

A HISTORY OF MEDICINE IN SRI LANKA

C. G. URAGODA



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Sri Lanka Medical Association

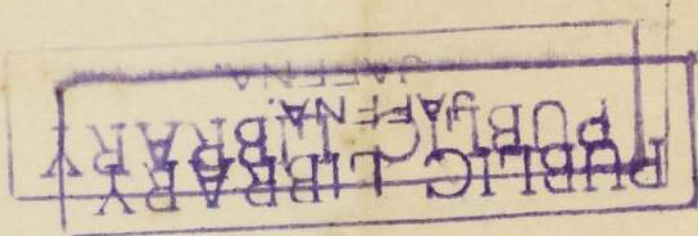
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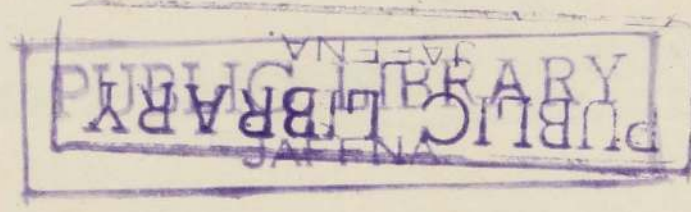
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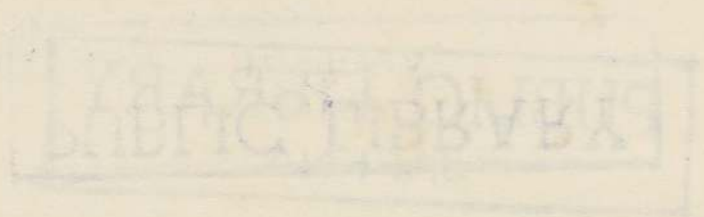
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OF MEDICINE
IN SRI LANKA



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SEFOJ

To my wife
and
to the memory of my parents

0132

To my wife

and

to the memory of my parents

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PREFACE

Sri Lanka has a medical history going back to over 2000 years, but no serious attempt was made in the past to bring together in one definitive work the loose ends found scattered in numerous sources, some of which are generally inaccessible or hardly known to the average reader. The present volume is an attempt to fill this void. It sets out to present in a meaningful and coherent manner a history of the medical systems that prevailed in Sri Lanka from prehistoric times. Every effort has been made to make it as comprehensive as possible, but it cannot claim to be a complete record of the medical history of Sri Lanka. It would fulfill one of its prime objectives, if it serves as a basis for future research workers to delve into our rich medical heritage.

Originally, I had the intention of writing this volume sometime later, at a leisurely pace and in a relaxed atmosphere, when the demands on my time were less exacting. However, a chance discussion with two of my friends, Dr. Upul Wijayawardhana and Dr. D. N. Atukorala a couple of years ago changed my plans. When I told them of my intentions, they prevailed on me to write it in time for the centenary of the Sri Lanka Medical Association. Dr. Wijayawardhana was thereafter instrumental in arranging the financial support for the Association to undertake this publication. It is sponsored by Messrs. Mackwoods-Winthrop Limited. Its Director and General Manager, Mr. Willie Weerasekera ventured outside his normal run of duties in enthusiastically agreeing to sponsor the publication. I am deeply grateful to him and Messrs. Mackwoods-Winthrop Limited for the generous financial support to the Sri Lanka Medical Association to meet the cost of this publication. I also thank Dr. Wijayawardhana and Dr. Atukorala for their abiding interest in this work. On my part, I offer this work as my own little contribution to the centenary of an association with which I have had the closest ties. At the far sighted suggestion of Mr. Weerasekera, it is the intention of the Association to set up a fund for medical research and educational activities with the proceeds from the sale of the book.

A book of this nature has necessarily to cover a vast field, and accordingly in the course of its compilation I had to consult many sources, which included ancient chronicles, lithic inscriptions, Portuguese records, Dutch

and British archival material, and little known published books and papers. Compiling a substantive medical history of the Portuguese and Dutch periods presented a particularly daunting task, and in this I was particularly fortunate. The two erudite scholars of the Portuguese period, Father V. Perniola, S. J., and the late Prof. Tikiri Abeyasinghe, not only gave me their valuable advice, but also placed at my disposal their unpublished research material in a rare gesture of academic magnanimity. They gave several hours of their time to me and also provided with English translations of Portuguese documents. I am indebted to both of them.

My task in dealing with the Dutch period was much eased by the assistance I received from Mr. K. D. Paranavitana. A few years ago, I was associated with him in writing a paper on the seventeenth century Dutch hospital in Colombo. I thank him for permission to use this material, including the reproductions of the two Dutch paintings of the hospital which were discovered after a prolonged and eventful research at the Koninklijk Instituut voor Taal-, Land- en Volkekunde, Leiden. He also translated for me some relevant Dutch archival records.

Many of my medical colleagues and friends helped me in various ways. I am much obliged to Dr. Dennis J. Aloysius who was always generous with his assistance. He helped at various stages in the production of this work. I am specially grateful to him for assisting in the onerous task of proof-reading. Dr. Malinga Fernando, Secretary, Ministry of Health, as usual extended to me his fullest co-operation in his personal as well as official capacity. I am deeply conscious of the confidence placed in me by members of the Council of the Sri Lanka Medical Association a couple of years ago in accepting this work for publication, and I thank the members of the present Council, headed by Dr. G. W. Karunaratne, for their encouragement. Mr. A. T. S. Paul provided me with useful information about the medical activities of the American missionaries in Jaffna. I offer my thanks to all of them.

In the non-medical sphere, I consulted a few specialists on their respective areas, and they included Prof. Ralph and Mrs. Kamalika Pieris, Mr. H. A. I. Goonetilleke, Mr. S. U. Deraniyagala, Mr. Ismath Raheem, Prof. B. A. Abeywickrema, and Mr. L. Amarasena. I thank them for their assistance.

Some of the illustrations are through the courtesy of the Archaeological Commissioner and the Director of National Museums, and I

thank them and their staff for it. I also thank Mr. Claude Perera and his staff at Messrs. Middleway Ltd., printers, for the interest taken in seeing this volume through the press. I particularly thank Miss. Megah Doole for her efficient type-setting. I thank the editors of *Medical History* for their permission to publish extracts from my two papers, 'The seventeenth-century Dutch hospital in Colombo' and 'The history of opium in Sri Lanka' which appeared in their journal.

Members of my family contributed both directly and indirectly to the realisation of this work. My wife Padma and children, Lalith, Dianthi, Neluka and Dishana gave me all the encouragement, and cheerfully suffered much domestic neglect when my spare time was taken up in compiling this work. They also gave many hours of their time to proof-reading, and in addition created the right atmosphere at home for the preparation of a work of this nature.

7th March, 1987.

C. G. U.



1

INTRODUCTION

The history of medicine in Sri Lanka has been fashioned over the centuries by a synthesis of several intrinsic and extrinsic factors, some of which were unique to the country. Being an island, Sri Lanka was insulated to a large extent from external forces influencing medicine, but India, Portugal, the Netherlands and finally Britain succeeded at different times in penetrating this natural barrier. The systems of medicine, the diseases and the cultures they introduced have largely determined the state of medicine in the country today.

The recorded history of Sri Lanka dates from the arrival of Vijaya and his band of settlers from North India in the sixth century BC. However, many historians and archaeologists consider that the authentic history began in the third century BC with the introduction of Buddhism from North India during the reign of King Devanampiyatissa (247-207 BC), a contemporary of the Mauryan Emperor Asoka of India. These two events have had a profound influence in shaping the history, including that of medicine, of the country.

Facets of Indo-Aryan culture that flowed into the country in the wake of Buddhism included the learned languages, Sanskrit and Pali, in which was written the well established system of Indian medicine, ayurveda. Whatever indigenous system that prevailed before was gradually supplanted by ayurveda with its centuries old heritage. The subsequent South Indian invasions that took place till the twelfth century did not have much impact on medicine, but it cannot be denied that certain diseases were introduced by these means. The system of siddha medicine may also have found its way into the country in this manner.

Buddhism, which commended the care of the sick as a meritorious act of the highest order, encouraged kings to improve the medical services. The development of medicine over the centuries was punctuated by periods of increased activity determined by the piety of some kings and their interest in medicine. A couple of them even acquired the epithet, physician king,

through their personal proficiency in the art of medicine. This royal patronage dwindled with the decline of the Polonnaruwa period. The turmoil in the country, the frequent shifting of the capital, and the shrinking dominions appeared to have engaged the primary attention of the rulers at the expense of providing social amenities to the people.

In this climate of relative inactivity in the medical sphere, the country went under foreign domination. The Portuguese (1505-1656), the Dutch (1656-1796) and the British (1796-1948) successively occupied the country. The Portuguese and the Dutch succeeded in occupying only the maritime provinces, the central highlands being under the control of the kings of Kandy, who by force or ruse contrived to keep their kingdom intact from these two European powers. However, in 1815, the British managed to annex also the Kandyan kingdom by means of a treaty with Kandyan chiefs who had turned against their king.

The advent of the Portuguese brought the first real contact with western medicine. The progress in navigation in early years brought ships of many nations to Sri Lanka, but there is no evidence that these trade contacts afforded any significant exposure of the local population to western medicine before the Portuguese period.

The influence which the Portuguese brought to bear on local medicine was marginal, but the Dutch, especially towards the latter part of their rule, made some impression. It was really the British who made a tremendous impact. It is to their credit that they, unlike their predecessors, took an interest in the health of the people, and by their activities transformed the entire medical scene in the country. Western medicine and ayurveda are now being practised side by side.

While Buddhism was the driving force behind the provision of health facilities to the people under the ancient Sinhala kings, Christian attitudes influenced to some degree the health care systems of the Portuguese and the early British. The Portuguese established throughout their empire an institution known as *misericordia*, which acted as a social service organisation. It drew support from the different Catholic orders, as well as the government. One of its functions was to help in running hospitals. During early British rule, the Anglican church sponsored Friend-in-need Societies which later established hospitals.

The British, for well over a century of their occupation, imported South Indian labour to work their plantations. This massive influx from a country where communicable diseases such as small pox and cholera were endemic, posed a constant threat to the health of the local population. Further, the attitude of the British, who considered the health of the plantation worker as an economically important factor which had to be safeguarded at great odds, was a major element in the development of the health structure in the country.

Throughout its history, Sri Lanka was known to various peoples by various names. It was called Lanka by the ancient Sinhalese, Taprobane by the Greeks, Serendib by the Arabs, Ceilao by the Portuguese, Ceylan by the Dutch and Ceylon by the British. With the promulgation of the new constitution in 1972, the name was officially changed to Sri Lanka, the name that has been adopted throughout this work.

The population of the country at various times is relevant to a consideration of the history of medicine. The first ever census was held in 1871, when the population was 2.4 million. There is no proper estimate of the population before this date, but unlike modern times, it is likely that the population fluctuated considerably as a result of various wars, famines and epidemics. Major epidemics of small pox and cholera probably wiped off large sections of the population. After the collapse of the sophisticated, ancient irrigation system, malaria took over where agriculture left, and if the 1934-35 epidemic was an indication of its killing power, the impact of this disease on the state of the population in the past few centuries would have been considerable. The control of malaria in the 1940's marked the beginning of an era which was characterised by a steady rise in population. In 1946, at the last census before independence, the population was 6.6 million.

Sri Lanka achieved independence from the British in 1948, and this is a convenient point of time to close this history. A large volume of activity in the sphere of health has taken place since then, and many factors have contributed to this upsurge. First, the steady increase in population necessitated new health facilities. Secondly, the vast strides made by technological advances in the recent past have imposed the need for new methodology in the delivery of health care. Thirdly, independence from foreign rule meant that the people themselves could, without referral to a foreign power, decide on what health measures are best for themselves. The history of this intense development, which was packed into the four decades since independence, would be too vast a field to cover in a general work of this nature. Further, these events are too recent to permit an objective appraisal of their historical perspectives. If events after 1948 are briefly mentioned in a few places, it is only to trace their history to a meaningful completion.

Throughout its history, Sri Lanka was known to various peoples by various names. It was called Lanka by the ancient Sinhalese, Taprobane by the Greeks, Serendib by the Arabs, Ceylon by the Portuguese, Ceylon by the Dutch and Ceylon by the British. With the promulgation of the new constitution in 1972, the name was officially changed to Sri Lanka, the name that has been adopted throughout the work.

The population of the country at various times is given in a consideration of the history of agriculture. The first census was held in 1911 when the population was 2.4 million. There is no proper estimate of the population before this date but under modern times it is likely that the population fluctuated considerably as a result of various wars, famines and epidemics. Major epidemics of small pox and cholera probably wiped out large sections of the population. After the collapse of the population, an irrigation system, malarial areas took over where agriculture had been the main economic activity. An indication of its killing power, the impact of this disease on the state of the population in the past few centuries would have been considerable. The control of malaria in the 1940's marked the beginning of an era which was characterized by a steady rise in population. In 1960, at the last census before independence, the population was 6.6 million.

Sri Lanka achieved independence from the British in 1948, and this is a convenient point of time to base the history. A large volume of activity in the sphere of health has taken place since then, and many factors have contributed to this progress. First, the steady increase in population necessitated new health facilities. Secondly, the vast strides made by technological advances in the recent past have impinged the need for new methods also in the delivery of health care. Thirdly, health workers from foreign and home have brought advanced techniques to the island, which resulted in a foreign power, besides on which health workers are dependent. The history of the health development, which was packed into the four decades since independence, would be too vast a field to cover in a general work of this nature. There, however, the author has tried to provide an overview of the health situation in Sri Lanka. It is only to recall that history is a discipline that is not a science, and it is not a science that can be taught in a few pages. It is a discipline that is not a science, and it is not a science that can be taught in a few pages.

2

ANCIENT MEDICAL PRACTICES

There is hardly any information on the state of medicine in pre-historic times. One view was that any knowledge of medicine that the early inhabitants had was confined to an acquaintance with the empirical use of a few drugs, which they knew by experience to cure some of the ailments to which they were subject.¹

It is traditionally believed that Ravana, the prehistoric king of Lanka of Ramayana fame was well versed in medical lore. It is mentioned that he represented Sri Lanka at a medical conference held in India during his time. It was while returning from this conference that he met Seetha, and 'committed an act which was not quite professional and which led to the first Indo-Ceylon conflict.'² Ravana is believed to have been the author of several books on medicine, the best known of which were *Arkaprakasaya*, *Nadivignananaya*, *Kumarathanthraya* and *Udishasasthraya*.³ Such a premise of authorship rests on weak grounds, for there cannot be a satisfactory explanation of the type of script used, the language adopted, and the nature of the material on which these books were written in those pre-historic times.

The majority of medicinal plants used in Sri Lanka are the same as those currently used in India. This common ground 'may have given rise to the popular legend that certain forested hills, e.g. Doluwakanda and Rumassalakanda, from which drug plants are often collected, are only fragments of a part of the Himalayas that was carried over to Ceylon by the mythical monkey-king, Hanuman, to provide drugs for the wounded in the Rama-Ravana battle.'⁴

Disease being as old as mankind, prehistoric man in Sri Lanka would have evolved his own approach to sickness which need not necessarily have invoked the use of herbs and other drugs. Charms and incantations, which figured prominently in primitive societies, would certainly have had their due place. Such a theory derives support from the state of medicine among the Veddahs, who are quite reasonably regarded as the aboriginal inhabitants of Sri Lanka.⁵

Veddah medicine

Veddahs are a vanishing race, but when they were of comparatively pure stock, they attracted the attention of some of the leading anthropologists of the world, specially during the latter part of the nineteenth century and early twentieth century. At the time, a few of them still led a nomadic existence in the wilds of Bintenne, living in jungle caves and subsisting on the produce of the chase. But over the years, due to exposure to civilisation, they gradually integrated with their Sinhala or Tamil neighbours, and have taken to cultivation as their chief means of livelihood.

The Veddahs believed that diseases were sent by evil spirits, and it was 'necessary to make an offering to them in order that this may be removed.'⁶ Tennent, who visited the Veddahs in 1848, found that when sick they sent for devil dancers to drive away the evil spirit who was believed to inflict disease.⁷

Le Mesurier quotes an official document written in 1820, in which it is stated that Veddahs 'attribute all sickness to the agency of malignant spirits, with whom they believe their country to abound. The use of medicine of any kind is not practised among them. They trust entirely to incantations to propitiate them.'⁸ Davy, writing about the same time, confirmed that they had no knowledge of medicinal plants.⁹ The same situation continued till the mid nineteenth century. According to Tennent, they had no knowledge of medicine beyond the practice of applying bark and leaves to a wound.¹⁰ In 1879, Hartshorne wrote:

'The diseases from which all Veddahs more particularly suffer are dysentery and fever; and it would seem that the effects of the former have been from time to time extremely disastrous. The remedies which they adopt for it consist of pounding the astringent bark of certain trees which they generally use for chewing and mixing the juice with water which they then drink. In cases of fever they drink warm water, as is the very general custom of the Sinhalese people, and also pour it over the body. Their only surgical implement is the sharp blade of the long spear-like arrow-head, and this is used in case of midwifery wherein the husband alone is the operator.'¹¹

Another disease which took heavy toll of the Veddahs, in common with other jungle dwellers, was parangi. Now that the disease has been eradicated, even its stigmata are seldom seen. However, recently a sabre tibia was seen in an old Veddah chief of Dimbulagala.¹²

On the basis of their studies, the cousins Sarasin concluded that Veddahs were the lowest in the scale of the three races, namely the Sinhalese, Tamils and Veddahs, not only in their habits, but also in their anatomy. This fact supported the view that the Veddahs were the remnant of an old tribe of aborigines.¹³ Virchow, after a review of the literature and the examination of three Veddah skulls, implied that Veddahs were older to the Sinhalese, thus supporting their aboriginal theory.¹⁴

Two Veddah skulls were demonstrated by Stephen H. Ward before the Ethnological Society in London on 21st December, 1859. They were, with

one exception, the only specimens in England at the time. He found the capacity of the cranium was smaller, in general, than that of other races, such as the Eskimos and Negroes.¹⁵

It is thus seen that Veddahs who lived in the last century hardly had a knowledge of medicine, and that their approach to disease was to drive away the spirits that caused it. It is reasonable to suggest that their ancestors, the prehistoric man in Sri Lanka too had a similar approach to disease.

Veddahs of a later generation acquired new attitudes, including that to disease, through intercourse with their Sinhala and Tamil neighbours. Spittel, writing in 1920, found that they, at the time, relied on a few medicines unlike before. They used a particular herb for headache, and another, crushed with lime, for wounds. Python fat was employed for fractures.¹⁶

With the inroads of civilisation into the traditional Veddah country, occasioned by the construction of large irrigation and hydropower schemes and roads, there has been a further departure from their ingrained attitudes towards disease. They still resorted to charms and invocations as the first line of treatment, but when these failed they turned to western treatment. A symbol of this new awakening is the Central Dispensary at Dambana, which was constructed in the 1960's. It served the Veddah community at Kandeganwela till recently,¹⁷ when the settlement was moved elsewhere.

Prehistoric excavations

Excavations, which normally aim at revealing a country's past, have recently shown a diversification in Sri Lanka. Archaeology, instead of confining itself to a study of the historical aspect, has widened its scope to include excavation of prehistoric sites. Some of these locations, which have received the attention of local and foreign archaeologists, have revealed information of some medical interest.

Prehistoric burial sites have been discovered in several places in the country, the better known among them being Pomparippu and Bellan Bandi Palessa. These testify to the fact that prehistoric man in Sri Lanka was conscious of the concept of cemeteries. Pomparippu is situated within the Wilpattu National Park, on the ancient Puttalam-Mannar road.¹⁸ In 1957, a part of the cemetery site was excavated, when 14 burial urns were unearthed.¹⁹ The burial site covers a large area of probably three to four acres of land. It is estimated that ten to twelve thousand people were buried at the site. Bones and some artefacts were found in each of the urns which were quite large and made of pottery. The osseous remains were poorly preserved, unlike the teeth. Apparently the bodies were exposed for sometime before they were interred. Frequently, the skeletal remains of more than one individual were found in a single urn. In the case of children, stains on the teeth indicated that cremation was practised before burial.²⁰

It has not been possible to fix the age of these burials, but they appear to belong to the Iron Age. There seems to be some affinity between

the Pomparippu burial complex and the Iron Age ('megalithic') culture of South India.²¹

Teeth, which were well preserved in these burial urns are, according to physical anthropologists, usually capable of indicating the health status of the population. Only four teeth out of many examined showed evidence of dental caries. The greater attrition of the anterior teeth in the samples examined indicated the greater use of the anterior teeth than the post-canine dentition.²² This differential wear indicates the use of the front teeth as tools to hold and manipulate various objects.

Bellan Bandi Palessa, near Balangoda, was found to be a smaller burial site, but of a much older age. This mesolithic burial site, measured by thermoluminescent dating, is over 6000 years old.²³ The skeletal remains suggest that these mesolithic men were the ancestors of the Veddahs.²⁴

In 1919, Paul E Pieris, in his excavations at Kantarodai in the Jaffna peninsula, discovered some interesting structures. These were a series of copper rods.²⁵ Similar artefacts were also found at Gedige in Anuradhapura,²⁶ and at Pomparippu.²⁷ At the latter site, some of these slender rods, made of copper alloy, were as long as 190 mm. Each had a head, while one end tapered to a point. These rods from all these three sites were identified as kohl sticks on the basis of similar rods found in Egypt. Kohl was applied by ancient Egyptian ladies to blacken the edges of eyelids. Several kinds of kohl were used for their real or supposed medicinal properties. Some of these had a lead or antimony base.²⁸ At Pomparippu, these kohl sticks were found along with other cosmetic items in the burial urns, the implication being that these rods were used for cosmetic purposes, rather than with medicinal intentions.

Two points emerge from these prehistoric excavations. One is the osteological confirmation that Veddahs are the descendants of Balangoda man. The comparatively pure Veddahs a century ago did not have a knowledge of medicine, and therefore, it is likely that the same situation applied to their ancestors, the prehistoric man in Sri Lanka. The other point is the likely use of kohl sticks for cosmetic rather than medicinal purposes. In all the prehistoric and protohistoric excavations so far conducted in Sri Lanka, no evidence bearing directly on medicine has been unearthed.²⁹

Occult practices

Belief in the supernatural in the causation of disease was widespread till recent times, specially among the rural population. With a literacy rate of nearly 90 per cent now, subservience to this concept has declined to a considerable extent, but there are still people of the educated classes who, faced with the dilemma of an apparently mysterious illness, resort to occult practices.

It is becoming increasingly difficult to obtain the services of practitioners of this art in the cities, and this is a measure of the relaxation of the

grip that exorcism used to exercise in the minds of the people. In remote jungle hamlets, lying outside the easy reach of a government health centre, occult practices still hold sway as an important constituent of the primary health care system. In these villages, where life has changed little over the years, old practices die hard. Almost every such village has its own practitioner, and in times of illness, the villager's age old faith in this healing art, coupled with its easy access, induces him to seek this form of treatment.

A belief in the supernatural causation of disease is fundamental to the concept that occult practices would be effective in times of illness. When such a belief is foremost, as in the case of Veddahs and remote village communities, then exorcism becomes the primary line of treatment. Sometimes these beliefs are latent and only surface in times of a calamity when other forms of treatment fail. In such situations, the implication is that if medicines did not act, then the disease could only have been caused by supernatural means. There are situations where both methods of treatment are adopted concurrently in the hope that the response would be more certain.

A good example of such a combined attack on illness is the treatment of snake bite envenomation. The treatment of a snake bite victim by the traditional practitioners is often coloured by astrological and demonological considerations. There are auspicious times to be observed, and rituals to be performed before, during and after the collection of herbs used in the treatment. The prognosis of the patient will depend on auspicious or inauspicious signs interpreted according to the day, time and site of the bite, and the state of the moon when bitten. The location where the bite took place has its own significance; for example, a cemetery presages poor prognosis.

The practitioner believes that he has the ability to derive much information from the *duthaya* or messenger, who is generally a member of the victim's family or a neighbour who rushes to summon him. The traditional system teaches a technique by which the practitioner could apparently predict, by the behaviour of and the first sentence spoken by the messenger, the identity of the offending snake, the bitten part of the body, the number of fang marks, and whether the victim would survive or not. Treatment commences by reciting a charm directed at the messenger. The practitioner also recites a charm to protect himself when he leaves his residence and again on entering the victim's house, and also at his bedside, to protect the patient from evil spirits.³⁰

The synthesis of occultism with traditional medicine extends to other spheres as well. A stone bench, which was acquired by the Colombo Museum many years ago, had the contour of a tortoise inscribed on it. The ayurvedic physician, surrounded by his utensils and medicaments, would seat himself on this tortoise bench on an auspicious day, recite Sanskrit verses, and then prepare his medicines. The sign of the tortoise would act as a talisman in

promoting the recovery of the patient. The tortoise has a special mythological significance in some ancient cultures such as the Hindu and the Japanese.³¹

There is no definite information as to when occultism originated in the country. Since the early medical system in Sri Lanka was an introduction from India, it is relevant to inquire whether occultism too had a similar origin. Gooneratne was not able to fix the exact period at which demonism originated in the country.³² However, a consideration of the Veddah practices suggests that occultism in the treatment of disease dates back to prehistoric times. The nineteenth century Veddahs practised only occultism and were unaware of any other form of treatment.

In occultism, as practised in Sri Lanka, diagnosis and treatment of disease are complicated matters requiring the services of several specialists in their respective fields. Diagnosis is dealt with by the soothsayer, the clairvoyant and the astrologer. The soothsayer unravels the problem by reading from a betel leaf or the palm. The clairvoyant is able to see through certain media the presence of an evil spell which has been cast on the patient by an ill designing person. The astrologer reads the horoscope to find out whether the planets are exerting an unfavourable influence.

Treatment is carried out by categories of people whose spheres of activity often impinge on each other: 'the removal of an illness is the occupation of the 'devil charmer' or exorcist, of the magician who exorcises the planets, the signs of the zodiac and the moon-houses, of the maker of amulets and talismans, and finally of the people's priest who plays the part of mediator between the deities and mankind.'³³

Perhaps the earliest definitive reference to occult practices in the art of healing was by Queyroz, the Portuguese historian. He noted that 'both in Ceylon and the rest of India they will not begin a treatment without first consulting the soothsayers with whom the whole country is well supplied.'³⁴

It is an interesting fact that the British government in its early days, in spite of its scepticism, engaged the services of a shark charmer at the pearl fisheries: 'Many divers will not venture down until the shark charmer is on the bank.' He was paid by the government. It was claimed that he had the power of 'securing the mouths of sharks.'³⁵

Buddhist Practices

In Sri Lanka, where the majority of people profess Buddhism, *pirith* or *paritta* is an immensely popular ceremony. It is the recitation by Buddhist monks of extracts from the Buddhist canon in the form of Pali stanzas. Its objective is to ward off danger, ensure protection and impart blessings on the sponsors. *Pirith* is chanted in rich sonorous tones by a single or several monks, and to a Buddhist it is one of the most spiritually soothing experiences that he could lend his ears to.

Pirith ceremony has a wide application in the life of the individual or of the community: 'During severe illness, it is performed with the hope

of eliminating all malign influences, whether they be domestic, astrological, physical or *karmic* in origin and character. The belief is that medicine will exercise its full effect once these hindrances are removed.’³⁶

Pirith has retained its popularity, if it has not actually increased it, with the passage of time. It appears to act as a spiritual instrument in purifying the mind. In this context, the salutary effect of *pirith* is likely to be felt in those maladies which are conditioned by the mind.

The presence of the Buddha’s tooth relic in the country was looked upon by the people as protecting the country from evil influences. The Chinese traveller, Hiuen-Tsiang noted in the seventh century AD, while referring to the tooth relic, that: ‘If the country is visited by calamity or famine or other plague, by use of earnest religious prayer, some spiritual manifestation ever removes the evil.’³⁷

Desiya chikitsa

The earliest system of medicine that existed in Sri Lanka, before the advent of ayurveda, was *desiya chikitsa* or *Sinhala vedakama*, which was handed down from generation to generation.³⁸ This system was officially recognised when the Ayurveda Act of 1961 was adopted: ‘Ayurveda includes the siddha and unani and *desiya chikitsa* systems of medicine and surgery.’³⁹ In the course of time, this system became integrated to a large extent with ayurveda and has now lost its independent existence. However, a few village *vedaralas* or medical practitioners still possess some remedies belonging to this system, which are generally preserved exclusively within the family. This secrecy was one of the very reasons for the decadence of the system. There were numerous occasions where a prescription, the efficacy of which had been vouched for by several knowledgeable observers, had been lost to posterity because the physician failed to transmit it to another party who was interested in upholding it.

Ayurveda

Ayurveda is a combination of two Sanskrit words which literally mean ‘science of life’. Its origins are shrouded in Indian mythology. It is one of the oldest systems of medicine in the world, coming next to those of the Egyptians, the Jews and the Babylonians.⁴⁰

It was introduced to Sri Lanka from North India where it flourished for over three thousand years. A knowledge of Sanskrit, which was the language of science, would have been essential to the proper understanding of ayurveda, and this would have been possible only with the cultural intercourse that took place with the introduction of Buddhism.

While ayurveda deals with both animals and plants, the emphasis is on prevention and treatment of disease in man. Measures recommended for the promotion of health include early rising, care of the teeth and tongue, gargling, massages and baths, care of the hands and feet, and avoidance of

harmful foods.⁴¹ Advice given to Buddhist monks in the *vinaya* or rules for the clergy follow similar lines.

Tridosha or the three humours, *vata* (wind), *pitta* (bile), and *sleshma* (phlegm) constitute the fundamental concepts of ayurveda. This simple translation does not convey the exact connotation of these terms. These three principles are types of energy responsible for biological activity pertaining to the movement of the body, generation of body heat and nutrition of tissues in the body, respectively. A person is healthy when these humours exist in dynamic equilibrium, while any disturbance causes disease.⁴²

Ayurveda was fed by an extensive pharmacopoeia of drugs which were mainly of herbal origin, but included animal products such as milk, honey and musk, and minerals, examples being copper, zinc, arsenic, iron, silver and gold. Susruta, who was the best known protagonist of surgery in ayurveda, described several surgical operations and over a hundred surgical instruments.⁴³

Ayurveda, which had served the needs of the people for several centuries, was faced with competition from western medicine. However, due to several reasons, the threat to ayurveda was minimal during the Portuguese and Dutch occupations. First, western medicine itself was not sufficiently developed at the time to be attractive enough. Secondly, the Portuguese and the Dutch themselves were impressed by the knowledge of herbal medicine possessed by the local physicians. Thirdly, these two powers were not interested in catering to the local population. They did not set up any organisation which would have serviced the medical needs of the people. Their interest was in their own nationals. Finally, the Sinhala kings were still reigning in their own kingdoms, thus providing royal patronage to ayurveda. Under these circumstances, ayurveda continued without much hindrance.

With the advent of the British, ayurveda began to decline. Very early in their occupation, they set up a Native Medical Establishment, which gradually widened its contact with the people. Plantation interests made it imperative that the health of the people be looked after according to their own light. The entire country came under the British, thus removing all royal patronage for ayurveda. Added to all these factors, the positive state sponsorship of western medicine by the British, saw the decline of ayurveda which began at the turn of the nineteenth century and lasted till its close. In spite of these antagonistic forces, ayurveda with its centuries old ingrained tradition, managed to survive, specially among the rural people who were least exposed to the inroads of western medicine.

Towards the end of the nineteenth century, a nationalist revival with cultural, social and religious overtones began to take shape. It was spearheaded by eminent nationalists such as Anagarika Dharmapala, and Rev. Hikkaduwa Sri Sumangala. Col. Olcott, though an American, lent his support.

The temperance movement and agitation against government policy on opium were two of the areas which suggested themselves for attention.

Later on, the nationalists turned their attention to reviving the arts and sciences of Sri Lanka, and in the furtherance of this objective, the Ceylon Social Reform Society, with Ananda Coomaraswamy as president, was formed on 29th July, 1905. The other office bearers were Mr. (later Sir James) Pieris (vice president), Mrs. M. Musaeus Higgins (secretary) and Donald Obeysekera (treasurer). The society admitted honorary committee members, among whom were Prof. T. W. Rhys Davids, Prof. Wilhelm Geiger, Mrs. Annie Besant and Col. H.S.Olcott, names which have figured prominently in the revival of Sri Lankan culture. One of the resolutions at this meeting was directed at raising funds to resuscitate the indigenous system of medicine which was made the first priority in the campaign to revive the ancient arts and crafts.

