HISTORIA DE LA PATOLOGÍA Y LA FILATELIA


PALABRAS CLAVE: historia de la patología; filatelia, teoría celular, Virchow, Papanicolaou

SOME MILESTONES IN THE HISTORY OF PATHOLOGY ILLUSTRATED BY PHILATELIC

This paper deals with some of the milestones in the history of pathology, from ancient times to molecular pathology as documented by philately. There are hundreds of postal stamps commemorating medicine or pathology ephemeredes or their protagonists. Some are beautiful works of art, others are simple documents of some historical interest. One problem is to select a wide but significant sample of the general topic. We could not ignore giants like Hippocrates, Avicenna, Leonardo da Vinci, Vesalius, Virchow, and Papanicolaou. But Leeuwenhoek, Zeiss, Abbe, Landsteiner and many others also merit registration. One obvious problem is that philatelic authorities around the world, making the milestone fragmentary, have ignored too many great names in medicine and modern pathology.

KEYWORDS: pistory of pathology, philately, cellular theory, Virchow, Papanicolaou.
INTRODUCCIÓN

“History recognizes many names and ignores even more. This fact is particularly true for philately. As a result, a philatelic version of any aspect of the history of medicine cannot be totally comprehensive. The omission of any event or individual’s role in no way lessens the importance of the impact or contribution” (Erwin W. Ruggendorff, New York, N.Y., USA) available in: http://www.urologichistory.museum/museum/content/about/resources/ruggendorffmedstamps.htm

Using philatelic material one can provide some insights into many major milestones of the history of pathology and also to introduce the individuals involved. It is a tentative journey through medical history from the antiquity to the present. Some countries like Austria, Australia, and Argentina have a tradition of honoring its leading citizens in medicine, while other countries rarely do so.

All the stamps shown here are from my collection of digital images recovered through the Internet and freely available for download. As E W Ruggendorff said on his homepage (see above): “Deciding what to omit has been as difficult as deciding what to include. Though the resulting picture does not necessarily present continuity, it does emphasize certain peaks and memorable events in the evolvement of urology”. I would say the same only changing the word urology for pathology.

MATERIAL Y MÉTODOS

Using several search engines a detailed search in the Internet was made, looking for images of postal stamps depicting the great names in medical history, and for web addresses of this topical philatelic interest. A search for bibliography was made in PubMed, the most relevant articles were selected (1-7). The names and events are presented here in chronological order (preferably by the year of birth of the involved protagonists).

RESULTADOS

More than 200 images were identified, and an almost equal number of web addresses were visited. Using a personal criterion the, the most important and interesting images and corresponding information were assembled in a coherent text, as follows, as a discussion of the findings.

DISCUSIÓN

1) Myth and Legend

Italy 1959

Despite its somewhat sinister appearance, the Staff of Asklepios (or Aesculapius) with its rod and an entwined snake has been an accepted symbol of the medical profession since its inception. Many academic and medical societies, including the World Medical Association, the World Health Organization, the American Medical Association, the American Cancer Society, and many others have this symbol in their logos. Asklepios was the God of the medical profession. He was the favorite son of Apollo, also a God of medicine. Spain has three semi-postal stamps honoring Asclepius (the extra charge in favor of antituberculosis fight – see the Lorena cross in red):

2) Hippocratic medicine

Hippocrates (460-377 BC) separated medicine from religion and superstition. He is considered the most important physician of all times, and the oath of Hippocrates is still used in graduation ceremonies of many Medical schools throughout the world. Most of the earliest descriptions of diseases are from him. He made an almost unsurpassed clinical description of tuberculosis. He described the famous humoral pathology, a model to explain the origin of the diseases as a disturbance of the balance of the humors, that is the body fluids that survived for more than
2,000 years, only being outdated by the cellular pathology of Virchow in the 19th century. The humoral pathology was taken over by the Greek/Roman physician Galen in the 2nd century AD. Galen exerted a very great influence over Arabic as well as European medicine, and he was an important authority until the beginning of the 19th century.

Greece stamps honoring Hippocrates are several, and I choose only a few. The first one shows a bust of Hippocrates and the Oath in the background.

