

# Nephrology in *A Medicinal Dictionary* of Robert James (1703-1776)

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## ABSTRACT

Robert James was a member of the College of Physicians at Cambridge and a practitioner. He was considered one of the “three best known characters in London – perhaps in Europe. The other two being the lexicographer Samuel Johnson and the Shakespearean actor David Garrick.” James became famous for his powerful ability to write and publish, which produced many books, including the ponderous *A Medicinal Dictionary, With a History of Drugs*, in 3 volumes in folio, published in London in the years 1743-1745, and dedicated to the famous professor and royal physician John Mead.

The Dictionary was translated into French by Denis Diderot, François-Vincent Toussaint and Marc Antoine Eidous, and was revised by Juliene T. Busson, president of the University of Paris. During the translation, Diderot learned much biology and medicine, which he used subsequently in developing his *Encyclopédie*. Interesting chapters are devoted to urine, predictions from urine, bloody urine, good urine, bad urine, urine portending death, diabetes, dropsy, nephritis, stone, ischury, dysury and urine incontinence. In general their strength resides in their accurate clinical descriptions. The paragraphs on urine are concise and clinically sound, and the description of procedures for urine

analysis and the utilization of results (quantity, quantity, colors, sediments and consistency) in diagnosis and prognosis of bloody urine is accurate. The section on diabetes is excellent and is comparable to that of Desault written decades later in the *Encyclopédie* of Diderot. In the chapter on dropsy (he does not use the word oedema), patients are well described and their remedies are appropriate for the time. The contributions of kidney and liver are clear. The plants for renal treatment can be traced to Dioscorides. Concerning dosage, he is precise and helpful to his readers. The chapter on stones is a real masterpiece, clinically well centered and giving all the pertinent information to localize them, their medical treatment and the risks of surgery. The entry on nephritis is short and rather confusing. Here James even lacks the usual accurate description of cases which could have made it understandable. Blood letting was extensively used in those days, and he is a man of his time, but James was aware of the clinical conditions where it fails. It is understandable that he underlines its role in certain bloody urines in patients with a plethoric constitution. Was James referring to patients with acute nephritis and possibly high blood pressure.

**Key words:** *Enlightenment, Hydrops, Robert James, Kidney, Medicinal Dictionary, Urine formation*



**Fig. 1 - Portrait of Robert James. Courtesy of Bernadette Molitor, BIUM, Paris.**

## JAMES'S LIFE

Robert James (Fig. 1, Table 1), was born in England at Kinverston in Staffordshire in the family of a major of the Army. At the age of 17 he registered at St. Johns' College in Oxford where he obtained a BA in 1726. He was subsequently admitted to the College of Physicians in London where he was nominated MD at the University of Cambridge. He practised at Sheffield, Lichfield and Birmingham and finally settled in London where he died in 1776 (1-5). He was considered one of "the three best know characters in London – perhaps in Europe" (5) – the other 2 being the lexicographer Samuel Johnson and the Shakespearean actor David Garrick (1717-1779).

## THE WORKS

James became famous for 2 reasons. The first relates to his powerful ability to write and publish many books including the ponderous *A Medicinal Dictionary*, in 3 volumes, in folio, published in London in the years 1743-1745 (Fig. 2). The second reason for his celebrity was a powder (a pill) made of phosphate of lime and oxide of antimony, which he developed and marketed for use in

fevers and inflammatory pain, and which was even administered to King George III for his attacks of mania.

*A Medical Dictionary* (6) is considered the most outstanding medical dictionary of prescientific medicine. It makes full use of the doctrine of constitutions (hot, cold, moist, dry, bilious, sanguine, phlegmatic and atrabilious). There has been speculation about the contributions of Samuel Johnson, James's classmate, to some biographies, including that of Boerhaave and to the whole outline (*Proposals*) of the dictionary.

The dimensions of the Dictionary impressed very much Mark Twain who in *A Majestic Literary Fossil* underlined that all case histories end with a "dy'd," no matter whether the disorder needed a mild purgative or a major operation.

Greatly influenced by chemists (chymistys) and particularly by Herman Boerhaave from Leyden, and to some extent by Paracelsus, James refers to many authors including Actuarius, Aegineta, Aesculapius, Aetius, Albucasis, Archagatus, Aesclepiades, Aristotle, Avenzoar, Averroes, Avicenna, Dioscorides, Erasistratus, Galen, Hippocrates, Oribasius, Pliny the Younger and Pythagoras. He also makes mention of Albinus, Bartholine, Borelli, Cowper, Arnaldus de Villanova, Van Helmont, Lancisi, Albertus Magnus, Malpighi, Morgagni, Ruysch, Santorini, Stensen, Wharton and many others.

The first volume begins with a dedication, written by Johnson, to Dr. Richard Mead (1673-1754), physician at St. Thomas, lecturer in anatomy, and physician of George II. A 99-page "Preface" follows where James describes his vision of the progress of medical ideas. Physicians and medical theories of all times are discussed including the unity of medicine which utilizes all sciences, namely geometry, mechanics, physic and chemistry, but yet is capable of moving from the particular to the general.

James also authored *A Treatise on the Gout and Rheumatism* (1745), *A Dissertation Upon Fevers* (1748), *Pharmacopoeia Universalis* (1752), *Practise of Physic* (1760) which is nearly a copy of one of Boerhaave's books, *Method of Preventing and Curing Madness Caused by the Bite of a Mad Dog* (1760), and *A Vindication of the Fever Powder* and *A Short Treatise of the Disorders of Children*, both of which appeared posthumously (1778). James is also credited with many translations including Ramazzini's *De Morbis artificum* and Prosper Alpinus's *The Presages of Life and Death in Diseases*.

Samuel Johnson wrote of James that "no one is more ingenious in his profession." For Burr, he "was a man living just before the new birth of medicine, having a glimmering in the future" (6).

