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PERSPECTIVES

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A brief history of the SEM journal(s): staunchly resisting improbability. I. From 1947 to 1997

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Scientific journals

Scientific journals are periodical publications—until recently only in print—whose aim is to communicate and transmit scientific knowledge, especially advancements in the various fields of science. The community each journal addresses, and the thematic field covered, determine the publication's characteristics. The earliest scientific journals covered general aspects of what is called science *sensu strictu*—mathematics and natural sciences. Throughout the nineteenth century, other journals appeared that covered the humanities, including philosophy, linguistics and sociology.

To our knowledge, the first scientific journal was the French *Journal des Savants*, founded in 1665. That very year, the London Royal Society began publishing *The Philosophical Transactions of the Royal Society*, which still exists. For science publications, the 1665 vintage was excellent as it also produced Robert Hooke's *Micrographia*, a book that marked the birth of microscopy, and of biology, as a science. Other journals, usually publications of learned scientific societies, appeared throughout the following two centuries. During the second half of the nineteenth century, the first scientific journals to address a specific group of scientists, and not dependent on a scientific society, were founded. One of the aims of Norman Lockyer, who founded *Nature* in 1869, was to publish the letters and communications of Charles Darwin. The publication of *On the Origin of Species by Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (1859), stimulated Victorian intellectuality. Since its inception, *Nature* has been an independent publication receiving no support—either economic or scientific—from any institution. Although for a period of a few years it experienced serious financial problems, as for scientific guarantees, since the very beginning it has had outstanding collaborators, including John Tyndall and Thomas H. Huxley. *Nature* is partially devoted to scientific journalism. It includes general information on the scientific community and the advancements of science, discusses current scientific controversies, and features obituaries, reports of newly awarded prizes, and book reviews, etc. In fact, these pages are the most appreciated by many of its readers. Besides its high impact factor (IF), what has made *Nature* deserve the adjective "prestigious"—which often precedes the title when it is cited in other media—are its Review Articles, Articles (primary research), and Letters to Nature, which in fact are short communications, not letters sent by readers. Those can be found in the Correspondence section.

During the twentieth century, in addition to journals published by institutions such as scientific societies, universities, governmental research councils and research centers, others appeared that were issued by private publishers, either alone or with the participation of scientific institutions. Those published only by scientific institutions include *Proceedings of the National Academy of Sciences*, published by the US National Academy of Sciences, the highest scientific authority in the United States; *Journal of Bacteriology* and all other journals published by the American Society for Microbiology; and *Microbiology* (formerly *Journal of General Microbiology*), published by the Society for General Microbiology in the United Kingdom. Those published by large publishing houses include—in addition to *Nature*, which is published by Macmillan—*Virology* (Academic Press) and *Archives of Microbiology* (Springer-Verlag). *Science* deserves special mention. Although it is a journal of the American Association for the Advancement of Science (AAAS), it devotes many pages to advertisements. Its large circulation and the fact that it has one of the highest IF among scientific journals have made it a wonderful source of funds for the AAAS.

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Currently, many journals that have gained prestige among the scientific community—independently of their intrinsic quality—also market products and have become good business for many publishers. A certain number of advertisements can assure the annual sale of an expensive journal, whose price can be raised without the danger of losses due to the presence of rival competitors, and with the security that buyers—in many cases only institutions, due to the extremely expensive subscription rates—will not complain. In this they differ substantially from non-serial scientific publications, which need publicity and specific marketing and which soon become obsolete. Furthermore, these types of publications are not distributed the same way as general books and can soon become a nuisance for the publisher; as a result, much of the edition can end up as pulp only two or three years after the book was published.

The current number of scientific journals published worldwide is estimated to be around 100,000. In 1997, more than 200 microbiology journals were being published in Europe alone. Counting those strictly related to microbiology, the number shrinks to a 'mere' 146 [9]. There is a growing tendency for journals to be published online as well; indeed, some new journals have only an online version. In most of them, scientific quality and rigor are assured because the criteria for selection and evaluation are the same as for printed journals. The Sociedad Española de Microbiología (SEM) journal *Microbiología SEM* was published online in 1996 and 1997—the last 2 years of its publication—thanks to the efforts of Jesús García-Gil from the University of Gerona [1, 7]. *International Microbiology*, which began in 1998, has been available online from the start. The Barcelona editorial office was first responsible for putting it on the Internet [http://www.microbios.org], but since 2001 Springer-Verlag has done the task [http://www.springer.de]. The contents of the issues of the first 3 years have always been available free of charge. Since 2001, however, only indexes and abstracts are available for everybody, and only SEM members and subscribers to the journal have free access to the entire contents.

