

## Medical journals: Old, not senescent. A tribute to Revista Médica de Chile on its 135<sup>th</sup> Anniversary

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*Medical journals, like the Revista Médica de Chile, are the product of a long history of printing, literary styles, and scientific inquiry. They would not have developed without the craft of paper making, the invention of movable type, the need to communicate ideas and observations in a timely and digestible format, and the growth of "natural philosophy" during the European Renaissance and Enlightenment. The proliferation of scientific and medical periodical literature during Europe's industrialization in the nineteenth and twentieth centuries followed the emergence of medical science and care as a separate discipline and the creation of common and worldwide professional expectations and credentials. Medical journals continue to evolve with the advent of digital paperless publishing. Prognostication remains uncertain but it seems to me unlikely that printed paper, so called "hard copy," journals will become extinct any time soon (Rev Méd Chile 2007; 135: 823-8).*

**(Key words:** History of Medicine; Journalism, medical; Periodicals)

## Revistas médicas: Antiguas, pero no senescentes. Homenaje a la Revista Médica de Chile en su aniversario 135

*Las revistas médicas, como Revista Médica de Chile, son el producto de una larga historia de impresores, estilos literarios e investigación científica. No se habrían desarrollado sin la pericia de fabricar papel, la invención de los tipos mecánicos en la imprenta, la necesidad de comunicar ideas y observaciones en un formato oportuno y digerible, y el desarrollo de una "filosofía de la naturaleza" durante el Renacimiento y la Ilustración en Europa. La proliferación de publicaciones periódicas científicas y médicas durante la industrialización de Europa en los siglos 19 y 20 siguió a la emergencia de la ciencia médica y la atención de salud como disciplina aparte, y a la creación de expectativas y credenciales profesionales comunes y universales. Las revistas médicas siguen evolucionando con el advenimiento de las publicaciones digitales electrónicas, sin papel. Pronosticar es incierto pero al autor de este artículo le parece improbable que las revistas impresas en papel vayan a desaparecer en un futuro próximo.*

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The world of medicine has had a literature ever since the origin of writing. Remnants of papyrus, bone and clay tablets from the early civilizations of the rivers (Nile, Tigris, Euphrates, Indus, Yellow, and Yangtze) contain fragments of disease description and therapeutic advice. Practitioners of the healing arts and crafts had need to note observations of illth, injury, ideas, and instruction for themselves and for their patients. Judging efficacy of incantations, ingredients, and interventions required a record more reliable than memory alone, lasting longer than the life of an observant priest, philosopher, or practitioner. Papyrus, textiles, and animal skins, hand written then copied, became the media of preserving medical practice and theory until first century AD when paper making was established in China<sup>1</sup>. Printing, using small seals made of carved stone or wood blocks coated with ink or paint, followed. The technique of wood block printing using larger sheets of paper emerged in the eighth and ninth centuries in Japan and China. Paper making slowly spread west from Asia reaching Samarkand in 751 and, during the florescence of Islamic culture, appeared in Baghdad in 793, continuing into Europe from Northern Africa to Spain and north across the Bosphorus into the Danube River region<sup>1</sup>. The first known printed book, The Diamond Sutra, was made in China in 868. Chinese, Hindu, Greek, Roman, Hebrew and, beginning in the seventh century, Arabic physicians wrote text and manuals and manuscripts first on scrolls and then as sheets which could be sewn together as a book. By the thirteenth century the Mediterranean was encircled by the craft of paper making. The craft of paper and printing on paper using wood block slowly moved into Northern Europe during the fourteenth century. Transferring a manuscript to wood block was laborious and, since the page could only be printed on one side, expensive in terms of time and quantities of paper. Medical texts were rarely rewritten by the same author and the notion of medical journalism so common today was unheard of.

Movable type, first applied in the mid-fifteenth century by Gutenberg, allowed for rapid production of printed pages<sup>1</sup>. An explosion of broadsides, pamphlets, and books followed the establishment of publishing houses that emphasized the translation and publication of ancient and religious texts<sup>2</sup>.

Early medical treatises were often translations from Arabic. Many medical *incunabula* (published before 1500) have been preserved. The *Regimen Sanitatis Salernitanum* from the medical school at Salerno, Italy, was first published in 1484. The first medical book to be illustrated with wood block prints, The *Fasciculus Medicinae of Johannes de Ketham*, was published in 1491. The first illustration of syphilis, by Albrecht Dürer, was printed on a broadside or fugitive sheet with a poem about the epidemic of syphilis by the City of Nuremberg physician, Theodoricus Ulsenius, in 1496, perhaps the first example of medical commentary about novel and perplexing medical events. Without movable type and paper the magazine or serial journal based on contemporaneous events and observations could not have developed. Yet it was not until the latter half of the seventeenth century that scientific and medical journals, published regularly, were created.

