is becoming increasingly prominent and important.

6. *Fitzpatrick Lectures*.—This lectureship initiated an entirely new departure, for it deals with a subject which had previously been practically neglected, but which now seems to be coming into considerable prominence. We owe it to the influence of our distinguished Censor, Dr. Norman Moore. Acting on his advice, and desiring to perpetuate the memory of her husband in connection with the College, in 1901 Mrs. Fitzpatrick, widow of Dr. Thomas Fitzpatrick, a learned Member of this College, presented to the President and Fellows the munificent sum of £2,000, in trust, to found a Lectureship in “The History of Medicine.” The interest is to be paid each year to a Fellow of the College appointed by the President and Censors, who shall deliver in the College two lectures, the precise subject to be announced beforehand. The same Fellow may be appointed two years in succession, but not again until an interval of at least one year has elapsed. The lectures to be printed and published in a separate book. The

first holder of the Lectureship—in 1903 and 1904—was our learned Librarian, Dr. J. F. Payne ; and he is most fitly followed this year by Dr. Norman Moore.

7. *Horace Dobell Research Lecture.*—In 1903, Dr. Horace B. Dobell, a well-known Member of the College, and formerly a very active and successful London physician, but now living in retirement, gave a sum of £500 in Consols to the College in trust to endow a lecture for a term of years, with a view to encourage research into “the ultimate origin, evolution, and the life-history of bacilli and other micro-organisms.” The lecture is to be delivered at the College once in every two years, and an honorarium of £50 to be provided for the lecturer by the sale on each occasion of a sufficient portion of the stock. It will thus be seen that after a certain number of years this lectureship will become extinct. Thus far it has only once been held, by Dr. E. E. Klein, in 1904.

8. *Oliver-Sharpey Lecture or Prize.*—The endowment to be next referred to is one which appeals to my personal interest and sentiments in a special degree, inasmuch as it has been founded by a most distinguished fellow-student of mine at University College in days gone by, Dr. George Oliver, of Harrogate, Fellow of the College, in memory of William Sharpey, M.D., F.R.S., who was Professor of Physiology at that institution from 1836 until

1874. No words can convey in any adequate degree the feelings of admiration, esteem, reverence, and affection which we students entertained towards this great teacher, and always our loyal friend. Possibly to some now present, and probably to the modern medical student, Sharpey may be a mere name, but let it never be forgotten that in his day his fame had spread throughout every civilised country, and he was universally recognised as one of the foremost physiologists, and most attractive and accomplished lecturers of the age. I have still a vivid recollection of the delight with which we listened to his lectures, and the inestimable benefit which we received from his instructions.

Dr. Oliver, who has himself done excellent scientific and practical work in relation to the circulatory system, as well as in other directions, in January 1904 gave to the College in trust the munificent sum of £2,000 sterling, to found and endow an annual lectureship or prize intended to promote physiological research by observation and experiment on man himself, and encourage the application of physiological knowledge to the prevention and cure of disease and the prolongation of life. It is left to the President and Censors to determine whether a lecturer shall be appointed, or a prize awarded for work already done. It was most fitting that the first Oliver-Sharpey Lecturer should have been Dr. Oliver himself; and he was succeeded this



year by Dr. Leonard Hill, whose fame as a physiologist was also originally established at University College. It may be confidently anticipated that this endowment, the objects of which are strictly in accordance with the spirit of Harvey's work, will also prove of great advantage to this College, and to the medical profession generally.

9. *Swiney Prize*.—Dr. Swiney, at his death in 1844, left by his will the sum of £5,000 to the Society of Arts, as trustees, for the purpose of presenting a prize on every fifth anniversary of the testator's death to the author of the best work on Jurisprudence. The award is made jointly by the Society of Arts and the College of Physicians, and the practice hitherto has been to give the prize alternately for a work in medical and in general jurisprudence. It consists of a silver cup, value £100, and money to the same amount. The Swiney Prize was first awarded in 1849 to Dr. Paris and J. Fonblanque for their work on "Medical Jurisprudence," and its subsequent recipients on the medical side include the well-known names of Swayne Taylor, Guy, Norman Chevers, Meymott Tidy, and Dixon Mann, who is still with us.

10. *Baly Medal*.—In 1866 Dr. Frederic Daniel Dyster transferred to the College the sum of £400 to provide a gold medal of the value of £20, "*in memoriam Gulielmi Baly, M.D.*" A railway accident brought to a sudden and premature end the successful

career of Dr. Baly, who was a most distinguished Fellow of this College, physician to St. Bartholomew's Hospital, and a leading physiologist. He had attained to a position of great eminence in his profession, while his personal charm and high character won the affection and esteem of all who were brought into contact with him. The medal is awarded every alternate year, on the recommendation of the President and Council, to the person who shall be deemed to have most distinguished himself in the science of physiology, especially during the two years immediately preceding the award, and is not restricted to British subjects. The recipients of the medal include a succession of the most distinguished physiologists, both British and foreign, whom we all delight to honour, beginning with Richard Owen in 1869. This year it has been conferred upon Professor Pawlow, of St. Petersburg, whose fame as a physiologist and pathologist is world-wide. It is much to be regretted that Professor Pawlow is unable to be present on this occasion to receive the medal in person.

II. *Murchison Memorial Scholarship* (Clinical Medicine).—Many now present must have a vivid recollection of the striking personality of Dr. Charles Murchison, in whose memory this scholarship was founded in 1880. As is well known, he attained great eminence as a practical physician and clinical teacher, and his works were universally regarded as

of the utmost value. Ultimately the sum of £1,000 was raised by subscription, which provides a scholarship of twenty guineas, tenable for one year, for proficiency in clinical medicine. The award is made alternately by the University of Edinburgh and this College. Any student in medicine is eligible as a candidate who has been a registered medical student during a period of not less than five, nor more than seven, years at a hospital in London or Edinburgh recognised by the Royal College of Physicians of London or by the medical faculty of the University of Edinburgh, and whether holding a qualification or not. It will be readily understood what a boon this scholarship must be to deserving students not too well furnished with this world's goods.

12. *Moxon Gold Medal*.—Walter Moxon was another personality who made a deep impression upon the age in which he lived, not only by his general professional attainments and abilities, but also by his originality and brilliancy, and his striking individuality. His premature death, in July 1886, was a grievous loss to our profession. Shortly afterwards a sum of money was subscribed to found a Moxon Memorial, and handed over to the Royal College of Physicians in trust for this purpose. A bronze tablet was erected in memory of Dr. Moxon at Guy's Hospital, with which institution he had been so long and honourably connected, and the remainder of the sum invested. It was arranged that the

income thence derived should be expended in awarding every third year a gold medal of the value of £30 to the person who should be deemed to have most distinguished himself by observation and research in clinical medicine. The award is not restricted to British subjects; but thus far it has not been considered necessary to go beyond the bounds of Great Britain to select one worthy of the Moxon Medal, as you will readily understand when I mention the names of Alfred Garrod, William Jenner, Samuel Wilks, William Gairdner, and Hughlings Jackson, on whom it has been conferred in succession.

13. *Jenks Memorial Scholarship*.—This is another group of scholarships established for the benefit of medical students. In 1893 Miss Johnstone, of Bath, bequeathed £5,000 in trust for founding five scholarships in memory of Dr. George Samuel Jenks, a former Fellow of this College. One scholarship is awarded annually, and is tenable for five years, its value being about £27. The nomination rests with the President and Censors of the Royal College of Physicians and the Council of the Royal College of Surgeons alternately, with a first claim or preference for students educated at and leaving Epsom College. This latter clause greatly enhances the practical usefulness of the Jenks Memorial Scholarship, and cannot fail to elicit our cordial approval and hearty sympathy.

14. *Weber-Parkes Prize and Medals.*—We rejoice to have still amongst us the distinguished, kind-hearted, and always genial Fellow of this College, to whom we are indebted for the most munificent endowment now to be referred to. Sir Hermann Weber, although a well-advanced octogenarian, seems to be possessed of the secret of perpetual youth, and is as active and energetic as ever, even going so far, I believe, as still to climb Alpine mountains and traverse formidable glaciers! He has been doing his best, moreover, to instruct us by precept and example as to the measures which we should adopt in order to attain old age in as good a condition as himself. In 1895 this generous benefactor presented to the College the sum of £3,000 sterling in trust to found a prize to be called the “Weber-Parkes Prize,” in memory of the late Dr. Edmund A. Parkes, who died in 1876, during the year in which he should have delivered the Harveian Oration, but left it in an unfinished state. This incomplete Oration was read by Sir William Jenner, who happened to be President at the time, and who spoke on the occasion with touching eloquence of the life, character, work, and personal influence of his former colleague and beloved friend. May I be permitted, as one of Dr. Parkes’s former pupils at University Hospital, to add my humble tribute of respectful appreciation to the memory of this noble physician, for whom, in common with all his students, I had the greatest

esteem and affection! He was so gentle, kind-hearted, straightforward, and truly Christian in all his dealings, that he endeared himself to all. Moreover, Parkes contributed in no small measure to the progress of scientific and practical medicine, and was one of the pioneers of physiological and pathological chemistry, as well as of modern hygiene, of which he was Professor at Netley after he left University Hospital. His masterly treatise on this subject is a lasting memorial of his admirable work in this direction.

Surely there is no one among the illustrious roll of Fellows of this College whom Sir Herman Weber could have more fitly commemorated than Dr. Parkes, and he has done so in most appropriate and practical fashion. The prize is to be awarded every third year, on the recommendation of three Fellows appointed by the President, to the author of the best essay connected with the ætiology, prevention, pathology, or treatment of tuberculosis, especially with reference to pulmonary consumption in man; the College, in making the award, to have regard to careful collection of facts and original research. It consists of the substantial sum of one hundred and fifty guineas and a silver medal for the winner of the prize; and a similar second medal for the essayist who comes next in order of merit. Thus far it has been awarded on two occasions.