Donald Obeysekera, who was elected president in 1908, energetically pushed this objective, and in this endeavour he received the support of leading public men of the time. Obeysekera referred to ayurveda as 'the most important branch of science that exists in the country.' In 1910, a resolution that 'this society do take steps to encourage native medical sciences in this Island' was passed unanimously. The money subscribed to this project by well wishers was formed into the Oriental Medical Science Fund in 1915. This fund was later used for the training of ayurvedic physicians in India.⁴⁴

The government appointed a Board of Indigenous Medicine in September 1928, with the Hon. Mr. K. Balasingham as chairman. The other members of the Board included Mr. D. S. Senanayake, Mr. (later Sir Baron) Jayatilleke, Mr. W. A. de Silva, Mr. A. F. Molamure and Mr. Donald Obeysekera. In 1937, the State Council reconstituted the Board, and Mr. S. W. R. D. Bandaranaike was appointed chairman. He observed that the Board was without adequate powers, and at his instance, the Indigenous Medicine Ordinance was enacted in 1941. The College of Indigenous Medicine, the hospital, pharmacy, dispensary and herbarium came under the government.⁴⁵

Two persons who figured prominently in the revival of ayurveda in the early part of the century were Mr. Donald Obeysekera who worked through the Ceylon Social Reform Society, and Mr. Balasingham who took up the cause of ayurveda in the Legislative Council, and saw to the establishment of the college and hospital at Borella.⁴⁶

The subsequent development of ayurveda is outside the scope of this work. Its foundation was laid with the enactment of the Ayurveda Act of 1961. Since then, several measures were introduced, and these included the establishment of the Department of Ayurveda and the Bandaranaike Ayurvedic Research Institute at Nawinna, expansion of the Central Ayurvedic Hospital, Borella, increase in the number of dispensaries run by local

authorities throughout the country, setting up of the Ayurvedic Drugs Corporation, affiliation of the Ayurvedic College to the University of Colombo, publication of books on ayurveda, scheme for the training of traditional ayurvedic physicians and the creation of the Ministry of Indigenous Medicine within the Ministry of Health.⁴⁷

Siddha

Siddha is a system of medicine practised by the Tamil speaking people. It has the same basic concepts as ayurveda, and there are hardly any doctrinal differences between the two. However, while the ancient works on ayurveda were written in Sanskrit, siddha texts were in the Tamil medium.⁴⁸ In addition, siddha medicine makes greater use of metallic preparations. It is said that when ayurveda spread southwards in India, it was assimilated by the medical practitioners of South India, who were influenced by the teachings of the siddhas.⁴⁹

The South Indian sage, Agastiya, is traditionally credited with having propounded this system. Another important achievement attributed to him was the moulding of the Tamil language. According to Casie Chetty, Agastiya as a physician occupied the same eminence among the Tamils as Hippocrates did among the Greeks.⁵⁰ Prof. T. P. Meenakshisunderam writes that Agastiya as a historical figure is 'no more than a will of the wisp, but as a tradition he wields an influence which is felt in all walks of life.'⁵¹ The colossal statue at Potgul Vehera in Polonnaruwa, which was once considered to be that of King Parakramabahu, is now thought to be that of Agastiya.

Mercury was a common ingredient used in siddha or *rasa vaidya*. The system 'prevailed through such literary works as those by Pulasthya Muni of India, and by Pararajasekeram, ruler of Jaffnapatam, and through such practitioners as the latter's brother, Segarajasekeram. The siddha system of medicine in its pure form is still practised in the Jaffna district.'⁵² The Commission on Indigenous Medicine concluded that ayurveda was also practised in the Northern Province. In view of the close affinity between the two systems, it observed that no distinction should be made between ayurveda and siddha.⁵³ The college of ayurveda from its inception conducted a separate course for siddha students and another for unani.

Unari

The unani system of medicine was introduced to Sri Lanka by the Arabs several centuries ago. The Arabs, who were seafarers in mediaeval times, had commercial links mainly with India, but later they resorted to direct trade with Sri Lanka. As a result, many of them settled down in the country, especially in the coastal areas. They maintained their contacts with the Middle East. In 1827, Sir Alexander Johnston wrote:

'By means of the intercourse which they kept up, through the Persian Gulf and Bussorah, with Bagdad and all the countries under the caliphate on the one side, and through the Arabian Gulf and Egypt with all the Mohammedan powers settled

along the coasts of the Mediterranean and of Spain on the other side, they introduced from those countries into Ceylon many original works in Arabic on Mohammedan law, and many translations into Arabic of the most valuable of the Greek and Roman classics upon medicine, science and literature.

'One of the principal Arabic works on medicine which they introduced into Ceylon was the work of Avicenna; they also introduced Arabic translations of Aristotle, Plato, Euclid, Galen and Ptolemy, extracts of which were frequently brought to me while I was in Ceylon by the Mohammedan priests and merchants.'⁵⁴

The first ever cloth weavers in Sri Lanka were introduced from the opposite coast in India by a great Mohammedan merchant who resided in Beruwala about six or seven hundred years ago. His descendants were granted certain privileges and immunities by the Sinhala king and these were honoured successively by the Portuguese, Dutch and British governments. It was customary for at least one member of this merchant's family in succession to become a physician.⁵⁵

Since the initial Moor settlements were along the coast, unani medicine was at first confined to this area. But during Dutch occupation, the Moors were persecuted for religious reasons. In their adversity they were given refuge by the kings of Kandy.⁵⁶ Thereafter, Muslim physicians attained much power and influence in the Kandyan court, and it may be inferred that the system of medicine they practised was unani. One of them, Gopala Mudaliyar, was the head of the *betge* or department of medicine of King Kirti Sri Rajasinhe (1747-1760). By the *Getaberiya sannasa* of 1760, the king rewarded him with lands for faithfully informing him of a conspiracy against him.⁵⁷ It was by bribing him that the Portuguese priests, who in turn were persecuted by the Dutch, were able to gain access to the Kandyan kingdom after having been banished by the previous king.⁸

There are Muslim families still living in the Kandyan areas whose names bear the appellation, Behetge (house of medicine), which their ancestors earned centuries ago through their medical antecedents in the service of the Sinhala kings. In 1871, E. L. Koch, the then principal of the Colombo Medical School, described such a family: 'even at the present day a family of naturalized Moormen in a village near Kaduganava whose official patronymic of Betgey indicates their connection with the medical history of the Island under its own native sovereigns, still continue in the practice of the profession which more than three centuries ago had earned them their distinctive appellation.'⁵⁹

Unani physicians at first transmitted their medical knowledge orally to members of their own families. Later, information was written down in the Tamil language in Arabic script, and kept within the family. Many of the medicinal plants found in the Kandyan areas and used in ayurveda began to be employed in the unani system too. However, in some coastal towns, such as Colombo, Galle and Beruwala, unani was practised more or less in

its pure form. Unani drugs were brought to the country by trading vessels coming from Arabia and the Persian Gulf. These drugs consisted of mainly syrups, which contained ingredients such as rose petals, grapes, dates and musk. Many local constituents were also made use of. After the introduction of western medicine to Sri Lanka, unani practitioners began to use western drugs as well. Today, unani medicine in its pure form as introduced by the Arab settlers is hardly practised in Sri Lanka.⁶⁰

The commission on indigenous medicine in 1947, inferred that there were many hakims or unani physicians in the country. However, none had applied for registration and it was of the view that Muslims generally sought ayurvedic treatment and that teaching of unani was not being done properly by the College of Indigenous Medicine, mainly due to lack of qualified teachers in the country. It recommended the discontinuation of the unani stream, and award of scholarships to enable prospective candidates to qualify abroad.⁶¹ In spite of this recommendation, unani continued to be taught at this college.

Acupuncture-related techniques

Several ayurvedic physicians, specially in the south, occasionally adopt a traditional method of treatment based on puncturing or cauterising certain specific points on the human body. Each physician may treat only a few cases a month.

The instruments used in these methods were of local manufacture. The basic ones consisted of a tapering metal rod which was used in puncturing, and another with a blunt button-like end for cauterising.⁶² It has been estimated that a collection of such instruments in the Folk Museum at Anuradhapura belongs to the seventeenth century.⁶³ Several old palm leaf manuscripts describe these methods, but their antiquity is not known. After an examination of the available data, Devasena concluded that the theory of acupuncture was not unknown in ancient Sri Lanka.⁶⁴

It is a matter for speculation how this technology was transferred, first to Sri Lanka, and then from the Kandyan kingdom to the south. One possibility is that this transfer took place from South India to the Kandyan areas during the reigns of the four Nayakkar kings (1739-1815) of South Indian origin. Buddhist monks moving between the Kandyan kingdom and the south, after the restoration of *upasampada* or higher ordination during the preceding reign of King Narendrasinghe (1706-1739), may have carried the technology to the southern areas. Another possibility is that the method came from China via India, probably through Mahayana Buddhist scholars.⁶⁵

Heaty and cooling foods

There is a firm conviction among many people in Sri Lanka that certain foods are heaty or hot while others are cooling or cold. This belief is more pronounced in times of illness, when avoidance of certain foods becomes almost obligatory according to ayurvedic principles. The tradition of heaty

and cooling foods is not confined to Sri Lanka, but prevails throughout other South East Asian countries such as Malaysia, Indonesia, Burma and Thailand, as well as in Latin America. This concept is based on the supposed effect on the body, and not on the actual temperature or spiciness of the food.

It is not known from where or how this cult originated, but as far as Sri Lanka is concerned, it probably came with ayurvedic medicine from India. There is considerable disagreement on the classification of certain specific foods. Some may classify ice as cooling, while others would label it as heaty. This example demonstrates how remote this division is from the physical characteristic of the food. Confusion in classification probably concerned foods which were introduced to the country after the original division of heaty and cooling foods was constituted in accordance with ayurvedic principles. It was probably while classifying these new introductions that disagreement arose due to individual whims. Rambutan (*Nephelium lappaceum*) was a later introduction from Malaysia which some consider as heaty and others as cooling, in its native country.⁶⁶ In Sri Lanka, it is generally considered to be heaty. A probable reason for this view is that some people, with a surfeit of this fruit, tend to develop irritation of the eyes. In fact, this effect on the eye appears to be a subconscious parameter for classifying a food as heaty. Examples of other foods with this property are mangoes and *bala* (skipjack, *Katsuwonus pelamis*). *Bala* fish has earned a universal reputation in Sri Lanka as one of the most heaty foods, and it is an interesting fact that a pharmacological reason could be adduced to rationalise it.

Histamine is a chemical found in certain foods. It is easily inactivated by the body if consumed in average amounts, but in large quantities histamine poisoning may occur. It was found that skipjack had the highest histamine content described in any food in the world. Under certain circumstances, this histamine may produce symptoms of intoxication, which include redness of the eyes, headache, urticaria and diarrhoea. In this instance, it is tempting to equate heatiness with histamine content.⁶⁷ Similar histamine reactions were observed after ingestion of *kelawalla* (tuna, *Neothunnus macropterus*,⁶⁸ and *hurulla* (*Sardinella sirm*).⁶⁹ These two species of fish are also considered heaty.

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MEDICINE UNDER SRI LANKAN KINGS

Sri Lanka was ruled by its own kings from the inception of its written history until 1815, when the British annexed the Kandyan kingdom. There was juxtaposition of Sinhala sovereignty side by side with foreign rule from 1505 to 1815. This long continuum of over two millennia of reign by kings of Sri Lanka makes it appropriate that one should consider the ancient and mediaeval history of medicine in Sri Lanka in the context of the entirety of this period rather than restricting the coverage to only the pre-Portuguese era.

Considerable information on the structure of the medical system that prevailed during this period is available from literary and archaeological sources. The ancient chronicle, the Mahavamsa, is undoubtedly the richest single source of such information.

The Mahavamsa

The Mahavamsa is 'one of the most remarkable histories in existence, unrivalled-with perhaps the sole exception of the Shu King records of the Chinese emperors.'¹ The accuracy of the Mahavamsa as a historical record of ancient Sri Lanka is generally accepted. Some of the events described have an air of fantasy about them but by making due allowance for such infirmities one could extract much valuable information. Its main usefulness is as a chronicle of events but it often wanders beyond the fringe of pure history and thereby gives an insight into the social structure of the period under consideration. Since it was written by Buddhist monks during mediaeval times, it is to be expected that the stature of personalities described in the Mahavamsa should have been measured by the yardstick of Buddhist virtuosity. Kings who performed deeds of piety were showered with praise. Provision of facilities for the sick, such as hospitals, medicines and food, were considered meritorious acts of the highest quality. This attitude of the authors of the Mahavamsa is responsible for the somewhat liberal mention of medical facts which could be dovetailed into a fairly articulate picture of the medical system that prevailed in ancient Lanka.²

The Mahavamsa was originally written in classical Pali verse on *ola* leaves, the time honoured vehicle of the written word of the ancient Sinhala people. It is divided into the Mahavamsa proper and the Culavamsa. This great chronicle forms a continuous record of the history of Sri Lanka from the advent of Vijaya to the occupation by the British in 1815. The Mahavamsa proper was written in the sixth century AD by a monk named Mahanama. It was continued into the first part of the Culavamsa by Dhammakitti in the twelfth century AD. Subsequent parts were added, first by an unknown monk and then by Tibbootuvave Sumangala Thera.³ The whole chronicle consists of 100 chapters, while chapter 101 which brings it up to 1815, was added as a supplement by Hikkaduwe Sri Sumangala Thera and D. A. de S. Batuwantudawa in 1877.

The temple was the seat of learning in ancient Lanka and therefore its library the legitimate repository of palm leaf manuscripts.⁴ The existence of the manuscript of the Mahavamsa was known to a handful of monks at the beginning of the nineteenth century but none could translate the mystical verses in which it was written.⁵ A monk, Galle Unnanse, was convinced that a *tika* or prose explanation of these verses was in existence. He conveyed his belief to George Turnour, a young English civil servant who was Government Agent, Ratnapura. They made a search for the missing key in Buddhist temples and were finally rewarded when the *tika* was discovered in 1826, in the ancient temple at Mulkirigala near Walasmulla. Williams wrote: 'The debt owed to the priest (Galle Unnanse) is little less than that which has yet to be paid to the civil servant (Turnour).'⁶ Turnour translated the first 38 chapters of the Mahavamsa into English and published them in 1837, but he did not survive long enough to complete the enormous task he set himself. The remaining chapters were translated by Mudaliyar L. C. Wijesinhe who published them in 1889, together with Turnour's work as a prefix, with notes added by him. Subsequently, Professor Wilhelm Geiger was commissioned by the government to bring out a new and revised edition. Rev. Sri Sumangala and Batuwantudawe translated the Mahavamsa into Sinhala in 1877.

Inscriptions

Inscriptions are the second most fruitful source of information pertaining to early history of medicine in Sri Lanka. Sri Lanka is endowed with a wealth of lithic material in which pronouncements and proclamations of ancient kings and their subjects have been recorded on caves, rocks, stone pillars and slabs, and left to posterity. These inscriptions have survived the ravages of centuries of exposure to the elements, and today are considered a national heritage.⁷

The earliest inscriptions so far discovered were from the reign of King Devanampiyatissa, who ruled from 247 to 207 BC, the chronology of Geiger⁸ being followed throughout this work. He was a contemporary of King Asoka

of India whose famous edicts inscribed on stone pillars in Brahmi script were first deciphered by James Prinsep in the 1820's. It was soon recognised that there were numerous local inscriptions in the same script, and these were probably deciphered for the first time in Sri Lanka by Brodie⁹ when he read the two sprawling rock inscriptions at Tonigala, not far from the Anamaduwa hospital.

The era of Brahmi inscriptions in Sri Lanka lasted from the third century BC to about the first century AD. Nearly 1300 such inscriptions, mainly in caves which were the homes of monastic monks, have come to light so far. As a rule, these inscriptions record the names of personages who fashioned and dedicated these caves to the monks for their use. Very little information of medical interest could be gleaned from them, and that too from only four out of this large number. On the other hand, one of the edicts of Asoka, engraved on the second tablet at Girnar, relates to the establishment of a system of medical administration throughout his dominions, and as far as Tambaparni (Sri Lanka) in which 'both medical aid for men, and medical aid for animals, together with medicaments of all sorts, suitable for animals and men' were provided.¹⁰

The inscriptions of a later date were mainly in Sinhala script, the characters being of the early evolutionary types. These inscriptions, as well as the few in Grantha and Tamil characters generally contain much more substance of a historical nature than the Brahmi epigraphs. Variations in the type of script, as well as the names of personages mentioned in the inscriptions are of assistance in fixing their approximate period. Historical facts contained in these inscriptions have provided a cross check for demonstrating the accuracy of ancient chronicles such as the Mahavamsa, Rajawaliya and Pujawaliya. These epigraphs also help, though in a rather sketchy manner, in providing an insight into some aspects of life and society prevailing at the time. A few inscriptions mention facts of medical interest.¹¹ One of the areas in which much information is furnished by the inscriptions, as well as by the Mahavamsa, is that of ancient hospitals.

Hospitals and the Mahavamsa

Buddhist hospitals in India existed before the invasion of Alexander. 'It is to Gautama and his followers that we owe, apparently, the hospital idea.'¹² There is no evidence that hospitals existed in Assyria, Babylon, and early Egypt though their medical systems were older than ayurveda. Neither did the Chinese have hospitals. The idea of creating hospitals 'had grown up gradually and spread over many distant countries, from Burma, Siam and Ceylon to Syria, Persia and Egypt and the whole of western Europe, excepting perhaps Russia In Ceylon and Burma they (hospitals) seem to have been ubiquitous.'¹³

The concept of hospitals where a number of patients could be collectively housed in special centres with the attendant advantages to the sick was

recognised as early as the fourth century BC during the reign of Pandukabaya.¹⁴ The state, or more correctly the king, appeared to have shouldered the responsibility of building hospitals. It is fairly clear throughout the Mahavamsa that the driving force that prompted kings to construct hospitals was the prospect of merit that would, as ordained by Buddhism, accrue to the builder. In modern society, provision of hospitals is a duty the state owes the people as part of its services, but whether such a secular motive governed the ancient kings of Lanka is not clear.

There is reference to a hospital for the laity built by the son of Mahinda IV (956-972 AD) in Anuradhapura.¹⁵ However, there is no special mention in the Mahavamsa of hospitals for monks, but a hospital existed on Mihintale which was a monastic site: 'on the Cetiya mountain he (Sena II, 851-885 AD) built a hospital.'¹⁶

Anuradhapura and Polonnaruwa were the successive capitals of Sri Lanka during the golden period of its civilisation, and therefore they were specially favoured with medical institutions. In Anuradhapura, such institutions were built, for example, by Pandukabaya,¹⁷ and Kassapa V (913-923 AD).¹⁸ 'In Pulatthinagara (Polonnaruwa), he (Udaya I, 792-797 AD) built of his great pity a large hall for the sick.'¹⁹

Specialised hospitals were built by various kings at different times. Institutions for cripples were built by Buddhadasa (362-409 AD),²⁰ Datusena (460-478 AD),²¹ Upatissa II (522-524 AD),²² and Udaya I (792-797 AD).²³ Buddhadasa and Upatissa II also built hospitals for the blind. Probably the first maternity home was established by Upatissa II.²⁴ Kassapa IV (896-913 AD) built hospitals in Anuradhapura and Polonnaruwa for combating 'upasagga'²⁵ which was probably an epidemic disease. If this interpretation is correct, these were the first infectious disease hospitals in Sri Lanka.

In the time of Pandukabaya (394-307 BC) there was a 'hall for those recovering from illness' at Anuradhapura.²⁶ It is surprising that convalescent homes were established as early as the third century BC. This concept would have been the answer to the present day problem confronting clinicians and hospital administrators alike where patients, though fit to be discharged, continue to clog the wards as a result of difficulties at home due to socio-economic reasons.

While the subject of hospitals figures several times in the Mahavamsa, dispensaries are mentioned only once. King Kassapa IV 'built houses where medicine was to be had in different parts of the town'.²⁷ After a consideration of the English and Sinhala translations it is not clear whether these 'medicine houses' refer to chemist's shops where medicine could be purchased on prescription, or to out-patient treatment centres. The paucity of references to outdoor treatment probably reflects the true tradition of general practice where ayurveda physicians visit the sick in the houses rather than the sick attending a central dispensary.

Monasteries and hospitals

While the Mahavamsa by and large mentions hospitals built for the benefit of the laity, several ancient inscriptions refer to such institutions attached to Buddhist monasteries and which were primarily meant for the monks. The natural cave, which is an interesting feature of the rocky outcrops found scattered in the dry zone, was used by monks as their abode in the early days of Buddhism in Sri Lanka. These sites have now been claimed by the jungle, and in their desolation the scene is so tranquil that one could well imagine how fitting these places would have been for a life of meditation. Here, one could think of an irony of nature where these precincts, once hallowed by ascetics, should now be the venue for scenes of love and hate among animals, two of the very temptations that these monks sought to conquer by meditation in the seclusion of these peaceful surroundings.

Later on, as Buddhism became established larger monasteries were founded close to the main cities such as Anuradhapura and Polonnaruwa.²⁸ Some of these monasteries housed large communities of monks. Fa-Hien, the Chinese monk, in his travels in Sri Lanka in the fifth century AD, found a community of 2000 monks on the Mihintale hill.²⁹ Monasteries where such large numbers resided in a closed society would naturally have required medical support, and this was provided for by the establishment of hospitals within these monasteries. While certain features such as the Buddha statue, image house, dagoba and bo-tree were standard to most monasteries, only the larger ones as in Anuradhapura, Mihintale, Polonnaruwa and Medirigiriya were endowed with hospitals.

The knowledge of medicine acquired by the monks through their literary pursuits would have made them the logical choice to administer to the medical needs of their own sick brethren. A fillip to such actions would have been the religious approbation that went with such acts of charity.

Lord Buddha in his day enunciated the *vinaya* or disciplinary rules for the monks. These rules touched all aspects of their life and included guide lines on healthy living. This code of conduct obtained among the monks in Sri Lanka too, but with the passage of time some of these regulations required adjustment to meet the changing situation.

A few of the Sinhala kings were interested in safeguarding the future of the religion, and with this end in view they consulted a few high priests. With their agreement, these kings laid down *katikavatas* or rules which had both religious and royal sanction. Written in simple Sinhala that was easily understood by the monks, some of these royal proclamations have survived to this day, the best known being the inscription of King Parakrama Bahu (1153-86 AD) at Gal Vihara in Polonnaruwa.³⁰ According to this inscription, members of the order should rise at dawn and pass the time walking up and down for the sake of bodily exercise. They should also clean their teeth.³¹

In the Dambadeni *katikavata* promulgated by king Parakrama Bahu 11 (1236-70 AD), it is laid down that a person seeking admission to the order of *sangha* should satisfy the elders that, among other things, he is free of disease.³² This is perhaps the earliest mention of a pre-recruitment medical test. This *katikavata* further lays down the rule that 'one should not engage in improper activities such as devil dancing, *bali* sacrifices and *bali* ceremonies on account of illness.'³³

Availability of water was a prerequisite for the establishment of a monastery, specially for the reason that these sites were located in the dry zone of the country. As much as the rocky outcrops provided caves as shelter for the monks, they also furnished them with naturally occurring water holes for their sustenance. Large hollows in some rocks held water for considerable periods of time. The north east monsoon, which was active for three months, brought in the precious water which had to be conserved till the next monsoon a year later. During this long period of storage, contamination with various impurities was liable to occur. There was no injunction in the *katikavata* that monks should boil their water. Such a step would not have harmonised with an era in which microorganisms were unknown. In the circumstances, the least that the monks could do was to strain the water. In mediaeval times, kings considered it a meritorious act to gift strainers to the *sangha*.³⁴ Geiger comments that strainers are 'among the requisites of the bhikkus; its use is for straining water so that he who is drinking shall not swallow some living creatures who may perhaps be in it.'³⁵ Strainers undoubtedly removed other macroscopic contaminants besides insects.

There is a water hole complex near Hambegamuwa which possesses some unusual characteristics. Caves, inscriptions and other findings suggest that it was the location of an old monastery. The beautiful water hole complex consists of three large pools in the sloping rock, arranged in tiers one below the other, and inter-connected by holes. Rain water collected in the upper pool while the second one at a lower level received the overflow from the first, and so on to the third. In this manner the precious fluid was conserved to the maximum.³⁶ It is tempting to think that the monks used the uppermost pool for drinking purposes, while the other two pools would have served for their ablutions. Such an arrangement would have the backing of sound sanitary principles.

The only structural remains of ancient hospitals that have so far come to light are of those established in the old monasteries of Mihintale, Medirigiriya and Alahana in Polonnaruwa. The identity of these hospitals has been established with the help of inscriptions and by the discovery of medicine troughs and other equipment relating to the ancient practice of medicine at these sites.

Medicine troughs

One of the most interesting tangible links with ancient medicine that

is extant today is the *beheth oruwa* or medicine trough.³⁷ In 1896, H. C. P. Bell, the first Archaeological Commissioner, discovered among the ruins of the Thuparama monastery at Anuradhapura a mysterious looking, sarcophagus-like stone receptacle which later turned out to be a trough for the administration of immersion therapy. At the time, Bell described it as a sarcophagus in view of its external appearance which resembled a stone receptacle in which ancient Egyptian mummies were placed.

Subsequently, five other similar troughs were excavated at Anuradhapura, Mihintale, Medirigiriya, Dighavapi and Polonnaruwa. The one at Polonnaruwa was discovered only in 1982. Bell, in his later descriptions, was more careful in calling it a sarcophagus-like structure, and not sarcophagus.

These structures intrigued archaeologists for quite sometime till it was realised that they were found in the vicinity of ancient hospitals. The hospital sites at Mihintale and Medirigiriya were identified with the help of stone inscriptions and later excavated. It was then suggested that these structures were items of equipment used in hospitals. Evidence from old ayurveda texts lent indirect support to this theory.

Immersion therapy was an accepted form of treatment according to the classical Indian works of Susruta and Caraka, as well as two Sri Lankan texts, *Yogarnavaya* and *Prayoga-ratnavaliya* written by a Buddhist monk in the thirteenth century. A wide choice of bath fluids which included embrocations of medicinal herbs, milk, ghee, oils and vinegar was prescribed. This form of therapy was used in the management of skin diseases as well as other conditions such as rheumatism, haemorrhoids and fever. The mode of action of this form of treatment was thought to be through fomentation or absorption of the medicinal fluid through the skin. Fever was probably brought down by physical cooling. It is conceivable that medicinal baths were used in the treatment of extensive skin lesions rather than minor ailments.

While the stone troughs discovered so far go back at the most to the ninth century AD, fomentation as a form of therapy is mentioned in the ancient Pali Buddhist canons preserved in Sri Lanka. In a commentary translated by Buddhagosa from the original Sinhala to Pali in the fifth century AD, there is a reference to fomentation. It is mentioned that one of five types of fomentation was 'getting into a vessel or bath filled with hot water.' This reference suggests that immersion therapy was known in Sri Lanka by the fifth century AD.³⁸

Ancient ayurveda books laid down metal, wood or stone as the material from which the baths were made. The configuration of the interior of the bath would have ensured the most economical use of the medicinal fluid whereby complete immersion would have been achieved with the minimum of fluid requirements.³⁹ This line of thinking would have implied a knowledge of hydraulics.

In ancient times some of the individual households probably had their own private medicinal baths. Those made of wood would have perished, while metallic ones would have either corroded or been melted by vandals. Therefore, it is not surprising that what has survived are those made of stone, a material that would have withstood regular use by generations of patients in a hospital. Immersion therapy is now rarely practised in Sri Lanka, but when this is done a small wooden bath is used.

Mihintale hospital

Mihintale hospital, which was built in the ninth century AD, has been described as being perhaps the oldest in the world.⁴⁰ Mihintale which lies 8 miles from Anuradhapura has a special significance in that Buddhism was first introduced to the country by Mihindu Thera from this mountain top during the reign of Devanampiyatissa (247-207 BC).

The ruins of the hospital were first excavated in 1910 by Bell who found the medicine trough partly buried in the earth.⁴¹ However, the work carried out by Bell was limited to just what was necessary for the preparation of a ground plan of the main building. 40 years were to elapse before work was taken in hand again. By then earth had partly reburied the structure. Paranavitana, in addition to redefining the building, exposed the forecourt. He also undertook the conservation of the ruins. Clearing of the interior of the rooms yielded some specimens of pottery, including two blue glazed jars of Persian origin.⁴²

The hospital complex consists of an outer and inner court. The main entrance with the porter's lodge, refectory, hot water bath and the room used for the preparation and storage of medicines were in the outer court. The hot water bath had a central trough on the ledge of which the monks sat while the attendants or pupil monks bathed the patients. Water would have been heated on the premises and the waste water drained by an underground duct, the remains of which have been found. In the refectory, the monks would have sat along the walls on a wooden seat which was about 15 cm high. The seats were assigned according to their seniority as set out in the *vinaya*. The rooms used for the preparation of medicines were identified on the basis of stone querns found nearby. It is likely that these querns were used for powdering grains and crushing herbs used in ayurveda.

The inner court is surrounded by a number of rooms or cells, neatly arranged in the form of a square. The four corner rooms are of a larger size than the rest. The small rooms probably accommodated the sick monks. The rooms opened into a connecting verandah, and they all faced the central courtyard in the middle of which was the shrine room. The Buddha figure would have been placed on a pedestal in this shrine room.⁴³ The larger rooms at the corners probably served a common purpose, for the medicine trough was found in one of them.

The hospital is sited at the foot of the hill. There was probably a special

reason for locating it in this fashion when the populous part of the monastery was high on the hill, as indicated by the numerous caves seen today. One possible reason was the lack of suitable flat ground on the rough terrain above that was large enough to accommodate a hospital of this size. Another factor to be considered was the availability of a water supply adequate for a hospital. It may be mentioned that even today the location of a rural hospital at a place which is not served by pipe-borne water is largely determined by its ready availability. Water for the Mihintale hospital would have been obtained from the ancient tank nearby or even from a well.

There is no definite indication who the founder of the hospital was. One view is that it was built by King Sena II. This assumption is based on the reference in the Mahavamsa which states that he built a hospital on the 'Cetiya mountain'.⁴⁴ The other view that it was established by Mahinda IV (956-972 AD) has some indirect lithic evidence to support it.

At Mihintale there are two well known inscriptions both of which have references of medical interest. They were set up by Mahinda IV. One inscription, labelled Slab A, lays down rules and regulations for the monastery,⁴⁵ and among these is one which stipulates that monks who are ill should be given a fixed amount of food when recommended by a physician. The other, labelled Slab B, deals with the emoluments of servants. Every type of service was paid for either with money, foodstuffs or lands. This inscription fixes the remuneration of various categories of workers, including those who 'supply strainers', physicians, 'physicians who apply leeches' and dispensers of medicine.⁴⁶ At the time this edict was promulgated ordinary physicians were probably considered different from those who applied leeches as each category was entitled to a different quantum of remuneration. Interpretation of the extent of this remuneration in modern terms is rather difficult since the inscription lays down payment in units of land measure prevailing at the time, but one gets the impression that the ordinary physician was better paid than the one who only applied leeches. This apportionment may appear reasonable if one accepts the position that the latter category worked in the narrow field of mechanically applying leeches, a rather paramedical task.

Medirigiriya hospital

Medirigiriya in the Polonnaruwa district is well known for its *vatadage* which is considered an archaeological gem. A Buddhist monastery flourished there several centuries ago, and there is epigraphical evidence that a hospital was attached to it. In 1939, A. H. Longhurst, the then Archaeological Commissioner, noted the ruins of a hospital which were awaiting investigation.⁴⁷ Recently, the Archaeological Department has conserved a structure consisting of stone pillars which is believed to have been the hospital at Medirigiriya. It is situated about half a kilometre from the *vatadage* and is furthest in the complex of ruins so far conserved. Added evidence for the presence of a

hospital was supplied by the discovery of a stone medicine trough close to the *vata-dage*. This structure has undoubtedly been moved from its rightful place which would have been within the premises of the hospital.

An inscription on a slab rock was discovered in 1907 at Medirigiriya, but Wickremasinghe⁴⁸ was able to decipher only a few portions. This was sufficient for him to recognise its importance, for he wrote: 'Had this record been legible it would have doubtless given much valuable information concerning public hospitals to which Ceylon chronicles make frequent but scanty references'.⁴⁹ He identified it as an edictal stone containing rules for the management of the hospital. Subsequently, Paranavitana⁵⁰ succeeded in reading the whole inscription which is in Sinhala script. The language is archaic as is usual for ancient inscriptions, and an English rendering sounds rather quaint. Paranavitana believes this epigraph is that of Mahinda VI (1187 AD). It yields much information about the administration of a hospital in ancient times.

