DOWNLOAD PDF DISCOVERER OF THE HUMAN HEART-WILLIAM HARVEY 1578-1657 (SHORT LIVES)

Chapter 1 : Blood: Composition, Functions and Other Details (with diagram)

William Harvey (1 April - 3 June) was an English physician who made seminal contributions in anatomy and racedaydvl.com was the first known physician to describe completely, and in detail, the systemic circulation and properties of blood being pumped to the brain and body by the heart, though earlier writers, such as Realdo Colombo, Michael Servetus, and Jacques Dubois, had provided.

Shadow Without a Name MostlyFiction. If you happen to click on one of links and make a purchase, we earn a commission and we always appreciate your support. The novel is now being published in book form. Named Zugzwang, it is a thriller with a political backdrop set in St. Over the years, Ronan Bennett has written political literary novels filled with intrigue in faraway places and times. His stories, some reminiscent of Graham Greene, have been located in South America and in Belgian pre-independence Congo. One was set in the seventeenth century. This happens in Zugzwang, too. The protagonist is one Dr. Spethmann, a prominent psychoanalyst in St. Spethmann is a widower who tries to protect his only daughter Catherine from the disturbances all around them in pre-revolution Russia. This is a very fast-moving novel. Spethmann wonders whom he can call in order to get influence to bear on the police, to get them off his back. The first is Anna, a Russian beauty with whom he is developing an unprofessional relationship. The other patient, Rozental, is a renowned chess player, Jewish, visiting from Poland for a major chess tournament. Rozental has a one-track mind, concentrating on his upcoming contest with the real-life champion Emanuel Lasker. Zugzwang is an intense and satisfying thriller, but more than that, it shows the impossibility of love and controlling your own destiny in times of political turmoil. During his adventures, Spethmann continues to play a long-running chess game with a friend of his, via correspondence and occasional dinners. Throughout the novel are interspersed his thoughts on the game, with board positions shown. The title of the novel, Zugzwang, is a condition in chess where one player is forced into choosing from a set of bad moves. As events in the novel heat up, so does the chess game. While chess enthusiasts will relish this side dish, others can safely skip these descriptions and still enjoy the main course. The character of Rozental seems to be based upon a real-life chess Grandmaster named Akiba Rubinstein, who was Jewish and born in Poland. And satisfyingly enough, Rubinstein really did play Emanuel Lasker in St.

Chapter 2 : What has the author Stephen Ronan written

*Discoverer of the Human Heart-William Harvey (short lives) [Ronan Bennett] on racedaydvl.com *FREE* shipping on qualifying offers. The Renaissance physician William Harvey was the first to demonstrate conclusively that the heart acted as a pump.*

Here he learned his Latin, which was businesslike rather than elegant, and occasionally idiosyncratic. He went on to Gonville and Caius College, Cambridge, to which he was admitted on the last day of May The old Gonville Hall had been refounded by John Caius in , who was its master on his death in In Michaelmas Harvey was awarded a Matthew Parker scholarship. In early Harvey was in Padua, an understandable choice for an ambitious medical student. He furthered his anatomical education with Girolamo Fabrizi of Acquapendente Fabricius who was carrying out original anatomical research in a manner derived from Aristotle. This was to be of great importance to Harvey. Little more than two years after arriving in Padua, Harvey was awarded his MD degree on 25 April He was incorporated at Cambridge in the same year. On his return to England, Harvey took a house in the parish of St Martin Ludgate, London, and sought to be admitted to the College of Physicians, in order to be able to practise in the capital. He was first examined on 4 May but not admitted, although he was allowed to practise. He was examined a second time nearly a year later and a third on 11 May , when he was approved for a candidateship. Further rituals of admission followed in August, and finally on 5 October he was sworn in as a licentiate. Harvey was now in a position to marry, and he did so the following month, the marriage licence being dated 24 November His wife was Elizabeth Browne d. Before his death Browne tried unsuccessfully to secure a position for his son-in-law as physician to the Tower of London. Harvey pursued his career in the College of Physicians with vigour. He was appointed a censor in and reappointed in and Therefore, on the eve of publishing a book that demonstrated the circulation of the blood and undermined the theories of Galen, he was examining applicants to the college on the orthodoxy of their Galenism. He became an elect of the college in and treasurer in Discovery of the circulation of the blood When, in , Harvey was elected to the Lumleian lectureship in the College of Physicians he made detailed preparations for his course of lectures the notes survive. He had no special interest in the heart, but was aware that for several centuries its primacy in the body, asserted by Aristotle and defended by scholastic philosophers, had been challenged by the medical men, who based their views on Galen who believed that the brain was the primary organ. First, his notion of anatomy was the Aristotelian one that knowledge of a part of the body was primarily knowledge of its function. Second, as a pupil of Fabricius in Padua he saw that this function could be seen most clearly in a range of examples: Whatever it was that hearts did, their characteristic and identifying action must be present in all cases. There was nothing new about this, especially in the case of the heart, as its motion was unique: He could not do so. The exposed heart of a living animal rose up vigorously and then subsided, without obvious change in size. Harvey tackled the matter from theory. The vigorous erection of the heart seemed like its purposeful action. In Galenic theory the purpose of the heart was to initiate the pulse, a flow of arterial blood into the arteries. It accordingly expanded vigorously, drawing in blood from the large veins, and then subsided as a wave of forcible expansionâ€”the pulseâ€”passed down the arterial coats, drawing blood from the collapsing heart. Harvey sought confirmation of this view by puncturing the principal artery and observing how the spurting of blood from it correlated with the rise and fall of the heart. He found that as the heart rose up with its vigorous motion, so the blood leapt from the hole in the artery. This was inconsistent with the Galenic doctrine that blood moved into the arteries as the heart passively contracted after its forcible diastole. Harvey was proud of his new doctrine about the forceful systole and pulse and argued in the lectures that it corrected an ancient mistake. He continued with his experiments while giving the first few lectures, as his modifications in his notes show. His new doctrine was a radical departure from the accepted professional Galenism of the college and not all the members accepted it. Harvey represented himself as conducting an academic disputation on the topic, with the president of the college, John Argent, acting as

