

# THE HORTON CHAPEL PROJECT

Research presented by David Shand

## Horton Malaria Laboratory, 1925-1975

At the beginning of 1913, 103,842 patients were suffering from mental disorders in 95 public mental hospitals in England. 6,380 (5,352 men and 1,028 women) were diagnosed as suffering from General Paralysis of the Insane (GPI).

At the time, 8% of new admissions to mental hospitals administered by the London County Council (LCC) were found to be suffering from late, or tertiary, syphilitic invasion of the brain and central nervous system. This condition would lead most to die a miserable, lingering death. There was no known cure.

The initial concept of treating patients suffering from GPI with malaria began in Austria. In 1917 Julius Wagner-Jauregg, the Professor of Psychiatry and Neurology in the University of Vienna, was able to induce malaria in GPI victims with dramatically successful results. For psychiatric patients at that time there was no other effective treatment.

News of the advance in treatment spread around the world, but the First World War and its devastation delayed the introduction into the UK. It was not until 1922 when the first patients were inoculated with malaria in England. Professor Warrington Yorke of the University of Liverpool was the first clinician in this country to carry out trials, at the Whittingham Mental Hospital near Liverpool.

On the 21<sup>st</sup> July 1922 three male patients with GPI were inoculated by injecting blood from a patient suffering from malaria fever. After an incubation period of 16 days in one instance, and 21 days in another, malaria parasites were detected in the blood of two of the cases, and attacks of malaria fever appeared.

In the same year some of the earliest attempts at malaria therapy in neurosyphilis were carried out by Colonel Sydney Price James at the Manor War Hospital, Epsom, after he found a strain of malaria in Madagascar that was safe for use in humans. In 1923 more hospitals started to adopt the treatment and agreement was reached between the Ministry of Health, the Board of Control for Lunacy and Mental Deficiency and the London County Council to set-up a centre exclusively for the application of malaria therapy to cases of paralysis. A laboratory for specialist study of malaria was established at Horton Hospital, the first of its sort to be set up in the UK and possibly the world. The fourteen-bed isolation hospital was ideal to render the treatment as safe as possible. It was first known as 'C' Hospital, later changed to Horton Malaria Laboratory and then to the Mott Clinic in memory of Frederic Mott (1853-1926) Director of the Central Laboratory, Pathologist to the LCC mental hospitals and to the Malaria Reference Laboratory (regional malaria centre for Europe).

At Horton Hospital some 10,000 patients underwent treatment by induced malaria. The facility also provided infective material from the laboratory to different centres throughout the British Isles and Europe.

The recovery rates stood at 30-35% but the degree of recovery depended on how early the treatment was given and how soon before irreversible damage to the brain had already occurred.

Initial research into malaria itself was undertaken by Colonel James and he was tasked with making the treatment as safe as possible. The introduction of a disease that is potentially fatal to humans into patients cannot be without danger and in the early days tragic fatalities did occur.

The laboratory continued to have a number of distinguished directors, each a renowned expert in the field of tropical medicine and in particular malaria. After Colonel James came John Alexandra Sinton VC FRS (1884-1956) then Major General Sir Gordon Covell (1887-1975), and, finally, Professor PCC Garnham (1901-1995).

It was PG Shute OBE, whose remarkable story and lifelong work continued to make the facility a recognised authority on British mosquitoes. His advice on controlling infestations was frequently sought by the Ministry of Health.

Percy George Shute or 'PG' as he was known by friends was born in Devon in 1894 and received little in the way of a formal education. Starting his career as an apprentice baker he went on to serve with the 10<sup>th</sup> Devons in Salonika in the First World War. It was here that he contracted dysentery and was repatriated in 1917 being sent to the Manor War Hospital, Epsom for treatment. During his convalescence he sought work in the hospital laboratory under the direction of Colonel Sir Ronald, Nobel Laureate (1857-1932). It was under his guidance that Shute learned how to examine blood for malaria parasites and how to dissect mosquitoes.

Shute really came into his own during the First World War where malaria had decimated the British Expeditionary Force in Macedonia and a large proportion of the 150,000 victims returned to Britain. At the end of the war from 1917-1920, nearly 500 cases of indigenous malaria occurred and became widespread among civilians in England. In an attempt to control the epidemic, Shute was taken on as a temporary civil servant to work in the malaria laboratory and to carry out surveys in the counties of Kent, Sussex and Hampshire. By the end of 1922 the epidemic was over and Shute was free to continue his crucial role in establishing and developing the Malaria Laboratory at Horton.

At this time an Austrian Professor of Psychiatry, Wagner-Jauregg, had discovered that GPI could be cured by infecting patients with malaria and allowing them to have several untreated attacks of fever. Shute travelled to Vienna in 1934 and visited Wagner-Jauregg to study the work that was being done, and on his return to England he established a laboratory for culturing malaria in mosquitoes. He visited hospitals all over the country, introducing infection for therapy purposes.

In 1936 the laboratory recruited Miss Marjorie Maryon who soon became an invaluable assistant to Shute and her name appears as co-author on many of the scientific papers that emanated from the laboratory.

Once established the unit's fame spread worldwide and it became a mecca for hundreds of Malariologists who came for instruction in the art of dissecting mosquitoes and identifying malaria parasites. Shute became an expert in a technique called Romanovsky staining, and slides prepared by him have become collector items.

The laboratory moved into the testing of synthetic antimalarial drugs in conditions of maximum secrecy during the Second World War. In his career he was the author of over 200 scientific papers and two textbooks. Shute won the Le Froy Gold Medal in 1925, and received the MBE in 1948, which would later be promoted to an OBE for his pioneering work and services to science. He was also honoured with the award of the Ross award in 1973. His services and advice were in demand in almost every European country including Russia and the Balkans; he also visited numerous states in North, East and West Africa with the World Health Organisation. He died in 1977.

By 1950, the advent of Penicillin as a treatment for neurosyphilis resulted in a sharp decline in the incidence of the disease which led to a decreasing demand for the services of the Horton Laboratory in a therapeutic content. It continued for another two decades as a malaria research centre. In 1973 the Mott Clinic and Horton Malaria Research Laboratory was finally closed. The Horton Centre had treated over 17,000 patients with GPI.

On 2<sup>nd</sup> June 1975 Professor Garnham unveiled a plaque in the foyer of the clinic bearing the inscription: 'To commemorate the contribution made in this building between 1925 and 1965 towards the relief of suffering'. Both PG Shute and Marjorie Maryon, his devoted assistant for nearly 40 years, were present at the unveiling ceremony.

Memorabilia and archives are now held by the Wellcome Trust and the London School of Hygiene & Tropical Medicine.



**Mott House** Mott Clinic Isolation Unit  
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PG Shute at work in the Laboratory



PG Shute and long-time assistant Miss Marjorie Maryon in the Horton Laboratory



Professor Garnham unveiled a plaque in the foyer of the clinic 1973

Photo of mosquito



The *Anopheles gambiae* mosquito, which transmits the malaria parasite (CDC).

Video of dissection (Published on 15 Jan 2010)

A detailed cinematographic record of the classic laboratory technique for dissecting a mosquito to detect malaria parasites.  
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<https://www.youtube.com/watch?v=DlkgMSboSE>

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1. Journal of Medical Biography 1994; 2: 94-97
2. British Medical Journal 26 February 1977 page 589
3. The Mosquito 1968 No161 page 8
4. Malaria Therapy and the Horton Hospital Epsom. 26/02/2013 @richardbogle.com
5. The Wellcome Trust
6. Epsom Explorer