One hundred years of journal publication

IN 1998, THE AMERICAN PHYSIOLOGICAL SOCIETY (APS) celebrates the centennial of the founding of the American Journal of Physiology (AJP) and by extension the centennial of the entire APS family of journals. APS was one of the earliest national biological societies in America and also one of the first to have its own journal. Although for its first sixteen years AJP was owned by its editor, William T. Porter, Porter published the journal at the request of APS and under contract to APS. By 1914, APS had assumed full ownership and management. The hundred-year history of APS journals has been one of expansion and specialization built on this strong early foundation.

Founding of the American Journal of Physiology

When APS was formed in 1887, no immediate attention was given to a publication, since the British Journal of Physiology was, in effect, a joint publication of British and American physiologists (11). But the increasing number of articles published by American physiologists as well as a sense of national and disciplinary pride soon made an American journal desirable. The question of an American publication was first raised by Frederic S. Lee at a special meeting of APS in May 1894. He moved that a committee be appointed to report “as to the feasibility of the establishment of an American Journal of Physiology.” Although this first committee, consisting of Lee, William T. Porter, and Henry Herbert Donaldson, reached an impasse probably due to financial considerations, the issue was raised anew by President Russell Chittenden at a special meeting of APS in May 1897. This time, Porter generously offered to undertake the publishing and financial responsibility for the new journal himself (9, 19). By June 1897, the new committee appointed to study the matter, consisting of Chittenden, Porter, William H. Howell, Lee, and Arthur Cushny, prepared a formal report that was mailed to the membership. It advocated the publication of a physiological journal “at once.” The committee wrote

It is no less evident that the various expedients that have hitherto served us are growing irksome and disadvantageous. The sending of manuscripts across the ocean, often to be printed in foreign languages, has been a necessary and valuable resource. But the time for this is past. . . . There can be no question that the position of our profession and its power for usefulness both at home and abroad would be increased by a publication that should be to us what the great archives of physiology are to Germany, France, England, and Italy. We believe that physiology in this country should occupy a position not less dignified and secure.

Of sixty-two members who received the report, forty-one responded, and all approved of the project. By the annual meeting of APS in December 1897, Chittenden could report on behalf of the committee “that The American Journal of Physiology was an accomplished fact.”

Like most scientific journals in this period, AJP was started and financed by an individual or individuals. There was little alternative, for societies at this time were small, and to retain their membership, dues had to be inexpensive. APS dues for the first fifty years of its existence were two dollars a year. Societies simply did not have the resources to put up the capital for a publication venture or to take on the financial responsibility if the journal should fare poorly. However, although APS accepted no financial responsibility for the journal and members were not required to subscribe, from its founding, the journal had an official connection with the Society.

By the terms of the contract with APS, Porter agreed to edit five volumes of the journal, each about 500 pages, at a subscription price of five dollars per volume. Contributors would be guaranteed immediate publication and fifty free reprints. Any profits would accrue to the Society. The Society, in turn, would appoint a Publications Committee that would have control of the editorial management of the journal and would enter into formal contract with Porter in the name of the Society for the publication of the volumes. Formal approval by the Society was given in December 1898, with the text of the agreement amended to read that the journal was “to appear in such a form and at such intervals as are satisfactory to the Committee: provided, that the Society shall be free from all financial responsibility for such publication.” The first Editorial Board, also called the Publications Committee, appointed by Chittenden in 1897, consisted of Henry P. Bowditch, William Henry Howell, Frederic S. Lee, Jacques Loeb, Warren P. Lombard, and Porter, with Chittenden an ex officio member. As with many journal boards at the time, the members, other than Porter, were chosen because they represented different university cities, in this case, Boston, Baltimore, New York, Chicago, Ann Arbor, and New Haven. Although Chittenden, when he announced the formation of the journal to the Council, requested that the amount of a subscrip-
tion be included in the annual dues, the proposition was voted down. Instead, in 1899 and several times afterward, circulars urged members to subscribe, but then as now, many members did not require individual subscriptions, and institutions and nonmember subscribers made up a good part of the subscription list.

The first issue of the journal appeared in January 1898. It commenced with a paper from the laboratory of the Sheffield Scientific School by Chittenden and William Gies, “The influence of borax and boric acid upon nutrition with special reference to protien metabolism.” No doubt the most memorable contribution to this inaugural volume was Walter B. Cannon’s first full-length paper on the application of the newly discovered X-rays to physiology, “The movements of the stomach studied by means of roentgen rays.” Among the authors represented were Howell, Lee, Porter, Charles Wilson Greene, Lafayette B. Mendel, Graham Lusk, Colin C. Stewart, A. N. Richards, and Ida Hyde. The entire first volume consisted of thirty-two papers in four issues and 522 pages and concluded with the publication of the abstracts of papers of the December 1897 APS Meeting.

In all, Porter edited thirty-three volumes of the American Journal of Physiology through March 1914. Publication at first ran at a loss. The Society made up some of the deficit by contributing sums of $50 or $100 from time to time, but Porter himself covered the remainder of the debt. The contract with Porter was renewed in 1900, and then again in 1905 and 1911. At first, issues appeared every two months, but after July 1899, they appeared monthly. As with many other journals, the period of time covered by a volume varied depending on how much material was received. Subscription was not by year but by volume, and even in 1898 there was material sufficient for more than one volume a year. There was no formal review process, although Porter was said to have gone over papers thoroughly and returned them to the authors with suggested changes (7). The main function of the Editorial Board was to help attract articles to the journal, not to critique them.

