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AN EARLY HISTORY
OF THE BRITISH
PHARMACOLOGICAL SOCIETY

W. F. BYNUM

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AN EARLY HISTORY OF THE BRITISH PHARMACOLOGICAL SOCIETY

W. F. BYNUM*

I. THE INITIAL LETTER

The British Pharmacological Society was founded in July 1931, on the initiative of Sir Henry Dale, Dr. W. E. Dixon, and Professor J. A. Gunn. Volume I of the General Minutes of the Society tersely records this preliminary strategy:

“In June 1931 a circular letter, worded as shown below, was sent out to about 30 people who were in charge of departments for teaching pharmacology or of institutions for pharmacological research, in Great Britain.

Dear

It has been thought for some time that it would possibly be of advantage to the subject of Pharmacology if some kind of annual meeting of British pharmacologists could be arranged, where papers on pharmacological subjects could be read and discussed, and questions of teaching and publication might from time to time be considered. If this suggestion should meet with sufficient approval, a suitable opportunity for a preliminary discussion of the project might be in connection with the forthcoming meeting of the Physiological Society in Oxford on July 4th. Arrangements could be made for accommodating, in Wadham College, those wishing to attend, and it would doubtless be an advantage, especially to those coming from a distance, to be able to attend also the meeting of the Physiological Society on the following day.

The following programme is suggested.

Friday 3rd July 7.30 p.m. Dinner in Wadham College.

Discussion after dinner of the formation of a Pharmacological Club.

Sat 4th July 10–1 Pharmacological Papers.

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The following would be the scale of College charges.

Dinner (Friday)	}	about 12/6 ^d
Bed and Breakfast –		
Lunch (Sat)		

In order to test the feeling of those likely to be interested, we should much appreciate your early reply (to Professor Gunn, Pharmacology Dept. Oxford) to the following questions.

1. Do you approve of at least a preliminary meeting to discuss the project?
2. Would you be able to attend the meeting as suggested?
3. Would you like to read a paper? (The intention is that papers should deal only with pharmacological subjects.)

We hope that these suggestions will meet with your approval.

Yours very sincerely

H. H. Dale

W. E. Dixon

J. A. Gunn''

The outcome of this is best seen when early twentieth-century British pharmacology is put briefly into its historical context.

II. PHARMACOLOGY IN ITS HISTORICAL CONTEXT

Pharmacology is a science with obvious ties to clinical medicine, on the one hand, and to chemistry and the pharmaceutical industry on the other. This full industrial development is of relatively recent origin, but concern with the medicinal properties of drugs is prehistoric, and drugs, particularly those of plant origins, have always been a part of therapeutics. Like so much of Western medicine, our therapeutics stems ultimately from the Greeks. Between the botanical writings of Theophrastus (c. 371–c. 287 BC) and Dioscorides' (fl. AD 50–70) *De materia medica*, many plant remedies were described which continued in use until the eighteenth century and beyond. This basic pharmacopoeia was gradually modified and extended, particularly from the Renaissance, when exploration opened the possibility of new drugs from Asia, the Americas, and Africa. However, the evaluation of a drug's effectiveness is difficult under the best of circumstances, and the unfortunate tendency, prominent from the Middle Ages, of mixing many drugs together (polypharmacy) further complicated this issue. For the most part the history of therapeutics is a pretty depressing affair. It is not that earlier pharmacopoeias were devoid of effective medicines. Opium, mercury, iron, disinfectants, willow's bark, and a number of other powerful medicines are traditional. But the precise

use of drugs was and is an exceptionally complicated affair, and the few historical exceptions, like Thomas Sydenham's (1624–1689) advocacy of 'Jesuit's bark' (quinine) for intermittent fever, William Withering's (1741–1799) use of the foxglove (*digitalis*) for certain forms of dropsy, or John Haygarth's (1740–1827) elucidation of the placebo effect, stand out like Portia's little candle in a naughty world (Ackerknecht, 1973).

It was against this background that many nineteenth-century doctors became sceptical of most traditional claims to efficacious remedies, preferring to concentrate their energies on accurate diagnosis and prognosis. At the same time, men like François Magendie (1783–1855) recognized that pharmacology could never become scientific until the precise physiological actions of individual drugs were uncovered. He himself investigated a number of plant alkaloids such as strychnine and emetine, and his analysis of the action of strychnine is arguably the first experimental analysis of the action of a drug. His work, which depended on improved methods of chemical isolation and identification, led to the publication, in 1821, of his *Formulaire*, wherein he described the actions and indicated medicinal uses of morphine, prussic acid, strychnine, quinine, emetine, iodine, and other chemical compounds. Magendie advocated the use of pure compounds only, and for specific reasons, and it is from the work of Magendie and his pupils that modern pharmacology derives. His most famous pupil, Claude Bernard (1813–1878), extended this approach by showing, as in the case of carbon monoxide, that it was possible to identify the precise site of action of an active substance (Grmek, 1973).

This approach, which emerged integrally with modern organic and biochemistry and experimental physiology, was systematically exploited in Germany during the second half of the nineteenth century. Rudolf Buchheim's (1820–1879) *Beiträge zur Arzneimittellehre* (1849) laid the German foundations on which his pupil Oswald Schmiedeberg (1838–1921) built a school of international importance. The latter's researches on the actions of drugs such as *digitalis* and muscarine, on physiological antagonism, and on the metabolism and excretion of compounds were outstanding, and his Institute at Strasbourg, where he went in 1872, attracted hundreds of students from all over the world. Schmiedeberg, Carl Binz (1832–1913), Hans Horst Meyer (1853–1939), Paul Ehrlich (1854–1915), and others ensured that knowledge of the German language was essential for any pharmacologist of the time, and German chemical and pharmaceutical companies began to capitalize on the results of this newer pharmacological research (Leake, 1975).

German influence in all the medical sciences found its first full expression

in America, particularly at the Johns Hopkins Medical School, founded in 1876 and long dominated by William H. Welch (1850–1934), and through the activities of Abraham Flexner (1866–1959) at the Rockefeller and Carnegie Foundations. Flexner travelled extensively in Europe in his efforts to improve the scientific standing of American medicine and medical education. In pharmacology, the German ethos was imported by J. J. Abel (1857–1938). After graduation from the University of Michigan in 1883, he spent a year in Baltimore with Newell Martin, Professor of Physiology (and Michael Foster's student), and then seven years in Europe, studying medicine and medical science with many famous teachers, including Carl F. W. Ludwig in physiology, Ernst F. I. Hoppe-Seyler in biochemistry, and Schmiedeberg in pharmacology. Abel's M.D. came from Strasbourg, and it was on Schmiedeberg's recommendation that Abel returned in 1891 to the University of Michigan as Professor of *Materia Medica* and Therapeutics (Dale, 1936–38). In 1893, he moved to Johns Hopkins as its first Professor of Pharmacology, remaining there until his retirement in 1932. It was Abel who called the vasoactive adrenal substance "epinephrine", by which name it is still known in America, and he also investigated the distribution of histamine and first crystallized insulin (Lamson, 1941). More important than his original researches, which were important though hardly brilliant, were his editorial and professional activities. He helped to found the *Journal of Experimental Medicine*, of which he was pharmacological editor, and the *Journal of Biological Chemistry*, which he edited jointly with Christian Herter. He was the sole founder and first Editor of the *Journal of Pharmacology and Experimental Therapeutics (JPET)* (1909), started just after the organizational meeting of the American Society for Pharmacology and Experimental Therapeutics (28 December 1908). Abel, the driving force behind the new Society, was its first president (Chen, 1969). Abel's initial Board of Associate Editors for *JPET* was entirely American, but, there then being no British journal devoted to pharmacology, in 1912 ten British editors were added to the Board, including Abel's friend A. R. Cushny (1866–1926) as joint Editor-in-Chief. Cushny's career illustrates some of the difficulties facing British pharmacologists during the early decades of this century.

Cushny was a Scotsman who trained at Aberdeen where J. T. Cash (1854–1936), Professor of *Materia Medica*, influenced his decision to pursue basic medical science. Graduating with the highest honours, he obtained the Thompson Fellowship which enabled him to spend a year in Berne with the physiologist Hugo Kronecker (1839–1914), following which he went on to Schmiedeberg's laboratory in Strasbourg. There he began

his researches on digitalis which continued intermittently throughout his life, culminating in two monographs on the subject, the second published the year before his death. After a year as Schmiedeberg's assistant, on the latter's recommendation, Cushny went to America to succeed Abel in Michigan. He spent twelve years in America, publishing many papers and writing his *Text Book of Pharmacology* (1899), which went through eight editions in Cushny's lifetime and continued under later editors as a standard textbook in the field (Parascandola, 1975; Geison, 1978a).

During Cushny's years in America, there were no pharmacology chairs in England, although the Scottish universities had professorships of materia medica and therapeutics. The reasons for this lack of pharmacological support in England are complex, related among other things, to the prestige of pathological anatomy and bacteriology (Paton, 1979); to the belief that therapeutics is so subtle a clinical art that pure science has little to offer it; and to the general financial, professional, and institutional obstacles which all laboratory-based medical sciences faced in late Victorian and Edwardian Britain (Geison, 1978b). Of the materia medica chairs, that in Edinburgh was the most active, T. R. Fraser (1841–1920) having done important work in experimental pharmacology, including the actions of physostigmine, structure-activity relationships, and the pharmacological properties of strophanthus (Bynum, 1970). However, the Scottish chairs also carried clinical responsibilities and were often combined with private practice. These same constraints also affected the man in England who perhaps did more than anyone to introduce experimental pharmacology to Victorian Englishmen, Thomas Lauder Brunton (1844–1916). Brunton, a student at Edinburgh, lectured for many years at St. Bartholomew's Hospital and published in 1885 what was the first modern pharmacology textbook in English. Despite his penchant for research, however, Brunton had only a tiny cramped room and virtually no facilities at Bart's. Although he was one of the band to introduce experimental physiology and pharmacology into England (he was a founder member of the Physiological Society), Brunton moved more into clinical medicine in the early years of the present century (Bynum, 1970).

As we shall see, there were a few lectureships being established in pharmacology (as opposed to materia medica) in England around this time, but the creation of a chair in the subject in 1905 at University College London was a notable event, made even more significant because it brought Cushny back to Britain. He found sympathetic support there from the physiologists E. H. Starling and W. M. Bayliss, and by 1912, with the help of the Carnegie Foundation, proper pharmacological laboratories had been built (MacGillivray, 1968). That same foundation had just sponsored

Abraham Flexner's tour of European medical facilities. His observations on the British scene, published in 1912, point to the lack of support for pharmacology. Noting the vigour of British experimental physiology, Flexner commented that Cushny's was the only department of its kind in the whole country. Fraser's department at Edinburgh was not nearly so active as it had been twenty years earlier. The chair at King's College London was only a part-time one, the professor at Glasgow was a practitioner, and only a lectureship existed in Liverpool. "In most [of the London medical] schools the instruction is assigned to physicians not otherwise engaged." (Flexner, 1912, p. 128). In consequence, teaching was primarily limited to the pharmacy, prescription-writing, and materia medica, which T. H. Huxley, as early as 1870, had suggested should have been abolished as part of medical education. It is true that the line between physiology and pharmacology was frequently a fine one, as J. N. Langley's (1852–1925) classic work with pilocarpine, nicotine, atropine, and curare demonstrates. Further, Henry Dale, by then already firmly established at the Wellcome Physiological Research Laboratories, was pursuing an incredibly fruitful research career outside normal academic circles. But for those few in Britain who felt that their professional identity lay in pharmacology rather than experimental physiology or clinical medicine, opportunities were limited. Publication outlets were often restricted to the medical weeklies *British Medical Journal* and *Lancet*, or the *Journal of Physiology*. As Dale was later to recall, Langley, editor of the *Journal of Physiology*, "was showing a steadily increasing reluctance to accept papers which could be regarded as pharmacological." (Dale, 1946). The negotiated joint Editorship of the *Journal of Pharmacology and Experimental Therapeutics* eased the situation somewhat.

Between 1912 and the foundation of the British Pharmacological Society in 1931, the situation changed slowly; Cushny left University College London for Edinburgh in 1920, being replaced by A. J. Clark (1885–1941), and pharmacology departments in Oxford, Cambridge, Liverpool, Sheffield, and elsewhere attested to the growing importance of the subject. A Therapeutics and Pharmacology Section of the Royal Society of Medicine had also provided a forum for discussion since 1907. This Section tended to be concerned principally with clinical issues, but its meeting in May 1931 included active participation by two of the Original Members of the Society – Gunn and G. N. Myers – and reference to work by Dale and Burn (*B.M.J.*, 1931 (1), 1023–1025).

Cushny died prematurely in 1926, but much of the progress in the subject just after World War I was effected by those who met at Wadham College, Oxford, on 3–4 July 1931, to found a new Society. Not surpris-

ingly, the meeting was held just before the Oxford meeting of the Physiological Society (Sharpey-Schafer, 1927; Bynum, 1976). As it had for other basic medical sciences such as biochemistry and experimental pathology in Britain, physiology had acted as a kind of foster-parent for the fledgling discipline of pharmacology.

III. THE SOCIETY'S FIRST MEETING AND ORIGINAL MEMBERS

The letter from Dale, Dixon, and Gunn, quoted in Section I, produced favourable replies from twenty-four individuals, and nineteen pharmacologists gathered for dinner at Wadham College on Friday 3 July 1931. Two more pharmacologists joined the group on Saturday morning, and seven sent apologies for their inability to attend. After dinner on Friday, Professor Gunn, who had been most active in sending the initial letter, spoke of the desirability of a society which would permit people engaged in pharmacological work to meet periodically, both to discuss scientific matters and to become better acquainted. After Gunn's remarks, there was a general discussion, during which it was decided that "Society" rather than "Club" was the better designation, and that, for the time being, only one meeting per year was to be held, the next one being tentatively fixed for 1 July 1932, immediately preceding the Oxford meeting of the Physiological Society. Dale, Dixon, and Gunn were appointed to the first Committee, with instructions to draft a constitution to be circulated and then discussed at the 1932 meeting. Dr. M. H. Mackeith, one of Gunn's staff, was added as Secretary. The Committee was empowered to change the date of the 1932 meeting, should 1 July prove inconvenient, and it was suggested that it should be incorporated into the rules that brief accounts of papers to be read should be circulated in advance. It was agreed that all individuals present at the organizational meeting, plus those sending their apologies, should be Original Members. Women were initially excluded, and the meeting was divided on whether membership should be restricted "to those engaged in teaching pharmacology or in pharmacological research", or whether "a limited number of clinicians might be admitted". However, those present agreed to oppose any "possibility of being swamped by clinicians" and consequently to send invitations for the second meeting only to those engaged in pharmacological research and teaching, although not simply to heads of departments.