In the intervening two centuries between the origin of movable type publishing and the origins of scientific and medical journalism a vast number of elegant anatomies, groundbreaking books describing years of natural history, anatomic, pathologic and physiologic observations by single authors, dictionaries, herbals, and self-promoting advertisements by quacks and entrepreneurs were published. Scientific and medical journalism would not develop until the creation of the serial essay and the establishment of scientific and medical societies that provided the audience and review of essays and observations by their members or correspondents<sup>3</sup>. Both had their origins in the sixteenth century.

The English Royal College of Physicians began with a Royal Charter in 1522 from Henry VIII to the physicians of London. In Europe and England barber surgeons were organizing and surgeons came into military organization as warfare and weapons became increasingly destructive. The organization and credentialing that university, hospital, and military training provided increased the number of educated, literate medical men, curious and capable of describing their experience in clinical cases. Often they served in multiple capacities: politics, religion, science, education, as well as medicine or surgery. Because religion continued to dominate university and lay society physicians, scientists, and philosophers began to

congregate in secular groups. From these grew scientific societies, first in Naples, Italy, in 1560<sup>3</sup>.

The sixteenth century emergence of the literary essayist was the beginning of the recording and writing of personal observations in short and pithy format<sup>4</sup>. More than a diary, essays under the influence of Michele de Montaigne (1533-1592) and Sir Francis Bacon (1561-1626) became instruction and debate<sup>a</sup>. Sometimes published as small collections in a pamphlet, the accumulated essays were usually published as a book. In essence sixteenth century essays were the origin of the thoughtful "case report" of ideas, observations and opinions. The concept of the essay was the model for science and medical writing and presentation of ideas, observations and experiments to peers. The homiletic essay could be given outside a church and published in a secular book, and the subject need not be theology or religion. Indeed, Sir Francis Bacon used his essayist skill to lay the ground work for the development of experimental science and the establishment of scientific and medical societies<sup>2,3</sup>.

Periodical literature followed the popularity of the published serial essay and printed newspapers began to replace the fugitive "news-letters" originally written in longhand and copied for wealthy patrons. Enterprising printers assembled intelligence gathering staff to supply the "copy" for the printed pages. Antwerp had a printed newspaper in 1605, Frankfurt in 1615, London in 1622. These weekly newspapers established a model for periodical publications which was quickly taken up by the scientific and medical societies.

Scientific societies proliferated during the seventeenth century<sup>3</sup>. The Academy of Lynxes was founded in Rome in 1603 and, although it was opposed by the church, it continued to promote a forum for discussion of mathematical and philosophical problems, new experiments, and reports of natural history. Galileo was one of its members. In 1645 an "Invisible College" was organized by

Boyle, Wren, Hooke and others. It amalgamated with other philosophical and scientific societies and began its first book of transactions in 1660. In 1662 Charles II gave the group the Royal Charter as "The Royal Society of London for the Improvement of Natural Knowledge." The "*Philosophical Transactions of the Royal Society*" began regular publication in 1644-1665. The French Academy of Science began publishing its "*Journal des Sçavants*" in 1665. The "*Giornale de Letterati*" began in Italy in 1668, and the "*Acta Eruditorum Lipsiensium*" began in Germany in 1682. Only a few of the science society periodicals have published continuously since their founding. The "*Transactions of the Royal Society*" is the oldest continuously published scientific periodical.

The seventeenth century contained a growth of natural history and medical discovery. In England, William Harvey described the circulation of the blood and Isaac Newton identified the forces that shaped the circulation of the solar system. Thomas Sydenham, John Graunt, and Edmund Halley brought geography and vital statistics together to make demography a constituent of medical knowledge. Dutch and Italian scientists advanced lens making, creating the techniques of microscopy. Robert Hooke, Antoni van Leuwenhoek, and Marcello Malpighi described red blood cells, bacteria, capillaries, and tissue histology. All of them sent their reports in the form of letters to the Royal Society to be published in their "*Transactions*". International authorship and the scientific authority of the Royal Society ensured popular and scientific success. An additional attraction were reports from distant and exotic places as European exploration expanded both in geographic distance from Europe and in scientific reliability.

