

HAFFKINE INSTITUTE 1899-1974



PLATINUM JUBILEE COMMEMORATION VOLUME

EDYTHE LUTZKER



Mrs. Edythe Lutzker, M.A., F.R.S.M., is a zealous American biographer. She says 'I have combed five continents for material'. With the treasure of information recorded in micro-film and photostats of documents in her possession, she is writing the biography of Dr. Waldemar M. Haffkine

Waldemar Mordecai Haffkine, C.I.E.

Waldemar M. Haffkine (1860–1930), was born of Jewish parents on March 15, 1860, in Odessa, Russia, the third of six children. His mother, Rosalle Landsberg, died at the age of forty, a month before Waldemar's seventh birthday. His father, Aaron Wolfe Khavkin (the Russian form of the surname) was frequently absent from home on business for his employer, Baron Joseph Gunzburg. Haffkine was devoted to his mother and her death and his father's uncertain and infrequent periods at home made him feel lonely and forsaken. His maternal grandfather supervised his religious education until he was able to enter the Gymnasium in Berdiansk where he acquired a passion for books, an interest in science and physical fitness, and achieved the highest grades. His aim was higher education at the University of Odessa, which he hoped to attain despite his family's limited financial means. He was admitted to the University in 1879 and the small sums he earned as a tutor, along with a very small subvention from an older half-brother, helped to pay the cost. He soon became a top-level student graduating from the Faculty of Natural Science and Mathematics in 1884 with a Doctor of Science degree.

Haffkine studied zoology under Professor Elie Metchnikoff, later a Nobel Laureate, who became his friend, and imbued him with the desire to devote his

life to science. A post as teacher at the University was offered to him if he would convert to the Russian Orthodox Church, but he refused. He was appointed, instead, an assistant in the Odessa Zoology Museum, where he remained until 1888. Two articles he wrote during those years were published in the *Annales des Sciences Naturelle* of the Institut Pasteur in Paris. He became a member of the Society of Naturalists of Odessa in 1885. Increasingly, his interest turned to bacteriology, newest of the emerging sciences in the last two decades of the nineteenth century. His duties at the Zoology Museum soon began to bore him and he sought other means of satisfying his desire for work that would be more meaningful to him. He applied for a teaching post at the University of Geneva under Professor Moritz Schiff, but after a year he realized that this position would not fulfil his hopes for doing scientific research.

Elie Metchnikoff, upon Louis Pasteur's invitation, was in Paris at the Institut Pasteur in 1889 and offered Haffkine the only job then vacant—that of librarian at the Institute which he eagerly accepted. The sudden departure in 1890 of Director Emile Roux's assistant rendered that position available to Haffkine. The entire course of his life was changed thereby.

He was then able to enter the mainstream of research in preventive medicine, at a time when an entirely new dimension had been added to medicine by Pasteur's search for the causes, treatment and prevention of infectious diseases.

Recurrent outbreaks of cholera had spurred Robert Koch in 1883 to concentrate on demonstrating the causal relation between cholera *vibrio*, which he had isolated, and cholera. Haffkine, too, felt the urgency of dealing with this dread disease which in 1888 and 1889 had flared up again in Russia and had reached the Paris suburbs, and on which Metchnikoff was already at work.

Racing against time to complete experiments on animals with a highly effective anti-cholera vaccine which he had created, Haffkine, concentrating on immunization, was able to report his success with animals to the Biological Society in Paris in early July, 1892. The next step was to prove that the vaccine was harmless to humans. Injecting himself with a dose four times larger than that later used, he carefully noted his reactions and concluded that his vaccine was as harmless to humans as it had proven to be to animals. At the end of July, 1892, he again reported to the Biological Society, describing his reactions in detail and stressing the vaccine's harmlessness to humans.

Congratulations from Pasteur, Roux and Robert Koch, followed. Medical journals and newspapers around the world hailed Haffkine's achievement—the very first effective anti-cholera vaccine, harmless to humans.

But for Haffkine this was not conclusive. He felt it was essential to seek a testing ground on humans under epidemic conditions, and decided on Siam. But when Lord Dufferin, British Ambassador to France, and formerly Britain's Viceroy in India, learned about Haffkine's choice of Siam, he persuaded Haffkine to go instead to India where cholera was raging.