15. *Bisset Hawkins Memorial Medal*.—Dr. Francis Bisset Hawkins was for many years the senior Fellow of this College. He was born in 1796 and died in 1895, thus living to within a year of his centenary. In 1896 Captain Edward Wilmot Williams, at the suggestion of our esteemed colleague Dr. Theodore Williams, presented to the College the sum of £1,000 sterling, with the object of perpetuating Dr. Hawkins's memory in connection with the College. It was resolved to establish a gold medal to be bestowed triennially on some duly qualified medical practitioner, who is a British subject, and who has, during the preceding ten years, done such work in advancing Sanitary Science, or in promoting Public Health, as, in the opinion of the College, deserves special recognition. The award is made by the President; and this year the medal has been most appropriately conferred on Sir Patrick Manson, K.C.M.G.

#### LIBRARY AND MUSEUM.

As has been already stated, the original foundation of the library of the College of Physicians was laid by Linacre. In addition to Harvey's own contributions, the following deserve special mention:—William Gilbert, President in 1600, bequeathed to the College his whole library, globes, instruments, and cabinet of minerals, most of which were unfortunately destroyed in the fire of 1666, only one

hundred and forty volumes of his books having been rescued. Sir Theodore Mayerne left his library to the College, including many manuscripts. Henry, Marquess of Dorchester, who was admitted an honorary Fellow of the College in 1658, has been the most munificent donor to the library, for in 1655 he presented £100 to augment it, and subsequently bequeathed a collection of books of the value of £4,000, in sympathy with the College in the loss of its library by the fire, and to show his respect for the profession. Dr. Richard Hale gave in his lifetime £50, and at his death in 1728 left the sum of £450, to be expended in the purchase of books. Dr. Matthew Baillie, to whom I shall again refer later on, gave during his lifetime his private collection of morbid specimens, now in the museum; and at his death in 1823 bequeathed all his medical books and the copper-plates of his work on "Morbid Anatomy." Coming to more recent times, Dr. Arthur Farre presented about one thousand volumes, some of which were very interesting or curious. Numerous individual contributions of much value and interest have been made to the library from time to time, by different Fellows, including our learned Harveian Librarian and Treasurer, as well as by others who have no immediate personal connection with the College. It would be beyond my province to mention these donations separately on the present occasion, but I



most heartily thank the several donors for their gifts to the library, and cordially invite others to follow their example.

GENERAL BENEFACTORS.

Under this group I include those who have made contributions to the funds of the College, without specifying any particular purpose to which they should be applied, or who have been conspicuous by their general benefactions.

Sir W. Paddy, who was twice President, in 1609 and 1618, bequeathed £30 to the College in 1634. Dr. Baldwin Hamey, Senior, left a similar sum after his death in 1640.

It is to Dr. Baldwin Hamey, Junior, however, whose bust and portrait look down upon us, that the College owes a special debt of gratitude, and he has been described by our former Harveian Librarian, the late Dr. William Munk, as "the most munificent of all the benefactors of the College." In the first place, he saved the original College building in Amen Corner from being sold to pay the exactions levied in the City of London, and himself "became the purchaser of the house and garden, and afterwards gave it in perpetuity to his colleagues." Further, Hamey contributed liberally to the fund for rebuilding the College after the Great Fire of 1666; and "at his own sole cost, amounting to some hundreds of pounds, wainscoted the Cœnaculum with fine Spanish oak with fluted pilasters ornamented with

capitals, an elegantly carved cornice, and his coat of arms and crest immediately over the entrance." A portion of the wainscoting was removed, and now adorns the adjoining Censor's room. Finally, in 1672, he made over to the College the estate and manor of Ashlins, in Essex, of four hundred acres, the proceeds to be partly applied to doubling the honorarium of the Harveian Orator, and to furnishing certain gratuities to the President, and the remainder to the general purposes and advancement of the College. To Dr. Hamey's bequest the Fellows present on the occasion of the election of President are indebted for the half-crown which they then individually receive, in lieu of a pair of gloves.

Dr. Matthew Baillie, the nephew of William Hunter, is another name worthy of special recognition by this College, from several points of view. Mention has already been made of his gifts to the museum and library. He further bequeathed at his death in 1823 a legacy of £300. Baillie appears to have been an indefatigable practitioner, and he has left admirable clinical records of cases far in advance of his time. While he trained himself, on Harvey's lines, to prosecute research by observation and experiment, his treatment was characterised by originality, sagacity, and common sense. Moreover, "his religious principle guided every part of his conduct and demeanour, and his moral loftiness and splendid character secured for him the deepest

regard and affection of his professional brethren." Matthew Baillie delivered the Harveian Oration more than a century ago, when he was thirty-seven years of age, but is not known to have published it. To this illustrious physician the College is indebted, not only for his substantial benefactions, but also for the high standard of professional life and personal character which he has set before us.

In 1878 Dr. Edward Lambert, a Fellow, bequeathed to the College the sum of £1,000 for the advancement of Medical Sciences, and particularly for adding to the library works of literary merit. As the legacy was not paid until 1883, the sum actually received amounted to considerably more, owing to accumulation of interest.

I must not omit to call attention to the recent bequest of the late Mrs. Begley, the widow of a former Fellow of this College, who lived to an advanced age, and was an interesting personality, whom many of us must remember as a frequent attendant at the Comitia. The bequest is the more acceptable on account of the terms in which it is expressed. Mrs. Begley bequeathed to the Royal College of Physicians certain specific articles free from duty "to show my admiration of the faculty and gratitude to some of its Members during my widowhood"; and by a codicil to her will further bequeathed a legacy of £500 free of duty, which I need scarcely say is most acceptable.

While thus duly recognising those who have benefited this College in a substantial manner, we must not forget that we owe a debt of gratitude, which it is not easy to estimate, to many who have not been in a position to help it in a similar way, but who by their professional or scientific attainments and achievements, as well as by their high personal character and charm, general culture and scholarship, and intellectual and moral qualities, have shed unfading renown and lustre upon the College of Physicians. To attempt to enumerate individually all those coming under this category on the present occasion is out of the question; but I may mention such prominent personalities as Sydenham, Heberden, Fothergill, Lettsom, Prout, Bright, Addison, Gull, Todd, Kirkes, Charles Locock, Sieveking, Chambers, Marshall Hall, and Bence Jones.

Before concluding this part of my subject I must not omit to remind you as well as myself of Harvey's exhortation to imitate those benefactors and to follow their example. There was a time, and not so very long ago, when this College was anything but flourishing from a financial point of view, but our excellent Treasurer gave us recently to understand that our position is now fairly satisfactory. Nevertheless, I presume he would still endorse the appeal he made in his Harveian Oration in 1898 for endowments to enable us to maintain

our position, our fabric, and our library ; as well as for other purposes that aim at the promotion of research, the advancement of science, and the substantial recognition of those who by their labours and discoveries are worthy of being thus honoured. He emphasised the fact that, as contrasted with provincial cities, "the vital interests of higher learning make little appeal to the sentiments or generosity of wealthy peers or commoners, whose interests lie largely in London." He further pointed out "that this Royal, but unendowed, College is constantly appealed to for advice by the several offices of the State, which thus receive gratuitous assistance for the benefit of the public." I think things have improved somewhat since Sir Dyce Duckworth's appeal was made, but it is still necessary to bring into prominence what he then said, namely, "that a corporation such as this well commends itself to the consideration and substantial liberality of persons of wealth and patriotic intelligence resident in London." Therefore, may I suggest that the College is always ready to receive, and to make good use of, any gifts from those who are too richly endowed with this world's goods, and are desirous of getting rid of their superfluous wealth? Some whom I am now addressing may be thus fortunately situated, or they may be on intimate terms with and able to influence a Carnegie, a Donald Currie, or a South African millionaire, in such a way as to make them

divert at least a portion of their gifts in this direction. It is truly aggravating to see not uncommonly in the papers announcements of large sums given or bequeathed to various objects which are, to say the least, not the most deserving. But, if we can do nothing of this substantial nature, we may each one of us, at least, endeavour by our work and character to approach in some measure the high standard set before us by our predecessors, and thus fulfil, however imperfectly, Harvey's exhortation.

#### SECOND INJUNCTION—EXPERIMENTAL RESEARCH.

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 dissections of a large number of all kinds of animals, as well as during foetal life; and unquestionably direct inspection of the heart and vessels in living animals, as well as actual experiments, or what we now speak of as "vivisection."

I have seen it recorded that Harvey experimented by injection into the vessels when in his seventy-fourth year.

It is hardly necessary for me to defend or to justify the practice of vivisection before this College, which has already been done in previous Orations with great thoroughness and ability. On this matter the College itself has also 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 anæsthetised animals for the adequate teaching of Pharmacology to students. The matter was referred to a representative committee in January 1904. In their report they affirmed that the subject of Pharmacology can only be taught with the aid of demonstrations, involving experiments on living animals; and that, in relation to the prevention and cure of disease, no branch of medicine is so immediately and directly connected with experiments as that of Pharmacology, or the action of remedies. They further reported that, "In the opinion of the Committee experiments on living animals are already so carefully safeguarded by the Act (39 & 40 Victoria), that it may be safely left to the discretion of the individual teachers of Pharmacology how far, and in what way, they should make use of

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experiments on living animals in their courses of instruction." The report was adopted by the Comitia practically unanimously.