The running of the hospital was entrusted to an office or 'establishment' with its own employees who were apparently distinct from those engaged in looking after the patients, the present system being a flash-back of this arrangement. The hospital workers were banned from taking work from those attached to the office: 'functionaries shall not take any service from those attached to the service establishments.'

The hospital probably relied for its maintenance on the income derived from lands and villages donated to it by the king. These lands were rented out for a fee, but it is not clear from this inscription whether the payment to the hospital was in kind or money. Another system of payment in ancient times was by service through *rajakariya* which when applied to the present context would mean that the tenant worked in the hospital in return for the right to make use of the hospital lands. But according to the text of the inscription the tenants and the hospital workers were probably quite separate, for it says that 'the functionaries in the hospital shall not accept any present or fees from the tenants attached to the hospital.' 'If the tenants too worked in the hospital and were one with the hospital workers, such specific instructions were out of place. Therefore, it is improbable that this widely prevalent ancient system of *rajakariya* was enforced in relation to the Medirigiriya hospital lands.

Misappropriation of hospital property by its employees was apparently a recognised feature even in ancient times. The inscription lays down rules to safeguard hospital lands from such irregularities: 'In the event of misconduct on the part of a functionary of the hospital taking for himself the *mandaran* (fee) which is customarily taken from cultivators, the physicians shall sit in session together with other functionaries, make inquiries and prove the guilt in order to exact *darandu* (penalty) from the erring functionary'. It is thus seen that physicians were empowered, as at present, with major

responsibility in the conduct of inquiries against employees of the hospital. The highest category of hospital workers was undoubtedly the physicians who are referred to as 'their lordships'. In ancient inscriptions, the word physician was used in a broad sense to include all categories of doctors.

It would be an interesting point to consider whether the hospital provided free treatment or not. While the inscription prohibited hospital employees from accepting presents or fees from the tenants, no specific instructions were issued against such acceptance from patients. Therefore, a plausible inference is that patients were expected to give presents or fees to hospital workers in return for their services.

The inscription laid down dismissal as the main form of punishment for misdemeanours involving the running of the hospital. All categories of hospital workers, including the physicians and the superintendent, were liable to this form of punishment.

The regular inspection of hospitals by supervisory staff is an accepted method of present day hospital administration. This system was apparently followed even in ancient times, for mention is made of 'lords of the palace establishment who, year after year, come to investigate the affairs of the hospital.'

The vicinity of a present day hospital is considered to be a silence zone where patients are expected to be free from disturbance. Road signs warn motorists against tooting their horns when approaching a hospital. It is interesting to note that precautions against such disturbances were taken even in ancient times. Merrymaking with its attendant noise was not permitted within the precincts of the hospital but only outside them: 'Permission shall be given to the tenants of houses to drink liquor, to play musical instruments, to dance, and for other acts of that sort in places belonging to the hospital outside its boundaries'.

Another inscription at Medirigiriya, which was discovered by H. C. P. Bell in 1897, is attributed to Kasyapa V (914-923 AD).⁵¹ This Sinhala pillar inscription, though older than that of Mahinda VI, is better preserved. It lays down certain privileges for a village near the hospital. It makes passing references to the hospital.

One would have expected a hospital attached to a monastery to cater exclusively for the treatment of monks, but the inscription of Kasyapa V suggests that the laity were also treated at this institution. It says that the 'inmates of the hospital shall not enter the village, and appropriate and commit...'.⁵² The last word missing in this sentence has not been deciphered, but one may infer that it refers to some sort of misdemeanour in which case such a rule is unlikely to have been directed at the clergy.

The two Medirigiriya inscriptions provide evidence that the flesh of animals such as goats, fowls and fish went into the diet of the inmates of the hospital though it was attached to a Buddhist monastery. The inscrip-

tion of Kasyapa V lays down that 'dead goats and fowls should be assigned to the hospital of the *vihara*'. It was suggested that this was for purposes of research,⁵³ while Wickremasinghe⁵⁴ was of the view that it was for food. Evidence from the other Medirigiriya inscription lends support to the view that flesh formed part of the diet of the inmates of the hospital: 'When those who have caught fish at a place, where creatures living in the water are protected, have been arrested the superintendent shall go to the place with their lordships the physicians and make the culprits do work on tanks. The fish shall be confiscated for the hospital'. In this context it is more likely that the fish would have been more for consumption than for research.

An inscription discovered in 1947 in Anuradhapura and attributed to Udaya II (885-896 AD) refers to the hospital at distant Medirigiriya.⁵⁵ The inscription records the grant of land to the hospital: 'We have endowed on the hospital at Medirigiriya the land enclosed within the boundaries where we have set up stones.' Paranavitana comments that it is 'a remarkable circumstance that the recipient of the land was not a high dignitary resident at Anuradhapura, not a courtier who had the ear of the king, and not even one of the ancient religious establishments of which there were so many in and around the city, but an institution dedicated to the healing of the sick, attached to a monastery far away from the capital. The hospital at Medirigiriya at that time must have enjoyed a high reputation to have received so signal a favour at the hands of royalty'.⁵⁶

There is no mention of the Medirigiriya hospital in the Mahavamsa. Of the three inscriptions that refer to it, the oldest is that of Udaya II (885-896 AD). The inference is that this hospital flourished as far back as the ninth century AD, and this would make it almost contemporaneous with that at Mihintale, which was first referred to in the Mahavamsa during the reign of Sena II (851-885 AD). Sena II was succeeded by Udaya II as king. By this reasoning, Medirigiriya hospital becomes the second oldest to have been so far discovered in Sri Lanka.

Polonnaruwa hospital

Polonnaruwa became the ancient capital of Sri Lanka after Anuradhapura was vacated, and it too is rich in old ruins. The remains of Alahana *parivena*, which was a large Buddhist monastery in the heart of the ancient city, lay buried for centuries till excavation work was undertaken recently as a project under the UNESCO-Sri Lanka Cultural Triangle.

In 1982, in the course of excavations, the removal of earth from a mound close to Rankot *vehera* revealed a structure which has been identified as a monastic hospital. It appears to have been surrounded by a wall. A beautifully dressed stone medicine trough, which has come to be regarded as a hallmark of an ancient hospital, was also unearthed.⁵⁷ This is probably the best preserved out of all such troughs so far discovered in Sri Lanka.

The structure of the newly discovered hospital is very similar to that

of the Mihintale hospital, and according to Prematilleke, it also resembles the ones at Medirigiriya and Anuradhapura. The basic plan consists of an oblong building containing cells for sick monks which face a central courtyard. Extending from this section was a second wing with another central courtyard. The latter gave accommodation to a refectory, a toilet and a room to house the medicine trough. On the other hand, the medicine trough in the Mihintale hospital was situated in the main section containing the cells. The main courtyard probably had a shrine room as at Mihintale, but only the stumps of pillars which may have supported a timber shrine room remain.⁵⁸

The main rectangular wing containing the cells measures 25.75m by 16.65m, while the extension is smaller, being 19.1m by 16.65m. Several significant artefacts relating to the equipment of a hospital were discovered at the site. These included medicine grinders, a pair of scissors, a hooked copper instrument probably used for incising abscesses and ceramic jars for storing medicines.⁵⁹

Alahana parivena was established by Parakrama Bahu I. As he was a patron of medicine, it is not surprising that he deemed it fit to build this monastic hospital.

There is lithic evidence that Polonnaruwa was endowed with at least one other hospital, besides the one at *Alahana parivena*. An inscription discovered in King Nissanka Malla's council chamber on the bund of Topawewa in Polonnaruwa records the grant of certain immunities to land owned by an individual on condition that he paid rental to a hospital: 'The same land shall be rented to yield interest and one *pala* of dried ginger....should be given year after year as rental to the hospital founded by Doti Valakna. Should it be not possible to give the dried ginger, a *huna* of gold.....should be given.'⁶⁰

Paranavitana comments that the payment of a small rental by owners of land to religious or charitable institutions was not an uncommon practice in mediaeval Sri Lanka. This inscription implies that the state actively supported the maintenance of a hospital founded by a private individual, Doti being a personal name. The financing of this hospital by diverting the income from other people's land through a policy of state is different from the method adopted at Medirigiriya and Anuradhapura where the lands from which the income was derived actually belonged to the institution itself. The inscription stipulates that dried ginger should be given to the hospital. It is not surprising that this commodity should have been selected as the medium of payment since it is a well known ayurveda drug even today, and therefore would have been most acceptable to a hospital.

The Mahavamsa does not mention any instance of a commoner building a hospital. This is not surprising in a chronicle which deals primarily with the performances of royalty. The present inscription is perhaps the

only existing record of a private individual having founded an ancient hospital in Sri Lanka.

Medical institutions in Anuradhapura

The Mahavamsa records that Anuradhapura which had the longest tenure as a capital city was favoured with many medical institutions. The study of inscriptions lends support to the Mahavamsa in this respect in that there is epigraphical reference to several institutions, namely a hospital, a dispensary and medical halls at Anuradhapura.

In Dorabawila in the Kurunegala district is a temple, perhaps two or three centuries old, which had been built on a platform supported on stone pillars. Two of these pillars which had apparently been brought from nearby Panduwasnuwara for the construction of this temple were found to contain an inscription each. One of these is a proclamation fixing boundary stones for certain lands set apart for the benefit of a hospital built in the inner city of Anuradhapura by King Kasub (Kasyapa V), the same king who set up one of the Medirigiriya inscriptions.⁶¹

As at Medirigiriya, the hospital at Anuradhapura was assigned lands by the king for its maintenance. This method of providing for the upkeep of hospitals is quite unlike the present system where state hospitals are allocated funds from a central budget. An interesting fact that transpires from this inscription is that these lands were probably located at a considerable distance from the hospital. According to the inscription, the name of the land that had been set apart for the hospital was Balulu which Godakumbura implies may have been the present day village of Balalla near Maho. Perhaps the control of such distant lands was sufficiently rigid at the time to ensure a steady income to the hospital. This inscription confirms the statement in the Mahavamsa that King Kasyapa V 'built a hospital in the town (Anuradhapura) and assigned it villages.'⁶²

Another inscription of Kasyapa V records the establishment of medical halls in Anuradhapura: 'By establishing royal medical halls near the southern gate of the auspicious high street in the inner city he allayed the fear of disease'.⁶³ This inscription, which was excavated near Abhayagiri, records the important religious acts of the king. The three inscriptions of Kasyapa V found at sites as far apart as Anuradhapura, Medirigiriya and Dorabawila vouch for the religious zeal with which this king founded hospitals and medical halls.

The Kiribathvehera pillar inscription discovered by Bell in 1891 near Anuradhapura probably belongs to Kasyapa IV (896-913 AD).⁶⁴ It proclaims certain privileges or immunities bestowed on a dispensary. It prohibits the entry of certain categories of people, and at the same time grants sanctuary to offenders: 'Should any person enter after committing an offence he shall be arrested only outside the precincts after the officials of the dispensary have been informed and the offender has been made to turn back, but no

arrest shall be made by trespassing within the precincts.' This is indeed a privilege of a high order if one considers other institutions which have enjoyed similar honoured positions, namely churches in mediaeval Europe and embassies.

A slab inscription of Mahinda IV was found at Anuradhapura. It gives an account of the Abhayagiri *vihara* and a general survey of the charitable and religious acts of Mahinda IV (956-972 AD).⁶⁵ This inscription mentions that the king established medical halls.

Only one of the several medical institutions that existed in Anuradhapura has been identified with some probability. It is the remains of a hospital which probably dates back to Kasyapa IV and found near the Thuparama *dagaba*.⁶⁶

Identification of hospitals

With the experience gained in identifying three or four groups of archaeological remains as hospital sites, a few criteria useful in such identification have become apparent. The hospitals so far discovered, with the exception of the one at Medirigiriya, have been mentioned in the Mahavamsa, but it only cites the cities where the various kings erected hospitals, but is hardly helpful in locating the actual situation. On the other hand, the few inscriptions which refer to the monastic hospitals at Medirigiriya and Mihintale are more helpful. The stone medicine trough has come to be regarded as one of the most reliable guides to a hospital. Surgical instruments, such as scissors found at Alahana *parivena* are very significant artefacts in identification. Querns used for grinding medicine were found at Mihintale and Medirigiriya. Hospitals so far discovered have a characteristic plan consisting of a central courtyard with cells round it and an adjoining second courtyard with surrounding rooms used for common amenities.

Physicians

There is hardly any doubt that physicians in ancient times belonged to a highly respected profession.⁶⁷ The art of healing was sometimes embellished with royal lustre by kings who practised medicine. It is unlikely that kings would have indulged in such a practice unless it was in keeping with their dignity.

King Buddhadasa was known as the physician king.⁶⁸ He appears to have been an adept in medicine, surgery and midwifery, as well as veterinary medicine. 'Strange but impossible stories of operations are recorded of him.'⁶⁹

King Aggabodhi VII (766-772 AD) 'studied the medicinal plants over the whole island of Lanka (to find out) whether they were wholesome or harmful for the sick'.⁷⁰ This is perhaps the first recorded instance of medical research in Sri Lanka.

King Parakrama Bahu, who himself was versed in medical lore, ordered people qualified in the art of healing to seek out villages and market

towns and practise their art. The effect of this order was to utilise to the maximum the services of available skilled personnel.

'To discerning and skilful physicians who were quick at distinguishing various (bodily) conditions and who were versed in all the text books, he (Parakrama Bahu) gave maintenance according to their deserts, recognising the merits in all of them and made them day and night practise the art in the best manner.'⁷¹ A fact that emerges from this reference is that physicians even then were expected to work day and night. King Buddhadasa, too, did not fail to give physicians due remuneration, for he 'gave the physicians the produce of ten fields as livelihood'.⁷²

The regard with which the chief physician was held is shown by the second Dorabawila pillar inscription.⁷³ This inscription, believed to be that of Dappula IV (923-934 AD) records the grant of lands together with certain immunities to a chief physician by the name of Punalna. The extent of immunities granted exceeds even those decreed to the *sangha* (Buddhist priesthood) at the time: 'Even if taxes are exacted from lands belonging to the Three Fraternities, none should be demanded from this village.' Godakumbura comments that the post of chief physician in mediaeval Lanka was equivalent in terms of today's terminology to that of the minister of health or director of health services or both. He was a member of the king's council and a chief officer of state.

In ancient times, the few people who were able to read and write were exponents of more than one profession. Even till comparatively recent times, some village physicians did not confine their practice to medicine alone, but interested themselves in other spheres such as astrology and teaching which called for some degree of learning. A situation of this nature is depicted in two Brahmi cave inscriptions from Piccandiyava off the Puttalam-Anuradhapura road.⁷⁴ They recorded the dedication of the two caves to the *sangha* by a person named Gobuhti who was both physician and teacher to 'Maharaja Devanampiya Gamini Tissa.' Being physician cum teacher to a king would have been a privileged and influential position indeed. Paranavitana believes that the king referred to in the inscriptions was Devanampiyatissa (247-207 BC) himself. If this assumption is correct it is an interesting fact that physicians were referred to in the earliest inscriptions in the country.

Physicians apparently never formed a separate caste.⁷⁵ In ancient times medicine was practised by the most respectable families among the Sinhalese. In the low country, during the Dutch government, several *mudaliyars* or chieftains were medical practitioners of great repute in their respective districts.⁷⁶

A regular medical establishment known as *betge* was attached to the royal household. This system prevailed till the times of the last kings of Kandy. The *betge vedaralas* or physicians were given lands for their use and main-

tained by the state. Such appointments were as a rule confined to the same family, generation after generation. They possessed valuable remedies handed down from father to son, and kept strictly within the family.⁷⁷ One such family was that of Gopala Mudaliyar, a Moor physician and favourite of King Kirti Sri Rajasinghe from whom he received a gift of land in 1760, as set out in the *Getaberiya sannasa*. His father and grandfather too were physicians to kings.⁷⁸

Late Sinhala period

Ancient medicine reached its heights during the Anuradhapura and Polonnaruwa periods. After the decline of Polonnaruwa, medicine too took a backseat. The kings were at first kept busy with their own internecine warfare. Later, a new dimension was added by the appearance of the foreign invaders. All their muscle was flexed in the defence of their country, and they had little energy, inclination or sustenance to nurture the cause of medicine.

The eighteenth century dawned with two centuries of fighting with the Portuguese and the Dutch behind it. The common duties of government were ignored in the pursuit of the paramount objective of ejecting the invaders.⁷⁹ In this climate, Narendrasinghe ascended the throne in 1707, and it was he who took the first step in rekindling traditional medicine. He came across a palm leaf manuscript of the Pali work, *Bhesajja Manjusa* which was written in the thirteenth century. He requested the learned Ven. Welivita Saranankara to translate and edit it. Ven. Saranankara's name stands out pre-eminently as the *Sangaraja* or the head of the Buddhist clergy, who was responsible for the revival of Buddhism which too had then reached the nadir in those troubled times. The king was so pleased with the product that he presented Ven. Saranankara with an elephant which, however, he could not make use of as he was a monk. Ven. Saranankara's paraphrase of *Bhesajja Manjusa* ushered in a renaissance in the study of traditional Sinhala medicine. Thereafter, scholars in *pirivenas* or temple schools began to study medicine in addition to Pali, Sanskrit, astrology and Buddhism.

King Narendrasinghe's personal physician was Sailendrasinghe. In recognition of his services, the king conferred the title of Sri Raja Vaidyashekara. He experimented with medicinal preparations recommended by Charaka, Susruta and Vagbhata. He also consulted the work of others and summarised his findings in his *vattoru veda potha* or book of medicinal prescriptions.⁸⁰

There was South Indian influence during the times of the later kings, and this pervaded into the field of medicine as well. In fact, the four last kings of Kandy were of South Indian descent. Royal patronage at that time was undoubtedly important in setting the trend in medicine, and this changed with the background of the king's personal physician who wielded much influence at the court. King Narendrasinghe's personal physician, Sailendras-

inghe belonged to a school of medicine derived from Ramachandra, an erudite physician from Andhra Pradesh who came to Totagamuwa to meet the learned Ven. Sri Rahula in the fifteenth century.⁸¹ On the other hand, Kirti Sri Rajasinghe's personal physician was Gopala Mudaliyar with a unani background. His father and grandfather were physicians to the kings before Narendrasinghe.

Medicines

The majority of medicines used in ayurveda were herbal in origin. While most of them were grown locally, there is evidence from the Mahavamsa that some were imported in ancient times.

Supply of medicines and food for the sick represents a universally valued form of aid which on humane, if not on religious grounds, satisfies the basic ideals of man. In ancient Sri Lanka, medicines were considered highly valuable items, and gifts of medicines commanded a very high order of priority in the scheme of meritorious acts. 'Precious ambrosial herbs' were among the gifts sent by King Asoka of India to King Pandukabaya (394-307 BC) for such an important occasion as his consecration.⁸² Viharamahadevi, before the birth of her son Dutugemunu, gifted medicines among other things to the Buddhist brotherhood in order that she may conceive.⁸³ King Dutugemunu (101-77 BC) on his death-bed listened to a recital of meritorious deeds he had performed during his life time: 'constantly in eighteen places have I bestowed on the sick the foods for the sick and remedies as ordered by the physician.'⁸⁴ Moggalana II (537-556 AD) by gifts of medicines, among other things, won the community of monks.⁸⁵

King Mahinda IV (956-972 AD) distributed medicines and beds in all the hospitals.⁸⁶ He also gave over the earnings from a betel *mandapa* or pavilion to the monks for the purchase of medicines.⁸⁷

King Dutugemunu 'bestowed on them (preachers of the doctrine) a handful of liquorice four inches long.'⁸⁸ This was obviously meant to soothe the throat made sore by the constant use of the voice in preaching the doctrine. Liquorice, *Glycyrrhiza glabra* has been used in medicine from a remote period for thirst and hoarseness.⁸⁹ This reference in the Mahavamsa was probably to the root of liquorice (*wel mi* S.). True Spanish liquorice does not grow in the wild state in Sri Lanka.⁹⁰ Its chief habitat is Persia. Therefore, it is likely that liquorice was imported during Dutugemunu's time.

Medicinal forests

In some jungles of Sri Lanka, a striking association of medicinal trees has been noticed for sometime. These trees mostly consist of *Terminalia chebula* (*aralu* S.), *Terminalia belerica* (*bulu* S.) and *Embllica owcinalis* (*nelli* S.). The products of these trees constitute some of the most universally adopted drugs in the local ayurveda physician's pharmacopoeia.

These medicinal forests occur in a few places in Sri Lanka. A large tract of jungle with such a concentration of medicinal trees is found near

the village of Pitakumbura which is about 10 km from Bibile, on the road to the Veddah village of Nilgala. It extends for several kilometres. Lying within the Gal Oya catchment area, it presents beautiful park-like features of the *talawa* or savannah forest in which scattered trees punctuate a green, uninterrupted carpet of grass.⁹¹ This fortuitous association of medicinal trees has given rise to the traditional belief that these forests were originally the medicinal plantations of the ancient kings. However, the evidence is against this theory. There is no mention of such medicinal gardens in ancient literary works or lithic inscriptions. These three species of trees along with a few others such as *Careya cocinea* (*kahata* S.), happen to be fire resistant. Periodic burning of the jungle by villagers in the pursuit of their traditional but destructive system of *chena* or shifting cultivation was a characteristic occurrence in these jungles. Fire resistant trees, unlike other varieties, become revitalised with the next rains. While the rest of the trees die off, these species become the dominant vegetation in the area.⁹²

Weights and measures

The Sinhalese had an elaborate system of weights and measures, and this extended to medicine as well. By present standards they were rather crude, but these served their purpose well. It has to be remembered that medicine then was mostly herbal in character, and purified extracts where precision in measurement was required, were unknown. The British made the first attempt at introducing a legalised system of weights and measures in 1816. Subsequent regulations were introduced in 1822, when the pound, the gallon and the foot were made the standards. In spite of these and subsequent legislation by the British in 1836 and 1876 whereby imperial standards were laid down,⁹³ ayurveda drugs continued to be measured by the traditional system.

Ancient medical works, such as *Bhaisajjaya kalpa* and *Yogaratanakaraya* set down the system of weights and measures then adopted. The weights were based on several varieties of seeds, each heavier than the previous one. These included the mustard seed, gingerly or sesame seed, grain of paddy and *maditiya* seed. *Maditiya* seed from the tree, *Adenantha pavonina*, is even nowadays used by ayurveda physicians and goldsmiths as a measure of weight. The seeds are hard, brilliant scarlet, glossy and convex on both sides. Each weighs approximately four grains.⁹⁴

The widely used measure of capacity for liquids was the *neliya*. In the preparation of herbal decoctions, large quantities of water were added and then boiled down to a fraction of the volume. Ancient prescriptions usually lay down the respective volumes in terms of this measurement.

Medical equipment

Ancient artefacts of medical interest may be conveniently divided into two categories, namely those used in surgical procedures and those employed in the preparation, storage and administration of medicines. Some of these artefacts have been unearthed in ancient hospital sites, and by vir-

tue of this association with hospitals their identity has been established. If these objects had been discovered at any other site, their identity would have been open to question, for they would have served some other purpose equally well.

Scissors and knife blades have been unearthed from archaeological sites, but those discovered at the Polonnaruwa hospital site were undoubtedly used for medical purposes. So far only a couple of ancient hospital sites have been excavated, and therefore the number of instruments identified with some degree of certainty is limited. On the other hand, numerous surgical instruments made in recent times and currently used by ayurveda physicians, are available. These instruments are of simple construction and made locally. A stainless steel needle with a wooden handle was used for perforating ears. Cauterising was done with a bent instrument with a flat head. It was of gold, silver, copper, steel or iron. A stainless steel lancet was used for opening abscesses.⁹⁵

As regard the preparation, storage and administration of drugs, the best known equipment was the stone medicine trough. Another stone implement which by its very nature has survived from ancient times is the grinding stone in which medicinal herbs were crushed. This item of equipment consists of two similar circular stones between which the herbs were crushed when the upper one was rotated over the stationary lower half. A quern of this nature was discovered in the Mihintale hospital site. Perhaps the oldest grinding stones discovered so far were a pair unearthed by Parker during excavations near Tissawewa in Tissamaharama.⁹⁶ He dates these remains between 200 BC and 40 AD.⁹⁷ If Parker's estimate is correct then these grinding stones indicate that medical practice was developed to some degree in the early period of history in the southern part of the country as well. The Mahavamsa and the archaeological evidence so far discussed pointed to well established medical practice only in the *Rajarata*.

Cutting of stems and roots of herbs into small pieces was a preliminary requirement in the dispensing of many ayurveda prescriptions. A special medicinal cutter which resembled an arecanut cutter was used for this purpose. Some of these were made of brass and elegantly designed. An example is the one constructed to represent *Gaja sinha* or the lion with an elephant's head. *Gaja sinha* was the heraldic device of the district of Nuwarakalaviya.⁹⁸

The two blue glazed jars of Persian origin found at the Mihintale hospital,⁹⁹ and pieces of ceramic at the Polonnaruwa hospital suggest that imported containers were used for purposes of storage in hospitals. Some pieces of ceramic ware from the latter site bore Chinese characters,¹⁰⁰ thus suggesting the country of origin.

While beautifully designed vases were used for storing medicinal liquids, equally beautiful boxes were utilised for storage of pills. Some of these pill boxes were made of ivory and elaborately carved.¹⁰¹

There is evidence that sandalwood cups were used for the administration of medicine.¹⁰² Sandalwood itself is used for medicinal purposes, and its use as a medicine cup is probably based on such considerations.

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THE PORTUGUESE PERIOD

The Portuguese first arrived in Colombo in 1505 at a time when there were three kingdoms in Sri Lanka, namely Kotte, Kandy and Jaffna. They gradually consolidated their hold on the maritime provinces by establishing forts in strategic towns such as Colombo, Negombo, Mannar, Jaffna, Galle and Batticaloa. Their period of occupation was marked by incessant hostilities with the rulers of the local kingdoms. At one stage, with the creation of the kingdom of Sitawaka, there were four such kingdoms to contend with.

The decline of Portuguese power in Sri Lanka began in April 1638, when the Dutch captured the fort of Batticaloa. Trincomalee, Negombo and Galle then fell in succession. There was a short revival of Portuguese hopes when they recaptured Negombo, but this gain proved to be only temporary. After a long siege the Dutch captured Colombo in 1656. The expulsion of the Portuguese was complete in 1658, with the fall of Mannar and Jaffna.

The first sustained contact with western medicine occurred during the Portuguese occupation. However, sporadic exposure during pre-Portuguese times could not be ruled out. There was considerable international commerce through the ports of Mantota, Colombo and Galle. Ships from many seafaring nations used to call at these ports to take in cinnamon, spices, elephants and other much valued articles of commerce for which Sri Lanka was famous at the time. During their stay in these ports, the sailors would have resorted to their own systems of medicine in case of illness and thereby would have provided a new experience to some of the local inhabitants around these ports.

Pliny records the instance of a Roman ship being overcarried to Hippuros, which is the present day Kudiramalai lying within the Wilpattu National Park. This incident prompted the king of Sri Lanka to send an embassy to Rome in the first century AD.¹ Such incidents could not have failed to impress the local people concerned of Roman practices including medicine.

Portuguese medicine

Medicine practised by the Portuguese at the time was not entirely western, for it had an oriental flavour as well. Some of their medicinal

knowledge was derived from the Moors of Spain.² The medical system pursued by them in their possessions in the Indies acquired a further oriental bias by absorbing some of the treatment methods from India as well as from Sri Lanka, as demonstrated by the pioneering work of Garcia da Orta.

Garcia da Orta was a Portuguese physician who lived in Goa from 1534 till his death in 1570. At the time, Goa was the principal Portuguese possession in the Indies, and was ruled by a viceroy who also had administrative control over their government in Sri Lanka. Garcia da Orta made extensive inquiries into the origin and uses of some of the drugs employed in Indian medicine, and published his results in 1563.³ It was an important work, and was the third publication ever to originate from India. It contains a few references to Sri Lanka, but it is doubtful whether he ever visited the country. In one passage he states that he served in the Portuguese fleet off the island of Ilha das Vacas⁴ which was later renamed Delft by the Dutch. His book is in the form of colloquies with an imaginary person by the name of Ruano. In the fifty eighth colloquy, he introduces a third person, Dimas Bosque who was a Spanish physician. Bosque served as medical adviser to Dom Constantino de Braganza, the viceroy in Goa, and accompanied him in his expedition to Jaffnapatam in 1560.⁵

Esteem for local medicine

The viceroy's forces, though they captured the town, were short of food and plagued by ill-health. The task of treating the sick fell on Bosque. The medicines brought by the fleet were already exhausted, and Bosque was forced to try a local remedy for dysentery:-

‘Having nothing left with which to treat the sufferers from dysentery, whose sickness gave so much work to the army, I was forced to try experiments with these *marmelos*, of which I heard from the natives. I cured many cases with them, ordering plasters to be made for the belly and stomach. I also ordered a marmalade to be made which did not taste bad, and had a pleasant acid flavour. I ordered the sick to eat it roasted, with sugar.’⁶

The *marmelo* referred to by Bosque was the common *beli* (S) fruit from the tree, *Aegle marmelos*. Its value in dysentery and diarrhoea was officially acknowledged by the British and Indian pharmacopoeia where it was listed.⁷ It has a local reputation for double action, for it is prescribed for constipation as well. The statement of Bosque provides evidence of an instance where the Portuguese learnt for the first time of the efficacy of a local medicinal preparation.

Contemporary Portuguese historians had the highest praise for local remedies. Joao Ribeiro was a soldier who served in Sri Lanka from 1641 to 1658, when the Portuguese finally surrendered to the Dutch. He wrote his famous history after returning to Portugal in 1680. His praise for local medicines was at times bordering on the fantastic:

‘They are great herbalists, and in case of wounds, tumours, broken arms and

legs they effect a cure in a few days with great ease. As for cancer, which is a loathsome and incurable disease among us, they can cure it in eight days, removing all viscosity from the scab without so much as leaving a mark anywhere to show that the disease had been there. I have seen a large number of soldiers and captains cured during my residence in the country, and the ease with which this was done was marvellous. In truth the land is full of medicinal herbs and many antidotes to poison, which I have myself tried to learn as a remedy against snakebites.' ⁸

Another Portuguese historian who has left a record containing numerous references to medicine was Fernao de Queyroz. He was stationed in Goa from 1635. He died in 1688, after a residence of 53 years in India. His history of Sri Lanka during the Portuguese period was based on publications and manuscripts, as well as on information obtained from persons who had first hand knowledge of the events. He never visited Sri Lanka. The variety of herbs found in Sri Lanka impressed him: 'some wholesome, others poisonous, some heaty, others cooling.'⁹ Queyroz implies the acceptance of the ayurvedic concept of heaty and cooling foods. Though he was not trained in medicine, it was unusual for a westerner to concur with such thinking.

Many of the plants that the Portuguese, like the Dutch who came later, saw in Sri Lanka were new to them. They were previously unaware of their medicinal values. When years of residence in the country had brought them into contact with the practitioners of ayurveda, they began to develop a healthy admiration for local knowledge. They gradually absorbed some of these remedies into their own pharmacopoeia. Besides the *beli* fruit, there were other oriental medicines which found a place in their treatment regimes. One of them was snake wood or mongoose plant, the *pao de cobra*.

Snake wood

Snake wood was used by the Portuguese as an antidote against snakebite, as well as for rheumatism, small pox, measles and cholera.¹⁰ It acquired its reputation as an antidote for snakebite through the fabled behaviour of the mongoose in its fight against the cobra. Their hereditary enmity has survived to this day and when the two enter into mortal combat, the mongoose usually emerges as the winner.¹¹ da Orta's high estimate of the efficacy of snake wood was founded on evidence from Sri Lanka. He noted that the mongoose fortified himself for the fight by rubbing himself against the root of the snake wood: 'From this the Chingallas (Sinhalese) took an example, and saw that this root would be good against the bites of cobras.'¹²

da Orta described three plants from Sri Lanka which were classed as snake wood. Subsequently there was much speculation as to their identity. Attygalle identified them as *Plumbago rosea*, *Ophiorrhiza mungos* and *Mimosa pudica* (*nidikumba*S.).¹³ Petch suggested three entirely different plants, namely *Rauvolfia serpentina* (*ekaweriya*S.), *Strychnos trichocalyx* or

Strychnos nuxvomica (godakaduruS.) and *Hemidesmus indicus*.¹⁴ *R. serpentina* was to later acquire fame as the source of the hypotensive drug, reserpine. A few years ago it was not uncommon for local gypsies to hawk around from house to house pieces of wood which they alleged to be snake wood in the hope that some unsuspecting persons would buy them as protection against snake bite.

