

# The "Harvard system": a mystery dispelled

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The "Harvard system" is nothing more sinister than a way of citing references—by author and year, usually in parentheses—in the text of scientific articles.<sup>1,2</sup> Disputes erupt periodically over the perceived virtues or failings of the system,<sup>3,4</sup> but all agree that its origin is obscure. Editors, scientists, and others may wish to know that the secret of the Harvard system has now been uncovered.

The system traces back to the eminent zoologist Edward Laurens Mark (1847-1946), Hersey professor of anatomy and director of Harvard's zoological laboratory until his retirement in 1921. In 1881 Mark published a landmark cytological paper on the embryogenesis of the common garden slug, *Limax campestris*.<sup>5</sup> On page 194 of that work appears a parenthetical author-year citation accompanied by an explanatory footnote (figure); these are the first evidences of the system. Until Mark's innovation, and for some years afterwards, references appeared in inconsistent styles in footnotes referred to from the text by asterisks, daggers, and other printers' symbols.

It is clear from contemporary testimony that Mark conceived the citation system that eventually came into common use. For example, Professor Charles Sedgwick Minot of the Harvard Medical School, in an 1896 paper on bibliography, ascribes the author-

*Right, above: Lower part of page 194 of Mark's 1881 paper, showing parenthetical author-year citation in last line of text and footnote explaining Mark's rationale for his citational scheme. ("Comp." is an abbreviation for "compare with" and is unrelated to the system.) Below: Excerpt from page 597 of Mark's paper showing the author-year arrangement of the bibliography. Flemming's second 1878 reference appears as the last entry in his list. (Note: Several minor details of Mark's scheme have changed over the years. In modern usage, for example, bold face is not used for the year, nor is the year given both before and after the reference; also, the lower case letter indicating a second or later paper by the same author in a given year is appended to the numerals on the line rather than as a superscript. These and other details aside, Mark's basic system remains intact and is still in use by many journals.) Figure reproduced by permission of the Library, Museum of Comparative Zoology, Harvard University, Cambridge, Mass. Copyright President and Fellows of Harvard College*

During the stage now under consideration the centre of the *peripheral* sphere becomes conspicuously modified. It is at length occupied by a circular, highly refractive homogeneous body, flattened in the direction of the axis of the spindle so that it appears oval in a profile view. This body, at times irregular in outline, appears to be surrounded by a clear zone of uniform thickness. The appearance may be due solely to reflection from the body itself. (Comp. Flemming, '78<sup>b</sup>, p. 310.\*)

\* The numbers immediately following an author's name serve the double purpose of referring the reader to the list (p. 591) where the titles of papers are given, and of informing him at once of the approximate date of the paper in question.

Ewetsky, Th.

'75. [Regeneration of Endothelium of the Membrana Descemeti.] *Unters. aus dem path. Inst. zu Zurich*, 1875. 3 Heft, p. 98, Taf. V. Fig. 5.

Flemming, Walther.

'74. Ueber die ersten Entwicklungserscheinungen am Ei der Teichmuschel. (15 Oct. 1873.) *Arch. f. mik. Anat.*, Bd. X. pp. 257-292, Taf. XVI. Feb. (?) 1874.

'75. Studien in der Entwicklungsgeschichte der Najaden. *Sitzungsber. d. k. Akad. der Wissensch. zu Wien, Mathem.-naturw. Cl.*, Bd. LXXI. Abth. 3, pp. 81-212, 4 Taf. 4 Feb. 1875.

'76. Beobachtungen über die Beschaffenheit des Zellkerns. *Arch. f. mik. Anat.*, Bd. XIII. pp. 693-717, Taf. XLII. 20 Oct. 1876.

'77. Zur Kenntniss des Zellkerns. (3 May, 1877.) *Centralbl. f. d. med. Wissensch.*, Jahrg. XV. No. 20, pp. 353-355. 19 May, 1877.

'78. Zur Kenntniss der Zelle und ihrer Theilungserscheinungen. (Aus einem Vortrag, gehalten im Kieler physiol. Verein den 1. Aug. 1878.) *Schriften des Naturw. Vereins f. Schleswig-Holstein*, Bd. III. Heft 1, pp. 23-27. 1878.

'78<sup>b</sup>. Beiträge zur Kenntniss der Zelle u. ihrer Lebenserscheinungen. (17 Sept. 1878.) *Arch. f. mik. Anat.*, Bd. XVI. pp. 302-436, Taf. XV.-XVIII. 20 Dec. 1878.