I would not have further alluded to vivisection, if at all, on this occasion, were it not that there has recently been manifested what appears to be a "change of tactics" on the part of some of the more courteous and polite leaders of the anti-vivisection movement, which we, as a profession, ought not to ignore. While becoming if anything even more aggressive and unreasonable in their opposition, as well as more rash and imaginative in their statements, and, while still applying language to vivisectors and their practices which is anything but complimentary, they have taken to flattering, patronising, and cajoling the medical profession as a whole, in contrast with these dreadful individuals. The noble chairman at a meeting of one of the anti-vivisectionist societies quite lately made the following remarks: "Let it never be said that they were working against the medical profession. There was no profession for which they had greater respect, regard, or admiration. It was not the 40,000 medical men they opposed, but the 340 vivisectors." Similar sentiments were expressed by the chairman at a meeting of another society. Now, personally, I strongly object to be thus patronised, and I think it would be cowardly if the profession as a body did not speak out boldly and emphatically at this time, and reaffirm our position



in relation to vivisection. Therefore I take upon myself the responsibility of expressing here, on their behalf as well as my own, what I believe to be the true sentiments of the 40,000 individual practitioners, with comparatively few exceptions, that we respectfully decline to be thus separated from those who practise vivisection; that we range ourselves on their side absolutely and unreservedly; that we deeply sympathise with them in the undeserved attacks made upon them, while fully sharing their responsibilities, and taking upon ourselves any opprobrium or abuse showered so freely upon them; and that we cordially acknowledge and are truly grateful for the incalculable services which they have already rendered to medical science and practice, and the inestimable benefits which they have thus conferred on humanity.

THE COLLEGE OF PHYSICIANS AND RESEARCH.

There can be no doubt, as the late Dr. Barclay said in a previous Harveian Oration, 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." It was a long time, however, before his hopeful anticipations were in any degree realised; and in the same oration there is a scathing

rebuke of the Fellows of the College, and of their narrow and exclusive jealousy, as being responsible for this result. Speaking generally, it may be affirmed 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 medical knowledge. 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 there gained were handed over to the Metropolitan Asylums Board, while other parts of the building became utilised for kindred work in the Army Medical School, and for the investigations carried on in connection with the Imperial Cancer Research Fund. An interesting report has been recently published, for which we are indebted to our distinguished Fellow, Dr. Pye-Smith, embodying the history of these laboratories, and in which a list is given of the

investigations carried on therein 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.

MODERN ACTIVITY IN RESEARCH.

If Harvey could come on the scene at the present time, and realise what is going on in the way of "seeking 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 to estimate what the future may bring forth in this direction.

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 his subsequent career to carry on research with real advantage to himself and others. The more venerable English Universities have also been roused into activity and revived, being now in the van of progress in this direction. As a promising feature in this connection, it is gratifying to call attention to the cordial reception recently given by the Vice-Chancellor of the University of Oxford to a deputation from the medical graduates, headed by our late President, Sir William Church, with reference to the advancement of pathology in the University, and the encouraging prospects indicated on the occasion as to the ultimate adequate endowment of the Chair of Pathology.

The London University has recently changed its character and aims, and it is to be hoped that in the future it will add materially to the laurels which it has fairly earned in the past by its efforts to promote higher training. The ancient Universities of Scotland and Ireland, to which medical science has been much indebted in the past, are also keeping thoroughly up with the times. At all our newer provincial Universities, and in the Medical Schools everywhere, 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 methods, are at the present time in active work.

The tendency to centralise the preliminary scientific and intermediate 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 of different kinds are now in existence, which are of great help in diagnosis, and thus of decided advantage to the patients, while if properly utilised they afford excellent opportunities for the scientific training of the more advanced students in methods and objects of research in this direction. Let it be clearly understood, however, that the work and investigations carried on at these laboratories have nothing whatever to do with vivisection. And I would take this opportunity of emphatically contradicting and indignantly denying the insinuations, or even the definite allegations, made not infrequently against hospitals, with regard to certain supposed "practices" carried on therein for experimental purposes, for which there is abso-

lutely no foundation. They are either the outcome of a too vivid and irrational imagination, or the cruel and malignant invention of ignorant and irresponsible persons whose chief aim in life seems to be to damage the reputation of certain of these institutions, and to create a feeling of distrust against them, and who care not what means they resort to in order to accomplish this end. It has been recently stated by a well-known member of our profession that among the poor a real fear of the hospitals threatens to override the sufferer's need. Personally I have never seen any reason to believe this statement; but if it is true, the significance of the tendency can thus be readily explained.

The establishment of independent laboratories for pathological work and research, which are now met with all over the world, is another comparatively modern advance by which great results have already been achieved, and from which we may anticipate incalculable benefits in the future. Among the most conspicuous and remarkable of these institutions, and one which commands our highest admiration and reverence, stands the Pasteur Institute in Paris, where those of us who recently visited that city, in connection with the *entente medicale*, were so kindly received by Madame Pasteur, Dr. Martin, Dr. Roux, Dr. Metchnikoff and many others, and where we took part in the interesting ceremony carried out on that occasion. The chief proceedings were conducted at the truly

magnificent mausoleum, crypt, or "chapelle funeraire," where now rest the ashes of its great founder, Pasteur. Professor William Stirling has given a graphic description of this mausoleum, and an interesting account of the touching ceremony which took place on December 26th, 1896, when Pasteur's remains were removed from a small chapel in Notre Dame Cathedral, where they had been temporarily placed, and deposited in this, their last resting-place, the family having refused the honours of the Pantheon. "They preferred that he should rest in the institute which bears his name, and which is a tribute to his marvellous genius—an institute erected by the voluntary contributions of his admirers, and where he passed the last years of his life, busy up to the end with his marvellous discoveries, which have revolutionised surgical practice, and conferred incalculable benefits upon the brute creation as well as upon man, and, moreover, which saved some of the most important industries of France from extinction" (Stirling). Pasteur's wonderful scientific investigations and attainments, his practical achievements, as well as the beauty, simplicity, and Christian nobility of his character, have been proclaimed by many speakers and writers of the highest eminence, and to-day we gladly endorse the sentiments they have expressed. His name may be fitly linked with that of Harvey; and, as in his case, Pasteur's views and researches were at one time entirely discredited,

and he was jeered at with all politeness by the French Academy of Medicine! Since his time the Institute which he founded has worthily maintained and even enhanced its reputation, and it has now developed into a truly wonderful place, where the amount and quality of scientific research carried out claim our highest appreciation and approbation.

In this city we have also an institution associated with an equally honoured name, one 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. And 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. In this connection I must not omit to call attention to the princely endowment which the late Mr. Jamsetjee N. Tata has given towards the founding of an Institute in Bombay. It is also interesting to note that Japan, that remarkable country which has



proved itself so progressive, intelligent, and efficient in other directions, is fully in the van in this department also, and has already done most excellent work in pathology and other subjects.

Another important and promising feature is the development of 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, nervous affections, psychology, sanitation and hygiene, immunity, and heredity. Tuberculosis is, as you know, being investigated from every possible point of view, and on a vast scale, in different parts of the world, and the results obtained have already been most encouraging. In relation to Cancer, it is but right and fitting that we should pay due honour to Middlesex Hospital, where a Cancer department was founded by the efforts of Dr. John Howard so long ago as 1792; and where a new set of laboratories for research work in relation to this disease, started in 1900, have recently been completed. The Imperial Cancer Research Fund, previously mentioned in connection with Examination Hall, has already, within the short period of its existence, achieved substantial progress, and gives great promise for the future. Its work is being carried on, not only in the mother country, but also in our Colonies and Protectorates, with the sympathetic co-operation of scientists in France,

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Germany, and America, as well as of many public offices and bodies at home and abroad. I may further mention here that the interests of the so-called lower animals are not ignored in the investigation of particular subjects bearing on their well-being. As an illustration I may refer to the fact that a committee has recently been appointed by the President of the Board of Agriculture and Fisheries to inquire, by means of experimental investigation and otherwise, into the pathology and ætiology of epizootic abortion, with the view to the adoption of preventive and remedial measures.

There are other aids and encouragements to research in relation to the advancement of medicine at the present time, which I need only briefly mention. The presentation of "Research Scholarships" to deserving individuals, either for general or special purposes, has already proved, and is still more likely to prove in the future, of conspicuous advantage in relation to scientific medical investigation. The British Medical Association is doing excellent work in this direction; and we are also indebted for valuable help of this kind to certain of the richer City Companies and other corporate bodies, as well as to a few private benefactors. There is abundant room, however, for the addition of further scholarships, to aid capable students who are not in a position to pursue a scientific career on their own account.

Another promising feature is that recently there has been some indication that a few wealthy people, who are guided by rational common sense, and are well-disposed towards the medical profession, are beginning to wake up to their duties, and to realise their responsibilities in the promotion of research, by making more or less considerable contributions out of their superabundance towards particular institutions or for particular purposes. In this respect, however, London is far behind the provinces ; and when we compare our country with America, we may well hang our heads with shame ! The United States has always been peculiarly fortunate in the public spirit of its millionaires, who have lavished vast endowments upon education and research.

Finally, I venture to call respectful attention, as a special encouragement to scientific medical research, to the fact that their Most Gracious Majesties King Edward VII. and Queen Alexandra, as well as other members of the Royal Family, are now taking such a warm and practical interest in this kind of work, and more particularly in its results in certain special directions bearing profoundly on the well-being of humanity.

CONTROL OF RESEARCH WORK. THE PERSONAL FACTOR. I

I have endeavoured in the preceding summary to give due prominence to the activity and encouraging

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aspects of modern research in relation to scientific medicine. On the other hand, it appears to me desirable to offer a word of criticism and warning, and to urge the necessity of more careful control and regulation of such research, on intelligent and rational lines, with due regard to its practical intention and purpose. One cannot help observing not infrequently that quantity, rather than quality, is the outcome of much that is called by this name ; and there is an undoubted tendency to jump to conclusions hastily and on insufficient data, which conclusions are sooner or later, and often very speedily, contradicted flatly by other investigators, the result being much confusion and uncertainty with regard to important questions, a state of things decidedly trying to those of us who are getting on in life, and are yet desirous of "keeping up with the times." Moreover, not a few so-called "scientific researches," some on a very elaborate scale, are concerned with quite trivial and unimportant matters, and have no apparent object, unless it be to vex, bewilder, and thwart the progress of the unfortunate medical student ! Personally I must confess that some investigations are made so difficult and complex as to be entirely beyond my comprehension, and the very terms used in relation to them are enough to frighten one off ! Let us be thankful, however, that on the whole the facts revealed and the lessons taught by our scientific workers come

within reasonable limits, and can be fairly grasped and utilised by persons of average intelligence, so far as their practical application is concerned.