Journals, articles and reprints

Articles are the items that make up scientific journals. Once published, each article has a life of its own in the form of offprints, which are distributed separately from the journal and are cited independently. Many authors often do not even see the journal in which their article is published. During the last few years, there has been a tendency to interrupt this independent life of an article by citing its IF, which is an erroneous concept because the IF always refers to the journal as a whole over the year when the article was published [3, 8].

The articles of early scientific journals were mostly descriptive; authors reported their observations and sometimes the deductions they had made. Starting around the second half of the nineteenth century, inductive experimentation became increasingly relevant. Today, articles must report not only observations and deductions, but also—and in detail—the methods employed, so that other researchers can corroborate—or discredit—the author(s)'s statements. Nowadays most articles describe "primary research" and are usually the first written communication of a given research; they comprise the precedents, methodology, results and comments. The date of publication is of great importance in case controversy arises regarding the authorship of discoveries that have been described independently: there is chronological priority. There are also "review articles" or "secondary research" articles, which describe the state of the art in a given field of research; authors of reviews can be either researchers in the field considered or other scientists acquainted with the topic. The structure of a journal can be even more complex and contain other items including editorials, letters, opinion and perspective articles, book reviews and meeting reports [10].

The SEM has had three journals: *Microbiología Española*, from 1947 to 1986, *Microbiología SEM*, from 1985 to 1997, and the present *International Microbiology*, which began publication in 1998. The structure of the SEM journal, with slight differences due to the trends of each time period, has focused mainly on primary research and review articles. This kind of articles are the core of current scientific journals, those in which authors communicate their achievements and which are read by colleagues looking to prepare, improve or justify their own research. When *Microbiología Española* was first published in 1947, it stated that the journal would be mainly devoted "to the publication of strictly original works", but that there would also be sections devoted to "bibliography [...], reports of scientific sessions and news of interest to the members [of the Sociedad de Microbiólogos Españoles (Society of Spanish Microbiologists), which was the early name of the SEM." *Microbiología Española* always maintained that structure.

The journal that followed—*Microbiología SEM*—published primary research articles and reviews of general interest from 1985 to 1993. But after 1994, each issue also contained some other type of article(s), such as editorials, opinion and/or perspective articles, book reviews, and features on the lives and works of Spanish or foreign scientists. The not strictly results-bound articles enriched the journal by dealing with topics of general interest either in microbiology or from a microbiological perspective. Furthermore, they fit in well with the scope of the SEM as being both generalist and a means to train its membership. The series of articles that described the history of the SEM, the history of its journal, and the state of the art of microbiology in Latin America (see [6], p. 515) deserves special attention. Many of the "complementary" articles have been cited and even reproduced entirely by several foreign journals, which indicates that our journal has a wide audience. *International Microbiology* has kept the same general structure.

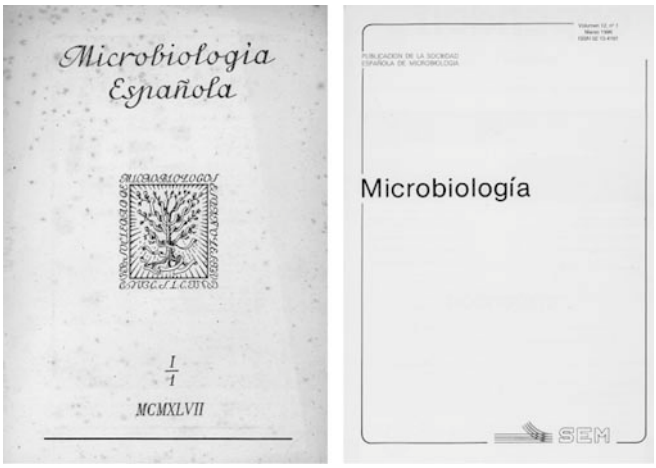

Fig. 1 Covers of the first issues of *Microbiología Española* (1947) (*brown*, 17.5×25 cm) and *Microbiología SEM* (September 1985) (*blue*, 19×26 cm)

The editorials—which are its outstanding feature—are authored by experts who discuss their own vision of the field in which they work. Although such editorials do not necessarily reflect the journal's opinion, not even that of the SEM, they are consistent with the aim of the SEM, to gather diverse opinions in order to promote the advancement of microbiology (*in pluribus unum*).

Let us look back at the path already trodden in order to see where we stand today.The history of the journal of the SEM, beginning with its birth in 1947 and continuing to the present, can be divided into three very different periods, represented by three different versions of the journal. The first lasted 39 years; the second 13 years; and the present is now in its fifth year of publication.