Biographical Sketch of William T. Porter (1862–1949)

William Townsend Porter, the founder of the American Journal of Physiology, has been the Society’s greatest benefactor. Trained at St. Louis Medical College (later incorporated into Washington University School of Medicine) and in German laboratories, Porter began to teach physiology at St. Louis Medical College in 1887 and established the first physiological laboratory beyond the Mississippi River. He was elected to APS at its fourth annual meeting in 1891 and presented a paper before the Society in 1892 on the effects of ligating coronary arteries. His publications on ventricular filling and pressure, control of respiration, coronary circulation, origin of the heartbeat, and the physical and mental development of children brought him to the attention of eminent physiologists, among them Bowditch, who in 1893 invited Porter to join his department at Harvard and introduce laboratory experimentation as part of the regular physiology course.

Because imported laboratory instruments were far too costly to equip a teaching laboratory, Porter established a machine shop in the department to make simplified and less expensive apparatus. It was found that enough instruments could be produced to equip other physiology laboratories. With the help of Charles W. Elliot, president of Harvard, capital was raised to found the Harvard Apparatus Company in 1901. The company prospered, and in 1920 Porter used the profits to found the APS Porter Fellowship. On two occasions, Porter offered to give the company to the Society, but the Society felt unequal to the task of attempting to manage such an enterprise properly and reluctantly declined.

In 1900 Porter, who had by then the major responsibility of the teaching of physiology at Harvard, chose as his teaching assistant Walter B. Cannon, who had just received his M.D. from Harvard. Despite Porter’s devotion to the reform of the teaching of physiology, he was not popular with the medical students. A strict disciplinarian, his expectations were too high; he failed roughly one-third of the students from 1902 to 1904. A student revolt was one of the reasons why, when Bowditch retired in 1906, it was Cannon rather than Porter who succeeded him. Porter was named instead professor of comparative physiology. A breach that lasted many years was created between Porter and Cannon. However, in 1937, Cannon was among those who enthusiastically proposed that Porter be honorary president for the Semi-centennial Celebration of APS. Porter served as master of ceremonies for the happy occasion. In 1948 he had the distinction of becoming the only American ever to be elected an honorary member of the Society. Former APS President A. C. Barger wrote of him, “Physiology was Porter’s religion; he had no other” (7–10, 19, 20).

APS Assumes Full Responsibility for AJP

A turning point in the history of APS publications occurred in 1914, when the Society took on full ownership of and responsibility for the American Journal of Physiology. Although the Society was grateful for Porter’s generosity in running the journal, some degree of friction seems to have developed between Porter and the Council and its Editorial Committee. Porter, a man of high ideals and uncompromising standards, did not always work easily with others. At the December 1913 meeting, the same meeting at which Cannon was elected president, members of the Society at a business meeting adopted the following resolution after “extensive” but unreported “discussion”:

Resolved that the Editorial Committee be appointed a special committee and instructed to consider the question as to the relation between the American Physiological Society and the American Journal of Physiology, and to recommend at the next annual meeting of the Society means by which more satisfactory conditions for publication by American physiologists may be obtained.
The Editorial Committee, chaired by Howell, addressed to Porter a letter inviting him to discuss the matter. Although Porter may have had personal financial reasons for wanting to relinquish the journal at this time, the letter implying criticism of his editorial policies led to a quick decision (9). Porter sent to A. J. Carlson, secretary of the Society, a terse note announcing that he would cease editing the journal after the current volume (i.e., volume 33) was completed, which would probably be April 1914. He set forth conditions for continued use of the title, which he owned: "(1) that the Society shall publish a journal that shall be their own property and (2) that such a journal shall be printed by a first-class house in a form little if at all inferior to that of the present journal."

Porter's sudden action precipitated a crisis. April was only three months away, but no official Society action could be taken until the annual meeting in December. The Editorial Committee had no authorization to take financial responsibility for a journal, and there was no one at hand to do the work. A flurry of letters passed among the members of Council and the Editorial Committee. When it proved impossible to induce Porter to continue as editor until the next meeting of the Society, an emergency meeting of the Editorial Committee was held in New York in January attended by Howell, Lee, Graham Lusk, Cannon, Samuel J. Meltzer, and Lafayette B. Mendel. The committee recommended that the Society own and manage the journal and continue to use the same title if possible, but, if Porter was unwilling, to adopt a new title. Lee and Cannon met with Porter in Cambridge on 5 February and succeeded in negotiating Porter's conditions. Although Porter was willing to receive manuscripts for the first issue of volume 34, he insisted that the Society assume responsibility for sending out notices and collecting bills by the beginning of March. Joseph Erlanger, treasurer of APS, was hurriedly pressed into service.

Because there was no time for constitutional niceties, Cannon took matters in hand and, after conferring with Lee, sent to the members of the Society a printed notice requesting a vote on the question, "Shall the American Journal of Physiology be owned by the American Physiological Society, and edited under its control?" The notice claimed that the journal as edited by Porter "results in little or no financial deficit," when in fact the journal had been running at a loss. To provide for the journal, Council proposed to raise a "guarantee fund." By 16 February, of the seventy-five members of the Society who responded, seventy-three were in favor, and ten men had pledged a total of over $1,000 for the emergency fund. A formal vote was taken by Council by mail. At the annual meeting in December 1914, the membership gave final approval and amended the constitution to enable the Society to own the journal. After considerable debate over the relationship of the journal to Council, it was decided that Council itself would act as the Editorial Committee.