the presiding master. Harvey strove to convince his audience by emphasizing the force of blood emerging from the heart, and his emendations to his notes for the lectures show that he now chose a stronger verb for the spurting of the blood from the punctured artery. Harvey also emphasized the quantity of blood emerging from the forceful systole. He made a rough estimate of the amount of blood contained in the left ventricle of the relaxedâ€”expandedâ€”heart, and of the amount ejected as the ventricle contracted. However modest he made his estimate of the amount ejected at every beat, he soon saw, given a heart beating more than seventy times a minute, that in a whole day the total would be impossibly large. Impossible, that is, because Galenic theory held that the arterial blood from the heart was absorbed as necessary by the tissues; and that venous blood was supplied to the heart by the conversion of ingested food into blood in the liver. No amount of food could supply this amount of venous blood and the arterial blood was emerging from the heart in quantities too great to be absorbed by the tissues. In his efforts to convince his audience of his new doctrine of the forceful systole Harvey had been led into a crisis. He could not say where all the arterial blood went, nor whence came the venous. As he sought for an answer he had in mind the newly discovered structures in the veins which seemed to slow down the centrifugal flow of blood from the liver to the parts of the body so that it would not accumulate there. These structures looked like valves, and Galen had argued that valves were open in one direction and allowed a small, controlled, flow in the other. In the case of the valves in the veins the controlled flow was towards the parts of the body from the central liver. Harvey suddenly saw that the open direction of the valves was towards the centre of the body, and that the motion of the blood was from the ends of the arteries to the beginnings of the veins, which terminated in the vena cava, returning blood to the heart. The De motu cordis Harvey had given the first of the Lumleian lectures in and the changes he made in his notes for them, indicating his discovery of the forceful systole and circulation, seem to date from the second delivery of the lectures in For more than nine years he argued in favour of the circulation with his colleagues and demonstrated it in the lectures. The conventional academic procedures of the day meant that this discussion took the shape of a disputed question, in which his opponents had the opportunity to challenge the form of his arguments, his authorities, and the status of his observations. This process prepared Harvey for the writing of the book in which he announced the discovery of the circulation. It appeared in , printed by Fitzer in Frankfurt. Harvey was not on hand to see it through the press, and there were many errors in the set type. The erratum sheet that accompanied some copies is now rare. Harvey called his book Exercitatio anatomica de motu cordis et sanguinis in animalibus. As this title suggests it is a formal academic exercise about two things, the motion of the heart and that of the blood. That the context is the animal world indicates that this was a philosophical enquiry, not medical. His philosophy was derived from Aristotle and Fabricius and was directed at discovering what hearts are and what they do. Harvey knew how radical his new doctrine was and that its reception in the College of Physicians had been mixed. He was obliged, both in the lectures and in the book, to proceed with great care in putting his case. Only rigorous and agreed academic procedures would convince physicians educated in a university. Conventionally in anatomical commentary any novel finding was located almost in the last place, so that the reader was already familiar with the authorities and their arguments before judging the new finding. Had Harvey begun his book by announcing the discovery he would have lost much of the force of his argument. He began, therefore, with an account of his first discovery, the forceful systole and true nature of the pulse. This was both logically and historically prior to the circulation. The first half of De motu cordis is therefore devoted to establishing the forceful systole. Then Harvey takes the reader through the moment of crisis that had occurred after he had made his calculations of the amount of blood leaving the heart and explains how he resolved the crisis. He states the thesis about circulation formally, with propositions that are shown to have certain consequences. The remainder of the book is taken up with certain observations that could be explained best on the assumption of circulation. Reactions As in the College of Physicians, so in the world at large, reactions to the doctrines of the forceful systole and pulse were mixed. Almost no one accepted both in the way Harvey wanted them to. The two doctrines were generally separated, and accepted or rejected on their own. Yet when Harvey died some sort of consensus about the fact of circulation had been reached and

produced the biggest change in medical theory since the Alexandrian discovery of the nervous system, about a thousand years earlier. The main argument against Harvey was that circulation had no medical use. This argument was used at two levels. First, medical philosophers like Caspar Hofmann asserted that circulation had no purpose, no Aristotelian final cause: Hofmann concluded that Harvey was not a philosopher, but a mere accountant, totting up quantities of blood leaving the heart ; philosophers, with Aristotle, thought that mathematics could not uncover essences. If the blood circulated the basis of practice would be destroyed as the humours of the body would be mixed together and could not be changed or evacuated separately, and there would be no basis for the letting of blood. Harvey understood these objections. Although an Aristotelian, he could not give a final cause of circulation and was driven to say that it had to be enough to show that a thing is, despite being unable to say what it is for. He had no convincing answer to the charge of destroying the basis of medical practice. There were a number of factors that contributed to the eventual consensus. Students were attracted to the idea of circulation, partly because it was radical. When they became teachers themselves the notion that the blood circulated was more popular. Many of these students were anyway being educated at a time when attacks were being made on the old orthodoxies of natural philosophy on which the theory of medicine rested, and Harvey could be seen as part of those attacks. It seemed to him that the circulation was an excellent example of how the body worked in a purely mechanical way and indeed he used it in his Discourse on Method as his most important example of mechanism. He substituted a heat driven forceful diastole in which the blood entering the heart was vaporized. The vapour expanded the heart and forced its way into the arteries, where it condensed. Before or early in he was appointed physician-extraordinary to James I; his senior colleague was Sir Theodore Turquet de Mayerne. Harvey was able to demonstrate to Charles a virtually exposed beating heart in the young Viscount Montgomery, and Charles provided deer which Harvey dissected while working on his book on animal reproduction. In Charles ordered Harvey to accompany the young duke of Lennox on a grand tour, and while we know that Harvey was in Paris in September, he was back in London in October and December. In February he was in Spain, and recorded the destructive effects of war that he had seen on his travels. Possibly Calvinist Scotland entertained different ideas about witches than did early seventeenth-century London; at all events Charles showed less antagonism to them than his father might have done and ordered a medical enquiry, under Harvey, to investigate their physical normality or abnormality. The point at issue was largely to determine whether they had supernumerary nipples to feed their familiars. Harvey, William Clowes, Alexander Read, and the midwives who conducted the examination concluded that they were normal.

Chapter 3 : William Harvey and his impact on society Essay Example | Graduateway

William Harvey, born 1 April at Folkestone, England, was educated at King's School in Canterbury, Gonville and Caius College of the University of Cambridge, and the University of Padua. His discovery of the circulation of the blood is the greatest single discovery ever made about the human body, and his experimental approach set the.

Born in Folkestone, England, William Harvey studied at Cambridge and then spent several years at Padua, where he came under the influence of Fabricius. He established a successful medical practice in London and, by precise observation and scrupulous reasoning, developedâ€¦ Education and appointment as Lumleian lecturer Harvey had seven brothers and two sisters, and his father, Thomas Harvey, was a farmer and landowner. He continued his studies at the University of Padua , the leading European medical school at the time. He became a student of Italian anatomist and surgeon Hieronymous Fabricius , who had a considerable influence on Harvey. It is also likely that Harvey was taught by Italian philosopher Cesare Cremonini, a prominent follower of Aristotle. Harvey earned his doctorate from Padua on April 25, , and then returned to England to work as a doctor. However, they did not have any children. Harvey was a fellow of the Royal College of Physicians of London from and was active in this society for the remainder of his life. In he was appointed Lumleian lecturer in surgery at the Royal College, a post he held until the Lumleian lecture series was named after Lord John Lumley. In he was appointed physician at St. Harvey built a considerable practice in this period, tending to many important men, including author and philosopher Sir Francis Bacon. In Harvey led the group of doctors attending James during his last illness and was an important witness in the trial of George Villiers, duke of Buckingham , who was accused of poisoning the king. Harvey was rewarded by Charles I for his care of James. Charles and Harvey seem to have enjoyed an amicable relationship, Harvey being allowed to experiment on the royal herd of deer and presenting interesting medical cases to the king. Harvey lived during the European witch hunt. He was involved in one of the cases , in , and had to examine four women accused of witchcraft. At a time when belief in witches was commonplace and to deny their existence was heresy , it would have been very easy to interpret any suspicious behaviour or mark on the body as positive evidence of witchcraft. The alleged witches were found to be innocent. This involved nearly a year of travel around Europe. Harvey also had a wide interest in philosophy , literature , and art. During the diplomatic mission of he visited Italy to look for paintings for the royal collection. He was friends with Robert Fludd , an important English physician and philosopher whose primary interest concerned natural magic , and Thomas Hobbes , a famous political philosopher. He was also acquainted with John Aubrey , the 17th-century biographer, who gave an account of Harvey in his manuscript Brief Lives. Harvey was a committed royalist. He followed the king on the Scottish campaigns of , , and , was with him from to during the English Civil Wars , and was even present at the Battle of Edgehill in His political views may be judged from the dedication to the king in his most important book, De Motu Cordis ; see below Discovery of circulation: Equally is the king the basis of his kingdoms, the sun of his microcosm, the heart of the state; from him all power arises and all grace stems. Harvey attended Charles in Oxford during the Civil Wars and in Newcastle when the king was held in captivity. Harvey eventually returned to London, in In , following the publication of his final work, Exercitationes de Generatione Animalium Exercises on the Generation of Animals , it is believed that Harvey attempted to take his own life with laudanum an alcoholic tincture of opium. However, this attempt failed. On June 3, , at the age of 79, he died of a stroke. One of the worst setbacks Harvey experienced concerned the loss of a great deal of written work when parliamentary troops ransacked his house in Whitehall in He also lost notes on patients, postmortem examinations, and animal dissections. Further material was lost in the Great Fire of London in , which engulfed the library that Harvey helped establish at the Royal College of Physicians. Prior to Harvey, it was believed there were two separate blood systems in the body. Today these blood systems are understood as deoxygenated blood and oxygenated blood. However, at the time, the influence of oxygen on blood was not understood. Furthermore, blood was not thought to

