

# Obituary

## IVAN PAVLOV

Professor Pavlov, the greatest of all Russian men of science, died in Leningrad on February 27th from pneumonia, after a short attack of influenza.

Ivan Petrovitch Pavlov was born on September 14th, 1849, the son of a poor priest in a village in Ryäsam, who added to his meagre stipend by peasant farming. After some early education at a theological seminary he felt the call of biology, having been keenly interested when a boy of 15 in a Russian translation of G. H.

Lewes's *Physiology of Common Life*. He

entered as a student of science at the University of St. Petersburg, and studied under Tsyon the physiologist and Mendeléeff the chemist; and on completion of the course in general science he went through the medical curriculum at the Military Medical Academy. After obtaining in 1879 his licence to practise medicine Pavlov became research assistant to the physician Botkin, with special charge of the experimental work on animals. He graduated M.D. at St. Petersburg in 1883, and in the following year was appointed privat-dozent in physiology. Then followed two years' work in Germany under Carl Ludwig at the Leipzig Physiological Institute and under Rudolf Heidenhain at Breslau. In his boyhood Pavlov

had trained himself to use both hands, and he found this ambidextrous skill of great value in laboratory manipulations. In 1891 he became director of the physiological department of the Institute of Experimental Medicine lately founded at St. Petersburg by Prince Oldenburg; in 1897 he added to these duties those of professor of physiology in the Military Medical Academy. Ten years later he was appointed one of the four scientific members of the St. Petersburg Academy, and in virtue of this post assumed control of yet another laboratory. His personal experiments, however, were carried out in the Institute of Experimental Medicine, the other two laboratories being in charge of assistants working under his direct inspiration.

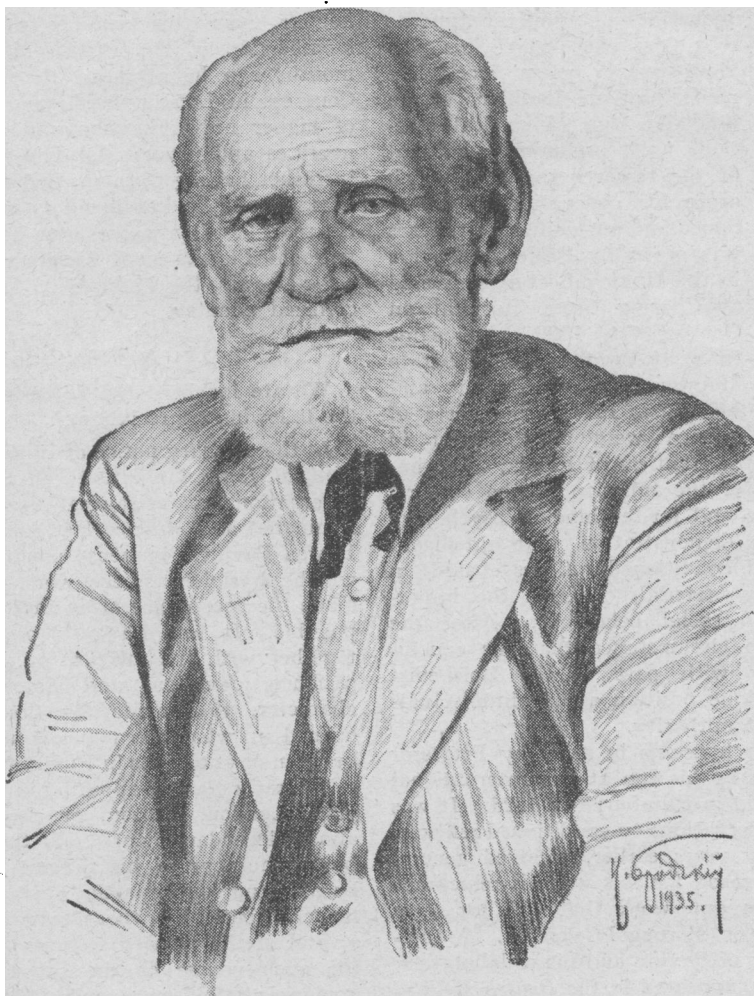
The researches with which the name of Pavlov is linked are remarkable no less for their number than for their variety. The earliest work that brought him into the foreground was on the physiology of the circulation. He discovered new facts about blood pressure by contriving operations which allowed experiments to be done almost