3) Middle Ages

Avicenna (Ibn Sina)(980-1037), a Persian physician, astronomer, and philosopher in his Canon of Medicine, combined the concepts of Hippocrates, Galen and Islamic principles with the medical practice of his time. His book was widely used in medicine teaching up to around the mid of 17th century. Tunisia, France and Poland issued stamps depicting Avicenna:

The Arab Republic of Syria (1965) and Iran issued stamps honoring both Hippocrates and Avicenna, and the staff of Asklepios has wrongly two serpents (this is a caduceus, the rod of Hermes, the Mercurial symbol of commerce) (Wilcox and Whitham, 2003):
Herophilus and Erasistratus were the only known Greeks who dissected humans in antiquity. Anatomy was taught using Galen and Aristotle ideas until the Renaissance. Nearly 1800 years passed before Leonardo da Vinci and Andreas Vesalius (1514-1564) resumed the study of the human anatomy, in the Italian Renaissance. They deserve the honor of being considered the fathers of the New Anatomy that started a new era in western medicine. Vesalius´ De Humani Corporis Fabrica is rightly considered one of the most important books in medicine.

Belgium stamps honoring Vesalius:

5) Early microscopists

In the 17th century five great microscopists left outstanding achievements: Leeuwenhoek, Hooke, Nehemiah Grew, Marcello Malpighi (whose description of frog lung capillaries in 1661 started the discipline of histology, and solved the problem of Harvey´s circulation model), and Swammerdam. With their amazing simple microscopes (Demesianos from the Accademia dei Lincei had coined the word ‘microscopio’), they made several discoveries, and with the posterior refinement of the instrument, led to the cellular theory.

Antoni van Leeuwenhoek (1632-1723). For example, he was the first to see living protozoa, bacteria and spermatozoa (according to Rugendorff, they were observed for the first time by his disciple L. Hamm). He used an extremely simple microscope, built by himself, but was a well disciplined observer and made convincing drawings of his findings.

Holland and Antigua & Barbuda issued stamps honoring Leeuwenhoek and his microscope:

Robert Hooke (1635-1703) in his Micrographia (1665) used the word cell, describing the small pores or holes he saw in a thin piece of cork, and unknowingly started a medical revolution, he had no idea or conception of the cells as we have now. (Harris 1999). His book had an enormous impact on his days, and besides this, he was a prolific scientist and inventor. He divided the podium, if you permit the
metaphor, with his contemporary and contender, Sir Isaac Newton.

Henry Harris in his excellent book The Birth of the Cell says: “There is, in my view, no convincing evidence that he saw individual living cells in any other tissue”.

The polymath Hooke deserves a visit to the web site dedicated to him:
http://www.roberthooke.org.uk/intro.htm


The 18th century saw almost no great progress, for want of better instruments, but the first half of the 19th century saw many contributions from scientists now using better built microscopes, including the use of the solar light as illumination (W F Gleichen): B C Dumorthier, Jan Purkine, Robert Brown, C G Ehrenberg, A H Hassal, Otto Bütchli, G G Valentin, R Remak, M Raspail, etc, culminating with the “Cell Theory” commonly attributed to Theodor Schwann and Matthias Schleiden in 1838–1839. All were ignored by world philately.

Henry Harris in his above mentioned book, laments the great rivalry between Germany and other nations, creating a reciprocal nationalistic bias in their respective publications, resulting in the usual omission of Purkine as an equal contributor to the formulation of the Cell Theory; actually he preceded them in 1837: in a public lecture given in Prague. In his work Purkine was the first to use a microtome, a mechanical device for slicing thin tissue sections for microscopic examination. He used glacial acetic acid, potassium dichromate in his pathological or anatomical preparations, and also became the first to use glass-slide preparations with balsam as a mounting medium.

It is worth of note that the first largely available microtome was developed by Zeiss in 1880, and that the “apochromatic” oil-immersion objective lenses of Abbe were first constructed in 1870. Great progress was also made in fixing and staining of tissues. The second half of the 19th century saw the establishment of chairs of pathological anatomy in all medical schools. Those achievements led to modern Pathology.