As having an important bearing upon the aspect of research with which I am now dealing, more particularly in relation to scientific medicine, the personal factor deserves more attention and consideration than it often receives. In the first place any individual who proposes to engage in this work is conscientiously bound to regard it as a serious and responsible business, not to be entered upon lightly or in an "amateurish" way, but as a calling of the highest importance. To look upon research as a mere amusing or even an interesting occupation, to be engaged in for the "fun of the thing," or to "pass the time" agreeably, cannot be too strongly deprecated. Then comes the question of personal fitness. That there are inherent differences in this respect is obvious enough. Some individuals are "born investigators," while others are by nature absolutely disqualified for the work. As a teacher of long experience, and brought into intimate contact with medical students, I have met with many illustrations of this fact. I have known some who would have been hopeless failures in the active practice of their profession, but have shown a conspicuous aptitude for original scientific work, and circumstances having given them a favourable opening, they have made excellent use of their opportunities, and have not

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only added to our knowledge in a striking degree, but not a few have attained to eminent positions in various fields of science and research.

While fully sympathising with those who are attracted by research work, and are wishful to sacrifice themselves on the altar of science, but who in reality are entirely destitute of the necessary qualifications, it would only be kind to them, for the sake of themselves and others, to discourage their aspirations in this direction, and to try to make them understand that the active practice of their profession is their proper sphere. Of course, there are some who are able to do both, and striking instances are familiar to us of men who, while engaged in ordinary practice, have diligently pursued scientific investigations which have led to results of the utmost value, and in some instances to epoch-making discoveries. Of such men Edward Jenner in the past, and Koch in modern times, are conspicuous examples.

The question of "ways and means" has an important bearing in relation to the individual aspect of scientific research. There are some who, like Harvey, are in the fortunate position of having no anxiety on this score, and can follow their inclination in this direction without any necessity or desire for emolument or pecuniary reward. If this is associated with personal aptitude the result is highly satisfactory, and there are names familiar to us of those who, while wealthy and occupying

high social positions, with their pleasant attractions, have elected to devote themselves to, and to live for science, which owes to them an incalculable debt. The possession of independent means is, however, nothing but a calamity in the case of those who are really unfitted for research, as it enables them to indulge their inclination, often to the decided obstruction and disadvantage of the progress of true science. But we must also not forget to honour those who, without any means of their own, are content to live a very simple and frugal life, or even to suffer hardships, their entire pleasure being in scientific research, whether remunerated or not. To such men, of whom Pasteur is a striking example, we owe not a few conspicuous advances in knowledge and practice. Such a state of things is, however, anything but satisfactory, and it is our duty on all occasions to urge the imperative necessity of adequate endowments, whether from public or private sources, which may attract competent scientific workers, and ensure them a livelihood worthy of their position. Only in this way can we fairly hope or expect to provide a steady and reliable supply of men fitted to carry on useful investigations, in relation to the many important questions and problems calling for solution, which the progress of medicine is constantly bringing to the front.

However well-qualified an individual may be by nature for the work of research, the fact must

also be emphasised that adequate education and training are essential before it can be entered upon with any prospect of success, or with the hope of carrying it out to the best advantage. Indeed, even some of those who have no original aptitude for scientific investigation may, by dint of persistent practice and prolonged experience, become experts in this line, and help to contribute in no small degree to the elucidation of important subjects. And, further, it cannot be too strongly impressed upon those who take up research work at the present day that they must be prepared to follow diligently on the lines laid down for them by Harvey himself, as well as by Pasteur, Lister, and other of his followers. They must recognise the imperative need of patience and perseverance, especially avoiding undue haste in coming to unwarranted conclusions on insufficient data; and should ever be guided by an honest and earnest endeavour to "search out diligently the secrets of nature," to strive after truth alone, and to fight against every temptation merely to gain kudos or popularity, to achieve a prominent position or worldly success, or to gratify vulgar ambition.

As bearing upon the personal factor, I must not omit to allude to the fact that scientific research is now-a-days by no means limited to men, but that women are also engaged actively in the work, and have already achieved considerable success.



## PROGRESS IN RELATION TO THE CIRCULATORY SYSTEM.

As immediately relevant to our commemoration of Harvey to-day, and as an appropriate illustration of the practical results of research following upon his great discovery, it would be entirely within my province to discuss in historical sequence the remarkable 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 tempting theme, however, at any length is obviously out of the question within the limited time at my disposal, and I must content myself with a very general summary, leaving the details for future Harveian Orators, or for the Lecturers on the "History of Medicine," who might here find very appropriate material for their discourses.

At the outset 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 utilised, 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 previously or not, and in demonstrating its mode of action and mechanism, and the effects thereby produced ; at the same time proving that the blood moves in a constant stream and in a definite direction, and that there is 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, by means of which apparatus the capillary circulation in the frog's lung and mesentery was first observed by Malpighi, and the continuity of the circulation thus definitely established. Nor did Harvey understand the meaning of the pulmonary circulation, knowing nothing about the mechanism or chemistry of respiration, which were only brought to light at a much later period ; and this constituted a most important advance.

Although described in his time, Harvey would not acknowledge the existence of a distinct absorbent system.

Starting from the standpoint of a knowledge of a complete circulation, as established by Harvey and those who subsequently supplied the links which were wanting in his day, the subject of the progress that has been since made may be conveniently referred to under certain general headings.

#### METHODS OF RESEARCH.

While again emphasising the essential importance of vivisection as a means of investigation in relation to the circulatory system, and our indebtedness to this procedure, I do not for a moment wish to overestimate its value, and I would take this opportunity of respectfully suggesting to physiologists, pathologists, and pharmacologists, who practise experiments on living animals, that such experiments do not cover the whole ground, but that there are other methods of research to which we owe a vast amount of our modern knowledge regarding this system, and that they should strictly recognise the limitations of vivisection. Moreover, they are bound to exercise scrupulous care not to perform any experiments on animals that are not really necessary, or that could give just offence to those who are conscientiously opposed to the practice.

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1. The more general and systematic study and teaching of anatomy, human and comparative, has naturally added materially to our knowledge of the circulatory system, aided by careful dissections and coloured injections of vessels, which the development of the microscope has enabled observers to trace, even to their minutest terminations. In this way much has been revealed with regard to anatomical details, especially in relation to the circulation in particular organs and structures. Of course, to the microscope we are also entirely indebted for our knowledge of the normal histology of the heart and vessels, as well as of the formed blood-elements; and of important points connected with the circulation of the blood in the vessels. It may further be noted, that the application of many advances in physics and chemistry to the study of the circulation and the blood, has contributed in large measure to the establishment of numerous physiological facts of essential value, with which we are now quite familiar.

2. Observations and investigations directed to the heart and vessels, on simple and harmless lines, to which no one could possibly object, have contributed in no small degree to the progress of knowledge with regard to these structures, as well as to the circulation of the blood, both from a physiological and clinical point of view. Thus the mere study of the cardiac movements and arterial pulse, under

various conditions, by the unaided senses of sight and touch, has taught us a vast deal. Percussion has been of use within its own limits. Obviously auscultation has revealed what could not otherwise have been ascertained or demonstrated. Harvey appears to have been acquainted with the practice of "direct auscultation"; but the invention of the stethoscope by Laennec, and the publication of his first memoir on "mediate auscultation" in 1818, gave a marked impetus to the examination of the heart by this method; and I need scarcely remind you of the advances which subsequently took place as regards the recognition and interpretation of the phenomena associated with the action of this organ, both in health and disease. Although there are some points which are still matter of controversy, it may be affirmed that our knowledge of these phenomena is now, speaking generally, established on a firm basis. Auscultation has also been of conspicuous service in relation to the arteries and veins. The introduction of the phonendoscope is regarded by some as an advance in the study of cardiac auscultation, but its claims have not been generally accepted, and in my opinion have certainly been exaggerated.

3. The cardio-vascular system naturally lends itself to the invention and employment of various kinds of special instruments and apparatus, either for the purpose of demonstrating or recording more definitely

and precisely the movements of the heart and arteries ; or for studying certain details as regards the circulation of the blood, the size of the arteries, arterial tension and blood-pressure, venous pressure and pulsation, or other particular phenomena. It will be well within the recollection of many now present when the sphygmograph and cardiograph were introduced, and previous Harveian Orators have waxed eloquent over the wonderful revelations which were to be anticipated from the sphygmograph more especially, and the practical advantages which were to be derived from its use. No doubt it has given us valuable information on certain points, but whether the anticipations regarding this apparatus have been adequately fulfilled may be a matter of opinion. The numerous other instruments which have been brought under our notice for the study of the circulatory system I will not on the present occasion even venture to name, and cannot do better than refer you to the lectures and published writings of Dr. George Oliver, who has dealt with the subject on comprehensive and practical lines, and has by his personal investigations contributed materially to our physiological, clinical, and therapeutic knowledge concerning this system.

4. The medical profession is, as a matter of course, more immediately interested in and concerned with the morbid conditions which affect the circulatory

system. And from this point of view, while duly appreciating the results of scientific researches, the fact cannot be too strongly insisted upon at the present day that, after all, the great bulk of our knowledge respecting these conditions, as well as our ability to deal with them on sound and rational principles, has been derived from the ordinary methods of investigation, which are more or less within the reach and scope of every practitioner. These methods include intelligent inquiries bearing upon the ætiology and pathology of the various affections; the routine performance of *post-mortem* examinations in hospitals, and the systematic study and teaching of morbid anatomy and histology; clinical investigations and observations on living subjects, on an extensive scale, not only in hospitals but also in general practice; and the methodical and careful study of the effects on individuals of therapeutic agents and measures, both in health and disease. It is only within comparatively modern times that investigation on these lines has been properly developed and established, and the greater part of our positive and reliable knowledge of affections of the circulatory system has been thus acquired during the nineteenth century, especially during its latter half. Of course, the study of morbid histology as now carried out is quite of recent date, and it has undergone remarkable development within the memory of most now

present. I will only add further that clinical and pathological research are as much needed to-day as ever.