Haffkine arrived in Calcutta in March 1893 and began to work at once among people totally strange to him, divided among themselves by caste, religious taboos and prejudices that had existed for centuries. Cholera broke out in one small village after another. Haffkine, two Indian doctors, a few laboratory workers and two horse-drawn carriages containing inoculation equipment, followed the trail of the disease for the next two years. He worked without pay. He developed a method of keeping detailed records showing the name, age, weight, caste, sex, religion of all who volunteered to be inoculated in each village. By the end of two years almost 25,000 people had come forward, most of them twice. He could not yet evaluate the degree of immunity or how long it was effective, but the death rate had been reduced by 70 per cent.

His itinerant group did not meet with a cordial reception from the villagers, despite explanations by the Indian doctors. In one village, someone in the crowd threw stones that hit the glass equipment and the loud crashes almost caused a panic. At that moment Haffkine removed his shirt, exposed his right side and turned to one doctor, who quickly plunged the hypodermic into Haffkine's flesh. The crowd's curiosity was aroused and they calmly watched each doctor inoculate the other. Of the 200 peasants assembled, 116 volunteered for inoculation; not one of these persons died, while nine of those not inoculated died later.

In 1895 he contracted malaria and left for England to regain his health but asked for permission to return, stating that problems still called for solution, namely the relation between the degree of immunity and the dosage; how long the immunity would last; the relation between dosage, physique, age, sex; the difference in response between Indians and Europeans.

He returned to Calcutta in March 1896. Six months later, rumours of deaths from bubonic plague in Bombay reached Calcutta, along with the usual newspaper denials, calling the illness 'fevers' wrongly diagnosed as plague. But as the death toll mounted and people began to flee from the city, the imperial British Government reassigned Haffkine to Bombay.

Arriving in Bombay on October 7, 1896, he at once improvised a one-room laboratory in the corridor alongside the Framji Dinshaw Petit Laboratory of

Grant Medical College, with a staff of one clerk and three servants. By December, experiments on laboratory animals with his anti-plague vaccine convinced him that he had found a way to prevent the disease from spreading. But the effect of his treatment on humans was still unknown.

On January 10, 1897, a doctor agreed to inoculate him secretly with the Principal of Grant Medical College as witness. Again the dose was four times larger than that later used. In a few hours high fever and pain at the seat of the injection developed. But he remained at work and attended an important meeting with the Director of the Indian Medical Service, no one present being aware of the inoculation he had undergone.

Next morning he lectured to staff, faculty and students of Grant Medical College, described his symptoms in detail, admitted the pain, and appealed for volunteers to be inoculated, stating that the inoculation was not dangerous. Hundreds of those present, Europeans and Indians, responded.

Haffkine proposed that Government assign medical officers from epidemic areas to learn how to prepare the vaccine in special laboratories; he added that a sufficient supply should be kept on hand so that the vaccine could be sent to authorized medical officers, which would enable the Government to provide service in the stricken areas. This procedure would not only encourage local co-operation but would also emphasize Government approval. This was not done.

He urged inoculation of troops, prisoners and coolies employed on railroads, tea plantations and in coal mines. He suggested that circulars explaining inoculation and including successes achieved against cholera be widely distributed to increase public knowledge. This too was not done.

When he learned of the high death rate from cholera and plague in Russia, he offered his vaccines free to the Czarist Government, adding that he would volunteer to train doctors to diagnose cholera and plague, and teach them proper inoculation methods. His offers were rejected.

Germany, China, France and even Russia sent their scientists to Haffkine's laboratory in Bombay to study techniques in vaccine preparation, inoculation procedures, and to observe and report results. Medical journals in many countries reported these events. Demands for huge quantities of vaccine from around the globe flooded the Plague Research Laboratory, which Haffkine had founded and of which he was Director-in-Chief. Despite several moves to larger premises, the facilities still proved to be inadequate, and after much stress and agitation,

the Laboratory was moved to Old Government House, former residence of the Governor-General, where it functions to this day.