At the Society's first formal meeting on 4 July 1931, in the Department of Pharmacology at Oxford, there were five papers and one demonstration:

- (1) J. H. Burn: "Is cocaine a sympathetic stimulant?"
- (2) J. A. Gunn: "The pharmacological action of harmine and some of its derivatives".
- (3) A. D. Macdonald: "The estimation of the toxicity of local anaesthetics".
- (4) E. Mellanby: "Convulsive ergotism".
- (5) A. C. White: "The fatty infiltration of the liver in rabbits produced by injection of large doses of pituitary extract".
- (6) J. Trevan: "Demonstration of a light frog lever suitable for class and research work".

With this meeting, the Society became a reality. To the twenty-one present in Oxford can be added seventeen who, although unable to attend the meeting, were counted as Original Members. Their biographies give some idea of the state of pharmacology in Britain in 1931. After the three Founding Fathers, the biographical sketches of the remaining Original Members will be alphabetical, those actually present at the first meeting being identified with an asterisk. Their ages spanned forty years, with Stockman aged seventy and Gaddum and White youngsters aged thirty-one and thirty respectively.

Henry Hallett Dale (1875–1968), O.M., F.R.S., was one of the giants of twentieth-century medical science. He earned first-class honours in the Cambridge Natural Sciences Tripos (1898), and, following a couple of years' research in Cambridge, went to St. Bartholomew's Hospital for clinical training. From 1902 to 1904 he continued his physiological studies under Starling and Bayliss at University College London. He also worked for several months with Paul Ehrlich at Frankfurt.

In 1904 Dale accepted a position at the Wellcome Physiological Research Laboratories, where he began his investigations into the physiological actions of ergot. This eventually led him, through a series of fortuitous discoveries, to his two abiding research interests:

These two lines of enquiry have led, on the one hand, by way of studies which involved the specific actions of adrenaline and of acetylcholine, to a widening application of the conception of a chemical phase in the transmission of excitation from nerve-fibre endings to responsive cells; and, on the other hand, by way of studies of the actions of histamine and of its distribution in the animal body, to evidence for its contribution to local and general reactions, by which the organism as a whole and its separate tissues respond to various chemical, immunological, or

physical assaults upon the integrity of their living cells. (Dale, 1965, p. x).

Dale remained at the Wellcome until 1914, when he left to become the head of one of the departments of the projected National Institute for Medical Research in Hampstead. He was Director of the Institute itself from 1928 to 1942. During those years, he continued his researches with a number of colleagues to whom he always paid warm tribute. These included George Barger and P. P. Laidlaw at the Wellcome, and during the Hampstead years, A. N. Richards, J. H. Gaddum, W. Feldberg, J. H. Burn, G. L. Brown, and Marthe Vogt (Feldberg, 1970; Schild, 1976).

There was a remarkable unity to Dale's research career, for acetylcholine, adrenaline, and histamine all entered the picture during the "ergot years". His work on histamine and "histamine shock" reinforced his awareness of important chemical and humoral factors in the control of circulation. This in turn led him back to acetylcholine, the vasodilatory effect of which had been reported in 1906 by the American pharmacologist, Reid Hunt. Its role in the transmission of nerve impulses at parasympathetic postganglionic and some sympathetic postganglionic endings, at preganglionic endings, and at the nerve endings in voluntary muscles was established primarily by Dale and his colleagues in Hampstead in the 1920s and '30s. Dale shared the 1936 Nobel Prize for Medicine or Physiology with Otto Loewi for "their discoveries relating to the chemical transmission of nerve impulses". Dale had already been knighted in 1932, and many other honours followed, including Presidency of the Royal Society (1940–45), the Chairmanship of the Wellcome Trust (1938–1960), and the Order of Merit (1944).

Dale is more accurately described as a physiologist than a pharmacologist, and through him and the first- and second-generation scientists from his laboratory, British pharmacology has acquired a distinctive physiological approach. Nevertheless, Dale clearly felt much affection for the Society he helped to establish. He was on the original Committee (1931–33), and offered much wise council over the years. In 1952, Dale and Gunn were the first British scientists to be elected to Honorary Membership.

**W. E. Dixon* (1871–1931), F.R.S., died before the Society he helped to establish was secure, but he undoubtedly deserves to be called one of its founders, for he played a crucial role in establishing pharmacology in this country. He received his medical training at St. Thomas's Hospital, where he became House Physician and, at the medical school, Demonstrator in

Physiology. In 1899, he was appointed an assistant to J. B. Bradbury, Downing Professor of Medicine in Cambridge. Cambridge made him a lecturer in pharmacology in 1909, by which time he was also part-time Professor of Materia Medica and Pharmacology at King's College London. He resigned the King's chair in 1919, when he became Reader in Cambridge, a post he retained until his premature death.

Dixon was a pharmacologist of the old school, with wide scientific and clinical interests, enthusiastic about the potential of drugs yet careful in his evaluation of them. Although some of his work could be called physiological, he insisted on the genuine independence of pharmacology, and looked forward to the time when British pharmacologists would achieve an international status equal to their physiological colleagues.

Dixon's earliest work was on the effects of mescaline, and he retained a lifelong interest in the pharmacology of hallucinogens and in physiological addiction. He was also concerned with the pharmacology of blood vessels and bronchi. His work (with T. Brodie) on adrenaline narrowly missed recording its broncho-dilating action, but he subsequently wrote widely on the physiology, pathology, and therapeutics of spasmodic asthma. He also performed, with W. Halliburton, a classic series of experiments on the cerebro-spinal fluid.

Perhaps Dixon's most interesting experiments, in view of later developments, were reported in 1907. He then noted that the vagus nerve, when stimulated, produced a substance which could inhibit the beating of the isolated frog's heart, an effect he found to be antagonized by atropine. So dubious were his colleagues about these results that he gave up this line of research.

Dixon succeeded Cushny as the British Joint Editor of the *Journal of Pharmacology and Experimental Therapeutics*. His *Manual of Pharmacology* (1906) was deservedly popular, going through seven editions in Dixon's lifetime; it was revised in an eighth edition by W. A. M. Smart (1936).

**J. A. Gunn* (1882–1958) was from Orkney, where he received his early education. He then proceeded to Edinburgh, where he earned medical and scientific degrees and won many prizes. At Edinburgh he came under the influence of Sir Thomas Fraser, and was assistant in Fraser's department before departing in 1912 for Oxford, where he was made Reader in Pharmacology. He quickly established pharmacology at Oxford, where he remained for the rest of his career, as the first Professor of Pharmacology 1917–1937, and from 1937 to 1946 as Professor of Therapeutics and Director of the Nuffield Institute for Medical Research. His research,

although distinguished, was hampered in 1925 by a streptococcal infection which left him blind in one eye. Nevertheless, he published many scientific papers; the alkaloid harmine and its various derivatives, and the methoxy compounds were among his particular interests. He summarized much of his own research work in the amine series beginning with phenylethylamine and ending with adrenaline in his Oliver-Sharpey lectures (1939) before the Royal College of Physicians.

Of equal importance, Gunn played a seminal role in wider arenas. He edited (with C. W. Edmonds) the ninth through the twelfth editions of Cushny's *Textbook of Pharmacology and Therapeutics* (1928–40). His own *Introduction to Pharmacology and Therapeutics* (1929) went through nine editions in his lifetime. Gunn also performed heroic services for the Pharmacopoeia Commission set up by the General Medical Council in 1928. He became Chairman in 1939, and, although the war delayed the appearance of the new *Pharmacopoeia*, its eventual publication in 1948 was a tribute to the persistence of Gunn and the Commission's Secretary, C. H. Hampshire. They were firm in their efforts to purge the *Pharmacopoeia* of worthless drugs.

Gunn's importance for the Society during its formative years would be hard to overestimate. He was the stimulus behind the original letter, and Chairman of the first meeting. His laboratory at the Department and the Nuffield hosted the Society no less than six times during his tenure. He was the Senior Editor during the years when the Society cooperated in the production of *JPET*, and on the Society's Committee for two stints, 1931–34 and 1936–39. His obituaries uniformly stress his endearing, human qualities, as when Burn wrote in the *B.M.J.* of Gunn's absent-minded wandering into St. John's for dinner instead of his own college Balliol (known for its high thinking but austere living). Halfway through a St. John's bowl of soup, Gunn looked up and exclaimed, "Surely this cannot be Balliol!"

If any one man had to be singled out as the Founder of the Society, it would undoubtedly be Gunn, who was elected to Honorary Membership (with Dale) in 1952.

**W. A. Broom* (1899–1978) was a pharmacologist with the Biological Research Division of Boots Pure Drug Company, which he joined in 1922. He retired in 1959. Early in his career he published joint papers with other prominent members of the Society, including A. J. Clark, and J. H. Burn, J. W. Trevan, and S. W. F. Underhill. His work at Boots was primarily concerned with bioassay and standardization. He was a regular attender of the Society's meetings for many years.

**J. H. Burn* (1892–1981), F.R.S., read Natural Sciences at Emmanuel College, Cambridge. After service in World War I, he finished his education with clinical training at Guy's Hospital, and in 1920 joined Dale on the scientific staff of the Medical Research Council. He and Dale collaborated on papers on biological standardization, insulin, and histamine. Much of the work on standardization was dictated by Dale's involvement in establishing international standards, one result of which was Sir Percival Hartley's special Department of Biological Standards at the N.I.M.R., founded through Dale's enterprise. It became responsible for international standards for vitamins, hormones, and drugs. Burn left Hampstead in 1925 to become first Director of the Pharmacological Laboratories of the Pharmaceutical Society, where his research was primarily concerned with quantitative assays of vitamins, hormones, and other substances. One result of this work was his book *Biological Standardization*, published in 1937, the year in which he succeeded Gunn to the Chair in Pharmacology at Oxford. His Department in Oxford became a world centre for research and teaching. During those years, his important research involved many fundamental pharmacological and physiological problems, including the actions of tyramine and of adrenaline (Burn, 1969). Many of these results were first reported to the Society, particularly in collaboration with Edith Bülbring.

Although he retired from the Oxford chair in 1959, he continued his active research and writing for many years, devoting much time in his later life to a series of popular books and articles on pharmacology, some aimed at general physicians, others at the layman. He was also a distinguished representative of British pharmacology in the international scene. Burn's role in the Society was particularly active. He was Secretary for eleven years, 1934–45; Foreign Secretary, 1947–58; a British representative on the Editorial Board of *JPET*, 1933–46; on the original Editorial Board of the *Journal*, 1945–52, and again in 1957–58; and on the Board of *Pharmacological Reviews*, 1951–55. He served on many sub-committees and was involved in virtually all the important decisions made by the Society for many years. He was elected an Honorary Member in 1960 and, in 1956, became, with Feldberg and Winton, one of the Society's first Trustees. When the Society instituted the Wellcome Gold Medal award, Burn was its first recipient (1979). His record of service to the Society has never been excelled.

David Campbell (1889–1978) spent most of his career in Aberdeen, where he became Dean of the Medical Faculty and Regius Professor of Materia Medica and Therapeutics. He devoted his later years to many important

positions, including the presidency of the General Medical Council from 1949 to 1961. His knighthood in 1953 was conferred on one who was said to be former billiards champion of the Athenaeum. He was on the Committee of the Society from 1939 to 1946.

A. J. Clark (1885–1941), F.R.S., was another of the small band who established pharmacology in Britain in the 1920s. He read Natural Sciences at Cambridge and clinical medicine at St. Bartholomew's Hospital. Following house appointments at Addenbrooke's and Bart's, laboratory appointments at King's College, University College, and Guy's, and war service, Clark succeeded A. R. Cushny in 1920 to the Chair in Pharmacology at University College London. Upon Cushny's death, in 1926, Clark moved to Edinburgh, where he remained until his own early death. Clark's research interests were broad, but much of his work concerned the actions of drugs and ions on isolated heart preparations. These included calcium, sodium, and potassium, as well as an important series of experiments in the 1920s on the action of acetylcholine on frog heart muscle and on its antagonism by atropine. In connexion with this work he made significant contributions to the drug receptor concept. He returned to the problem of the kinetics of chemical transmission during his last years. He also did pioneering work on the metabolism of the heart, on which he published (with four colleagues) a monograph. His textbook, *Applied Pharmacology* (1923), was very successful, going through seven editions during his lifetime. His monograph on *General Pharmacology* (1937) extended to pharmacology the approach which his U.C. colleague, W. M. Bayliss, had so fruitfully used in physiology. His lectures were notable in their attempt to impress upon medical students the basic principles of scientific pharmacology. His little book on *Patent Medicines* was aimed at educating the general public on the dangers and dishonesty of many of these.

Clark was very active in the Society during its first decade. He was on the Committee from 1932 to 1935, and a Society representative on the Board of the *Journal of Pharmacology and Experimental Therapeutics*, 1935–39. From its formation in 1928 until his death, he was a member of the Pharmacology Sub-Committee of the British Pharmacopoeia Commission.

Walter James Dilling (1886–1950) was Professor of Pharmacology and General Therapeutics at the University of Liverpool from 1930 until his death. He had also been Dean of the Medical Faculty from 1923 to 1933 and 1934 to 1945, and served on the General Medical Council. J. M. Bruce

and Dilling's *Pharmacology and Therapeutics of the Materia Medica* went through numerous editions between 1912 and 1951.

K. J. Franklin (1897–1966), F.R.S., trained at Oxford and St. Bartholomew's Hospital. He was Fellow and Medical Tutor at Oriel College, Oxford, from 1926 to 1947, when he moved to the Chair in Physiology at Bart's. His research was primarily concerned with circulatory physiology, particularly the functions of the veins and renal and foetal blood flow. He also devoted much time to historical studies; his translation of Harvey's *De Motu Cordis* is still often used. Although not present at the first Society Meeting, a special resolution at the 1932 Meeting made Franklin an Original Member.

J. H. Gaddum (1900–1965), F.R.S., read mathematics and medicine at Trinity College, Cambridge, pursuing his clinical studies at University College Hospital. His career was peripatetic. He spent two years with Trevan at the Wellcome Research Laboratories, and seven with Dale at the National Institute for Medical Research, before holding a succession of chairs at Cairo, University College London, the Pharmaceutical Society, and Edinburgh. His association with Trevan and Dale gave a thread to his researches, which touched a wide number of issues and substances, including Substance P, acetylcholine, 5-hydroxytryptamine, and the catecholamines. He introduced many important methods of bioassay, and his concern with quantification in pharmacology was often apparent. He contributed to drug-receptor theories and developed mathematical expressions to describe drug antagonism. He had a flair for constructing new pieces of apparatus, which he often demonstrated at Society meetings. Gaddum's textbook, entitled simply *Pharmacology*, went through five editions and several translations. Knighted in 1964, Gaddum was a member of the Committee from 1935 to 1938, 1943 to 1947, and 1955 to 1958, on the Board of Editors of the *Journal* from 1945 to 1955 and 1956 to 1958, and Society Representative on the Board of *Pharmacological Reviews* from 1951 to 1954. His long and devoted service to the Society was formally recognized by his election to Honorary Membership in 1965 and the establishment of a Gaddum Memorial Lectureship in 1967.