5. The blood, which is not only an essential part of the circulating system, but also of extreme importance in itself, and in relation to various pathological processes, has come within modern times into conspicuous prominence, and the investigations which have been carried out in connection therewith—both physiological and pathological—have revealed what may be truly described as a new world, transcending immeasurably anything which Harvey could have possibly imagined. Such investigations have of course necessitated the employment of particular methods of examination—physical, chemical, microscopical, with and without staining, and the use of special instruments and apparatus. The revelations of bacteriology may also be noted in this connection.

6. The Röntgen rays have been applied to the investigation of the heart and larger vessels, and their movements in health; and to the observation of morbid conditions of these structures, and of the pericardium. Without commenting on the application of this method for such purposes, it may be acknowledged that it has already proved useful within certain limits in adding to our knowledge on these points, and further information of importance may be reasonably anticipated from more prolonged and multiplied experience.



## MORBID CONDITIONS OF CIRCULATORY SYSTEM.

As the outcome of certain of the methods of research just outlined, remarkable advances have been made as regards our knowledge of the nature, ætiology, and pathology of morbid conditions of the circulatory system, using the term in a comprehensive sense, and of their relation to other organs and systems. In illustration of this statement the following brief summary may be given.

I. Although no doubt some of the more gross lesions affecting the heart and pericardium have been known for a long period, and were probably described by Harvey, considerable progress has been made in this direction even within recent times. We are now quite familiar with the ordinary diseases of these structures, as well as with their chief combinations, and their mutual secondary relations and effects. Most pathological museums exhibit nowadays a fairly complete range of specimens exemplifying these affections, where they can be studied with advantage. As regards the heart, morbid conditions of the valves and orifices, and enlargements of the organ, occupy a conspicuous prominence; but it must be remembered that these are not the only changes to be borne in mind. A marked advance has been made of late years as regards our knowledge of the varieties of acute endocarditis, and how far they are set up by different infective agents, including amongst

them the organisms which are now generally recognised as being associated with the rheumatic state.

In his Harveian Oration in 1898, Sir Dyce Duckworth makes the interesting statement that Matthew Baillie learned from Dr. David Pitcairn, of St. Bartholomew's Hospital, that rheumatism was frequently the cause of disease of the heart, a fact that had not been previously recognised. Another important class of lesions which have come into prominence in modern times are those affecting the myocardium, both acute and chronic, chiefly of an inflammatory and degenerative nature. The acute changes in the cardiac walls are a source of serious danger under various circumstances—as in connection with high fever, pneumonia, diphtheria, typhoid fever, and septicæmia—and their causative relation to infective organisms or toxins is also a matter of much interest and significance, which is still being worked out.

2. One of the most striking advances made in modern times in relation to the circulatory system is in the knowledge which has been gained of the structural changes which affect the blood-vessels, especially the arteries and arterioles, and of the causes by which they are produced. Several distinct morbid changes have now been clearly differentiated, although their ultimate effects may be very similar. Adequate recognition of arterio-sclerosis and other vascular organic changes is the key to the understanding of numerous symptoms and ailments; while they account

for important secondary lesions and morbid processes. Their significance in relation to the central nervous system from these points of view calls for special notice. Aneurysm is of course an arterial disease which has long been known ; and although as a rule it belongs to the domain of the surgeon, it must be remembered that when an aneurysm occurs in one of the internal cavities of the body, it comes within the scope of the physician. The recognition of the more minute aneurysms which give rise not infrequently to cerebral hæmorrhage, as well as those within phthisical cavities, which by their rupture cause serious or fatal hæmoptysis, is of comparatively recent date. Amongst the causes which modern investigations have shown to affect the arteries may be specially mentioned certain acute febrile diseases, the effects of which may become revealed later on ; and syphilis, both acquired and congenital, the injurious results of which upon the vessels are but too well-known. In this connection may also be noted the advance in knowledge with regard to the mutual secondary effects of diseases of the heart and vessels upon each other.

3. The so-called "functional disorders" of the circulatory system, sensory and motor, constitute another most important group of affections, which no doubt are now much more frequent than formerly, or at any rate have assumed a conspicuous prominence at the present day, mainly as the outcome of the altered

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conditions of human existence, changes in mode of living and habits, mental disturbances, and other factors which the progressive development of so-called civilisation has brought in its train. Such disorders are not only met with independently, but not uncommonly supervene, either temporarily or permanently, in cases of organic disease, thus adding, it may be seriously, to their difficulties and dangers. While painful and other abnormal sensations in connection with the heart, even the complaint known as "angina pectoris," as well as disturbances of the cardiac action, have long been recognised in a general way, it is only within a comparatively recent period that these conditions were at all studied on methodical and scientific lines. Obviously, no rational conception or explanation of the functional disorders of the heart was possible prior to the knowledge of the muscular nature of its walls, and of its innervation and nervous relations, which were not discovered until well on in the last century, and only worked out practically during its latter half. During recent years the subject has attracted special attention on the part of numerous observers, and many important facts have been, and are still being brought to light. These are founded upon a more precise and accurate knowledge of the structure and mode of action of the heart; of the nervous apparatus associated with the organ, its functions, connections with other nerves, and relation to the

central nervous system ; and of the reflex or other factors which are liable to excite cardiac sensory or motor disturbances.

At the present time the so-called "myogenic" doctrine is generally accepted in relation to the heart, namely, that the cardiac movements are automatic, and due to an inherent power of contraction belonging to its muscular fibres. Gaskell sums up the functions of these fibres as rhythmicity, excitability, contractility, conductivity, and tonicity. These inherent functions enable the heart to beat and keep up the circulation without any nervous assistance. Gaskell's investigations demonstrated, however, that some of these functions are more highly developed in certain portions of the heart than in others, and that each part has a special rhythm of its own, due to a morphological difference in structure, according as the muscular fibres approach to ordinary striated muscle in appearance, or are actually striated, or of a more or less embryonic character.

According to the view just indicated, the heart does not possess any motor nerves in the ordinary sense of the term, the vagus and sympathetic merely controlling and modifying the cardiac action as regards rapidity, force, rhythm, or in other respects. Their connection with the spinal nerves explains the superficial phenomena associated with angina pectoris.

As regards the functional disorders of the arterial system, they depend upon the existence of a muscular coat in the walls of these vessels, which was known to Harvey, and of a vaso-motor nerve apparatus, the discovery of which was of comparatively modern date. We are all now-a-days familiar with the expressions arterial tone, arterial tension, and blood-pressure, which undoubtedly have an important pathological and clinical bearing. Vaso-motor disturbances explain a variety of symptomatic phenomena ; and are believed by many to account for certain more definite affections, such as Raynaud's disease, angeio-neurotic œdema, and erythromelalgia ; while they are the foundation of attractive hypotheses to explain numerous other complaints.

4. Every student of medicine is familiar now-a-days with the conditions known as thrombosis and embolism, and their effects, immediate and remote, occupy a conspicuous place in the pathology of the circulatory system. No doubt the fact that clotting of blood may take place in the heart and vessels during life has been recognised for a long period, but it is only comparatively recently that thrombosis has been practically studied in its various relationships. Although the conception of embolism can also be traced back to the seventeenth and eighteenth centuries, if not earlier, and a few observations and experiments had been made before his time, it is to the renowned and ever venerated pathologist—

Virchow—that we owe the definite establishment of this doctrine, between the years 1846 and 1856, with the demonstration of the origin and nature of infarcts, founded upon the basis of anatomical, experimental, and clinical investigations, which have been well described as a model of scientific research in medicine. His discoveries revolutionised many traditional ideas current at the time, and introduced a new era in pathology, the development of which I can well remember when a student. The field opened up by Virchow attracted numerous workers, amongst them our distinguished Fellow, Kirkes, and many valuable additions have since been made to our knowledge of the subject of embolism, but mainly relating to details.

5. The relation of the circulatory system to other systems and organs is now universally recognised, at any rate in theory, as being of great pathological and clinical significance, which is a marked step in advance. The intimate connection between the heart and lungs is obvious enough. The mutual relations between the nervous and circulatory systems are also well-known, both as regards structural changes and functional disorders. The secondary effects of any cardiac disease which causes persistent interference with the general venous circulation, upon various organs and structures, are of the utmost importance. One of the most conspicuous and striking examples of modern progress which deserves mention

in this connection is in our knowledge of the effects which organic diseases of the kidneys and those of the heart and vessels produce upon each other, and most valuable work in this direction is associated with the names of Bright, Sibson, Dickinson, and other distinguished Fellows of this College. In relation to functional disorders of the heart the alimentary canal is a conspicuous factor, and, under certain circumstances, gastric disorders more especially may prove very grave from this point of view. What exact effects the several so-called "internal secretions" have upon the heart and vessels is not definitely settled, but the investigations carried on during recent years have shown that in some cases, at any rate, they are quite definite, and of much interest and importance, and further developments may be confidently anticipated in this direction.

6. The mere mention of the blood calls up an extensive field of pathology which is essentially the outcome of modern discovery, and which could never have been revealed were it not for the help of special methods of investigation and observation, which have now reached such a remarkable degree of perfection and accuracy. Indeed, it may be affirmed that the progressive development of our knowledge concerning the physiology and pathology of the blood, is one of the most striking and conspicuous examples of the advances made in relation to the circulatory system during recent



years. I dare not on the present occasion venture even to touch the fringe of this vast and fascinating subject, and will only refer you for information on certain points to the valuable lectures which have been delivered in this College quite lately.