6) Modern Pathology

Karl Freiherr von Rokitansky (1804-1878), the founder of the anatomo-pathological school of Vienna, who in a period of 40 years personally performed more than 30,000 autopsies, and was criticized by Virchow as being not objective and mainly based on the humoral theory of diseases was honored by Austria with two stamps:
R-T-H Laënnec (1781-1826) in France described in detail the morbid anatomy of tuberculosis. “Laënnec's studies on tuberculosis were monumental. He first recognized the unity of this condition, which had previously been thought to be a number of different diseases. He wrote the first descriptions of bronchiectasis and cirrhosis, and classified pulmonary conditions.

He is also famous for the invention of the stethoscope: he introduced many terms still used today in auscultation: for example, pectoriloquy, rales and aegophony, and described bronchial and vesicular breathing. He also described “cirrhosis” of the liver.

France honored him with a stamp:

Pierre F. Bretonneau (1788-1862) made the fundamental studies on typhoid fever based on autopsy findings in 120 patients dying from it. He also published a treatise on diphtheria (Traité de la Diphthérie). France honored him with a stamp (with his beloved Tours in the background):

Rudolf L.K. Virchow (1821-1902)

(Born October 13, 1821 in Pomerania, died September 5, 1902, in Berlin) He was the most prominent German pathologist, and also a brilliant biologist and politician.

Virchow studied medicine in Berlin at the Kaiser Wilhelm Academy of Prussia, and in 1843 graduated at the University of Berlin. In 1847 he was appointed Privatdozent in Pathology.

Virchow is credited with multiple significant discoveries. He was the first to recognize leukemia as a disease. His method of making autopsy is still a standard one. However, he is perhaps best known for his law Omnis cellula a cellula ("every cell originates from another cell") which he published in 1855. (The motto was actually coined by François-Vincent Raspail but popularized by Virchow). Virchow is also famous for elucidating the mechanism of pulmonary thromboembolism, thus coining the term embolism. Virchow is considered the most prominent German physician of the 19th century, his long and successful career reflecting the ascendancy of German medicine after 1840. Virchow pioneered the modern concept of pathological processes by his application of the cell theory to explain the effects of disease in the organs and tissues of the body. He emphasized that diseases arose, not in organs or tissues in general, but primarily
in their individual cells. Virchow founded the medical disciplines of cellular pathology, comparative pathology, and anthropology.

His Die Cellular-pathologie, 1858, probably the most influential book ever written on medicine, was a compilation of previous lectures and formal scientific papers, and incorporated Robert Remak (1815-1865) views that every animal cell originated from a previous animal cell, a position never adopted by Schwann,

7) Virchow’s Archiv

Dissatisfied with the editors of journals that refused to accept some of his papers, Virchow, with his friend Benno Ernst Heinrich Reinhardt (1819-1852), in 1846 founded a new journal, Archiv für pathologische Anatomie und Physiologie und für klinische Medizin ("Archives of Pathological Anatomy and Physiology and of Clinical Medicine"). He wrote that the aim of the journal was a close union of clinical medicine, pathological anatomy and physiology and this remained his lifetime objective. He strongly propounded the concept that unproved hypothesis is an anathema for the practice of medicine and that no man could be regarded as infallible with regard to knowledge, judgment or supposition.

This journal became one of the most prominent medical periodicals of the time. After Reinhardt's death in 1852, Virchow continued as sole editor, now known as Virchows Archiv. In 1856 Virchow accepted an invitation to return to the University of Berlin as professor of anatomy, general pathology, and therapy, as well as director of the newly created Pathological Institute at the famous Charité Hospital in Berlin. The stamp of DDR (Deutsche Demokratische Republik) honoring the 250th year of foundation of Charité has his effigy.

Robert Koch (1843-1910), in 1882, isolated the tubercle bacillus and developed a staining method to demonstrate it in tissues. Tuberculosis was starting to be defeated as one of the major killers of humankind. Many countries with dozens of stamps have honored him. Here we demonstrate only six of them.

A very interesting stamp from Rwanda, commemorating the 100th year of the discovery of the tuberculosis bacillus by Koch, shows what was to be a microscopical field depicting a histological section of
a lung with tuberculosis, but actually looks more a tangle of blood vessels.