**Philip Hamill* (1883–1959) took first-class honours in both parts of the Cambridge Natural Sciences Tripos before going to St. Bartholomew's Hospital for his clinical training. He combined a private practice with appointments to three London hospitals, and for many years was also lecturer in pharmacology and therapeutics at St. Bartholomew's Hospital

Medical School. He served on the Pharmacopoeia Commission of the General Medical Council, and in 1952 was appointed by the Council as visitor of examinations and medical schools in pharmacology and therapeutics.

**R. St. A. Heathcote* (1888–1951) returned to Britain from Cairo in 1933, where he had been Professor of Pharmacology since 1922. He spent the remainder of his life at the Welsh National School of Medicine, where he built up a vigorous department of pharmacology and continued his researches, particularly in pharmacology in relation to invertebrate animals.

**T. B. Heaton* (1886–1972) was educated at Christ Church, Oxford, and Guy's Hospital. After service in the R.A.M.C. (SR) in World War I, he became Dr. Lee's Reader in Anatomy at Christ Church, Oxford, where he remained until his retirement in 1954.

**A. St. G. J. McC. (Hugo) Huggett* (1897–1968), F.R.S., was more of a physiologist than pharmacologist, although he had been reader in pharmacology at Leeds before being appointed in 1935 to the chair in physiology at St. Mary's Hospital Medical School. There he made his department a world centre of foetal physiology, being the man who first interested Sir Joseph Barcroft in the subject.

**O. Inchley* (1874–1936) read Natural Sciences at St. John's College, Cambridge, followed by clinical training at St. Bartholomew's Hospital. He saw war service and, like Dixon, was assistant to the Downing Professor of Medicine at Cambridge. When Dixon resigned his King's College London post to devote himself exclusively to Cambridge, Inchley went to King's (1920) as lecturer in pharmacology. He worked primarily on histamine shock.

**A. D. Macdonald* (1895–1978) studied mathematics and then medicine in Edinburgh, where he was a pupil of Sir Edward Sharpey-Schafer. His career was closely associated with Manchester University, where he was Professor of Pharmacology, Materia Medica and Therapeutics from 1935 to 1964. His important researches included studies in the bioassay of drugs, the mode of action of analgesics, and the problems of drug addiction. He was also active in the Pharmaceutical Society and the Research Defence Society. He was on the Committee of the Society from 1945 to 1948, and a member of the Editorial Board of the *Journal* from 1947 to 1962.

**M. H. Mackeith* (1895–1942). Educated at Guy’s Hospital and Oxford, Mackeith’s early career was spent at Oxford, where he was a Fellow and Tutor in Medicine at Magdalen College 1922–33, and Dean of the Medical School 1930–1933. During those years, he was also a University Demonstrator in Pharmacology. In 1934, he became Dean of the British Post-graduate Medical School. He was the Society’s first Secretary and Treasurer, in which posts he served until succeeded by J. H. Burn in 1935.

E. B. C. Mayrs (1891–1964) trained at Queen’s University, Belfast. His ambition to become a surgeon was thwarted by the loss of an arm in World War I, and he eventually turned to pharmacology under the influence of A. R. Cushny and A. J. Clark. After a few years at Edinburgh, Mayrs returned to Queen’s University in 1923 as lecturer in pharmacology. In 1928, when he was appointed to the Chair in the subject, it was changed from one of materia medica to one of pharmacology. He retired in 1957, having built up a modern department there. He was widely known for his interest in antiques and automobiles.

**Edward Mellanby* (1884–1955), F.R.S., was another product of the Natural Sciences Tripos at Cambridge, where his close association with F. G. Hopkins introduced him to nutritional research into what were then called “accessory factors” (later, vitamins). Clinical training at St. Thomas’s Hospital and an early chair in physiology at King’s (now Queen Elizabeth’s) College for Women were followed by his appointment in 1920 as Professor of Pharmacology at the University of Sheffield. There he continued his fundamental researches in biochemical, physiological, and clinical aspects of rickets and its relationship to vitamin A. He was Secretary of the Medical Research Council from 1933 to 1949, managing, however, to extend his scientific work on many nutritional topics in the midst of laborious administrative duties. Mellanby was knighted in 1937. He was a member of the Society’s Committee in 1933.

**Nathan Mutch* (1886–1982) was educated at Cambridge (First Class Honours, Natural Sciences Tripos, 1907) and at Guy’s Hospital, where he eventually became Consulting Physician. He was also Director of the Department of Pharmacology at Guy’s, and a frequent examiner in therapeutics and applied pharmacology. He was the originator of medicinal magnesium trisilicate. He was a member of the first Editorial Board of the *Journal*, serving from 1945 to 1950.

**G. N. Myers* (1898–1981) received his medical training at Durham (M.D., Gold Medal, 1930), and a Ph.D. from Cambridge, where he held

the Beit Memorial Fellowship, 1930–34. At the time of the Society's first meeting, he was attached to the Pharmacological Laboratory at Cambridge. He was subsequently Consultant Physician to the Royal Bath Hospital, Harrogate, where his interests were primarily in rheumatology.

Newman Neild (1872–1934) was senior physician to the Bristol General Hospital. Trained at Owens College, Manchester, he settled in Bristol in 1901, where he was for many years in charge of the Department of Pharmacology and Therapeutics. He was also active in British Medical Association affairs, and was a collector of botanical books and herbals. He died shortly after the Society was founded.

**W. A. M. Smart* (1879–1973) came into medicine after a few years as a teacher. He qualified at the London Hospital, whose staff he joined shortly after World War I and where he lectured in physiology and pharmacology until his retirement. During World War II, he grew in the hospital grounds a number of plants to supply drugs then in short supply. He was active in the Society during its early years and gave a communication at the Second Meeting.

Ralph Stockman (1861–1946) trained in Edinburgh and on the Continent (including time with Schmiedeberg in Strasbourg). Following more than ten years' lecturing on materia medica and pharmacology in Edinburgh, he was called in 1897 to the Chair of Materia Medica at the University of Glasgow, where he remained until his retirement in 1936. Although nearing the end of his career by the time the Society was founded, he gave a communication at the 1932 meeting on 'Nervous ergotism'. He was essentially a clinical pharmacologist, especially interested in the treatment of anaemias and arthritis, but he also worked on the pharmacology of various plant alkaloids.

**J. W. Trevan* (1887–1956), F.R.S., trained at St. Bartholomew's Hospital and demonstrated physiology there from 1914 to 1920. Under the influence of F. A. Bainbridge, however, he turned to pharmacology, being appointed pharmacologist to the Wellcome Physiological Research Laboratories in 1920. He remained there for the rest of his career, becoming Director of the laboratories and, in 1952, Research Director of the Wellcome Foundation. He studied several drugs including (with G. A. H. Buttlet and T. A. Henry) cinchona and (with G. E. Glock, P. A. Young and G. A. Mogyey) curare. However, he is best known for his application of statistical methods to bioassay and drug toxicity and standardization. The

term “lethal dose” (LD) derived from him, and his paper on ‘The error of determination of toxicity’ (*Proc. Roy. Soc. B*, 1927, 101, 483) is a modern classic. Trevan was a popular, friendly figure; his craggy features were described as “lined not with worry but with smiling”. A firm supporter of the Society, Trevan was on the Committee, 1937–43 and 1948–51, and on the Board of Editors of the *Journal* from 1951 until his sudden death. He had just promised to become Press Editor.

**S. W. F. Underhill* (d. ca. 1957) was educated at Oxford and Guy’s (B.M., B.Ch., 1916). He was associated with the Physiological Laboratories of British Drug Houses for many years. He published papers on a variety of topics, such as insulin, vitamin A, and bioassay.

**E. B. Verney* (1894–1967), F.R.S., was educated at Cambridge (First-Class Honours, Natural Sciences Tripos, 1916) and St. Bartholomew’s Hospital. After several years in clinical medicine, Verney went to work in Starling’s laboratory at University College. His earliest papers were on the kidney, and that organ and its control by posterior pituitary hormone continued to be the chief preoccupation of his scientific life. He spent two years as Assistant in T. R. Elliott’s Medical Unit at University College Hospital, and in 1926 succeeded A. J. Clark to the chair in pharmacology at University College London. In 1934, he went to Cambridge, first as Reader, then as the first Sheild Professor of Pharmacology (1946–61). After retiring from Cambridge, he spent three years at the University of Melbourne. His work was essentially physiological, and concerned relationships between renal function and blood pressure, water and salt retention and excretion, and anti-diuretic hormone. He was on the Society’s Committee from 1935 to 1937.

**A. C. White* (1901–1962) had a distinguished career at the University of Edinburgh, where his M.D. thesis on ‘Ergot and its Alkaloids’ won a gold medal. After lecturing for a few years in A. R. Cushny’s department there, he moved in 1929 to the Wellcome Research Laboratories at Beckenham, which he eventually headed. He did important early work on the actions of the anticholinesterases, and was responsible for the Wellcome Laboratories’ development of many new drugs.

**F. R. Winton* (b. 1894) was educated in science and medicine at Clare College, Cambridge, and St. Bartholomew’s Hospital and University College Hospital. He spent a number of years in the Physiology Department at University College London, before moving to Cambridge in 1933

as Reader in Physiology. He returned to UCL in 1938 as Professor of Pharmacology, where he remained until his retirement in 1961. His research has been concerned primarily with the kidney and on the physiology and pharmacology of plain muscle. His textbook, *Human Physiology* (1930), was published in its seventh edition in 1979.

Winton has been a valued Member of the Society since its foundation. His laboratories have often hosted Society meetings, and he has served on many sub-committees. In addition, he was on the Society's Committee 1938–45, succeeded Burn as Secretary (1945–47), and was an original member of the Editorial Board of the *Journal* (1945–47). He became (with Burn and Feldberg) a Trustee in 1965, and two years later the Society to which he had devoted so much energy elected him an Honorary Member.

**V. J. Woolley* (1878–1966) received his M.D. from Cambridge in 1911. For many years he lectured in pharmacology at St. Thomas's Hospital Medical School.

The original mixture of membership from universities and medical schools, government research institutions, and the pharmaceutical industry has continued to the present day.

IV. THE FORMATIVE YEARS: 1932–1945

1932

In the event, the 1932 meeting was held in London instead of Oxford, so that members might take part in the Centenary Meeting of the British Medical Association. Thus, on 27 July 1932, twenty-two members assembled at University College London, to consider the draft rules which the Provisional Committee (after Dixon's death, consisting only of Gunn and Dale) had prepared. As settled by the 1932 Meeting, these Rules governed the Society until they were revised in 1947. They defined what constituted an "Original Member", set the Committee Members at three, the senior committee member to retire each year and be ineligible for immediate re-election. In addition, the Honorary Secretary, an *ex officio* member of the Committee, was to double as Treasurer. An initial payment of five shillings per member was fixed to defray printing and postage charges; no annual subscription was deemed appropriate. Meetings were to be held annually, at a centre which possessed a pharmacological laboratory. Ordinarily, membership was to be limited to those regularly engaged in pharmacological research or in teaching the subject. However, on the recommendation of the Committee, persons ineligible under the above definition, but who might be expected to promote the interests of the

Society, could be elected to ordinary membership, provided this number did not exceed one-fifth of the entire membership. The election of distinguished foreign pharmacologists to Honorary Membership was approved. J. J. Abel of Baltimore and Hans Meyer of Vienna were so elected.

Ordinary Membership was gained by the nomination by two Members at least fourteen days before the Annual Meeting, and by the vote of at least two-thirds of the members present at the meeting. Titles of communications were to be circulated a week in advance of the meeting, and, following the long-standing tradition of the Physiological Society, communications were not to be read. Guests could be brought to meetings with the prior consent of the Chairman, who ordinarily would be the Head of the Pharmacological Laboratory in which the meeting was held. Dr. Mackeith was asked to continue as Secretary, and the Committee consisted of Henry Dale (to retire 1933), J. A. Gunn (1934), and A. J. Clark (1935). In addition to the two Honorary Members, nine Ordinary Members were elected (one of whom declined membership at the time). Three have been particularly active in Society affairs: G. A. H. Buttle, H. R. Ing, and C. M. Scott.

G. A. H. Buttle (1899–1983), after service in the Royal Engineers in World War I, read medicine at Cambridge and University College Hospital. At Cambridge he became friendly with J. H. Gaddum, who encouraged him in 1925 to join J. W. Trevan's department at the Wellcome Physiological Research Laboratories. There he worked on digitalis, local anaesthetics, and, after 1935, sulphanilamide, whose mode of action he discovered. He also discovered dapsone (Buttle, 1980). After service in the RAMC, 1939–45, he was appointed Wellcome Professor of Pharmacology at the School of Pharmacy, University of London, where he remained until his retirement in 1966. He played a key role in nurturing non-medical pharmacologists, many of whom have worked actively in the Society.

Buttle has been a frequent contributor to Society meetings, and his department hosted the Society's Winter Meeting in 1960. He has been on the Committee twice, 1947–50 and 1960–63, and was on the Editorial Board of *Pharmacological Reviews*, 1956–62.

H. R. Ing (1899–1974), F.R.S., brought to pharmacology the education and inclinations of a chemist. Educated at New College, Oxford, he went on to obtain the D.Phil. under W. H. Perkin jr. After three years in Manchester, he went to University College London in 1929 as lecturer in pharmacological chemistry (now usually known as chemical pharmacology), becoming the first Reader in this subject there in 1937. After a

year at the Rockefeller Institute, Ing returned to Britain in 1939, where he joined the chemical research group at Oxford. He later joined Burn's pharmacology department there, where he developed a course in chemical pharmacology.