Microbiología Española (1947–1986)

Microbiología Española (Fig. 1) was founded in 1947. Its history has been described by García-Mendoza [2], and in two other articles [5, 6]. Initially, the journal was published jointly by the SEM and the Instituto Jaime Ferrán de Microbiología of the Consejo Superior de Investigaciones Científicas (CSIC, Spanish Research Council). The first issue started with an article that reproduced a lecture by Luis Nájera Angulo under the title ''Bioparasitologic war'', which would be a hot topic today. The journal became well known and was included in several international indexes. *Microbiología Española* also published the article in which the genus *Bordetella* was first described. The article, by Moreno López [*Microbiol Esp* (1952) 5:177–181], has been cited in many books of taxonomy including several editions of *Bergey's manual of systematic bacteriology*. The years between 1953 and 1962 were the most productive, especially 1955 and 1956, during which volumes comprising more than 500 pages each were published. After that, however, the size of the journal declined slowly to the point that in 1985 the SEM stopped its collaboration with the Instituto Jaime Ferrán and decided to start publishing a journal on its own under the name *Microbiología*. The Instituto Jaime Ferrán published two more issues of *Microbiología Española*. The last, released in 1986 with only five articles that filled only 39 pages, contained the sad—but honest—epitaph: ''[...] The Editorial Board, in this farewell, wants to thank, especially, the readers, and those that with their collaborations in different tasks as advisors, managers, authors and printers have made possible the publication of this journal that, after thirty-nine years, brings its collection to a close with this volume.'' The transition from one journal to the other was not friendly. The Instituto Jaime Ferrán claimed before the Register of Industrial Property that the journal's new name (*Microbiología*) usurped the previous one. The Register considered the claim justified; unbeknownst to the editors of *Microbiología SEM* (1985–1997), the journal carried an ''illegal'' name throughout its entire life.

Only a few complete collections of *Microbiología Española* have been located. The detailed study of the papers published, their topics, and their authors [11] provides a vision, sometimes discouraging and sometimes hopeful, of an autarkic microbiology far from international trends. This was simply an accurate reflection of the Spanish situation throughout the 1940s and 1950s. Nevertheless, despite the isolation of the country, small attempts were made to open up Spanish microbiology to the world by inviting prestigious foreign scientists in order to learn from them. Efforts were also made by young microbiologists who had gone abroad to improve their knowledge. Despite the difficulties of those times, most of them returned to put into practice what they had learnt. As a result, they brought fresh air into what had become a highly insulated environment. Currently, many positions in Spanish universities are occupied by scientists who in the intervening years did not go abroad, and as a result science in the university is again becoming insulated. While the magnificent building of Spanish microbiology that was constructed during the 1970s and 1980s is supported by the foundations of its earlier efforts, it also requires timely renovations. Nonetheless, the continuity and hope provided by the country's scientists were virtues that distinguished this epoch of Spanish microbiology.

Each yearly volume of *Microbiología Española* was supposed to have four issues. This goal, however, was reached only rarely (in 1953, for example). Between 1947 and 1952, only one or two issues appeared each year (with the exception of 1948, when no issues were published). Until recently, there were no available data concerning how many issues were published annually. Although several libraries had the complete collection, the issues had been bound without the cover pages, making it impossible to know how many issues made up each volume. One of us (RG) managed to find the entire collection of journals unbound and was thus able to compile Table 1, the data of which are an improvement over those in Table 1 in an earlier article [4].

Table 1 Issues of *Microbiología Española* (published from 1947 to 1986)

Year	Volume	No. of issues	No. of articles	Total pages
1947	01	3	15	317
1949	02	3	11	283
1950	03	3	16	247
1951	04	3	13	209
1952	05	2	12	213
1953	06	4	17	414
1954	07	4	16	328
1955	08	4	14	523
1956	09	4	26	504
1957	10	4	23	485
1958	11	4	24	431
1959	12	4	23	438
1960	13	4	24	414
1961	14	4	22	268
1962	15	4	23	307
1963	16	4	27	280
1964	17	3	21	254
1965	18	2	16	250
1966	19	3	24	346
1967	20	2	18	250
1968	21	2	20	240
1969	22	3	25	286
1970	23	4	23	306
1971	24	4	24	302
1972	25	4	25	289
1973	26	3	17	199
1974	27	3	19	326
1975	28	2	15	178
1976	29	1	13	156
1977–78	30–31[a]	1	15	142
1979–80	32–33[a]	1	12	123
1981	34	1	9	90
1982	35	1	6	76
1983	36	2	14	132
1984	37	2	13	119
1985	38[b]	2	15	125
1986	39[b]	1	5	39

[a]Volumes 30–31 and 32–33 had only one issue, corresponding to the years 1977–1978 and 1979–1980, respectively
[b]In 1985 and 1986, *Microbiología SEM* was also published

The non-nata *Biología Microbiana* and the sad transition

As early as 1976, the idea of publishing another journal was discussed by the Executive Board of the SEM. Both a name (*Biología Microbiana*) and an editor-in-chief (Jorge López Tello) were chosen. The name was even registered. Among the people that launched the project was Antonio Portolés, who had been the thesis director for one of us (RL). The journal was to appear after the SEM meeting held in Santiago de Compostela in 1977. However, no issue of *Biología Microbiana* was ever published—mainly because of the lack of manuscripts. As a result, the SEM decided to continue collaborating with the Instituto Jaime Ferrán in the publication of *Microbiología Española*, provided the SEM was represented both on the Executive Board and on the Publication Board. In 1985, however, the SEM ended the collaboration and again decided to publish a journal of its own.