Paul Ehrlich (1854-1915), won the Nobel Prize in Medicine or Physiology in 1908, together with Ilya Ilyich Mechnikov, in recognition for their work in immunity. But while still a student of medicine and in his early career he made very important contributions in staining cells and tissues, working mainly with aniline dyes. In 1878 he obtained his doctorate of medicine by means of a dissertation on the theory and practice of staining animal tissues. He has been honored with many stamps, specially because he is considered the father of modern chemotherapy of pathogenic microorganisms, in special of syphilis. Ghana commemorating the 100th anniversary of the Nobel Prize issued a stamp honoring Ehrlich:

Frits (“Frederyk”) Zernike (1898-1966), Dutch physicist, in early 1930 discovered the phase contrast phenomenon in his optical laboratory and later invented the phase contrast microscope. He had difficulties in convincing the Zeiss industry to make commercially available phase microscopes. Today the study of living organisms and cells are unthinkable without the help of phase microscope. He was awarded the Nobel Prize in Physics “for his demonstration of the phase contrast method, especially for his invention of the phase contrast microscope” in 1953.

He was honored by his native Netherlands and by the Republic of Guinea:

Karl Landsteiner (1868-1943), who received the 1930 Nobel Prize in Medicine or Physiology in recognition for his discovery of blood groups in man, and whose research with Alexander S. Wiener led to the discovery of the Rhesus (Rh) factor in 1940, introduced the dark-field microscopy for the diagnosis of primary syphilis. Previously, spirochetes could be seen only in stained sections of tissue.

8) Cytopathology

Johannes Peter Muller in Germany (1838) and Alfred François Donné in France (1845) are considered the pioneers in using cytological criteria and to study and diagnose diseases, in special malignant tumors. Donné first described Trichomonas vaginalis. He was a pioneer in the use of photomicrography in documenting cytology with his Atlas du cours de microscopie exécuté d’après nature au microscope daguerreotype avec M. Léon Foucault, 1845. The atlas includes the first engravings from photomicrographs, in this case, daguerreotypes. The
interested reader should consult the History of Clinical Cytology (Grunze and Spriiggs, 1980) for the details of their contributions. Both men were ignored by the postal authorities of their countries.

George N. Papanicolaou (1883-1962), the father of cytopathology was honored by stamps issued by the USA, where he developed the method, by his native country Greece, and by Cyprus. Greece also had his image on a 10,000 dracma bill (Wilcox and Whitham, 2005).

He studied at the University of Athens where he received his medical degree in 1904. Six years later he received his Ph.D. from the University of Munich, Germany. In 1913 he emigrated to the U.S.A. in order to work in the department of Pathology of New York Hospital and in the Department of Anatomy of the Cornell University. He first reported that uterine cancer could be diagnosed by means of a vaginal smear in 1928, but the importance of his work was not recognized until the publication, together with H Traut, of ‘Diagnosis of Uterine Cancer by the Vaginal Smear’ in 1943. He thus became known for his invention of Papanicolaou's test, which is used worldwide for the detection and prevention of cervical cancer and other cytologic diseases of the female reproductive system. Since the introduction of the Pap test after 1950, the death rate from cervical cancer has decreased by nearly 70 percent, in countries like Canada, USA, and Sweden, where effective use of the test has been accomplished. It is without doubt the most effective secondary preventive medical strategy ever devised.

The USA issued in 1965 the stamp “Fighting Cancer with Microscope and Stethoscope”, and emphasizing its early diagnosis, and a first day of issue cover shows the Pap smear being fixed with a drop of cytological fixative.

In 1996 the Republic of Croatia issued a stamp for the awareness of the Pap test in prevention of cancer of the uterus, and in 2004, Argentina also issued a stamp with similar purpose:
9) Molecular Pathology

César Milstein (1927- ), an Argentinean scientist, shared the 1984 Nobel Prize in Medicine with Georges J. F. Köhler (1946- ), and Nils K. Jerne for theories concerning the specificity in development and control of the immune system and the discovery of the principle for production of monoclonal antibodies. Monoclonal antibodies are used in diagnostic testing, specially immune-histochemistry in pathology, for the development of drugs, vaccines and hormones, and for cancer therapy. Argentina honored his native scientist with a stamp in 2005.

DNA double helix and the biotechnology revolution

Several countries issued commemorative stamps for the 50th year of the discovery of the DNA double helix structure, and the advent of molecular biology (and its by-product molecular pathology):

REFERENCES