In March, a candidate for managing editor was found. Neither Lee nor Howell, the two most senior members of the committee, was willing to take on the work. Both had supported the idea of finding a younger man. There was some concern, however, that a young man would not have the necessary broad experience for editorial judgments. Donald Russell Hooker, first suggested by Lee, was an excellent choice, because, as a student of Howell and a member of the Department of Physiology at Johns Hopkins, he could readily avail himself of Howell's advice. Elected to APS in 1906, he was at this time thirty-seven years old. Howell, as chairman of the Editorial Committee, requested Hooker's appointment to the Committee, and, although Porter had not yet formally resigned and created a vacancy, Cannon approved. Hooker was to act as managing editor of the APS journals for the next thirty-two years.

With Hooker in place, journal procedures were regularized and some important cost-saving changes were made. Porter's payment of five dollars to authors of accepted articles was eliminated as unnecessary. It was decided that authors should pay for reprints and for part of the cost of publishing articles that were long or contained many tables. Procedures for acceptance or rejection of manuscripts were spelled out. There was at this time no formal peer review. Any member of Council had the power to accept articles for the journal, but two members of Council were required to reject a manuscript. In fact, few articles were rejected (17). Ten rejections were reported in 1917, three in 1919, eight in 1920, and ten in 1921. Immediate attention was devoted to finding another press for printing the volumes, because the Plimpton Press used by Porter was considered too expensive. Waverly Press was chosen because of its location in Baltimore, close to the managing editor, and its extensive experience in handling similar journals. Waverly Press printed and distributed the AJ P for 70 years. (The journal is currently printed by Science Press, in Ephrata, Pennsylvania.) In 1914 there were about 400 subscribers to the journal, for the most part libraries and institutions. Of 205 members of APS at the beginning of 1914, only one-fourth subscribed to the journal; this figure increased to one-third as the result of a circular sent to all members.

By mutual consent of Hooker and Council, Hooker assumed handling of subscriptions and financing. Finances for the journal were thus from the beginning separated from finances of the Society. Hooker established an office for the journal in his home in Baltimore and in 1915 hired an assistant, Laura Campen, APS's first employee, who was responsible for all the day-to-day affairs of the APS journals throughout Hooker's long tenure as managing editor. APS was one of the earliest societies of its size to assume full responsibility for managing its associated journal. By way of contrast, the Journal of Biological Chemistry and the Journal of Pharmacology and Experimental Therapeutics were still privately owned, with only an informal relation to the American Society for Biological Chemistry and the American Society for Pharmacology and Experimental Therapeutics. Early in its history, however, APS began a strong publications program that has led to a long period of steady growth and prosperity.
Biographical Sketch of Donald Russell Hooker (1876–1946)

Born in 1876 in New Haven, Connecticut, Donald Russell Hooker received his B.A. and M.S. degrees from Yale and his M.D. degree in 1905 from Johns Hopkins. After spending a year in research at the University of Berlin, he joined the Department of Physiology under Howell at Johns Hopkins as an assistant in physiology. In 1910 he became an associate professor but gave up the appointment in 1920 because of the pressures of editing the APS journals, accepting in 1926 an appointment as lecturer in the School of Hygiene and Public Health. His research was of a high order. Between 1907 and 1935 he published over forty journal articles on the physiology of the circulatory system, and he is recognized as a pioneer in the study of venous pressure. Some of his most important work was done at Hopkins in the early 1930s as part of an historic team project, funded by Consolidated Edison, to investigate the effects of electricity on the human body. The collaborators were Hooker, O. R. Langworthy, a neurologist, and William Kouwenhoven, an electrical engineer. Their research, published in the American Journal of Physiology in 1933, demonstrated that electrical defibrillation was possible in animals and led to the eventual development of means to defibrillate the human heart.

In addition to his duties as managing editor of the American Journal of Physiology and Physiological Reviews (begun in 1921), in 1935 Hooker became secretary of the Federation; he was the founder and the first editor of Federation Proceedings. For most of his years as editor of APS journals, he worked without remuneration. A. J. Carlson (12) said of him that he was one of the ablest most devoted servants of our science, and “the last man to claim the stature of a superman.” As an editor he was known for his wide experience, good judgment; high standards of accuracy, clarity, and brevity; and conservative management, resulting in the accumulation of a substantial reserve fund for the protection of the journals. He was a man of strong social conscience, active in civic affairs and social reforms. In the volume of the American Journal of Physiology dedicated to him was written, “No one of his generation has had a greater influence on American physiology” (1).

Founding of Physiological Reviews

Under the management of APS Council and Hooker, AJP began to accumulate a modest revenue. As early as 1915 Hooker reported a surplus of $2,565.76, an amount that grew steadily every year thereafter. Within a few years it was generally understood that the funds were to be used for publication purposes only. Among the uses for the money suggested in Hooker’s annual report for 1915 was “to guarantee for one year the publication of a journal devoted to articles reviewing the various fields of biological science.” At this time this was quite a novel suggestion, for there were few journals of this kind in existence.

The initial idea of Physiological Reviews, as well as its subsequent development and rapid success, was largely due to Hooker’s mentor and colleague, William Henry Howell. In April 1919, Howell and Hooker brought the matter of the review journal before Council and the Society. Howell felt there would be good demand for such a journal and that it would soon be self-supporting. Council appointed Howell and Hooker to a committee charged with presenting a detailed plan at the next meeting. The proposition was discussed informally by the Society. Its response was described in the minutes as “enthusiastic,” although Howell recalled years later that the initial reaction was at best lukewarm.