circulate around the bodyâ€”it was believed to be consumed by the body at the same rate that it was produced. The capillaries , small vessels linking the arteries and veins, were unknown at the time, and their existence was not confirmed until later in the 17th century, after Harvey, when the microscope had been invented. Harvey claimed he was led to his discovery of the circulation by consideration of the venous valves. It was known that there were small flaps inside the veins that allowed free passage of blood in one direction but strongly inhibited the flow of blood in the opposite direction. It was thought that these flaps prevented pooling of the blood under the influence of gravity, but Harvey was able to show that all these flaps are cardiocentrically oriented. For example, he showed that in the jugular vein of the neck they face downward, inhibiting blood flow away from the heart, instead of upward, inhibiting pooling due to gravity. He made estimates of the volume of the ventricles , how efficient they were in expelling blood, and the number of beats per minute made by the heart. He was able to show, even with conservative estimates, that more blood passed through the heart than could possibly be accounted for based on the then current understanding of blood flow. The human body contains about 5 litres of blood. The body simply could not produce or consume that amount of blood so rapidly; therefore, the blood had to circulate. It is also important that Harvey investigated the nature of the heartbeat. Prior to Harvey, it was thought that the active phase of the heartbeat, when the muscles contract, was when the heart increased its internal volume. So the active motion of the heart was to draw blood into itself. Harvey observed the heart beating in many animalsâ€”particularly in cold-blooded animals and in animals near death, because their heartbeats were slow. He concluded that the active phase of the heartbeat, when the muscles contract, is when the heart decreases its internal volume and that blood is expelled with considerable force from the heart. It is tempting to view Harvey, with his quantitative experiment and his model of the heart as a pump , as someone who supported or was inspired by the new mathematical and mechanical ideas of the 17th century, which played significant roles in the scientific revolution of the time. However, there is a need for considerable caution here. Harvey did quantify blood flow, but his quantification is very approximate, and he deliberately used underestimates to further his case. This is very different from the precise quantification leading to the mathematical laws of someone like Galileo. It was important that Harvey saw the heart as a pump, but he saw it as an organic pump, rather than as a mechanical pump. He also interpreted the blood as having an irreducible life force of its own. It is likely that Harvey actually made his discovery of the circulation about â€” Such a major shift in thinking about the body needed to be very well supported by experiment and argument to avoid immediate ridicule and dismissal; hence the delay before the publication of his central work. Renaissance influences Harvey was very much influenced by the ideas of Greek philosopher Aristotle and the natural magic tradition of the Renaissance. Thus, one might say that the solar system is a macrocosm and the atom is a microcosm. The Renaissance natural magic tradition was very keen on the idea of the human body as a microcosm. Water was changed into vapour by the action of the Sun, and the vapour rose, was cooled, and fell again as rain. The microcosm was the human body, where the action of the heart was supposed to heat and change the blood, which was cooled again in the extremities of the body. Harvey says and compare the earlier quote concerning the king that: This was critical to Harvey. How could arterial blood be rapidly, efficiently, and consistently converted into venous blood and vice versa within one system? It also should be noted that much of his terminology for change was drawn from the alchemy of his time. Harvey was very much a man of the later Renaissanceâ€”not a man of the scientific revolution and its mechanical nature. Studies of reproduction Harvey spent much of the latter part of his career working on the nature of reproduction in animals. At the time, reproduction was poorly understood, and Harvey investigated issues of the role of sperm and menstrual blood in the formation of the embryo. His observations were excellent, but such matters could not be resolved properly without the use of the microscope.

Chapter 4 : Ronan Bennett : Zugzwang : Book Review

(Hellenic Journal of Cardiology) HJC â€¢ 7 William Harvey: Discoverer of Blood Circulation tomical works, and overturned the traditional medical ideas that had predominated for centuries.

William Harvey was discoverer of process of the blood circulation in The blood is thick and bright red fluid. It is alkaline pH 7. An average adult person contains 5 to 6 liters of blood in his body. William was an English medical doctor, born in , in Kent, England. He was voracious student earning bachelors degree from Cambridge University in He proposed that blood flows through the heart in the separate systems, one system is pulmonary circulation, connects circulatory system to the lungs, and the second system is systemic circulation through which blood flows to the vital body organs and tissues. Harvey also observed that blood flows through the veins towards the heart, but not in opposite direction. Harvey eventually developed an accurate theory of how the heart and circulatory system operated. Glucose, amino acids, hormones, fibrinogen and urea are other substances, while sodium chloride, potassium hydroxide, calcium sulphate and sodium-bi-carbonate are inorganic salts present in plasma. When fibrinogen protein is removed from plasma it is called serum. Cellular part Corpuscles form living part of blood. There are following types of corpuscles Fig. Erythrocytes Red Blood Corpuscles are minute, biconcave circular structure, flat in the centre, thick at the periphery. They are with a diameter of 7 microns and thickness of micron. Mature erythrocyte has no nucleus, no mitochondria and no ribosome. The life span is of only days. Number of erythrocytes in male is 5. These corpuscles contain haemoglobin. The erythrocytes are produced in marrow of long bone such as ribs and breast bone, but in embryo, liver and spleen also. The process of their formation is called haemopoiesis. Erythrocytes disintegrate in spleen, liver and bone marrow, this process is called haemolysis. A Red coloured substance is present in Erythrocytes, it is called haemoglobin. It is Conjugated chromoprotein. Haemoglobin has two main parts, globin and Haem. Haem in turn; is composed of Iron and porphyrin. Each molecule of Haemoglobin has four ferrous atoms. Porphyrin is a pigment of four pyrrol groups, it is a protein. It is water soluble and insoluble in alcohol. The main function of haemoglobin is oxygen carriage from lungs to body tissues and carbon dioxide transport in blood. On breakdown it forms important bile pigments Blood gets its colour from trillions of Erythrocytes in plasma. The blood of lobsters and other large crustaceans is blue due to the presence of oxygen carrying pigment known as hemocyanin, as contain copper molecules rather than iron molecules. The main function of erythrocytes is to deliver oxygen, as they lack mitochondria they cannot use oxygen and transport full absorbed oxygen to the tissues. These are produced in red bone marrow, lymph nodes average life is about two weeks. These are large irregular or oval colourless nucleated structures. These corpuscles do not contain haemoglobin. When number of leucocytes increase, it is called leukaemia. There are two types of Leucocytes: Basophils, acidophils and neutrophils are the types of granulocytes. Lymphocytes and monocytes are the types of agranulocytes. Production of anti toxins, formation of antibodies, help in fat metabolism, phagocytic action against infecting organisms, help in tissue repair and help to maintain plasma concentration are the main functions of leucocytes. These are oval, round or rod like cytoplasmic structures with granules but no nucleus. These are formed in red bone marrow. Their life span is 3 to 5 days and are destroyed mainly in the spleen. Protection of inner lining of blood vessels due to adhesive property and initiates the process of blood clotting are the main functions of thrombocytes. Blood transports digested food materials such as glucose, amino acids and fatty acids to various body parts. Blood regulates body temperature. Blood transports oxygen from lungs to the tissues, oxygen is carried in two ways 98 per cent travels as oxy-haemoglobin and remaining two per cent is dissolved in plasma. Leucocytes of blood protect the body from diseases. Blood helps in wound healing. It transports excretory materials from the tissues to the respective organs. Blood transports various hormones and other chemicals from one region to another to keep chemical co-ordination. James Blundell Dr. James Blundell was an English British physician. First of all in James blundell determined that a blood transfusion would be appropriate to treat a severe hemorrhage. He also