On June 22, 1897, Queen Victoria named him Companion of the Order of the Indian Empire (C.I.E.) and along with others he received the title and medal from the Queen herself on the occasion of the Jubilee to celebrate sixty years of her reign. The citation read as follows:

Dr. Haffkine is a Doctor of Science of the University of Odessa, and worked and taught for some years in the Pasteur Laboratory in Paris. In 1893 he came to India, and since then has devoted himself to perfecting a system of protective inoculation against cholera. For this work he has received no remuneration, though the Government of India made a contribution towards his expenses. On the appearance of Plague in Bombay in September last he offered his services, which were at once accepted by the Government of India, and since then he has been continuously engaged in Bombay and other parts of the infected area on bacteriological investigations and inoculation.



Dr. Haffkine in the laboratory

In 1899 he applied for, and was granted permission to become a British citizen. Yet Haffkine's work was often met with hostility and even sabotage. His unique pioneering achievements did not guarantee full acceptance of either his techniques or his successful results by many Indian Medical Service officers to whom he was an outsider; not a medical doctor, not in the civil service or in the army, but a doctor of science—and a Jew.

In June of 1899 he was acclaimed by the Maccabi Association at a gala dinner in London, attended by many prominent Jews and others. He shared honours with Lord Lister whose address was filled with high praise for Haffkine's pioneering public health work in India, naming him a 'saviour of mankind'.

In 1901 the University of Edinburgh awarded him the Cameron Prize in Practical Therapeutics in the amount of over £ 92, and in the same year the *Artzlicher Verein* of Munich named him Corresponding Member.

In 1903 the Manila Medical Society elected him to Honorary Membership. He had reached the apogee of his career. The turning point was not far off.

The plague epidemic had reached alarming proportion in 1902 in the Punjab. An all-out inoculation campaign was planned. A dozen doctors and nurses were requested from England. Haffkine asked that thirty soldiers be trained in laboratory techniques for preparing thousands of doses of vaccine and added his need for more Indians as auxiliary personnel. Only part of his request was filled.

The inoculations were going ahead at a rapid pace when at the end of October, nineteen of the tens of thousands of people who had been inoculated contracted tetanus and died. All nineteen had been inoculated from the bottle of vaccine containing brew No. 53N. Of the five other bottles used that day, no unusual effects occurred apart from those normal to inoculation.

Before investigating the facts, the British medical officials publicly charged Haffkine and his Laboratory with having sent contaminated vaccine to the Punjab. He was suspended without pay. A Commission of Inquiry consisting of Sir Lawrence Jenkins, Chief Justice of Bombay, at its head, and others, was appointed. Not one of its members was a bacteriologist. British medical officers had received their training before medical bacteriology and its practice came into use.

The Inquiry lasted almost five years. Scores of witnesses testified. Haffkine was summoned several times. He supported his testimony with scientific evidence which contradicted the charges. The Commission's Report was withheld from the public and from scientists in India and elsewhere, and from Haffkine, until public and other pressures forced its release, but that was not until about five years later.

Meanwhile, at the end of October or early November, 1902, he was dismissed from his Laboratory. Thwarted in India by the British medical officials who either did not understand the evidence he produced to support his position, or

turned a deaf ear to it, or both, at the end of April, 1904 he left for Europe to present his evidence before the Lister Institute in London and the Institut Pasteur in Paris, and to friends in Parliament. He appealed to scientists in England to call for a new impartial investigation and to testify on his behalf. All who were sympathetic did their best. But the British Government rejected all such pleas.

Finally, on July 29, 1907, Sir Ronald Ross, the eminent bacteriologist, and a strong supporter of Haffkine's views, took action. He initiated a long letter that was signed by ten leading bacteriologists of Europe, and even included one from America. It was published in the London Times. Four conclusive arguments stated that the charge against Haffkine and his Laboratory was not only 'not proven, but distinctly disproven'. Moreover, the letter continues that 'there is very strong evidence to show that the contamination took place when the bottle was opened at Malkowal (the village where the deaths occurred), owing to the abolition by the Plague Authorities there of the techniques prescribed by the Bombay laboratory and to the consequent failure to sterilize the forceps which were used in opening the bottle, and which during the process were dropped to the ground'.

Haffkine was finally exonerated by the British Government, but the ordeal of those years left battlescars that could not be healed. He knew that his work in India was not finished. He began negotiations to return with the status and increased salary he had been promised immediately after his success with the anti-cholera vaccine.

