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# Kellogg and Pavlov: Portrait of a Friendship

by T. Joe Willey

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The Pavlov Physiological Institute of the Battle Creek Sanitarium, founded by Dr. John Harvey Kellogg in 1922, attracted a number of eminent scientists, not the least of whom was Pavlov himself. The institute was named for the recipient of the first Nobel Prize in medicine, Russian physiologist Ivan P. Pavlov, a man that Kellogg greatly admired. Drs. Banning and Best, winners of the Nobel Prize (1923) for the isolation of insulin from the pancreas, had earlier addressed the sanitarium medical staff on their preliminary findings in the treatment of diabetes mellitus. The most immediate presence felt at the institute was that of Dr. William Nicholas Boldyreff, Pavlov's former first assistant in Russia and later the director of Kellogg's Battle Creek Institute.

Kellogg was one of the first in America to call attention to Professor Pavlov's research. In 1904, the year that Pavlov received his Nobel Prize and less than two years after his book on digestion was translated into English, Kellogg reviewed the discoveries of the acclaimed scientist.<sup>1</sup> It is clear that Kellogg recognized the importance of Pavlov's findings on digestion to medicine, particularly in the realm of therapeutic applications for

individuals with weak or absent stomach secretions. Kellogg felt that the body of Pavlov's research established the diatetic and physiological foundations for the treatment of gastric disorders.

In illuminating the psychic effects on gastric secretions by demonstrating that the vagus nerve from the brain controls digestion, and publishing "Lectures on the Work of the Digestive Glands,"<sup>2</sup> Pavlov reinforced what would become his standing as the founder of modern gastroenterology.

Kellogg dreamed of organizing a modern laboratory devoted to scientific studies in digestion. Pavlov's research and surgical techniques had so aroused Kellogg's interest that he made a point of visiting Pavlov's St. Petersburg laboratory. Kellogg wanted to see Pavlov's famous "window dogs" and his revolutionary digestive experiments. Pavlov had developed the surgical skill to present one or more digestive organs through the body wall, thereby allowing observation of secretions and digestive processes. Kellogg gave the following explanation for this visit:

The fundamental reason for my first visit to St. Petersburg was to obtain a first-hand acquaintance with the important facts that Pavlov's methods of research had revealed, and up-to-date information. In organizing and developing the Battle Creek Sanitarium, the constant aim has been to make physiologic facts and principles the basis of every method employed. It was quite impossible to correlate the older

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ideas in relation to digestion, with clinical findings and there was, indeed, a most chaotic condition in the gastro-enterology of that period. Pavlov's discoveries fitted perfectly into physiotherapeutic philosophy, and supplied new and substantial support for the rational dietary system.<sup>3</sup>

By the time Kellogg made his 1907 trip to Russia, though, Pavlov had shifted the focus of his laboratory from digestion to conditioned reflex research. This is the research most people today think of when they hear the name Pavlov. Pavlov's preoccupation with conditioned reflexes was probably a disappointment to Kellogg as Kellogg was more interested in digestion than speculations about cerebral activities. On the boat returning home Kellogg wrote to Pavlov encouraging him to visit America.

American physiologists and physicians appreciate more and more the tremendous importance of your research which establishes basic principles of digestion and its processes. The whole world is making use of the results of your surprising new findings. I hope that some day you will come to America. The whole scientific world of the United States will be excited to have the possibility of showing you its respect. No other physiologist is spoken of so much as Professor Pavlov.<sup>4</sup>

**A**s Kellogg pursued his career, performing an estimated 22,000 surgeries, he became well known for success in abdominal surgery. Later Kellogg would attribute his success as a surgeon in part to the inspiration of Pavlov. But Kellogg's ideas of digestion were even more profoundly influenced by Pavlov. Always ready to link himself with eminent researchers, Kellogg, "a born reformer and propagandist",<sup>5</sup> reminded his readers of his own research in the area of stomach function relation to the contraindication of meat diet for gastric dysfunction:

For more than twenty-five years I have been laboring and experimenting in this same direction, and I have been interested to no small degree in the observations made and conclusions reached by Professor Pawlow (sic), and it has been especially satisfactory to me to find all Pawlow's conclusions in the main in harmony with those to which I have been led by clinical observation and by a number of experimental observations which I have been able to make in the laboratory of hygiene of the American Medical Missionary College.<sup>6</sup>

Kellogg's health reform writings relating to

Pavlov's and other researches illustrates one of his techniques for promoting "biologic living." Kellogg freely mixed noted scientific observations to marshal a scientific basis for his own empirical ideas.