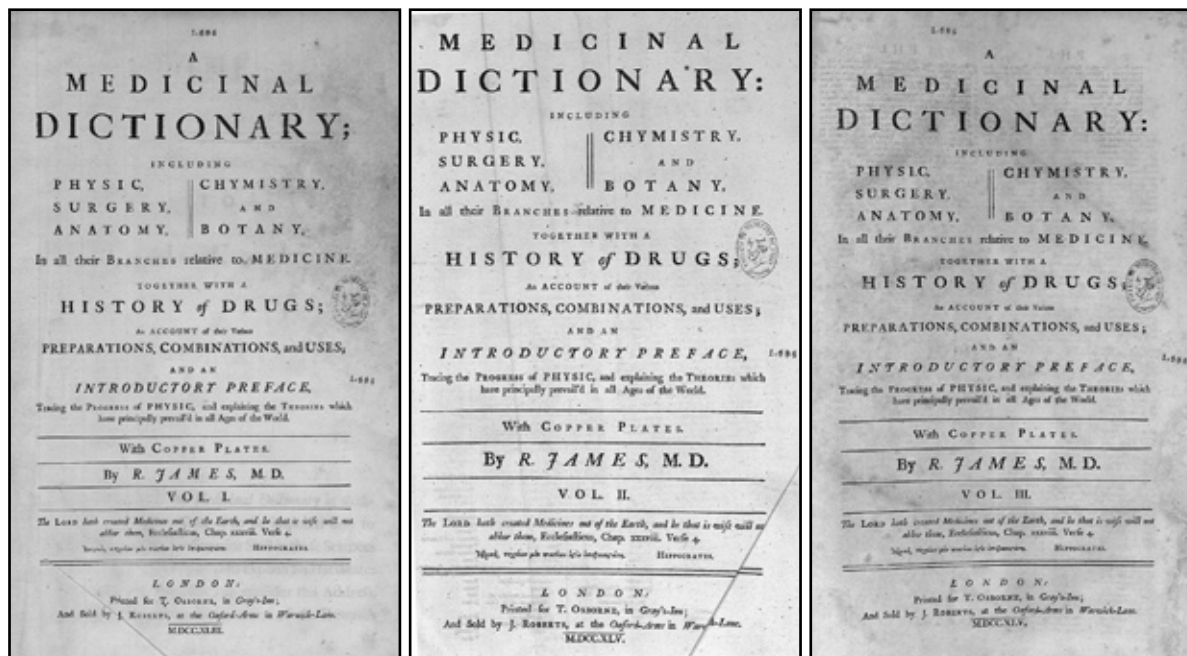


Fig. 2 - Frontispieces of volumes number 1-3 of *A Medicinal Dictionary* of Robert James.

### THE FRENCH TRANSLATION OF THE DICTIONARY AND THE GENESIS OF ENCYCLOPEDIISM

The book was translated into French by Denis Diderot, François-Vincent Toussaint and Marc Antoine Eidous, and was revised by Julien T. Busson, president of the University of Paris (Fig. 3). Eidous was a French writer, translator and encyclopedist. Toussaint (Paris 1715 - Berlin 1772) was at that time a lawyer of the French Parliament, who later became famous as author of *Les Moeurs* (1748), as a brilliant journalist and as advisor to Frederick II of Prussia, in Berlin (1764-1772). The outcome was a 6-volume French dictionary, which is relevant since Diderot during the translation acquired considerable information regarding the sciences of nature, which later was used in the *Encyclopédie*.

### JAMES, A MAN OF HIS TIMES

England contributed to the birth of modern science not only through its philosophers (7, 8) like Bacon, Newton, Boyle, Hobbes, Locke, Toland, Shaftesbury, Berkeley and Hume, but also through great physicians and scientists (Tab. I). As pointed out by Guthrie, in the 18th century, “the medical world in this eventful century, was in the capable hands of Cheselden, Pott, and above all of John Hunter. In medicine the leaders were Radcliffe and Mead, Fotherill and Lettson, Whitering, Ballie and Eberden, and many others” (9). So in England at the time of Robert James, experimental

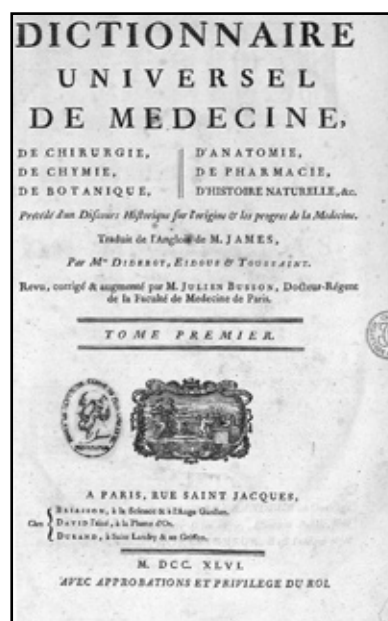


Fig. 3 - Frontispiece of the French translation by Diderot, Toussaint, Eidous and Busson, of Robert James's *Medicinal Dictionary*.

science, well supported by philosophical thought, was rapidly progressing and stimulated advances in anatomy, medicine, surgery, therapy and obstetrics.

### A MAN OF ENCYCLOPEDIK KNOWLEDGE

Although the birth of modern medicine may be dated to December 4, 1793 (10), in the very days when Robert James at

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**TABLE I**

TIME LINE 1703-1776 OF EVENTS IN ENGLAND, DURING ROBERT JAMES' LIFE

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1703	Robert Eliot public dissector in Town College
1704	Newton, Optikcs
1705	Birth of David Hartley
1706	John Locke, Of the Conduct of the understanding
1707	Union of the Parliament of England and Scotland
1798	St. Paul Cathedral in London completed
1709	Shaftesbury, Sensus Communis
1710	Birth of William Cullen
1711	Alexander Pope, Essay of Criticism
1712	Birth of John Foothergil
1713	End of Queen Anne's war
1714	George I of Hannover, King
1715	Edmund Halley observes total eclipse
1716	Alliance England-Netherland renewed
1717	Permier Grand Loge of England founded
1718	Birth of William Hunter
1719	England signs the anti Russia-Prussia pact
1720	South Sea Bubble
1721	Trials of variolation in England
1722	Death of John Tholand
1723	Birth of Adam Smith
1724	Premier of Handel's Julius Caesar in London
1725	Birth of Robert Clive
1726	Jonathan Swift, Gulliver's Travel
1727	Newton's death
1728	Ephraim Chamber,Cyclopaedis or Universal Dictionary of Arts and Sciences
1730	Colley Ciber laureate poet of England
1731	Birth of Admiral Duncan
1732	Birth of Lord Frederick North
1733	Birth John Priestley
1734	Birth of Charles Inglis
1735	Birth of John Brown
1736	Birth of Jams Macpherson
1737	Birth of Adam Gibbon
1738	Birth of George III
1739	David Hume, An enquiry concerning Human Understanding
1740	English Parliament allows naturalization of colonialists after 7 years