Ing's research was always grounded in his desire to understand the basic relationships between chemical structure and pharmacological activity. At UCL he was concerned with the curariform action of various onium salts, in the tradition of the original classical chemical work of Fraser and Crum Brown, but specifically modified as evidence for the neurohumoral theories of Dale *et al.* emerged. By the time he moved to Oxford, work in Burn's department was in full tide, and he naturally turned to atropine and its substitutes. With R. B. Barlow, but independently of W. D. M. Paton and Eleanor J. Zaimis, he discovered the neuromuscular blocking effects of decamethonium. He also performed an important series of experiments on the structure-activity relationships of acetylcholine. Towards the end of his career (1964), he tried to generalize some of the basic pharmacological principles he had studied by considering the pharmacology of the homologous series, a concept pursued exactly a century previously by Benjamin Ward Richardson (Bynum, 1970).

Ing was an active and valued member of the Society. He was the original and devoted Press Editor of the *Journal*, which position he held from 1945 to 1953. From 1954 to 1955 he was on the Editorial Board of *Pharmacological Reviews*. Ing was made an Honorary Member of the Society in 1967.

C. M. Scott (d. ca. 1973) received his medical (M.B., Ch.B, 1926) and scientific (D.Sc., 1934) education at Edinburgh, where he was for a time a lecturer in materia medica. Most of his career, however, was spent as a research pharmacologist with Imperial Chemical Industries. Scott was active in Society affairs and was on the original Editorial Board of the *Journal*, 1945–50.

The Scientific Meeting in 1932 was held on Friday 29 July, with E. B. Verney in the Chair, consisting of three demonstrations and five communications, including those by Gunn, Huggett, Franklin, and Gaddum. Mary Pickford prepared a demonstration with E. B. Verney; she was subsequently to be the first woman elected (1935) to Membership in the Society. Two of the communications were concerned with choline and acetylcholine.

1933

The Society returned to Oxford for its 1933 meeting, where the Treasurer reported a healthy balance of £3 1s. 6d. E. Mellanby replaced Dale on the Committee, and three new Ordinary Members were elected. The main item of business at the AGM concerned the *Journal of Pharmacology and Experimental Therapeutics*. After Abel's recent retirement from the Editorship, the new American editor, Marshall, had raised the possibility of the *Journal's* becoming the official organ of the American Society. The proposal was now that the British Pharmacological Society collaborate in jointly issuing *JPET*, an offer unanimously accepted by the Society. Gunn had already been the British Co-Editor-in-Chief, with Abel in a private capacity. He now offered his resignation so that the Society might appoint an official editorial board. Gunn was unanimously asked to remain, with Henry Dale and A. J. Clark to be associated with him on the Board. This meeting also clarified some procedural matters associated with the scientific meetings, agreeing that the notices of papers to be presented should be printed, and in general that papers should be given in the order of the date of their receipt, details to be left to the discretion of the Chairman of the Meeting.

At the Scientific Meeting on 1 July 1933, nine communications were given, by Franklin, Broom, Campbell, Gaddum, Gunn, Hamill, Huggett, Trevan, and White.

1934

The arrangements regarding *JPET* were effected so that Gunn could report at the 1934 AGM, meeting again under his Chairmanship in Oxford, that all papers appearing in the *Journal* were read by two members of the editorial board. Most papers were appearing within three months of acceptance. J. H. Burn was elected Secretary-Treasurer, and ten new Ordinary Members and three Honorary Members were elected. The latter were M. Tiffenueu of Paris, W. Straub of Munich, and W. Heubner of Berlin, the last two of whom underscore the importance of German pharmacology for the British scene. The Society considered the possibility of a joint meeting with the Deutsche Pharmakologische Gesellschaft. However, it was decided not to make any formal approach but simply to contact individual German pharmacologists, partly, no doubt, because of the contemporary political situation in Germany, one result of which was reflected by the presence at the 1934 meeting of W. Feldberg, one of a number of refugees from Nazi Germany whose energies were so to enrich the Society. Another German "refugee", albeit a voluntary one, was Otto Krayer. At the 1934 Scientific Meeting, six communications were given, including two by newly-elected

Members, Krayner and G. S. R. Rao. Of the group elected in 1934, Feldberg and Krayner, together with G. L. Brown and E. Wayne, deserve special mention.

G. L. Brown (1903–1971), F.R.S., trained at the University of Manchester, where A. V. Hill and B. A. McSwiney encouraged his interest in physiology. After completing his clinical studies in Manchester, he joined McSwiney (who had since moved to Leeds) as lecturer in physiology. There, with J. C. Eccles, he worked on electrical phenomena in muscles and nerves. However, Dale soon persuaded Brown to join him at the National Institute in Hampstead, where he was soon active with Dale, Feldberg, Vogt, Bacq, and others on chemical transmission. His research was devoted to other areas during World War II, but the return of peace enabled him to continue, with B. D. Burns, Bülbring, Vianna Dias, and Paton, a variety of basic experiments on neuromuscular physiology, and later on the release of noradrenaline. He returned to academic life in 1949, as Professor of Physiology at University College London. In 1960, he became Waynflete Professor of Physiology at Oxford. He spent his last four years as Principal of Hertford College, Oxford, having been knighted in 1957.

Brown was another of those medical scientists whose researches can be better described as physiological. Nevertheless, he often attended Society meetings.

W. Feldberg (b. 1900), F.R.S., has had a distinguished career in physiological and pharmacological research. He had already spent a period in 1927 in Dale's department at the National Institute for Medical Research, when in 1933 he was informed that he was no longer welcome at his laboratory in Berlin (Feldberg, 1977). He was consequently able to return to Hampstead, where he took an active role in those fruitful years in the chemical transmission story (Bacq, 1975). He left in 1936 for Australia, and, after a period as Reader in Physiology in Cambridge, returned to N.I.M.R. in 1949 as Head of the Division of Physiology and Pharmacology. From 1966 to 1974, he headed the Laboratory of Neuropharmacology, and since 1974 has continued his research there on a personal grant. In addition to histamine and acetylcholine, Feldberg has pursued fundamental researches in the roles of monoamines in the hypothalamic control of body temperature, and many aspects of neuropharmacology.

Feldberg has been active in Society affairs since his election in 1934. Elected as Honorary Member in 1967, he was on the Editorial Board of

the *Journal*, 1968–74. In 1965, he became (with Winton and Burn) a Trustee.

Otto Kraye (1899–1982) was educated in Freiburg, Munich, and Berlin. He left Germany during the Nazi regime, spending 1934 as a Rockefeller Fellow at University College London. He went to the United States in 1937, where he eventually became Gustavus Adolphus Pfeiffer Professor of Pharmacology at Harvard Medical School. The Society elected him to Honorary Membership in 1956.

E. J. Wayne (b. 1902) was educated in Manchester and Leeds (M.B., Ch.B., 1929; M.D., 1938). He was assistant in Sir Thomas Lewis' Department of Clinical Research at University College Hospital, 1931–34, before being appointed to the Chair in Pharmacology and Therapeutics at the University of Sheffield (1934–53). In 1954 he became Regius Professor of Practice of Medicine at the University of Glasgow. His research has been primarily in clinical pharmacology, particularly on cardiovascular and endocrinological subjects. From 1958 to 1963 he was Chairman of the British Pharmacopoeia Commission. Wayne was knighted in 1964. He was on the Editorial Board of the *Journal*, 1951–57.

1935

The 1934 meeting had already determined to accept E. B. Verney's invitation to meet in Cambridge the following year. This meeting, 4–5 July 1935, was the largest yet, with thirty-four Members and two Honorary Members being joined by sixteen guests. Gaddum replaced Mellanby on the Committee, and three new members were elected.

Mary Pickford (b. 1902), F.R.S., has modestly (but quite incorrectly) said that she was elected to the Society in order to make room for Edith Bülbiring and Marthe Vogt. She was educated in London, at Bedford and University colleges, where she also qualified in medicine. She held a junior Beit Memorial Fellowship in Cambridge from 1936 to 1939, and then became a lecturer and, subsequently Professor in the Department of Physiology in Edinburgh. After retiring from Edinburgh, she became Special Professor of Endocrinology in the Department of Physiology and Pharmacology of the newly-founded Medical School at the University of Nottingham. Her early communications before the Society were on posterior pituitary extracts, and much of her work has continued to centre around an area indicated by the title of a monograph she published in 1969: *The Central Role of Hormones*. She was on the Editorial Board of the *Journal*, 1968–74.

The Scientific Meeting on 5 July occupied the whole day, with fourteen communications and seven demonstrations. Among the former were a joint communication by G. L. Brown and Dale on "A new development in the pharmacology of ergot", and contributions by E. Bülbring and J. H. Burn. Mary Pickford and E. B. Verney were among those demonstrating equipment and experimental procedures.

1936

Cambridge was again the venue for the 1936 meeting, where twenty-four Members and one Honorary Member were joined by nineteen guests. The six new Members included E. Bülbring, F. Hawking, and A. C. Frazer.

Edith Bülbring (b. 1903), F.R.S., received her early pharmacological and medical training in Germany. She came to England in 1933, where she joined Burn's laboratory at the Pharmaceutical Society. In 1938, after Burn had succeeded Gunn as Professor of Pharmacology at Oxford, she joined his department there, where she has since remained, as Reader in Pharmacology 1960–67, and Professor 1967–71. Her research has covered a wide terrain, including the introduction of the rat diaphragm preparation, the functions of the suprarenals, autonomic transmitters, and smooth muscle. She was honoured in 1974 by the Schmiedeberg-Plakette der Deutschen Pharmakologischen Gesellschaft.

Bülbring has been exceptionally active in the Society. She gave no less than five communications and demonstrations between 1935 and 1939, and has often contributed since the war. She has also served on several committees. In 1976 she was elected an Honorary Member.

F. Hawking (b. 1905) read medicine at Oxford (D.M. 1933), lectured in pharmacology at the Welsh National Medical School and was Caton Memorial Research Fellow at the School of Tropical Medicine at Liverpool. From 1940 to 1970 he was a senior member of the scientific staff at the National Institute for Medical Research. His research has been primarily concerned with the chemotherapy of tropical diseases, on which subject he frequently addressed the Society. Hawking has edited and partly written a multi-volumed work on *Experimental Chemotherapy*, and has published widely on the sulfonamides, on miracil D, hetrazan, and many other drugs, particularly those effective in helminthiasis and filariasis.

Hawking was an original member of the Editorial Board of the *Journal*, 1945–53, and served a second term, 1960–66. He and Winton did much of the original negotiation between the Society and the B.M.A. when the *Journal* was being started.

A. C. Frazer (1909–1969) was trained at St. Mary's Hospital Medical School, where he lectured in physiology and pharmacology, 1929–42. In 1943, he moved to Birmingham as Professor of Medical Biochemistry and Pharmacology. He left in 1967 to become Director-General of the British Nutrition Foundation. He died prematurely. Frazer's research interests were concerned primarily with metabolic and nutritional subjects, particularly the absorption of fats. His department hosted the Society meeting in 1950. Frazer was on the *Journal's* Editorial Board, 1953–58. He also did important work as Chairman of the DHSS Safety of Drugs Committee.

The seventeen communications and three demonstrations on 3 July 1936 covered a wide range of topics, including choline esters (Bacq and Brown), ergot (White), sulphonamide (Buttle), and posterior lobe pituitary extracts (Pickford).

1937

In 1937, the Society journeyed north to Clark's department in Edinburgh, where attendance, including guests, was fifty-one. At this meeting, on 16–17 July, there were sixteen communications and three demonstrations. With a growing scientific programme, the potential problem of crowding made its first appearance in the Society's Minutes, the Secretary noting that "Communications 10–16 were given between 4.45 and 6.25. The mean communication time was 12.7 minutes with a standard deviation of ± 4.12 minutes. These figures afford an estimate of the Chairman's efficiency." Among the drugs and active substances discussed were digitalis, ergot, cyclopropane, neoarsphenamine, histamine, and acetylcholine. Communications were given by both the newly-elected Members, J. M. Robson and Marthe Vogt.

J. M. Robson (1900–1982) received his medical and scientific education in Leeds. At the time of the 1937 Meeting he was Lecturer in Pharmacology in Edinburgh. Working on chemical warfare agents during World War II, he was responsible for the discovery of the mutagenic action of mustard gas and related substances. He moved to Guy's Hospital Medical School in 1946, becoming Professor of Pharmacology in 1950. His *Recent Advances in Pharmacology* (produced successively with C. A. Keele and R. S. Stacey) went through four editions between 1950 and 1968. Robson was on the Editorial Board of the *Journal* from 1959 to 1966.

Marthe Vogt (b. 1903), F.R.S., earned her M.D. and D.Phil. degrees from the University of Berlin. She came to Britain in 1935 on a Rockefeller travelling Fellowship, working in Cambridge 1935–40, during which time

she obtained a Ph.D. She was on the research staff of the College of the Pharmaceutical Society, 1941–46, following which she joined Gaddum at the Department of Pharmacology in Edinburgh. In 1960, she accompanied Gaddum on his move to Cambridge, where she became head of the Pharmacology Unit at the Agricultural Research Council Institute of Animal Physiology at Babraham. She was one of the group of co-workers (with Dale, Feldberg, Gaddum, Brown, and MacIntosh) which definitively established the chemical transmitter role of acetylcholine, and has worked on many other pharmacological and physiological problems, including renal hypertension, 5-hydroxytryptamine, and brain catecholamines. She was a Society representative on the Editorial Board of *Pharmacological Reviews* 1955–62, Foreign Secretary 1960–69, and on the *Journal's* Editorial Board 1964–70. In 1971 she was made an Honorary Member.

1938

There were seventy-six Members and guests present at the 1938 meeting in Oxford, under Burn's chairmanship. Burn replaced Clark on the Board of *JPET*, and Winton replaced Gaddum on the Committee. Two new members were elected, and the meeting heard twelve communications.

1939

The Society returned to Oxford, on Gunn's invitation, in 1939, this time to the Nuffield Institute, where sixty-seven Members and guests heard seventeen communications and saw four demonstrations. At the AGM it was agreed to introduce a new rule at the 1940 meeting to the effect that membership for those resident in Great Britain should be limited to fifty, and that "any Member who is absent next year (1940) and will have then been absent for three consecutive Meetings without sufficient reason, shall no longer be a Member". In the event, the war intervened, and neither rule was effected. Four new Ordinary Members and one Honorary Member (Prof. Liljestrand of Sweden) were elected. Among the former were W. A. Bain and F. C. MacIntosh.

W. A. Bain (1905–1971) was educated at the University of Edinburgh, where he took many prizes and lectured for several years in experimental physiology. In 1934, he moved to Leeds, where the following year he was made Reader in Pharmacology, and in 1946, Professor. He left in 1959 to become Director of the Smith, Kline & French Research Institute, Welwyn Garden City. His research interests were classically British, and included the autonomic nervous system, adrenaline, histamine antagonists, and the quantitative evaluation of drug actions.