without pain. Hitherto important phenomena had been masked by the reactions of the animal to the pain of operations or to other abnormal conditions. As the late Professor E. H. Starling well said in a study of the man and his work,<sup>1</sup> "Pavlov realized that these disturbing factors—namely, anaesthetics, pain, and discomfort—must be eliminated before the part played by excitation of a nerve, for example, under normal conditions could be appreciated or proper value given to the results of operative procedure. We see the beginning of these ideas in the first chapter of Pavlov's scientific activities, those connected with the physiology of the circulation." Pavlov's researches on the physiology of digestion won him even higher fame. He elucidated the nervous control

of the digestive glands and the part played by these glands in normal life. Once again he achieved success by devising experiments that prevented the subject from being distracted by pain. "Here the introduction of new methods devised to fulfil the conditions laid down by him at the beginning of his career enabled him to rewrite this chapter in physiology. At the present time our whole idea of the course of digestion is based upon Pavlov's discoveries. This work would have been impossible but for Pavlov's marvellous skill as an operator."

From 1888 to 1900 all his activities were devoted to the problems of digestion. At the beginning of that period he showed that the vagus nerve was the secretory nerve to the pancreas, and was able to explain why previous observers had failed to

obtain any results from stimulating this nerve. A note published by one of his pupils in 1889 described Pavlov's method of obtaining pure gastric juice by making fistulous openings into the stomach and the oesophagus. By this means he was able to work out the whole process of gastric secretion and the mental and physical stimuli that induce it. Between 1892 and 1897 his colleagues in other countries became fully informed of Pavlov's discoveries on the physiology of digestion through a series of papers in the *Archives des Sciences Biologiques*, and in the latter year a collected account of his studies and experiments was published in German and in French, an English translation appearing soon afterwards. For his achievement in laying bare the main features of the digestive mechanism Pavlov received the Nobel prize for medicine in 1904. By this time his methods were widely known through the agency of his pupils, many of whom had acquired enough operative



<sup>1</sup> *Nature*, January 3rd, 1925.

skill to perform the difficult operations which Pavlov had done himself.

From 1902 onwards Pavlov and his disciples dedicated themselves to an attack upon the problem of the nature of the higher nervous processes in the brain. Hitherto the methods of investigating the functions of the cerebral hemispheres had been unsatisfactory. To quote again from Starling: "Up to the time when Pavlov began his researches, we lacked such objective physiological methods as would do for the analysis of the functions of the cortex the same services that had been rendered by physiological method in the hands of Sherrington for the analysis of the spinal reflex functions, or which have recently been used by Magnus and others in the investigation of the manner in which equilibrium is maintained or restored. . . . Pavlov conceived the ingenious idea of using the appetite



reactions, with which his previous twenty years' work had made him so familiar, as an objective sign of cortical reactions." A preliminary account of the researches out of which arose his conception of conditioned and unconditioned reflexes was given by Professor Pavlov in the Huxley Lecture delivered at Charing Cross Hospital on October 1st, 1906. For some time afterwards the elaborate investigations of Pavlov and his pupils in this new field of science were only known in

broadest outline beyond the frontiers of Russia. The implications of his studies of the function of the cerebral hemispheres are immense and far-reaching in psychology and in sociology. His demonstration that intelligent behaviour is built up of conditioned reflexes, based on simpler reflexes of living material, confirms the importance of environment in social behaviour. After the revolution in Russia the circumstance that his conclusions were in harmony with part of the Bolshevik doctrines gave him a unique position among intellectuals in the eyes of the Soviet authority.

A lecture on inhibition hypnosis in sleep by Professor Pavlov was read for him by his son at the International Physiological Congress held in Edinburgh in 1923. It was not until then that his observations on conditioned reflexes, begun more than twenty years earlier, received general attention abroad. The reason for this was his reluctance to submit for publication any work that did not seem to him to be completely or thoroughly verified. A first-hand account of the work of Pavlov and his collaborators, by Dr. W. Horsley Gantt, appeared in the *British Medical Journal* of September 30th, 1924, and a further paper by Dr. Gantt on the same subject (June 11th, 1927) described the elaborate and ingenious apparatus for eliminating adventitious stimuli when studying conditioned reflexes. Pavlov's researches in this field went on until his death, and on his eighty-fifth birthday in 1934 the Soviet Government gave him a million roubles for the extension of his laboratories and an annual pension of 20,000 roubles. Until well over the age of 80 he was daily at work directing the researches of fifty collaborators in three different laboratories, and on six days in the week was present himself from 10 a.m. to 6 p.m., coming and leaving with military punctuality, and when necessary walking through the snow and ice.

