

The search for Samojloff: a Russian physiologist in times of change

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The names of Russian physicians do not often spring to mind when recalling the advances of the past century, though a quick glance discloses many contributions, including those of Anitschkow in the pathogenesis of arteriosclerosis, Korotkoff in the measurement of blood pressure, and Elie Metchnikoff, the bacteriologist. Few, however, realise that James Herrick's diagnosis of coronary occlusion in the living patient¹ had been anticipated by two years by two physicians from Kiev, Obrastzow and Straschesko. Their original description in *Russki Vrach* was republished almost simultaneously in German and was cited by Herrick.²

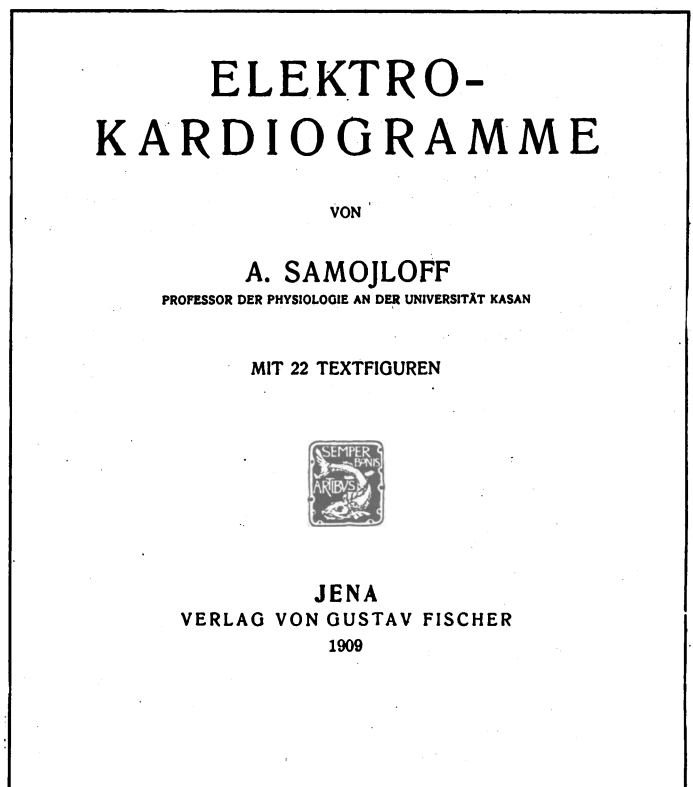
Even before this, however, a Russian physiologist, Alexander Filipovich Samojloff, had written the first book on electrocardiography, which should have been easily accessible to Western physicians because it was written in German and had been issued by a leading German publisher.³ The book is not, however, listed in two important English bibliographies,^{4,5} though it and several other publications by Samojloff were cited by Western contemporaries, and his contributions are proudly acknowledged in the Soviet Union. Who was Samojloff and what was his role in Russian and indeed international physiology?

Chance encounter

In 1957 Sir John Parkinson visited Cape Town and was the guest of honour at the medical staff round at the Groote Schuur Hospital, where I was senior registrar to the late Velva Schrire, the cardiologist. "Find a case of the Wolff-Parkinson-White syndrome, read it up, and for God's sake quote the original paper when you present it." All this I did and had the privilege of escorting Parkinson out after the round. His sigh was polite but very audible as he told me that wherever he went in the world the syndrome was all that he was ever shown. He *did* have some other interests in cardiology.

The need to consult the classic paper, of which Parkinson was coauthor, did have a happy byproduct.⁶ Close to it in the bound volume of the *American Heart Journal* for 1930 was a memoir of Einthoven by Samojloff, which remained dormant in my mind for many years, though always an intriguing diversion whenever I needed to consult the Wolff-Parkinson-White paper.⁷ This may have been the only English language article by Samojloff and was the text of a lecture that he had given, at the invitation of Paul Dudley White, at the Massachusetts General Hospital in 1929. Later, Eugene Lipeschkin, who had known him during his own childhood in Russia, published a memoir about Samojloff and Frank Wilson, the American electrocardiographer.⁸ But it was only six years ago, when I was lucky enough to spot Samojloff's book in an antiquarian catalogue and was able to buy it, that I started my search for Samojloff.