Bain was particularly active in the Society after the war. He was

Treasurer for seventeen years (1947–64), a record unlikely to be broken. This made him *ex officio* a member of the Committee, where he also served as an elected member, 1964–67. Bain was Press Editor of the *Journal* 1954–57, continuing to serve on the Editorial Board until 1960, and returning for another period in 1967. His obituary in the *Journal* (1972, 46: 1–12) reflects the esteem in which he was held by the Members of the Society, who made him an Honorary Member in 1967. A firm advocate of the “beneficial qualities of ethyl alcohol”, Bain’s humour enlivened Society meetings, just as his editorial skills improved many of the papers which he saw through the *Journal*.

F. C. MacIntosh (b. 1909), F.R.S., is a Canadian who was on the scientific staff of the M.R.C.’s National Institute at the time of his election. He had been educated at Dalhousie and McGill Universities. He was on the Society’s Committee from 1947 to 1949, returning in the latter year to McGill as J. M. Drake Professor of Physiology. At Hampstead, MacIntosh was an active member of the Dale-Feldburg group in their fundamental work on cholinergic neuro-transmission.

1940–1945

The war seriously disrupted the regular pattern which the Society had established during the 1930s. Only one meeting was held between 1939 and 1945, this one at University College London’s war evacuation premises at Leatherhead on 6–9 August, 1943. There were twenty-three Members and thirty-one guests present, to hear communications and take part in a discussion of pharmacology teaching in connexion with the Inter-department Goodenough Committee on Medical Education. The proposed 1939 Rules were officially abandoned, and J. H. Gaddum was asked to replace Gunn on the Board of *JPET*. Gaddum was also elected to the Committee, serving with Campbell and Winton. The latter also continued as acting Secretary, Professor Burn having shortly again to leave the country for wartime work as scientific liaison officer between the British Medical Research Council and the corresponding bodies in the United States and Canada. Despite the exigencies of the war, this meeting was also concerned with the future, and in particular, with the establishment, if thought appropriate, of a *British Journal of Pharmacology and Chemotherapy*, as soon as social conditions permitted. A Committee, consisting of F. Hawking (Convenor), J. H. Gaddum, A. D. Macdonald, J. W. Trevan, and the Hon. Secretary (or the Acting Secretary) was set up to explore the possibility. Of the nine new Ordinary Members elected at the

1943 Meeting, many contributed much to the Society during the post-war period. They included the following:

George Brownlee (b. 1911) was educated in Edinburgh and Glasgow. After a period with the Pharmaceutical Society and the Chemotherapeutic Division of the Wellcome Research Laboratories, he became (1949) Reader in Pharmacology at King's College London, where he was Professor from 1958 until his retirement in 1978. His research has covered a wide variety of topics, including the chemotherapy of tuberculosis and leprosy, drug toxicity, and the structure and pharmacology of the polymyxins. He was on the Society's Committee 1946–47, and became Secretary in 1947, which office he held until 1952.

L. G. Goodwin (b. 1915), F.R.S., studied pharmacology and medicine at University College London and UCH. He joined the scientific staff of the Wellcome Laboratories of Tropical Medicine in 1939, where he was Head from 1958 to 1963. In 1964, he became Director of the Nuffield Laboratories of Comparative Medicine at the Zoological Society. His research has been concerned with the biochemistry and physiology of the protozoa, and with the chemotherapy of tropical diseases, especially malaria, trypanosomiasis, and helminthiasis. He was on the Society's Committee 1956–60, and on the *Journal's* Editorial Board 1953–60 and 1967–71.

Hans Heller (1905–1975) was born in Czechoslovakia, and lectured in Vienna before coming to Britain in 1934. Following research at UCH, he moved to Bristol in 1942, where he remained, becoming Professor of Pharmacology in 1949. His research was primarily concerned with endocrinology and the neurohypophysis on which he published widely. He was on the Society's Committee, 1962–65.

C. A. Keele (b. 1905) received his medical education at the Middlesex Hospital Medical School, where he was associated in a wide variety of capacities throughout his career, ultimately as Professor of Pharmacology and Therapeutics (1952–68) and Director of the Rheumatology Research Department (1968–73). The physiological and chemical basis of pain and itching and the pharmacology of analgesia have been central to his research. He was on the Society's Committee 1949–52, and on the Board of *Pharmacological Reviews*, 1955–56.

H. O. Schild (b. 1906), F.R.S., was educated in Germany and at Edinburgh, where he received his Ph.D. in 1935. In 1937, he moved to the Phar-

macology Department of University College London, where he was Professor from 1961 to 1973. He had first given a paper to the Society in 1937, on the antagonism between tryptamine and histamine, which led to fundamental work on histamine, antihistamines, gastric secretion, the histamine receptor, and drug antagonism. He was on the Society's Committee 1952–56 and 1959–62, and on the *Journal's* Editorial Board 1954–61. In 1974, he became an Honorary Member. He was awarded the Society's Wellcome Gold Medal in 1981.

H. C. Stewart (b. 1906) was educated at University College London, and Cambridge. Interested in clinical pharmacology as well as basic research, he was head of the Pharmacology Department at St. Mary's Hospital Medical School, 1950–74 (as Professor of Pharmacology from 1965); and Consultant in Pharmacology to the Ministry of Defence, 1961–74. His research has concerned fat absorption and the pharmacology of analgesia. He has also written on anaesthesia and antibiotic therapy, including (with F. G. Wood-Smith) *Drugs in Anaesthetic Practice* (1962; 5th ed., 1978), and (with W. H. Hughes) *Concise Antibiotic Treatment* (2nd ed., 1973).

A. Wilson (1909–1974) received his medical education in Glasgow, where he was assistant in materia medica, before moving to Sheffield as lecturer in pharmacology (1939–46). In 1946 he became the first lecturer in applied pharmacology at UCL, and he was appointed to the chair in pharmacology at Liverpool in 1951. Applied and clinical pharmacology continued to be his chief professional interests. He chaired many committees, including that on pesticides and toxic chemicals, and the British National Formulary Committee. With Schild, he edited later editions of A. J. Clark's *Applied Pharmacology*. He was on the Society's Committee, 1959–62.

V. THE YEARS OF MATURATION: 1945–60

The end of the war permitted the Society a measure of normalcy again, although it was some years before post-war economies and rationing ceased altogether. The informality of procedure which had characterized the Society's first fifteen years began gradually to disappear as Society membership grew and its activities expanded. Historical perspective becomes increasingly clouded as events and discoveries are less remote from the present. Accordingly, the Society's post-war history is best briefly described through three principal headings: Membership and Meetings; Publications; Committee Activities. Biographical sketches of members elected since the war will be limited to those few who have been elevated to Honorary Status, or to deceased members who have contributed particularly to the Society's activities.

A. Membership and Meetings

The war's end saw the rate of membership growth increase. Ninety-eight new members were elected between 1945 and 1950. Membership in 1947 stood at eighty-two. By 1953, there were 187 Ordinary Members and five Honorary Members, and the Society continued to grow throughout the 1950s, as experimental pharmacology departments were established in medical schools throughout the country. Nevertheless, the 1945 Meeting expressly rejected the excessive growth of Society membership and the question of optimal Society size has been raised on several occasions since.

In 1945, three meetings were held, business meetings in London and Cambridge and a scientific meeting in Oxford in July. At the latter meeting it was agreed to add routinely a scientific meeting in the winter to complement the annual summer weekend meeting. This was first done in 1946, when demonstrations, a formal meeting, and dinner at UCL on 4 January were supplemented by a visit – attended by 110 members and guests – to the Wellcome Physiological Research Laboratories at Beckenham for communications and lunch on the following day.

The expansion of the programme resulted in gradual dilution of the heavy Oxford/London/Cambridge/Edinburgh concentration which had dominated the Society's early years. The Society journeyed to Manchester for its 1947 winter meeting, where A. D. Macdonald at the University and C. M. Scott of I.C.I. chaired the meeting and the dinner respectively. Bristol was the venue for the summer 1949 meeting, of which H. Heller was chairman, and the University of Birmingham, where A. C. Frazer was Professor of Pharmacology, was host to the July 1950 meeting. St. Mary's Hospital Medical School and the University of Sheffield were visited in 1951. The new M.R.C. laboratories at Mill Hill hosted the winter meeting in 1952. At the Edinburgh meeting of 1952, one day was devoted to a joint meeting with the Biometric Society, with sessions on the design and evaluation of clinical trials and statistical problems arising in biological assay. Appropriately enough, the meeting coincided with Trevan's sixty-fifth birthday. His hand, and that of J. H. Gaddum, is discernible in the programme, to which on the biometric side A. Bradford Hill contributed. Dale and Gunn were elected Honorary Members in Edinburgh.

1953 was a particularly active year for the Society. Many of its members travelled on the S.S. *Ascania* to the XIX International Physiological Congress in Montreal, and in addition to the January and July meetings at Guy's Hospital Medical School and Oxford respectively, the Society sponsored its first special Symposium on Anticholinesterases jointly with the Fine Chemicals Group of the Society of Chemical Industry. This two-day Symposium included sessions on structure-activity

relations of anticholinesterases, and on their *in vitro* modes of action and their acute and chronic *in vivo* modes of action. The success of this symposium encouraged the organization of another two years later, this one on histamine and honouring Sir Henry Dale on the occasion of his eightieth birthday. This Symposium, 4–5 April 1955 and the subsequent dinner on 27 September, were jointly sponsored by the Society and the Physiological Society. H. O. Schild and his colleagues at UCL had done the lion's share of the work in arranging the Histamine Symposium, at which many of Dale's former laboratory colleagues, including Feldberg, MacIntosh, Gaddum, Von Euler, W. D. M. Paton, and W. L. M. Perry, spoke. Dale himself chaired the final session.

In the meantime, Society members had rejected the suggestion of increasing regular meetings to more than two per year. The London Hospital Medical College and Dundee and St. Andrews hosted the 1954 meetings, the golf course at St. Andrews vying for the attention of some members. The Society met in Leeds and Bristol in 1955. The Bristol meeting spilled over into three days, with thirty-five communications and five demonstrations. Following the January 1956 meeting held in Mill Hill, the Society combined with seven other organizations in sponsoring a Symposium on 'Hypotensive Drugs and the Control of Vascular Tone in Hypertension'. Both basic pharmacological and clinical papers were given, mostly by members of the Society, including Ing, H. Blaschko, Marthe Vogt, John McMichael, and Eleanor Zaimis, the latter talking on the recently developed ganglion blocking agents. Reserpine, the veratrum alkaloids, hydralazine, and hexamethonium were among the hypotensive drugs then under pharmacological and clinical evaluation. Sponsored primarily by the Wellcome Foundation Ltd., the symposium was attended by more than 250 individuals from a number of countries. Its proceedings were subsequently published.

The Society's twenty-fifth anniversary was celebrated at the 13–14 July 1956 meeting in Edinburgh. There were thirty-two communications and seventeen demonstrations, and more than 200 members and guests attended the annual dinner. There were speeches by Gaddum and Gunn about the early days of the Society, and a particular guest was N. E. Condon, who had completed fifty years' service as a pharmacological technician. The latter recalled some of Gunn's early pharmacological experiences. The Society's business meeting on the occasion was concerned partially with the more mundane problems of the supply of experimental animals and a report from the Research Defence Society, in which Trevan was particularly active. Trevan's death shortly thereafter was a great loss to the Society.

The two ordinary meetings in 1957 were supplemented by a Symposium on 5-Hydroxytryptamine on 1–2 April, sponsored by the Society and four other organizations. At the July 1957 meeting, the desirability of strengthening the Society's authority was considered; this ultimately led to the expansion of ordinary members of the Committee, to the creation of the Associate Membership category and other changes introduced in the revised constitution of 1958. D. R. Wood, Secretary from 1952 to 1957*, was warmly thanked for his services to the Society; he was replaced by W. L. M. Perry. Both the ordinary meetings of 1958 were in new locations for the Society: St. Bartholomew's Hospital Medical College and the University of Glasgow. There was, in addition, another in the series of what had become regular symposia, this one on 'Quantitative Methods in Human Pharmacology and Therapeutics'. As in several of the previous ones, H. O. Schild had been particularly active in the organization. At the July meeting, the revised Rules for governing the Society were approved. The regular meetings in 1959 were held at the National Institute for Medical Research, Mill Hill, and the University of Manchester, under Feldberg's and Macdonald's chairmanship, respectively. The Symposium was on 'Polypeptides which affect Smooth Muscles and Blood Vessels'. Henry Dale was an active participant in the 1960 Symposium, on 'Adrenergic Mechanisms', delivering the opening address, chairing the first session, and contributing an epilogue in verse. This Symposium was additional to the two regular meetings, the first at the School of Pharmacy, Brunswick Square, under G. A. H. Buttle's chairmanship. In July 1960, for the first time, the Society went abroad, to join the Scandinavian Pharmacological Society in Copenhagen. This three-day meeting included a Symposium on 'The Pharmacology of Membranes', fifty-four communications, and a boat-trip between Denmark and Sweden, with the last day of the meeting being held in Sweden. Erik Jacobsen, a member of the Society since 1950 and Secretary of the Scandinavian Society, chaired the Society's business meeting and signed the Minutes of the previous meeting, which had been shouted through a microphone on board ship. The Scandinavian connexion was entirely appropriate, since Prof. Liljestrand of Stockholm had been one of the early Honorary Members, and U. S. von Euler, a Member since 1951 but a regular contributor to Society meetings since 1936, has continued to cement the relationship. Von Euler, Nobel Prizewinner in 1970, was elected an Honorary Member in 1971.

By the beginning of 1960, Society membership stood at seven Honorary, 236 Ordinary, and ten Associate Members. Attendance at meetings and symposia was so high that problems of accommodation and lecture

* While Wood visited America during 1955–56, M. Weatherall was Secretary.

theatres loomed large, and some limitation on the number of guests had to be imposed. Nevertheless, the Minutes of the meetings in the 1940s and '50s suggest that both informality and *esprit* had been preserved. Perry's (now Lord Perry) Minutes in particular highlight the gaiety and spontaneity which characterized meetings and relationships. As he wrote of the January 1960 Meeting:

The Meeting was a very large one indeed. Despite the fact that only 195 names appear in the attendance book, no less than 305 members and guests paid for the lunches; no record is available of how many ate them. In view of the increasing problem of finding lecture theatres large enough for the Society, the Committee studied with interest the press report to the effect that the world record had been increased from 18 to 21 for the number of people who could be squeezed into a standard telephone kiosk. Rumours that 15 kiosks have been ordered for the next winter meeting are, however, unfounded.

Despite these problems, Perry recorded, as his last Secretarial Minute (January 1961), that "our greatest strength is in friendliness and informality and in a refusal to take ourselves too seriously".