Bezoar stone

The medicinal properties of bezoar stone were highly regarded by the Arabs, and its use by the Portuguese was an example of how Arab medicine influenced the Portuguese. Bezoar stone was a concretion found in the stomach of male goats. The island of Delft off Jaffna had a reputation for this stone at the time. Queyroz, writing of Delft, stated: 'there is a kind of goat if killed in the month of July, there are found in the stomach excellent bezoar stones.'¹⁵

In 1543, the Governor, Martin Alfonso de Souza went to Jaffnapatam at the head of a large fleet,¹⁶ but strong winds scattered his fleet and he was forced to remain at Ilha das Vacas or Isle of Cows (Delft) for several days.¹⁷ Garcia da Orta's statement suggests that he was with the fleet:

'I afterwards found them (bezoar stones) when serving in the fleet off the Ilha das Vacas (near Cape Comorin) when many he-goats were killed for the fleet. For the most part they contained this stone in their paunches, and the people who sought them found a great many.'¹⁸

Later it became customary for ships from Bengal to call over at Delft for these stones.¹⁹

Bezoar stone was used in the treatment of many conditions. Wealthy persons took it in rose water twice a year in order to preserve their youth. It was also used for prickly heat, leprosy and malaria. As a local application it was employed in the extraction of poisons in ulcers, and for the bites of mad dogs and other animals.²⁰

The Portuguese attributed similar properties to another type of animal stone, namely that found in the gall bladder of the hog from Malacca, as well as from Sri Lanka. They called it *pedro de porco* or hogstone.²¹ The Dutch too valued this stone, but it failed to stand the test of time and it has since disappeared from use as a remedy.

Venesection

Venesection has been described as the most ancient and widespread surgical operation in the world.²² It was resorted to for various illnesses at different times in history. In ayurveda, bleeding was practised through the relatively painless method of applying leeches, but the Portuguese resorted to cutting the vein with a lancet. They were probably the first to introduce this method to Sri Lanka, but it failed to supersede the leech. Therapeutic bleeding is mentioned in a few Portuguese documents.

Felipe de Oliveira was despatched to Jaffnapatam from the Seven

Korales by Constantine de Saa who was Captain General in Colombo in order to settle certain issues there. His expedition met with many hardships including sickness. According to a letter he wrote to de Saa from Nallur on 8th June, 1619, he himself fell ill and had to be bled six times.²³

The Church of Our Lady of Miracles of Jaffnapatam became famous as a place where miraculous cures were claimed. Its fame was not confined to Jaffnapatam, but the sick from all parts of the country flocked there. In one instance an inhabitant of Mannar came there to make some religious observances when his son fell ill:

‘In order to bleed him they placed him on a basket and however hard the barber tried to perforate the vein, he was unable to do so. Trying to discover the reason why even the lancet doubled up, they found that the basket contained some shavings from the wood of Our Lady’s statue. On discovering this, they hastily removed them. When the barber tried again, the lancet entered the vein to the amazement of all.’²⁴

A belief in divine cures found a prominent place in their attitudes to disease. It may be mentioned that in mediaeval times many diseases were beyond medical cure. The Sinhalese had faith in exorcism.

Exorcism

One of the factors that the Portuguese had to contend with in Sri Lanka was the hold the exorcists had on the local inhabitants in times of illness. The Portuguese considered this an impediment to their evangelistic activities. The deeply rooted belief in the devil went against the grain of their gospel. Exorcism was consequently discouraged but the people still used to practise it in times of illness much to the annoyance of the Portuguese. Queyroz was constrained to remark that the Sinhalese possessed a good knowledge of medicine and effective herbs which helped to cure dangerous wounds, but they little made use of them as they preferred to believe in the supernatural causation and cure of disease. The Portuguese were bent on weaning the local inhabitants from this attitude and inculcating in them a belief in medicines and god.²⁵ Queyroz declared that ‘both in Ceylon and the rest of India they will not begin a treatment without first consulting the soothsayers with whom the whole country is well supplied.’²⁶

The Portuguese were concerned that these exorcists were making money. They claimed that sickness was due to possession by the devil, and in order to appease the devil patients were induced to part with their possessions such as cattle. Their income would have been considerable, for the Sinhalese king imposed a tax on their earnings. In order to pay this tax the exorcists were obliged to continue their practice in spite of protestations by the Portuguese. In the end, the latter prevailed on the king to withdraw the tax, but this did not have the desired effect, for the practice still continued.²⁷

The Portuguese did their utmost to discourage superstitious approach to disease, but they did not offer any new alternatives. They only recommended that the Sinhalese practise their own system of medicine with its rich

heritage of herbal knowledge. Their antagonism to exorcism was purely based on religious considerations. They were not interested in offering the population at large the western system of medicine which they brought along with them. Such a step would have meant a large capital outlay in terms of drugs, equipment and medical personnel when proper medical care for their own nationals was found wanting.

Medical care

The medical care system employed by the Portuguese in Sri Lanka was almost exclusively confined to the erection of hospitals in the chief garrison towns of Colombo, Mannar, Jaffna and Galle. These towns had the added importance of possessing harbours which were used by Portuguese shipping. Their intention was to provide medical care to their soldiers, sailors and civilian nationals in these towns. It was rarely that non-Portuguese were treated at these hospitals.

These hospitals were generally managed by Catholic priests, chiefly the Jesuits. The latter were in a way well suited for this task, for they were required to work for a month in a hospital before ordination. The hospitals were the responsibility of the government, but as funds were often short the quality of health care suffered.

Charity played a significant role in their attitude to patient care. Every leading town had an institution known as the *misericordia* which was a holy house of mercy for relieving the suffering of the poor and the needy. These institutions often looked after the sick and the orphans.

The Portuguese term for hospital was *espiritual*. The adoption of this word into the colloquial Sinhalese vocabulary indicates the impact that a few hospitals practising western medicine would have had on the local population at the time. The Sinhalese had apparently lost sight of the hospital concept for a few centuries before the advent of the Portuguese, for there is no indication in the ancient chronicles or the inscriptions of the existence of a hospital since the Polonnaruwa period.

There was no fixed method of financing the hospitals. The methods used appear to have varied from time to time and from hospital to hospital. There is evidence that grants from the state, charitable donations, and revenue from customs, pearl fisheries and lands allocated to the hospitals were employed for the maintenance of these institutions.

Colombo hospital

The Colombo hospital was established in 1552, by two Jesuits. Father Manoel de Moraes was the second Jesuit to visit Sri Lanka and he was accompanied by a lay brother, Antonio Dyas. They arrived in October 1552. Father Moraes called on the captain of the then small Portuguese settlement of Colombo and requested him to 'set in order a house where the sick might be treated' and where the two of them may lodge. A hospital was hastily arranged where they took up their quarters.²⁸

It is not clear whether the same site continued to be used as the hospital throughout the Portuguese occupation of Colombo. A map drawn in 1634, shows its position by the Colombo harbour at the site where the wooden passenger jetty now stands.²⁹ Two maps drawn in 1656, about the time Colombo was captured by the Dutch depict the same site for the hospital.³⁰

The *misericordia* stood a short distance away from the hospital at the site presently occupied by St. Peter's Church in Fort.³¹ The situation of the hospital by the harbour would have facilitated the easy transfer of the sick from the ships that called at Colombo.

On 25th April, 1598, Francisco da Gama, Count of Vidigueira and Viceroy of India issued an *alvara* or decree from Goa. It laid down the means of financing the hospital, and in addition it reflected the official attitude towards the sick:

'I, Dom Francisco da Gama, etc, make known to those to whom this *alvara* will come that it is very important for the service of God and of His Majesty that the sick people of the hospital of the fort of Columbo should be well cared for, that nothing should be wanting to them, and that the hospital should be equipped to welcome the sick. Hence, I decree, and it is my pleasure that all the revenue of the Customs House of the fort be devoted to the care of the sick. And if anything of that revenue still remains it will be spent on the building of the hospital. In this matter I enjoin on and charge the Factor, who is at present in the fort, and any future Factors that whatever amount is derived weekly from the Customs House should be certified by the officer in charge and passed to the *mordomos* of the hospital or to the person chosen by the superintendent of the *misericordia* to look after this institution. This person will acknowledge officially which he has received.'³²

In 1634, towards the end of the Portuguese rule, another method of financing the hospital was in vogue:

'For the cure (of the sick) at the King's hospital is given 4000 xerofins, although it is certain that this amount cannot be spent in a year. Thus, the surplus in a year is carried over to the succeeding year, because this amount is raised from the village which it (the hospital) owns.'³³

Cinnamon was a valuable item of commerce, and there is an instance of the income from this produce being set apart for the use of the Colombo hospital. In a *regimento* or a set of instructions issued by Pera da Silva, Viceroy of India to the *vendor* or superintendent of revenue in 1639, it was decreed that the revenue from cinnamon produced in the village of Bocalagama should be set apart for the Colombo hospital.³⁴

This system of allocating a village to a hospital was not a novel one, for it was used during Sinhalese times as well. The hospital at Anuradhapura built by King Kasyapa V and that at Medirigiriya were provided with lands for this purpose.³⁵

The fines imposed by the *ouvidors* or judges throughout the country provided another source of revenue for the Colombo hospital. A half of the fines collected was set apart for this purpose. It is significant that only Col-

ombo hospital was thus favoured. The local hospital did not benefit from fines collected even in distant places such as Jaffna.³⁶

The *vendors* or superintendents of revenue were responsible for the supply of provisions and other necessary items to the hospital, but the manner in which they attended to this duty was unsatisfactory. As a result, the Franciscans, the Dominicans and finally the Jesuits declined to take a share of the hospital work.³⁷

The state of the Colombo hospital was in sharp contrast to that in Goa, a description of which has been left by the French traveller Francois Pyrard of Laval who spent sometime as a patient in the hospital. He described it as the finest hospital in the world:

‘They (beds) are beautifully shaped and lacquered with red varnish; some are chequered and some gilded; the sacking is of cotton; the mattresses and coverlets are of silk or cotton, adorned with different patterns and colours.’³⁸

On the other hand, the Colombo hospital had no beds strung with rope, coir or rattan though these could easily have been procured without cost from the villages of the king. A few of the patients slept on mats while the others did so on the ground.³⁹

In the hospital in Goa fowls were a much appreciated dainty that was supplied to the patients.⁴⁰ The patients in the Colombo hospital too should have received such delicacies. The villages of the king were expected to supply poultry but the patients hardly received such food. An example was the village of Wisinawaya which used to supply 20 fowls daily and a cow weekly to the *vendor*, but none of these reached the invalids. Matters came to a head when soldiers afflicted with beriberi ‘caused by insufficient nourishment’ went begging for food on the streets. Several of them were taken charge of by charitable Portuguese and cured at their own cost.⁴¹

The Colombo hospital was not a large one by present standards. In times of epidemics it was able to accommodate about 150 patients.⁴² The overflow was found room in private homes of the citizens who considered it a pious duty to be charitable to the sick. The Captain General, who was the equivalent of the governor, set an example by himself undertaking to nurse the sick in his own home.⁴³

There were several garrisons stationed some distance from Colombo which in terms of transport existing at the time would have been several days’ journey from Colombo. These garrisons in such strategic places as Menikkadawara (near Dedigama), Sabaragamuwa (Ratnapura) and Ruwanwella were kept busy by the hostile Sinhalese, and therefore injuries were not uncommon. There were no hospitals attached to these centres, but there was a surgeon each at Menikkadawara and Sabaragamuwa and he was provided with two rations of rice a day, the total adding up to 4 candies, 12 parras and 35 measures annually. These surgeons were also paid a curry allowance of 6 larins per month and also two double quarterings a year.⁴⁴

When soldiers fell ill at Menikkadawara, where 600 Portuguese were stationed, they were kept in the camp for a few days and then sent to Ruwanwella, from whence they were despatched by boat to Colombo. This inevitable delay caused many deaths.⁴⁵

As far as possible the invalids were attended to in the camps themselves so that the expense of sending them to hospital could be saved. When an illness could not be treated on the spot the surgeon had to issue a certificate before sending the patient to hospital in the city.⁴⁶

Towards the tail end of their rule in Sri Lanka, the Portuguese suffered many casualties at the hand of the Sinhalese and the Dutch. The importance of looking after the health of the Portuguese soldiers then became a primary objective. In a letter written to V. Mascarenhas, Viceroy of India on 14th February, 1652, King Joao IV of Portugal had occasion to emphasise this point:

‘By letter of 27th March, 1649, I earnestly requested the Viceroy, Dom Phelipe Mascarenhas, your predecessor to take special care of the widows and the orphans of the inhabitants of Colombo who died in the war of Ceilao, and to give full compensation to those who serve me in that city, and that the *casados* who are poor should be admitted to the hospital and receive there free treatment.’⁴⁷

Mannar hospital

Mannar was wrested by the Portuguese from the King of Jaffna in 1560.⁴⁸ In this expedition they carried away to Goa seven ‘mermaids’. The Portuguese at the time fondly believed in the mermaid. These mammals, which were really the dugongs that frequented the waters off Mannar and Puttalam, were dissected by the physician, Dimas Bosque who accompanied the expedition as mentioned earlier.⁴⁹ It was found that their ‘parts, external and internal, (were) perfectly conformable to the human.’⁵⁰

Soon after the capture of Mannar a hospital was set up there. A second hospital was built later and Mannar then became the only town in Portuguese occupied territory in Sri Lanka to have this dual facility. One of the hospitals was primarily meant for the Portuguese soldiers. Mannar being a small town, the civilian population would have been small, but they too had access to this institution. The other hospital was for the local inhabitants who had been converted to Christianity by the Portuguese. However, a few non-Christians too were admitted to this hospital.⁵¹

Much information about the Mannar hospitals is available in letters written by the Superior of Jesuits in Mannar to his Superior General in Rome. These letters, which the former was expected to write at least once a year, were very descriptive, and are now preserved in the Roman Archives of the Society of Jesus.

One of the earliest references to the Mannar hospital is in a letter written by A. Anriquez, Superior of Jesuits in Mannar on 29th and 30th December, 1562:

‘We have a hospital for the Christians of the country. About this I wrote before. The poor are treated in this hospital free of charge since the Christians have contributed for this purpose about a hundred cruzados this year. The money was given during the pearl fishery, and the same was done in the previous years.’⁵²

The people of Mannar used to pay a tax to the Portuguese for preventing unauthorised Moors from outside the country approaching the coveted pearl banks. This tax was diverted to the hospital for its maintenance.⁵³

The hospital that existed in 1562 could accommodate about 30 patients at a time. When it became necessary to treat larger numbers, a few temporary rooms were added to the hospital. The rest, who were less ill, were distributed among several households of the Christians who much welcomed this opportunity of showing such charity. These patients were looked after by the Christians at their own expense. An instance where such distribution of patients took place was in 1562, when a ship sailing from Portugal put into harbour with 80 or 90 sick. They were well cared for in Mannar: ‘We begged some soldiers to help us in the pious work. They did very well watching, working and putting up with foul odours.’ The captain of the ship contributed about 40 cruzados towards the cost of caring for the sick, but the total expenses were thrice this amount.⁵⁴

The Jesuits looked after the hospital with much devotion, for they considered it a service rendered to God.⁵⁵ Some priests made it their special duty to look after the sick. Father Jeronymo Vaz, whose main obligation was to preach to the soldiers, was responsible for building a ‘very good hospital, better than the one they had been having.’⁵⁶

By 1569, Mannar had a *misericordia*, and with its assistance a better service was provided to the patients. The hospital was originally on a site not very conducive to the health of the sick. In 1569, the *misericordia* bought a large plot of land in a suitable location and put up separate buildings for the Portuguese and the native Christians.⁵⁷

In 1634, the government provided a sum of 360 xerofins a year for the maintenance of the hospital, and the physician was paid a living allowance of 64 xerofins a year.⁵⁸

The Mannar hospital was established at a time when the town was frequented by soldiers and ships. But towards the end of Portuguese rule in Sri Lanka this situation had ceased to exist. Its upkeep was considered an unnecessary expense on the exchequer and the Viceroy, Mascaranhas ordered the closure of the hospital with effect from 1st June, 1645,⁵⁹ which was just three years before the capitulation of Mannar to the Dutch.

Jaffna hospital

The Kingdom of Jaffnapatam became a Portuguese province in 1619, when it was subjugated by Captain Major Philippe de Oliveira. After the conquest, de Oliveira erected the hospital as well as the house of charity at

his own expense.⁶⁰ The Jaffna hospital thus had a relatively short period of existence, for the Dutch captured the town in 1658.

The hospital was situated close to the church and the jail. On 20th February, 1627, a tempest lashed Jaffna. The hospital and the jail were submerged by the waters, but the church was spared.⁶¹

Once an armada came in with 60 badly wounded Portuguese. They were admitted to the Jaffna hospital:

‘The Rector of the College (probably of the Jesuits) undertook the task of nursing them, and invited his religious subjects who were dispersed in different parts, to come and help him in a work of so great charity. They all responded with charity, each bringing what he could for the relief of the wounded as well as for their sustenance.’⁶²

The hospital was run by the Jesuits. It was financed from the revenue derived from the Customs House.⁶³ In 1645, a sum of 1200 xerofins was set apart for its use.⁶⁴ The Jesuits visited the hospital and assisted the sick ‘both in their spiritual and temporal needs.’⁶⁵

Galle hospital

Within the fortress of Galle there were 262 Portuguese families. According to Ribeiro there was a hospital as well as a *misericordia*,⁶⁶ but as far as could be ascertained there is no other reference to this hospital.

Diseases

While the Portuguese were credited with having ushered in western medicine to Sri Lanka, on the debit side they were responsible for the introduction of a couple of new diseases, as well as an injurious habit. Pyrrard of Laval wrote:

‘Venereal disease is very prevalent but only where the Portuguese are. As for pox it is no mark of shame there....they even make a boast of it. This malady prevails only among the Christians.’⁶⁷

While this statement implies that syphilis was introduced by the Portuguese, yaws or *parangi* which had many similarities to syphilis was brought in by their negro slaves from Mozambique. The untold misery that this disease inflicted on thousands of poor villagers in jungle hamlets was a legacy that lasted through several centuries.

Tobacco cultivation was first introduced into Sri Lanka by the Portuguese in 1610.⁶⁸ Tobacco was invested with medicinal properties by them. The Captain General, Dom Antonio Mascarenhas, after consulting native medical practitioners, issued an order to the army that everyone should use tobacco in order to avoid beriberi.⁶⁹

Several diseases which appeared in epidemic proportions from time to time harassed the Portuguese. At Menikkadawara, ‘the pestilential disease of beriberi attacked them (the soldiers) from which died more than 300, and many of them so rapidly that they did not even have time to make their confessions.’⁷⁰ This description fits cholera more than beriberi.

Most of the descriptions of epidemic diseases during Portuguese times have been left behind by Christian priests, and the stress has been on sympathy towards the sufferers rather than a description of the disease itself. The nomenclature of diseases cannot be relied on, for the account of a particular malady would fit in equally well with beriberi, cholera, dysentery or plague. On the other hand, when small pox was referred to, there was no ambiguity.

In 1564, a great epidemic swept the island of Mannar and the related coastline of the mainland, and it lasted a few months:

'The Christians who died there, and those who died of the same epidemic after returning to the coast, must be more than four thousand, not counting gentiles of whom a great number also succumbed to the sickness.....It was sad to see the destruction caused by the great epidemic which seemed to be a kind of plague, for there was hardly any house where you could find a person to prepare a bit of food.'⁷¹

Gout is another disease which was mentioned for the first time by the Portuguese. de Almeida, Captain General of Colombo from 1631, to 1633, suffered from the disease while in Sri Lanka: The Viceroy of India, Conde de Linhares, in a letter written on 2nd April, 1632, to the King of Portugal states:

'I have had news from Ceylon (that) Dom Jorge de Almeida who wrote on 28th December, (1631) that he was preparing to go to battle with the enemy, but was prevented by having had acute gout in the legs and arms.'⁷²

The Portuguese imported medicines from Goa,⁷³ which as their headquarters in the East, would have been stocked with such necessities obtained from Portugal. Most of these drugs would have been the standard western medicaments in vogue at the time, but they also included exotic remedies such as the stone of Gaspar Antonio. Antonio was a Jesuit lay brother born in Florence. He had a knowledge of medicine and was therefore placed in charge of the hospital in Mozambique where he worked from 1641 to 1655. In 1656, he went to Goa in charge of the hospital of the Jesuit College of St. Paul. Making use of various substances such as musk, amber, seed-pearl, jacinth, sapphire, emerald, ruby, red coral, white coral, bezoar and deer horn, he prepared a tablet which went under the name of the stone of Gaspar Antonio. It was used internally in case of malaria or other fevers and for vertigo or gout. Its external use was in the case of snake bite when the powdered stone was applied on the wound.⁷⁴

Garcia da Orta has described in detail several oriental drugs which he found useful. It may be inferred that these found a place in their pharmacopoeia in India and some of them in Portugal too. The majority were products of vegetable origin such as coconut, cinnamon, cardamon, nutmeg, clove, tamarind, betel, opium, and cannabis. The more unusual substances used in medicine included pearls, precious stones and ivory.⁷⁵

In time of epidemics there are instances when the Portuguese resorted to local remedies in sheer desperation. The use of the fruit of *Aegle marmelos* (*beliS.*) in an outbreak of dysentery in Jaffnapatam was already referred to. While *beli* had a reputation for anti-diarrhoeal action, the fruit of *Garcinia Cambogia* (*gorakaS.*) was not known for its medicinal properties. It was pressed into service by the Portuguese to treat a mysterious epidemic that erupted in Colombo in 1587, when King Raja Sinha I laid siege to the city. It was a new disease previously unknown to both the Portuguese and the local inhabitants of Sri Lanka. The disease took the form of a progressive swelling of the body beginning in the feet, ascending to the legs, the abdomen and finally to the chest. Large numbers died of the disease and at one time poisoning of wells was suspected. As it was a mysterious sickness, a post mortem examination was carried out by the physicians on one of the bodies. This was perhaps the first recorded post mortem study in Sri Lanka. The liver was found to be 'apostemated'. The disease was then ascribed to the intense drought that prevailed at the time, and a line of treatment drawn up:

'And the disease being (now) understood, they applied remedies of cold and dry things, like vinegar, with which they mitigated it; and this lacking, they made use of a fruit which they call *gorsas* (*goraka*), which has the same virtue.' ⁷⁶

The epidemic lasted only a short time. Its true identity is obscure.

Dutch Times

When the Dutch became masters of the maritime provinces they discouraged Catholicism. The Catholic converts in the country found themselves without spiritual sustenance. Portuguese priests were anxious to succour to their religious needs, but found themselves unwelcome in the Dutch territory. However, they resorted to various ruses to enter the country from Goa and also to sneak into Colombo. Once in the country, some found refuge in the Kandyan Kingdom where the King was not hostile to them. Father Joseph de Menzes and Father Joseph Carvalho were two such priests who resided in Puttalam which came under the King of Kandy. In 1697, they wrote to the Superior of the Oratory in Goa requesting certain necessities which included some stones of Gaspar Antonio. Undoubtedly, these stones would have been highly regarded at the time for a request of this nature to have been addressed to Goa.⁷⁷

Father Joseph Vaz was the most famous of these missionaries. His work during the small pox epidemic in Kandy is well documented. Many houses in Kandy were rendered vacant by the people fleeing from the town. Father Vaz admitted small pox patients to four of these vacant houses and thus established a hospital. The neighbours objected to this undertaking as they disapproved of infected patients being treated close to their houses. Even after the small pox epidemic had abated the hospital continued to function, when patients with other diseases too were admitted.⁷⁸

Notes

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3. Garcia da Orta, *Colloquies on the simples and drugs of India*.
4. *Ibid.*, p 363.
5. *Ibid.*, p 459.
6. *Ibid.*, p 464.
7. F. Lewis, *The vegetable products of Ceylon*, p. 82.
8. J. Ribeiro, *The historic tragedy of Ceilao*, p 68.
9. F. de Queyroz, *The temporal and spiritual conquest of Ceylon*, p.71.
10. Garcia da Orta, *op. cit.*, p 335.
11. R. L. Spittel, *Far off things*, p 190.
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THE DUTCH PERIOD

The Dutch completed the capture of the maritime provinces by defeating the Portuguese in the long drawn out siege of Colombo in 1656. They, like the Portuguese before them, succeeded in conquering only the maritime provinces, the central highlands being under the control of the Kandyan kings.

The impact that the Dutch had on local medicine was only a fraction more than in the case of the Portuguese. There is a close parallel in the circumstances of the two regimes. They were both beset by wars and disputes with the Sinhala kings, and both had the more important religious and commercial motives to occupy themselves than to provide social amenities to the nationals of the country.

The Dutch built more hospitals than the Portuguese, and that again was for the purpose of serving their forces, shipping personnel and other Dutch nationals in the country. Hospitals were established in strategic garrison towns, several of which possessed harbours as well. The premier hospital was in Colombo, while smaller institutions were in Galle, Jaffna, Matara, Trincomalee, Mannar, Batticaloa and Kalpitiya. All these towns, except Colombo, still have well preserved ramparts, and it is logical to assume that the hospitals were situated within these fortifications. The military and administrative activities of the town would have been centred in the fort and the hospital would have to be handy for the treatment of the injured and the sick, specially in times of war.

It may thus be seen that centres practising the western system of medicine had a wider distribution during the Dutch than the Portuguese period, but local nationals were generally shut out from these hospitals. This lack of exposure of the local population would have lessened the impact of western medicine on the nationals of the country.

Considerable information on Dutch hospitals and other medical activities in Sri Lanka are available, specially from archival sources. Much of this information concerns the hospital in Colombo, but the system of medicine that it unfolds is equally applicable to other Dutch hospitals in the country.

The Dutch governed the maritime provinces through the Dutch East India Company. This Company was formed in Amsterdam in 1602. At the

time, the sovereignty of Holland rested with the States General (Staten Generaal), which was composed of representatives from each of the seven provinces. It, in turn, granted the Company powers of sovereignty over Dutch possessions in the East including Sri Lanka. It was a large trading company that was vested with military powers to enable it to pursue its policies aggressively. The eastern headquarters of the Company were in Batavia (now Djakarta), the capital of the Dutch East Indies. Sri Lanka was governed by a resident governor who was answerable to the High Government of India in Batavia, the reference here being to the Dutch East Indies and not to present-day India. The governor administered the country through a Political Council, which was equivalent to a cabinet of ministers. Policy regarding the administration of the Colombo hospital, as well as other hospitals in the country, was laid down by the Political Council, but occasionally the more important matters were referred to Batavia for a decision. Examples of these are preserved in the archives at The Hague and Colombo.

Colombo hospital

The Colombo hospital was situated in the Fort which originally came within the fortifications built by the Dutch after their capture of Colombo from the Portuguese. The ramparts have since disappeared except for a tiny remnant. In this busy area in the heart of Colombo was an old dilapidated and unoccupied building which was the country's leading hospital during the Dutch occupation. It was restored in 1985. Few of the passers-by are aware of its identity. The narrow lanes that skirt it on two sides are known as Hospital Street and Hospital Lane, and perhaps these are the only reminders of its past. It occupies about half a hectare of land, which is a relatively large area in terms of the size of the Fort.

Paintings of the front and rear views of the Colombo hospital done in 1771 by a Dutch artist, presumably C. F. Reimers, are preserved in the Koninklijk Instituut voor Taal-, Land- en Volkekunde, Leiden. The building appears hardly to have changed during the past two centuries. The design is a simple one, consisting of five wings, four of which are joined to form a square with a courtyard in the centre. The fifth wing constitutes the facade of the building and is situated in front of the square with a second courtyard intervening. The only part of the hospital with an upper floor is the front wing. However, this first floor is limited in extent, and appears like a compartment sitting atop the roof in the centre of the wing. A wooden staircase leads to this storey, which now has the appearance of a small hall. Its floor is made of wooden planks.

As with other Dutch buildings in Sri Lanka, the walls are over 50 cm thick and the teak beams are massive both in girth and length. These features of solid construction have undoubtedly ensured the survival of the building. A long and wide open verandah runs along the length of each wing, and is another characteristic of old Dutch architecture in the tropics. The high walls,

large windows, and spacious verandahs provide a comfortable environment within, in contrast to the humid heat outside.

The courtyards which appear bare in the paintings are now overgrown with vegetation, while the ornamental shrubs that formed a prominent feature against the rear windows in 1771 are no longer present. A canal which ran by one side of the building has long since disappeared, and its only memorial is the name of a narrow lane that borders on one side of the building, Canal Row. It may be mentioned that the Dutch were adept at building canals in and near Colombo for transport. While some of these canals still exist outside Colombo, those within the Fort were filled up by the British soon after the capture of the city, and some of them are now busy motorways.¹

The Portuguese, who preceded the Dutch, had their hospital on another site in the Fort about half a kilometre away, by the harbour. Colombo capitulated to the Dutch after a siege lasting seven months during which continuous bombardment destroyed most of the buildings. Shortly after gaining control of the city, the Dutch commander-in-chief replanned it by demolishing all buildings that had been left standing.² Probably the Portuguese hospital too was demolished in the process, for there is no subsequent record of a hospital at the original site.

The Dutch hospital was probably built shortly afterwards, but a definitive date is not available. A Dutch map drawn in 1732, shows the hospital on its present site,³ and the description by a German, Christopher Schweitzer who was in Sri Lanka from 1676 to 1682 in the service of the Dutch, implies that it was already there in 1681.⁴

The declared intention of the Dutch in establishing the Colombo hospital, as well as the other hospitals, was to look after the health of the officers and other staff serving under the Dutch East India Company. The preamble to the instructions issued to the steward of the hospital states that 'it has been considered that it is a duty of the Company to restore the health of its officers who are on board ships as well as in the outposts.'⁵ In a memorandum submitted to the Political Council by Jacobus de la Haije, it is stated that 'its (the Company's) invalid officers could be brought back to their former state of health with the blessings of the God only by way of good care and attention; therefore it is necessary to issue instructions to the senior surgeons who are in the service of the Company in the country to perform their duties diligently.'⁶

Holland was a leading seafaring nation at the time, and Colombo a busy port where special provision had to be made for the sick brought in by ships. The Company intended to provide a sufficiently large hospital in Colombo to cater to the local Dutch population as well as the floating population. The influx from ships would have been considerable, as sickness was rife during long sea voyages. The British, who succeeded the Dutch, had similar provisions in their hospitals in Colombo for the benefit of those who

fell ill at sea. Till recent times, the General Hospital, Colombo, maintained a seamen's ward.

In a set of regulations laid down by the High Government in Batavia, the medical superintendent or chief surgeon was made responsible for the internal administration of the hospital.⁷ It was the policy of the Dutch to have a board of regents for each hospital, consisting of two or three persons who were unconnected with the hospital. The necessity for such appointments was clearly enunciated by Zwaardecroon: 'this (hospital) is a place where the Company shows its sympathy with its suffering servants and wishes them to have every comfort. For this reason also regents are appointed to see that nothing wrong is done by the doctor or the steward.'⁸ In the Colombo hospital, the regents included the military commander and the officer in charge of the stores.⁹

Medical staff

The medical staff of the Colombo hospital in the final years of Dutch occupation consisted of the chief surgeon (on a salary of 60 guilders a month), one surgeon (30 guilders), three junior surgeons (22 to 24 guilders), three third surgeons (14 guilders), and five interns (9 guilders).¹⁰ The higher grade surgeons were generally graduates from Amsterdam, Utrecht, and Leiden.¹¹ It was not uncommon for ship's surgeons to be appointed to the hospital, and there was no strict rule that only qualified graduates could be appointed as surgeons. C. F. Reimer, for example, was a private soldier, and when it was discovered that he had sufficient medical skill, he was sent to Sri Lanka in October 1768, as a third surgeon, on a salary of 16 guilders a month.¹² Incidentally, he was also a painter, and his interest in medicine was likely to have prompted him to paint the Colombo hospital. The two paintings of the Colombo hospital depicting the front and rear views respectively are attributed to him though they do not carry the artist's name. Reimer also captured on canvas the historic occasion when Governor Flack and the Kandyan ambassadors signed a treaty.¹³

The surgeon with the longest service at the Colombo hospital was Alleman. He served the hospital for nearly a third of the period of Dutch occupation (1756 until at least 1790). He was first appointed by the Political Council by a resolution dated 9th October, 1756: 'Considering the old age of the chief surgeon, Dirk Berghuis, and the acute need for a qualified assistant, it has been decided to appoint the chief surgeon of the ship "Gheisenberg", Barend Alleman van Ligtenvoord as the second surgeon in the Dutch hospital in Colombo.'¹⁴ Alleman wrote frequent memoranda to the Political Council about the deficiencies in the hospital, and through his efforts many improvements were effected.