7. I will only further allude in this connection to the important bearing which the blood and vascular system have been found to exercise upon certain pathological processes hitherto but little understood; and the remarkable progress made in our knowledge regarding morbid conditions of the absorbent system, which is so intimately connected with the circulation.

#### CLINICAL INVESTIGATION.

Another interesting study in relation to the circulatory system is the progressive development of clinical investigation, culminating in the modern more strictly scientific methods which are now-a-days so much in vogue. While offering a few general observations on this aspect of my subject, I cannot refrain from personal criticisms of certain tendencies which are apparent at the present time. That immense advances have been made since the time of Harvey goes without saying, and it may be affirmed that the means which are now at our command should enable any well-trained and intelligent practitioner to recognise and diagnose, as a rule with sufficient accuracy, the morbid conditions of the circulatory system which may come under

his clinical observation, provided he takes the trouble to carry out adequate systematic investigation in each individual case. On the other hand the fact must not be ignored that there are certain changes affecting the heart or vessels, which it may be very difficult or even impossible to make out definitely during life, and hence we must still be prepared to meet with cases of sudden death from cardiac failure, or fatal secondary vascular lesions, the nature and cause of which can only be revealed by *post mortem* examination, even if then.

1. One obvious and striking advance which has been made is in the recognition, and more methodical observation and practical study, of symptoms associated with diseases of the heart and vessels. No doubt time was when the relationship of the more important of these phenomena to the circulatory system was not in the least appreciated or understood, and only by degrees, as physiological and pathological knowledge became developed and established on the basis of scientific investigation and practical observation, was the connection worked out and verified. It cannot be too strongly enforced that the comprehensive and intelligent study of symptoms which happen to be present in any case of cardiac disease, whether immediately associated with the heart, or due to the remote or secondary effects of the existing morbid conditions, is still of essential importance from different aspects. On the

other hand, it must always be borne in mind that symptoms are frequently either entirely absent or of no definite significance, even in cases of grave organic diseases of the cardio-vascular system; while local sensations are often referred to the region of the heart, or disturbances of its action complained of, which are really of little or no consequence. Therefore it is necessary to guard against placing too much reliance on these phenomena from a diagnostic point of view.

2. The systematic examination of the heart and pericardium, as well as of the great vessels, by the ordinary physical methods—inspection, palpation, percussion, and auscultation—has been progressively worked up to its present position, and is now established on a comprehensive and practical basis. It is on the intelligent application of these methods, separately or in combination, that the diagnosis of morbid conditions of these structures must be mainly founded; and as a rule they are fully adequate for the purpose, if properly carried out. It would be quite out of place to attempt to discuss this aspect of my subject at any length, but there are a few points to which I should like to refer. The comprehensive and detailed investigation of the cardiac impulse and movements is of the utmost importance in a large number of cases, but I doubt whether this part of the examination receives even now, as a matter of routine, the attention it deserves. For this purpose inspection and palpation are obviously essential; as

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well as for studying arterial pulsation and certain other vascular phenomena. Special tactile signs appreciated by palpation, associated with the heart or vessels, are also of much diagnostic value. The introduction of percussion, and its application to the study of præcordial dulness, as well as of that due to aneurysm in internal cavities, was a distinct clinical gain, and this method often gives decided help in diagnosis. Personally, however, I venture to differ from some eminent authorities in their estimate of the reliance to be placed on percussion-signs in relation to enlargement of the heart, even with the aid of special plessors and pleximeters, and at any rate it is always well to be on guard against possible sources of error. Since the invention of the stethoscope, auscultation has, for obvious reasons, come more and more to the front, and is now generally and rightly regarded as *par excellence* the method of physical examination most adapted for the circulatory system. Indeed, in a large number of cases it is the only means by which a positive diagnosis can be arrived at. Let it never be forgotten, however, in relation to the heart, that auscultation is not merely of use for the detection of "cardiac murmurs," or pericardial friction, a mistake by no means uncommonly made, but that the ordinary sounds should also be borne in mind and carefully studied. It may, further, be of decided help in appreciating the rhythmic action of the heart, and

certain characters of the impulse ; as well as in studying abnormal arterial pulsation. As already mentioned, there seems to be no doubt that Harvey was acquainted with, and probably practised, direct auscultation in the examination of this organ. I take advantage of this fact to emphasise the essential help in diagnosis afforded by this simple method, without the aid of any instrument or apparatus, under a variety of circumstances, when applied to the heart and large arteries. It may be noted in passing that auscultatory-percussion has been advocated as a help to determine the size of the heart. The phonendoscope is a comparatively modern instrument which has been much vaunted for the examination of this organ, but certainly discretion should be exercised in its employment, else serious errors may arise from mere exaggeration of sounds. Another application of this apparatus, with the aid of a small brush, has been introduced for the purpose of marking out the exact dimensions of the heart and thus determining its functional capacity, but I have no personal knowledge of the practical results of this procedure. How far the more modern special methods or instruments for demonstrating or recording the cardiac movements, especially the cardiograph, may be clinically helpful in particular cases must be left to individual judgment, but their application in the ordinary run of practice can only be decidedly limited.

3. To "feel the pulse" at the wrist has from time immemorial been a routine practice in the examination of a patient. What was to be learnt from the procedure must, however, to say the least, have been but very imperfectly understood in the past. Conspicuous progress has been made in the methodical study of the phenomena which examination of the arteries reveals, and of the conditions which they severally indicate, both as regards the circulation and the changes affecting the walls of these vessels. In an ordinary way these phenomena can be observed and appreciated by careful inspection, and the application of the fingers over the artery under investigation, usually the radial. Now-a-days, however, there is a manifest tendency in many quarters to advocate the routine employment for clinical purposes of certain of the scientific instruments and apparatus already referred to, and claims have been made as to their essential need for diagnosis, which personally I cannot admit. Of course, the sphygmograph gives valuable information not uncommonly, especially as regards certain details, and it is particularly useful when a permanent record is required. When, however, it is affirmed by eminent authorities, for whose opinion I have the highest respect, that no reliance can be placed on merely feeling the pulse for appreciating and estimating arterial tension and blood-pressure, and that some special apparatus for the purpose, of which several have been invented,

should always be employed, I feel bound to offer a protest. While there can be no objection whatever against any one who finds a difficulty in this respect availing himself of such scientific aids, and while they are useful for recording purposes, I maintain that these conditions can, as a rule, be adequately realised and studied by the fingers, provided that they are applied and utilised in the proper way, and that the tactile sense has been properly educated and trained. In one of the previous Harveian Orations the *tactus eruditus* was referred to somewhat in terms of ridicule, but I hope we still have some faith in it. It must be borne in mind that the average medical student has to be prepared for the ordinary duties of general practice, and it may be confidently affirmed that, even if he were acquainted with their uses, circumstances would prevent him from employing scientific appliances for investigating the pulse on any large scale. Therefore, I submit that it would be an evil day for our profession, if those who are being trained for its active work were led to believe that the senses with which nature has endowed them can be of little or no service, and therefore not worth educating, and that they are bound of necessity to avail themselves of such artificial aids to diagnosis.

It must not be forgotten that other arteries besides the radial may call for examination, not only in themselves, but also in relation to cardiac diseases.

Aneurysm, of course, has its own special signs, wherever it may happen to be situated. The brachial artery at the bend of the elbow is very convenient for studying the general condition of the arterial system, which is also frequently revealed by the temporal arteries. The observation of the venous pulse, especially in the jugular veins of the neck, is now a well-recognised part of the clinical investigation of the circulatory system, and needs only a passing mention. For studying the movements of the heart, as regards the relation of the auricular and ventricular systole, Dr. James Mackenzie employs an apparatus connected with a sphygmograph, by means of which simultaneous tracings of the radial and jugular pulses are taken. It must not be forgotten that auscultation reveals in certain conditions important signs in connection with arteries and veins, quite apart from aneurysm.

4. The use of the Röntgen rays, or Radiography, in relation to the heart and vessels, has already been referred to, and it will suffice to note here that this modern method of investigation is now definitely recognised clinically, and may be of real service in the positive diagnosis of certain cardiac and pericardial diseases, as well as of aneurysm. It may also be useful in demonstrating more definitely and accurately the actual morbid conditions present. Its results are up to the present not always reliable, however; and radiography is by no means so in-



variably helpful in difficult or obscure cases as we might reasonably expect, but much may be hoped from further experience.

5. The systematic clinical investigation of the blood on scientific lines is essentially modern, and is still making steady progress. It is not only of incalculable service in recognising changes in the blood itself, but also in the diagnosis of important diseases or conditions of a general or local nature, in which the blood is involved. For this purpose not only is the microscope in constant demand, with or without the help of different staining processes, but special instruments or apparatus are called into requisition for various objects, some of which are well within the scope of the ordinary practitioner; but others require the aid of an expert in this branch of pathological science. Chemical testing and the spectroscope are also sometimes of service. With this extensive subject I do not propose to deal further at present.

#### TREATMENT.

As a practitioner Harvey does not seem to have been held in high esteem by his contemporaries, if Aubrey is to be believed, for he writes: "Though all of his profession would allow him to be an excellent anatomist, I never heard of any that admired his therapeutic ways. I knew several practitioners that would not have given threepence for one of his bills." Harvey recognised the value of

blood-letting, affirming that daily experience satisfies us that it has a most salutary influence in many diseases, and is indeed the foremost among the more general remedial measures. He also employed cupping and dry-cupping. Further, Harvey was aware of the effects of agents applied endermically and afterwards absorbed ; and was in the habit of employing cold water affusions and applications in treatment. The first immediate result claimed for Harvey's discovery of the circulation is the invention of the tourniquet half a century later ; and the second John Hunter's operation for the cure of aneurysm, by tying the artery between the sac and the heart. I have also seen it stated that this discovery led to the revival or adoption of the practice of transfusion, but on this point there is much uncertainty.