Samojloff was born in Odessa on 26 March 1867 to an impoverished family. His father died young, but the family presumably came of educated, middle class stock. He was brought up by his mother and attended a gymnasium, as did his brother, who became a mineralogist and later specialised in crystallography. While at the gymnasium Samojloff developed a lifelong interest in music, Beethoven being his initial and indeed constant favourite. Having completed his schooling at the age of 16 he entered university at Odessa in 1884 to read mathematics, physics, chemistry, and German. As there was no medical faculty he transferred to Dorpat (now Tartu) in Estonia, where the language of instruction was German, in which he became completely fluent. Though not



Title page of Samojloff's monograph.

politically active in later life, he seems to have belonged to a liberal student group. As an undergraduate he was able to participate in research in animal physiology and in the pharmacological laboratories. Soon after he graduated in medicine in 1891 Samojloff was sent to Tobolsk to help fight an epidemic of cholera. His work attracted the public commendation of Metchnikoff at a congress in Budapest two years later.

Postgraduate training in St Petersburg and Moscow

After his experience in Tobolsk Samojloff decided to concentrate on the laboratory and theoretical aspects of medicine and spent a crucial year with Pavlov in St Petersburg in 1893. At this stage Pavlov had worked extensively on cardiovascular physiology, which became Samojloff's main interest, and was embarking on the studies of gastrointestinal physiology that would soon bring him great fame. Samojloff and he were to enjoy a lifelong friendship. In 1894 he moved to Moscow, where he worked in the laboratory of Professor I Sechenoff, initially studying electrophysiology with Morohovetz. That he had been aware of this subject for long is suggested by his recollection at a medical congress in 1930 of how fascinated he had been just after he had finished school to hear N E Vedenski describe at a medical congress in Odessa the transmission of physiological signals by telephone.

While working in Moscow Samojloff extended his musical interests and founded a medicoscientific musical society.

whose members included Sergei Rachmaninoff and Alexander Gretchaninoff; he was president of the society in 1901. By this time he had married and become the father of twin sons.

In 1903 Samojloff accepted a call by the University of Kazan to become professor of zoology, comparative anatomy, and physiology, though he seems soon to have been able to concentrate on the latter. The laboratories were bare and he had to equip them. With his training in electrophysiology he was much intrigued by Einthoven's description of his electrocardiograph⁹ and arranged to visit him in Leiden before they attended an international physiological congress in Brussels in 1904. This was the start of a friendship that endured until Einthoven's death in 1927; except during the years encompassing the first world war and the Russian revolutions and civil war Samojloff was a frequent visitor to Leiden.

Immediately on his return to Kazan from his first visit to Einthoven's laboratory Samojloff commissioned an electrocardiograph, which was made for him by one of the technicians there. He made some improvements to the controls and reported several original findings, some of which appear in his small monograph.³ In 1908 he bought a factory built instrument from the Cambridge Scientific Instrument Company, the sixth that it had made.¹⁰ In an important observation Samojloff used the electrocardiograph to confirm the Gaskell effect in which the current of injury is increased by vagal stimulation¹¹; these studies, carried out near the start of the first world war, could be published in the West only after the turmoil of the Russian civil war had subsided.

Although his book remains unlisted,⁴ it was well known to Sir Thomas Lewis, who cited nine works by Samojloff, published between 1907 and 1923, in his definitive text.¹² Once again the gap caused by war and civil strife is striking. Though Samojloff's book was slim (37 pages with 22 figures), he cites Waller and Einthoven, three British physiologists (Bayliss, Starling, and Gotch), and the key German electrocardiographers, Kraus and Nicolai, who were soon to make their mark.¹³

Harmony and revolution

In Kazan Samojloff remained a keen musician and musicologist. He formed an amateur trio with himself as pianist, the professor of dermatology as cellist, and a practising physician as violinist. They were able to cover the range of trios quite extensively each winter. Samojloff studied the history of Russian church choir musical notation and wrote a book on the "acoustic peculiarities" of Scriabin's harmony.

Each summer the Samojloffs spent their vacation at their dacha at Morvarki, about 15 miles south west of Kazan, where Wladimir Wasiljevich Lepeschkin, the professor of plant physiology, and Dr Bolduzeff, a neurologist, also had their country homes. Lepeschkin's son, Eugene, who himself became a renowned electrocardiographer, was 4½ years old during the last of these vacations in 1918 during the civil war. He remembers the Czech legion, made up of liberated prisoners of war, passing through Kazan on their way home to their country, newly recreated out of the Austro-Hungarian empire. They were leaving Russia on the Trans-Siberian railway, embarking at Vladivostok. There had been peasant uprisings near Kazan in 1917 and the area was soon to come under Bolshevik rule during the ensuing civil war. The old régime was passing and several residents, including Samojloff's sons, Alexander and Leva (Leon), joined the Czechs on their tortuous journey to the West. Samojloff was invited to join them but declined; an important reason was his desire to look after his string galvanometer,⁸ though it would have been difficult for him and his wife to have tagged along with a fighting unit.