In June Hooker and Howell sent Council a report proposing that a journal, called either Physiological Reviews or Quarterly Reviews of the Physiological Sciences, be published quarterly in a single volume per year. The journal would “cover the subject of physiology, physiological chemistry, pharmacology, experimental pathology and such other subjects as may from time to time appeal to those interested in the biological sciences.” Editorial responsibility would rest with a Board of Editors, representing various branches of physiology, which would select the subjects to be reviewed and assign them to authors. “The ultimate subscription list is estimated as over a thousand,” they wrote. It was hoped that the journal would appeal to teachers and clinicians, as well as to physiological researchers. In the plan presented to and approved by Council in December 1919, Council was to appoint the managing editor and to deal with policy matters other than selection of authors and articles. Hooker became managing editor, and Council appointed a first Editorial Board consisting of four members from APS (Howell, Macleod, Lee, and Hooker) and one each from the other three Federation societies (Lafayette B. Mendel, Reid Hunt, and H. Gideon Wells). The Board elected Howell to be chairman, a position he held until 1932.

In 1920 a prospectus was drawn up and widely distributed. It described the journal in the following terms:

The main purpose of the PHYSIOLOGICAL REVIEWS is to furnish a means whereby those interested in the physiological sciences may keep in touch with contemporary research. The literature, as every worker knows, is so extensive and scattered that even the specialist may fail to maintain contact with the advance along different lines of his subject. The obvious method of meeting such a situation is to provide articles from time to time in which the more recent literature is compared and summarized. The abstract journals render valuable assistance by condensing and classifying the literature of individual papers, but their function does not extend to a comparative analysis of results and methods. Publications such as the Ergebnisse der Physiologie, the Harvey Lectures, etc., that attempt this latter task, have been so helpful as to encourage the belief that a further enlargement of such agencies would be welcomed by all workers. It is proposed, therefore, to establish a journal in which there will be published a series of short but comprehensive articles dealing with

...
the recent literature in Physiology, using this term in a broad sense to include Bio-chemistry, Bio-physics, Experimental Pharmacology and Experimental Pathology.

The first volume, which appeared in 1921, contained nineteen contributions, including articles on the conduction of the heartbeat by J. E. A. Eyster and Walter Meek, functions of the capillaries and venules by Hooker, blood volume and its regulation by Joseph Erlanger, the sugar of the blood by J. H. R. Macleod, the regulation of pulmonary circulation by Carl J. Wiggers, afferent paths for visceral reflexes by S. W. Ranson, the physiology of undernutrition by Lusk, and the physiological effects of altitude by E. C. Schneider. Physiological Reviews proved an immediate and overwhelming success. Cash subscriptions in advance at $6 per year had been adequate to meet initial expenses, and the reserve fund of $3,000 did not have to be used. By the end of the first year of operations the journal had 838 subscribers “and new subscriptions constantly coming in.” It was not long before the “ultimate subscription list” of 1,000 was reached and surpassed.

The Board of Publication Trustees and Peer Review

The major concerns of the APS journals in the 1920s were the products of their success: first, too many manuscripts, and second, how to handle a rapidly growing reserve. Although the most prolific authors of articles in AJP came from a small number of centers of medical research, papers in the early AJP represented a very broad definition of physiology and a wide spectrum of researchers and of institutions (17). Hooker and the APS Council took pride in the rapid publication of research results in AJP; they had been able to publish articles two months after they were submitted. The mounting accumulation of manuscripts was at first handled by expedients such as increasing the number of pages in the volumes and printing in smaller type or printing an extra “free” volume to eliminate the backlog. In the 1920s the rejection rate for manuscripts was low; only the obviously unfit were refused publication. Hooker and Council were reluctant to select articles on the basis of merit. Instead they decided to restrict the field covered by the journal, by eliminating almost all articles that would be more appropriately submitted to some other journal. Thus the journal became far less hospitable to articles in such areas as general physiology, comparative physiology, nutrition, clinical physiology, and industrial physiology, because these fields were covered by professional journals. Articles describing apparatus, those containing no new research (i.e., theoretical articles), and those coming from a foreign laboratory were also routinely rejected. In addition, Hooker urged authors to avoid historical reviews of the literature, to state their results with clarity and brevity, and to include only the most important tables and figures. These measures only staved off for a time the need for closer scrutiny of the manuscripts.

Nearly everyone agreed that Hooker was the ideal managing editor, but there was concern over placing too much editorial and financial responsibility on a single individual. Manuscripts were sent directly to Hooker in Baltimore, who approved them on his sole authority, returned them to the author for condensation, or rejected them if they fell into various categories of unsuitable manuscripts as previously defined by Council. The relatively small number of manuscripts on which there was some question was sent by Hooker with his recommendation to members of Council. No one man, it was felt, could possibly have the expertise to render judgment on papers in all branches of physiology. Occasionally, members of the Society would bring to Hooker’s attention examples of seriously flawed papers that had been published. By the 1930s the problem of too many manuscripts had reached a critical point. In some years, five volumes of the journal had appeared at a high total cost to subscribers of $37.50 for nonmembers and institutions and $18.75 for members. (Member rates had been introduced in 1922.) As billing for journals was still done by volume, rather than by number, there was pressure from subscribers, especially in a time of depression, not to publish more than four volumes a year. Although the journal was recognized as excellent, there was a growing feeling that manuscripts should be more carefully selected.