Without attempting to trace the progress of knowledge in relation to the therapeutics of the circulatory system since Harvey's time, I propose now to offer a brief summary of the principles and methods which govern modern treatment directed to this system, as exemplifying the more conspicuous and prominent lines upon which advances have been made. It may be confidently affirmed, in passing, that we have at the present day a fairly definite idea as to what effects can be produced upon the heart and vessels, and upon the circulation, from a physiological and therapeutic point of view, as well as a reliable knowledge of a considerable number

of agents and measures by which these effects can be produced. While giving due weight to the value of drugs, it cannot be too strongly enforced in relation to the circulatory system, perhaps more than any other, that we have several recognised non-medicinal methods of treatment at our command, which may be of conspicuous service in numerous cases. Moreover, it must always be borne in mind that, by the rational and efficient employment of these therapeutic measures, we are not only able to deal with organic diseases and functional disorders of the circulatory system itself and their effects ; but can by their aid exert a marked influence upon certain pathological processes and conditions, general or local ; and also guide patients through grave illnesses of different kinds to a favourable termination ; or even immediately save life in urgent cases, under a variety of circumstances.

1. Remarkable and striking progress has been made within the recollection of most of us now present in the definite knowledge acquired as to the effects of medicinal agents upon the heart and vessels ; and many new and valuable drugs have been and are still being added to the list. By their intelligent and rational use in treatment excellent results can be obtained, and now-a-days it may be truly said that the stigma that we are in the habit of "introducing drugs of which we know but little into a body of which we know less," certainly does not at any rate

apply in this direction. This aspect of the subject must be familiar to all medical practitioners, and it would be quite out of place for me to enter into any details regarding cardio-vascular medicinal agents on the present occasion. I desire, however, to draw special attention to the excellent and reliable preparations of the active principles of certain important drugs which are now made by high-class scientific pharmacists, to whom we as a profession owe a deep debt of gratitude for providing us with such essential aids in treatment. And in relation to this point more particularly, it is impossible to estimate in any adequate degree the invaluable assistance afforded by the hypodermic or intravenous method of administration of remedies when dealing with the circulatory system, without which all our efforts would be absolutely futile in a considerable number of cases which we are now able to treat, often most efficiently, in this way. Nor must I omit to notice how essential the method of inhalation is in the employment of certain therapeutic agents which have a powerful effect upon this system, such as amyl nitrite, chloroform, ether, or oxygen.

Although they scarcely come within the category of medicinal remedies proper, it will be convenient to allude in the present connection to the remarkable modern discoveries as to the effects which can be produced upon the heart, arteries, or both, and upon the blood pressure, by the administration of pre-

parations of certain organs or their active principles, either internally or hypodermically, or even by their local use. Whether these results can be explained by the doctrine of "internal secretions" or in some other way, there can be no doubt as to their reality, and agents of this nature are now definitely available for therapeutic purposes. It will suffice to mention supra-renal extract and adrenalin as prominent examples, which, as you are aware, are now so extensively used in medical and surgical practice.

Taking a glance into the future, it appears to me that there is no necessary or obvious limit to the discovery of additional therapeutic agents, which may be advantageously employed for their direct effects upon the heart or vessels, whether derived from the inorganic, the vegetable, or the animal kingdom, or prepared in the chemical laboratory. Further researches in this direction are deserving of every possible encouragement, as being likely to lead to most valuable results, if carried out systematically and judiciously.

2. Among the most popular, or I might say even fashionable methods of treatment employed in relation to the circulatory system at the present day, are those which may be described as physical, balneological, or a combination of both. They chiefly include massage, either general, or local over the præcordial region; graduated and progressive walking exercise, as practised in the "mountain-cure"; carefully conducted gymnastic exercises of

a particular kind; and the so-called Nauheim or Schott treatment, which consists in the combined use of certain baths and resistant exercises. The baths and exercises may also be employed separately. That one or other of these methods may be of conspicuous service in suitable cases, both of organic and functional affections of the heart and vessels, cannot for a moment be questioned; but experience has convinced me that they are not uncommonly practised injudiciously, to say the least, and on no intelligible grounds, and I have known them lead to serious consequences. While their employment is guided by certain recognised principles, it must be left to individual discretion and conscientious judgment to determine how far either of them is applicable to any particular case.

3. The learned Harveian Orator last year brought prominently under our notice the great importance of prolonged rest as a therapeutic measure in cases of acute endocarditis. Not only do I cordially endorse his opinion, but I take this opportunity of enforcing and emphasising the essential value of rest, either temporary or permanent, according to circumstances, with attention to posture, in the treatment of many cardiac complaints, both functional and organic. I venture to submit that not uncommonly this method is far preferable to the more active measures just referred to, and I do not think that its beneficial effects are as generally recognised or

appreciated amongst the profession as they deserve to be, while it is often by no means easy to make patients understand its aims and intentions, or submit to the restrictions which it involves. Of course, the principle has to be carried out in different degrees, according to circumstances; but this point I cannot now discuss. Not only does it apply to physical rest, but also to freedom from mental disturbances of all kinds, which are such important factors in a large number of instances. The fashionable modern fad, known as the "rest cure," is certainly as much applicable to cardiac as to any other kind of case, and may be of decided help when carried out rationally and intelligently.

4. The direct withdrawal of blood, whether by venesection or by local methods, especially leeching and cupping, is a measure which has from time immemorial been recognised as having very definite and important effects upon the heart and vessels, the circulation, and the blood, and no doubt it influences more or less certain pathological processes. Speaking personally, I can well remember the time when these methods were practised as a matter of routine in a most absurd and dangerous manner. Then a reaction took place, when they were to all intents and purposes discarded, and fell into disuse. More recently they have again been revived, but on more rational lines, and no doubt they can under certain circumstances be employed

with great advantage. To ignore venesection altogether is a mistake to be decidedly guarded against, though the objects for which it is practised in any particular case should be clearly recognised. Local removal of blood is more frequently applicable, and in my opinion leeching is much preferable to cupping. Notwithstanding the way in which dry-cupping has been depreciated in some quarters, I feel sure of its usefulness, and am convinced that this method is now-a-days often neglected when it might be of real advantage.

5. Whatever may have been the true history of the introduction and subsequent progress of the opposite practice of transfusion of blood from one individual to another, it is only within a comparatively modern period that the operation could have been possibly carried out with any degree of efficiency or safety, guarded by antiseptic precautions, and even now many object to its employment under any circumstances, as being too dangerous. Of course, it can only be called for under very exceptional and grave conditions. The substitution of defibrinated blood and milk for the entire blood did not lead to satisfactory results; but there is one development of this line of treatment which has proved of the utmost practical value, namely the infusion or injection of sterile saline solution (usually a weak solution of chloride of sodium) in considerable quantities. This method is founded



on the fact, first demonstrated by Woolridge, a distinguished Member of this College (whose early death, almost at the threshold of a most promising career, was such an irreparable loss to the medical profession and to science), that, in transfusion, only the increase in the quantity of circulating fluid in the vessels is really essential. As no doubt you are aware, the fluid may be injected into a vein, into the subcutaneous tissue—*hypodermoclysis*, or into the peritoneal cavity; or is administered *per rectum*. In these ways it is introduced, either directly or indirectly, into the vessels. It has been recommended to mix sugar with the solution, and for particular purposes brandy or strychnine may be added. Treatment on these lines is indicated for several purposes, and to the surgeon it has proved invaluable under various circumstances. Personally, I can testify to its potent influence in saving life in grave medical cases, especially after severe hæmorrhages, such as hæmoptysis, hæmatemesis from gastric ulcer, or intestinal hæmorrhage in connection with enteric fever. Indeed, I look upon the practice of infusion of saline fluid as one of the most important additions made to modern therapeutics in relation to the circulatory system.

6. Taking a comprehensive view of the therapeutics of the circulatory system, apart from the more direct methods and principles already indicated, it may be confidently affirmed that considerable practical

advances have been made in several directions bearing upon treatment. Thus we are to-day far better able than formerly to deal with this system on rational lines as regards diet, mode of living, particular habits and indulgences, hygienic conditions and surroundings, atmospheric states, and other well-known general factors, founded upon a more intelligent and definite knowledge of its physiology, as well as of the ætiology and pathology of its morbid conditions. The effects produced on the heart and vessels by causes originating in the central nervous system, or by reflex influence from various sources, are also more clearly recognised and understood ; as well as the pathological relations of these structures to certain constitutional states or particular diseases. All such knowledge may not only be often utilised and applied with conspicuous advantage in active treatment ; but is of still greater importance from a preventive point of view, if duly appreciated. Again, as is well known, several groups of therapeutic agents affect the heart and circulation indirectly, and are now utilised in treatment on more judicious and rational lines than formerly, such as purgatives, diuretics, diaphoretics, general tonics, alteratives, especially iodide of potassium, and remedies acting upon the central nervous system, or influencing the digestive functions.

Various well-known local measures or applications are often of conspicuous service in relation to the

heart and vessels, when properly employed, and at the present time we understand more definitely the effects they produce, and their real uses in treatment. The application of cold over the præcordial region, by means of the ice-bag, has come into special prominence of late in dealing with acute pericarditis; and this method also exerts an important influence on the cardiac action, as well as upon aneurysm in certain cases. The treatment of symptoms associated with the heart and circulation, immediate or remote, as well as of the secondary morbid conditions resulting from cardiac and vascular diseases, has made considerable progress, and is now conducted on well-defined principles, though serious difficulties are still often met with in our attempts to deal with them.