Despite the severe famine of 1921, when Professor Lepeschkin and his family were able to move to the relatively less severe discomfort of Minsk (from where they were able to emigrate), Samojloff stayed on. Conditions gradually improved with the introduction by Lenin of the New Economic Policy, and Samojloff was able to undertake some electrocardiographic teaching in Moscow and once again to publish abroad. He could travel to the West most years and resumed his regular contacts with Einthoven.

Happily, he could also visit his sons in the United States, where both had settled. After a spell at a Stanislavsky style school of drama in New York, where his future wife, an American, was a fellow student, Alexander switched careers and became an engineer. He died in 1977. Leon is still alive and has retired to Puerto Rico. Their last meeting with their father was in 1929 during his visit to Boston.⁷



Photograph of Samojloff, undated, probably 1928-30. (Courtesy of USSR Cardiology Research Centre.)

Resumption of links with Einthoven

Einthoven once again became a central figure in Samojloff's life. They had disagreed over Samojloff's studies on the Gaskell effect, but Einthoven conceded the honours after seeing Samojloff's war delayed report.^{8,11} Then Samojloff, recalling that 20 years had elapsed since Einthoven had described his instrument, wrote to him on 30 March 1923, begging him to read the letter "to the honourable String Galvanometer, since it can write well (to be sure, sometimes not very distinctly and often too copiously) but cannot read." Then followed a pleasant eulogy to Einthoven, reminding him, however, that all strings were temperamental, as would be well known to Einthoven's daughter, a violinist, and to Samojloff himself, a pianist. Einthoven responded in the same vein, on 10 April, advocating the use of American strings because they were more reliable, and giving the galvanometer's answer: "But as I continued reading your letter the Galvanometer suddenly became furious. 'What, I can't read? This is a terrible lie! Do I not read the most intimate secrets of the human heart?' I was able to calm the galvanometer."⁸ Samojloff and Einthoven seem to have enjoyed their joke sufficiently to repeat the correspondence for another birthday.⁷

In 1927 Samojloff visited Leiden for the last time. Though Einthoven seemed well and was cheerful, he suddenly turned serious as he said goodbye to his friend at the station: "Perhaps we may never meet again." Indeed, he died within months.⁸

In this latter part of his life Samojloff was also able to resume his friendship with Walter Cannon and John Fulton, the American physiologists. He also wrote historical memoirs about two European

physiologists: T W Engelmann, of Berlin, whose key work on extrasystoles had been carried out in Utrecht during the last decade of the nineteenth century, and his own mentor, Ivan Petrovich Pavlov. At the celebrations for Pavlov's 75th birthday Samojloff gave the principal address.

In 1930 Samojloff received the Lenin prize; he died three months later on 18 June at the relatively early age of 63.

Samojloff was much influenced by Walter Gaskell, the Cambridge physiologist, who had localised the origin of the cardiac impulse to the sinus region and who defined the autonomic nervous system. Samojloff's corroboration of Gaskell's work on the influence of the vagus on the current of injury has already been noted.¹¹ In 1910 he became friendly with Keith Lucas, also of Cambridge, who was a disciple of Sherrington, and took a keen interest in his work on the excitation of nerves and the contraction of muscles in response to electric stimuli. They corresponded regularly until Lucas's tragic death in a flying accident in 1916. Lucas had been testing an improved compass to aid aircraft steering that had been devised by Sir Horace Darwin of the Cambridge Scientific Instrument Company. Other key influences on Samojloff's work on reflexes were Sir Charles Sherrington and Sherrington's Dutch pupil, Rudolf Magnus.

Visit to England

I obtained much of the biographical material from papers kindly provided by the USSR Cardiology Research Centre, and the selection of papers by and about Samojloff included his portrait. With this was another photograph that immediately caught the eye (below). From the Cyrillic legend, and by comparison with the portrait, there was no doubt that Samojloff was the person second from the right—but who was his companion? The Cyrillic text was not too difficult to decipher: I P Pavlov. From the background you could see that the distinguished Russian physiologists had been photographed while walking past Buckingham Palace, and from the legend that it had been in 1928. What could have brought them to England that year? A search of the archives of the Physiological Society yielded the answer, though the identity of their companions remains unknown.



И. П. Павлов и А. Ф. Самойлов в Лондоне в дни Гарвеевских торжеств (1928 г.)

Photograph of Samojloff (second from right) and Pavlov (extreme right) in front of Buckingham Palace, 1928, with Russian legend. (Courtesy of USSR Cardiology Research Centre.)