In his 1929 annual report, Hooker, concerned with the high cost of subscriptions and with the accumulation of manuscripts, suggested that the Society should “create a continuously functioning editorial board with specified jurisdiction for each member, to which all manuscripts will be referred.” In 1930 he requested and received permission to consult nonmembers of Council on articles with the understanding that appeals could still be made to Council. That year another unsuccessful attempt was made to reduce the cost of subscription by including the cost of the journal in the Society dues. Council voted to set dues at fifteen dollars to include a subscription to the journal, but the membership rejected the plan.

The issue of financial vulnerability was brought to a head in 1932 by the loss of some of the Society’s funds, then held in a Boston bank, through bank closures. It was imperative to protect the publications reserves, which by then amounted to nearly $100,000. Council felt that Hooker should not bear this responsibility alone. Thus in 1932 a committee, consisting of Walter Meek (chairman), Cecil K. Drinker, and A. C. Ivy, was appointed to examine editorial and financial policies of the Society’s publications and to report back at the next meeting. By putting Drinker on the committee, the Council knew what to expect, as Drinker had already proposed a trustee arrangement to APS Council in the 1920s.

The committee’s report, presented to Council in 1933 recommended:

1. To establish a Board of Publications Trustees of the Council which shall devote special attention to the fiscal and editorial policies of the Journal.
2. To appoint a Board of Editors for the American Journal of Physiology.
3. To pay a salary to the Managing Editor.
The Board of Publication Trustees (BPT) was to consist of three members appointed by the president for three-year rotating terms and subject to the approval of the Society. It was to advise Council on journal finances and editorial policy and recommend members to serve terms on the Editorial Boards of the American Journal of Physiology and Physiological Reviews. After consultation with Council, President Arno B. Luckhardt selected the first three BPT members: Walter Meek (chairman), Andrew C. Ivy, and Wallace O. Fenn.

Beginning in 1933, the BPT voted for Hooker each year an honorarium in lieu of a salary, which increased from $1,500 in 1933 to $4,500 in 1946. It was realized that when Hooker retired, his successor would have to be salaried. A 10% reduction in journal prices was enacted for prompt cash payment of subscriptions. Despite the additional costs of meetings of the board, the honorarium, and the reduction in subscription prices, the journals under the careful and conservative management of the BPT continued to prosper and the reserves to rise.

The first Board of Editors of the American Journal of Physiology took up its duties of reviewing all submitted manuscripts in the summer of 1933. Its members were Cecil K. Drinker, Carl J. Wiggers, Herbert S. Gasser, Andrew C. Ivy, Walter M. Boothby, Roy G. Hopkins, J. G. Dusser De Barenne, and Alfred Newton Richards. Hooker continued to read all manuscripts as they came in and sent them to the appropriate member of the board with his own opinion attached. The number of manuscripts rejected or returned for revision increased dramatically after 1933. In 1935, for example, less than half the manuscripts were accepted as submitted. The new editorial review procedures proved to be not as cumbersome as some had feared and were effective in limiting the size and improving the quality of the journal.

Although the BPT was to act in an advisory capacity, it soon assumed, with the tacit approval of Council, much stronger powers. It appointed the managing editor and the boards and made financial and policy decisions. It submitted these decisions in the form of an annual report, which Council always approved. Although the members of the BPT were to rotate, in fact the same members tended to be reappointed for long periods, because they were known to have the dedication and experience required for the job. Meek served as chairman of the BPT until 1946. Ivy served for a total of nine years, H. C. Bazett for eight, and Fenn for fourteen. Except for Homer W. Smith, who served 1944–1948, all fifteen members of the BPT from 1933 until its dissolution in 1961 were past or future presidents of APS.

BPT’s power and autonomy were consolidated in 1946 when the Constitution of APS underwent major revisions. APS members had pressed for a clear statement of their authority in response to a heated disagreement that had arisen in 1941 when John F. Fulton and others had induced the members at the business meeting to vote to send war relief funds to the Royal Society of Great Britain. Because the Society had no reserves to speak of, several thousand dollars had to be taken from publications reserves. BPT members were horrified by what they perceived as an unauthorized “raid” on their funds (5, 15). The Constitutional revision granted BPT “full power of the Society to control and manage, both editorially and financially, all of the publications owned in whole or in part by the society,” and “to control all publication funds, none of which, however, may be diverted from support of publications of the Society except by consent of the Council.”

The creation of the BPT led to a more efficient and regularized operation of the journals, an increase in quality, and a more secure control over reserve funds. It also meant that journal affairs were increasingly separated from those of Council and the Society. The separation posed no difficulty in this period, even though the disparity between journal funds and Society funds was far greater than when a crisis erupted in 1961. It was not until the Society became involved in a broader range of activities that resentment and conflicts began to arise.

APS Journals Acquire a Permanent Home

The death of Hooker in 1946 precipitated a new era in the history of APS publications. Hooker’s assistant Laura Campen carried on the publications alone under the supervision of Philip Bard while BPT searched for a new managing editor. A. C. Ivy, chairman of the BPT, proposed at the 1947 spring meeting the appointment of Milton O. Lee (1901–1978). Lee had received a Ph.D. in physiology in 1926 from Ohio State University and was elected a member of APS in 1927. He had acquired unusual administrative and editorial experience as Secretary of the Neuro-Endocrine Research Foundation at Harvard Medical School from 1927 to 1942, in various war positions, and as managing editor since 1936 of Endocrinology and the Journal of Clinical Endocrinology. APS Council appropriated $1,000 so that Lee might also act as executive secretary of the Society. Through the generosity of Detlev Bronk, a member of APS and president of the National Academy of Sciences, space in the National Academy of Sciences Building at 2101 Constitution Avenue in Washington, DC, was made available at no cost for the work of the Society, as well as of the Federation. The Federation appointed Lee executive secretary as well; thus Lee, who assumed his duties in June 1947, had three hats and three sometimes conflicting masters to serve. It was largely Lee’s vision and enterprise as executive secretary of the Federation that brought about the Federation’s rapid growth and rise to eminence (3).