Throughout his long service, Alleman strove to improve the lot of the patients. When, by resolutions of the Political Council dated 12th May and 10th July, 1786, the vote on provisions for the hospital was reduced,

Alleman appealed successfully for a revision. The vote on medicines and linen was doubled, and increased quantities of wine, oats, sago, butter, powdered sugar, and wheat flour were allowed to the patients. They were also provided with a rupee a month each, deductible from their salaries, for the purchase of such items as sugar, tea and tobacco.¹⁵ The very ill patients were provided with a mattress,¹⁶ while others had to do with only a mat.¹⁷ Patients who did not have a change of clothing were given a shirt, long trousers, and a jacket, all made of rough linen from Tuticorin in South India.¹⁸

One of the earliest doctors at the Colombo hospital was Michael Jurgen Ondaatje, who was originally a Hindu. He was born at Arcot, the capital of Carnatic in South India. He came to Colombo in 1659, three years after the Dutch occupation of the city, at the request of the first Governor, Adrian van der Meyden. Meyden's wife was suffering from an illness which had baffled the surgeons of the Dutch East India Company, and the 'native' physicians in Colombo, as well as those sent by the King of Kandy at the Governor's request. Ondaatje's name was brought to Meyden's notice by certain merchants who periodically visited Sri Lanka for the purpose of purchasing elephants. On arrival, Ondaatje held out little hope for her, but later succeeded in curing her of the illness. In appreciation, the Governor appointed him physician of the town and environs of Colombo and of the government hospital at Colombo. He enjoyed an extensive practice among both the European and local population, by whom he was held in high esteem. He was later converted to Protestant Christianity.¹⁹

The most famous of all the surgeons who worked in the Colombo hospital was undoubtedly Paul Hermann, who has been described as the father of botany in Sri Lanka.²⁰ He was attached to the Colombo hospital from 1672 to 1679. His main interest was botany, and all the plants, except three, he saw in Sri Lanka were new to him. He sent collections of local plants to Leiden, and a herbarium he collected in Sri Lanka came to light about seventy years after his death. Linnaeus described Hermann as the prince of botanists.²¹ While in Sri Lanka, Hermann was offered the chair of botany at Leiden, which he took up in 1780. Although he was acknowledged as a distinguished botanist, he was most unpopular with his patients and subordinates. Schweitzer wrote:

'The Chief Inspector that had the care of it (the hospital) in my time was Dr. Hermannus, now Professor of Medicine (*sic*) at Leyden. He took no good praise away with him from the soldiers and seamen that came under his hands. He was a true tyrant over his slaves, with blows and whippings; he was also accused of killing a female slave whom he let bury (*sic*) in the garden behind his house, and was for some days under arrest in his house, but was after set free.'²²

Dutch hospitals in Sri Lanka were not the preserve of the Dutch only. Doctors from other nationalities too served in them. One was Nicholas Grimm, a Swedish doctor who came to Sri Lanka in 1674. He was also a

botanist of repute and worked under Hermann. Another was Aegidius Daalmans, a Belgian physician from Antwerp. He arrived in Sri Lanka in 1687, and worked for 18 months. His conduct as a physician was not without reproach as his practice of medicine at the time was considered unorthodox. Based on his travels in the East, he published in 1689, in Amsterdam a book, *New medicine based on acid and alkali, followed by observations on the common diseases of the Island of Ceylon, Batavia, etc.* A copy of the 1703, edition of this rare book was obtained for the Royal Asiatic Society of Sri Lanka by H. C. P. Bell, the then Archaeological Commissioner.²³

The chief surgeon of the hospital was not a member of the Political Council, which was composed of high-ranking military and civil officers. However, he came fairly high in the order of precedence observed at important social functions. At the funeral procession of Robertus Cramer, merchant,²⁴ the chief surgeon Dirk Berghuys walked in the twentieth place behind the Governor. Alleman, who was second surgeon at the time, walked another sixteen places behind.

The duty of the surgeons was mainly to visit the hospital twice a day, but they were obliged to call on patients in their homes on request, provided these domiciliary visits did not interfere with their hospital routine.²⁵ A visit of this nature was recorded by the Englishman, Robert Knox, who was held captive by the King of Kandy for twenty years. In 1679, he along with one of his fellow prisoners, managed to escape into Dutch territory. On their arrival in Colombo, the companion developed fever (probably malaria). Knox wrote: 'My consort's ague increased and grew very bad; but the chief chirurgeon by order daily came to see him, and gave him such potions of physic, that by God's blessing he soon after recovered.'²⁶

Junior surgeons were on call at all hours of the night, except those who were married and living outside the city. Unmarried junior surgeons were expected to live close to the hospital so that they were easily available in case of an emergency.²⁷

The hospital had on its staff an apothecary, who worked under the medical superintendent and was responsible for the dispensing of medicines according to an approved pharmacopoeia. In 1786, Alleman recommended that separate quarters be provided for the apothecary and his dispensary. In response, the Political Council decided to construct or convert a suitable building for the purpose.²⁸

Non-medical staff

Very early in the Dutch occupation, the Political Council appointed a steward to the Colombo hospital: 'The Company considers it one of its duties to restore the health of its officers on board ships and its outposts; therefore the Company decided to appoint and pay a steward who should be attached to the Colombo hospital.'²⁹ Later, stewards were appointed to other Dutch hospitals as well. The administrative duties of the steward were

only second in importance to those of the medical superintendent. He was responsible for the purchase of provisions and supply of meals to patients. For this purpose, he was provided with a fixed sum of money per patient. A meal for an ordinary patient included a beef soup and a dessert. Special diets containing such items as gruel, milk, chicken soup, sago and warm soft drinks were provided to more seriously ill patients on the recommendation of the surgeons.³⁰ The steward was also expected to see to the cleanliness of the hospital and the patients.³¹

The other members of the non-medical staff were a cook, porter, laundryman and several slaves. The cook and porter were Europeans,³² while the laundryman was always a native of Sri Lanka. The cook's salary was 24 guilders a month, which was on par with that of a junior surgeon. The porter, usually an ex-serviceman, received 14 guilders, compared to only 9 for an intern.³³ One of his duties was to see that patients did not sneak out for a drink, but there were several instances of negligence of duty in this respect.³⁴ The Colombo hospital was served by one laundryman till 1787, when an extra hand was appointed on a recommendation by Alleman.³⁵

There is no indication that Dutch hospitals were served by nurses, male or female. The nursing duties in the hospitals were probably shared by junior surgeons, interns and the steward, while the slaves did the work that did not require special training.

Diseases

A general hospital catering to a large military and sea-faring population in the seventeenth and eighteenth centuries would have had to deal with various injuries, including fractures. Diseases of a medical nature which were frequently treated at the Colombo hospital included dropsy, epilepsy, colds, diarrhoea, fever, scabies and venereal ailments.³⁶ Foreigners occupying Sri Lanka were subject to a host of diseases, some of which affected them more severely than the local population. Soldiers on campaigns outside Colombo developed dysentery, sometimes in epidemic proportions, and were admitted to hospital.³⁷ The leech, which abounded in Kandyan areas, was an enemy of the foreign soldier on the march and an ally of the defending Kandyans. Leech bites sometimes developed into maggot infested ulcers, which resulted in loss of limb or life.³⁸ Malaria was a problem outside Colombo. The Dutch had a morbid fear of leprosy.

Special consideration was given to venereal diseases. Schweitzer saw many soldiers in the Colombo hospital 'who in pursuit of their lustful desires destroy themselves by venereal distempers.'³⁹ It was perhaps the only condition for which a surgeon from the Colombo hospital was paid a gratuity for successfully treating a patient.⁴⁰

Medicines

Throughout the Dutch rule in Sri Lanka, one constant theme was the

admiration for local medicine, some of which were used in Dutch hospitals. Other drugs were imported from Europe and other countries.⁴¹

The purpose for which the Belgian physician, Aegidius Daalmans was sent to Sri Lanka was 'to look for new herbs and roots that grew there wild, in great abundance; of which I (Daalmans) had already made such a large collection, that I presented to Governor Pyl the pharmacopoeia of Ceylon, comprising both external and internal remedies, without there being any necessity for sending out for a single other from the Fatherland.'⁴²

One of Daalmans' recipes was the *pedro porco* or hog stone. It was the gall stone of the porcupine rather than of the hog that Daalmans used in Sri Lanka. It was one of the constituents of a panacea he prescribed for all ills. Hog stone, under the name *pedra de porco*, was also used by the Portuguese who obtained it from hogs in Malacca. The *pedro porco* found in Sri Lanka, according to Daalmans, was quite hairy and weighed 10 to 20 grains. It had to be swallowed whole. He claimed that it induced the same effect as opium, but more slowly. An ounce cost 15 to 20 rixdollars. The hog stone from Malacca was as hard as a stone, and it had to be kept in water or wine for a few minutes, when the liquid became bitter.⁴³

Pedro porco would have been a highly priced medicine in Sri Lanka, even before the arrival of Daalmans. In 1656, the year in which the Dutch captured Colombo, the Dutch general, Gerard Hulft went on a goodwill mission to King Rajasinghe 11. He carried many gifts to the king and his son, and among those he handed over to the latter was a *pedra de porco*.⁴⁴

Among other drugs recommended by Daalmans was *Coscinium fenestratum* or false calumba or Colombo root (*weni-wel* S.). It was used by the Portuguese in Goa under the name, *rais d'a butere*. The root was imported to India from Peru and Brazil by missionaries in the seventeenth century. He prescribed it for inflammation, specially of the throat.⁴⁵ *Weni-wel* is still very popular as a prophylactic against tetanus.

The true calumba or Colombo root derives its name from the town of Colombo, though it does not grow in Colombo nor elsewhere in Sri Lanka. Colombo was the transshipment centre for this root which was imported from Malabar and shipped to Europe where it was popular as a medicine.⁴⁶

Thunberg was a professor from the Upsala university in Sweden who was in Sri Lanka in 1777 in the course of his travels to Europe, Africa and Asia. While in Colombo the Dutch governor sent him to Matara to attend on 'Count Rantzow's lady who laboured under a fever and tedious illness. Count Rantzow was comptroller of this factory of the Company'. He left Colombo on 7th December, 1777: 'I travelled both day and night in a palanquin, borne by twelve stout Moors who supported the whole journey without resting so that I made the journey in the space of three days.'⁴⁷

Thunberg, through his interest in botany, made a study of the medicinal properties of plants which were claimed to have such properties.

It is interesting that shingles was recognised even at that time. He wrote: 'The shingles (herpes) are cured with the capsules of *Hibiscus tiliaceous* by rubbing the juice of these over the eruption.'⁴⁸ This common plant, *bellipatta* (S.) is now used for its fibre.

Thunberg corroborated Daalmans regarding hogstone. He found the porcupine 'has frequently bezoar stones in its stomach, which here (Sri Lanka) scraped to a fine powder, are administered in all kinds of disorders.'⁴⁹

Schouten, who was a Dutch surgeon, visited Sri Lanka in 1661, and his comments about local doctors and medicines are interesting:

'There are also intelligent lawyers, doctors, surgeons and barbers. The medical men, however, have very little knowledge of anatomy, of things natural, unnatural, and contrary to nature, which ought to be the basis of their science. Thus, their principal knowledge rests upon experience. Their medicines consist of freshly plucked herbs and flowers, of which they know how to make decoctions, stupes, poultices and the like.'⁵⁰

The admiration the Dutch had for Sinhalese medicine was reciprocated by the Sinhalese who valued western drugs which they obtained from Colombo. During the first half of the eighteenth century, it became almost customary for the Dutch to send diplomatic missions to the King of Kandy. As many as 51 such missions were dispatched during this period. No Dutch embassy ever went to the Kandyan court without an impressive array of expensive gifts, among which were chests of medicines. These medicines, which were likely to have been from the Dutch pharmacopoeia and ordinarily not available to the Kings of Kandy, would have been highly prized by them, for they were sent along with such expensive items as pearls, gold and silver cloth, horses and dogs.⁵¹

Towards the tail end of their rule, the Dutch began to appreciate and make use of the superior knowledge of herbal medicines possessed by the local ayurvedic physicians. In 1793, they adopted a far reaching resolution in the Political Council whereby a 'native' physician was appointed to each of the Dutch hospitals in Sri Lanka. His duty was to assist the chief surgeon in the daily visits to the sick so that his knowledge was utilized in the best manner.⁵²

In 1790, the Dutch appointed an officer in Jaffna to make an accurate description of medicinal plants in Jaffna, Mannar and the Wannu. He was provided with an assistant with a knowledge of the subject and ten labourers. This officer, van de Putten, was also asked to inquire into the uses of these plants, as well as how and where they grew. He was required to submit annual reports, thus demonstrating the sustained interest of the Dutch in the native system of medicine.⁵³

In the absence of a sufficient number of their own physicians to serve the population at large, the Dutch devised a system of encouraging indigenous medicine at a village level. They created, at least in Jaffnapatam, two

categories of indigenous medical practitioners, namely those recognised by the authorities, and the rest who were not. The former category received certain benefits, such as exemption from certain taxes. A commission, which was appointed in 1794 to inquire into the revenues of Jaffnapatam, recommended that the number of these practitioners, totalling 167 and referred to as *cerpariari* or village doctors, should not be reduced in view of the large number of villages served.⁵⁴

In 1757, the Political Council approved a new pharmacopoeia for the Dutch hospitals, and this was listed in its entirety in the minutes.⁵⁵ This pharmacopoeia was still in use in 1790.⁵⁶ It was a very comprehensive one and probably covered all aspects of medical treatment prevailing at the time. The names of drugs were written in Latin, and the prescriptions listed under various categories, such as extracts, spirits, tinctures, elixirs, oils, plasters, and ointments. It concluded with a list of preparations which were already in use but could be written off. The local drugs which were in the new pharmacopoeia were mainly spices, such as cinnamon, ginger and cardamon. It may be mentioned that one of the major attractions that induced the Dutch to capture Sri Lanka was the availability of spices in the country. Cinnamon, for example, was grown only in Sri Lanka.⁵⁷ Coriander, well known as a diaphoretic in ayurvedic medicine, and *Canarium zeylanicum* (*Kekuna-mal S.*) were two other items that figured in the pharmacopoeia.

The apothecary at the hospital dispensed the medicines according to this pharmacopoeia. A close check was kept on the medicines, which were kept locked up in special medicine boxes. These boxes were probably imported from Amsterdam at first,⁵⁸ but later produced locally.⁵⁹ Their keys were kept by the doctor, and without his presence no one was allowed access to them. When the apothecary required some medicine, he had to go along with the doctor to the warehouse to open the chests and fetch it. All such issues were carefully entered in books which showed the stock in hand and the amount consumed.⁶⁰

Drugs from the hospital were sometimes sold, but the hospital authorities were prohibited from donating or disposing of them in any other manner.⁶¹ Ships which called at Colombo sometimes requested medicines. The Political Council had to approve such issues, as is implied by a resolution based on a request from the ship *Vreedenburg*.⁶² Rules were strictly enforced with regard to drugs. Apothecary Strasburg, for example, had to obtain special permission in 1790 to write off certain medicines prepared according to the 1757 pharmacopoeia.⁶³

The hospital provided wine and liquor for medicinal purposes. Cape wine or 'vinetint' was popular as a tonic for patients with diarrhoea.⁶⁴ Liquor given to patients included arrack, which was a local drink distilled from the sap of the coconut flower. Patients were prohibited from taking alcohol except for medical indications. As drunkenness was common among patients,

they were not allowed to leave hospital at night, and liquor smuggled by patients into the hospital premises was liable to confiscation.⁶⁵

Accommodation

The Colombo hospital was the largest in Sri Lanka at the time, for Colombo had the largest Dutch population in the country, consisting of the military personnel, civilians such as merchants, and seafarers who frequented the busy port. The military personnel numbered 2,966 in 1700, 4,652 in 1753 and 3,784 in 1780, in Sri Lanka, compared to Batavia which had 3,853, 4,860 and 3,283 respectively.⁶⁶ Such a population required a large hospital.

In 1785, there was accommodation for only 180 patients, and in October of that year all the wards were full and patients were admitted on a first come first served basis.⁶⁷ Alleman made a strong plea for reconstruction on the basis of insufficient accommodation as well as other grounds. The chief surgeon's quarters were used as a residence cum storehouse during both the Dutch and early British periods, causing Alleman to complain to the Political Council in 1785 that his quarters were not spacious enough to house the hospital stores. The Political Council in 1786 decided to enlarge and improve the hospital and to construct or convert a suitable building for the apothecary and his dispensary.⁶⁸ The hospital was then able to take in 300 patients.

The limitation in numbers probably did not apply during epidemics and emergencies. Schweitzer, while referring to dysentery, reported that in 1676, he saw more soldiers in hospital than in the garrison.⁶⁹

The Colombo hospital was a fee levying institution. The Company deducted half the salary in lieu of hospital dues, and a further sum for linen, pillows and a mattress, according to the requirements of the patient.⁷⁰ It was unlikely that non-Europeans were admitted. In any case, the fee levying character of the hospital would have effectively barred them, for only a few could have afforded such fees.

The slaves, although employees of the Dutch East India Company, were denied admission to the hospital. The Dutch and the Portuguese brought to Sri Lanka many Negro slaves from their possessions in Africa. They introduced at least one new disease, yaws, to the country.⁷¹ It would have been unthinkable in those days for slaves to have been treated in the same hospital as their masters. In 1707, Governor Joan Simons completed a special hospital for these slaves.⁷² It was situated in the slaves' quarters outside the Rotterdam gate of the city., and had its own doctor. On representations from the surgeon, Johannes Schoorman, in 1757, the number of public houses in the area was reduced to one in order to limit drunkenness and sickness among the slaves.⁷³

The Colombo hospital was in acute need of repairs in the latter part of the eighteenth century. According to the account books maintained by the Company, a total of 66,031 guilders were spent on this work from 1764

to 1773.⁷⁴ Still, there were several shortcomings apart from the lack of accommodation already referred to. Only one well was situated in the premises, and the water was not sufficient to wash the lavatories. Smells emanating from the open lavatories were a nuisance to the inmates. The washing room was not provided with its own well, as digging such a well would have endangered the adjoining building. The situation was made worse during the dry season when extra expenditure had to be incurred in procuring buckets of water from nearby wells.⁷⁵

Discipline

The Colombo hospital was run according to a set of rules laid down by the Company.⁷⁶ All sick officers of the Company were entitled to admission at their own request. They were not expected to seek treatment elsewhere without permission from the regents. Guests of the officers were not allowed to use the hospital as lodgings for the night. Patients were admitted on the understanding that they undertook to observe the rules of the hospital.

Misdemeanours by the staff or the patients were dealt with at one of three levels, namely courts of justice, the regents and the medical superintendent, depending on their gravity. Gambling, abusive behaviour, noise making, and disturbing other patients, sneaking out of the hospital, throwing food through windows, or straying into the precincts of the canal just outside the hospital were prohibited. Any officer or attendant found sleeping or missing from hospital while on duty was liable to be punished with fifty strokes. Patients who caused injury to others were charged before the courts. At the time of the surgeons' visits to the wards, all patients were expected to be in their respective places. Patients were not allowed to bring their own fruits, sweets or other food without permission.

The code of conduct outlined here was laid down in 1790, and probably reflected over 130 years of experience in running the hospital. It was undoubtedly an attempt to curb the recurrence of undesirable incidents that had created problems in the past.

Reputation of the hospital

The Colombo hospital enjoyed a good reputation, which was vouched for by more than one writer during Dutch times. Heydt, a German who took employment under the Dutch East India Company, was in Sri Lanka from 1734, to 1737. In a book of his travels published in 1774, he wrote:

'While I write of Colombo, I must mention its hospital. I have already mentioned in my earlier pages concerning Batavia the bad arrangements of the hospital there, but here the conditions are very different. I think the Company has no better hospital in all the Indies than here in Colombo, since here various and costly medicines are prepared, and there is a doctor to be found, provided with a good laboratory, together with three assistants who are experienced in medicines. The Company allots to them many slaves to serve the sick, and there is a ward master, who commands both the sick and the slaves. The rest of the arrangement is not less well ordered, since each patient has an under-bed, two pillows and a chintz mattress, and receives

two meals a day; and he can without hesitation ask for what he will; since each morning the cook goes to the patients with a list of food and asks what he wishes to eat. Then when the food is ready, the black boys come and take it, prepared in heavy bowls of beaten iron, on a board four or five feet long and go into one or other of the wards. But of rice, pepper, vinegar, salt and such like each may have as much as he asks. From which can be seen how much trouble, care and solicitude is given to the sick.'⁷⁷

Another German who praised the hospital was Christopher Schweitzer: 'There is a well built hospital in which the sick Dutchmen are laid and well served by surgeons and slaves with medicants and plaisters.'⁷⁸

The British, who succeeded the Dutch in 1796, continued to use the building as a military hospital till 1872. In 1803, Captain Robert Percival also praised the hospital.⁷⁹ Both Heydt and Percival commented on the separation of the hospital into wards, though under two separate administrations.

Royal missions

On three separate occasions, doctors from the Colombo hospital were dispatched by the Dutch Governor to Kandy at the request of King Narendrasinha to attend on him. The King ascended the throne of Kandy in 1706, at the age of 17 years, and died in 1739, after a reign of 33 years. He was a temperamental man, given to fits of rage. His conduct towards the Dutch doctors was one of stubbornness, combined with an air of royal dignity which transgressed the norms of ordinary doctor-patient relationship. In consequence, he made a poor patient. His behaviour, which may even have been normal for a royal patient at the time, undoubtedly prevented him from deriving the maximum benefit from these doctors. His attitude remained inflexible to the end.

In the first mission, Dr. A. V. Langenhoven went to Kandy in 1716, to attend on the king when he was a young man of 27 years. Dr. P. M. Cloppenburg followed next year to treat the same complaint which Langenhoven apparently failed to cure. Finally, in 1739, Dr. Danielsz treated him in what turned out to be his terminal illness.

The King maintained three palaces, namely at Kandy which was the seat of his government, Kundasale and Hanguranketa. He sojourned in the latter two palaces at his convenience. All these palaces figured in his consultations with the Dutch doctors.

One could only infer the reasons for his seeking medical treatment from the Dutch who exhibited only a semblance of friendly relations with him. One possibility is that his own physicians failed to give him relief and thereby forfeited his confidence. Dutch medicine was likely to have enjoyed a good reputation for the King of Kandy to have requested medical assistance. When one system of medicine failed, he would have pinned his hopes on another, though alien, system.

The respective doctors, after returning to Colombo, had to submit an account of their mission to the Governor. In each case, the report was first approved by Dirk Berghuys, who was the chief surgeon at the Colombo hospital, before submission to the Governor.

Dr. Langenhoven's mission

Langenhoven left Colombo on 24th June, 1716, and having arrived at his destination was received by the King's courtiers and escorted to the palace at Hanguranketa where the King was residing. He was presented to the King, who described his illness to him. Since the age of 10 years, he was suffering from a congested nose. He was also troubled by shortness of hearing in the left ear. He described his main complaint as ulcers in the mouth from which he had suffered for three years. He also had swelling of the body, arms and legs.

Langenhoven examined the King's mouth and found blood and pus oozing from the gums. The teeth, specially on the left side, were loose. The doctor prescribed a mouth wash. After a few days the King felt better, but complained that the teeth were still loose. Langenhoven assured him that treatment should be continued for sometime. But the King was impatient, and he several times requested the doctor to change the treatment. In spite of several audiences, the King denied him a second opportunity of inspecting his mouth.

As the King was getting ready to leave for a big festival, he wanted to know how long the treatment would take. The doctor was unable to give a precise answer, but recommended the continuation of treatment. The King, however, was consistently asking for new medicines, but Langenhoven refused to comply without examining the King's mouth a second time. Finally, on 9th July Langenhoven was requested to leave for Colombo.

After exchanging gifts with Rammolaka Adigar and other nobles, he left Kandy accompanied by two of the King's officials. He reached Colombo on 14th July, 1716.⁸⁰

It is interesting to speculate on the King's illness. The congested nose he had as a child was probably due to nasal catarrh. The most likely diagnosis of his buccal condition was pyorrhoea. Dr. Cloppenburg's report lends further support to this assumption.

Dr. Cloppenburg's mission

Dr. Cloppenburg left Colombo on 23rd February, 1717. He was commissioned by the Dutch Governor to restore the health of the King who was languishing for a considerable time. He was also asked to present two black Jaffna horses to the King.

On reaching Kandy he was lodged in a house opposite the King's palace. He bided his time till the inauspicious days were over, and then was presented to the King. The King has had a discharge from his nose, accompanied by much sneezing, from his childhood. His teeth were loose. There

was a discharge of blood and pus on pressing the gums. Gum boils caused much pain which was relieved by the passage of a blood-stained discharge. Hair was grey and came off easily. Nails of the fingers and toes were hard, thick and bent inwards.

After examination, Dr. Cloppenburg told the King that the treatment would take six to seven months, to which the king agreed. With the help of the local physicians he prepared the medicines which he had brought from Colombo. But the King was influenced by superstitious considerations, and declined to use these medicines. Therefore, he had to prepare them afresh, for which purpose he had to obtain knives and other instruments specially ordered from the royal stores. He used mainly spices and dried roots which were suitable for many diseases.

The medicines thus prepared were given in one ounce doses, twice a day, for the first three days. The dosage was gradually increased to 2½ ounces in the morning and 1½ ounces in the evening. At this stage the King complained of a burning sensation in the body, whereupon Dr. Cloppenburg recommended a lower dosage. But the King did not wish to continue with the treatment as the Sinhala new year was due soon.

The King presented him with a gold chain and ring, some linen, and inscribed knives. He left Kandy on the 23rd and reached Colombo on 27th April.⁸¹

Dr. Danielsz' mission

Dr. Danielsz left Colombo on 1st March, 1739. On the 27th he reached Gurudeniya which was a few miles away from Kundasale where the King was temporarily residing. He was met at the Gurudeniya resthouse by the King's officials who told him that the King had five ulcers on his left foot, which was swollen as a result. He had lost his appetite, and experienced pain all over the body. There were times when his memory was poor. They inquired from Danielsz the cause of these symptoms. He replied that they were due to impure blood. Each of the next three days was spent by the officials in shuttling between the King and Dr. Danielsz for discussions, the main theme being the King's insistence on knowing what the real cause of his symptoms was. On 31st March, the officials at last discussed medication for the ailment, though the doctor had still not seen the royal patient. Danielsz prescribed a decoction, which the officials requested be prepared in their presence. The next day the King complained that the medicine was bitter and discarded it. He asked whether a medicine could not be prepared with arrack.

On 3rd April, the doctor was for the first time summoned to the palace at Kundasale. The officials still continued to negotiate for medicine on behalf of the patient, but Danielsz insisted on a chance to see the King.

It was only on 5th April, ten days after his arrival in the capital, was he finally allowed to see the royal patient. He had to kneel three times in a humble manner before His Majesty. The left foot was placed on a low stool.

There were three nasty ulcers, but the King wanted the treatment to commence only after the Sinhala new year.

Consultations were reconvened after the new year, on 22nd April. The King was now at the great palace at Mahanuwara (Kandy), having returned from Kundasale. Danielsz found the ulcers foul smelling and the leg swollen. There were three ulcers altogether, one being on the big toe, another between the fourth and fifth toes and the other between the second and third toes. The ulcers were two finger breadths deep, and had penetrated the muscle. The next day Danielsz bandaged the ulcers. When the bandages were removed on 26th April, there were now seven ulcers instead of the three. When the King questioned him why this was, Danielsz gave the reply that his blood was impure. Two days later the King asked him whether he could cure them in three days, to which he replied that he was no god. The King wanted another doctor, but still continued with Danielsz' treatment. Some other medicine was prepared with wine. When bandages were removed on 1st May, the leg was inflamed from the knee downwards. The King had high fever, and the doctor was not summoned thereafter. The next day he was asked to be ready to leave for Colombo. The officials who came to see him off on 5th May told him that 22 years earlier two other doctors had come to see the King, and that Danielsz too had the same luck.⁸²

The King did not survive long. He died on 13th May, 1739.⁸³ Such large ulcers were probably due to an underlying condition which could well have been diabetes. The rapidly progressive nature of the lesions, involvement of the muscles, and subsequent inflammation of the whole leg with high fever point to gangrene of the leg, which is a well known complication of diabetes. The parting comment of the officials to Danielsz suggests that the Kandyan court considered all three missions by Dutch doctors to have been failures.

Galle hospital

The Dutch captured Galle in 1640, and made it the headquarters of the administration till Colombo fell into their hands in 1656. It remained an important town for them. In 1788, towards the end of their rule, the European population in Galle was considerable, numbering about half that of Colombo. It consisted of military, shipping and commercial personnel.⁸⁴ The hospital established by the Dutch to serve this population was situated in the Fort where the kachcheri now stands.⁸⁵ Harking back to the olden days, the road that skirts the kachcheri is still called Hospital Street.

The hospital was established soon after the capture of the town from the Portuguese, for the German, Johann Jacob Saar who was in Sri Lanka from 1647, to 1657, noted its existence on his visit to Galle. The Portuguese had their mint on the site where the Dutch later built their hospital.⁸⁶

A plan of the Galle fort drawn by Valentyn in 1663, depicts the hospital next to Akersloot, which was a bastion commanding the harbour.

The surgeon's quarters were adjacent to the hospital, while on the other side of the hospital was a garden for invalids.⁸⁷ The whole complex faced the sea. A later traveller who noticed the hospital was Heydt, whose map again shows the hospital at the same site.⁸⁸

One of the earliest surgeons, if not the first, to have been appointed to Galle hospital was Jan Carstens of Tonningen, who first arrived in Sri Lanka in 1636, in the ship, *Prins Willem* in which he was chief barber. In the course of his stay in the country, he acquired a sound knowledge of local plants and herbs which were suitable for use in place of European drugs. In February 1643, the Council of the Town of Galle renewed his contract for another three years at a salary of 60 guilders, which was equal to that of a koopman or merchant.⁸⁹

As in Colombo, the surgeon in Galle was not entitled to a seat in the Council, even when the Dutch headquarters were in Galle. He was given an extra allowance of 10 coconut trees for his use, while members of the Council were provided with 24 trees each. These trees were for the purpose of obtaining oil, toddy which was used as yeast for baking rich cakes, and other purposes.⁹⁰

The Galle hospital was usually staffed with one senior surgeon, one surgeon and two interns. However, at times when extra staff became available from ships moored in the harbour, the number permitted was increased to one senior surgeon, three surgeons, three junior surgeons and two interns.⁹¹ Ancillary staff included a steward, a porter and a washerman. In 1788, the Political Council decided to provide the steward with a block of land near the city to lay out a fruit garden for the use of the patients, but planting of big trees or building permanent structures was not permitted. The Council also decided that a slave, who was allowed to live on the premises, should look after the garden.⁹²

Mannar hospital

The Mannar hospital was a small one, as vouched for by Cordiner who visited the town in 1804, just 8 years after it changed hands.⁹³ When it was originally built, the floor was too low. Patients who lay on the floor were subject to damp conditions. The Commander of Jaffnapatam, Zwaardecroon, had the floor raised on the premise that the Company must show sympathy with its suffering servants.⁹⁴ The wards were divided into sections by half walls. The Governor, Gerrit de Heere, thought that the walls should be raised to the level of the roof in order to keep the patients warm.⁹⁵

In Mannar, there was an instance of the Government doubting the integrity of a hospital administrator. Zwaardecroon wrote:

'For sometime, this supervision was entrusted to Captain Jan van der Bruggen, but for the reason stated above, I cannot approve of the arrangement any longer, while moreover his daughter is the wife of the chief surgeon, Hendrick Warnar, who has a very large family, and suspicious people might try to find fault with the ar-

rangement. The supervision of the hospital must therefore be entrusted every alternate month to the Administrateur Biermans and the Lieutenant Class Isaacs as it is against the principles of the Company to entrust such work to one person only.⁹⁶

Other hospitals

Besides the hospitals at Colombo, Galle and Mannar, hospitals were situated at Jaffna, Trincomalee, Matara, Kalpitiya and Batticaloa. Tuticorin was a Dutch possession in South India which came under the administration of the Governor and the Political Council in Colombo. Therefore, the hospital at Tuticorin too was run on the same lines as those in Sri Lanka

The Political Council allocated resources to each hospital according to its needs and its importance. The quantum of food, clothing, wine, medicines, and bedding differed from hospital to hospital. Colombo, being the largest and most important hospital, was treated on a very special basis. The expenditure for the various hospitals for the year 1791-92 was £ 444 15s for Colombo and Kalpitiya; £ 79 1s for Jaffnapatam and Mannar; £ 434 18s for Galle and Matara; £ 85 4s for Trincomalee and Batticaloa; and £ 14 6s for Tuticorin.⁹⁷ This expenditure, no doubt, reflected the relative importance of the respective hospitals.