Kellogg's admiration of Pavlov and concern for involving established scientists in his work at Battle Creek Sanitarium led him to invite Pavlov's associate, Dr. William Boldyreff, to head up a new laboratory. In 1922, the permanent secretary of the National Research Council, Washington, D.C., made an urgent appeal to American scientists concerning Professor Boldyreff who was in America "without a position and in real distress." He stated that Boldyreff, recipient of Russian and German prizes and honors for his scientific work, and author of about 150 scientific papers, mostly on the physiology of digestion, had been chief assistant to the famous Russian physiologist Pavlov.<sup>7</sup> After learning about Boldyreff's situation, Kellogg attracted Boldyreff to Battle Creek, noting that Boldyreff's qualifications were just the type needed to organize the

laboratory in which the work of Pavlov, especially in relation to the digestive functions, might be continued and in certain lines extended. It was thus with much satisfaction that we were able to introduce Professor Pavlov, on the occasion of his visit here in 1923, to his old assistant and a laboratory in which his ingenious and most fruitful methods of research were being made use of.<sup>8</sup>

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Kellogg in his enthusiasm to promote "biologic living" concepts, occasionally used the results of Boldyreff's research to promote his own ideas. Although Boldyreff did not always agree with Kellogg's use of research information, he remained gracious and found ways to conduct his experiments

without compromising his rigorous scientific standards. Boldyreff was determined to maintain his reputation for careful, methodical research.

On the occasion of Pavlov's first American tour in 1923, he spent a week as the guest of Kellogg and Boldyreff. During this week he gave an address entitled "New Researches on Conditioned Reflexes" and granted his permission for the use of his name for the new research facility, The Pavlov Physiological Institute. Pavlov offered advice for the direction of the institute's scientific work and encouraged the staff to pursue his own contemporary interests in conditioned reflexes. In his address to the medical staff, Pavlov optimistically predicted that

in this laboratory in the near future, rich results in relation to the condition reflex will be obtained; and I believe that these results may be used for the purposes of healing the patients who come here to find the normal way of life. They might find some new ways in these results. That is what I wish to see.<sup>9</sup>

The Russian emigré Boldyreff was the first and last director of the Pavlov Physiological Institute of Battle Creek Sanitarium. At the time of Pavlov's visit, Boldyreff stated that the "laboratory is the finest of its kind in the world."<sup>10</sup> Research at the institute was directed mainly to problems of digestion, conducted on dogs prepared by surgical procedures introduced by Pavlov and further developed by Boldyreff.<sup>11</sup> In addition to work on the influence of x-rays on digestive organs and the problems of sugar metabolism and diabetes, the institute worked in collaboration with the Rocke-

feller Institute, supplying experimental intestinal secretions to researchers in the biochemistry department. According to progress reports from the Pavlov Institute, about 50 research papers were published during the period from 1923 to 1929, mostly the work of Boldyreff, his sons, and Drs. Kellogg, Case, and Charles Stewart. Members of the institute gave lectures and demonstrations at Battle Creek College and participated in various national and international scientific meetings and congresses.<sup>12</sup>

Throughout his career, Kellogg saw the value of arranging seminars and visiting scientists to stimulate the intellectual life of the sanitarium. In 1904, Kellogg was one of the first in America to note the importance of Pavlov's work. By 1935 the Fifteenth International Physiological Congress referred to Pavlov as "facile princeps physiologorum mundi"—Prince of the Physiologists of the World. Throughout these years Kellogg and Pavlov remained cordial. Kellogg, who as one of Adventists' main health reformers wrote nearly 50 books and many health hygiene articles,<sup>13</sup> felt that Pavlov's "window dogs" were the greatest single landmark in modern nutritional science.<sup>14</sup> The Pavlov Physiological Institute of Battle Creek Sanitarium, which continued until Boldyreff's retirement in 1941, was Kellogg's monument to the founder of modern gastroenterology.

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#### NOTES AND REFERENCES

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1. J. H. Kellogg, 1904. "The Bearing of Pawlov's Researches Upon Gastro Therapeutics". *Modern Medicine*. Battle Creek, Mich. 13:25-35. Kellogg claims that Professor J.C. Hemmeter (1863-1931) (Professor of Medicine, University of Maryland School of Medicine) was the first in America to call attention to Pavlov's remarkable experiments. Hemmeter pioneered the use of x-rays to study the human stomach (1896). *The National Cyclopaedia of American Biography*. Vol 30, p. 230. Hemmeter was

one of the contributors of the festschrift to Pavlov published by Kellogg. *The Bulletin of the Battle Creek Sanitarium and Hospital Clinic*. 1929. Vol. 24.

A footnote in R. W. Schwarz, 1964. "John Harvey Kellogg: American Health Reformer". Ph.D. Diss., *The University of Michigan, Ann Arbor, Mich.* p. 150, gives considerable weight to Kellogg as playing a leading role in making America aware of Pavlov's research in digestion. This statement is probably true for the non-scientific community.

2. Originally published in Russian in 1897, translated into English by W.H. Thompson, 1902. The Russian volume is extremely rare.

