



DR. GIGLIOLI {1897- 1975} AND THE FIGHT AGAINST MALARIA IN BRITISH GUIANA.

By Dmitri Allicock

Guyana's development was seriously hampered by the prevalence of numerous tropical diseases, among which malaria was the worst. The Italian physician, [Dr. George Giglioli](#), was in great part responsible for fighting this disease for more than four decades and drastically reducing its effects on the population.

Born in 1897 in Pisa, Italy, to an Italian father and an English mother, George Giglioli grew up speaking both parents' languages, as well as French. In 1915, during his last year of high school in his hometown of Pisa, Italy, he was

encouraged to study medicine by a physician friend of his father.

During his first year of medical training at the University of Pisa, World War I had already started, and he was called up for military duty in 1916. Shortly after, his squad was captured and he was imprisoned in an Austrian prison camp for the remaining 18 months of the war. He used his period of imprisonment to read all the medical textbooks he could find, and assisted at the prison hospital in the treatment of other prisoners. When the war ended, Giglioli returned to Italy and immediately resumed his studies. Through great determination, he was able to catch up on studies he had missed during the past two academic years. He wrote his final examinations and received his medical degree in July 1921.

Giglioli then enrolled at the London School of Tropical Medicine, with the hope of eventually obtaining a job in one of the British colonies. Soon after completing his London studies, he learned that the Demerara Bauxite Company at Mackenzie in the interior of Guyana was looking for a medical officer. His application was accepted and after agreeing to a three-year contract, he and his wife travelled by ship to Guyana in 1922.

The Demerara Bauxite Company offered medical services to its 1000 employees and the population in the area through a hospital in Mackenzie. When Dr Giglioli arrived, he found that the hospital facilities were grossly inadequate with an untrained staff, and was seriously in need of supplies and equipment. Improvements came about in May 1925, when a new 60-bed hospital which opened. It had X-ray and laboratory facilities, a sterile operating theater, and a trained staff that included professional nurses, and, later, a surgeon.

The health conditions of the people of Mackenzie challenged Dr Giglioli to treat and study the diseases which were rampant.

Many patients were affected with malaria and hookworm, the latter affecting 80 percent of the population. He decided to treat the hookworm problem as his first priority, and instituted preventive measures.

These included improvements in sewage disposal methods and providing the miners with army surplus boots, purchased at cost. Infection dropped to 6 percent and worker productivity increased dramatically.

Malaria proved a more serious problem. Between 50 to 75 percent of all those who sought treatment at the hospital were suffering from this disease. The mosquitoes that carried the disease bred profusely following the rainy season in the large numbers of ponds formed in the bauxite mining areas. At that time, the only way to control the disease was through a prolonged course of quinine, an unpopular, bitter-tasting drug.

This health situation at Mackenzie forced Dr Giglioli to begin a study of the malaria problem, and as the country's first permanent medical research scientist, he discovered that the mosquito could not breed successfully in acidic waters. This finding would lay the foundation for his work in fighting the disease.

Dr Giglioli would visit my Grandparents James {1884-1966} and Catherine Allcock {1888-1940} and family at Old England and use his property as his base in the Upper Demerara river for many years even when he was attached to the Sugar Industry. He also hunted and fished from this Old England retreat.

The famous son of Dr Giglioli, Dr Marco Giglioli, who was born at the Mackenzie Hospital in 1927, attended school in British Guiana and later Italy, became very famous in the Cayman Islands. He was the director of the Mosquito Research and Control Unit of the Caymans before his death in 1983.

The period after 1929, which was marked by the "Great Depression" in the United States, saw a reduction in the demand for bauxite in North America. This resulted in a cut back on bauxite production, and the company laid off many of its workers, including Dr. Giglioli. He and his family returned to Italy in 1932, where he hoped to teach at a university. But he was not comfortable with the political situation which was seeing the rapid growth of fascism. He yearned to return to the peace and comforts of Guyana.

His wishes were fulfilled when shortly after, the sugar company, Davson, which owned three sugar estates in Berbice, offered him the post of medical officer. The company was facing stiff competition from Bookers, which produced 90 percent of Guyana's sugar at that time. Davson felt that it had to modernize and improve public health conditions to prevent its workers from leaving to work on other estates.