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*to be continued*

**TABLE I**  
CONTINUED

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1741	David Hume, Essay moral and political
1742	Walpole resigns as Prime Minister
1743	Battle of Dentigen
1744	War of England against France
1745	The Jacobites take Edimburg without opposition
1746	David Hartley, Coniecturae quaedam de sensu, motu et idearum generatione
1747	Victory at Finis Terrae
1748	David Hume, Research on human intellect
1749	Birth of Edward Jenner
1750	Typhus epidemic in London
1751	David Hume, An Enquiry concerning the Principles of Morals
1752	John Pringle, Observations on the Diseases of the Army
1753	Foundation of the British Museum
1754	Victories of Robert Clive in India
1755	Samuel Johnson, Dictionary of the English Language
1756	War of the 7 years
1757	David Hume, The Natural History of Religion
1758	British attack on Fort Carillon at Ticondergo
1759	Canada from France to England
1760	George III King
1761	Conquest of Pondicherry
1762	Birth of George IV
1763	Treatise of Paris between England, France, Spain and Portugal
1764	Thomas Reid, Inquiry into Human Mind of the Principles of Common Sense
1765	Birth of William IV
1766	Henry Cavendish discovers the inflammable air
1767	Birth of Maria Edgeworth
1768	Birth of Sir Astley Paston Cooper
1769	Navigation of Cook
1770	Birth of William
1771	Birth of Walter Scott
1773	James Watt and the steam engine
1774	William Hunter, The Anatomy of Human Gravid Uterus
1775	Victory of Bunkershill
1776	Adam Smith, Inquiry into the Nature and Causes of the Wealth of Nations

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the age of 35 years published the first volume of his *Medicinal Dictionary* a new fresh air of innovation had entered into science including medicine.

In the preface, James acknowledges the great contributions of physics, geometry, mechanics, chemistry and microscopy and quotes many innovative scientists and physicians. He accepts the role of basic sciences in understanding the human *machine*, but one should not take the risk of overwhelming the great bulk of notions needed by the physician who must utilize very simple procedures. The goal of medicine is that of preserving life and health of man. The whole material fed to medical students is excessive for the goal. We need to restore the simplicity of the art. This is the reform we need and we should pursue it. There is no need to study books produced from compilers who have copied the ancient authors, and need to go back to a few original scientists.

Physicochemical discoveries have contributed much to the advancement of medicine since we have learned about gravity and elasticity of air, the causes of fire, heat, cold, investigated the nature of solids and fluids, discovered the causes of fermentation, the effects of salt and sulphurs. Also the virtues of medicines are better known. Chemistry and pharmacy have helped in preparing new salutary medicine, the law[s] of motion have grown knowledge on muscle movements, the power of heart and fibres, as well as the knowledge of the effects produced by the inequalities of the circulation of blood (6).

James having a great interest in chemistry therefore put great emphasis on Paracelsus, who used mercury, antimony, sulfur, niter, tartar, opium, iron and the urinous spirit of hartshorn. However, regarding mercury preparation he was very imprecise; indeed he was never clear regarding methods of preparation. He looked for the quintessence or philosophical stone and, obviously, neither he nor his followers – like Isaccus Hollandus and Basil Valentine or Severinus – could find it. Bacon criticized Paracelsus and defined him as a *monstrum* (monster), although he admitted that chemists had demonstrated the falsity of the Galenic system. Paracelsus had learned the use of mercury from Berengarius da Carpi, and made extensive use of it. He had also the merit of having criticized the use of purgants; however, he made use of those of mineral origin. According to Van Helmont, one should not give credit to Paracelsus, although Van Helmont too commended him as the chief of chemists. His merits were :

- “In being well skilled in surgery, and practising it with great success.
- In understanding the common practise of physic, as

well as his contemporaries.

- In being alone master of the powers, preparations and uses of metal.
- In having the use of opium to himself and working wonderful cures thereby.
- In being well acquainted with the virtues of mercury, in an age when perhaps only he and Carpus knew anything on the matter.” (Preface, LXXXXII (6)).

However, Paracelsus “is more copious about urine, as may be seen in what he has written concerning the judgement drawn from urines. Urine says he, is a dissolved salt, with a mixture of sulphur and mercury. Urines were used to judge on the nature and consequences of disease” (6).

Nearly 90 years after Paracelsus, Van Helmont was born. “A man of infinite industry that he spent fifty years in examining fossils, animal and vegetable bodies by chemistry, He would undoubtedly have made a very considerable achievement if he had made right use of his discoveries, communicated them candidly to the world, and forbore running into the notions of Paracelsus, whom he mimicked in pretending like him an universal remedy” (6).

And after him came Sylvius de la Boe and Otho Tachenius (Preface, LXXXVII (6)). It was the time of the “ideas of acid and alcali” (Preface, LXXXXVIII (6)).

Harvey “gave occasion to the introduction of mechanics into medicine.” Thereafter man started to be studied as a machine, “a true mechanical structure and therefore possessing all properties which belong to a subject, the best quality for mechanical speculation.” Malpighi extensively studied artery, veins, lymphatic ducts “with the use of a microscope” and showed “that man is an aggregate of glands. Havers and Kirchner confirmed him. It was also possible to couple Mariotte’s observations with Descartes mechanics:

“The body of man is a machine whose solid parts of which some are appointed as vessels for confining , directing, changing, separating, collecting and discharging fluids; others are mechanical instruments, which by their figure, hardness and connections, are qualified to support other parts or to exercise some determinate motions” (6).

We need therefore a physician capable of understanding hydrostatics and mechanics and how to use them. This is also suggested by the studies of Archimedes, Descartes, Stensen, Borelli, Newton and Bellini.

In addition there emerged a role for chemistry. “The experiments of chemistry will indeed afford us a narrow view of single events.... Chemistry is very necessary to medicine in furnishing it with observations and showing us the most compendious way of making them.... For the chemical art can afford data and determine their conditions” (6).

The geometrical approach of mechanics applied to medicine has provided interesting experiments as indicated by the results of Borelli, those provided by Bellini using Malpighi's microscope, those of Descartes, Huygens, Pitcairne, Kirchner, Schelhammer and Morland. "This shows the usefulness of mechanics to medicine. However, the theory of mechanics does not heal patients, although it can show what is life in a man in health.... However I am not saying that a mathematician will make a good physician, I am convinced of the contrary, it will make a bad physician.... We do not require that a man skilled in mechanics should be a physician, but that a physician should be skilful in mechanic learning.... The misapplication of mechanics into medicine has made the art of healing prejudiced" (6).