discovered the importance of letting all the air out of a syringe prior to the transfusion. When patients undergo surgical operations they need blood, then it becomes necessary to inject blood into the body of patient. This is called blood transfusion. For this process, blood is introduced into the body of patient from a healthy person called donor. It is necessary for this that the blood of both acceptor and donor should match. The blood of donor may not always match the blood of the patient who receives it, as a result, the blood of the patient clumps or agglutinates, proving fatal to the life of the patient. Mismatching of blood takes places due to the reaction between antigens present in the RBCs cells of donor and antibodies present in the plasma of the receiver. Karl Landsteiner was born on June 14, in Vienna, Austria. In he received his medical degree. In Landsteiner discovered that during a blood transfusion from human to human, different foreign bloods tends to clump and cause shock or jaundice. Landsteiner, along with A. Weiner, identified the Rh factor on In , Landsteiner received the Nobel Prize for medicine for his work on differentiating the blood groups. The human blood is divided into four types of blood groups. The person having blood group O, is called universal donor. The person of blood group AB can receive the blood from all type of blood groups AB, A, B and O, and is therefore called universal acceptor. Besides the regular antigens, there is one antigen called Rh factor that determines the compatibility of blood transfusion. Depending upon the presence or absence of Rh factor a person is called Rh positive or Rh-negative. Rh-negative persons do not have an antibody in the plasma against Rh factor. Blood is fluid connective tissue, when the blood comes out through injury, the platelets come in contact with the air, due to this thromboplastin an enzyme is released and it combines with calcium ions present in plasma and converts pro-thrombin into thrombin. Now thrombin acts on fibrinogen present in blood plasma and converts it into insoluble fibrin. Fibrins is solid substance and form a fine network around the wound. Blood cells are unable to go through this network. Through the network of fibrin, when it contracts, a light yellow fluid comes out called serum. Blood does not clot in vessels due to some factors such as: Blood pressure is pressure which is exerted by the blood on the walls of blood vessels. Upper limit of blood pressure is called systolic pressure and responsible for movement of fresh blood in the arteries. Normal blood pressure for upper limit in adult is systolic and the lower limit diastolic when a person is having mm systolic and above 90 mm diastolic pressure, the person is said to be a case of hypertension.

Chapter 5 : Where does Ronan Keating live

William Harvey was born in Folkestone, Kent on 1 April His father was a merchant. Harvey was educated at King's College, Canterbury and then at Cambridge University.

His mother, Joane, daughter of Thomas Halke of Hastingleigh, Kent, was the second wife of Thomas Harvey, and William was the second child and eldest son of the family. His father died 12 Jan. Here, in the curious anatomical theatre, lined with carved oak, which is still standing, he attended the candle-light lectures of the great anatomist Fabricius of Aquapendente, and pursued the other medical studies of the place. He returned to England, graduated M. In November he married, at the church of the neighbouring parish of St. Sepulchre, Elizabeth, daughter of Dr. On Saturday 28 Feb. Atkins, president of the College of Physicians, and from several of the senior doctors of the college. Harvey was elected to the reversion, a condition comparable to that of an assistant physician at the present day. Wilkinson, also a Cambridge man, gave his assistant the benefit of his professional experience and friendship. Wilkinson died in the summer, and his assistant discharged the duties of the physiciancy till his formal election as physician at a meeting of the president, Sir John Spencer, and the governors on Saturday, 14 Oct. The hall of the hospital in which he sat once a week to see patients was a spacious room, pulled down about , with a great fireplace, to the fire of which Henry III had granted a supply of wood from the forest of Windsor. Harvey sat at a table and the patients brought to him sat upon a settle beside it, the apothecary, the steward, and the matron standing by. The surgeons discharged their duties in the wards, and the physician only went into them to see such patients as could not walk. His prescriptions were written in a book which was kept locked up. On 28 July , at a court of governors under the presidency of Sir Thomas Lowe, it was resolved that Harvey should have an official residence formed of two houses and a garden in West Smithfield, adjoining the hospital. The premises were then on a lease, and the tenure was to begin at its expiration. This did not take place till , when Harvey, after consideration, decided not to accept the residence, and on 7 July his stipend was in consequence increased from 25l. The notes from which he delivered these lectures exist in their original manuscript and binding at the British Museum. The pages measure six inches in length by three and three quarters in breadth, and are closely written over, the notes being generally arranged in a tabular form. The notes cover ninety-six pages, some of them containing more than forty lines of close writing. There are divisions which indicate where the lectures ended. The book does not complete the treatment of the subject. Some further notes are contained in another manuscript Sloane , although these do not directly continue the first collection of notes. The lectures are three in number, and begin by a statement of the general arrangement of the subject, followed by eleven rules, which the lecturer lays down for his own guidance. They direct demonstration of what is before the audience, the illustration of human anatomy by that of animals, the avoidance of controversy, of minute details, and of telling what may as well be learnt at home. The first lecture treats of the outside of the body, then of the skin, fat, and superficial muscles, and then of the abdomen and all its contents. Each organ is described, often with homely illustrations, as of the names of the various parts of the alimentary canal f. The second lecture deals with the chest and its contents. The first describes the structure of the heart and of the great vessels, explains the contraction of the several cavities of the heart, the form and use of its valves and of the valves in the veins, and he concludes by clearly stating that he has thus demonstrated that the perpetual motion of the blood in a circle is produced by the beat of the heart. He had studied Aristotle and Galen evidently in Latin editions, and had a profound veneration for Aristotle and a professional respect without much personal admiration for Galen. He quotes Aristotle oftener than any other author, and after Aristotle Galen. He had read St. Augustine, and was well versed in the Bible. He does not mention the works of Shakespeare nor any of the literature of his time, though he often quotes verbal remarks of his contemporaries, chiefly, however, of physicians. He had already attained considerable practice, and must have laboured incessantly, for he showed that he had thoroughly dissected more than eighty species of animals. The lectures lasted more than an hour each day, as it was

