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A Final Curtain

At a simple ceremony held at Horton Hospital, Epsom, on 2 June Professor P. C. C. Garnham unveiled a plaque to "commemorate the contribution made in this building between 1925 and 1965 towards the relief of suffering . . ." The building referred to was the one previously occupied by the Malaria Reference Laboratory and W.H.O. Regional Malaria Reference Centre for Europe, known universally as the Horton Malaria Laboratory, or even more simply as the Horton Laboratory.

The history of the laboratory may read like science fiction: it is none the less a fascinating if little-known chapter of science fact. The prologue was set in Vienna about 1918, with the discovery by Professor Wagner-Jauregg of the treatment of syphilitic general paralysis of the insane (G.P.I.) with malaria-induced fever. Before this G.P.I. had been a killer; a measure of the devastation it created was the fact that in 1921 about 10% of all patients in mental hospitals in Britain were victims of the disease, and most of them were destined to die a wretched, lingering death. News of the epoch-making therapeutic advance reached the Ministry of Health, which lost little time in introducing it. Serious hazards were encountered at first, due largely to a lack of awareness of the lethal effects of certain species of human malaria parasites such as *Plasmodium falciparum*. In one hospital alone, for example, five patients died within three weeks of being given venous blood from a malaria-infected seaman recently arrived from West Africa.

It was, indeed, in an attempt to render the treatment as safe as possible that the Horton Laboratory came to be established. Colonel S. P. James, the first director, laid down the criteria that should be met before the strain of parasite could be considered safe for use in man. Eventually such a strain was found in a lascar who had contracted malaria in Madagascar. On an historic day, 25 May 1925, mosquitoes infected with this strain were taken to Horton and fed on two female patients, so establishing the so-called Madagascar strain of *P. vivax*—and with it the reputation of the laboratory. At first the prime function of the laboratory was to provide malaria parasites for any hospital in Britain to use in the treatment of G.P.I. So well did it meet its obligations that until penicillin made the treatment obsolete the laboratory provided material for many thousands of victims of G.P.I., and some 16 000 were treated in Horton Hospital alone.

Malaria therapy, it was soon discovered, provided a unique opportunity to study malaria itself in the greatest detail, an opportunity that the high-calibre personnel of the laboratory were not slow to exploit. Before long a steady stream of publications began to appear in scientific journals all over the world bearing the Horton Laboratory imprint. They record an impressive list of major discoveries, but none so important as that of the exoerythrocytic parasite in the liver in man in 1948. As its fame spread so workers from many European countries and the U.S.A. came to study in the laboratory and then to return home armed with its philosophy and techniques.

Help of inestimable value to the Allied cause was contributed by the laboratory in the last World War. The outbreak of hostilities brought to an end the cooperation between Germany and Britain in testing synthetic antimalarial drugs. The early victories of the Japanese in the Far East resulted in supplies of quinine being cut off, thus exposing our troops in North Africa and Burma to the grave danger of having to cope without adequate antimalarial drugs. Extreme urgency was given to the further development of mepacrine, already known to be more effective than quinine as a curative agent. It fell to the Horton Laboratory to test the drug in conditions of maximum secrecy, and the ultimate success of the programme is in itself a story of epic proportions.

The laboratory was singularly fortunate in its long line of distinguished directors starting with Colonel James and ending with Professor Garnham. However, few would doubt that the real star of the show was Mr. C. P. Shute, who joined the laboratory at its inception in 1925 and then rose from the ranks to serve as its assistant director from 1944 until its closure in 1973. This remarkable man, by trade a baker, was by an act of providence transmuted into a world-class scientist. He had the added virtue of being articulate—as his innumerable papers bear witness. It is a pleasure to record that he and Miss Marjorie Maryon, his devoted technical assistant for the past 37 years, were present to witness the final curtain rung down.

There is to be a fitting epilogue. The Wellcome Museum has generously undertaken the safekeeping of the laboratory's memorabilia. So tokens of one of the heroic chapters of the history of medicine of our time will be preserved.

Bladder Stone

"Cutting for the stone"; there can be few other phrases which range over such vistas of medical history, human suffering, and surgical endeavour. Of the triad of elective operations first performed by man—circumcision, trephination of the skull, and cutting for the stone—the last was the only one free from religious, ritual, or superstitious connotations and may therefore safely be pronounced the most ancient operation undertaken for a specific surgical disorder.[1]

The oldest bladder stone so far discovered was obtained from the grave of a boy of about 16 buried at El Amrah in Upper Egypt and dated at about 4800 B.C. Descriptions of means to relieve a patient of his stone have come down to us in Ancient Egyptian and Indian writings. The Hippocratic physicians of the fifth and fourth centuries B.C. were familiar with this condition, and the Hippocratic oath itself mentions[2] the first specialist urologists: the treatment of patients with stone was to be left in their hands. "I will not covet persons labouring under the stone but will leave this to be done by men who are practitioners of this work."