Clearly, by 1960, the Society had come of age, and British pharmacology was a force on the international scene. During the fifteen years after the war, the Society had been the forum from which much new important pharmacological research had been reported. Acetylcholine, adrenaline, ergot, histamine, nicotine, 5-hydroxytryptamine, and pituitary extracts have already been mentioned. Reports of war-time work included the first report of the anticholinesterase action of DFP, by Adrian, Feldberg, and Kilby. Chemotherapy and tropical medicine are represented by the introduction of solapsone, leucanthone, the polymyxins, and an early cephalosporin, together with the discovery of the active metabolite of proguanil. The methonium compounds and pempidine appear, to be followed by bretylium, precursor of new approaches to hypotensive therapy. Mephesisin, primidone and dextran sulphate are also introduced, and the work of Raventós on halothane results in an important new anaesthetic agent (Papper, 1973). Equally significant are the introduction of the superfusion of isolated tissues, the use of automation in assay procedures, improved methods for studying drug antagonism, the introduction of the concept of drug efficacy, the reports of morphine action on acetylcholine output, and the discovery by Gaddum of the antagonism of 5-HT by LSD.

This sample of significant pharmacological innovation testifies to the operation of an established Society.

B. Publications

Even before the end of the war, a Committee had investigated the possibility of publishing a *British Journal of Pharmacology and Chemotherapy*. The joint arrangements with the American Society for Pharmacology and Experimental Therapeutics in editing the *Journal of Pharmacology and Experimental Therapeutics* had worked smoothly, providing British pharmacologists with one publication outlet. But such a compromise was undoubtedly never seen as a permanent solution, and it is not surprising that Society members, looking towards the return of peace, should seriously explore the feasibility of a new pharmacological journal.

Two business meetings, in February and April 1945, were largely devoted to the matter. The Journal Committee had already secured interest from the British Medical Association in sponsoring the new journal, but preliminary approaches were made, in addition, to the Medical Research Council. Sir Edward Mellanby, speaking for the latter, informed the Society that the M.R.C. would not take any firm decision until the Society had made up its mind about the B.M.A. offer. The Royal Society was also approached by Professor Burn, but the answer from A. V. Hill was not very encouraging. Sir Henry Dale, although not present at the April meeting, had written that he had no strong views as to where the support should come from, so long as the new journal was given the opportunity of succeeding. In the circumstances, it seemed wise to accept the B.M.A. offer, so long as the Society could control the advertisements and the agreement was for no longer than ten years (and, preferably, five), at the end of which time the Society could, if it desired, publish the journal independently, using the same name. Professor Winton and Dr. Hawking were asked to conduct negotiations with the B.M.A., using Burn, Gaddum, and Verney for any points requiring a decision.

By the July 1945 meeting, these negotiations had progressed satisfactorily. A letter of 23 May 1945 from the Journal Committee to the B.M.A. Journal Committee spelt out the Society's position for this new quarterly journal. The Editors and Editorial Board were to be appointed by the Society and the B.M.A., from names submitted by the Society. The Editor of the *B.M.J.* would be welcomed as a member of the Editorial Board. Preferential subscription rates were requested for Society members. The agreement was to last for five years, in the first instance, with the possibility of terminating then, with the title and goodwill of the journal to become the property of the Pharmacological Society. The reply from the *B.M.J.*'s editor, Hugh Clegg, on 14 June 1945, announced the B.M.A.'s agreement and hoped that publication could begin in the first quarter of 1946. He approved the inclusion of "and chemotherapy" in the

title, as this, he felt, would increase circulation and might head off any rival, commercially financed, chemotherapy journal.

With this agreement, the first Editorial Board was appointed, consisting of Burn, Gaddum (Chairman), Hawking, Ing (Secretary), Mutch, Scott, and Winton, with Clegg representing the B.M.A. By January 1946, Ing could report that a licence for an adequate supply of paper had been obtained and the first number was hoped for in April. With publication now assured, the Society wrote to the American Society, informing them of the new journal and expressing appreciation for the long association between the two societies in producing *JPET*. Initially, paper shortages meant a limit of sixty-four pages per quarterly issue. 1,000 copies were printed, and by July 1946 over 700 subscriptions had been received. The birth of the *British Journal of Pharmacology and Chemotherapy* meant that the informal collection of occasional subscriptions had to be replaced by a regular, annual subscription, set in 1946 at thirty shillings, to include the *Journal*. The first issue, with Sir Henry Dale's preface, duly appeared, and by January 1947 Ing could report on the successful completion of the first volume, containing twenty-eight papers occupying 287 pages. The mean interval between receipt of a paper and publication was 130 ± 50 days. The paper quality for the first volume was good, but deterioration of the supplies in 1947 reduced the number of half-tone illustrations which could be accepted. Further, the success of the *Journal* had encouraged the submission of papers, and this, combined with the limitation of size because of post-war paper shortages, meant that by July 1947, it was apparent that sixteen papers already accepted would have to wait until 1948 for publication. By December 1947, the average "lag time" was between seven and eight months.

As a result of these problems, Vol. 3, for 1948 was printed in double columns, and in slightly reduced type, increasing the number of words per page by almost fifty per cent. This new stratagem, combined with an increase in the issue size from seventy-two to ninety-six pages, meant that fifty-seven papers appeared in volume 3, as compared with twenty-eight and thirty-one for the first two volumes. Dr. George Brownlee successfully negotiated additional paper supplies, permitting additional expansion in 1949, by which time the print run had increased from 1,000 to 1,200. Consequently, it was possible to revert to full-page printing for volume 5 (1950), the largest volume (632 pages) yet produced. Mean delay was now in the order of four months. In the first five volumes, 235 pages were published, of which about sixty per cent came from universities, twenty-five per cent from industry, and the rest from government institutions. After five years, Scott and Mutch voluntarily retired, so that continuity of

the Editorial Board could be maintained. They were replaced by Trevan and E. J. Wayne. Increasing cost of paper during these years forced the increase in subscription price to outsiders, although a preferential price to Members was maintained. For most of the early years, the *Journal* lost money, the sums being absorbed by the B.M.A. In 1953, printing was again double-columned, although the paper was of good quality. The number of papers submitted and published increased slowly each year, and the 1952 Report noted that the sprinkling of papers from abroad gave evidence of the *Journal's* growing international reputation. At the same time, the distribution of work was falling unevenly on the Editorial Board, the Press Editor, Dr. G. Dawes, in particular taking the brunt of much laborious responsibility. A sub-committee, consisting of Bain, Dawes, Paton, and Wood, examined the situation and made recommendations, subsequently approved, that the number of editors be increased, and that a Press Editor, an Assistant Press Editor, and a Secretary be included on the Board. It was hoped that these new arrangements would help deal with the problems of increased submissions and larger issues. By 1959, when the number of papers submitted reached a new high of 125, forty-two per cent of these were from overseas. This number dropped to ninety-two in the following year, with the rejection rate maintained at roughly the level it had been throughout the decade, ten to fifteen per cent. 1960 was the last year for quarterly publication; in 1961 the *Journal* appeared bi-monthly, still with the cooperation of the B.M.A.

The *Journal* was not the only publishing venture begun just after the war. In January 1947, Dr. Ing reported an informal conversation with Dr. Jacobsen of the Scandinavian Pharmacological Society about the possibility of annual reviews in pharmacology. Various publishers were sounded out, but Society members were aware that the American Society was also beginning a similar scheme. By 1948 Dr. Brownlee, returning from a visit to America, reported that the American Society expected its first pharmacological review as a supplement to *JPET* by April 1949, and that the Americans were prepared to cooperate with British and Scandinavian colleagues in producing it. Accordingly, J. H. Gaddum formally explored the situation, and prepared a report dated November 1948 and considered at the January 1949 meeting. He favoured the production of a joint American-British-Scandinavian edited *Pharmacological Reviews* to be published by Williams & Wilkins, the publishers of *JPET*. Considerable correspondence and discussion in 1949 and 1950 cleared the way for these arrangements, during which the Society's Pharmacological Reviews Committee, under Gaddum's chairmanship, was active. In January 1951, the Society appointed Burn, Gaddum, and M. Weatherall, then of the

London Hospital, as the three British Editors on the new publication. By 1953, Dr. Weatherall could report vigorous European cooperation in the *PR*, the balance of review articles between Scandinavian, American, and British authors being 1:7:1 in 1951 and 5:3:6 in 1952. After a meeting among the members of the Advisory Board at the Montreal Congress in 1953, the Society agreed to a general policy of British representatives on the Reviews Board serving a three-year term. Following Dr. Weatherall's resignation from the Reviews Board after seven years' service, Dr. Vogt assumed responsibility for coordinating the British contribution and reporting to the Society. Reviews play an important part in the consolidation of scientific knowledge and are a useful way for scientists to keep up with developments outside their primary research areas. That *Pharmacological Reviews* has been produced so long by an international board is testimony to the international character of science.

In addition to these two on-going projects, some of the specialized symposia, already mentioned, had had the proceedings published. Thus, by 1960, the Society was actively involved in a diversified publishing programme.

C. Committee Activities

The original Committees, with only three members plus the Society Secretary, worked informally. Much Committee activity must have been devoted to items laid before the Society's Annual General Meetings, many of which have already been briefly mentioned. Only from 1953, when Committee minutes have been preserved, is it possible systematically to relate Committee activities to those of the Society as a whole. Two of these should be touched upon: Society finances, and the Society's relationship to other organizations and to wider social and scientific aspects of pharmacological research.

The Society was originally run on a shoestring, secretarial expenses for postage and duplication being recovered by periodic collections, usually of 2s. 6d. or 5s. per member. The balance in hand up to the opening of the 1933 meeting was £3 1s. 6d., a balance which swelled to £6 11s. 0½d. by 1935. This healthy credit balance lasted for two years, by which time the Treasurer was £1 7s. 5½d. out of pocket, necessitating a 2s. 6d. collection in 1937. This situation – small bank balances and *ad hoc* collection of subscriptions – remained the norm until after the war, when publication of the *Journal* started. A collection of 10s. per member in 1945 raised the income for that year to £31 10s. 0d., and left a balance of £17 19s. 9d. From 1946, annual subscriptions (to include the *Journal*) were started, initially pegged at 30s. This, plus the expanding post-war mem-

bership, increased the Society's bank balance to around £40 by 1947, when a separate Treasurer (W. A. Bain) was appointed. At the same time, the post of Foreign Secretary (J. H. Burn) was created, G. Brownlee replacing F. R. Winton as Secretary. Although the *Journal* as a whole was run at a loss for several years (being about £900 in deficit for 1950), this was absorbed by the B.M.A., and the Society bank balance fluctuated over the next decade, from £64 6s. 11d. in 1948 to £195 1s. 4d. in 1950 to £95 16s. 6d. in 1954. These balances must be put against a growing turnover, as membership and subscription rates increased (the latter to two guineas per annum by 1955). These relatively slim reserves were augmented in 1959, when the Society was able to negotiate with the B.M.A. a 10s. per annum reduction on the cost of the *Journal* to Society Members, and at the end of 1960, the bank balance reached an all-time high of almost £360. In addition, outside grants, particularly from the Wellcome Trust, the Wellcome Foundation, Sandoz, and the Ciba Foundation, had permitted the operation of the Symposium series without financial liability to the Society.

In addition to overseeing Society meetings, publications, and finances, the Committee has been responsible for representing Society (and, more generally, pharmacological) interests at large. From the formation in 1946 of the Biological Council, the Society has contributed a subscription and sent a representative. Active support continued for the Research Defence Society. Dale gave the Stephen Paget Lecture in 1955, having also done so in 1931; J. H. Burn was lecturer in 1960. In 1953–54 a Joint Committee on the supply of cats and dogs was set up by the Society, the Research Defence Society, and the Physiological Society. This Committee made recommendations concerning the better experimental use of the thousands of stray dogs and cats destroyed each year by the police or humane societies. Negotiations between the Joint Committee and the R.S.P.C.A. ultimately broke down.

Further expansion of the Committee's activities during the 1950s is evident through the Society's representation on the British National Committee, the Parliamentary and Scientific Committee, and on *Biological and Medical Abstracts*. Both the Society and the profession continued to grow, both through the expansion of existing pharmacology departments and the creation of new ones. Funding came direct from the Government, from medical schools, and from pharmaceutical companies. These developments sometimes heightened the potential split between clinical and more basic aspects of pharmacology, but the Committee rejected in 1960 the idea of a separate clinically-orientated Society for Human Pharmacology. Instead, it requested the *Journal's* Editorial board not to reject papers simply because they were "too clinical" and asked W. L. M.

Perry (Secretary), A. Wilson, and L. G. Goodwin, along with Drs. Mogyey and Watkinson, to form a sub-committee with the purpose of encouraging more clinical papers for the Winter Meeting in 1961. These events look forward to the enhanced diversification of the Society during the past two decades.

VI. THE ESTABLISHED SOCIETY, 1961–1981

The issues faced by the Society in a period of rapid growth and increasing specialization are not unique to it. Many broadly based scientific societies have tried to steer a course between the Scylla of splinter groups and the Charybdis of gigantic meetings with parallel sessions. These pressures seem an almost inevitable part of contemporary experimental science. This very schematic sketch of Society activities since 1961 will touch on several strategies aimed at preserving a vigorous Society identity while adapting to the forces which shape modern science.

A. Membership and Meetings

Professor G. V. R. Born's department at the Royal College of Surgeons hosted the Winter Meeting in 1961. It was, as Perry's secretarial summary pointed out, yet another in the string of "largest meetings yet", with forty-one communications and seventeen demonstrations spilling over into three days. The entertainment at the official dinner included the showing of a film, just made by Born's department. Entitled "A Career in Pharmacology", it provoked the comment that "A pharmacologist is made not Born". Among the new members elected at that meeting was J. W. Black, now the most recent of the pharmacological knights. Edinburgh in the summer was another three-day meeting, and included sixteen communications on clinical subjects. G. A. H. Buttle set the tone when he reported work which had led him to a "quantitated clinical impression". 197 Society members also attended the First International Meeting of Pharmacologists in Stockholm, in August 1961; they gave fifty-seven papers. Paton had represented the Society in the advance planning of this meeting, which represented a natural culmination of the efforts of pharmacologists to secure a separate international identity within the context of the physiological sciences. The Society had taken a lead in this, for after the International Union of Physiological Sciences meeting in Oxford in 1947, pharmacologists were invited to attend the Society's London Meeting. This led to a separate pharmacological day at the 1950 I.U.P.S. Congress in Copenhagen; to a Section of Pharmacology (SEPHAR) of the I.U.P.S.;

and eventually to an autonomous International Union of Pharmacology (IUPHAR). Bain represented the Society in planning the second International Meeting (Prague), and Born in the third (Sao Paulo). These are now established events on the pharmacological calendar. The adhering British National Committee for Pharmacology of the Royal Society was formally created in 1972; Burgen was its first chairman.