This abuse, he says, should be condemned, the abuse is detrimental to the art. Its contributions were a meager nothing compared with the good fruits achieved by "practical observations, knowledge in anatomy and natural philosophy."

Chemists made many mistakes. "For, as while they devoted themselves to the making of experiments they deserved much commendations, so where from the narrow bands of *singular* they made excursions in the immense space and vast extent of *general* soon they lost their way" (6). So there were infinite errors in Paracelsus, Van Helmont and Tachenius.

### WHAT A PERFECT PHYSICIAN SHOULD KNOW

James's view on this was that :

"I imagine him first laying in the foundation of his art in the contemplation of geometrical figures, bodies, weights, velocity, the fabric of machine and the power of acting over other bodies thence arising. While he employs his thoughts above these matters, he is taught by plain precepts as well as examples to distinguish truth from falsehood, evidence from obscurity, and acquires prudence of mind, from a slowness to pass a judgement upon things. When he knows to estimate the actions of simple bodies, and to deduce them from true and manifest causes, I think he qualified for learning the properties of fluidity, elasticity, thickness, weight, and tenacity of liquids from hydrostatics. His reason being by the time much improved, he proceeds to study the force of fluids upon machines, and of these upon fluids and to demonstrate them by mathematics, confirm them by hydraulics and mechanics, and illustrate them by chemical experiments, and entertains himself with speculations on nature and actions of fire, water, air, salts and other homogenous bodies. I now look

upon him as sufficiently furnished and qualified for entering upon the study of medicine, and here he employs his eyes illuminated with geometry, in viewing dissections of human carcasses, or the opened bodies of living brutes and contemplates the structure, figure, firmness, original, bounds, connection, curvature, flexibility and elasticity of vessels. Being excited by so wonderful a spectacle he applies what he sees to the rule of mechanics, in which he was before instructed, and discovers the hidden use of those.... By this method the proximate causes of every effects are investigated" (6).

Of the authors of antiquity there is no need to read and learn everything. Just those authors who have written original things have to be studied, those of compilers can be neglected.

### KIDNEY-RELATED ENTRIES IN *A MEDICINAL DICTIONARY*

#### Calculus

The topic is extensively discussed in the last 19 pages of the first volume, where the most interesting pages are those dedicated to the signs and symptoms of kidney stones. He makes full use of his knowledge of the literature and carefully discusses data from several authors. Calculus is defined by "the presence of stone in kidney, ureters or bladder." "The symptoms of a stone in the kidneys are an obtuse pain at the region of the kidney, a discharge of bloody urine after any considerable motion of the body especially in a coach upon stony roads" (Boerhaave). Suppression of urination is a sequence of stones obstructing ducts:

"If the sinus of the kidney be obstructed with a stone of considerable bigness, there arise[s] pain in the loin about the muscles called psoas which extends to the middle of the rib so as to cause the disease be oftentimes mistaken for a pleurisy. There is a sense of weight upon the hip, the patient bends forwards with difficulty and can scarcely move his back.... The patient is tormented by the desire to make water, like a woman in travail.... If the stone falls in the ureters it raises a shivering as from cold and the progress of the stone is felt, attended with violent pain. If a stone falls into the bladder there is a plentiful discharge of acqueous urine. If the ureter is lacerated blood sometimes passes with urine. Another pain commences when the stone passes through the urethra" (Aretaeus).

One also learns "that all nephritic disorders, such as infarctions of the kidneys, inflammation, exulcerations and pains arising from the stones are more difficultly cured in old than

in young people,” as confirmed by Hippocrates (Hoffman). Concerning the cures, he departs from Aretaeus and states that prevention is nearly impossible, so one has to favor stone expulsion. Therefore blood letting from the vein of the ankle of the affected kidney may be necessary to relieve a long-lasting colic. Cupping and scarification may be of help before trying the roots of valerian, spignel and asarabacca. However, Trallianus uses medicines “of relaxing and lenitive qualities.” The best remedy for these purposes is bathing, which mitigates the pain and cures the distemper. Therefore bathing in hot water should be achieved 2-3 times a day. In summer, cold baths and a decoction of cardus may be indicated. Clysters containing oil should be administered. In the most obstinate cases, goat’s blood should be prepared, reduced in powder and given in Cretean wine. Drinking warm water or cooled wine during meals is also a good approach. Hoffman in turn is very precise when he states there may arise the conflict of curing pain and expelling the stones: thus he suggests the use of his mineral liquor or the spirit of niter. Clysters and hot baths have a role in the treatment of the colic. Opiates also have a role in “order to take off the spasmodic contraction of the parts where the stone resides and to alleviate the pain.” Also blood letting may be necessary. It can be afforded in the upper limbs as well as through the veins of the anus, ankle or ham. It is followed by reduction or removal of inflammation. However, it should be avoided in cases of ulcerations.

Bladder stones are a serious problem, which sometimes oblige us to cut the bladder, since “ischury, pain, fever and colliquation destroy the patient.” However, the cut has horrible sequelae and will be followed by “a continual efflux of urine, which though not a dangerous disorder is yet insupportable to a free person who knows not how to live under a perpetual dribbling, which molests him whether he sleeps or wakes and is very troublesome in walking” (6).

The section on bladder stones makes reference to various extractive techniques by specific instruments and catheters and also includes a detailed description of Mrs. Stephens’ medicine for the stones, consisting of a powder, a decoction and the pills, which James transcribes verbatim from the *State Gazette*, which is a personal decoction of the pill invented by James.

The last 2 paragraphs of volume 1 deal with problems of recent onset, including many anomalous symptoms of the fevers utterly unknown to ancients. “The bark doe not cure the disorder and leaves in the blood a portion of morbid matter which causes the fever.... hence fevers, which have been treated with the bark, frequently afflict the miserable

patient for many years from time to time, under the mask of other disorders”.

(“Calculus” *A Medicinal Dictionary*. Vol. 1. London: Osborne; 1743 (6).)

### *Hydrops*

In defining hydrops, James refers to the authority of Aretaeus, who considers it a highly depraved habit of body with respect to all its parts and functions accompanied with a preternatural stagnation and collection of serous humours either in the whole body or in some particular cavities of it.... All patients labouring under dropsy are pale, and afflicted with difficult breathing and cough. They are at certain times slow, lazy, and have an aversion to ailments, and if they eat anything, though in small quantity and free from a flatulent quality they are nevertheless much inflated and distended, their skins are entirely destitute of all moisture, neither can a sweat be raided on them by warm baths. Besides they are of a whitish colour, and effeminate, their sleeps are oppressive, troublesome and short, they are subject to delirium, anxious and uneasy about trifles, and excessively fond of living (6).