Soon after taking up his duties, Lee hired Sara F. Leslie, a recent employee of the US State Department, to be senior assistant; she became secretary of publications in 1948 and eventually succeeded Lee as publications manager of APS. Lee modernized the accounting for the journals by contracting with Remington-Rand to set up an automated system that enabled calculation of
balances at any time.\(^1\) In 1947 for the first time the journal was issued on a calendar-year basis with four volumes a year (changed to two much larger volumes in 1959).

Free rent did not last long. When the Academy requested a rent of $12,000 a year for the combined offices, BPT, concerned with the expense, began to investigate purchasing property for a headquarters. At the same time Lee saw the opportunity to provide a home for the Federation with sufficient space for executive offices for all the member societies. When Lee and the members of the APS Committee on Society Headquarters saw the 38-acre Hawley estate with a mansion house and outlying buildings just north of the National Institutes of Health in Bethesda, they realized that the property was an excellent bargain. The estate was purchased in 1954 for $212,500 paid in full, mostly from the APS publications reserves. Portions of the property were then sold for about $100,000 to the State Highway Commission to widen Rockville Pike, then only two lanes (this was before the Washington Beltway was built), and to a developer to build single-family homes. At the request of the Federation, strongly supported by Lee, BPT agreed to transfer title to the remaining 11 acres to the Federation for $100,000 and to loan the Federation part of the funds needed to pay for it. Thus the Federation obtained in 1954, through APS and in particular through APS publications, the valuable property it now owns for what was even then considered an exceedingly good price. APS publications from then on had a permanent home (15, 18).

**Journal of Applied Physiology**

The Journal of Applied Physiology (JAP) was inaugurated in 1948 and thus celebrates its fiftieth birthday this year. It originated in a proposal to Council made at the 1947 annual meeting from a group of physiologists consisting of Norman R. Alpert, William B. Bean, Henry Borsook, Ernest William Brown, J. Brozek, Robert S. Goodhart, Robert M. Kark, Geoffrey L. Keighley, Ancel Keys, Ernst Simonson, and Maurice Visscher. The group had met at the University of Minnesota in January 1947 to discuss “the need for a journal of high standard for the broad field of human physiology, with emphasis on the relationship between man and environment. Specifically, the journal should be concerned with experimental investigations in the fields of industrial physiology, physiology of exercise and athletics, climate physiology and military physiology.” Under the leadership of Simonson, the group conducted a poll of workers in these areas and collected statistics from recent review articles on the number and location of articles being produced in the field. They concluded that sponsorship by the Society would be the most desirable means of publication.

The BPT agreed to take up the project in a modified form and chose as a first editorial board R. A. Cleghorn, David B. Dill, Chalmers L. Gemmil, A. H. Steinhaus, E. F. Adolph, Frances A. Hellebrandt (the first woman to serve on an APS editorial board), Simonson, E. M. Landis, Wallace O. Fenn, Robert E. Johnson, Hudson Hoagland, and E. J. Van Liere. Six issues of JAP were published between 1 July 1948 and 1 January 1949. Unlike other APS publications, JAP was somewhat slow in getting off the ground financially. The journal had an initial problem of identity, and it took sometime before it acquired enough subscribers to be self-supporting. According to the annual report of the BPT for 1948, JAP had 604 subscribers, compared with 1,408 subscribers for AJ P and 2,423 for Physiological Reviews. By 1961, however, JAP had 2,152 subscribers and had become the journal of choice for papers in respiratory physiology.

Through the 1950s the publications of APS continued to expand. The Physiologist, a house organ for APS members, was inaugurated in late 1957; a monograph series was begun; and the first volume of the monumental Handbook of Physiology appeared in 1959.

**Journal of Neurophysiology**

The Journal of Neurophysiology (JN), which celebrates its 60th birthday in 1998, was founded as an independent journal by John F. Fulton, professor of physiology at Yale, J. G. Dusser de Barenne, and the publisher Charles C Thomas. The first issue appeared in January 1938, published by Thomas and edited by Fulton, Dusser de Barenne, and Ralph W. Gerard with the assistance of an international advisory board. The “primary aim” of the new journal was said to be “to provide a channel for prompt publication of original work bearing on the functions of the nervous system, peripheral and central. It has been planned to embrace all aspects of the subjects amenable to experimental analysis” (cover of 1st issue of JN). Among the authors represented in the first issue were Fenn, Hallowell Davis, E. N. Harvey, H. W. Magoun, and S. W. Ranson. A volume consisting of six issues was published each year. After Dusser de Barenne’s death in 1940, Fulton continued as editor-in-chief until his death in May 1960 (24).

APS’s interest in purchasing the journal at this juncture was motivated in part by the desire to prevent the formation of a splinter group of neurophysiologists and in part by the expectation that JAP would eventually be sectionalized. Fulton had left his share of the journal to Yale University; APS acquired full ownership of JN in November 1961 by payment of $35,000 to Thomas and $25,000 to Yale. Negotiations with the latter were delicate, because Yale was willing to sell only on approval of the journal’s editorial board. Vernon B. Mountcastle, who had edited the journal in 1961, continued as chief editor under APS with an Editorial Board separate from that of JAP and JAP whose editorial boards had been combined in 1952. At the same time as APS began publication of JN in January 1962, a system of section editors for JAP and JN was initiated and the articles in JAP began to be organized according to section (6) (see below).