Advancing years did not prevent Sir Henry Dale from making an occasional appearance at meetings, including January 1962 at the Middlesex Hospital Medical School, when he recalled his friend and co-recipient of the Nobel Prize, Otto Loewi. Dale was able to be present only via a video tape four years later, at a dinner given by the Society and the Physiological Society on 11 June 1965, in honour of his ninetieth birthday. Sir Lindor Brown, F. C. MacIntosh, and Sir John Eccles all spoke of Sir Henry, to which he replied in video. The High Table must have been worth sitting at, for in addition to the many friends and former colleagues of Dale (including Feldberg, A. V. Hill, Sir Bernard Katz, A. L. Hodgkin, Burn, and others), the menu was signed by other luminaries, including Claude Bernard and Mary, Queen of Scots.

By 1962, so large was attendance at the Oxford meeting that the Oxford Playhouse was booked as the venue for the fifty-four communications. At the same time, a general discussion at the business meeting about election procedures paved the way for the more generous policies adopted four years later. These led to a diminution of the waiting time of suitable candidates and consequent expansion of membership. At the same time, the Committee was charged with the task of endeavouring to preserve the "family feeling" which had always characterized the Society.

Clinical pharmacology continued to receive Society attention through a special symposium on 'Early Stages in the Testing of New Drugs', held as part of the Winter 1963 meeting at University College London. Its success encouraged subsequent occasions at later meetings. At the same time, the regular series of joint symposia continued (now organized by the Biological Council), the 1963 topic being 'Animal Behaviour and Drug Action'. The Summer Meeting 1963, was held in Dublin for the first time. In addition, Society members gave fifty-one papers and two demonstrations at the Second International Meeting at Prague.

During the next three years, the bi-annual meeting schedule was maintained, along with Biological Council Symposia and, in 1964, the Third International Pharmacological Congress was held in Sao Paulo. A special symposium on 'The Teaching of Pharmacology' attracted 250 at the Bristol meeting, summer 1964. Its theme was one of particular concern to the Society during those years, as will be discussed under *Committee*.

Continued growth in the number of communications and in attendance made a parallel session necessary for the first time at the Winter 1965 meeting at St. Bartholomew's Hospital Medical College. Although not particularly popular, this arrangement was repeated by grouping together communications on specialized topics at the Winter 1966 meeting in Liverpool. This format was also used at the Summer meeting in Dundee, where sessions on human pharmacology and on toxicology ran in parallel with more general communications. The continuous press of offered communications, however, dictated the addition of a Spring meeting to the 1967 programme. At that meeting the proposed changes in the Society Rules were presented; these permitted easier election procedures and led to the increase in Ordinary Membership from 378 in 1967 to 444 in 1968, and ultimately to the continued increase during the past dozen years.

The 1967 Summer Meeting, in Cambridge, was held jointly with the Deutsche Pharmakologische Gesellschaft. It was notable for the delivery of the first Gaddum Memorial Lecture by W. W. Douglas of the Albert Einstein College of Medicine, New York, and for the presentation of the Schmiedeberg Plakette by H. Konzett of the German Society to J. H. Burn. In addition, there was a special symposium on the 'Mechanism of Drug Action'.

The 1968 programme had an international flavour. Following Winter and Spring Meetings at St. Thomas's Hospital and at Cardiff, the Society returned to Edinburgh, where the 200th anniversary of the Edinburgh Chair of Materia Medica and Pharmacology was celebrated by a joint meeting between the Society and the Scandinavian Pharmacological Societies. In honour of the occasion and in acknowledgement of the warm relations between the two societies, Professor E. Jacobsen announced that the Scandinavian Societies had created a special £1,000 scholarship to permit a British pharmacologist to work for six months in a Scandinavian laboratory. Dr. Judith Park ultimately took up this scholarship. The meeting coincided with Jacobsen's 65th birthday, to which the Society responded with a gift to him. J. R. Vane delivered the Second Gaddum Memorial Lecture. In September 1968, about ninety Society Members travelled to Florence for a joint meeting with the Società Italiana di Farmacologia.

The three meetings in 1969 included a first visit to Chelsea College and to the School of Pharmacy, London, and the University of Manchester. During the year there was much discussion about the possibility of forming a separate Section of Clinical Pharmacology. It will be recalled that the Committee had previously resisted a similar proposal as potentially divisive. By this time, however, the Society was felt to be large and vigorous

enough to support a clinical section. Accordingly, a sub-Committee consisting of R. S. Stacey, J. R. Vane, B. N. C. Prichard, and R. G. Shanks considered the issue and drew up a set of rules for the Clinical Pharmacology Section (C.P.S.) which were ultimately adopted at the AGM in 1970. The Section has since played an active role in the Society and since 1974 has been responsible for the publication of a second journal, the *British Journal of Clinical Pharmacology (BJCP)*. The inauguration of the Section resulted in a further acceleration of Society growth, total membership of which stood at 791 by January 1971, the Society's fortieth year. This consisted of nine Honorary, 641 Ordinary, thirteen Retired Ordinary, and 128 Associate Members. The Associate Membership category was eventually abolished in 1973, a reflection of the increasingly international character of pharmacology. Since then, there have been only three classes of membership: Honorary, Ordinary, and Retired Ordinary. Total membership reached one thousand for the first time in July 1974. By 1977 it stood at 1,236, and in January 1981 there were thirteen Honorary, 1,533 Ordinary, and forty-seven Retired Ordinary Members, a total of 1,593. It has almost exactly doubled in the past decade. Many of the present Honorary Members have already been mentioned; another who has been particularly loyal in his support of the Society is H. K. F. Blaschko.

H. K. F. Blaschko (b. 1900), F.R.S., received his medical and scientific education in Germany. He was a research assistant for several years to Otto Meyerhof. He had also worked in 1929–30 at University College London, where he returned in 1933. The following year, he went to the Department of Physiology in Cambridge, joining Burn's department in Oxford in 1944, where he was Reader in Biochemical Pharmacology. He has done fundamental work on monoamine and diamine oxidases, on the biosynthesis of catecholamines, and on the chromaffin granule. In 1972, he received the Schmiedeberg Plakette der Deutschen Pharmakologischen Gesellschaft. He was on the Board of *Pharmacological Reviews*, 1957–63, and on the Editorial Board of the *Journal*, 1959–65. He was elected to Honorary Membership in 1979.

The programme has also been vigorously maintained at what has become a standard level of four meetings per year. New institutions visited during the past decade include the Institute of Psychiatry, London (Winter, 1971); the Royal Postgraduate Medical School, London (Winter, 1972); the University of Southampton (Spring, 1974); the University of Surrey, Guildford (Spring, 1978); the University of Nottingham

(Autumn, 1978); the University of Aston, Birmingham (Spring, 1979). The difficulty of finding meeting places of sufficient capacity for the growing Society led to the use of the Institute of Education for the 1979 Winter Meeting in London. Contact with foreign societies has also been regularly maintained. A joint meeting in Paris in April 1971 with the French Association des Pharmacologistes was reciprocated when the French Society came to Oxford in the Autumn 1976. Berlin was the venue for a joint meeting with the German society in the Autumn 1973; the Italians came to Bristol in the Autumn 1974, and the Dutch to Leeds in the Autumn 1979. For the Summer Meeting 1980, the Society journeyed to Verona to join with Italian colleagues, one of whom, D. Bovet (a Nobel Laureate), has been an Honorary Member of the Society since 1958. The meeting in Aberdeen in September 1980 was held jointly with the Belgian Society. One distinguished Belgian medical scientist, long connected with the Society through his association with Sir Henry Dale and his colleagues, is Z. M. Bacq, elected a Member in 1948 and Honorary Member in 1975.

The first half-century's round of activities came full circle when the Society returned to Oxford for the thirteenth time, to celebrate its fiftieth anniversary in the ancient university town where its Original Members first met. The Society's growth during this period is shown in Appendix I.

B. Publications

In 1961, two important changes were made in the *Journal*. The layout reverted from double-columned to full-out page, and publication became bi-monthly instead of quarterly. This resulted in the production of two volumes per year and enabled the Society to increase the number of papers published (100 in 1961 as compared to ninety-two in 1960). In addition, the new arrangements helped to reduce the mean delay between receipt and publication from 5.2 to 4.1 months. A. D. Macdonald resigned as Chairman of the Editorial Board, being replaced by G. S. Dawes. The new format permitted yet another record of publication in 1962, 111 published papers with no deterioration in the lag-time. However, the continued increase in volume meant some delays in 1963 and 1964 and, after negotiations with the B.M.A., the number of pages published in 1965 was put at 1600 (as against 1200 for 1964). In 1966 (the *Journal's* twenty-first year), three volumes were published; the additional work involved in this production made the further expansion of the Editorial Board advisable.

By 1967, it was generally felt that, such was the international standing of the *Journal*, its publication by a commercial publisher would enhance its profitability. Accordingly, the arrangement with the B.M.A. was ter-

minated at the end of the year, and from the first issue of 1968, the *Journal* was published for the Society by Macmillan (Journals) Ltd. At the same time, a new format and cover were adopted and the title was changed to the *British Journal of Pharmacology*, i.e. by the omission of the words "and Chemotherapy". The Society, of course, retained editorial responsibility for the *Journal*. The changeover was effected smoothly, and Macmillan continues to publish the *Journal*. Another innovation of 1968 was the publication in the *Journal* – subject to approval at Society Meetings – of the abstracts of communications and demonstrations presented before the Society. This increases the public visibility of the Society, permits more rapid public dissemination of material presented at Society meetings, and more intimately links the Society with its *Journal*.

The general trend during the past decade has been one of growth in all aspects of the *Journal*: number of papers published, number of subscribers, and subscription price. By 1973, however, the success of the Clinical Pharmacology Section suggested to many the possibility of a complementary journal devoted to clinical pharmacology. A Steering Committee, chaired by Professor Paton (Chairman of the *Journal's* Editorial Board), negotiated with several publishers, and finally settled on Macmillan. The *British Journal of Clinical Pharmacology* was launched in 1974. Not surprisingly, this resulted in a temporary reduction in the number of papers offered to the *Journal* (316 in the year ending 31 August 1974, as opposed to 414 in the preceding year). The ultimate result, however, is a satisfactory diversification of the Society's publishing activities, and both journals have weathered the various fiscal crises which the past years of high inflation and economic uncertainties have produced. In the Society's fiftieth year, the *Journal* will publish its seventy-fourth volume and the *BJCP* will achieve its twelfth volume since its beginning eight years ago. The size of the Editorial Boards of both journals has also increased. In 1981, the *Journal* Board consists of a Chairman, Secretary, Press Secretary, and Assistant Press Editor, plus thirty-six Board Members. The *BJCP* is run by a Chairman, Secretary, and Press Editor, plus twenty-four Board Members. In addition, because of the considerable financial implications which these journals have for the Society, the Secretaries and Treasurers of the Society and the CPS sit on the Editorial Boards.

In addition to its two official journals, the Society has continued to cooperate in the production of *Pharmacological Reviews*. Contributions to *PR* by members of the Society have been regular, if not too frequent, the main problem facing the editors of the journal being that of finding pharmacologists prepared to take on the task of writing review articles. Despite this, there seems general agreement that *Pharmacological Reviews* serves

a useful function. A proposal either to replace or supplement Society involvement in its editing by a Society Monograph Series was not effected, although the proceedings of the Biological Council Symposia were frequently published.

C. Committee

The continued growth of the Society has markedly increased the volume of work handled by the Committee. This in turn has been accompanied by a multiplication of Society officers, increases in ordinary membership on the Committee, and the formation of various sub-committees and further aspects of additional division of labour. Most of the activities mentioned in the previous discussion, such as representation in various national and international committees, have continued but will not be separately dealt with here.

J. D. P. Graham was the last person to hold the single office of Secretary, from 1961 to 1968, after which the duties were split into those of a General Secretary and a Meetings Secretary. J. P. Quilliam and J. R. Vane first held these, and in 1971, when Vane succeeded Quilliam as General Secretary, the rotation was established whereby, after a three-year period, the Meetings Secretary became the General Secretary for a similar period. The office of Treasurer has been set for seven years, R. P. Stephenson succeeding D. R. Wood in 1971. About the same time, the creation of the CPS necessitated a Secretary, Treasurer, and Committee Members for the section. A permanent Membership Sub-Committee is also now maintained.

Antivivisection activity recurred during this period, and the Society and its members were much involved. A. D. Macdonald and J. B. E. Baker served in a secretarial capacity to the Research Defence Society; and later Paton became its chairman, as did Perry from 1980 onwards. Paget Lectures were given by Alex Haddow, A. S. V. Burgen, and W. D. M. Paton. The Committee established a continuing liaison with the R.D.S., to secure the Society's interests when new legislation was proposed.

The Society through its Committee has naturally been concerned with other professional and academic aspects of pharmacology in Britain. Two surveys on the organization of pharmacology have been commissioned by the Society and reported in the *Journal*. The first, conducted by Y. S. Bakhle and Paton, covered the period between 1952 and 1964. They charted the increase in academic and industrial appointments during this time, together with the expanding university and medical school teaching programmes to meet the demand. During this period, the demand for adequately trained pharmacologists consistently exceeded the supply (Bakhle

and Paton, 1966). To encourage recruitment, C. R. B. Joyce prepared a booklet entitled *Pharmacology as a Career* (1966). This was distributed free of charge to interested persons.

In 1971, a second survey was carried out. In the intervening years, expansion had continued and the identifiable supply and demand for pharmacologists seemed more nearly balanced, although many pharmacology graduates were clearly being employed by firms and institutions not circulated by the questionnaire. This survey, carried out by Bakhle, D. W. Straughan, and R. A. Webster, quantified the improvement of pharmacology's academic standing (forty professors in fifty-one departments in 1971, as compared with twenty-five in forty-two departments in 1964). Bakhle *et al.* also noted the continued drop in the proportion of medically-qualified pharmacologists (fourteen per cent in 1971, as compared to twenty-five per cent in 1964) (Bakhle, Straughan, and Webster, 1974). Only one of the original thirty-one Members had no medical degree.