In 1927 a translation into English of Pavlov's book on *Conditioned Reflexes* was carried out by Dr. G. V. Anrep, who combines the advantages of being a Russian-born subject naturalized in Britain and a former pupil and collaborator of Pavlov's in these investigations. With the

aid of the Royal Society this translation was published by the Oxford University Press. At one step, never to be forgotten in the history of physiology and psychology, this book carried us from a period of introspective observation and impotent speculation into a period of direct experimental inquiry, which will extend far into the future.

Professor Pavlov was elected a foreign member of the Royal Society in 1907 and an honorary member of the Physiological Society in 1909; the Royal Society awarded him the Copley medal in 1915. In 1928, when he visited this country for the Harvey tercentenary celebrations, he gave a Croonian Lecture before the Royal Society on certain problems of the physiology of the cerebral hemispheres. In that year the Royal College of Physicians of London elected him an honorary Fellow. His last honour from this country was Foreign Corresponding Membership of the British Medical Association. Seven months ago he attended the International Neurological Congress in London, and gave an address on the types of higher nerve function and their connexion with the neuroses and psychoses. The aged professor, who spoke in rather halting German, had a great ovation, the members standing and applauding, and again when he resumed his seat. A few weeks later he presided over the International Physiological Congress held in Russia, and received again the homage of fellow workers from every civilized country.

#### A Tribute to Pavlov

We are indebted to Professor A. V. HILL, F.R.S., for the following appreciation:

In the obituary notice of Professor Pavlov in the *British Medical Journal* mention will no doubt be made of the International Physiological Congress which was held in Leningrad and Moscow last August under his presidency. It was Pavlov's immense prestige and the deep affection which physiologists, the world over, had for him which made the acceptance of an invitation to the Soviet Union possible. It was Pavlov's prestige and that affection, together with the mixture of playfulness, sternness, impatience, devotion, and simplicity, which formed his character, that made the Congress so successful, and opened up what one hopes is an era of friendly relations between physiologists in Russia and in the rest of the world.

Wherever Pavlov appeared in public—whether in Leningrad, London, Boston, or elsewhere—his romantic and almost legendary figure, and the engaging simplicity and boyish humour of his bearing, were apt to evoke prolonged and enthusiastic applause. He was sometimes rather impatient of this popularity. I sat next to him at several of the plenary sessions of the congress, and when the even course of the proceedings was disturbed by applause the old man would shake his fists repeatedly and mutter hard words until the unnecessary disturbance—as he regarded it—was at an end.

Pavlov was an old man in years, but he did not seem old in mind or in strength, and one of the memorable pictures of the Congress was of Pavlov giving his arm to a colleague, ten years older than himself, who came on the platform to address us. Partly by his age, partly by his repute, partly by his character, he was without peer among the scientists of his country, and he could be as tyrannical at one moment as he could be simple and boyish at another: but he was loved far more than he was feared. His single-hearted devotion to science and the cause of science was that of a religious man—as he was. I had remarked to him that many great Englishmen were the sons of country parsons. He proudly replied that he was the son and the grandson of a priest, and his wife was the daughter of a priest. My obvious comment that he himself was a High Priest drew chuckles of boyish pleasure.



Here is a story about him which is not generally known. About 1912 Pavlov came to Cambridge to get an honorary degree—I forget the exact occasion. The students of physiology at that time knew his name very well in connexion with his work on digestion. They thought they would have to do something to improve the occasion of the degree-giving. They went to a toy-shop and bought a large and life-like dog, which they proceeded to decorate with rubber stoppers, glass tubes, pieces of rubber tubing, and any other physical, chemical, or physiological appliance that they could think of. They took it to the Senate House and suspended it from gallery to gallery by a long string. As Pavlov walked away, having received his degree, they let it down to him on the string. He was highly delighted, took the dog from the string, and carried it away under his arm. Later on that day I was talking to him at a party (I think it was in the Hall of Christ's College), and he repeatedly said how delighted he was at what he thought was the greatest honour that had ever been done him! "Why, even the students know of my work!" That he continued to feel the greatness of the honour was shown by the fact that for many years he kept that dog in his study in Leningrad, as I was told by one of his colleagues more than ten years later.

One of the charming things about Pavlov was his family relationships. In his later years, whenever he went abroad, he was always accompanied by one of his sons. A lawyer son had in recent years devoted himself, I believe exclusively, to acting as his father's secretary and agent. Pavlov himself did not easily speak any language but his own, though he was able to converse, not very readily, in German. This son, however, was an extremely accomplished linguist, and accompanied his father to such meetings as that of the Permanent International Committee of the Physiological Congresses, where conversation might be carried on in at least three languages, and translated for him. I have the most vivid and charming memories of the old man and his son at these meetings, the latter taking part in the conversation in any language and rapidly giving his father in Russian the gist of all that was going on: the old man nodding and smiling and expressing his opinion with his hands and with smiles and nods all the while. The son, alas! died a few months ago from an incurable illness, having taken a very active part last August in the administrative work of the Congress and in helping his father to bear his part so effectively in public functions and in private deliberations. It must have been a very heavy blow to Pavlov, and one did not expect him really very long to survive it: one's fears were justified.