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The 1961 Reorganization

One of the more difficult turning points in the history of the APS publications program was the so-called “Comroe Revolution” of 1961, which brought about the downfall of BPT and returned full control of APS publications to the elected officers of the Society.

In 1938 the Society’s activities were limited almost entirely to holding annual meetings and publishing journals. Dues were the same two dollars as in 1887. After World War II, in a relatively short time, the Society was transformed from an organization with a strictly research orientation to one with a wide range of professional activities. In the 1950s a Fall meeting was begun, and a system of standing committees was established including an Education Committee that undertook several major projects funded by outside grants. The Society began to involve itself in social issues beyond simple monetary contributions or signing of resolutions. It sought to help physiologists in war-stricken countries, worked to defend physiologists against loyalty tests, and for the first time took an active role in the defense of animal research. These expanded activities led to a steady rise in dues and a separation of the work of executive secretary-treasurer of the Society from that of managing editor of the journals. In 1956 Ray G. Daggs was appointed executive secretary-treasurer of APS while Lee remained managing editor of APS publications and executive secretary of the Federation.

Daggs’s active involvement in the work of Council and the committees encouraged new projects and activities but also led to frustration on the part of Council over the limited financial resources of the Society. Society operations, including Daggs’s salary, depended almost entirely on dues, a good chunk of which went to the Federation, and grant support (22). When certain grants came to an end in 1960, the Society reached a point of financial crisis.

Over the decade of the 1950s the frustrations of the Council mounted while the BPT grew increasingly defensive. The matter was passionately debated at several Council meetings before it came to a head in 1960–61. By 1961, there was a great disparity between the Society’s reserves (about $30,000) and the publications reserves (about $600,000) built up through the conservative management of BPT (13). The estimated budget for 1961, as published in The Physiologist, showed a Society income of $20,500, mostly from dues, and expenses of $28,000, leaving a deficit of $7,500, whereas the net income from publications operations was $25,000 and the income from the sale of securities was $32,000 (2). Under the bylaws, BPT had full control over the income of publications funds, which could only be used for publications purposes.

A number of factors seem to have contributed to the Comroe Revolution that took place at the annual meeting in Atlantic City in April 1961. Besides the lack of money available for Society functions, there was a desire for publications such as Physiology for Physiologists (begun in 1963 and evolved into a series in the journal Hospital Practice) that the BPT did not want to support, distrust on the part of some members of Milton Lee’s management of publications, and the general belief that Council should be in full control of all the activities of the Society. On the other side, those who supported BPT, including Lee, maintained that the publications reserves had come from subscribers, only a small portion of whom were Society members, and therefore should be used for publications purposes and not to benefit members of the Society; that the BPT had supported the Society in many ways; that BPT members, who held office for a long period, were better able to manage publications and enter into long-term agreements than a constantly changing Council; and that the plan to separate finances from editorial policy was schizophrenic and unworkable (18, 21, 23).

Changing the situation meant changing the bylaws of the Society (a revision of the APS Constitution in the early 1950s transferred organizational matters to the bylaws), which required a three-fourths vote at the annual business meeting. In the 1960s, two sessions of the business meeting were held during the annual meetings, since major Society business, including election of officers, was transacted there. At the first session Julius H. Comroe, Jr., president of APS in 1960–61, offered for a vote a controversial amendment that he and Robert F. Pitts had drawn up and circulated to the membership. It created, in place of the BPT, a Publications Committee to oversee editorial policies of the publications and a separate Finance Committee to be responsible for all financial affairs of the Society. Both committees were to be under direct control of Council. The capital fund of the BPT was to remain as a reserve fund for publications, but annual income from investment of the fund “may be used for any of the activities of the Society including publications” (13). When the vote was taken by written ballot, the 74% voting in favor was just short of what was required. However, one member (A. P. Fishman) who had voted against the motion was prevailed to bring it up again at the second business session two days later. This time the motion passed by a small margin (78%). At a stroke, BPT, in existence since 1933, was abolished and a new regime instituted (15). Wallace Fenn (15) observed in his 75th anniversary history of APS in 1963, “As society disputes go, this was a rather heated controversy.”

After the reorganization, editorial policy for publications was overseen by a three-member Publications Committee appointed by Council. (The number of members was increased to five in 1985. At that time, Jean M. C. Marshall became the first woman to be appointed a member.) In charge of the difficult transition period were Philip Bard as the first chairman of the Publications Committee (the one holderover from BPT), Eugene M. Landsis, first chairman of the Finance Committee, and Horace W. Davenport, president of APS in 1961–62. A five-year contract was arranged with Milton Lee and Sara Leslie to continue managing the journals.

Sectionalization

The new Publications Committee faced the perennial problems of increasing numbers of manuscripts and increasing specialization of physiology. With the pur-
purchase of the Journal of Neurophysiology, the Committee took the first major step toward eventual sectional- ization of the journals.