One of the intriguing mysteries of bladder stone is its frequency throughout medical history and its rarity in Europe today. Old surgical writings abound with descriptions of the large numbers of victims of the stone, especially in children; indeed a common cause of crying of infants at night listed in the old text books was bladder stone. One might attribute the high incidence of stone in adults in the past to the ravages of untreated or badly treated urinary obstruction from stricture of the urethra and prostatic enlargement, together with superadded infection; but this would not account for the epidemic proportions of the disease among children in former days, and some other factor not yet fully understood, perhaps dietary, must have been to blame. Though primary bladder stone is extremely rare in northern Europe it is still seen in southern parts of the continent and persists as a major problem in the middle and far east and in India. Singh and his colleagues,[3] for example, reported 50 calculi in children seen over a two-year period in the Punjab. Here the climate is hot and dry and the peasant population subsists on a strictly vegetarian diet with very limited protein intake.

Smith and O'Flynn[4] have recently reviewed 652 examples of vesical stone treated at the Meath Hospital, Dublin, between 1952 and 1972, accounting for 1·5% of all urological admissions. Only five of these patients were below the age of 10, the youngest being 18 months, and 80% were 50 years of age or more. The great majority of these stones probably originated in the bladder, since though 88 were associated with renal stones only 3% of the patients gave a history of ureteric colic—symptomatic evidence that the bladder stone had descended from the kidney.

There was a male preponderance of 92%. The small number of women either had retained suture material as a nidus for the stone or had an associated neuropathic bladder and poor vesical emptying. Among the men two thirds had bladder outlet obstruction (benign prostatic hypertrophy in 249, carcinoma in 43, and bladder neck obstruction or stricture in 110). Only 15 patients in the total number had no other disease apart from their vesical calculi, and only five patients in the whole series were found to have parathyroid adenoma or hyperplasia (though only 179 had serum calcium levels estimated).

For long centuries cutting for the stone comprised the perineal approach to the base of the bladder, and it is a tribute to the agonies caused by stone that patients would submit themselves to this torture in preanaesthetic days. The lithotrite was introduced by Jean Civiale at the Necker Hospital in Paris in 1824, and with it skilled operators were able to crush the stone within the bladder. The fragments were then passed naturally or washed out by means of a variety of ingenious evacuators. The lithotrite is still used from time to time to this day, when the surgeon is assisted by having the instrument incorporated in a modified cystoscope which enables him to visualize the stone. These instruments, however, are limited by the size of the stone and the strength of their crushing blades. Many surgeons today therefore prefer the open transvesical approach, which has the advantage of allowing them to deal with any associated condition such as bladder neck obstruction or an infected diverticulum.

In recent years there has been much interest in the development of the electronic lithoclast, in which the stone is broken up by a series of powerful electrical discharges delivered through a modified cystoscope held against the calculus. Up to 10 or 20 shocks may be required to disintegrate the calculus, which is then removed by irrigation and complete evacuation checked by cystoscopic examination.[5–7]

Though the centuries-long epidemic of bladder stone appears to be rapidly subsiding throughout the civilized world, it continues to fascinate the surgeon, and this recent advance in treatment shows that bladder stones can still inspire surgical ingenuity.

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Appliances for the Disabled

The provision of surgical appliances for patients has been unsatisfactory for many years. In 1968 a B.M.A. working party[1] made many recommendations, most of which have not been carried out. In 1973 the British Orthopaedic Association produced a report,[2] and this too has produced few results. In 1970 a Scottish report[3] recommended the linking of the prosthetic service (that is, for artificial limbs) with the orthotic service (that is, for orthopaedic appliances) and noted the dissatisfaction of the orthopaedic surgeons with the appliance service. While the report's proposals for improving the prosthetic service were implemented with commendable promptness, its advice on the orthotic service produced no result apart from the starting of a training course for orthotists at the University of Strathclyde. Because of dissatisfaction in Northern Ireland a working party has also produced a report on the prosthetic and orthotic services, and this is now in the hands of the Ministry of Health and Social Services. It remains to be seen whether its recommendations will be followed.

Commercial workshops are the backbone of the present service. In 1973 there were some 298 firms in Britain, about half of them having fewer than ten employees. They varied considerably in size, in the quality and variety of their products, and in the time they took to supply appliances. The various Departments of Health firmly control contract prices, but with such a large number of workshops control of quality is difficult. Owing to the price control small workshops especially find that no workman can be idle, so a waiting list for appliances is inevitable. There is little incentive to accept anything but standard items, for retraining of employees and retooling make acceptance of non-standard items barely profitable.

A few university and district hospitals have their own workshops, but there is little evidence that their numbers are increasing, as was recommended by all the working parties. It is in these workshops that virtually all the research and development take place, and they provide the main source of non-standard appliances. Their situation would appear to be ideal. They are close to the patients, and co-operation between employees and medical staff ensures that the appliances are absolutely correct, adjustments and repairs are carried out rapidly, and priorities of production can be established. Unfortunately these workshops are plagued by staffing troubles owing to poor pay. In one of the best known workshops technicians have left to earn better pay as milkmen.