Then he discusses “anasarca, ascites and tympanites. The first is when the entire body is tumid, the second when the abdomen is turgid and a lymph, stagnating within its cavity, overflows the viscera, and the third when the abdomen is not so soft as to yield to the impression of the fingers but appears highly inflated and hard” (6).

“In the early stage of dropsy, a swelling seizes the feet, which in process of time rises to the thighs, the groin, the ilia, the abdomen, and the pit of the stomach. Sometimes the abdomen, turgid with water, is so excessively prominent, that the patients cannot see his own feet, but dreads a rupture of the abdomen. In process of time a quantity of water falls down into the scrotum and frequently distends it so much as to render it as large as one’s head. Not in all dropsical patients the scrotum does become tumid. In women also the groin become turgid and the vagina is sometimes so distended by the waters as to fall down.... Besides a common symptom of dropsical patients is a difficult breathing which by being increased by violent motion and especially in the night time by reason of the reclining posture of the body, frequently induces a danger of suffocation. Hence the miserable patients are obliged to shift their posture and rather to sit erect, than lie in bed.... They are also afflicted with a cough, which is generally of the dry kind and without expectoration.... In the beginning of a dropsy the quantity of urine corresponds to that of the liquor drank.



When the disease advances thirst ensues. Malignant ulcers are frequently produced which are not to be cured and consolidated without the great difficulty.

In those who die from dropsy the liver may be normal or contracted, the spleen corrupted, the pancreas scirrhus, the stomach oedematous, the heart, especially its right ventricle distended, the quantity of serum in the cavities may range between 30 to 1000 pints” (6).

The true cause of swelling of the body in a dropsy person, of the secretion of serum from blood and of its stagnation in the cavities “is a slow flow and languid circulation of the blood, especially through the veins” (6).

It is difficult to treat dropsical persons, not everyone can be cured. Doctors have to be clear on that first evacuate stagnating waters then eliminating the cause of the dropsy, since fluid removal is not curative. Sometimes scarification of legs and scrotum may drain sufficient water. However the best measure is paracentesis. Purgatives may be safe, clysters are useful, blood letting useless as are sudorifers.

Before paracentesis it is a good rule to put a belt strap around the abdomen to apply pressure. Fluid may be drawn in one seance or in small daily quantities having well in mind that “upon a sudden evacuation of waters death or a violent fainting ensues for the pressure of water being taken from the arteries, they become larger and blood rushes into them suddenly, deserting at the same time, the brain” (6).

Dissipation of water may be achieved “by a rigid abstinence from drink, and eating biscuit with a little salt and a very small quantity of oleosus wine” (6). Hippocrates used to recommend “exercise (to increase perspiration), sweating, eating bread (contains little water), little drinking, a little white wine and purgatives.” People were cured by a year-long abstinence from fluid.

Paracentesis should be performed with an instrument inserted into a cannula (trocar) either just 3 inches below the navel and 3 inches laterally to the linea alba or in the middle of the line connecting the navel to the spine of the os ilium. Repeated paracentesis carries the risk of infection.

Many drugs can increase urine volume. Patients should be monitored by measuring daily drink and urine and by taking their circumference. Water can be drawn also by urine and by vomiting, and by increasing urine volume, having the legs at a higher level than the head and abdomen during sleeping, by applying bandages and by careful scarifications.

In these guidelines by James, we observe the richness of clinical description which points both to heart failure, as well as to the liver – dropsy as a sequence of cachexy. He shows no suspicion of any role of the kidneys. We learn about mon-

itoring fluid balance (fluid intake, urine, circumference), low water intake, low salt foods, purgatives, clysters, sweating and positioning the legs in an upper position.

(“Hydrops”, *A Medicinal Dictionary*. Vol. 2. London: Osborne; 1743 (6).)

### *Nephritis*

This is defined as “an inflammation of the kidneys” characterized by “the burning, pungent, intense and inflammatory pain of the part where the kidneys are situated, from the acute continual fever, from small quantity of urine which is highly red and deep-coloured, pain of the groin and contiguous testicle, pain of the ileum, vomiting of bile” (6).

“Such an inflammation may be produced by all the general causes of inflammation applied to the kidneys ... whatever hinders the extremities of the arteries from transmitting their fluids ... a wound, a contusion, running, violent riding, excessive heat, a plethora, a poison ... a long spasmodic contraction of all those vessels.... Such inflammation is cured when her nature is benign and the disease favourable. First by resolution, secondly by a copious, red, and thick urine continually discharged before the seventh or, at most, the fourteenth day. The disorder is to be cured by general remedies appropriate for the cure of inflammation such as bloodletting, revulsion and dilution. Secondly by mild emollient and antiphlogistic decoctions drunk in great quantities. Thirdly by clysters, fomentations and baths ... and fourthly by mild and moist aliments, rest and by avoiding lying on the back and excessive warmth. Opiates are used for convulsions and excessive pains” (6).

This short chapter (less than 2 columns) ends in stressing that although the causes of nephritis are infinite, all types are cured almost in the same manner. James is even confused to the point where he includes stones as a cause of nephritis. Here, although making reference to Boerhaave’s aphorisms, he even lacks the traditional accuracy in describing signs and symptoms. There is no reference to dropsy except when nephritis is caused by a scirrhus of the kidney. The disease is incurable when it ends in a carbuncle.

(“Nephritis” *A Medicinal Dictionary*. Vol. 2. London: Osborne; 1745 (6).)

### *Principal symptoms of urinary secretion*

The chapter on urine starts with a definition of “the principal symptoms of urinary secretion” and continues as follows, referring to *Ischury* as “entire retention of urinary, the primary cause[s] of which are plethora, inflammation of the kidney, ureters, bladder, the neck of the bladder,

urethra; a spasm and compression of the same part; also an obstruction of the same from the stone, phlegm, pus, or thrombus, carbuncle, or tumour”.

*Dysury* is “an excretion of urine with trouble, labour, or pain. One species of this is an emission of urine by drops, with burning sensation” (6).

*Incontinence of urine* occurs “when the same flows without effort or consent of the will. This disorder proceeds from a resolution, dilatation, or lesion of the fibres of the sphincter of the bladder or by a suppuration” (6).

*Diabetes* is “a frequent and copious discharge of chylous or lacteous urine” (6).