In January 1962, section editors took over from Lee the handling of manuscripts for AJ P and J AP. The sections established were Circulation (Maurice B. Visscher), Respiration (Hermann Rahn), Renal and Electrolyte Physiology (W. D. Lotspeich), Gastrointestinal Physiology (Horace W. Davenport), Endocrinology and Metabolism (Jane A. Russell), Environmental Physiology (Loren D. Carlson), Comparative and General Physiology (Knut Schmidt-Nielsen), and Neurophysiology (E. Henneman). To these sections were later added Hematology, Muscle Physiology, and Biomedical Engineering. During the period of section editors, from 1962 to June 1976, the Publications Committee and staff experimented with different ways of organizing articles by sections. A. P. Fishman and Stephen Geiger recalled, "It was clear, however, that neither the increase in the number of sections nor the attempts at sorting were coping with the increasing numbers of papers and the evident trend to greater and greater specialization."

Because section editors now took care of professional matters, the post of managing editor no longer had to be limited to physiologists such as Porter, Hooker, and Lee. APS publications have benefited by an extraordinary continuity in management. When Lee retired in 1965, Sara F. Leslie, who had joined the staff in 1947, replaced him as managing editor. She was in turn succeeded by Stephen R. Geiger, who joined the APS publications staff in 1969. Geiger became acting publications manager in 1974 and publications manager and executive editor in 1975. Brenda B. Rauner, a member of the publications staff since 1975 and production manager since 1978, became publications manager and executive editor in 1987.

Beginning in 1974, under the chairmanships of Peter F. Curran and Alfred Fishman, the Publications Committee began wrestling with how to initiate true sectionalization of the journals, that is, breaking up AJ P and J AP into several specialty journals. The APS membership was generally in favor of specialty journals but, as in the past, averse to any plan that would have required mandatory subscription. How to satisfy the specialists and generalists at the same time was a difficult problem. As Fishman and Geiger wrote, "Clearly some form of sectionalization according to specialization was in the offing, but the exact form that would be acceptable to the membership, financially sound, and in keeping with the scholarly aspirations of the Society remained to be settled."

The plan that was eventually adopted was worked out in the summer of 1975. AJ P would be split into six specialty journals, each with a separate editor, associate editors, and editorial board, and the J AP would restrict itself to papers on respiration, exercise, and environmental physiology. However, libraries and generalists still had the option of purchasing a consolidated AJ P, a composite of the specialty journals. Editors were selected by the end of the year, papers began to be accepted in April 1976, and the first issues appeared in January 1977.

The six journals and their first editors were Paul Horowitz for AJ P: Cell Physiology, Rachmiel Levine for AJ P: Endocrinology, Metabolism and Gastrointestinal Physiology, Matthew N. Levy for AJ P: Heart and Circulatory Physiology, F. Eugene Yates for AJ P: Regulatory, Integrative and Comparative Physiology, Thomas Andreoli for AJ P: Renal, Fluid and Electrolyte Physiology (renamed AJ P: Renal Physiology in 1997), and Leon Farhi for J AP: Respiratory, Environmental and Exercise Physiology (the subtitle was dropped and the journal returned to its original scope in 1985). Physiological Reviews, edited by Charles F. Code, and The Journal of Neurophysiology, edited by Vernon Mountcastle, were unchanged in the reorganization. The specialty journals in cellular physiology and integrative physiology were an innovative departure from dividing physiology solely by organ systems.

The reorganization was described as follows in the first issue of each journal of 1977:

1. The American Journal of Physiology and the Journal of Applied Physiology will continue to exist and to be available as separate publications of the American Physiological Society. This continuing arrangement will satisfy both the generalist in physiology and the librarian who will be able to preserve unbroken series of these two distinguished journals.
2. The Journal of Applied Physiology, under its own editorial board, will restrict itself to papers on respiration, exercise, and environmental physiology.
3. The American Journal of Physiology will henceforth be an umbrella for separate journals, each with its own editorial board and each devoted to specialized subject matter. Each component will be issued separately as well as part of the American Journal of Physiology. This arrangement will satisfy the specialist who is interested in having on hand outstanding papers in his own particular field of interest.

The process of dividing the journals paved the way for sectionalization of the Society in 1976. Sectionalization led to an anticipated huge increase in the number of manuscripts and a steady increase in the number of manuscripts and pages published each year. It also made possible a broader variety of articles, including theoretical articles, reviews, opinion papers, and rapid communications. In 1980, AJ P: Endocrinology, Metabolism and Gastrointestinal Physiology split into AJ P: Endocrinology and Metabolism under the editorship of Ernst Knobil, and AJ P: Gastrointestinal and Liver Physiology, under the editorship of Leonard R. Johnson. AJ P expanded again in 1989 with the addition of AJ P: Lung Cellular and Molecular Physiology, with D. J. Massaro as editor, and Advances in Physiology Education under Harold Modell. In recent years the Publications Committee and staff have had to grapple with the many uncertainties of rapid technological change in scholarly communication. In 1997 there appeared the first of the online versions of APS journals that may eventually succeed the hundred years of paper journals (see Editorial by Leonard Johnson and Brenda B. Rauner in this issue).
In 1898, one man, William T. Porter, managed practically every aspect of publication of AJ P, from reviewing and copyediting articles to collecting subscription fees. A century later APS journal publishing has become a large, complex, and flourishing enterprise involving thousands of individuals serving as committee members, editors, associate editors, editorial board members, reviewers, and staff. APS is now publishing eight specialty journals making up the American Journal of Physiology as well as Physiological Reviews, Journal of Applied Physiology, Journal of Neurophysiology, The Physiologist, and, since 1986, News in Physiological Sciences, a cooperative effort of APS and the International Union of Physiological Sciences. In 1994 the Society launched APStracts, a free online journal that publishes abstracts of manuscripts accepted for publication in the APS journals. The goal of the publishing program, that of serving physiology, has remained constant.

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