Although the SEM had registered the name *Biología Microbiana*, at the very last moment it was decided that a more general name would be more suitable (several members of the Executive Board thought that *Biología Microbiana* sounded too basic-research oriented, and that clinical microbiologists might feel excluded). As a result, the name chosen for the new journal that replaced *Microbiología Española* was simply *Microbiología*. However, as there were several foreign journals with the same name, the acronym of the Society was subsequently added to the general name on the cover page, and the journal became known as *Microbiología SEM*.

Microbiología SEM (1985–1993): starting anew

Microbiología SEM had three Editors-in-Chief: Rubens López (1985–1989), José Antonio Ordoñez (1990–1993) and Ricardo Guerrero (1994–1997). The idea of a new journal materialized thanks to the efforts of both César Nombela—by then SEM President—and Rubens López and his team. It all started as an adventure, the challenge being to start a journal almost from nothing. After much controversy, it was decided that the journal should be bilingual: articles could be either in English or in Spanish. This made it differ considerably from the previous journal, in which non-Spanish articles only rarely appeared [11]. It was also decided that each issue would include a mini-review, usually in English, on a topic of interest in microbiology, and that manuscripts would be peer-reviewed. Ernesto García, Pedro García and Concepción Ronda assisted the first Editor-in-Chief in many editorial tasks and shared with him a small office crammed with files, folders, manuscripts, pictures and graphs. Instead of an editorial office, it looked more like the cabin of the Marx Brothers. From the very beginning, the members of the first Editorial Board aimed at sustaining a scientific standard that allowed for a substantial qualitative jump both in the content and in the format of the journal. Juan Antonio Ordóñez, the second Editor-in-Chief, followed this same path and began publishing monographic issues.

One or two issues appeared each year, with a total number of pages between 110 and 201. Publishing in a Spanish journal, however, was considered parochial by some Spanish researchers and institutions. They could not understand that for a country to be strong in science its researchers have to publish in national journals as well as in international journals. By doing so, they would help to raise the level of the national journals and help them to become international.

Microbiología SEM (1994–1997): a promising transition

In 1994, R. Guerrero took over the direction of the journal. He counted on Carmen Chica, Mercè Piqueras

Table 2 Issues of *Microbiología SEM* (published from 1985 to 1997)

Year	Volume	No. of issues	No. of articles	Total pages
1985	01	2	10	94
1986	02	2	14	119
1987	03	3	20	201
1988	04	3	19	170
1989	05	2	15	116
1990	06	2	13	110
1991	07	2	15	133
1992	08	2	14	126
1993	09	3	31	262
1994	10	4	44	462
1995	11	4	59	532
1996	12	4	76	688
1997	13	4	66	556

and Jordi Mas Castellà to do most of the editorial work. They all learnt on the job, and soon the journal was "made" almost completely at the editorial office, including the final layout. The publisher—Editorial Garsi—received the files ready to be printed. At that time, Garsi was producing more than 40 medical journals and showed little interest in a journal that did not carry many advertisements (the main source of profit for publishers). Despite this—as we discovered later—*Microbiología SEM* became one of Garsi's most prestigious journals as far as article citation was concerned. However, the editor was not allowed to change any physical features of the journal to make it more attractive because all Garsi journals followed the same format. Moreover, there was no one on the publisher's staff who was prepared to deal with English texts, thus handmade corrections on the galley proofs were often misunderstood. Table 2 lists the volumes and issues of *Microbiología SEM* from 1985 to 1997.

In its second period, *Microbiología SEM* comprised two kinds of articles: (1) research or review articles and (2) "Complements", which included editorials, opinion articles, perspective articles, book reviews, and short biographies of scientists. The journal was also bilingual; authors could choose to publish in either Spanish or English. During the last four years of publication, however, all research articles were in English. This was a great change. Only rarely had *Microbiología Española* published articles in English, although it was not a deterrent for authors. On the contrary, the number of manuscripts increased to around 100 per year. Another change was the publication of monographic issues, which began in 1993. By 1997, *Microbiología SEM* was a thriving journal as far as its scientific quality and acceptance among SEM members was concerned. What was lacking was its international diffusion. The Editor-in-Chief thus began exploring the possibility of working with an international publisher, and finally the best option seemed to be Springer-Verlag, which had a branch in Barcelona. The new journal took the name *International Microbiology*, as will be seen in the second part of this brief history of the journals of the SEM.

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