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THE BRITISH PERIOD

The British captured the maritime provinces from the Dutch in 1796, and annexed the Kandyan kingdom in 1815. They ruled the country till 1948 when Sri Lanka achieved independence. Though the first contacts with western medicine were through the Portuguese and the Dutch, the system really became established only during the British period, during which it spread through the length and breadth of the country.

The early phase of British medicine belonged to the military who controlled both the military and civil health institutions. With the creation of a separate Civil Medical Department in 1858, a new phase was born by which medical facilities were provided to the civilians by a department free of military control. This was a momentous event which marked the beginning of a new phase that finally led to the creation of a sound health service.

The British were very much concerned about the health of the local population. Several Governors, in their addresses to the Legislative Council, indicated their solicitude for the health of the people. The British may have had their own motives for some of the steps they took, but the general verdict is that they had a genuine concern for the state of health in the country. Sri Lanka was a prosperous crown colony which attracted many British interests, and the country had to be made sufficiently healthy to offer a safe abode to the expatriates who flocked to it. The prosperity of the colony depended on the cultivation of coffee, and later of tea and rubber, and the health of the labour force was an important economic factor. The British directed their energies at achieving these goals as far as possible. They promoted western medicine as the official system. The powerful state sponsorship resulted in more and more people being weaned away from ayurveda, which was the time honoured system.

The British, from the inception of their rule, created a sound infrastructure on which the health services were subsequently built. When they finally relinquished their responsibilities in 1948, the country was left with a comprehensive health care system which has changed little in outline up to modern times.

Early phase

The main concern of the British at the beginning of their rule was

naturally the health of their troops, and with this end in view they set up military hospitals in Colombo, Jaffna, Trincomalee and later Galle. It is very likely that Dutch hospital buildings in these towns were used for the purpose. These hospitals were manned by army doctors, who were well qualified men, many of them possessing the degree of MD. The military medical service was gradually extended to other towns and villages where the British army was stationed. The few army doctors were insufficient to handle the work involved, and the military authorities soon decided to have assistants to fill subordinate posts under the army doctors.¹

At the same time, small pox was considered a major health hazard to the troops, and when vaccination was first introduced in 1802, the British set about vaccinating the population at large, one of the main objectives being to prevent infection reaching the troops. They could ill afford to deploy qualified army medical officers for such a mass campaign of a para-medical nature. In order to serve these ends, they created a separate wing called the Native Medical Establishment, which functioned under the army. This name implied that natives were recruited to this service. In this context, natives were those who were not British born. Men who filled posts in the Native Medical Establishment were invariably the Dutch who took service under the British after their surrender. They were designated medical sub-assistants.

Sir Alexander Johnston, who later became Chief Justice, appointed a Muslim physician as the native superintendent of the medical department:

'The chief of this (Mohammedan) family was appointed by me, in 1806, native superintendent of the medical department, under the control of the Supreme Court. He was considered by the natives of the country as one of the best informed of the native physicians on the island, and possessed one of the best collections of native medical books, most of which had been in his family between seven and eight hundred years, during the whole of which period it had been customary for one member of his family at least to follow the medical profession. This same person made me a very detailed report of all the plants in Ceylon which have been used from time immemorial for medical purposes by Mohammedan native physicians on that island. The cultivation and improvement of these plants, as well as of all other plants and vegetables on the island which might be used either for food or commercial purposes was one of the great objects for which His Majesty's Government, at my suggestion, in 1810, established a royal botanical garden in Ceylon.'²

This was probably one of the earliest appointments made to the Native Medical Establishment. There is no other record of an officer of the Medical Department being placed under the supervision of the Supreme Court. This unusual arrangement reflects the influence Johnston wielded in the government of the day.

Among the doctors brought to Sri Lanka by the British army at the beginning of their stay in the country were some outstanding personalities who have left their imprint on the medical, literary or artistic scene. Thomas Christie, who was a friend of Edward Jenner, will be referred to later. Others

included Henry Marshall (1775-1851), John Davy (1790-1868) and James Paterson (1790-1866).

Henry Marshall

Henry Marshall was born in Kilsyth, Scotland in 1775. After graduation at the University of Glasgow, he first joined the Royal Navy and later the 89th Regiment. He came to Sri Lanka in 1808, and became successively regimental surgeon, staff surgeon, and in 1816 a senior medical officer. He returned to Britain in 1821 where he finally became Deputy Inspector General of Army Hospitals.

He began his literary career while in Sri Lanka when he published his first paper in the prestigious *Edinburgh Medical and Surgical Journal*, to which he later contributed several other papers. He wrote on such diverse topics as hydrophobia, problems in supervising vaccination in the Kandyan during the Kandyan wars, cinnamon in Sri Lanka and the utility of the coconut tree.³ He also wrote several books, of which *Notes on the medical topography of the interior of Ceylon* and *Ceylon: a general description of the island and its inhabitants* are oft quoted reference works.

Shortly after his death, he was described as the father of military medicine. He advocated a more humane attitude towards soldiers.⁴ Although he was not decorated by the crown for his services, he received many tributes and honours, one being the honorary degree of Doctor of Medicine from the University of the State of New York in 1847.⁵

Davy's contribution

John Davy was born in Penzance, Cornwall, on 24th May, 1790. He studied medicine and graduated as Doctor of Medicine in 1814. He was the younger brother of Sir Humphrey Davy who invented the miner's safety lamp. John Davy's voluminous books on his brother, who predeceased him, did much to establish Humphrey Davy's image as a great scientist.

The major portion of John Davy's life was spent in the Royal Army Medical Corps, in which service he was stationed in Sri Lanka. He rose to be the Inspector General of Army Hospitals, but the highest post in the department eluded him, for 'he was injudiciously, if not ungratefully, displaced or passed over in favour of servile mediocrity or convenient inferiority.'⁶

He was in Sri Lanka from August 1816 to February 1820.⁷ At the time of his arrival, he was barely two years a doctor. He acted as the personal physician to the Governor, Sir Robert Brownrigg, who became his friend and promoter of his interests while in Sri Lanka. He travelled extensively during his stay in the country, visiting such inaccessible places as Nitre Cave in the Knuckles wilderness. His book⁸ is an important record of the state of the country during the period of the Kandyan rebellion. It also contains some of the results of his scientific researches.

Davy's description of Nitre Cave was dominated by its importance in the manufacture of gunpowder. The cave floor was rich in nitre (saltpetre

or potassium nitrate) which was an ingredient in its manufacture. His book was published shortly after the Kandyan rebellion of 1818, and therefore, his treatment of the subject reflected the importance of the cave as a source of this strategic material.⁹

He wrote altogether 152 papers and books. His contributions embraced a wide spectrum of subjects, such as pathology, physics, comparative anatomy, geography, anthropology and sociology.¹⁰ He initiated several lines of research while in Sri Lanka. Throughout his career, his favourite research interests centred on body temperature of man and various animals including the elephant, leopard and jackal.¹¹ His observations on the elephant, which were carried out in Sri Lanka, were: 'At Colombo, on the 22nd of September, air eighty degrees, the temperature of a full grown healthy elephant was 99.5. It was ascertained by placing a thermometer in a deep abscess in the back. It was necessary to lay open the abscess to effect a cure.'¹²

Another favourite investigation of his was the estimation of the specific gravity of various substances. These included rocks from Sri Lanka, human and animal organs, and arterial and venous blood from man and animals.

In 1816, while in Sri Lanka, he conducted research on the urine of amphibians and reptiles. He was apparently unaware of the prior discovery that the urine of reptiles and birds contained lithic acid (uric acid). He noted that the urine of frogs and higher mammals contained urea. He concluded that diet did not have a bearing on the presence of uric acid in urine.¹³

Some of John Davy's contributions to the cause of science while in Sri Lanka were succinctly summarised by his brother, Sir Humphrey Davy in a letter he wrote on 9th March, 1818 to the Secretary of State for the Colonies. John Davy had been nominated by the Governor to the post of physician to the forces in Sri Lanka. In his letter to the Secretary of State seeking his approval for the appointment, Sir Humphrey described his brother's achievements:

'This is now the beginning of the fourth year that Dr. Davy has devoted to the service. In the campaign which ended by the occupation of Paris in 1815, he went through those severe fatigues and duties, which pressed peculiarly hard upon the inferior medical attendants of the army, with the highest approbation of his superior officers. Since that time in Ceylon, he has not only been constantly engaged in the duties of his profession in a new country where diseases unknown to many Europeans called for all the resources of chemistry and general science, but has likewise been occupied in examining the uses and qualities of the peculiar natural productions abounding in that fertile and hitherto little investigated island.

'He has ascertained the absurdity of some remedies ever popular amongst Europeans, and has substituted for useless antidotes, real and efficient medicines.....He has shown the source of the salt in the salt lakes which now yield a revenue of 10000 £ (sic) a year, and how its quantity may be increased to any amount. He has examined the nitre caves in a district never before visited by a European, and I hope, discovered the cause of the formation of this valuable substance.'¹⁴

Davy was honoured by the Royal Societies of London and Edinburgh

which elected him a fellow. He presided several times over the physiological section of the British Association for the Advancement of Science. He made his last public appearance at the Dundee meeting of the Association in 1867 at which he was vice president of the biological section.

He lived in Ambleside for many years in retirement. He died on 24th January, 1868, aged 78 years. In a tribute, the *Medical Times and Gazette* reported: 'By the death of Dr. John Davy, the British school of physic has lost one of her ablest scholars, and not this only, but a scholar in that narrow borderland which connects medicine with science.'¹⁵

Dr. Paterson's paintings

Dr. James Paterson left his mark as a painter rather than as a doctor. His paintings of local scenes are now historical records of the early British period. He was born in 1790 in Lanarkshire. His mother was a kinswoman of William Harvey, who discovered the circulation of blood. Paterson qualified Doctor of Medicine from Glasgow, and arrived in Sri Lanka on 12th August, 1819. His first day in Sri Lanka was captured by him on canvas. This painting showed him in his bedroom, and one of the items prominently displayed was his box of medicines.

Dr. Paterson worked in Kandy. His hospital was on the south east side of the lake where the Kandy Society of Arts was later situated. Four long low buildings arranged in a rectangular fashion comprised the military hospital. It was intended as a new palace for the king before the British took over Kandy.

Two of his paintings showed this hospital. One caption read: 'View of the general hospital, guard houses, mess house of the officers of the Ceylon Regiment and part of the royal bath and lake with Kandy, taken from the Octagon. The hospital was intended as a new palace.' The other painting had the caption: 'View from the general hospital in Kandy, showing part of the unfinished bath, Malabar Deowalle, Octagon temple of the sacred relic and palace of the late King's mother.'

Paterson's career in Sri Lanka was as colourful as his paintings. He was arraigned before a court martial at Kandy on 15th November, 1824 on a charge of insubordination to his immediate superior, Dr. Dwyer. He was ordered to be reprimanded. However, the authorities in England were not impressed with the course of the whole episode, and the King decided to remit the reprimand. He learnt of this decision only after he had left Sri Lanka. He died in Edinburgh in 1866. Some of his descendants later came to Sri Lanka and worked in the Ceylon Civil Service and as planters.¹⁶

Pettah hospital

In the early part of the British rule, the civil establishment which came under the military medical service, was primarily concerned with the control of communicable diseases, such as small pox and cholera. When there was an epidemic of these diseases, temporary hospitals which in effect were huts

servicing as isolation centres, were hastily put up in the affected areas. There were no general hospitals for civilians, the only institutions for the treatment of general medical and surgical cases being the military hospitals, but these were only meant for the treatment of service personnel. The leprosy hospital at Hendala, which was a legacy from the Dutch, was in existence at the time, but it was not a general hospital, being mainly reserved for leprosy cases though a few non-leprosy patients labelled as incurables were also looked after. It was only in 1817 that the first general hospital for impoverished civilians was proposed. This hospital, when it was established, was named the Pettah hospital, after that part of Colombo where it was located.

The Pettah hospital, which was the precursor of the General Hospital, Colombo, was set up in an old Dutch building on Prince Street, which is presently occupied by the Dutch Period Museum. Prince Street was so named by the Dutch in honour of King Rajasinghe's son.¹⁷ It was originally the residence of Count August Carl Van Ranzow when Pettah was a residential area. It later served as a Dutch orphanage.¹⁸

In 1817, Charles Farrell, MD, Deputy Inspector of Hospitals, first made the suggestion to the Governor, Sir Robert Brownrigg, that a civil general hospital for the poor be established in Colombo. In a lengthy memorandum, he advanced compelling reasons why such an institution be set up:

'The wisdom and humanity that conferred the blessings of vaccination on the population of this country could not remain insensible to the sufferings and distresses of the poor and helpless labouring under diseases, which they had not the means to have properly treated, and which, were their means ever so ample, the native medical practitioners were incapable of treating. It was therefore determined that an infirmary should be established for the reception of poor natives of the above description.

'On the advantages of this establishment, it is not necessary to enlarge. Many of them are sufficiently obvious, and to an intelligent mind, some of them will appear, even on the score of political economy, to compensate fully the expenses attending it. To the person who views it as a political institution, it will present the advantages of restoring to health, and the means of earning a livelihood, wretched objects, who would otherwise be a burthen on their friends or a deadweight on the public, while to the benovent and humane, the relief which it affords to the combined sufferings of sickness and poverty will be its strongest recommendation. Among the numerous advantages resulting from it, I ought not to omit that of its diminishing the infectious diseases communicated by unfortunate females to our soldiers, of which there are at this moment many instances in our military hospitals. It will, in this way, conduce not only the healthiness of our troops, but add to our military strength.'

Farrell proposed a hospital for a hundred male and female patients requiring medical and surgical treatment, and a dispensary for the issue of free medicine and advice to the 'poor natives'. He had a ready plan for its speedy establishment with minimum costs:

'The airy and spacious building in the Pettah, lately occupied as an orphan house, will, with some slight alterations and a few repairs, present all the advantages

of a ready constructed hospital. The elevation and the division of its apartments, in short the whole arrangement of the premises, render them well adapted for the purposes of a hospital, in which a number of patients much greater than it is at present in contemplation to take in hand, may be commodiously accommodated. His Excellency, by appropriating this building to the purposes of an hospital, removes at once the heavy expenses of erecting or purchasing a house for the purpose, and gives immense aid to the execution of the plan.'

The main expenditure would be on food for the patients and on salaries for attendants and servants. This money could come from public subscription, but Farrell felt that such a good cause should not be left 'to the chances of time, the caprice of opinion or the assaults of human imbecility and wickedness.' He advised the Governor to provide government funds for the upkeep of an institution where 'poverty and sickness will be the great supports for admission.'

He suggested that the hospital could easily be furnished if the Governor made a request to the Secretary of State for War. Medicines and equipment could then be obtained from England. At the start, medicines could be supplied from the army medical store.

If the hospital was to be maintained by public subscription, then it was only fair to allow subscribers their due share in the management of the hospital. The plan was to appoint a committee from the ranks of the subscribers, with the Governor as the president, to manage the hospital. On the other hand, if it was to be financed by the government, he suggested a large committee of officers and officials, with the Governor as the patron, and including the Chief Justice, Major General commanding the troops, Paymaster General, Auditor General, Commandant of Colombo, and Deputy Inspector of Hospitals.

As regards the doctors, he was confident that army medical officers would undertake duties at the hospital, free of charge. He himself offered his services one hour each day on two days of the week. However, a 'respectable native medical attendant with a suitable salary must be employed. He should be obliged to reside in the hospital, to take charge of the pharmacy, hospital equipment, and everything, in short, within the walls of the hospital.' For this post, he recommended a 'native medical man called Doctor of the Pettah, who is supposed to watch over the health of its inhabitants, and who receives from government RD 100 per month for that duty. He may with advantage to himself and the public be transferred to the hospital.'

He suggested that the leprosy hospital at Hendala be set apart exclusively for the treatment of leprosy, and all other patients, provided they were poor, were to be admitted to the Pettah hospital. By transferring 70 incurables, who were not suffering from leprosy from Hendala to Pettah, the extra expenditure necessary for running the Pettah hospital would not be high. By such manipulation of accounts, Ferrell envisaged an extra monthly expenditure of only 109 rixdollars in running the Pettah hospital ¹⁹.

Farrell's recommendations were apparently accepted by the government, and the first general hospital for civilians in Sri Lanka was established at Prince Street. It was opened in 1819.²⁰

In 1835, J. Kinnis, MD, who was Superintendent of Vaccination in the Colombo District, described the hospital as a large and well constructed building capable of easily accommodating 120 patients. The plan of the building as it stood in 1835 was almost identical with that of today. It faced Prince Street, which at the time was 31 feet wide. The main part of the building was on the ground floor, there being six wards, outdoor facilities, and the quarters for the medical officer. The long courtyard behind with two wings on either side has survived unchanged. Even the well depicted in the map²¹ still contains clear water. The upper storey had two wards and a store room.

An outbreak of small pox occurred in the hospital in 1834. The entire ground floor was then reserved for small pox cases.²² The Pettah hospital also paid host to the Colonial Medical Library which today is the Sri Lanka Medical Library.

With the popularisation of western medicine, the demand for hospital facilities outstripped the limited resources at the Pettah hospital. The outcome was the establishment of the General Hospital at its present site in 1864.²³

British attitude

The attitude of the British towards traditional medicine in Sri Lanka was somewhat different to that of the Portuguese and the Dutch, who had a healthy regard for it. The British adopted the position that the local population should be shielded from quacks, but their active pursuit of this goal was limited. In their early years they were not inclined to spend money on a programme of providing free hospital facilities. There was a long pause in health activities after the establishment of the Pettah hospital, which could be considered as a personal triumph for Dr. Farrell rather than part of an agreed policy of the government. It was in this climate of government inactivity that missionaries found a fertile field for launching into the new area of medical evangelism.

While being disinclined to provide medical facilities to the population at large, the British took serious note of their moral obligations to some unfortunate sectors of society. Leprosy hospital at Hendala was their first civil medical establishment. The Pettah hospital was followed by the Lunatic Asylum and the Welikade jail hospital.

Prisoner's health was a moral responsibility cast on the government by the administration of justice, and the one that could not be shirked. Welikade jail was started on 1st December, 1843. It had its own hospital which was visited by the medical sub-assistant every morning soon after 6 o'clock. He examined the patients in the wards and also those who had reported sick. He had to exercise much vigilance as malingering was common.²⁴

American mission

Throughout the ages, care of the sick has had a special attraction for most religions in the world. In accordance with the tenets of Buddhism, many ancient kings made special provision for the sick during their reigns. The Portuguese, in their time, introduced the institution of *miser cordia*, which had a special relationship with the Catholic church. There is, however, no evidence that any religion-backed health organisation existed during Dutch times. Religious backing for the care of the sick was reintroduced during the early British period, first by the American missionaries, and then through the institution of Friend-in-need Societies.

The American Board of Commissioners for Foreign Missions in Boston, Massachusetts, sent a small band of five missionaries who arrived in Sri Lanka in 1816, during the administration of Sir Robert Brownrigg who was sympathetic to their cause. They began their missionary work in Jaffna. Their leader, Daniel Poor, as well as two others, Edward Warren and James Richards, all suffered from tuberculosis. Warren and Richards, who later became victims of the disease, became the first medically oriented missionaries. They were not qualified doctors, but had undergone a short course of medical studies at the University of Pennsylvania, and also had some practice in hospitals at home. Within a year of their arrival, they set up a temporary hospital at Tellipalai with the help of government officials and others. It was 'for the cure of both soul and body', which was their mission in life. They were soon followed by Dr. John Scudder, who was a practising doctor in New York when the call for missionary work came.²⁵

Dr. Scudder arrived at Tellipalai on 17th December, 1819. Dr. Scudder, who has been described as the world's first medical missionary, was sent to Pandaterruppu after a few months. He started his first dispensary at Pandaterruppu on 8th June, 1820. The building was a small hut with a thatched roof. He worked for long hours attending on patients with diverse diseases who were increasingly attracted to him.²⁶

These humble beginnings gave rise to the medical missionary effort of the American Board which later had an impact outside the confines of Jaffna. The only other hospitals in the district at the time were the military hospital which, of course, was out of bounds to the general population, and small pox hospitals.

Scudder left for Madras in 1836, and was succeeded by Dr. Jonathan Ward, who himself returned to the USA in 1847. He was in turn succeeded by Dr. Samuel Green,²⁷ who left a permanent imprint on the local medical scene by establishing the first medical school in the country. These medical missionaries opened other medical institutions in the district and manned them with some of their own trainees. The premier institution was the Green Memorial Hospital at Manipay, which celebrated its centenary in 1950.²⁸ The medical missionaries were successful in drawing the public away from their

traditional methods of treatment. These institutions became increasingly popular in the district.

Friend-in-need Societies

Early in their rule, the British introduced a system of voluntary organisations known as Friend-in-need Societies. These were charitable institutions, which at first, at least, were sponsored by the Anglican church, but were not strictly religious oriented. They owe their beginnings to the Bishop of Calcutta, Dr. Turner, who visited Sri Lanka in February, 1831: 'At the Bishop's suggestion a society has been established at Colombo called the Friend-in-need Society. An institution under the same designation has existed in Madras for the last sixteen years, and has been productive of much good in the Presidency, and there is no reason to doubt that if encouraged and supported as it is expected it will be, it will prove of equal utility in this place'.²⁹

These societies were subsequently established in Kandy, Jaffna, Trincomalee, Galle, Negombo and Moratuwa. Their declared objective was 'to relieve the really necessitous, and as far as possible, to suppress mendicity in the Settlement.'³⁰ Each society was managed by a separate committee consisting of leading personalities in the respective towns. Members of the Anglican clergy played a key role in several of these committees. While the Colombo society had the Governor as its patron, the vice patron was the Bishop of Colombo. Clergymen of lesser rank also served on these committees.

Some years after their establishment, the societies in Colombo, Kandy, Jaffna and Trincomalee set up hospitals or dispensaries in these towns. These institutions were usually administered by a special sub-committee of the parent society. These catered to the poor, who were provided with free treatment. At the time of their establishment, the only government institutions run for the benefit of the nationals of the country were the leprosy hospital at Hendala, Pettah hospital for paupers and the Lunatic Asylum at Borella. Western medicine of a non-specialised nature was available only at the Pettah hospital, and that too for the poor in Colombo. Outside Colombo, western medicine was confined to the forces. The establishment of free hospitals and dispensaries by the Friend-in-need Societies in other towns gave a fillip to the development of western medicine in Sri Lanka, further augmenting the non-official effort already started by the American mission in the Jaffna district.

The government was not inclined to extend free treatment outside the Pettah hospital, and the local people were too poor to benefit from western medicine if they had to pay for it. The policy of the government at the time was to contribute to hospitals started by local effort.³¹ The Friend-in-need Societies stepped in to fill the void, and the hospitals they set up at Kandy, Jaffna and Trincomalee proved to be the precursors of the present day govern-

ment hospitals in these towns. The government paid an annual grant for their maintenance. The doctors were military men who worked part-time on a voluntary basis.

It may be seen that the Pettah hospital, the American mission institutions in Jaffna and the Friend-in-need Society institutions all gave treatment free of charge. This trend continued throughout British rule and formed the basis of the present day free health service in Sri Lanka.

Colombo General Dispensary

The Colombo General Dispensary was set up in 1845, 'for the gratuitous relief of the sick poor, under the auspices of the Friend-in-need Society. It confined itself to providing only out-patient treatment. The society probably did not wish to run a parallel hospital when the Pettah hospital was already in existence for the treatment of in-patients.

The dispensary was open, except on Sundays, from 7 am to 8 am, when a medical officer was in attendance. Prospective patients had to follow a set procedure before they received treatment. The patient first had to apply to a member of the committee or any subscriber to the dispensary, who if satisfied about the patient's credentials would recommend him to the medical officer for treatment. Each patient had to bring along with him an empty bottle to collect his medicine, which at the time consisted mainly of mixtures.

Strict economy was enforced in regard to the issue of drugs which was the responsibility of a dispenser appointed for the purpose. Patients were not allowed to transfer their tickets to others. In 1849, three medical officers shared the duties.³² This dispensary was apparently closed down about 1850, for it ceased to find mention in the *Ceylon Almanac* of that year.³³

Trincomalee hospital

The Friend-in-need Society in Trincomalee was instituted in 1840, and the hospital established in 1846, just one year after the Colombo dispensary. 'Sick paupers' were admitted to the hospital which was a commodious building with separate wards for the accommodation of males and females according to their diseases. They were regularly seen by a resident medical attendant. The advice of a consultant surgeon, probably from the military hospital, was also available. Clothes and medicines were provided free of charge. In 1848, 62 patients were treated at the hospital.

The society also established, in 1846, a general dispensary on the same lines as the Colombo one. It received a regular supply of drugs from England.³⁴

The hospital was mentioned for the last time in the *Ceylon Almanac* of 1859.³⁵ About this time, it was handed over to the government, whereupon it became the Trincomalee Civil Hospital under the administration of the PCMO.

Jaffna hospital

The Friend-in-need Society in Jaffna was instituted in 1841, and the

hospital established in 1852.³⁶ P. A. Dyke, who was Government Agent for over 20 years, was the virtual founder of the institution. He functioned as the president of the society for several years. In the 1860's, 8000 to 10,000 patients were treated annually.³⁷ The superintendent of the hospital at first was a military medical officer, who resided in the Fort. In 1863, Dyke invited Dr. S. F. Green of the American mission to become its superintendent though the society did not have any connection with the American Ceylon Mission.³⁸ Green accepted the appointment for a trial period of three months, but continued as superintendent till 1868. During his trusteeship, he brought up the hospital to a high degree of efficiency, and it was with regret that the society accepted his resignation.³⁹ Dr. Green used his hospital connection to teach practical anatomy to his class of students.⁴⁰ Dr. Danforth, who was one of his former students, worked as a dispenser at the hospital, and on Green's retirement, he recommended him to the society as his successor. This recommendation was accepted by the society.⁴¹

Jaffna hospital eventually became the longest surviving private hospital in the country, but not without rumblings and protests from some official and unofficial quarters. The main target of attack was the government grant to the hospital which was considered very large at the time. When the Legislative Council was asked to vote an increase in the grant from Rs.4000 to Rs.6000, there were protests from two unofficial members of the Council, including Mr. (later Sir Ponnambalam) Ramanathan. They contended that the money was being used by an institution over which the Civil Medical Department had no control. However, the vote was passed with only these two members dissenting.⁴²

Similar views were echoed by Dr. John Attygalle, who was Colonial Surgeon, Northern Province. He advocated the establishment of a hospital under the PCMO. But the PCMO, Dr. Kynsey supported a hospital run by voluntary contributions.⁴³ Dr. Attygalle next argued that of the hospital budget, a half came from the government grant, while two thirds of the balance was made up of profits from the sale of drugs purchased with the government grant. Therefore, only a small amount really came from voluntary contributions.⁴⁴

By 1905, the grant had been increased to Rs.8000, and it had outlived other society hospitals. At this stage, the committee considered handing over the hospital to the government out of their own accord.⁴⁵

Kandy hospital

The first civil hospital in Kandy was established by the Friend-in-need Society, Kandy. Very little is known of its activities. It supplied free medical relief and food. This hospital admitted, among others, sick labourers from estates. With increasing immigration, the demands on the hospital outstripped its resources.⁴⁶ It was handed over to the government about 1860, and thereafter became the Kandy Civil Hospital.

Other medical missions

In 1917, the Anglo-Catholic Union of Ceylon decided to establish a medical mission at Denepitiya, near Weligama in the Southern Province. Rev. G. B. Ekanayake, whose home town was Weligama, was responsible for the choice of the village. The scheme was approved by Bishop E. A. Coplestone. Rev. Ekanayake worked assiduously for its success.⁴⁷

It was started in 1918. A plot of land, 13½ acres in extent, was acquired, and buildings constructed on it. The services of a qualified medical practitioner were obtained.⁴⁸ It later received a grant from the government.

Another medical mission was established in 1911 by Miss E. S. Karney at Talawa, 8 miles from Anuradhapura. Miss Karney was an Englishwoman who came to Sri Lanka in 1896 as a missionary of the Church of England Zenana Mission. She first worked in Gampola, and later moved on to Talawa, which was selected by her on account of the poverty and sickness, specially malaria, prevailing there at the time. She devoted her life to the amelioration of the lot of these villagers. She started on a modest scale with a small thatched building sufficient to accommodate four beds for urgent medical attention. This tiny hospital was later enlarged and was named 'The House of Joy'. It included a maternity home as well. At the request of Miss Karney, the establishment was taken over by the diocese of Colombo in 1943.⁴⁹

She recalled:

'The villagers were desperately poor. The two scourges, malaria and parangi, sapped their strength, and because they had no strength to work hard they were very poor, and because of their poverty they were ill fed and unable to resist diseases; so it was a vicious cycle. In the rainy season, numbers died of malaria. Often the death rate exceeded the birth rate. Maternal mortality was 30 per cent (sic), and infant mortality even greater. I started a maternity hospital.'⁵⁰

The funds for the hospital came from Miss Karney's friends abroad and in Sri Lanka, but the biggest contributor was Miss Karney herself. Miss Karney died in 1953 at the age of 84 years and was buried at Talawa.⁵¹

Civil Medical Department

The Civil Medical Department was created by Governor North with the primary objective of controlling small pox. The first official recognition of civilian medicine was when Dr. Thomas Christie was appointed as Inspector General of Civil and Military Hospitals in 1801.⁵² To begin with, it was a very modest civil section, consisting of only the small pox hospitals and the leprosy hospital at Hendala.

In its early period the department was referred to as the Native Medical Establishment. The early arrangement of military control over the civil department continued unchanged for over half a century. Finally, in 1858, an independent Civil Medical Department was created by removing it from military control. This separation was a landmark in the development of the health services in Sri Lanka. It heralded a spate of activities by which medical

facilities were extended within a short time to a large sector of the population, both urban and rural, through a network of hospitals and dispensaries.

Though there was an agitation for this separation, it was resisted by the authorities. The Governor, Sir Henry Ward (1855-1860), in his address to the Legislative Council on 27th August, 1857 gave the reasons for his decision:

'In my report on the fixed establishments, I inclined to the view that a military head to the medical establishment would be most likely to ensure to it a constant accession of medical talent and a knowledge of the most recent discoveries of the art. Papers were subsequently submitted to me, showing the great want of medical men throughout the Island competent to deal with ordinary surgical cases, and the impossibility of procuring a sufficient supply of them without the establishment of a medical school, the superintendence of which could hardly be combined with the ordinary duties of a military medical officer, as it would require some knowledge of the language in order to be of use.

'These papers produced a considerable impression upon the Secretary of State, as they did upon me. The plan, if adopted, would not interfere with the employment of military medical men at those places where they are stationed; but by placing a civilian in charge of the principal hospitals, it might facilitate the formation of medical classes, and the extension of the simple branches of the healing art, to a much greater extent than can be contemplated under the present system.'⁵³

One of the leading agitators for the creation of an independent department was Dr. Elliot, who first applied to be its head in 1855. Elliot was known as an outspoken critic of the government through his newspaper, the *Colombo Observer*. He again sought office in 1856 with the argument that the head of the department should have a knowledge of the country and its people. Finally, he was appointed in 1858, when he severed his connections with the *Colombo Observer*. However, he died of dysentery the next year, and he was replaced by Dr. Charsley,⁵⁴ who continued as PCMO till 1875. The next two PCMO's were W. R. Kynsey (1875-1897) and Allan Perry (1897-1915). It may be seen that Charsley, Kynsey and Perry, between them, served as head of the Civil Medical Department for over half a century. Each developed the department according to his own thinking, but the sum total of their efforts represented almost a revolution in medical progress. When Charsley took over, there were only three civil hospitals, namely those at Pettah, Kandy and Trincomalee. When Perry relinquished his duties in 1915, the whole country was dotted with health facilities. In fact, in 1868, just ten years after Charsley took over, there were 15 civil hospitals, besides several specialised ones.⁵⁵

In 1925, the designation of the Principal Civil Medical Officer and Inspector General of Hospitals was changed to that of Director of Medical and Sanitary Services. This was in keeping with the growing importance of public health.⁵⁶

Dispensary system

The dispensary system owes its origin to Sir William Gregory

(1872-1877). He was an Irishman who felt that the dispensary system which was successful in his native Ireland would be suitable for Sri Lanka too. Till then, the emphasis in the Civil Medical Department was in building hospitals in large towns which served only a relatively small proportion of the population. His idea was to open a network of dispensaries with out-patient facilities that would serve the large rural sector. In his address to the Legislative Council on 30th July, 1873, he said: 'Most liberal provision has been secured for the European stations and the medical institutions connected with them, but as regards the mass of the population in outlying stations, they are still at the mercy of ignorant quacks and devil dancers.'⁵⁷

This scheme depended on the availability of trained medical personnel to man these stations. But the Colombo Medical School had been in existence for only three years, and its output was hardly sufficient to serve the hospitals. His plan was a long term affair, for he was aware that training the necessary personnel would take time. The backbone of his scheme, which he drew up in consultation with the PCMO, was the creation of a new category of students in the medical school, who would be given a shortened course and sent to remote dispensaries. This proposal was put into effect in 1877.