necessary to complete the course before the body which lay on the table became putrid, and the preservative fluids at present in use in dissecting rooms were then unknown. Clement, he was appointed by the College of Physicians to watch the proceedings of the surgeons who were moving parliament in their own interest. A certificate stating that the health of Sir William Sandis, a country gentleman, required his stay in London in the winter of , and signed by Harvey, is preserved in the Public Record Office Dom. In each year he gave the Lumleian lectures at the College of Physicians, and the notes of those of Sir G. Paget, An Unpublished Manuscript of Harvey , are in the British Museum Sloane in a volume somewhat smaller than that containing his first course. It has leaves, of which the first sixty-eight are devoted to the anatomy of the muscles, and most of the remainder to their functions and diseases, of which last he shows a considerable clinical knowledge. In these lectures he quotes Aristotle often and Riolanus once, but in the rarity of his allusions to authors they present a marked contrast to the first course of lectures. In , twelve years after his first statement of it in his lectures, he published at Frankfurt, through William Fitzer, his discovery of the circulation of the blood. There is a dedication to Charles I, in which the king in his kingdom is compared to the heart in the body, and this is followed by a modest address to Dr. Argent, the president, and to the fellows of the College of Physicians of London. An introduction then states the existing opinions on the structure of the heart and great vessels, on the blood and its movement, for that it moved had of course been observed from the earliest times. Seventeen chapters follow, in which the whole subject is made clear from the beginning and incontestably demonstrated. He then describes the motions of arteries, of the ventricles of the heart, and of its auricles, as seen in living animals, and the use of these movements. He shows that the blood coming into the right auricle from the vena cava, and passing then to the right ventricle, is pumped out to the lungs through the pulmonary artery, passes through the parenchyma of the lungs, and comes thence by the pulmonary veins to the left ventricle. This same blood, he shows, is then pumped out to the body. It is carried out by arteries and comes back by veins, performing a complete circulation. He shows that, in a live snake, when the great veins are tied some way from the heart, the piece of vein between the ligature and the heart is empty, and further, that blood coming from the heart is checked in an artery by a ligature, so that there is blood between the heart and the ligature and no blood beyond the ligature. He then shows how the blood comes back to the heart by the veins, and demonstrates their valves. These had before been described by Hieronymus Fabricius of Aquapendente, but before Harvey no exact explanation of their function had been given. He gives diagrams showing the results of obstructing veins, and that these valves may thus be seen to prevent the flow of blood in the veins in any direction except towards the heart. After a summary of a few lines in the fourteenth chapter he further illustrates the perpetual circuit of the blood, and points out how morbid materials are carried from the heart all over the body. The last chapter gives a masterly account of the structure of the heart in men and animals, and points out that the right ventricle is thinner than the left because it has only to send the blood a short way into the lungs, while the left ventricle has to pump it all over the body. This great and original book at once attracted attention and excited discussion. In the College of Physicians of London, where Harvey had mentioned the discovery in his lectures every year since , the Exercitatio received all the honour it deserved. On the continent of Europe it was received with less favour, but neither in England nor abroad did any one suggest that the discovery was to be found in other writers. Hoffman of Nuremberg and others followed in opposition, in letters, lectures, and treatises, but before his death the great discovery of Harvey was accepted throughout the medical world. The modern controversy Dr. It remains to this day the greatest of the discoveries of physiology, and its whole honour belongs to Harvey. He was a regular attendant at the comitia of the College of Physicians, and took an active part in the proceedings. He afterwards visited Blois, Saumur, and Bordeaux. In February he was in Spain, and probably visited Venice before his return to England. Minute Book of St. Andrewes was appointed a full physician, so as to give Harvey more liberty. Sixteen regulations drawn up by Harvey were then discussed, and were all agreed to except one requiring the surgeons to declare their treatment whenever the physician desired. Their general purport is that absolutely incurable cases are not to be admitted, and that the surgeons, apothecary, and matron are to discharge all their duties decently and in

person. In four Lancashire women had been accused of witchcraft Aveling, Memorials of Harvey , and were sent to London. On 2 July he superintended their physical examination by ten midwives and seven surgeons, and found that there was nothing unnatural in their bodies, and so they were pardoned. In , on 17 Nov. His report of the post-mortem was published in by Dr. Bett De Ortu et Natura Sanguinis. While at Nuremberg he visited his opponent Hoffman, but did not convince him. Harvey remained in London till the outbreak of the great rebellion. A certificate signed by him on 2 Dec. In he left London in attendance on the king. He was present at the battle of Edgehill, and, according to Aubrey, all whose remarks about him are to be received with suspicion, had charge of the Prince of Wales and the Duke of York while the fight was in progress, and read a book he had in his pocket. He went to Oxford with the king, and was incorporated M. Harvey worked at anatomy, making dissections at Oxford Highmore, preface to Anatomy , and in was made by royal mandate warden of Merton College, in the place made vacant by the departure of Sir Nathaniel Brent [q. In , after the surrender of Oxford, he returned to London and resided in the houses of his brothers, who were wealthy merchants. At the end Harvey mentions that he had intended to write a morbid anatomy of diseases based upon the notes of the numerous post-mortem examinations he had made. At Christmas Dr. It shows vast labour and careful observation; but the discovery of the microscope was wanting to make clear much of what Harvey could only see in part. This was his last published work, except a few letters printed at the end of his Works Sydenham Society, â€”7. On 4 July he offered to the College of Physicians, through its president, Dr. Prujean, to build a library. This was done anonymously, but became known, and on 22 Dec. He served on the council in and In he resigned his Lumleian lectureship; gave the college his estate at Burmarsh, Romney Marsh, Essex, and took leave of the fellows. He had had many attacks of gout, and used to check it by putting his feet in cold water. The attacks became more frequent, and he died on 3 June The fellows of the College of Physicians followed his body on its way to Hempstead in Essex, where it was deposited, wrapped in lead, in a vault of the family. Here it remained till St. Decesed the 3 of June He gave his books and papers to the college, his gown to Sir Charles Scarburgh [q.

Chapter 6 : BBC - History - William Harvey

Harvey was short, with black hair, as a young man, and bright brown eyes; John Aubrey thought him 'very cholerique'. Education, marriage, and early career Details of Harvey's early education are sketchy; however, by he was attending the King's School, Canterbury.

Robert Willis, Introductory Note William Harvey, whose epoch-making treatise announcing and demonstrating the circulation of the blood is here printed, was born at Folkestone, Kent, England, April 1, He took the same degree later at both the English universities. It was in this last capacity that he delivered, in , the lectures in which he first gave public notice of his theories on the circulation of the blood. The notes of these lectures are still preserved in the British Museum. In Harvey was appointed physician extraordinary to James I, and he remained in close professional relations to the royal family until the close of the Civil War, being present at the battle of Edgehill. By mandate of Charles I, he was, for a short time, Warden of Merton College, Oxford , and, when he was too infirm to undertake the duties, he was offered the Presidency of the College of Physicians. He died on June 3, The discovery was received with great interest, and in his own country was accepted at once; on the Continent it won favor more slowly. Before his death, however, the soundness of his views was acknowledged by the medical profession throughout Europe, and "it remains to this day the greatest of the discoveries of physiology, and its whole honor belongs to Harvey. The heart of animals is the foundation of their life, the sovereign of everything within them, the sun of their microcosm, that upon which all growth depends, from which all power proceeds. The King, in like manner, is the foundation of his kingdom, the sun of the world around him, the heart of the republic, the fountain whence all power, all grace doth flow. What I have here written of the motions of the heart I am the more emboldened to present to your Majesty, according to the custom of the present age, because almost all things human are done after human examples, and many things in a King are after the pattern of the heart. The knowledge of his heart, therefore, will not be useless to a Prince, as embracing a kind of Divine example of his functions, - and it has still been usual with men to compare small things with great. Here, at all events, best of Princes, placed as you are on the pinnacle of human affairs, you may at once contemplate the prime mover in the body of man, and the emblem of your own sovereign power. Accept therefore, with your wonted clemency, I most humbly beseech you, illustrious Prince, this, my new Treatise on the Heart; you, who are yourself the new light of this age, and indeed its very heart; a Prince abounding in virtue and in grace, and to whom we gladly refer all the blessings which England enjoys, all the pleasure we have in our lives. For I could neither rightly perceive at first when the systole and when the diastole took place, nor when and where dilatation and contraction occurred, by reason of the rapidity of the motion, which in many animals is accomplished in the twinkling of an eye, coming and going like a flash of lightning; so that the systole presented itself to me now from this point, now from that; the diastole the same; and then everything was reversed, the motions occurring, as it seemed, variously and confusedly together. My mind was therefore greatly unsettled nor did I know what I should myself conclude, nor what believe from others. I was not surprised that Andreas Laurentius should have written that the motion of the heart was as perplexing as the flux and reflux of Euripus had appeared to Aristotle. At length, by using greater and daily diligence and investigation, making frequent inspection of many and various animals, and collating numerous observations, I thought that I had attained to the truth, that I should extricate myself and escape from this labyrinth, and that I had discovered what I so much desired, both the motion and the use of the heart and arteries. From that time I have not hesitated to expose my views upon these subjects, not only in private to my friends, but also in public, in my anatomical lectures, after the manner of the Academy of old. These views as usual, pleased some more, others less; some chid and calumniated me, and laid it to me as a crime that I had dared to depart from the precepts and opinions of all anatomists; others desired further explanations of the novelties, which they said were both worthy of consideration, and might perchance be found of signal use. At length, yielding to the requests of my friends,