7. The more direct therapeutics of the blood is a subject of extreme interest and importance, which has developed considerably in modern times. The chief object usually to be aimed at is to improve its quality and corpuscular richness in various anæmic conditions, and especially to increase the red corpuscles and hæmoglobin. For this purpose, not only are new forms and combinations of iron employed with much advantage, but other remedies have been found of essential value, notably arsenic. How far the administration of such agents as bone-marrow, dried blood, or certain of its constituents, are of real service is a matter of doubt, and at any

rate we should not hastily accept the favourable reports of interested persons on insufficient data. Of course the beneficial effects upon the blood of good food, fresh air, sunlight, proper exercise, healthy hygienic surroundings, and other general measures must always be duly appreciated. It is practicable to modify the reaction of the blood-serum, and especially to increase its alkalinity for certain purposes. Possibly also its coagulability can be influenced.

Although not directly bearing on the therapeutics of the blood, reference may be made here to two modern methods in which this fluid is utilised. The first is the employment of antitoxic sera, a plan of treatment which, though still in its comparative infancy, has, it seems to me, been already established on a firm basis, both for preventive and active purposes, and from which we may anticipate far more valuable results in the future. Another use of the blood which has come into prominence is to make it a channel for the introduction into the system, by injection into the veins, of particular agents, antiseptic or of other kinds, which circulate throughout the body, and are supposed to have a specific effect upon certain general morbid conditions or processes, or are conveyed to local foci of disease, upon which they are said to produce a beneficial action. While this method of procedure is quite legitimate and not irrational, and may ultimately prove an important aid in treatment, it is one which

it seems to me should for the present be regarded by this College, as representing the profession, with some degree of reserve, and we must hesitate to accept the statements made as to its beneficial effects until these have been far more widely and positively demonstrated and substantiated than is the case at present.

8. It may seem somewhat out of place to introduce into the Harveian Oration before the College of Physicians the subject of surgical or operative treatment in relation to the circulatory system, but I cannot pass it by altogether, as it affords a prominent illustration of the progress that has been made in modern times. I need scarcely remind you that the surgeon now-a-days is ubiquitous, and is making inroads into medical practice in every direction, so that before long it appears as if the physician must become entirely superfluous. Passing by ligature of arteries for essentially surgical purposes, which is an ancient practice, I will only refer to a few of the more modern developments of operative procedure, in cases which may be regarded as coming more or less within the scope of ordinary practice. The direct treatment of internal aneurysms by different surgical methods may be mentioned as belonging to ~~this~~ category. The removal of varicose veins, often on an extensive scale, is an operation of comparatively modern date, which has been attended with conspicuous success. I have known life undoubtedly saved in a grave case of a suppurating venous

thrombus, by opening the vessel and clearing out the contents under strict antiseptic precautions. The application of surgical measures, simple or more or less elaborate, to accumulations of fluid in the pericardial sac, is now a well-recognised mode of practice, which has proved of great value. With regard to the heart itself, wounds of that organ have been successfully treated by suture; but this cannot happen in cases of rupture from disease. I have seen the suggestion made that in these days of marvellous accomplishments it may be possible, when there is disease of a cardiac orifice or its valves, to dilate an obstruction or provide substitutes for the damaged valves. It is not easy to imagine, however, that even the most daring and advanced surgeon can restore a heart thus broken down in its valvular mechanism.

#### PRACTICAL ACHIEVEMENTS AND LIMITATIONS.

It is a trite and familiar saying that truth must be sought after and esteemed for its own sake, and altogether apart from any practical benefits which it may be expected to confer. Indeed, Harvey himself insists upon the value of physiological truths, independently of their immediate utility. This is all very well in the abstract, and as a pious sentiment, with which, within due limits, no doubt we are all inclined to agree, but it certainly does not fall in with the utilitarian spirit and

tendency of the present age. The laity are by no means satisfied, and I see no reason why they should be, unless the progressive scientific or other modern discoveries and developments bearing upon clinical investigation and diagnosis, the prevention or cure of disease, the relief of suffering, and the promotion of sound health, are efficiently applied and utilised, not only with regard to individuals, but also for the advantage of the community at large. And surely they have not been disappointed, but ought to appreciate highly and feel profoundly thankful for, what has already been achieved, as well as full of hopeful anticipation for the future. The mere mention of such familiar words and expressions as anæsthetics, antiseptic treatment, the prevention and cure of tuberculosis, vaccines and antitoxins, organo-therapy, electricity in diagnosis and treatment, the Röntgen rays and radiography, light and colour treatment, must call up in the mind of any fair and unprejudiced person of average intelligence, beneficial achievements which can only be fitly described as marvellous, and which are the outcome of a remarkable series of scientific researches, utilised by the medical profession.

As a striking illustration of progress in a direction very closely connected with the circulatory system, special attention may be drawn to the "brilliant victories," as they are justly called, which have been won in various countries and regions, many

of them forming an integral part of this vast Empire, against malaria, not to mention other tropical diseases, with the details of which you are all, of course, fully conversant. And in this College and on this occasion surely we must not forget those to whose splendid investigations and devoted labours, often under circumstances involving severe trials and great personal danger, leading in some instances to sacrifice of life or health, we are indebted for these achievements. Some have even submitted to experiments on themselves, at the immediate risk of their lives, and in more than one instance with a fatal result. Truly these men deserve the highest honours that can be conferred upon them, especially as not uncommonly their object is to a great extent, if not wholly, philanthropic, and they are guided and urged on by the true missionary spirit. It has been well said that "scientific research and philanthropic enterprise go hand in hand." I cannot now do full justice to the latest "martyr to science" as he has been aptly called—Dr. Dutton—whose lamented death occurred recently while studying sleeping sickness on the Congo, where he had been sent by the Liverpool School of Tropical Medicine, but I feel sure you would wish me to express on behalf of this College our deep sense of the great services he has rendered to the medical profession and to humanity, our profound regret at the premature cutting-off of such a valuable life, with its promising



career, and our heartfelt sympathy with his bereaved family and friends.

Bearing in mind the advances made in more immediate relation to the circulatory system with which I have already dealt in some detail, I think that here also we may claim the gratitude and confidence of those with whom we have to deal in practice. I again affirm that by the intelligent and rational use of the means now at our command, we not only can make a definite and adequate diagnosis in all but exceptional cases; but are further able to perform what may fairly be expected of us in the way of treatment of diseases and disorders of this system and their effects; indeed, I may say, to achieve results which were formerly inconceivable, though we must not pretend to perform impossibilities.

While thus fully appreciating the practical advances which have been made, it behoves us in these "go-a-head" times, as a profession, to exercise some degree of caution and discretion as to what we say and do. We are living in an age when the most extravagant and absurd expectations and hopes are entertained with regard to the present and the future; and when any kind of treatment, however outrageous it may be, that promises results which are really unattainable is eagerly sought after and believed in, audacious quackery being rampant and triumphant. Quite recently I have been asked by

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intelligent and generally well-informed persons, "Why does not your profession eradicate plague, malaria, yellow-fever, and every kind of infectious and epidemic disease?" They do not seem to have the faintest conception of the difficulties, indeed I might say the impossibilities, of the task in many cases, considering the circumstances and conditions of human existence under which they prevail. I am sorry to read sometimes the utterances of members of our profession positively affirming that the day will come when such and such a disease will be swept off the face of the earth. Against such irrational and wild statements I feel bound personally humbly to protest, as I have done on previous occasions, being convinced that they work serious mischief in a variety of ways; and in my opinion we cannot be too careful as to what we promise or predict in this direction. Again referring to the circulatory system, it is extraordinary how the laity seem to be absolutely unable to understand in the slightest degree this system as a complex and highly organised mechanical structure; how they expect us, for example, to cure every kind of physical disease of the heart, however grave or complicated; or, at least, to enable them to go on living, with the aid of drugs or other methods of treatment, under all sorts of conditions; while they themselves must be allowed to do what they please, as regards social life, sports, games, and the like, to pursue

unchecked their selfish desires and inclinations, and to ignore every law of health. I fear too that in our own profession there is a tendency sometimes to take up any vaunted new treatment or remedy, without due consideration or investigation, and to employ powerful and dangerous drugs which act upon the cardio-vascular system, as well as methods of treatment of a special kind, in a somewhat casual way, and without adequate regard to the actual conditions with which they have to deal, or to the individual whom they have to treat. In this way immediately serious consequences may ensue; or habits are established which ultimately lead to more or less disastrous results. I have been impelled to offer these remarks on the present occasion by a strong feeling that it is by no means the least important function of the Fellows and Members of this College, collectively and individually, to do their utmost to influence and guide modern therapeutics on rational and honourable lines; to refuse to give the least countenance to any vaunted remedy or method of treatment obviously savouring of charlatanism or quackery; and to exercise the greatest caution in accepting the alleged favourable results of any therapeutic measure, however scientific it may be, founded on inadequate or premature data, and unless they are supported and established by unimpeachable authority, after adequate inquiry and experience on the part of those who are competent to judge.

## THIRD INJUNCTION—MUTUAL LOVE AND AFFECTION.

The last and a 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 parvæ crescunt, discordia magnæ 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 a manifestation and example of simple and unassuming dignity, true courtesy and politeness, unselfishness, geniality and kindness of heart, and Christian grace and charity. Whatever may have been the state of things in days gone by, and they do not appear to have been invariably characterised by smoothness or harmony, 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. Moreover, our relations with our working ally, the College of Surgeons, are thoroughly amicable and sympathetic. Thus the

dignity of the College is fully maintained, and an increasing and much-needed influence for good is being exerted upon the medical profession generally, as well as in various 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 work, and whose achievements have already brought them into conspicuous prominence—in not a few cases, indeed, into the foremost ranks of our profession. May we not confidently hope that they will also ever keep in mind Harvey's last exhortation, each individual doing his utmost to encourage and promote mutual goodwill and affection, while at the same time unflinchingly striving to maintain the high standard of character and conduct which he has set before them. But should they at any time feel the need of an example, a stimulus, or an inspiration, 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 on this anniversary.