### *Ischury*

Ischury is suppression of urine which may be true (the bladder is full) or spurious (the bladder is empty). True ischury may be due to 1. abolition of sense in the bladder (related to nerves); 2. a cold distemper (weakened sense of bladder or weakened expulsive capacity); and 3. bladder neck obstruction due to swelling of the muscle surrounding the neck. Tumors, hard feces, a pregnant uterus and stones may also cause a bladder neck case.

“A suppression of urine is sometimes occasioned by an excessive quantity of urine too long retained, by which the whole body of the bladder is distended in such a manner so to be incapable of contracting. This occurs when one abstains from urinating and also for insensibility of the stimulus” (6).

Spurious ischury occurs when no urine falls into the bladder due to injured kidneys, ureteral obstruction by stones, gross phlegm, pus or blood clots. No urine is formed in injured kidneys, in burning fevers and in dropsy – in the last case the serum is diverted to other parts. Ureters may be obstructed by stones, blood clots or compression of neighboring organs. Complete ischuria follows bilateral suppression.

True ischury manifests with sense of tension and weight on the hypogastrium, and a visible bladder globe. Causes may be discovered by preceding and attendant circumstances. Proper symptoms will help in recognizing obstructions of various origins. Catheters will not reach the bladder if the obstruction is in the urethra. Signs of bladder stones and signs of gonorrhoea are important. Clots or pus may be partly excreted after the catheter is withdrawn. In spurious ischury there is no tension, no globe, and catheters do not cause passage of urine. Stones, inflammation, burning fever and hydrops may be disclosed easily.

The prognosis is bad if it exceeds 7 days’ duration – in that case it is fatal. Death is due to regurgitation of blood

in the whole body which cause coma and death. Tenesmus with urine suppression portends death, which is preceded by hiccough. Also ischury due to vertebral dislocation or spine lesion is incurable. When a urinous smell is perceived from the mouth and nostrils death is imminent. A spurious ischury from ureters, kidneys or inflammation causes repletion of the emulgent vessels, which is cured by blood letting and hydragogues. An ischury due to a stone impacting on the bladder neck must be cured by its removal, which may attempted by elevating the legs of the patients and by strongly shaking them. A semicupium may be of help. Caruncles should be excised.

If ischury is due to gross phlegm, purgation is mandatory. Syrupus Byzantinus, fomentations, semicupius, syrups fernellii, wine of winter cherries (Arnaldus Villanova) and oil of scorpions (5 to 6 drops) come into discussion.

Chemists have their remedies, which are represented by vitriol, sulfur, turpentine, spirit of salts, salt of tartar (half to 1 ounce). Cataplasms made of onions in swine fat and oil may be placed on the pubes and loins. When blood clots are the cause, remedies should be specific. Among them, oxymel simple and simple of squils are useful.

(“Ischury.” *A Medicinal Dictionary*. Vol. 3. London: Osborne; 1744 (6).)

### *Dysury*

Dysury, or difficulty in urinating, is any dolorous or painful excretion of urine, which is also expressed as *ardor urinae*, or heat of urine.

“Its proximate and immediate cause is either a solution of continuity in the sphincteric muscle or of urethra” due to any cause: acrimony of urine, acrimonious foods, lesions of the bladder and ureters giving origin to white and milky excretions, and a mixture of acid humors. A latent stone of the bladder, the passage of gross sand, an inflammation or ulcer and gonorrhoea may come into consideration. Acrimony causes a dysury with thin, reddish colored urine. “Stone and inflammation manifest them sufficiently.”

The cure is centered on removal of causes. “If the cause is a stone, an inflammation or an ulcer of bladder or its neck, the cure” is that of those diseases. Acrimony of food is treated with phlebotomy repeated several times in the right arm, on the inferior veins. Purges are of common use, in this case one should select those of lenient and cooling quality, such as cassia, given in bolus, or with a decoction of lettuce or pulp of tamarind. “In a long dysury purging and opiates would be of service.” Mucilage can be mixed in clysters to mitigate pain. Clysters

of milk with mucilage are very efficient in mitigating pain. Also, emulsions can be used, although they are diuretic, and being cold, they “gently clean the urinary passages.” Goats’ milk or any milk corrects acrimony. Mineral waters are usable. Also Julaps have a place. Also useful are the conserve of flowers of mallows and the decoction of camomile flowers in milk. The troches of alkekengi and winter cherries, being diuretic, obtund and correct the acrimony of urine. External remedies are of scarce effect, when an excess of bilious and acrid humors is the cause, in which event, hemorrhoidal veins should be opened because of their relation with kidneys and bladder. (“Dysury.” *A Medicinal Dictionary*. Vol. 3. London: Osborne; 1745 (6).)

### *Incontinence*

Incontinence (*incontinentia*) “in medicine mean[s] the inability in any organ to retain what should not be discharged without the concurrence of will” (6). The bladder may be debilitated in men when “their urine flows from them involuntarily.” This may proceed from a stone in the bladder or a palsy in the sphincter. In the first case, the only remedy is lithotomy, in the second case strengthening and nervous medicines are mostly likely to remove it. Leather bags between thighs, steel pots and compression of the penis are also used. In women, incontinence proceeds from a difficult labor, the removal of a stone or a natural weakness. Astringents may be used. “If these fail [*sic*] it is generally looked [upon] as incurable. However a pessary or a ring of appropriate size positioned in vagina may be of help.” (“*Incontinentia*.” *A Medicinal Dictionary*. Vol. 3. London: Osborne; 1744 (6).)

### *Diabetes*

James after giving the definition, describes 3 patients and then refers to various authorities including Lummius, Rabbi Moses, Araeteus, Lister, Willis and Galen. Then he describes the “methods of cure,” and finally he turns to “consumption from a diabetes” (cachexia) which is discussed along with new clinical cases.

*Diabetes* is defined as

“that discharge of urine [which occurs] when any liquor, soon after [it] is drank, is immoderately, and without undergoing almost any change, evacuated crude, and under the appearance of water. In this disorder the patient is continually afflicted with an insatiable thirst, incapable of being removed by drinking the most liberal draughts. The liquor

drank is often discharged by urine in larger quantities than it was taken into the stomach. Thus the whole body is by this means, consumed as, as it were, dissolved.... A diabetes is a disease of the chronic type and depends upon the state of the kidneys” (6).