that all might be made participators in my labors, and partly moved by the envy of others, who, receiving my views with uncandid minds and understanding them indifferently, have essayed to traduce me publicly, I have moved to commit these things to the press, in order that all may be enabled to form an opinion both of me and my labours. This step I take all the more willingly, seeing that Hieronymus Fabricius of Aquapendente, although he has accurately and learnedly delineated almost every one of the several parts of animals in a special work, has left the heart alone untouched. Finally, if any use or benefit to this department of the republic of letters should accrue from my labours, it will, perhaps, be allowed that I have not lived idly, and as the old man in the comedy says: For never yet hath any one attained To such perfection, but that time, and place, And use, have brought addition to his knowledge; Or made correction, or admonished him, That he was ignorant of much which he Had thought he knew; or led him to reject What he had once esteemed of highest price. So will it, perchance, be found with reference to the heart at this time; or others, at least, starting hence, with the way pointed out to them, advancing under the guidance of a happier genius, may make occasion to proceed more fortunately, and to inquire more accurately. On The Motions Of The Heart As Seen In The Dissection Of Living Animals In the first place, then, when the chest of a living animal is laid open and the capsule that immediately surrounds the heart is slit up or removed, the organ is seen now to move, now to be at rest; there is a time when it moves, and a time when it is motionless. These things are more obvious in the colder animals, such as toads, frogs, serpents, small fishes, crabs, shrimps, snails, and shellfish. They also become more distinct in warm-blooded animals, such as the dog and hog, if they be attentively noted when the heart begins to flag, to move more slowly, and, as it were, to die: In the pause, as in death, the heart is soft, flaccid, exhausted, lying, as it were, at rest. In the motion, and interval in which this is accomplished, three principal circumstances are to be noted: That the heart is erected, and rises upwards to a point, so that at this time it strikes against the breast and the pulse is felt externally. That it is everywhere contracted, but more especially towards the sides so that it looks narrower, relatively longer, more drawn together. The heart of an eel taken out of the body of the animal and placed upon the table or the hand, shows these particulars; but the same things are manifest in the hearts of all small fishes and of those colder animals where the organ is more conical or elongated. The heart being grasped in the hand, is felt to become harder during its action. Now this hardness proceeds from tension, precisely as when the forearm is grasped, its tendons are perceived to become tense and resilient when the fingers are moved. It may further be observed in fishes, and the colder blooded animals, such as frogs, serpents, etc. At the moment the heart contracts, and when the breast is struck, when in short the organ is in its state of systole, the arteries are dilated, yield a pulse, and are in the state of diastole. In like manner, when the right ventricle contracts and propels its charge of blood, the pulmonary artery is distended at the same time with the other arteries of the body. When the left ventricle ceases to act, to contract, to pulsate, the pulse in the arteries also ceases; further, when this ventricle contracts languidly, the pulse in the arteries is scarcely perceptible. In like manner, the pulse in the right ventricle failing, the pulse in the pulmonary artery ceases also. Further, when an artery is divided or punctured, the blood is seen to be forcibly propelled from the wound the moment the left ventricle contracts; and, again, when the pulmonary artery is wounded, the blood will be seen spouting forth with violence at the instant when the right ventricle contracts First of all, the auricle contracts, and in the course of its contraction forces the blood which it contains in ample quantity as the head of the veins, the store-house and cistern of the blood into the ventricle, which, being filled, the heart raises itself straightway, makes all its fibres tense, contracts the ventricles, and performs a beat, by which beat it immediately sends the blood supplied to it by the auricle into the arteries. The right ventricle sends its charge into the lungs by the vessel which is called vena arteriosa, but which in structure and function, and all other respects, is an artery. The left ventricle sends its charge into the aorta, and through this by the arteries to the body at large. These two motions, one of the ventricles, the other of the auricles, take place consecutively, but in such a manner that there is a kind of harmony or rhythm preserved between them, the two concurring in such wise that but one motion is apparent, especially in the warmer blooded animals, in which the movements in question are rapid. Nor is this for any other reason than it is in a piece of machinery,

in which, though one wheel gives motion to another, yet all the wheels seem to move simultaneously; or in that mechanical contrivance which is adapted to firearms, where, the trigger being touched, down comes the flint, strikes against the steel, elicits a spark, which falling among the powder, ignites it, when the flame extends, enters the barrel, causes the explosion, propels the ball, and the mark is attained - all of which incidents, by reason of the celerity with which they happen, seem to take place in the twinkling of an eye But what remains to be said upon the quantity and source of the blood which thus passes is of a character so novel and unheard-of that I not only fear injury to myself from the envy of a few, but I tremble lest I have mankind at large for my enemies, so much doth wont and custom become a second nature. Doctrine once sown strikes deep its root, and respect for antiquity influences all men. Still the die is cast, and my trust is in my love of truth and the candour of cultivated minds. And sooth to say, when I surveyed my mass of evidence, whether derived from vivisections, and my various reflections on them, or from the study of the ventricles of the heart and the vessels that enter into and issue from them, the symmetry and size of these conduits, - for nature doing nothing in vain, would never have given them so large a relative size without a purpose, - or from observing the arrangement and intimate structure of the valves in particular, and of the other parts of the heart in general, with many things besides, I frequently and seriously bethought me, and long revolved in my mind, what might be the quantity of blood which was transmitted, in how short a time its passage might be effected, and the like. But not finding it possible that this could be supplied by the juices of the ingested aliment without the veins on the one hand becoming drained, and the arteries on the other getting ruptured through the excessive charge of blood, unless the blood should somehow find its way from the arteries into the veins, and so return to the right side of the heart, I began to think whether there might not be a Motion, As It Were, In A Circle. Now, this I afterwards found to be true; and I finally saw that the blood, forced by the action of the left ventricle into the arteries, was distributed to the body at large, and its several parts, in the same manner as it is sent through the lungs, impelled by the right ventricle into the pulmonary artery, and that it then passed through the veins and along the vena cava, and so round to the left ventricle in the manner already indicated. This motion we may be allowed to call circular, in the same way as Aristotle says that the air and the rain emulate the circular motion of the superior bodies; for the moist earth, warmed by the sun, evaporates; the vapours drawn upwards are condensed, and descending in the form of rain, moisten the earth again. By this arrangement are generations of living things produced; and in like manner are tempests and meteors engendered by the circular motion, and by the approach and recession of the sun. And similarly does it come to pass in the body, through the motion of the blood, that the various parts are nourished, cherished, quickened by the warmer, more perfect, vaporous, spirituous, and, as I may say, alimentive blood; which, on the other hand, owing to its contact with these parts, becomes cooled, coagulated, and so to speak effete. It then returns to its sovereign, the heart, as if to its source, or to the inmost home of the body, there to recover its state of excellence or perfection. Here it renews its fluidity, natural heat, and becomes powerful, fervid, a kind of treasury of life, and impregnated with spirits, it might be said with balsam. Thence it is again dispersed. All this depends on the motion and action of the heart. The heart, consequently, is the beginning of life; the sun of the microcosm, even as the sun in his turn might well be designated the heart of the world; for it is the heart by whose virtue and pulse the blood is moved, perfected, and made nutrient, and is preserved from corruption and coagulation; it is the household divinity which, discharging its function, nourishes, cherishes, quickens the whole body, and is indeed the foundation of life, the source of all action. But of these things we shall speak more opportunely when we come to speculate upon the final cause of this motion of the heart. As the blood-vessels, therefore, are the canals and agents that transport the blood, they are of two kinds, the cava and the aorta; and this not by reason of there being two sides of the body, as Aristotle has it, but because of the difference of office, not, as is commonly said, in consequence of any diversity of structure, for in many animals, as I have said, the vein does not differ from the artery in the thickness of its walls, but solely in virtue of their distinct functions and uses. A vein and an artery, both styled veins by the ancients, and that not without reason, as Galen has remarked, for the artery is the vessel which carries the blood from the heart to the body at large, the vein of the present day bringing it back