3. J. H. Kellogg, "A Visit to Pavlov's Laboratory". *The Bulletin of the Battle Creek Sanitarium and Hospital Clinic*, 1929. p. 209.

4. Letter to Pavlov from Kellogg, May 21, 1907. Archives of the Academy of Science, U.S.S.R. My thanks to Professor Ney who translated the original letter in Russian and several others used in this research.

5. R. W. Schwarz, Ph.D. Diss. University of Michigan. p. 149. G. Carson. "Cornflake Crusade". (Rinehart and Co.: New York, N.Y.), 1964. p. 97.

6. Kellogg's most extensive review of Pavlov's research on digestion appears in his book, "The New Dietetics". *The Modern Medicine Publ. Co.*, Battle Creek, Mich. 1927. Will Durant refers to Kellogg's book "New Dietetics" as "a splendid guide" in *The Mansions of Philosophy*. Simon and Schuster, Inc. New York. 1929. p. 272. The spelling "Pawlow" was the same that appeared on the Nobel Prize Diploma (1904) and bogus obituary in the *JAMA*, March 11, 1916. Early translations of Pavlov's name rendered the Russian B into w, v, or ff.

7. *Science*. Oct. 1922, p. 481. Vernon Lyman Kellogg was a prolific writer and versatile scientist. He had a common heritage with John Harvey through a five generations back descendent, Joseph Kellogg, who came from England and settled in Farmington, Conn. in 1651. Vernon Kellogg was a popular zoology teacher at Stanford University (1894-1920). He joined Herbert Hoover's relief staff in Belgium and Northern France during WW 1, and was active in the formation of the National Research Council. *The National Cyclopaedia of American Biography*. Vol. 28, p. 354. Boldyreff's story about the family fleeing Russia is described in "Battle Creek Scientist's Work Wins Recognition". *The Battle Creek Moon-Journal*. Jan. 8, 1930.

8. J. H. Kellogg. "A Visit to Pavlov's Laboratory". *The Bulletin of the Battle Creek Sanitarium and Hospital Clinic*, 1929. p. 209.

9. *Science*. Nov. 9, 1923. *The Bulletin of the Battle Creek Sanitarium and Hospital Clinic*. Dec. 1923. p. 4. Apparently, Kellogg was not convinced about the value of conditioned reflexes as a modality of therapy at the Sanitarium.

10. "Great Russian Scientist Here". *The Battle Creek Moon-Journal*. July 7, 1923. Boldyreff was an

acquaintance of Czar Nicholas in the Imperial Russian court. During the chaotic period of the revolution he fled to Japan and thence to America.

11. In a letter dated March 22, 1924 addressed to Professor Boldyreff at Battle Creek, Pavlov explained that he had already agreed to have his most recent book published with the assistance of Professor Carlson at the University of Chicago. But he said; "Thank you and Dr. J.H. Kellogg very much for the readiness to publish my book on conditioned reflexes, but I cannot break my word. As I have written, I have given my consent for the publication to Dr. Carlson in Chicago and let it be so. Probably, soon I will write a new special book on conditioned reflexes—and then I will let Dr. J.H. Kellogg publish it. This book will be more interesting and more important than the present one." Letter in Michigan Historical Collection. Bentley Historical Library. Univ. Mich., Ann Arbor. Mich. Unfortunately, Pavlov did not write another book.

12. Boldyreff attended the 12th International Physiological Congress (IPC) in Stockholm in 1926. He gave a report on the research of the Pavlov Physiological Institute. He also attended a Congress in Paris. In 1929 he attended the 13th IPC in Boston and the 9th International Congress of Psychology at New Haven, Conn. He presented papers at all three of these congresses. Former colleagues of Pavlov met with him at these meetings.

13. John Harvey Kellogg Obituary, *JAMA*. Dec. 25, 1943. p. 1132. R. W. Schwartz, 1964. *Ibid*. p. 115. H. B. Powell, 1956. "The Original has this Signature -W. K. Kellogg." (Prentice-Hall, Inc.: Englewood Cliff, N.J.) p. 60.

14. Laboratories patterned after Pavlov's in Russia were constructed in Berlin, Dresden, Stockholm, London, Edinburgh, Kyoto and Tokyo and elsewhere in America. By this time, fustula operations had been performed on a wide variety of animals from horses to pigeons. Boldyreff demonstrated the surgical techniques involved in constructing the Pavlovian pouch to over 50 European, Japanese and American physiologists. Boldyreff, W.N. 1925. "Surgical Methods in the Physiology of Digestion. Description of the Most Important Operations on the Digestive System". *The Bulletin of the Battle Creek Sanitarium and Hospital Clinic*. Vol. 20:206. There were large pictures of Kellogg and Pavlov framed and hanging side-by-side on the walls of the Battle Creek Institute.