It is a rare disease. The cases reported refer to (a) a girl of 18 years of age who died of diabetes showing normal kidneys at post mortem examination, (b) a woman with a stone disorder and urinary fever showing at post mortem a small left kidney and large stones in both kidneys, and (c) a gentleman with insatiable thirst, burning fever and at post mortem 2 large stones in each kidney. All cases were characterized by severe thirst, immoderate drinking and dryness of the mouth. His cases were characterized by death, absence of sweet urine, rapid onset of polyuria in 1 case, by fever and polyuria in the other 2. Dehydration might be the common denominator for death; central diabetes insipidus might explain the disease in the girl, and acute renal failure with urinary infection the remaining 2 cases.

James discusses Lister’s opinion about the slow emergence of polyuria in diabetes – “this disorder does not seize the patient suddenly” – and the presence of mouth dryness and thickening of saliva. He also refers on Ettmuller’s classification of true diabetes, spurious diabetes and coeliaca by urine. True diabetes being characterized by sweet urine. However, James seems indifferent to this possibility, but readily accepts Galen’s suggestions about the rarity of the disease. One should note that it is a diabetes with slow onset, not abrupt as in the central one.

Aeraeteus is the authority concerning the fact that “the remedies for putting a stop to the liquefaction are the same as those which are proper for dropsies, but the thirst is to be the principal object of our care for this is the most tormenting symptom belonging to this disorder.” The very innovative use of a diuretic to reduce polyuria was discarded in the treatises of Araeteus and was not subjected to experimentation. “For drink, James let the patients use water boiled with autumnal fruits and let this food be milk mixed with frumentaceous aliments. The wine must be sweet, made with grapes left to dry in the sun”. This is a prescription not different from that of Lister, who uses milk diluted with water and wine boiled with ginger. The daily milk allowance is not reported. It is disappointing that James, although knowing of the occurrence of sweet urine in diabetes, does not suggest to check it in all cases. He discusses a chronic disease ending with death (which is appropriate), reports Araeteus’ prescription for the use of a diuretic and considers

adequate the use of milk with cereal flour and plenty of water. It should be recalled that the use of milk for a renal disease will cease around 1950.

("Diabetes." *A Medicinal Dictionary*. Vol. 2. London: Osborne; 1745 (6).)

### *Pain*

Pain may be acute, pulsative, gravative and associated with numbness. A hardness and pain in the bladder are very difficult and destructive on all accounts, but most cases are fatal when attended by a concomitant fever. Gravative pain gives a sense of weight on the affected part and is typical of kidney, liver, spleen, skin, glands and lung. In kidneys excited by an inflammation, pain occurs with numbness.

("Pain." *A Medicinal Dictionary*. Vol. 1. London: Osborne; 1743 (6).)

### *Bloody urine*

A bloody urine proceeds from a rupture or corrosion of the vessels either of the kidney or bladder, in such a manner that they evacuate their content sometimes with and sometimes without urine. This disorder is more or less dangerous according to the circumstances with which it is accompanied. If the redness proceeds from blood it tinges the cloth through which it is strained, with a reddish color, which does not happen when the high color of urine proceeds only from salts. This maneuver should be regarded as a safe laboratory test. For Hippocrates, a bloody urine with pain is due to bleeding in the kidney and or in the bladder. When bleeding is associated with pain about the loins and iliac region and a difficult discharge of a sandy urine, the lesion is in the ureters. Blood from the penis is not mixed with urine.

Violent exercise in a plethoric person may cause bloody urine, and riding is the typical cause for bloody urine, as is riding on chariots on rough streets. Stones are a frequent cause of bloody urine especially during or after exercise and are associated with pain in the loin. Also, ulcerations of bladder can cause blood urine and urine discharge to be painful; this is the case in gonorrhoea, where urine is bloody, purulent and full of filaments, small caruncles, and hairy and wormlike material.

Another cause of bloody urine are contusions, blows and the lifting of burdens. In this case, blood letting is useless. Purgatives and strong diuretics as cantharides may cause bloody urine which can result also from measles and small pox. The last 2 examples are very important since they represent hematuria from viruses in recent treatises.

"The most dangerous species of bloody urine is that which proceeds from a profound wound or ulceration of the kidneys or bladder and is accompanied by intense pain and an evacuation of pus" (6). Causes and seats of bloody urine are incumbent on the skillful physician both for prevention and cure of the disorder. "When it is caused by redundancy of blood, venesection is the most safe and efficacious if performed in the arms. In the case of bloody urine from expansion of blood, venesection should be associated with the administration of nitrous medicines. For blood urines accompanied by dysuria or ischuria, draughts of tepid water and external use of baths are indicated. Temperate medicinal waters should be used in conjunction". Venesection has a role in preventing a return of the disorder (6). Milk and whey are also excellent remedies against the disorder and should be associated with purging for not less than 40-50 days. Rest should be a rule, and exercise be forbidden. Quercetan's syrup and the syrups fernelii have also a role.

At this point, James discusses predictions from urine. This section indicates that the status of knowledge in those years had not progressed since the time when Hippocrates and Galen were still references for physicians scrutinizing urine, an art each doctor used in his everyday work.

("Bloody Urine." *A Medicinal Dictionary*. Vol. 3. London: Osborne; 1745 (6).)

### *Of prediction from urine; of the nature and causes of urine, and of what importance it is with respect to prognostication*

Urine may help in suspecting many diseases. The matter within urine is very important. Usually urine has the same color as meat and drink. Urine should be evaluated for its "substance, quality, quantity and contents." Substances may cause thin, thick and intermediate urine. Qualities are related to color, clearness and smell. The color may be white, pale, yellow, gold, red, green or black. Urine may be clear, lucid, turbid or obscure, and may smell fetid or not. Concerning the quantity, "sometimes the excretions are copious, sometimes small, sometimes moderate, on some occasions wholly intercepted" (6).

Substances which appear separated from the body of urine are defined as contents. Substances are defined as sediments when on bottom of the vessel, *enaorema* when observed in the middle of the vessel and clouds when observed on the surface. The sediments may be thick, thin, continuous, discrete, incoherent or not at all united and dispersed in urine.

The contents may be white-pale, yellow-pale, deep-red, green, livid or black, as well as thin or thick. The last may appear as grains (*oroboides*) or scales (*petaloides*).

At this point the author minutely discusses the various reasons for thin and thick urine, the quantity (copious, small), colors and contents, and associates them with disease as prognostic signs.

(“Of Predictions From Urine.” *A Medicinal Dictionary*. Vol. 3. London: Osborne; 1745 (6).)

#### *Of the different causes of urine*

Urine may be thin or thick: the former does not contain humors, the latter means concoction of humors. Urine may be copious (plentiful drinking, inflammation of the kidneys) or small (drinking sparingly, fever).