from the general system to the heart; the former is the conduit from, the latter the channel to, the heart; the latter contains the cruder, effete blood, rendered unfit for nutrition; the former transmits the digested, perfect, peculiarly nutritive fluid. That There Is A Circulation Of The Blood Is Confirmed From The First Proposition But lest anyone should say that we give them words only, and make mere specious assertions without any foundation, and desire to innovate without sufficient cause, three points present themselves for confirmation, which, being stated, I conceive that the truth I contend for will follow necessarily, and appear as a thing obvious to all. First, the blood is incessantly transmitted by the action of the heart from the vena cava to the arteries in such quantity that it cannot be supplied from the ingesta, and in such a manner that the whole must very quickly pass through the organ; second, the blood under the influence of the arterial pulse enters and is impelled in a continuous, equable, and incessant stream through every part and member of the body, in much larger quantity than were sufficient for nutrition, or than the whole mass of fluids could supply; third, the veins in like manner return this blood incessantly to the heart from parts and members of the body. These points proved, I conceive it will be manifest that the blood circulates, revolves, propelled and then returning, from the heart to the extremities, from the extremities to the heart, and thus that it performs a kind of circular motion. Let us assume, either arbitrarily or from experiment, the quantity of blood which the left ventricle of the heart will contain when distended, to be, say, two ounces, three ounces, or one ounce and a half - in the dead body I have found it to hold upwards of two ounces. Let us assume further how much less the heart will hold in the contracted than in the dilated state; and how much blood it will project into the aorta upon each contraction; and all the world allows that with the systole something is always projected, a necessary consequence demonstrated in the third chapter, and obvious from the structure of the valves; and let us suppose as approaching the truth that the fourth, or fifth, or sixth, or even but the eighth part of its charge is thrown into the artery at each contraction; this would give either half an ounce, or three drachms, or one drachm of blood as propelled by the heart at each pulse into the aorta; which quantity, by reason of the valves at the root of the vessel, can by no means return into the ventricle. Now, in the course of half an hour, the heart will have made more than one thousand beats, in some as many as two, three, and even four thousand. Multiplying the number of drachms propelled by the number of pulses, we shall have either one thousand half ounces, or one thousand times three drachms, or a like proportional quantity of blood, according to the amount which we assume as propelled with each stroke of the heart, sent from this organ into the artery - a larger quantity in every case than is contained in the whole body! In the same way, in the sheep or dog, say but a single scruple of blood passes with each stroke of the heart, in one half-hour we should have one thousand scruples, or about three pounds and a half, of blood injected into the aorta; but the body of neither animal contains above four pounds of blood, a fact which I have myself ascertained in the case of the sheep. Upon this supposition, therefore, assumed merely as a ground for reasoning, we see the whole mass of blood passing through the heart, from the veins to the arteries, and in like manner through the lungs. But let it be said that this does not take place in half an hour, but in an hour, or even in a day; any way, it is still manifest that more blood passes through the heart in consequence of its action, than can either be supplied by the whole of the ingesta, or than can be contained in the veins at the same moment. Nor can it be allowed that the heart in contracting sometimes propels and sometimes does not propel, or at most propels but very little, a mere nothing, or an imaginary something: For if it be a necessary effect of the dilatation of the heart that its ventricles become filled with blood, it is equally so that, contracting, these cavities should expel their contents; and this not in any trifling measure. For neither are the conduits small, nor the contractions few in number, but frequent, and always in some certain proportion, whether it be a third or a sixth, or an eighth, to the total capacity of the ventricles, so that a like proportion of blood must be expelled, and a like proportion received with each stroke of the heart, the capacity of the ventricle contracted always bearing a certain relation to the capacity of the ventricle when dilated. And since, in dilating, the ventricles cannot be supposed to get filled with nothing, or with an imaginary something, so in contracting they never expel nothing or aught imaginary, but always a certain something, viz. Whence it is to be concluded that if at one stroke the heart of man, the ox, or the sheep, ejects but a single drachm of

blood and there are one thousand strokes in half an hour, in this interval there will have been ten pounds five ounces expelled; if with each stroke two drachms are expelled, the quantity would, of course, amount to twenty pounds and ten ounces; if half an ounce, the quantity would come to forty-one pounds and eight ounces; and were there one ounce, it would be as much as eighty-three pounds and four ounces; the whole of which, in the course of one-half hour, would have been transfused from the veins to the arteries. The actual quantity of blood expelled at each stroke of the heart, and the circumstances under which it is either greater or less than ordinary, I leave for particular determination afterwards, from numerous observations which I have made on the subject. Scientific papers; physiology, medicine, surgery, geology, with introductions, notes and illustrations. This text is part of the Internet Modern History Sourcebook. The Sourcebook is a collection of public domain and copy-permitted texts for introductory level classes in modern European and World history. Unless otherwise indicated the specific electronic form of the document is copyright. Permission is granted for electronic copying, distribution in print form for educational purposes and personal use. If you do reduplicate the document, indicate the source. No permission is granted for commercial use of the Sourcebook.

Chapter 7 : William Harvey - History Learning Site

Englishman, short in stature, by the name of William Harvey, the discoverer of the circulation of the blood and the man who brought us the science of physiology.