The long drawn-out negotiations were painful. He was faced with the choice of yielding on many points, including higher status and increased salary, or abandoning the idea of returning to India. He chose the former, returning to Calcutta in December, 1907, to the laboratory on the Presidency General Hospital grounds, at the same salary he had been receiving, and no advancement in status. Although British doctors and army men, especially at the Hospital, were cool and aloof, Indians respected and trusted him and took every opportunity to demonstrate their appreciation in small ways.

In February, 1908, he was elected to membership in the Societe de Pathologie Exotique.

In January, 1909, the Institut de France, Academie des Sciences, nominated him for the Prix Briant, its highest annual honour, in the amount of 4,000 francs, which he received in July of that year. He was elected to Honorary Membership in the Calcutta Medical Club the same year.

The Indian Institute of Science in Bangalore, one of several research institutes that had been established in various parts of India as an outgrowth of Haffkine's work, elected him to membership on its Court of Visitors. A history of that Institute includes details of a conference with Haffkine to work out plans for large-scale training courses in bacteriology, laboratory techniques, and selection of talented students who might be sent to his Laboratory in Bombay for special scientific guidance under his supervision.

In 1907 the Liverpool School of Tropical Medicine presented him with the Mary Kingsley Medal, the citation stating that since 1897 over six million doses of his prophylactic had been distributed and not only had mortality among the inoculated been reduced to one-sixth, but the way had been paved for preparing prophylactics against other diseases on the same principles. There were many other honours, too numerous to mention.

Haffkine reached the compulsory retirement age of fifty-five in 1915, when he left India for good, travelling by way of the Far East. He arrived in San Francisco in July and crossed the United States, visiting Jewish agricultural settlements along the way, until he reached New York in September and sailed to England.

After some time in London he moved to Paris and occupied himself with Jewish affairs. In 1919, with other prominent people, he presented a petition which stressed emancipation for the Jews of Eastern Europe, to the President of the Peace Conference then meeting in Versailles.

In 1925, ten years after his retirement from India, the Plague Research Laboratory he had founded in Bombay was renamed the Haffkine Institute in his honour and is so known to this day.

In 1920 he became a Life Member of the Central Committee of the Alliance Israelite Universelle, with headquarters in Paris.

In 1929 he bequeathed his entire fortune of \$ 500,000 to the Haffkine Foundation which he had created, stipulating that the interest earned be used to foster religious, scientific and vocational education in the Jewish religious schools for young boys in Eastern Europe. The Foundation still exists.

In 1964 the now Independent Indian Government issued a commemorative postage stamp with Haffkine's portrait in honour of his 104th birthday.

In 1967 an International Memorial Committee was organized by the author of this article who is also preparing a full-length biography of Haffkine. Its founding members include two Nobel Laureate scientists, its Honorary President is

a Nobel Laureate, and others prominent in the fields that reflect Haffkine's interests and life work.

This International Memorial Committee honoured Haffkine in Israel on the fortieth anniversary of his death, October 1970, by dedicating the Haffkine Memorial Grove of over 1,000 trees within the Kennedy Peace Forest in the Judean Hills.

In August, 1971, Mr. V. V. Giri, President of India, unveiled a marble plaque erected on the outside wall of the Pharmacology Building of the Grant Medical College in Bombay, the building where Haffkine did his work on the anti-plague vaccine.

The Haffkine Memorial Committee for India in Bombay co-operated in planning and carrying out that unique and momentous event which was attended by diplomatic representatives of many countries, thousands of students and others.

In September, 1972, the Institut Pasteur in Paris commemorated the eightieth anniversary of Haffkine's discovery of the anti-cholera vaccine therewith Professor Jacques Monod, Director, unveiling the plaque erected for the occasion in the presence of many scientists and other distinguished guests. Professor Rene Cassin, Nobel Laureate, President of the Alliance Israelite Universelle was host at a reception that evening, September 21, at the Alliance Headquarters in Paris.

Haffkine's published scientific and other papers in French, English and Russian number more than thirty, exclusive of translations and those connected with Jewish matters.

It is undisputed by scholars of the subject that Haffkine introduced into India the most modern Western scientific knowledge and techniques, and that he pioneered work in immunology, public health and preventive medicine during the more than twenty years that he spent in India. A network of research institutes in microbiology and the expansion of curricula in medical colleges are part of the fruits of his efforts and dedication.

Haffkine never married. He chose instead to devote his entire life to scientific research.

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