#### *Of good urines portending recovery*

“Urine, as well as other excretions, affords indications in diseases for a prognostic of death or recovery, in two ways: first as it is [a] sign of concoction and malignity, and, secondly, as it is a cause, in discovering itself to be a good or bad excretion” (6). For Galen, “the best urine of a moderate consistence, answering in proportion to drink, is lightish red or of a yellowish colour with a white smooth sediment.” For Hippocrates,

“the best urine, is what has a white, smooth and equal sediment, during all the time before the crisis, for this signifies that the patients is in a safe state and that the disease will not be of long duration. But if there be an intermission, and the urine be sometimes pure and sometimes with a white and smooth sediment, the disease will be the longer, and the patient less secure” (6).

Hippocrates, however, puts more emphasis on contents than on colors and in the above definition of the best urine, he does refer to color or consistency. However, to make a prognosis, one needs to know the temperament of the body and viscera, as well as “age, sex, diet and the way of living of the patient.” In children, “the best urine is what appears of a thickish consistence, is but slightly tinged, and abounds with copious, white, smooth and constantly equal sediment.” In women, “the urine in some occasion must be thicker and more colourless, than ordinary.”

(“Of Good Urine Portending Recovery.” *A Medicinal Dictionary*. Vol. 3. London: Osborne; 1744 (6).)

#### *Of bad urine, which portends death*

“Thin, white, aqueous urine of long continuance in a disease

not of a favourable kind, is destructive, as we are assured by Galen, because it indicates a very high degree of crudeness and is not less pernicious in acute fevers because the yellow bile has its course upwards and carried toward the head and predicts a delirium” (6). Galen also points out that “white pellucid urine is bad, especially in a frenzy. James continues in describing Galen’s views:

Thin and aqueous urine in all acute fevers and portending at least a long duration of the disorder...

White, thin and aqueous urine in acute diseases are the worst because, as we have learned from Galen, it is best in bilious diseases, for the urine and excrements to appear pretty much coloured...

In inflammation of the internal parts and in acute fevers gold-coloured urine, of long continuance, is very much to be suspected because indicates a high phlegmon or inflammation in sole one or other of the viscera. Black urine in acute disorders, is always attended with danger unless it be critically excreted or flows in a copious manner. (6)

The final paragraph is a warning transcribed from Prosper Alpinus:

There remains one thing which highly deserves our remembrance on this head, and is as follows: in many very destructive fevers the urine in colour, substance and contents appear like the urine of persons in health, and on that account is esteemed and pronounced laudable by the mistaken and inexperienced physician, though at the same time it portends inevitable death by indicating to us the bile, by which the urine is coloured, has its course wholly diverted upon the brain, or one of the viscera and that nothing of the noxious humours is excreted with urine which is observed by physicians to be highly destructive in phrenies and, also, in a pleurisy and peripneumony. (6)

This is a very important concept since it points out that only the physician can integrate the laboratory findings within the particular characteristics of the disease in that individual patient and that the quantitative approach to diseases does not work when separated from the patient’s individuality. In that respect, this is a very modern view.

(“Of Bad Urine Which Portends Death.” *A Medicinal Dictionary*. Vol. 3. London: Osborne; 1745 (6).)

## **JAMES’S NEPHROLOGY**

There are many main entries dedicated to nephrology. In general their strength resides in their accurate clinical descriptions. James has accurately read Malpighi, Bellini, Ruysch and especially Boerhaave, the reference scientist in those days.

The paragraphs on urine are concise, clinically sound, and the descriptions of procedures for urine analysis and the utilization of results (quantity, quantity, colors, sediments and consistency) in diagnosis and prognosis of bloody urine are accurate. The chapter on stones is a real masterpiece, clinically well centered, it gives an entirely pertinent approach to localization, medical cures and risks of surgery. The entry on nephritis is short but very confused. Here James even lacks the usual, accurate description of cases which could have made the main ideas understandable. The section on diabetes is excellent and is comparable to that of Desault (11, 12). The chapter on dropsy is descriptive and appropriate. Patients and their signs are a great adjunct to the theories. Remedies are those of the time. The contributions of kidney and liver are clear. The plants for renal treatment can be traced in Dioscorides. Concerning dosage, he is precise. Blood letting was extensively used in those days, and he is a man of his time, but also aware of the clinical conditions where it fails.

It is understandable that it has a role in certain bloody urines in patients with plethoric constitution. Was he describing patients with acute nephritis and possibly high blood pressure?

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## REFERENCES

1. James (Robert). In *Biographie universelle*. Vol. 20. Paris: Chez Madame C. Desplaces; 1857:538-539.
2. James Robert. In *Biographische lexikon*. Munich: Urban and Schwarzenberg; 1962:414.
3. Bayle AL, Thillaye A, eds. James Robert. In *Biographie medicale par ordre chronologique*. Vol. 2. Amsterdam: B. M. Israel; 1967:323.
4. Porter R. James Robert. In Ricci FM, trans. *Dizionario biografico della storia della medicina e delle scienze naturali*. London: Wellcome Institute; 1985:232.
5. Burr CW. Dr James and his medical dictionary. *Annals of medical history (new series)*. Packard FR, ed. New York, NY: Paul B. Hoeber; 1928:180-190.
6. Hazen AT. Samuel Johnson and Dr. Robert James. *John's Hopk Bull Insdt Hist Med*. Baltimore, MD: John Hopkins Press; 1936;4:455-465.
7. James R. A Medicinal dictionary including physic, surgery, anatomy, chymistry and botany, in all their branches relative to medicine together with a history of drugs. London, UK: T. Osborne; 1743-1745.
8. Reale G, Antiseri D. *Storia della filosofia*. Vol. 6. Milan: Bompiani; 2008.
9. Abbagnano N. *Storia della filosofia*. Vol. 3. Rome: Gruppo Editoriale l'Espresso; 2005.
10. Guthrie D. *A history of medicine*. London: Thomas Nelson; 1945.
11. Richet G. Fourcroy et son décret. Création de l'enseignement de la médecine moderne, clinique et biochimique. In Bernard J, Lemaire J.-F., Larcan A, Eds. *L'acte de naissance de la médecine moderne*. Paris: Lês Empecheurs de Penser en Rond; 1955:41-47.
12. Richet G, Bisaccia C, De Santo NG. P. J. Desault and the birth of nephrology (between 1786 and 1795). *J Nephrol*. 2003;16:754-759.