During the century and a half between publication of the "*Philosophical Transactions of the Royal Society*" in 1665 and the debut of "*The Lancet*", the oldest continuously published medi-

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Books described in footnotes are from my personal library.

<sup>a</sup> Essayes written in French by Michael Lord of Montaigne. Done into English by John Florio. London, printed by Melch Bradwood for Edward Blount and William Barret, 1613; pp. 1-630.

The Philosophical Works of Francis Bacon, Baron of Verulam, Viscount St. Albams, and Lord High Chancellor of England; Methodized and made English, from the originals. With occasional notes, to explain what is obscure; by Peter Shaw, M.D. London, 1733.

cal journal, in 1823, the explosion of information about geography, geology, physiology, biology, medicine, and natural history filled the printed page. An explosion accompanied by a plethora of short-lived periodicals devoted to science, medicine, amusement, and improvement. The format was formalized so that each issue of a journal would contain several articles, usually by different authors, usually not longer than ten to twelve printed pages, and almost always focused on a specific experiment, observation, or hypothesis. A longer "review," an editorial, letters to the editors, and news about recent events, meetings, and books would complete the table of contents. Citations of published material became increasingly essential and stylized as the importance of periodicals for contemporaneous scientific reporting and debate increased. Since many of the published papers in reputable, reliable science periodicals had been presented at society meetings or scientific congresses, peer review was assumed.

Medicine was contained in and contributed to the concept of the science of natural history<sup>5</sup>. The invention or discovery of physical diagnostic techniques and therapies such as percussion (Auenbrugger), pulse counting (Floyle), thermometry (Currie), blood pressure (Hales), foxglove (Withering), the biologic effects of electricity (Galvani, Franklin), pathologic anatomy (Morgagni), obstetric forceps (Chamberlen), and the clinical description of diseases such as exophthalmic goiter (Parry) were considered part of the natural history of human beings. In fact many of the great naturalists of the eighteenth century were trained as physicians and exerted enormous influence upon both biologic and medical science. Carl von Linné (Linnaeus, 1707-1778), the great Swedish botanist, was educated as a physician<sup>2</sup>. His passion for systematic classification shaped taxonomy of living things for biology and for medicine. The great British surgeon, John Hunter, was inveterate collector of "specimens," as was Sir Hans Sloane, the first physician to be made a baronet and the secretary, later president, of the Royal Society. Their natural history collections became the nuclei of the British and Royal College of Surgeons Museums in London.

Medicine and its practitioners in the eighteenth century were leaders in the world of science, scientific

experiments, and publication. Many published their observations as pamphlets or books (Jenner, inoculation; Pringle, military medicine; Baillie, morbid anatomy; Smellie, midwifery) but all relied upon periodicals to announce their most recent and exciting discoveries (Priestly, oxygen; Cruikshank, regeneration of nerves; Heberden, chickenpox and angina pectoris; Hamilton, mumps orchitis; Hughes, yellow fever). The descriptions of people, plants, and plagues in far off lands continued to grow during the eighteenth century, as did the sciences of physics, chemistry, astronomy, and geology. By the close of the eighteenth century sustainable and reputable scientific journals were burgeoning with submitted manuscripts, and decisions about how to evaluate and what to publish were becoming more difficult.

In the Americas, Africa and Asia, European and British physicians serving as explorers and caregivers to expatriate and indigenous communities felt obliged to observe, record, and publish for the benefit of their patients and their profession. They established regional societies and publications, sent letters to their peers and professors, and founded medical training programs. They fostered the growth of national medical professions by training settlers and indigenous people, by integrating medical foreigners into national professional organizations, and by encouraging congeniality and cohesion of professional colleagues through the activities and publications of the national professional society.

The medical sciences and craft were replete with new clinical and experimental submissions for publication. Medical societies around the globe –in the New World, Europe and Asia–wishing to establish their scientific and professional credentials recognized the importance of establishing a secular, scientific forum for their members. Perhaps more important was the need to encourage and ensure the accuracy and reliability of the clinical and basic science of medical reports submitted for publication. That medical reports would be reviewed by architects, astronomers, and amateurs with no knowledge of current medical science or practice was found to be deficient and dangerous by the founder of "*The Lancet*", Thomas Wakeley. Science, especially medical science, had emerged as an independent enterprise and profession. The growth of the clinical and scientific fundamentals of medical

science, the natural history of human beings, separated medicine from “natural history” and from the sciences of animal and plant health.