Pavlov loved his country deeply, and he worked for his country. He did not approve of all that was done in Russia, and at one time was notoriously the only man in Russia, outside a small group of politicians, who could say and do what he pleased. His prestige, at home and abroad, secured his immunity from interference. In his later years, one gathered, he became more tolerant of the system which treated him, after all, and his science very well. He realized that the Soviet regime had come to stay, and, as a man who loved his country well, was prepared to do the best that was in him for Russian science and so for Russia.

Few, if any, scientific men can have been so well known, few can have been photographed so often. He never sought for publicity or fame; he seemed to be unaware, or a little impatient of them. His popularity was inevitable—by reason of his name and achievement, and the playfulness of his humour. This popularity may have been exploited sometimes by others for other than scientific purposes, and much that has been written by others about "conditioned reflexes," in the Soviet Union and elsewhere, gives rather the impression of propaganda

than of scientific fact. That was not Pavlov's fault, and he had no part in it. He was a great and simple and completely honest man, and one who was altogether unspoilt, morally and intellectually, either by public adulation or by the reverence of his colleagues.

The portrait on page 507 is from a drawing of which reproductions were given by Professor Pavlov to the delegates attending the fifteenth International Congress of Physiology at Leningrad last August. The snapshot reproduced on page 508 was taken during convalescence after an illness in 1926.

#### J. B. BLAIKIE, M.D.

We regret to announce the death on February 26th, after many weeks' illness, of Dr. James Brunton Blaikie, who had long practised with much success in Brook Street, W. At Edinburgh he was president of the Royal Medical Society. After graduating M.B., C.M. at the University in 1896 he went to Germany for a period of further study at Freiburg and Heidelberg, and took the M.D. degree in 1903. Settling down in general practice in the West End of London, he attended for some years as clinical assistant at the Hospital for Sick Children, Great Ormond Street, the Victoria Hospital for Children in Chelsea, and the Hospital for Skin Diseases at Blackfriars. He was a Fellow of the Royal Society of Medicine, and had been a member of council of the Section for the Study of Disease in Children. For many years Dr. Blaikie served as physician to the Margaret Street Hospital for Consumption, and on retiring from the active staff was elected consulting physician. Notwithstanding the claims of a large practice, he found time to keep abreast with recent advances in medicine and surgery, and in his early days had contributed papers to the *Scottish Medical and Surgical Journal*, the *Edinburgh Medical Journal*, and the *Lancet*. All Blaikie's work was characterized by thoroughness, gentleness, and sobriety of judgement. His professional code was of the very highest, and no trouble was too great on behalf of a patient. In all who came to him for help and advice he inspired complete confidence. He was an accomplished fisherman, and never so happy as when casting a fly on Scottish waters. At the Savile Club he made many friends in the card room and elsewhere.

A correspondent writes: Two boys sat on the back bench of a lecture theatre poring over a map of Shetland and discussing plans for a holiday when their attention should have been otherwise engaged. This was the beginning of a lifelong friendship. Interested, enthusiastic, ambitious, endowed with a remarkably refreshing outlook on life and an unusually attractive personality which gained for him a host of friends, Jim Blaikie combined with these qualities more than a streak of the originality of his uncle, Sir Lauder Brunton, and something of the spirit of romance of his cousin, Andrew Lang. There was nothing outstanding about his undergraduate career, for he had other interests besides his work, but some of those who heard his presidential address to the Royal Medical Society on "Telegony" recognized that he had capacity which might carry him far. At this time his mind was set upon becoming a hospital physician and a research worker, and he had both the gifts and the personal qualifications, to a quite exceptional degree, which would have made for success in consulting practice. But the fates decreed it otherwise, for his uncle, looking back no doubt upon the unusually long period of waiting he had had before he made a competence, persuaded him that it was his duty to give up his ideal and commence practice in Mayfair, since this appeared to offer prospects of earlier material reward. It must have been a wrench to Jim to abandon his cherished ambitions, but never a word of regret passed his lips. As was only to be expected, he succeeded to the full. He thoroughly enjoyed his life in London and his work, but his heart was in the country. In fishing