Gregory became the first administrator to introduce the system of primary health care as it is understood today. Dispensaries were built in remote areas, but as the process took time there were more and more demands from the people. Planters and chieftains clamoured for health facilities for their respective areas. In 1866, for example, there was a demand of this nature at the durbar held in Badulla by the Governor, Sir Arthur Gordon to mark the inauguration of Uva as a new province. Rambukpota Ratemahattaya, whose district included Monaragala complained that in his scattered area there was no medical officer. A deputation of planters followed up by asking for a small dispensary at Monaragala. When this was referred to Dr. Kynsey, who was at hand, his reply was typical. He would give the dispenser, provided the planters gave the building. At the end, Monaragala did get a dispensary.⁵⁸

The dispensary system was a boon to the public in more than one way. Hospitalisation was not popular, specially in the Kandyan provinces. This was due to a preference for ayurvedic treatment, as well as an antipathy to staying a few days in hospital away from home, when his family and lands would be neglected.⁵⁹

Health progress

When the British left the country in 1948, an independent Civil Medical Department (or its successor, the Department of Medical and Sanitary Services) had been in existence for 90 years. The achievements during this period were phenomenal. When the department was created in 1858, there were only three civil hospitals, a leprosy hospital, a lunatic asylum, a small pox hospital and two jail hospitals (Welikade and Hulftsdorp).⁶⁰ During this

period numerous hospitals were built and dispensaries established. In 1946, shortly before the British left, the total number of hospitals rose to 183, inclusive of specialised hospitals and 45 rural hospitals. The total number of in-patients for the year was 502,012. At the end of the year, there were 240 central dispensaries, 176, branch dispensaries, and 453 visiting stations, which catered to a total of 7,498,552 out-patients,⁶¹ thus demonstrating the success and the popularity of the service. This classification of dispensaries was adopted in 1922. The visiting station constituted the lowest rung of the health service, where an apothecary visited a remote station on a set day, often on foot, or even on horseback. He was accompanied by a labourer who carried a box of medicines, the bulk of which comprised the ubiquitous mixture. In this manner, the health service was brought almost to the doorstep of many remote villages.

In 1913, it was realised that preventive medicine too was an integral part of an effective health care system, and a sanitary branch was accordingly created within the department. In time, this led to the health unit type of work where medical officers of health were appointed to look after the health of a community of manageable size. Another development was the setting up of special campaigns for the control of major diseases, such as malaria, ankylostomiasis, tuberculosis, leprosy, filaria, and venereal diseases.

Two categories of hospitals which had only a short span of existence were also created. The field or parangi hospitals were established in parangi stricken areas. These were closed down with the control of the disease. The other category was the pioneer hospital. The pioneers were a special labour corps detailed for the construction of public works, such as the roads and irrigation facilities, in remote areas where malaria was a daunting factor. Temporary hospitals were constructed at these sites for the treatment of these workers.

The success of all this intense health activity may be gauged quantitatively by reference to the parameters of birth, death and infant mortality rates. During the period 1870 to 1948, the birth rate rose from 27.4 to 40.6, the death rate dropped from 22.8 to 13.2, and again the infant mortality dropped from 158 to 92 per thousand.⁶²

Provision of health facilities to certain sectors of the population was made on economic considerations. Plantation workers on whom the economy depended at the time were given special consideration, including the provision of hospitals.

South Indian immigration

Shortly after the signing of the Kandyan convention in 1815, British planters gained access to the hill country. They started to open up coffee estates which proved to be highly profitable ventures. Unfortunately, in the 1880's as a result of coffee blight, a fungal disease which affected the plants,

the economy based on coffee crashed rather dramatically, but the planters not to be outdone switched on to tea cultivation in place of coffee.

The local Sinhala villagers, who were pre-occupied with their rice cultivation and other types of agriculture, were reluctant to serve on British estates. In order to meet the increasing demand for labour that the opening of new estates entailed, labour was imported from the Madras Presidency.

The recruitment of South Indian labour during British colonial rule and its concentration in the plantation districts which were mainly spread over the hill country have had a profound influence on the health structure of Sri Lanka, the effects of which are noticeable even to the present day. The import of South Indian labour began around 1825, with the start of the coffee industry.⁶³ It gathered momentum in the 1840's with the establishment of coffee as a profitable agricultural crop. The labour requirements of coffee were mainly seasonal, being confined to the picking period. Once the season was over, most of the labourers used to return to South India, but with the devastation of the coffee plantations by the fungus, and the consequent rise of the tea industry, more labour was required, for tea cultivation and maintenance were more labour intensive.⁶⁴ Therefore, South Indian labour started to arrive in Sri Lanka with increasing vigour. Their movement along well established migration routes posed many health problems to the immigrants themselves, to the indigenous population specially along the route, to the British planters and to the government.

Sri Lanka, being an island, was fairly effectively insulated against the introduction of diseases such as small pox and cholera, which were endemic in South India. With the free entry of immigrants, reaching as high as 134, 134 in 1900,⁶⁵ these diseases were introduced to the country from time to time, the result being frequent epidemics which were, however, successfully contained by the authorities.

The main route taken by the South Indians till the end of last century was the North Road. It was the most popular route as it was the cheapest for these impoverished people. They embarked at one of the South Indian ports and landed at Mannar or Talaimannar. In the absence of a railway, which was built only in 1914,⁶⁶ the immigrants were obliged to walk to Madawachchiya, and then along the North Road through Anuradhapura and Dambulla to Matale which was a distance of 131 miles. Those who could afford the fare then took train at Matale in order to reach their destination on various estates, while the others had to continue on foot. Large numbers died on the way from disease, starvation, exposure or exhaustion. The diseases that took a heavy toll were the communicable diseases such as small pox, cholera and dysentery. The sick were either abandoned on the road or admitted to hospitals built along the route for the purpose. In this way districts at the beginning of the route acted as a form of natural quarantine in pro-

tecting the plantation districts. Though the mortality was heavy, the great bulk of the immigrants reached their estates usually free of disease.⁶⁷

The North Road, at least in parts, was no more than a track through thick jungle. Starvation was not uncommon, specially in their originally impoverished state. Many were unprepared for the cold of the hilly plantation districts which was in contrast to the intense heat of their native South India. They could ill afford any protective warm clothing.

On the initiative of the Planters' Association of Ceylon, the authorities took various steps to reduce the mortality and morbidity of immigrant workers. This action was chiefly motivated by economic considerations. The necessity of maintaining plantation labour in working trim was of paramount importance to the planters as well as the government, so that the production of coffee, and later of tea and rubber, on which the economy of the country depended could be kept at the maximum possible level.

Quarantine camps

Some of the labourers recruited in South India were obviously in no physical condition to withstand the rigours of a long and arduous trek to the estates.⁶⁸ Weeding out the likely casualties at the source itself was the most prudent step to adopt, rather than incur unnecessary expenditure in getting labourers of doubtful physical condition who would succumb to the privations of the journey before they reached the estates. Quarantine camps in several recruiting areas in South India were set up at one time or another so that the labourers could be observed for a few days before embarkation to Sri Lanka. By these means, outbreaks of infectious diseases *en route* were minimised, and the health of the local population along the route was safeguarded to some extent.

The principal ports in South India from which the emigrants embarked for Sri Lanka were Ammapatam, Tondi, Paumben and Tuticorin. Medical officers employed by the Sri Lankan government submitted them to a medical examination before embarkation.⁶⁹ The Sri Lankan government subsequently established a quarantine camp at Mandapam in South India. It was manned by a Sri Lankan doctor as recently as the 1950's.

The northern route was closed to immigrant labour from 1st January, 1899 on a directive by the Governor which was based on a recommendation of the Plague Committee.⁷⁰ It was feared that plague which occurred in epidemic form specially in Bombay at the time would find its way to Sri Lanka through immigrant traffic. The immigrants were, instead, brought to Colombo by ship from South Indian ports and then conveyed to Ragama, 8 miles away, where a quarantine camp was set up in 1899.⁷¹ The immigrants were detained for 12 hours before allowing them to proceed to their destinations. If the gangs of immigrants became infected *en route*, or if they came from an infected area in India, they were quarantined for the full period according to the disease.⁷² The success of this arrangement was shown by the large

number of outbreaks of cholera that occurred within the confines of the camp. In 1900, for example, there were 11 outbreaks.⁷³ If not for this quarantine camp, the population at large would have been exposed to potential epidemics.

Immigrant hospitals

During the period the North Road was in use, the government set up special institutions known as immigrant hospitals along the route. In 1899, the year in which the North Road was closed to immigrant traffic, there were such hospitals at Pesalai, Mannar, Vankelai, Puliandy-irakkam, Mihintale and Dambulla,⁷⁴ which were remote outposts at the time. Besides these, there were other hospitals which catered primarily to the immigrants. Kurunegala hospital, which is now one of the major provincial hospitals in the country, was primarily meant for Malabar immigrants. It is interesting to note that at this hospital, nine men were specially employed to fetch the sick from the wayside.⁷⁵

In course of time, some of these hospitals developed into important institutions in the present day medical set-up. Thus the development of health facilities in these remote areas was influenced by immigrant traffic. The sparse indigenous population of these jungle-girt villages too benefited at a time when such facilities would not have been provided for their sole benefit. In this respect, the system of immigrant labour has left a lasting imprint on the structure of the health care system in the country.

District hospitals

Once the immigrants reached their respective estates, the danger of communicable disease eased off as their period of sojourn in the country extended beyond the maximum incubation period of the major communicable diseases. However, epidemics did occur from time to time.

The problem of providing facilities to these economically important new settlements of labour faced the authorities. In 1880, the Governor, Sir J. R. Longden wrote to the Secretary of State, the Earl of Kimberly, that the health of the Indian labourer was 'always an object of solicitude to the Government.'⁷⁶ There were bitter arguments as to whether the government or the planters were responsible for the treatment of sick labourers. In 1880, 'An ordinance to provide for the medical wants of immigrant labourers in certain planting districts' (No.17 of 1880) was introduced. Its main provision was for the government to undertake the medical care of these workers. However, the cost of such treatment was to be borne by the planters. This irked them, but the Secretary of State gave his sanction to the ordinance.

For the purposes of this ordinance, estates were grouped into planting districts, and each district was provided with a district hospital under the care of a district medical officer. This nomenclature of district hospital and district medical officer exists to this day long after its origin has been forgotten. These planting districts did not conform to administrative districts.

The tea plantations that replaced coffee after the coffee blight, at first

conformed to the same high altitude areas, but subsequently, tea cultivation spread to low and mid-altitude areas in the southern part of the country. Rubber too became a major plantation in the south-western region. In the wake of this advancing agricultural development, South Indian labour gradually found its way to these new regions. The provision of health care to these new concentrations of labour engaged the attention of the authorities. As a result, more and more hospitals were opened in the plantation districts which later developed into larger hospitals for the benefit of the general population as well. The Central, Southern, North Western and Sabaragamuwa Provinces were the main plantation areas with concentrations of immigrant labour.⁷⁷

Prior to the establishment of these hospitals, primary health care was usually provided by ayurvedic practitioners. The popularisation of western medicine among the indigenous rural population of the plantation districts was in no small measure due to the establishment of health facilities near their villages in order to cater to the Indian settlers.

Doctors

In 1876, there were 22 district hospitals which were inspected by an officer with the quaint designation of Medical Inspector of Coffee Districts. One of the constraints to the efficient running of these hospitals was the shortage of doctors. Some doctors and medical assistants were obtained from Madras, but the supply was very limited. They, 'with one or two exceptions were drunkards.' The Medical Inspector, in his report, also mentions that he was 'very happy to bear testimony to the excellent officers we have obtained from the local medical school.'⁷⁸ This testimony was to some of the earliest students to pass out from the Colombo medical school.

The diseases the doctors and medical assistants were called upon to control or treat were cholera, small pox, plague, hookworm infestation and malaria. It has been claimed that many of these diseases originated from India.

Estate dispensaries

It was realised that the death rate among immigrant labourers admitted to district hospitals was unduly high. In 1892, the Governor; Sir A. E. Havelock appointed a commission to ascertain the reasons for this and to recommend remedies.⁷⁹ It was found that in the nine years from 1883 to 1891, the death rate among immigrant labourers admitted to these hospitals was 20.87 per cent, while that in hospitals in general was only 10 per cent.⁸⁰

The commission found that the reason for this high mortality was the fact that patients were brought to hospital at an advanced stage of the disease due to the delay in their seeking treatment. The commission recommended that in order to encourage labourers to seek early treatment, facilities should be made available to them as near to their place of work as possible. As a result, over the next few years, a large number of dispensaries were opened

on the larger estates. These were mainly for primary health care and were manned by medical assistants and dispensers who had only a basic knowledge of drugs. These dispensaries exist to this day and provide a very useful service in the health care of the estate workers. With time, some of these dispensaries on large estates developed into hospitals with in-patient facilities.

Administration

The Medical Department, as well as other government departments, came under the administration of the Colonial Secretary, who was immediately below the Governor, till 1931. With the promulgation of the Donoughmore constitution in that year, the Legislative Council was replaced by the State Council, which had legislative and executive powers. The latter were exercised through seven Executive Committees into which the members of the State Council were allocated. One of these committees was on health. In the first State Council elected in 1931, the members of the Executive Committee of Health were T. B. Panabokke, George E. de Silva, D. H. Kotalawala, G. C. Rambukpota, V. R. Schokman, T. L. Villiers and V. S de S. Wikramanayake. Its chairman, elected by the committee, was T. B. Panabokke, who thus became the first Minister of Health. Under the Donoughmore constitution, the Medical Department came under the direction of the Minister of Health and the Executive Committee of Health.

In the second State Council, elected in 1936, the Executive Committee of Health consisted on W. A. de Silva (Minister of Health), George E. de Silva, F. H. Griffith, E. A. Nugawela, G. C. Rambukpota and D. D. Gunasekera. On W. A. de Silva's death, George E. de Silva succeeded him.

The Donoughmore constitution was replaced in 1947 by the Soulbury constitution when D. S. Senanayake became the first Prime Minister, and S. W. R. D. Bandaranaike the Minister of Health and Local Government. When Sri Lanka achieved Independence on 4th February, 1948, the latter continued as Minister of Health and Local Government.

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MEDICAL LITERATURE AND EDUCATION

The best known books on ayurveda are the *Charaka Samhita* and *Susruta Samhita*, which were written in Sanskrit. These two books were very comprehensive and treated most subjects in depth. Charaka, for example, divided ayurveda into eight sections, namely *salya* (surgical treatment), *salakaya* (diseases above the clavicles), *kaya chikisa* (treatment of general diseases), *bhuta vidya* (demonology), *kaumarabhrtya* (paediatrics), *agada* (toxicology), *rasayana* (medicines which promote longevity) and *vijikarana* (aphrodisiacs).¹

The works of Charaka and Susruta were treated with divine reverence in India, and were accepted with unquestioned faith. When ayurveda was introduced to Sri Lanka, the same attitude prevailed, and the early books on ayurveda in Sri Lanka borrowed heavily from the material of Charaka and Susruta. The lack of significant progress in ayurveda was partially due to this tacit acceptance of their work,² as well as to religious abhorrence of the Hindus towards dissecting dead bodies.³

The early ayurveda texts used in Sri Lanka were mostly compiled in India, but from time to time original works were written by local authors. These books were inscribed on *ola* leaves which were prepared from the tender leaves of the talipot palm, *Corypha umbraculifera* which is a native of Sri Lanka. This tree, which has the largest inflorescence in the vegetable kingdom, flowers after 40 to 60 years and then dies off. The *ola* leaves have provided the ancient Sri Lankans with a traditional medium for bequeathing their religious, literary and scientific knowledge to posterity.⁴

Buddhist clergy

The centre of learning in ancient times was the Buddhist temple, which was also the repository of *ola* books. Buddhist monks did not confine themselves to religious ministrations, but took an interest in physical sustenance as well. They were not prohibited from learning or practising medicine, but were not expected to derive any profit. Some of the regulations in the Buddhist *vinaya* or set of rules for the clergy were based on sound medical principles. Therefore, it is not surprising that some of the early works on medicine in Sri Lanka were written by monks, perhaps for their own use.⁵

In the *vinaya pitaka* or the code of disciplinary rules for the clergy,

the Buddha laid down five essential qualities that a person attending on the sick should possess. He should be able to prescribe, should know what is good from what is not good for the patient, should attend to the sick out of love and not greed, should not revolt at removing excreta, saliva or vomit, and should administer religious consolation to the patient from time to time.⁶

Languages

Sanskrit and Pali were the learned languages at the time, as much as Latin was in mediaeval Europe. While religious literature was written mostly in Pali, Sanskrit was the medium largely employed for works on medicine.⁷ Buddhist monks comprised the majority of those proficient in these two languages, and as is to be expected, some of the classical treatises on medicine were written by them. Some of these works were subsequently translated to Sinhala by later writers, mainly for the use of the lay sector.

In ancient times, duplication of a book was a laborious procedure as it involved the manual transfer to a new set of *ola* or palm leaves. In the process, several deviations from the original, some intentional and others through error, crept into the copies. It was seldom that two copies of the same book were identical, and for this reason, researchers delving into *ola* books would consult more than one manuscript before arriving at an acceptable interpretation.

With copies of medical books hard to come by, practitioners of medicine adopted the method of committing their knowledge to memory. In this respect, verses were more easily memorised than prose, and therefore, the contents of some of these books were versified.⁸

Since learning of medicine devolved on the question of literacy, the few who were able to read and write studied this branch of science. It became the prerogative of a few, namely Buddhist monks and those of gentle birth. Medicine practised by such a select group was bound to be of a high order.⁹

There was a copious flow of medical literature from them. In fact, a large proportion of *ola* literature extant today concerns medical topics, and in volume, probably comes only second to religious works.

Ayurveda books

The first book in ayurveda to have been compiled in Sri Lanka was *Sarartha sangrahava*, a work in Sanskrit which is attributed to King Buddhadasa (362-409 AD). It is very similar in arrangement to *Susruta samhita*, but contains some original information as well. Detailed instructions are given regarding the preparation of drugs, and diagnosis and treatment of diseases. Descriptions of surgical instruments and surgical operations are also included in this book.¹⁰

The next important work was *Bhesajja manjusa* or the casket of medicine, which was written in Pali by a monk during the reign of King Parakrama Bahu II of Dambadeniya in the thirteenth century AD. Diseases of women were deliberately excluded from it as this subject was, according

to the author, unsuitable to be dealt with by a Buddhist monk. The translation of this work into Sinhala was ascribed to Saranankara Sangaraja, but in fact the translation of the first 18 chapters already existed. He completed the rest.¹¹

Another thirteenth century writer was Mayurapada Thera who wrote the chronicle, *Pujavaliya* as well as the two medical books, *Yogarnavaya* and *Prayogaratnavaliya*. Mayurapada Thera was an advocate of Sinhala as the medium of writing when the learned languages in vogue at the time were Sanskrit and Pali. These two medical works are in Sinhala, and appear to borrow much from original Sanskrit books. *Yogarnavaya* was subsequently converted into Sinhala verse under the title, *Yogaratnakaraya*, 'the mine of precious prescriptions.'¹²

Vaidyacintamani bhaisadyasangrahava or *Vaidyacintamani bhesajja sangrahava* was a treatise in Sinhala prose written about the fifteenth century AD. Its author, Sailasimha, who was probably a Sinhalese, says that the subject matter was derived from a Tamil source. His teacher, Sandrasekera, was a descendant of Brahmin pundits who had come to Jayawardhanapura from Cola country or Tanjore in India. There is evidence of introduction of new material from Dravidian sources into the then prevailing system of medicine, which was mainly in Sanskrit and Pali, from North Indian sources.¹³

The classical books mentioned above, along with a few others, have influenced the teaching of ayurveda in Sri Lanka. Subsequently, hundreds of other books which were compiled by various authors have contributed to form a considerable body of medical literature in Sri Lanka, but it is doubtful whether the works on medicine produced locally contributed substantially to the advancement of the system as a whole.¹⁴

Training in ayurveda

In ancient Sri Lanka, as was the case with many other countries, there were very few centres of higher learning of university status. The organisation of the teaching of ayurveda was mainly on an individualistic basis. The practice of medicine, which was the privilege of a few, was imparted to selected pupils. In this context, Buddhist temples played a substantive role in ancient medical education. It was not unusual for the lay physician to keep the knowledge within the confines of the family by transferring it from father to son.

A prospective pupil sought a *guru* or teacher who was an acknowledged authority on the subject. The teacher was either a Buddhist monk or a lay physician. Quite often the apprentice lived in the temple or the house of the physician. The apprenticeship would take years, depending on the ability of the pupil and the degree of trust he had created in the teacher. The more celebrated physicians had their own innermost secret recipes and other items of outstanding knowledge which they were loathe to part with unless

the pupil showed those higher qualities which endeared him to the master. Such rapport usually took several years to build up. This system of medical apprenticeship was not unlike that which prevailed in mediaeval Europe.¹⁵

In ancient times, when learning was at a premium, the few people who were able to read and write were exponents of more than one profession. Even till comparatively recent times some village physicians did not confine their practice to medicine alone, but interested themselves in other spheres such as astrology and teaching which too called for some degree of literacy.¹⁶ In these circumstances, the pupil not only learned medicine, but other skills too.

The few ancient seats of learning of university status were confined to the outstanding *pirivenas* in Buddhist monasteries, such as the Abayagiri in Anuradhapura and Alahana in Polonnaruwa. These had large communities of monks who were engaged in studying religion and allied subjects. Some of the monasteries, such as those at Mihintale, Medirigiriya and Alahana at Polonnaruwa had hospitals attached to them. Since Buddhism encouraged humanitarian acts such as attending on the sick, it was likely that pupil monks were trained in medicine so that they could undertake the care of the sick in the adjoining hospital. It is also likely that these hospitals acted as training centres for practical instruction in medicine, much in the same manner as the teaching hospitals of today.

The Vijayaba Pirivena at Totagamuwa near Hikkaduwa, presided over by the famous Totamagamuwe Sri Rahula, taught not only religion and linguistics, but also secular subjects for the professions, such as medicine and law.¹⁷ This fact is vouched for by the *Gira sandesaya*, a book of Sinhala poems the authorship of which is in doubt. It is said that Brahmins from India came to this institution to learn medicine. Ramachandra from Andhra Pradesh was one of them.

Successive foreign invasions and the resultant strife sapped the strength of the monarchy, and ayurveda which for centuries before had enjoyed royal patronage became a casualty in common with other ancient arts and crafts. It was only at the beginning of this century that the organised training of ayurveda physicians was resumed. The Ceylon Social Reform Society was formed with the aim of reviving local arts and sciences, and revival of ayurveda became a high priority with the society. It was handicapped by a lack of funds. In the absence of patronage by the colonial government, it had to look to private contributions to promote its aims. Subscriptions totalling Rs.131,000 were promised. The money was placed in deposit under the name, Oriental Medical Science Fund. It was administered by a board of trustees with Paul E. Pieris as chairman. In 1916, the trustees mooted the idea of establishing an ayurveda hospital. However, as an interim measure, it was decided to award scholarships for training in ayurveda in India. Sanskrit was made a compulsory subject for prospective applicants. The despatch

of students to India marked the most important step in the resuscitation of the indigenous medical science in Sri Lanka. In 1917, the board of trustees selected G. P. Wickramarachchi and R. Buddhadasa to be trained in Calcutta. Their selection was prophetic for the development of ayurveda, for their subsequent contribution to the profession was outstanding. Pundit Wickramarachchi in 1929, established his own school at Gampaha, and its graduates are scattered far and wide in the country today. He later became a senator under the pre-republican constitution. R. Buddhadasa set himself the immense task of translating the *Susruta samhita* and *Caraka samhita* into Sinhala. Thanks to his scholarship, present day ayurveda physicians have access to these two texts which were previously denied to them.

The board of trustees continued to send students to India till 1929, when the College of Indigenous Medicine was established. Thereafter, students were sent to India only for postgraduate studies. The college was opened in a rented house named 'Bower' at Cotta Road, in Borella by the Governor, Sir Herbert Stanley on 10th June, 1929. It was managed by the board. The course was of four years duration, and there were separate streams for ayurveda, siddha and unani. At the time, all the full time lecturers were former scholars trained in India.¹⁸ Successful trainees were awarded the Diploma in Indigenous Medicine and Surgery (DIMS). It may be mentioned that earlier, in 1919, the government offered a site to the Oriental Medical Science Fund for the establishment of an ayurveda college and hospital, but the money at the disposal of the Fund was found to be insufficient for the purpose. The government withdrew the offer in 1922.¹⁹

The 'Bower' was found to be unsuitable in 1931, and by the end of 1933, the college and hospital were established on the present site at Cotta Road, the land and funds being provided by the government. It is the only training school run by the government. However, the government provides grants to a few other training institutions which are privately owned. These are situated at Gampaha, Mawanella, Agalawatte and Jaffna. The one at Jaffna is the only school for siddha.²⁰

The Portuguese period

Sri Lanka made the first substantive contact with western medicine during the Portuguese period, during which they set up hospitals at Colombo, Jaffna and Mannar. These hospitals, which were mainly for their use, were run by missionaries. It is likely that they engaged local inhabitants in lesser capacities, who with time, would have learnt some medicine from them. However, there was no formal medical education as such, and in any case these few hospitals could not have had any significant impact on medical training in Sri Lanka. On the other hand, the Portuguese admired some aspects of local medicine, and it is likely that the Portuguese learnt more from the local physicians than the latter did from them.

The Portuguese period was devoid of progress in medicine. There is

no evidence of medical research during this period. The few literary contributions were made by Portuguese doctors resident in India. The best known of them was Garcia da Orta whose book, *Coloquios dos simplese drogas he causas medicinais da India*, was published in Goa in 1563. In 1569, it was translated from the Portuguese to Latin and in 1913, to English. Another book on drugs and medicinal plants of India, *Trata do de las droges y medicinais orientales*, written by Christoval Acosta, was published in 1578. It included much of da Orta's work. Acosta too made only passing reference to medicinal plants from Sri Lanka.²¹

The Dutch period

In the early part of their occupation, the Dutch were much preoccupied with consolidating their position and promoting trade, and had little inclination for the arts and the sciences. Towards the latter part of their rule they engaged themselves to a considerable extent in activities of medical interest. They built more hospitals than the Portuguese, and had a larger impact on local medicine. These hospitals were manned by graduates from Amsterdam, Utrecht and Leyden. Though there is no record of a formal medical school under the Dutch, these hospitals probably served as training establishments. When the British took over, a number of men born and educated in Sri Lanka took service under the British. Former dressers and dispensers from these Dutch hospitals later attained eminence in the profession during the British period by combining European and ayurveda systems of medicine. E. L. Koch, principal of the Colombo Medical School, records in 1871 that there were old people living at that time who recalled 'not without a touch of affectionate pride, the extraordinary cures and the wonderful operations performed by Dr. Vander Laan and Jan Lourensz of Colombo, Dr. Gerasse of Galle, Drs. Keegal and Janseque of Jaffna, and Pietersz of Matara.'²²

The Dutch were much impressed by the medicinal herbs available in Sri Lanka, and they made arrangements to send a collection of these once a year to Holland for research purposes. The list of one of these shipments sent in 1746 is preserved in the Archives. The plants were tabulated under Latin, Sinhala, Malabar (Tamil), Dutch and Portuguese names. Each entry was followed by a couple of descriptive lines on its medicinal properties.²³ These herbaria were later to earn international acclaim as the best in existence at the time. They were to advance the cause of botany throughout the world.²⁴

Hermann was the most celebrated of the Dutch physicians to have worked here. His collection of plants, which he sent to Holland, formed the basis of a classification by Linnaeus. Hermann was the author of several books. The two on plants from Sri Lanka were *Museum zeylanicum* and *Flora zeylanica*, both of which were published posthumously. The latter book was edited by Linnaeus who classified 429 out of the 657 specimens.²⁵ Dr Koch wrote: 'It must be remembered that Ceylon possesses the distinction of hav-

ing had her flora arranged and described by the great Linnaeus in a work in which he first applied his sexual system in the arrangement of plants.²⁶

A Swedish doctor, Nicholas Grimm worked under Hermann in the Dutch service, and after leaving Sri Lanka wrote a book on Sri Lankan plants, *Insulae zeylanicae thesaurus medicus* or *Laboratorium ceylonicum*. It was published in Amsterdam in 1679 under the authorship of Bartholomeo Pielat, but was later attributed to Grimm, a case of plagiarism even in mediaeval times.

After Hermann's death, John Hartog, a pupil of Boerhave who made Leyden famous as a centre of medicine, came to Sri Lanka, and he too sent plants to Holland.²⁷

Based on these herbaria, Burmann published his *Thesaurus zeylanicus* in 1737. A copy of this rare book with hand written corrections, probably by the author himself, is available at the Sri Lanka Medical Library.

Towards the end of their rule, the Dutch admitted indigenous physicians to each of the Dutch hospitals in Sri Lanka so that they would learn about the medicinal plants and their uses from them.²⁸ The readiness of the Dutch to learn from a subject race suggests the highest regard they had for local physicians and their herbal remedies. It is doubtful that the Dutch would have acted in this manner in any other sphere of activity while in Sri Lanka.

Early British period

The British, like the Dutch, established military hospitals in various parts of the country to service their garrisons. They were manned by well qualified British doctors, many of whom had the degree of MD. Some of them taught medicine to local volunteers on an individual basis: 'The names of Drs. Cameron and Templeton will long be remembered as the first teachers of medical science in Ceylon under the English government.'²⁹ These trainees were designated medical pupils and were attached to the larger hospitals at Colombo and Trincomalee.³⁰ There was probably no fixed period of training. Once the pupil was considered by the teacher, who was an army surgeon, to have attained sufficient proficiency, he was appointed a medical sub-assistant, grade three, in the Native Medical Establishment.

Dr. Kevett was the first Briton to have started a collective class of medical pupils. In 1835, he set up a class consisting of 7 students, namely, F. W. Ferdinands, P. H. VanCuylenburg, M. B. Misso, Trask, Cleveland, Ebert and E. F. Kelaart.³¹ Kelaart was undoubtedly the most outstanding medical man of this period. His early life well illustrates the medical education and the professional advancement of an outstanding young Sri Lankan.

E. F. Kelaart

E. F. Kelaart was born in 1819. His father was an assistant apothecary to the British forces in 1839 and an apothecary in 1846. In 1819, he lived in Hospital Street, and this close proximity to the military hospital may have influenced the senior Kelaart to choose medicine as a career for his son, who

following in the footsteps of the father, became a medical volunteer at the age of 14 years, and later a medical sub-assistant. After his training under Dr. Kevett, he proceeded to Edinburgh where he obtained the MD, being the first Sri Lankan to get this qualification, or as a matter of that, any British qualification.

On his return to Sri Lanka in 1841, he was appointed staff assistant surgeon in the British army, again the first Sri Lankan to hold a post which till then had been the preserve of the British.

Kelaart is best remembered, not so much for his attainments in the field of medicine, but for his contributions to zoology which brought him international recognition. His best known work was *Prodromus faunae zeylanicae* which included the first scientific classification of the mammals of Sri Lanka. He lent his name to many species of animals, but over the years, with subsequent reclassification his name has been omitted from many of them.

Kelaart accompanied Major General H. F. Lockyer as the doctor in attendance when the latter went to England for medical treatment in 1860. Lockyer was the officer commanding the troops and was acting for the governor when he left Sri Lanka. Lockyer died on board two days before the ship was due to reach England, and Kelaart died the next day. He was buried in a cemetery at Southampton.³²

Bengal Medical College

It was found that the system of clinical teaching in military hospitals had its shortcomings. It was the same old system of apprenticeship in another guise. The army surgeons did not have any teaching experience and neither did they have the necessary expertise. Although there were a few notable exceptions, the products from the days of military instruction did not measure up to the high standard which the British authorities were wont to expect at home. The civil government, therefore, inaugurated a scheme of training doctors at the Bengal Medical College in Calcutta.