Dr Giglioli's first challenge was to rebuild the run-down estate hospitals. Most of his patients were suffering from malaria, anemia, and malnutrition. He therefore applied a programme to improve not just diet, but general living standards such as improved housing, water supply, and refuse and sewage disposal.

His work on the estates encouraged him to continue his studies on malaria that he had started at Mackenzie. He was able to identify the *Anopheles darlingi* mosquito as the main malaria carrier in Guyana.

This discovery, along with the information that this mosquito bred in rainwater collections, irrigation canals, trenches, and rice and sugarcane fields in flood fallow, enabled him to predict how widespread malaria would be in any given area.

In 1936, Booker's, the country's largest sugar producer, asked him to move to Georgetown to head the firm's laboratory, and to conduct systematic medical surveys aimed at improving health conditions on all the sugar estates in the country. Three years later, he was placed in charge of a Malaria Research Unit which was established with funds from the Colonial Government, the Rockefeller Foundation, and the British Guiana Sugar Producers' Association. But the work of this Unit was interrupted in June 1940 when Italy entered World War II on the side of Germany. As an Italian citizen, Dr. Giglioli was immediately placed under house arrest as an "enemy alien." He and other Italian and German residents of Guyana were kept as prisoners of war at the Mazaruni Penal Settlement.

But the Colonial Government of Guyana, faced with the increasing havoc caused by malaria, felt that Giglioli was too valuable as a scientist to be imprisoned. In August 1942 he was released and he was given a job as Government Malariologist.

The following year, three distinguished British scientists met with Dr Giglioli in Guyana. One of the scientists, Dr. Alexander King, told him about the new insecticide DDT, which the Allies were using as a "secret weapon" to protect their troops from malaria. Unlike other insecticides, it was applied to the surfaces where adult mosquitoes came to rest, and a single spraying continued to be fatal to the insects for months. Dr Giglioli asked the scientists for assistance to obtain a quantity of DDT to conduct an experiment in malaria eradication, which would be the first in the Western Hemisphere. He was confident that this insecticide would be effective since his own research showed that the *Anopheles darlingi* mosquitoes were prevalent in people's houses. He believed it would be better to attack the adult mosquitoes by spraying the houses instead of trying to destroy the mosquito larvae.

Within a month, the first 500-pound consignment of DDT was on its way to Guyana. The trial spraying of the insecticide began as soon as it arrived. A large-scale control programme commenced in 1946 on the sugar estates, and this became a countrywide campaign in 1947. It involved a house to house spraying of the insecticide by a Mosquito Control Service which was established for that purpose.

So effective was the DDT that by 1951, malaria and its principal carrier, the *Anopheles darlingi* mosquito, had been completely eliminated from the coastal areas. The situation was more difficult in the interior because the disease bearing mosquitoes lived in the forest. In addition, settlements were far apart and it was not easy to get to them.

When there were intermittent outbreaks of malaria in the North-West District and the Rupununi savannahs, Giglioli applied a new technique. In 1961, with financial and technical assistance from the Pan American Health Organization (PAHO) and UNICEF, he distributed salt treated with the anti-malaria drug chloroquine to the populations of those remote areas. Despite the remoteness of many areas, this programme eliminated falciparum malaria (the most dangerous type) in the North-West District. By the mid-1960s, most cases of malaria were wiped out.

As a result of Dr Giglioli's achievements in fighting malaria, Guyana saw its overall health situation improve dramatically in the 1950s and 1960s. The most striking change, particularly on the sugar estates, was the reduction in deaths of women of child-bearing age and the increased survival of their children. Thus, a relatively rapid population growth was experienced during that period.

Dr Giglioli's research on malaria in Guyana won him great respect internationally. The World Health Organization (WHO) and the Pan-American Health Organization (PAHO) sought his advice for anti-malaria work conducted in Brazil, Venezuela, Mexico and Jamaica. He also worked with PAHO specialists in Ghana, Nigeria, Somalia and Afghanistan. Giglioli died in 1975.

Towards the end of the twentieth century, the use of DDT was discouraged by international health and environmental authorities. Unfortunately, with the reduction of the use of this insecticide, malaria began to make a comeback in the 1980s. In 1986 it reappeared in the North-West District and in the Rupununi. Since then, cases of malaria infection continue to be reported in the interior and also on the coastal districts of the country.