Fœttinger, Alexandre.

'76. Recherches sur la structure de l'épiderme des Cyclostomes, et quelques mots sur les cellules olfactives de ces animaux. *Bull. de l'Acad. roy. de Belg.*, 2 sér., Tom. XLI. pp. 599-679, 3 pl. 1876.

year system directly to Mark.<sup>6</sup> Explicit confirmation comes from a 1903 festschrift dedicated to Mark by 140 former students, including President Theodore Roosevelt.<sup>7</sup> The introduction to that volume pays tribute to Mark's important *Limax* paper, which "also introduced into zoology a proper fullness and accuracy of citation and a convenient and uniform method of referring from text to bibliography." The bibliography is, of course, arranged alphabetically by author and year (figure).

Mark's system, though original in its application to scientific papers, may have been adapted from the cataloguing system used then (and now) in the Library of Harvard's Museum of Comparative Zoology. That library, founded in 1861 by Louis Agassiz, files its catalogue items by author-year and then title, as does the sister library at the Marine Biological Laboratory, Woods Hole. Most other major zoological libraries in the United States, such as those of the American Museum of Natural History in New York and the Academy of Natural Sciences in Philadelphia, are organised conventionally by author-title.

The origin of the phrase "Harvard system" remains unexplained. According to an editorial note in the *British Medical Journal* in 1945, the expression was "not introduced by Harvard University. It is believed that an English visitor to the library of Harvard University was impressed by the system of bibliographical reference in use there, and dubbed it the 'Harvard system' on return to England."<sup>8</sup> Note that this unconfirmed and unattributed anecdote refers to library practice (presumably in the Museum of Comparative Zoology) rather than to Mark's system, which was by then widely used in biomedical publications.

Although the genesis of the author-year method is now apparent, editors and scientists will doubtless continue to argue whether the Harvard system or some other is fairest of them all.

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- 1 Burbridge PG. *Cambridge authors' and printers' guides. IV. Notes and references.* Cambridge: Cambridge University Press, 1952.
- 2 Council of Biology Editors. *Style manual.* 5th ed. Bethesda: Council of Biology Editors, 1983.
- 3 Lester L. Reference citation. *Earth and Life Science Editing* 1983;No 19:3. (And comments by O'Connor M, Lock S, page 4.)
- 4 Houston CS. Uniform requirements for literature citation in biomedical journals. *CBE Views* 1982; 5:13-4. (And comments by Huth EJ, Day RA, pages 14-5.)
- 5 Mark EL. Maturation, fecundation, and segmentation of *Limax campestris*, Binney. *Bulletin of the Museum of Comparative Zoology* 1881;6 (part 2, No 12):173-625.
- 6 Minot CS. Bibliography—a study of resources. *Biological lectures, Marine Biological Laboratory, Woods Hole.* Boston: Athenaeum Press, 1896.
- 7 Parker GH, ed. *Mark anniversary volume.* New York: Henry Holt, 1903.
- 8 Hewer CL. The Harvard system. *Br Med J* 1945;i: 233-4, and editorial note p 234.

A short life and a merry one seems to have been the order of the day in mediaeval Europe. You weren't likely to live to be more than 30, but your capacity for innocent enjoyment could be exploited to the full in those few years. That at least is the picture that emerges from *Fun and Games in Old Europe* by W Endrei and L Zolnay (Budapest: Corvina, 1988. ISBN 963-13-2386-2; price not stated). It is hard to imagine a world in which children and adults, upper class and peasants all spent a lot of time just playing—anything from chess to tip cat and handy dandy. The picture shows the "hot hand game" in which the player has to guess who has struck his hand (in less polite circles it was the backside that got slapped). There were also tournaments, mock battles, and the occasional topless races as well as games that are still played—including football and tennis, at which, in 1427, a fifteenth

century Martina Navratilova called Margot beat all the best men in Paris one after the other.

Scholarly, humorous, and marvellously illustrated, the book is a joy to read and a delight to look at. Its second half is devoted to "Entertainments and merrymaking in old Hungary," where, it seems, a whale of a time was had by all. There were 114 days' holiday every year, most of them occupied in singing, dancing, and generally larking about; and on top of this there were celebrations for special occasions: the wedding of King Matthias Corvinus in 1476 was marked by a two month long carnival, and after a famous victory against the Czechs in 1278 King Ladislas IV commanded a day's holiday for the whole country on which it was strictly forbidden to do anything other than sing and dance. What glum times we live in by comparison.



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