Assignment or emigration of British and European physicians to Asia and the Americas as well as the migration of Asian and American doctors and medical students to Europe and Britain for education created a cosmopolitan community of medical and surgical practitioners. Experience with novel diseases and people overseas needed to be described for European centers of medical training and research. New discoveries and experiments in Edinburgh, London, Paris, Leiden, Rome, Lisbon, and Madrid had to be transmitted to medical and surgical practitioners abroad.

At the close of the eighteenth and the beginning of the nineteenth century, medical science discovered statistics and a new way to examine human illness and the therapies employed to alleviate it. The science of physical diagnosis enlarged by auscultation using the stethoscope became defined and subject to careful, standardized application. Preventive medicine with the use of variolization described by Jenner was used in the New World within two years after the publication of Jenner’s cases in 1798.

Between 1775 and 1825 the success of scientific medicine, based on sound observation and experimentation and guided by attention to numbers as well as adjectives, emerged as the standard for medical and surgical practice in Europe and in a widening world of European influence. Advances in clinical description of diseases unique to other regions and climates as well as dissemination of advances in diagnostic and therapeutic techniques required portable periodical publications. The medical journal emerged as the ideal device to bind medical practitioners around the globe into a global community. Periodical medical journals emerged as the professional and scientific glue for international medical science during the nineteenth century. Some journals because of language and content had wide international readership. Some journals originated in countries with expanding populations, such as Chile, Mexico, and the United States,

that ensured growth in the numbers of medical and surgical practitioners and hence a growing readership. These were the journals likely to persist. Other publications associated with regions or with medical institutions thrived only as long as the medical practitioners or the medical institutions flourished. Short or long lived, each medical magazine provided subscribing practitioners with portable information, up to date and classic descriptions of science and clinical cases, the appearance of scholarly erudition, and a tangible connection to professional peers. Reading and writing for medical journals as an obligation of the responsible and reputable practitioner became embedded in medical education around the world. The romance and importance of authorship reached its apogee during the Osler years and continued throughout the twentieth century.

Now in the twenty-first century computers and the internet have transformed the communication of scientific and medical information. It is possible to have a virtual medical library with all of the books and journals necessary for contemporary clinical practice seemingly contained in a small computer. Indeed the medical students and house staff that I teach are attached to small devices which they repetitively tap with a stick to ferret out obscure and useful bits of information. Paper journals, I am told, are no longer necessary. Indeed I suspect that the rooms of these physicians of the immediate future will be bare, perhaps fitted with things of beauty, but lacking the stacks and stacks of journals that occupy so much of my floor and shelf space! I am a species of physician, they say with kind and gentle humor, that is soon to be extinct. I am a physician who cannot believe in a library in a box or a library without books and journals that are the tangible evidence of my profession. There is romance and passion in the collecting and collections of printed paper marking the progress of medical science and the professional community of medical and surgical practice. The digital library lacks the tactile contact with the actual pages of van Leeuwenhoek’s 1683 letter<sup>b</sup> to the Royal Society describing his observations of

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<sup>b</sup> An Abstract of a Letter from Mr. Antoni van Leeuwenhoek at Delft, dated Sept. 17, 1683. Containing some microscopical observations about Animals in the scurf of the Teeth, the substance call’d Worms in the Nose, the Cuticula consisting of Scales. Philosophical Transactions of the Royal Society #59, 1683; pp. 568-585.

“animacules in the scurf of the teeth” or the observations of Benjamin Waterhouse describing his use of Jenner’s variolization, “a prospect of exterminating the smallpox”, published in the United States at Cambridge in 1802<sup>c</sup>.

The “etherealization” of medical information has dangers that are as yet undefined and unrealized. As long as outstanding journals continue to publish on paper, history and progress in medical publishing will be well served. Perhaps in a futuristic Ray Bradbury “Fahrenheit 451” fashion the physical objects of medical history and publishing will be found only in a small number of libraries in strategic nations. Nevertheless, I doubt

that the digital library will replace the physical library any time soon.

The *Revista Médica de Chile* celebrates 135 years of continuous publication, a testament to the quality and vision of the Chilean medical community. Perhaps its success is due as much to necessity as to inspiration, because the need for portable “hard copy”, accessible in the developing world, remains essential for education and professional sustenance. The history of periodical medical publications is an important inheritance but inheritance can be squandered! Longevity is a measure of doing things right and well over time. Well done *Revista Médica de Chile!*

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<sup>c</sup> Benjamin Waterhouse, M.D. Practical Observations on the local Appearance, Symptoms, and Mode of Treating the Variola Vaccina or Kine Pock. Cambridge, William Hilliard, 1802.

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