These and other activities on behalf of the profession have been supported by the Society's financial resources. In the early 1960s, Society reserves and annual turnover remained small by today's standards, even after allowing for subsequent inflation. In 1962 there was a turnover of just over £1,000, and a bank balance of around £550. By 1967, the respective sums had almost doubled, although the appearance of additional accounts testified to the diversification of Society activities. To the Gaddum fund, set up just after his death in 1965, has been added a W. A. Bain fund; and pharmaceutical support has enabled the Society to establish Sandoz, Lilly, Smith, Kline & French, AMAPI, and Wellcome awards. Subsidies to members attending international congresses and joint meetings abroad has also been possible through the same eclectic variety of sources. At the same time, the rapid expansion of Society membership during the 1970s, profits from the *Journal* subsequent to 1968, combined with inflation and the addition of *BJCP* to the Society's activities have vastly increased yearly general turnover which by 1980 reached almost £100,000. Along with many other learned societies, the Society has been hit by the spiralling rises in meeting, editing, and administrative expenses and has had to strike a balance between reserves and expenditure, subscription levels, and services to members. That membership has continued to climb suggests that a reasonable balance is being achieved and that the Society is fulfilling the functions which Professor Gunn elucidated at the original meeting:

Professor Gunn spoke on the advisability of the formation of some sort of society which would provide the opportunity for people

engaged in pharmacological work to meet from time to time, not only to discuss scientific matters, but also to make one another's better acquaintance. He emphasized the importance of the members living together for a brief spell now and again.

Gunn's words have even greater applicability as the Society enters its second half-century.

ACKNOWLEDGEMENTS

My greatest debt is to Professor Sir William Paton, who first asked me to prepare this short history and has subsequently been most generous in answering queries and making numerous helpful suggestions on earlier drafts of the manuscript. In addition, various members of the Society have shared with me their recollections of its early days, and I have used these recollections in shaping my own account of the Society. These include the late J. H. Burn, whose death so close to the 50th Anniversary Meeting has saddened so many; Edith Bülbring, Mary Pickford, Marthe Vogt, G. A. H. Buttle, P. B. Marshall, C. A. Keele, and J. D. P. Graham. A. M. Barrett, J. R. Vane, A. T. Birmingham, W. C. Bowman, A. W. Cuthbert, and B. A. Callingham also made very helpful suggestions. The mistakes and errors of interpretation which remain are my own.

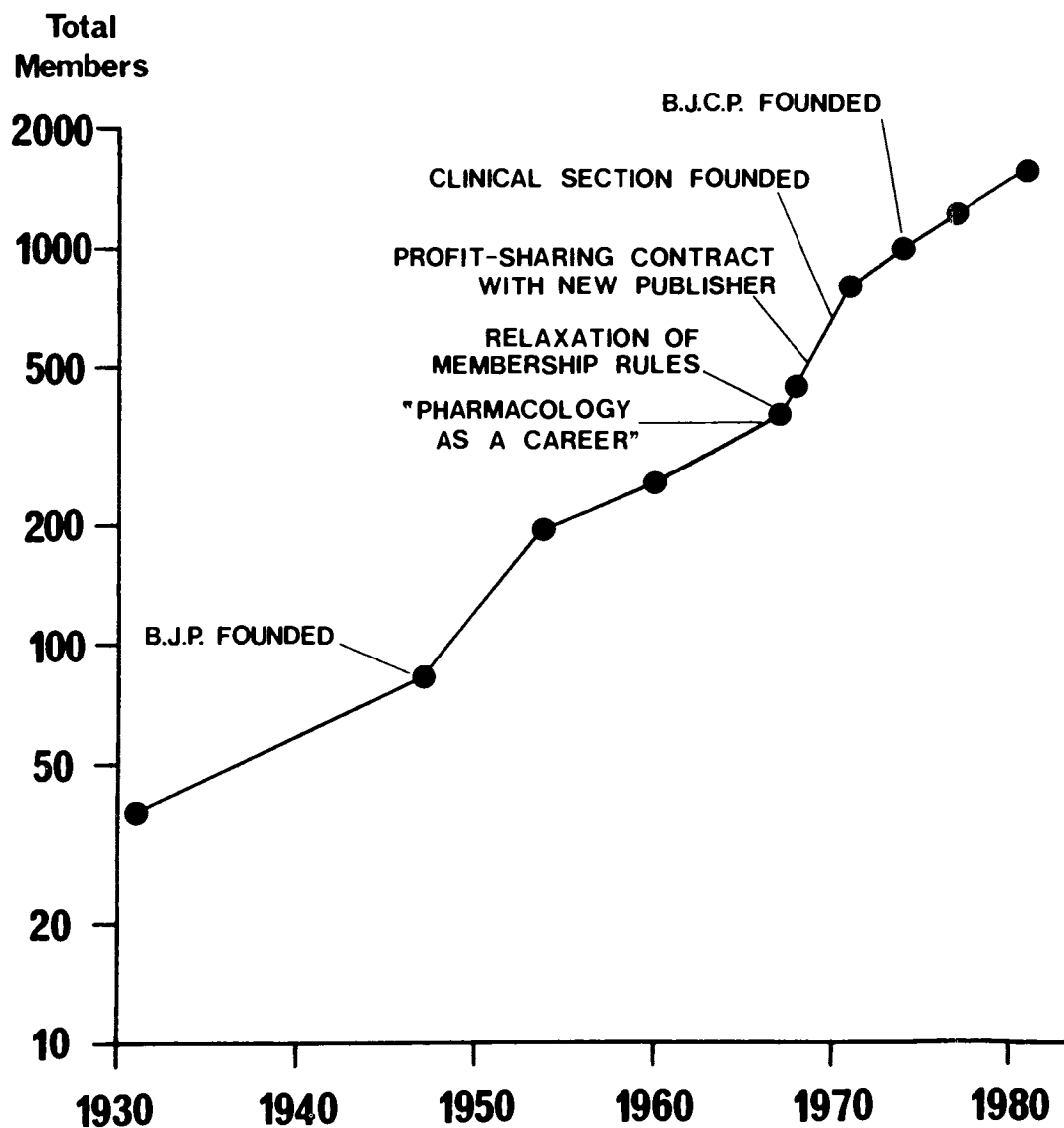
As always, I have benefited from the secretarial skills of Frieda Houser and the editorial skills of Jean Runciman.

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Note: The information about the Society's activities has been taken from the Society Archives, now deposited in the Contemporary Medical Archives Centre, Wellcome Institute for the History of Medicine, 183 Euston Road, London NW1. I am grateful to the Archivist, Miss Julia Sheppard, for assistance. Reference to this Archive has not been made separately; in addition I have used obituaries of deceased Society members which are not always separately noted.

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	1931	1981
Total Members (Doubling time 9 years)	38	1593
Communications and Demonstrations (Oxford Meeting)	6	290
Attendance (Oxford Meeting)	21	c. 900
Total Income	c. £10	c. £100,000
Pages Published in Journal(s)	(1946) 1980	(1980) 3534
Total U.K. Pharmacologists	(1964) 725	(1971) 1104
% Members	41%	72%

APPENDIX I – THE GROWTH OF THE SOCIETY, 1931–1981

Although the Society has grown rapidly in its first half-century, the doubling time for total membership has remained at a steady nine years. Various key events in the Society's history are indicated on the graph.

Their impact on Society growth seems less striking when plotted logarithmically, but the fact that the percentage of UK pharmacologists who are Society members rose from 41 in 1964 to 72 in 1971 reflects the broadened programme and enhanced activity of the Society. (Graph and statistics, courtesy of Professor Sir William D. M. Paton.)

APPENDIX 2 – MEMBERS OF THE BRITISH PHARMACOLOGICAL SOCIETY ELECTED 1931–1950

Original Members

W. A. Broom
J. H. Burn
D. Campbell
A. J. Clark
H. H. Dale
W. J. Dilling
W. E. Dixon
K. J. Franklin
J. H. Gaddum
J. A. Gunn
P. Hamill
R. St. A. Heathcote
T. B. Heaton
A. St. G. J. McC. Huggett
O. Inchley
A. D. Macdonald
M. H. Mackeith
E. B. C. Mayrs
E. Mellanby
N. Mutch
G. N. Myers
N. Neild
W. A. M. Smart
R. Stockman
J. W. Trevan
S. W. F. Underhill
E. B. Verney
A. C. White
F. R. Winton
V. J. Wooley

Elected 1932

J. J. Abel (Hon)
Hans H. Meyer (Hon)
Stanley Alstead
G. A. H. Buttle
J. W. C. Gunn
V. E. Henderson
E. Holmes
J. C. Hoyle
H. R. Ing
C. M. Scott

Elected 1933

B. B. Dikshit
G. S. R. Rao
J. W. de W. Thornton

Elected 1934

G. L. Brown
P. Ellinger
W. Feldberg
O. Krayser

G. R. Morgan
G. W. Theobald
E. J. Wayne
K. D. Wilkinson
M. Tiffenueau (Hon)
W. Straub (Hon)
W. Heubner (Hon)

Elected 1935

Mary Pickford
R. N. Chopra
Stanton Hicks

Elected 1936

E. M. Scarborough
Edith Bülbring
F. Hawking
T. H. B. Bedford
A. C. Frazer
J. H. Stothert

Elected 1937

Marthe Vogt
J. M. Robson

Elected 1938

Noah Morris
R. West

Elected 1939

W. A. Bain
M. R. Gurd
F. C. MacIntosh
The Earl of Suffolk and Berkshire
G. Liljestrand (Hon)

No meetings between 1940–1942

Elected 1943

George Brownlee
H. Heller
C. A. Keele
L. Goodwin
J. Raventós
H. O. Schild
H. C. Stewart
R. Wien
A. Wilson

No elections 1944

Elected 1945

A. Bacharach
H. K. F. Blaschko
M. R. Chance

G. S. Dawes
F. J. Dyer
C. H. Kellaway
P. M. Marshall
A. Slessor
R. Thorp
G. Woolfe

Elected 1946

W. J. O'Connor
J. McMichael
H. Bergel
B. G. Maegraith
H. Schutz
H. O. J. Collier
G. B. West
W. B. Taylor
J. B. B. Crawford
M. Weatherall
H. M. Adam
A. L. Walpole
J. D. P. Graham
D. R. Wood
J. J. Elkes
F. W. Landgrebe

Elected 1947

J. M. Barnes
E. M. Bavin
F. M. Berger
J. Y. Bogue
E. Boyland
H. Cullumbine
F. H. S. Curd
D. G. Davey
P. B. Dews
A. M. E. Duguid
H. Dunlop
S. Ellingworth
M. S. Glock
P. Hey
H. Jackson
W. R. Jones
Mary Lockett
H. B. Parry
F. Prescott
F. L. Rose
A. Spinks
J. S. Steward

Elected 1948

J. F. Goodwin
A. Albert

Mrs R. Kapeller-Adler
E. M. Lourie
W. D. M. Paton
J. Madinavectitia
G. F. Somers
A. F. Green
J. M. Walker
A. S. V. Burgen
R. S. Stacey
P. Halton
J. Dekanaki
F. Alexander
M. Ginsburg

Elected 1949

J. L. Broadbent
S. R. M. Bushby
H. C. Carrington
N. K. Dutta
B. N. Halpern
C. O. Hebb
R. B. Hunter
A. G. Macgregor
D. F. J. Mason
G. A. Mogey
W. L. M. Perry
J. B. Roberts
M. Robinson
R. P. Stephenson
G. A. Stewart
J. R. Vane

Elected 1950

D. W. Adamson
G. Achari
H. Barcroft
D. Bovet
C. A. Lovatt Evans
G. L. M. Harmer
F. Hobbiger
E. Jacobsen
Dinah M. James
J. A. Lock
Joan C. Mott
P. A. Nasmyth
J. P. Quilliam
J. J. Reuse
M. Rosenheim
Eileen I. Short
Isabelle Wajda
E. M. Vaughan Williams
Eleanor J. Zaimis

APPENDIX 3 – OFFICERS OF THE BRITISH
PHARMACOLOGICAL SOCIETY FROM ITS FOUNDATION IN
1931 TO 1981 (with year of election)

Secretary and Treasurer

1931 M. H. MacKeith

1934 J. H. Burn

1945 F. R. Winton

Secretary

1947 G. Brownlee

1952 D. R. Wood

1955 M. Weatherall

1956 D. R. Wood

1957 W. L. M. Perry

1961 J. D. P. Graham

Foreign Secretary

1947 J. H. Burn

1959 W. L. M. Perry

1960 Marthe Vogt

1970 J. M. Walker

1979 J. R. Vane

Treasurer

1947 W. A. Bain

1964 D. R. Wood

1971 R. P. Stephenson

1976 E. W. Horton

1981 B. A. Callingham

General Secretary

1968 J. P. Quilliam

1971 J. R. Vane

1974 J. F. Mitchell

1977 G. P. Lewis

1980 A. M. Barrett

Meetings Secretary

1968 J. R. Vane

1971 J. F. Mitchell

1974 G. P. Lewis

1977 A. M. Barrett

1980 A. T. Birmingham

OFFICERS OF THE EDITORIAL BOARD OF THE BRITISH
JOURNAL OF PHARMACOLOGY FROM ITS FOUNDATION IN
1945 (with the year of election)

Chairman

1945 J. H. Gaddum

1969 W. D. M. Paton

1955 A. D. Macdonald

1975 A. W. Cuthbert

1962 G. S. Dawes

Secretary

1945 H. R. Ing

1953 G. S. Dawes

1959 J. M. Walker

1966 R. S. Stacey

1971 S. E. Smith

1971 H. M. Adam

1977 A. Ungar

Press Editor

1953 W. A. Bain

1957 J. P. Quilliam

1960 G. P. Lewis

1963 J. G. Widdicombe

1966 J. R. Hodges

1969 P. A. Nasmyth

1972 Margaret Day

Assistant Press Editor

1955 G. A. Mogyey

1957 L. G. Goodwin

1959 C. R. B. Joyce

1959 J. G. Widdicombe

1960 E. W. Horton

1963 Joan C. Mott

1970 Jennifer Maclagan

1972 J. D. Stephenson

OFFICERS OF THE CLINICAL PHARMACOLOGY SECTION
FROM ITS FOUNDATION IN 1970

<i>Secretary</i>	<i>Treasurer</i>
1970 B. N. C. Prichard	1970 R. G. Shanks
1976 A. J. Smith	1976 G. E. Mawer
1978 D. G. McDevitt	1982 P. N. Bennett

OFFICERS OF THE EDITORIAL BOARD
OF THE BRITISH JOURNAL OF CLINICAL PHARMACOLOGY
FROM ITS FOUNDATION IN 1974

<i>Chairman</i>	<i>Secretary</i>	<i>Press Editor</i>
1974 G. M. Wilson	1974 P. Turner	1974 Anne-Marie Hedges
1978 C. T. Dollery	1981 A. Richens	

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