Records and personal descriptions delineate him as an overall calm, diligent, and intelligent man whose "sons He kept, employed, and improved their gainings to their great advantage. William was the eldest of nine children, seven sons and two daughters, of Thomas and his wife Joan Halke. Harvey graduated as a Bachelor of Arts from Caius in Harvey graduated as a Doctor of Medicine at the age of 24 from the University of Padua on 25 April Harvey had "conducted himself so wonderfully well in the examination and had shown such skill, memory and learning that he had far surpassed even the great hopes which his examiners had formed of him. Physic" a medical doctor. You shall not, for favor, lucre or gain, appoint or write anything for the poor but such good and wholesome things as you shall think with your best advice will do the poor good, without any affection or respect to be had to the apothecary. And you shall take no gift or reward This you will promise to do as you shall answer before God The Lumleian lectureship, founded by Lord Lumley and Dr. Richard Caldwell in , consisted in giving lectures for a period of seven years, with the purpose of "spreading light" and increasing the general knowledge of anatomy throughout England. Harvey began his lectures in April At this time, at the age of thirty-seven, he was described as "a man of lowest stature, round faced; his eyes small, round, very black and full of spirit; his hair as black as a raven and curling". At the beginning of his lectures, Harvey laid down the canons for his guidance: To point out what is peculiar to the actual body which is being dissected. To supply only by speech what cannot be shown on your own credit and by authority. To cut up as much as may be in the sight of the audience. To enforce the right opinion by remarks drawn far and near, and to illustrate man by the structure of animals. Not to praise or dispraise other anatomists, for all did well, and there was some excuse even for those who are in error. Not to dispute with others, or attempt to confute them, except by the most obvious retort. To state things briefly and plainly, yet not letting anything pass unmentioned which can be seen. Not to speak of anything which can be as well explained without the body or can be read at home. Not to enter into too much detail, or in too minute dissection, for the time does not permit. To serve three courses according to the glass [i. In the second the parlour, [i. He seems to have similarly served various aristocrats , including Lord Chancellor Bacon. He said of him "He writes philosophy like a Lord Chancellor. As a result of negative comments by other physicians Harvey "fell mightily in his practice", [15] but continued advancing his career. Eventually, Harvey was also elected Treasurer of the College. Witchcraft trials[edit] Harvey was a prominent sceptic regarding allegations of witchcraft. He was one of the examiners of four women from Lancashire accused of witchcraft in , and as a consequence of his report, all of them were acquitted. Initially he told her that he was a wizard and had come to discuss the Craft with her, and asked whether she had a familiar. She put down a saucer of milk and called to a toad which came out and drank the milk. He then sent her out to fetch some ale, and killed the toad and dissected it, concluding that it was a perfectly ordinary animal and not supernatural in any way. During this journey he wrote to Viscount Dorchester: It is scarce credible in so rich, populous, and plentiful countries as these were that so much misery and desolation, poverty and famine should in so short a time be, as we have seen. I interpret it well that it will be a great motive for all here to have and procure assurance of settled peace. It is time to leave fighting when there is nothing to eat, nothing to be kept, and nothing to be gotten". It is possible he met Galileo in Florence en route. The papers consisted of "the records of a large number of dissections Now sixty-eight years old and childless, Harvey had lost three brothers and his wife by this time. He thus decided to return to London, and lived with his brothers Eliab and Daniel at different periods. You know full well what a storm my former lucubrations raised. Much better is it oftentimes to grow wise at home and in private, than by publishing what you have amassed with infinite labour, to stir up tempests that may rob you of peace and quiet for the rest of your days. Descriptions of the event seem to show that he died of a

cerebral hemorrhage from vessels long injured by gout: There exists a fairly detailed account of what happened on that day. Harvey "went to speak and found that he had the dead palsy in his tongue; then he saw what was to become of him. He knew there were then no hopes of his recovery, so presently he sends for his young nephews to come up to him. He then made signs for seized with the dead palsy in his tongue he could not speak to let him blood his tongue, which did him little or no good, and so ended his days, dying in the evening of the day on which he was stricken, the palsy giving him an easy passport. Harvey was buried in Hempstead , Essex. In the course of time the lead enclosing the remains was, from expose and natural decay, so seriously damaged as to endanger its preservation, rendering some repair of it the duty of those interested in the memory of the illustrious discoverer of the circulation of the Blood. The Royal College of Physicians , of which corporate body Harvey was a munificent Benefactor did in the years â€", by permission of the Representatives of the Harvey family, undertake this duty. In accordance with this determination the leaden mortuary chest containing the remains of Harvey was repaired, and was, as far as possible, restored to its original state Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. March Main article: Opening with a dedication to King Charles I, the quarto has 17 chapters which give a clear and connected account of the action of the heart and the consequent movement of the blood around the body in a circuit. Having only a tiny lens at his disposal, Harvey was not able to reach the adequate pictures that were attained through such microscopes used by Antonie van Leeuwenhoek ; thus he had to resort to theory â€" and not practical evidence â€" in certain parts of his book. After the first chapter, which simply outlines past ideas and accepted rules regarding the heart and lungs, Harvey moves on to a fundamental premise to his treatise, stating that it was important to study the heart when it was active in order to truly comprehend its true movement; a task which even he found of great difficulty, as he says: I found the task so truly arduous For I could neither rightly perceive at first when the systole and when the diastole took place by reason of the rapidity of the movement After this, Harvey goes analyzes the arteries , showing how their pulsation depends upon the contraction of the left ventricle , while the contraction of the right ventricle propels its charge of blood into the pulmonary artery. Whilst doing this, the physician reiterates the fact that these two ventricles move together almost simultaneously and not independently as had been thought previously by his predecessors. This discovery was made while observing the heart of such animals as the eel and several other types of fish; indeed, the general study of countless animals was of utmost importance to the physician: A digression to an experiment can be made to this note: As early as the 17th century, William Harvey had already discerned the existence of the Ductus Arteriosus and explained its relative function. Here he says, " He estimated that the capacity of the heart was 1. The next estimate he used was that the heart beats 1, times every half an hour, which gave 10 pounds 6 ounces of blood in a half an hour, and when this number was multiplied by 48 half hours in a day he realized that the liver would have to produce pounds of blood in a day, more than the weight of the whole body. Having this simple but essential mathematical proportion at hand â€" which proved the overall impossible aforementioned role of the liver â€" Harvey went on to prove how the blood circulated in a circle by means of countless experiments initially done on serpents and fish: This process was later performed on the human body in the image on the right: This would cut off blood flow from the arteries and the veins. When this was done, the arm below the ligature was cool and pale, while above the ligature it was warm and swollen. The ligature was loosened slightly, which allowed blood from the arteries to come into the arm, since arteries are deeper in the flesh than the veins. When this was done, the opposite effect was seen in the lower arm. It was now warm and swollen. The veins were also more visible, since now they were full of blood. Harvey then noticed little bumps in the veins, which he realized were the valves of the veins discovered by his teacher, Hieronymus Fabricius. Harvey tried to push blood in the vein down the arm, but to no avail. When he tried to push it up the arm, it moved quite easily. The same effect was seen in other veins of the body, except the veins in the neck. Those veins were different from the others â€" they did not allow blood to flow up, but only down. This led Harvey to believe that the veins allowed blood to flow to the heart, and the valves maintained the one way flow. Contrary to a popular misconception, Harvey

did not predict the existence of capillaries. His observations convinced him that direct connection between veins and arteries are unnecessary; he wrote "blood permeates the pores" in the flesh and it is "absorbed and imbibed from every part" by the veins. Harvey knew that he was facing an uphill battle: Galen believed that blood passed between the ventricles by means of invisible pores. Al-Nafis stated that blood moved from the heart to the lungs, where it mixed with air, and then back to the heart, from which it spread to the rest of the body. Some doctors affirmed they would "rather err with Galen than proclaim the truth with Harvey. Until the 17th century, two separate systems were thought to be involved in blood circulation: Like bellows, the lungs fanned and cooled this vital blood. Independently of Ibn Al-Nafis, Michael Servetus identified pulmonary circulation, but this discovery did not reach the public because it was written down for the first time in the Manuscript of Paris in Pulmonary circulation was described by Renaldus Columbus , Andrea Cesalpino and Vesalius , before Harvey would provide a refined and complete description of the circulatory system. He had been working on it for many years but might never have finished it without the encouragement of his friend George Ent. Finally he deals with embryogenesis in viviparous animals especially hinds and does. The treatment is generally Aristotelian and limited by use of a simple magnifying lens. Needham claims the following achievements for this work. He denied the possibility of generation from excrement and from mud, and pointed out that even worms have eggs.

Chapter 8 : William Harvey () | Geneaology in | Pinterest | William harvey

HARVEY, WILLIAM, M.D. (), physician and discoverer of the circulation of the blood, was born at Folkestone, Kent, 1 April , in a house which was in later times the posthouse of the town and which still belongs to Caius College, Cambridge, to which Harvey bequeathed it. His father was.

Chapter 9 : Harvey, William () (DNB00) - Wikisource, the free online library

Harvey focused much of his research on the mechanics of blood flow in the human body. Most physicians of the time felt that the lungs were responsible for moving the blood around throughout the body.