On 19 May 1928 the society held a luncheon in the hall of Downing College, Cambridge, to commemorate the tercentenary of the publication of William Harvey's *Excitatio Anatomica de Motu Cordis et Sanguinis*. From the signatures of those present, preserved in the minute book of the society, it can be seen that they included Samojloff and Pavlov. The latter was accompanied by his son, Vladimir Ivanovich, but I cannot ascertain whether he is one of the others in the photograph outside Buckingham Palace.

A. V. Hill.	London
William H. Welch	Baltimore
A. Samoilov	Kasan Russia.
O. Loewi	Graz

Signatures of A V Hill, W H Welch, A Samoilov (sic), and Otto Loewi, Physiological Society luncheon register, Downing College Hall, Cambridge, 19 May 1928. (Courtesy of the Physiological Society.)

C. S. Sherrington	Oxford
I. P. Pavlov	Petrograd
K. F. Wenckebach	Vienna
Prof. Syllaba	Prague
H. H. Dale	London

Signatures of C S Sherrington, I P Pavlov, K F Wenckebach, Syllaba, and H H Dale, Downing College luncheon. (Courtesy of the Physiological Society.)

The names on the register read like a roll call of the most renowned physiologists and biological scientists of the day. Samojloff signed in with A V Hill, already a Nobel prizewinner, as well as the future laureate, Otto Loewi. Pavlov signed with the future prizewinners Sherrington and Dale, the latter receiving the award in 1936 with Loewi. Among these, Pavlov was the senior laureate, having been one of the early prizewinners, in 1904. Of particular interest to electrocardiographers is the name of Wenckebach; Einthoven's compatriot was at the height of his fame and the leading physician in Vienna.

The previous year, on the death of Einthoven, Pavlov had been made an honorary member of the Physiological Society in his place. He had written from Leningrad to congratulate "hotly and respectfully" the society on its fiftieth birthday,¹⁴ but now he gave the previous designation, Petrograd. Perhaps this was because Pavlov was a Russian traditionalist who refused to come to terms with the new régime, but in any case this confusion is understandable: the city had been St Petersburg until the outbreak of the first world war, then Petrograd, and Leningrad only since 1926. Samojloff gave his home as "Kasan, Russia," but when he delivered his memoir on Einthoven he used USSR, the abbreviation of the name adopted in 1922.⁷

The different uses of place names and spellings of personal names in English are interesting indications of political and linguistic transitions. The Cyrillic ending "ов" was rendered differently for themselves by Samojloff and Pavlov, though the former signed himself Samoilov at the Cambridge luncheon. It had been almost the rule to use the French transliteration until the end of the first decade of the present century, but with time Turgenieff, for

example, has become Turgenev. In writing about him now, in English, Russian cardiologists use Samoïlov. Like other Russians attached to the classic transliterations of their names, however, Samojloff's sons retained it thus in their new home with minor simplification to Samoïloff. Obrastzow, the old German transliteration, has become Obrastsov²; and from the spelling of his name we can deduce Slavic ancestry for Rudolf Virchow. Doubtless because they had settled in Germany, Eugene Lepeschkin continues to refer to his father, both in papers⁸ and in correspondence, by the Germanised form of his Christian name and patronymic (see above).

Broken bonds and new hopes

This search for Samojloff has touched many aspects of cardiology, physiology, history, the use of language, and political upheaval. Intellectual and physical barriers have helped hide awareness of important contributors to many subjects, here exemplified by a highly civilised Russian physiologist, at home wherever he found himself in Europe and the United States. After Samojloff's death Pavlov was able to maintain links outside the USSR, despite his continued opposition to the Soviet government. By the time he died in 1936 Stalin's control had long become complete. In retrospect the detention of Peter Kapitza in Russia in 1934 was a watershed. Kapitza had been able to retain his Soviet citizenship and the ability to enter and leave his homeland freely since he had gone to Cambridge in 1921 to work with Lord Rutherford at the Cavendish Laboratory.¹⁵ In October 1934 he was prevented from returning to Cambridge and was forced to remain in the USSR; it was 30 years before he was allowed to visit the West and 32 before he could visit Cambridge again. The prohibition on Kapitza was probably the recognisable start of the intellectual cold war that we all deplore and the end of which would surely gladden the spirit of Alexander Filipovich Samojloff.

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Washington, DC) kindly translated documents from the Russian. Sir Isaiah Berlin (All Souls College, Oxford) was most helpful in explaining changes in the transliteration of Russian names and in discussion of the period and the circumstances under which the Russian intelligentsia lived. Mr Donald Steven, honorary archivist to the Physiological Society, and Mrs Hilary Keynes, his archival assistant (Churchill College, Cambridge), provided the material about the visit of Pavlov and Samojloff to England in 1928. I am grateful to them for this help and to Professor Tony Angel (honorary secretary, the Physiological Society) for permission to reproduce material from the society's archives.

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