The first batch of students left for Calcutta in 1839:

'Six pupils have arrived at the Medical College (Calcutta) from Ceylon. These youths are of European descent, and have received an excellent preliminary education; they are lodged and boarded at the College at the expense of the Government; and after four years study will return to fill the situations of civil surgeons in different parts of the island. Another division will follow in May next, it being the intention of the authorities in Ceylon to send in all twenty students.'³³

The next projected batch, referred to above, consisting of five more pupils left Sri Lanka for Calcutta on 29th April, 1839 in the brig, *Bengal*.³⁴ It may be noted that these students went by ship and their expenses were borne by the government in Sri Lanka.

The initial intention of the authorities was to train only twenty doctors at Calcutta, but a batch of students continued to go to Calcutta annual-

ly till 1870 when the scheme ceased to operate after the establishment of the Colombo Medical School.³⁵

It is of interest that reluctance to handle dead bodies was put forward by the authorities as an objection to the selection of a certain 'high class Sinhalese' for one of these scholarships to Calcutta. Subsequently, on his producing a certificate to the effect that he had handled dead bodies and organs at autopsy, he was finally awarded the scholarship.³⁶

The first two batches which were sent to Calcutta in 1839 returned to Sri Lanka in 1843 and these consisted of Anthonisz, Loos, Dickman, Krikenbeek, Ondatjee, Andree, Wambeck, Marcus, Margenot, Ludovici and Toussaint.³⁷ Some of these names still have a familiar ring, for their descendants in turn took to medicine and figured in medical annals till recent times. The products of Bengal Medical College in later years occupied very prominent positions in the professional and public life of the country.

P. D. Anthonisz, after graduating from Bengal Medical College, went to Britain where he obtained MD (St. Andrews), MRCP (London) and FRCS (Edinburgh). After serving in various capacities throughout the country, he acted as PCMO. After his retirement from the public service, he settled down to a lucrative practice at Galle which was his home town. He was a member of the Municipal Council, Galle, and the Legislative Council where he represented the Burgher community. He was the first president of the Ceylon Branch of the British Medical Association. The clocktower on the ramparts at Galle was built by public subscription as a memorial to him. The inscription on it reads: 'To the perpetual memory of Peter Daniel Anthonisz in testimony to his skill and benevolence in relieving human suffering. The clock is the gift of Samson Abrew Rajapakse Esqr. of Kosgoda, a grateful patient.'³⁸ Two wards at the General Hospital, Colombo were named after him,³⁹ a fitting memorial to a person who was responsible for establishing paying wards in government hospitals.

James Loos was appointed medical sub-assistant after his return from Calcutta in 1843. He obtained MD (St. Andrews) and MRCP (Edinburgh). He was entrusted with the inquiry into the depopulation of the Wannu. He recommended a medical school, and it was apt that he was selected as its first principal. He acted as PCMO in 1881.⁴⁰

E. L. Koch was a gold medalist at Calcutta. He was an MD and CM of the Aberdeen University. He succeeded Loos as principal of the medical school, but died in 1877, at the age of 40 of a wound he received while performing an autopsy.⁴¹

J. L. Vanderstraaten, MD (St. Andrews) succeeded Koch as principal. After his initial education at Colombo Academy which later became Royal College, Vanderstraaten joined the Colombo Medical Hall belonging to Messrs. Clarke Romer and Co., 'retired ship's surgeon.' He worked in the dispensing department as an assistant. He was very anxious to obtain ad-

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mission to Calcutta as a government scholar, but he failed in his attempts over several years: 'This (admission) was presumably effected as a result of personal influence, which young Vanderstraaten in those days was not in a position to command.' In his disappointment, he joined a ship as its apothecary, and on one of its voyages met the newly appointed Governor, Sir Charles McCarthy, through whose intercession he secured admission to the Bengal Medical College. Later he became the third principal of the Colombo Medical School and occupied the post for 21 years.⁴² He made valuable contributions to the history of medicine in Sri Lanka. It is thus seen that the first three principals of the Colombo Medical School were all graduates of the Bengal Medical College.

Dr. Green's medical school

Dr. S. F. Green was an American medical missionary who arrived in Jaffna in 1847. He was born in Massachusetts in 1822 and graduated from the College of Physicians and Surgeons of New York in 1845. Green remained in Jaffna for well over 20 years till he finally left in 1873. Green Hospital, Manipay, was named after him. He died in 1884 in the house he was born in.

The first medical school in Sri Lanka was opened in 1848 when Green established the Mission Medical School at Manipay, by taking a few hand picked students from the Batticotta (Vadducottai) Seminary which was started in 1823. The course lasted three years, and the curriculum was based on that of the American universities at the time. The graduates from his school were recruited by the government for employment in hospitals in Sri Lanka. Some were even accepted for employment in India and Malaya. This general recognition of his graduates in a way defeated Green's own purpose in establishing the school. His intention was for his graduates to return to their villages in the North, to popularise western medicine and to wean people away from the indigenous methods. He felt that the graduates could be confined to the North only by teaching them in Tamil, but he was handicapped by a lack of Tamil textbooks. Not to be outdone, he initiated a massive programme of translating English textbooks into Tamil.⁴³ This translation of scientific works has been hailed as a significant contribution to the Tamil language.⁴⁴ In this task, he was assisted by some of his pupils, one of whom was J. Periathamby Danforth. Danforth belonged to the 1848-50 class, which was the first to have been trained by Green. It consisted of three students, the other two being J. Dennison and J. Waittilingam.⁴⁵ In 1866, Green wrote to the College of Physicians and Surgeons of New York requesting an honorary degree of Doctor of Medicine for Danforth. He wrote that he did not 'intend to apply for those unworthy, nor for those who would not *earn* it by doing a *bona fide* service in the cause of Tamilizing western medicine.'⁴⁶ One object of Green's application was that, if successful, it would stimulate others to compile a Tamil medical literature.⁴⁷ When Danforth was conferred the honorary degree of Doctor of Medicine, Green while thanking the

President of the College of Physicians and Surgeons, wrote 'I believe this recognition of merit will have a happy influence upon the many practitioners trained in medicine by the American Mission.'⁴⁸ Later Danforth rose to the position of Assistant Colonial Surgeon at Vavuniya Vilankulam. His report on parangi written in 1873 was praised by Sir William Gregory, the Governor, in his address to the Legislative Council at the opening of the sessions on 30th July, 1873.⁴⁹ It was posthumously published in 1881.⁵⁰

In 1849, Dr. Green wrote to his brother John: 'I came out here to take medical care of 1st the missionaries, and 2ndly of whoever of the natives applied to me for aid. I began registering the names, residence, diseases and treatment of these last on the 14th Dec. 1847.'⁵¹ Dr. E. Waitillingam, writing of the medical facilities existing at the time of Green's arrival, stated: 'In the year 1847 there were very few English doctors, and none among the Tamils of Jaffna who had any idea of European medical practice.'⁵²

In 1850 Dykes who was Government Agent, Jaffna first suggested a government grant to the medical school. Dykes, who was a legendary figure at the time and known as the Rajah of the North, was a personal friend of Green. The grant was for the purpose of supplanting 'the old class of medical sub-assistants throughout the Province by young men trained as Gould, Ewart and Waitillingam have been.'⁵³ The grant amounting to £ 50 was to take effect from 1st January, 1852.⁵⁴ It was increased to £ 100 in 1867, and to £ 200 in 1873, the year Green left Sri Lanka. In 1883, after Green's departure, the government reduced it to £ 100, the reason ascribed being lack of a competent physician as the head of the school. Subsequently, it was done away with altogether.⁵⁵

Each of the first four batches consisted of three to four students, but with the gain in popularity the numbers increased to as many as 18 in 1872. Altogether, 32 passed out as doctors in the English medium, and another 33 were trained by Dr. Green in the Tamil medium upto 1873.⁵⁶ Dr. Green left behind a class of 18 students who were trained in his absence. As he was expected back, another two batches were trained. The final batch passed out in 1879.⁵⁷ According to Ferguson, a total of 87 medical practitioners were trained by Dr. Green.⁵⁸

When Dr. Green finally left Sri Lanka the Colombo Medical School had been in existence for three years. In 1879, with Government sanction, seven graduates of the Mission Medical School were nominated by its principal to follow a shortened two year course of studies at the School in Colombo. They were exempted from paying the entrance fee. These seven students were admitted to the tenth session of the School which opened on 1st May, 1879. They had been trained in the Tamil medium in Jaffna, but had a fair knowledge of English.⁵⁹ They were expected to pass the final examination with credit.⁶⁰

Colombo Medical School

One of the earliest proposals to set up a medical school was put forward by the Rt. Hon. J. A. Stewart Mackenzie who was Governor from 1837 to 1841. Mackenzie was perhaps the one person who contributed the most towards the advancement of medical education in the country in the early British times. In his address to the Legislative Council, he declared:

‘...steps were taken to ensure to the junior members a regular course of instruction, both by the military medical officers serving in the colony and at the Colombo Academy. I also took advantage of the means of education which Calcutta afforded to medical students by sending certain of the more advanced youths to be educated there at the expense of this Government, with a view to employment in the colony on their return:.... It is for you, gentlemen, to declare whether this colony does not stand in need of a more efficient class of medical practitioners.... The time is not, I hope, very distant when I shall be enabled to propose to you, in furtherance of these views, the establishment of an Anatomical School.’⁶¹

Mackenzie considered two options available to him. One was to site the school at the Pettah hospital, and the other at the Colombo Academy which later was renamed Royal College.⁶² In his next address to the Legislative Council, a few days later, he enlarged on his plans for the Pettah hospital:

‘An Anatomical School, by enlargement of the Pauper Hospital, is another public building of vast importance and utility, in every way most desirable to erect, but for which at least from £ 2000 to £ 3000 will be required; and plans and estimates involving the purchase of adjoining property must be prepared.’⁶³

A medical school obviously required a hospital, and the proposal to establish it at the Pettah hospital was a logical one, for it was the only civilian general hospital in the country. However, the proposal did not prosper.

The next Governor to interest himself in setting up a medical school was Sir George Anderson (1850-1855). In his address to the Legislative Council on 4th August, 1852, he declared: ‘In the last session, a committee of the Council recommended the establishment of a medical school or college, and the subject was otherwise pressed on my attention by a memorial from some influential members of the community.’⁶⁴

Anderson had in mind a school on the lines of the Grant Medical College in Bombay with which he was acquainted.⁶⁵ He proposed a medical school with a principal and four professors, but it again failed to materialise.⁶⁶

Five years later the next Governor, Sir Henry Ward (1855-1860) again took up the issue:

‘Papers were subsequently submitted to me, showing the great want of medical men throughout the Island competent to deal with ordinary surgical cases, and the impossibility of procuring a sufficient supply of them without the establishment of a medical school, the superintendence of which could hardly be combined with the ordinary duties of a military medical officer, as it would require some knowledge of the language in order to be of use.’⁶⁷

It was surprising that as many as three Governors who wielded immense powers failed to push through this scheme in spite of their conviction that a medical school was essential. It was left to a lesser mortal, acting under somewhat strange circumstances, to give the final impetus to the establishment of a medical school. There was a decline in the population of the Wanni in the north central part of the country. This was going on for some years but showed acceleration in the 1850's. The Committee of the Legislative Council on Irrigation Works and Rice Cultivation became alive to this situation as it affected their interests, and it prevailed on the Governor, Sir Hercules Robinson (1865-1872) to order an investigation. Dr. James Loos who was Colonial Surgeon, Northern Province was entrusted with the task. After an exhaustive inquiry, he reported in 1868 that cholera, endemic fever (malaria) and parangi were the causes of this depopulation. He was struck by the enormity of the problem of parangi. He ended his report with a far reaching recommendation:

'In connection with the establishment of hospitals and dispensaries, I cannot refrain from adding a recommendation, with the advantages of which I have been long and deeply impressed - the adoption of a plan of medical education in the Island itself, for training an efficient class of medical practitioners who will scatter themselves over the country and displace the present class of ignorant quacks. This good work is, to a certain extent, being carried on among the Tamils of Jaffna by Dr. Green of the American Mission; but I think the benefits of improved medical practice deserve to be extended to other districts of the Island and other classes of the community, and this in my opinion, can be best accomplished by the establishment of a medical school in Colombo.'⁶⁸

Dr. Charsley, the then PCMO, brought this prominently to the notice of the government, but wished the medical school to be 'simply an elementary school'. A scheme drawn up by Dr. Charsley was laid before the Governor and the Executive Council, and was formally approved on 19th October, 1869.⁶⁹ At the opening of the sessions of the Legislative Council on 22nd September, 1869, the Governor, Sir Hercules Robinson said: 'I hope also that you will be disposed to view with favour a project which will be submitted to you for the establishment of a medical school.'⁷⁰ At the closing of the session on 12th January, 1870 he thanked the Council: 'I am gratified.....that you have made due provision for the establishment of a medical school.....'⁷¹

The Colombo Medical School was opened by Sir Hercules Robinson on 1st June, 1870. It came under the PCMO, and a fee of £ 2 was charged at the beginning of each session. Dr. Loos was fittingly appointed its first principal. Women students were admitted for the first time on 1st May, 1892. The first prospectus was issued in 1870 when the course was spread over three years. The second prospectus was issued in 1873 when the course extended over four years. In 1884, it was further extended to five years.⁷²

Its declared objective was 'to impart to the native youths of the Island

a practical, sound and safe knowledge of medicine and surgery, so as to enable them to engage in private practice or fill subordinate posts in the public service. It was hoped that through its instrumentality the benefits of the modern rational system of medicine, founded on a knowledge of the structure of the human body, would be brought more within the reach of the people than previously.⁷³ A correspondent to *The Lancet* in 1870 hailed it: 'To all interested in the cause of education generally, but to the members of the medical profession particularly, the establishment of the Ceylon Medical School must be a source of extreme gratification.'⁷⁴

The first lecturers were Dr. Loos (physiology and medicine), Dr. Andree (anatomy and surgery) and Dr. Koch (materia medica and midwifery). Much attention was paid to a practical knowledge in anatomy. By 1873 considerable additions were made to the course which then included chemistry and medical jurisprudence.⁷⁵

In 1870 the school started in a humble way in a block of buildings in the General Hospital, Colombo which subsequently were converted to a female surgical ward. In 1876 Mudaliyar Samson Rajapakse generously donated the land on which the present institution stands. Thereafter, the government and private individuals who included Charles de Soysa and Muhandiram A. Simon Fernando Wijegooneratne contributed to the erection of the buildings.⁷⁶

In 1880, the school was raised to the dignity of a college by Sir John Douglas, acting Governor, on the recommendation of Dr. Kynsey.⁷⁷ Under its new name, the Ceylon Medical College continued to prosper. In 1887, the principal and secretary of the College sent a letter to the PCMO requesting recognition from the General Medical Council of Great Britain. As a result of this letter, a Privy Council held on 29th December, 1887 at Osborne House in the Isle of Wight granted this request.⁷⁸ The diploma of Licenciate of Medicine and Surgery (LMS) which was granted by the College⁷⁹ became registrable in Britain without further examination. This arrangement prevailed with the degree of MBBS, which was the successor to the diploma of LMS, until it was withdrawn in the 1970's.

From the time of the opening of the school till 1st November, 1875, there was no organised system of clinical teaching, and the defect made itself felt in the careless and ignorant manner in which some of the graduates discharged their duties when appointed to outstation hospitals.⁸⁰ By 1885 there was more organisation. The third and fourth year students worked for equal periods in the medical and surgical wards and the outdoor dispensary. In the fifth year they worked six months each at the outdoor dispensary of the General Hospital and in the de Soysa Lying-in-home. Before the opening of the latter institution in 1879 the students worked in the General Hospital.⁸¹

In the first six years of the existence of the medical school, 18 men

passed out, and of them 16 joined government service and one the plantation service. One went to England for higher studies.⁸² The first batch of students to pass out consisted of Edwin C. Perera, R. C. Aldons, S. Waytelingam, H. A. Phillips, E. N. Schokman and P. Ohlmus.⁸³

The intention to divide each year at the school into two terms in accordance with the custom prevailing in Europe was announced by the PCMO in 1875. The short term starting on 1st May and ending 31st July was referred to as the summer term, while the other from 1st October to 31st March was the winter term.⁸⁴ The adoption of such nomenclature which had no relevance to a tropical country reflected a desire by the authorities to emulate British practice however inappropriate it was.

A considerable number of graduates passing out of the medical school belonged to the Burgher community. On 1st June, 1875, for example, there were 16 Burghers among the 33 students on the roll.⁸⁵ This ethnic proportion was, in fact, evident throughout the better part of the nineteenth century. The majority of trainees at the military hospitals and at Calcutta were also Burghers. There was probably more than one reason for this affinity for medicine. In the early years of the British period, western medicine was largely alien to the aspirations of the other ethnic groups in the country. This was not the case with the Burghers, who as descendants of the Dutch, had some rapport with western medicine. Further, English was the medium of instruction at these institutions where admission requirements shut out many from the other ethnic groups.

Dr. Loos (1870-75), Dr. Koch (1875-77) and Dr. Vanderstraaten (1878-99) were the successive principals from its inception. After Dr. Vanderstraaten's retirement, the PCMO at the time (and later DM & SS) functioned as the *ex officio* principal till 1942 when the College was absorbed into the University of Ceylon.

The impressive clocktower standing at the entrance to the Faculty of Medicine and opposite the old gate of the General Hospital was a memorial to Dr. Koch, erected by his friends and colleagues. The government too joined in this 'lasting conspicuous memorial of that distinguished⁸⁶ man in the place where he especially made his name so distinguished.'

The medical school fulfilled its functions to the satisfaction of both the officials and the public. Dr. Kynsey praised the Ceylon Medical College for producing doctors who were able to successfully control epidemics in the country.⁸⁷ The Governor, Sir West Ridgeway (1895-1903) described the College as an admirably equipped one, 'which I understand is second to no medical school of its size in the United Kingdom - nay in the whole Empire.'⁸⁸ Mrs. Gordon Cumming complimented the College for its students whom she described as 'highly trained in all the learning of European schools.'⁸⁹

With the retirement of Dr. Vanderstraaten in 1899, the PCMO became the *ex-officio* principal, but the immediate responsibility for the College was

vested in the Registrar of the College. The first holder of this newly created post was Dr. Harvey Hilliard. He was succeeded in 1901 by Dr. Albert J. Chalmers. Shortly after assumption of office, he set about reorganising the institution which involved improvements to the curriculum, appointment of lecturers and construction of buildings. This was not an easy task since government machinery moved very slowly. Arrangements for many of the lectures were unsatisfactory, and examinations required modification. The anatomy block which still stands was the first building he was responsible for.

He impressed on the government the necessity of appointing full time lecturers in chemistry, physics, biology, physiology, anatomy and pathology. He advocated the appointment of a lecturer in pathology who would at the same time serve as the director of the Bacteriological Institute as well. The result was the appointment of Dr. Castellani.⁹⁰ This partnership of Castellani and Chalmers in later years blossomed into a joint authorship of the most comprehensive and detailed book on tropical medicine written up to that time. It ran into several editions.⁹¹

After completing the reorganisation of the College he made a request to the University of London to hold its professional examinations in Colombo. Prof. Herdman who came to Sri Lanka to report on the pearl fisheries was deputed by the University to assess the situation. On his recommendation, the University decided to hold the first and second (part one) examinations for medical degrees in Colombo. This opportunity was availed of by several students.⁹²

Chalmers was responsible for the ordinance for the registration of medical practitioners which was passed in 1905.⁹³ At the time there were unqualified persons practising western medicine in Sri Lanka. In order to avoid hardship to them, the ordinance provided for their registration if they had practised for over ten years and had such proof by way of a certificate from two qualified and registered medical practitioners.⁹⁴

When Sir Allan Perry retired, Dr. Chalmers applied for the vacant post of PCMO, but his claims were overlooked by the government. The administration probably considered him an irksome person since he had publicly stated that medical officers were being poorly paid.⁹⁵ Disappointed, he left Sri Lanka in 1912 and in the following year he took up the post of Director of the Wellcome Tropical Research Laboratory in Khartoum. While on his way to Japan, he fell ill in India and died in Calcutta on 6th April, 1920. His friends and well wishers donated the Chalmers gold medal in anatomy in his memory.⁹⁶

In 1905 an ordinance to incorporate the Council of the Ceylon Medical College was passed by the Legislative Council. The Council now had the legal right to confer the diploma of LMS. The Ceylon Medical College Council had control over the medical profession as well as medical education till 1924

when the former function was vested in the Ceylon Medical Council composed of elected and nominated members of the medical profession.⁹⁷

Prof. F. O'B. Ellison, Registrar of the Ceylon Medical College from 1923 to 1938 was largely responsible for the construction of a new physiology block which was formally opened by the Governor, Sir Herbert Stanley on 1st October, 1930. In 1938, a dental school was added to the College.⁹⁸

In 1942, the University of Ceylon was created by the amalgamation of the Ceylon University College and the Ceylon Medical College. The medical school changed its name for the second time and became the Faculty of Medicine with Prof. W. A. E. Karunaratne as its first dean. In 1945, Prof. (later Sir Nicholas) Attygalle succeeded him as dean.⁹⁹

Apothecaries

Sir William Gregory was keen on extending to Sri Lanka the dispensary system which worked well in his native Ireland. However, he was handicapped by a lack of suitable officers for the purpose. In 1875, he proposed a 'partial solution to this difficulty' by setting up a secondary class at the medical school which would train dispensers and vaccinators.¹⁰⁰ Before he left the country he gave effect to this proposal which had the concurrence of the PCMO, Dr. Kynsey. The secondary class was set up in 1877 and it became a feature of the early period of the school. This category of students 'qualified to serve as medical practitioners, sanitary officers, hospital assistants, dispensers and vaccinators.'¹⁰¹ In 1897, for example, one passed out as a medical practitioner, two as medical assistants and twelve as dispensers and dressers.¹⁰² This separation was made according to the performance at the final examination. The pass list was arranged in three classes according to the order of merit, and this determined the type of employment provided to them.¹⁰³

In 1899, radical changes were made in regard to the secondary class, or the junior department as it was later called. The pre-existing grades were amalgamated under one category designated apothecary. With this change, the standard of the entrance examination for this grade was raised. The examination was held in Colombo as well as in the offices of the Colonial Surgeons of the North, Central, Southern, Uva and Eastern Provinces. The course was made into one of two years at the College itself, while previously one year at an outstation was recognised.¹⁰⁴ In this manner was created the category of apothecaries who later came to be designated as assistant medical practitioners. The contribution made by them towards rural health in the country hardly requires emphasis.

Postgraduate education

In the absence of a local university till the tail end of the British regime, doctors aspiring to do postgraduate studies were obliged to seek such qualifications abroad, usually in Britain. There was no organised system of postgraduate studies then. A few doctors, more enterprising than others and

out of their own initiative embarked on such a course. Britain was the destination of choice for such studies. Dr. Kelaart was the first Sri Lankan doctor to have obtained British qualifications. Some years later he was followed by graduates of the Bengal Medical College, such as Anthonisz, Loos, Koch and Vanderstraaten. After the establishment of the Colombo Medical School, its graduates in turn sought British qualifications. During this period a marked affinity for Scottish universities was noticeable. The University of Aberdeen extended partial recognition to the certificate issued by the local medical school. Not only licentiates of the local medical school, but students as well went to Britain for qualifications. In 1879, six students from the primary class and one licenciate proceeded to Europe to further their studies.¹⁰⁵

At the turn of the century, all the leaders of the medical profession were products of British universities. On their return from Britain, they were usually appointed as consultants at the General Hospital, Colombo, or as Colonial Surgeons in the provinces. Some acted as lectures at the medical school. These British qualified teachers influenced their students to adhere to British standards. The natural outcome was the creation of a medical profession modelled on British lines and maintaining high standards.

There was no strict adherence to a speciality those days. Dr. H. M. Fernando, for instance, functioned as a physician at the General Hospital as well as its acting surgeon in charge at one stage. He was also the Director of the Bacteriological Institute. Dr. M. Sinnatamby, MD, FRCS, was a physician at the General Hospital, Colombo, and Medical Superintendent of the de Soysa Lying-in-home.

The diploma of LMS did not entitle one to the plums of office in the Medical Department. Holder of any British qualification, not necessarily a postgraduate one, was eligible for special posts. A British MBBS degree was considered superior to the LMS. There was at least one physician at the General Hospital, Colombo at the turn of the century who was appointed on the strength of the MBBS degree of a British university.

The first ever postgraduate medical course in Sri Lanka was held in 1903 when 13 medical officers were granted two weeks study leave at the Ceylon Medical College on the initiative of the PCMO, Dr. (later Sir) Allan Perry. Its objective was to enable medical officers stationed at a distance from Colombo to familiarise themselves with some of the recent advances in medicine and surgery.¹⁰⁶ The course was repeated in 1904 and 1905 when 11 medical officers followed it each year.¹⁰⁷

Importance of postgraduate training for all medical officers was recognised early on in the twentieth century when locally qualified medical officers were required to obtain a British qualification before they were promoted. This resulted in a regular movement of doctors to Britain for the purpose of obtaining postgraduate degrees, one of the favourites of which was the DTM & H, London. This system was called off due to the outbreak

of the second World War in 1939. In this predicament facing the authorities, the creation of the University of Ceylon opened a new vista. It stepped into postgraduate medical education in a modest way. Locally qualified doctors were for the first time given the opportunity of following a full scale postgraduate course within the country that would enable them to gain promotions in the Medical Department. The first such course was arranged in 1944.¹⁰⁸ It was known as the post licenciate course and extended over nine months. It was held again in 1945 and 1946.¹⁰⁹

The development of medical education after 1948 is outside the scope of this work. However, it may be mentioned that one of the recommendations made by Dr. Cumpston was that the University of Ceylon should develop postgraduate degrees such as the MD, MS, DPH, DTM & H.¹⁰ But the University had already taken action by the time the report appeared. The first MD examination was held in March 1949. The DTM & H examination was held for the first time in June 1951.¹¹¹

Medical journals

In the early British period, as it was in the Dutch regime before it, there were only a few qualified doctors in the country, and of them only an insignificant number were interested in research which at the time was mainly based on clinical observation. In the absence of a local medical journal, they resorted to devious means, such as foreign journals, newspapers, the government gazette and books, both general and medical, of publishing their results. The credit of writing the first medical paper in English goes to Thomas Christie who published his 'Letters on vaccination in Ceylon', first in the *Ceylon Government Gazette* and then in the *Edinburgh Medical and Surgical Journal* of 1809. He was also the first to write a medical book in English when he published 'An account of the ravages committed in Ceylon by small-pox' in Britain. Davy included much material of medical interest in his famous book on Sri Lanka. Some army doctors contributed to the annual British publication, *Army Medical Department Report*.

Since these early British times, research workers in Sri Lanka, up to modern times, have availed of foreign journals, specially British, to publish their findings, but with increasing world wide competition for their pages in recent years the numbers have dwindled to a few papers of international standing. The first attempt at local medical journalism was made in 1853 when the *Ceylon Miscellany* was launched. It was a tripartite journal on medicine, law and literature. The medical section was edited by Drs. Elliott, Loos, and Dickman. The *Ceylon Miscellany* lasted only a few years. The next attempt at establishing a medical journal was made when Dr. J. L. Vanderstraaten started the *Ceylon Medico-Chirurgical Journal* in 1865. It was given up in 1867.¹¹²

The *Ceylon Medical Journal* was started in 1887. It was the organ of the Ceylon Branch of the British Medical Association. Some very useful

papers which are now of considerable historical value were published in it. At the time the *Indian Medical Gazette* was the only medical journal in India, and its editorial comments were quite appropriate:

'We have received the first two copies of the *Ceylon Medical Journal* which has recently been started under the editorship of Dr. Henry Keegal. It appears that several attempts have been made to establish a medical periodical in Ceylon; but they have ended in failure. This is by no means a rare experience in the East. We have ourselves witnessed the demise of several medical papers, and watched the short and fitful career of others. At the present moment we believe that the *Indian Medical Gazette* is the only medical periodical extant in India. The *Ceylon Medical Journal* is published quarterly. The two numbers which have been sent to us contain much interesting material, both original and selected. We wish our contemporary a long and successful career.'¹¹³

This pious wish has been realised, for the *Ceylon Medical Journal* will be celebrating its centenary in 1987, but not without an eventful career. It ceased publication in 1893. It was revived under the name of the *Journal of the Ceylon Branch of the British Medical Association* in 1904 by Albert Chalmers. It continued its publication uninterrupted when in 1952, it resumed the old name of *Ceylon Medical Journal*. It has grown from strength to strength, and is now the only internationally accepted medical journal from Sri Lanka in that it is indexed by the *Index Medicus* in the USA.

Ceylon Journal of Science, Section D, Medical Science was first published in 1924 by the Government. Some important papers have been published in this journal. In later years, several other medical journals were launched from time to time, but many of them have failed to survive.

Sri Lanka Medical Library

The need for continuing medical education for both the army and civilian doctors was realised by the British authorities early in their administration when they established medical libraries. The first to have been set up was the Military Medical Library and Museum. Very little is known about it. It was in existence in 1835¹¹⁴ but not in 1832.¹¹⁵ It lasted till at least 1862.¹¹⁶ It was probably housed in the Military Hospital which at the time was in the buildings of the old Dutch hospital in the Fort.

The Sri Lanka Medical Library is one of the oldest medical institutions in the country. It was established as the Colonial Medical Library on 1st June, 1844,¹¹⁷ less than 30 years after the fall of the Kandyan Kingdom. Throughout its long history, it has had many vicissitudes as would be expected of an institution which has survived well over a century. It is a tribute to its resilience and the tenacity of its members, both past and present, that it was able to weather many sectarian, national and even global upheavals during its long course.

It was established at a time when local doctors trained in Calcutta were beginning to return to the country. The first batch arrived in 1843 and the library was opened the next year. The necessity of having a separate library

for them was probably felt at the time. The Military Medical Library had the Governor as its patron, while the Colonial Medical Library had to do with the PCMO. This subtle discrepancy probably reflected a difference in the status of the two libraries which existed side by side for several years.

The name Colonial Medical Library endured for nearly a hundred years till it was changed to Ceylon Medical Library on 25th January, 1939. The present title, Sri Lanka Medical Library was assumed on 3rd November, 1972, when the country adopted a republican constitution when Ceylon was renamed Sri Lanka.

It was originally housed in the Pettah hospital. This was a logical move, for at that time there was no other suitable location in Colombo where civilian doctors would have congregated. When the General Hospital, Colombo took over from the Pettah hospital in 1864, the library too would have moved with it. In 1880 the library was transferred to the Ceylon Medical College where it remained for 85 years. When the late Dr. E. M. Wijerama donated his residence to the Sri Lanka Medical Association, he stipulated that the library too should be housed in it on a nominal rent. Since January 1965 the library has remained at Wijerama House.

When the library was founded in 1844 there were only 14 members. In 1982 there were 501 members of whom 114 were life members. At the start only government medical officers were eligible for membership, but in 1862 private practitioners were admitted as 'honorary' members and in 1944 as full members. During the second World War, starting from 1941 some foreign military doctors serving in the forces in Sri Lanka were admitted as members. At the request of the apothecaries, a section known as the apothecaries' library within the Colonial Medical Library was set up in January 1905 with 66 members and a nucleus of 153 books.

A library for the students at the Ceylon Medical College was started only in 1901. It was a small one, and at the suggestion of Dr. R. Briercliffe who was both principal of the Ceylon Medical College and the president of the Colonial Medical Library, it was decided to amalgamate the two. This took place in 1934 when a students' section was created within the Colonial Medical Library. It proved very popular. The Government gave an annual consolidated grant of Rs.1350 to the library. It did not take long for the Faculty of Medicine which succeeded the Ceylon Medical College to realise the importance of establishing its own library which it did in 1955.

Government patronage was extended to the library from its inception, thus underlining its commitment to a library as a medium of continuing education for doctors. This was very enlightened thinking in 1844. At first the government grant was £ 50 a year. It was progressively increased over the years, being Rs.750 in 1923, Rs.2100 in 1934, Rs.6000 in 1938, Rs.10,000 in 1950, Rs.25,000 in 1973 and finally Rs.50,000 since 1979. There was a temporary reduction in the grant in 1940 probably owing to the war.

The PCMO, DDM & S and DHS at various times was ex-officio president and treasurer of the library till 1968 when these posts were filled by election.

The library has had close connections with the Sri Lanka Medical Association. In fact the inaugural meeting of the latter was held in the hall of the library on 17th December, 1887. For the next 73 years the Association was the guest of the library. Now the two institutions have a special relationship, both being located at Wijerama House.^{11b}

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THE PROFESSION AND ITS INSTITUTIONS

The leading medical institutions were located in Colombo, and these were manned by the best known and the best qualified medical men in the country. The advances made by the profession were intimately linked with such institutions as the General Hospital, Colombo and the Bacteriological Institute. While these centres provided a base to these men to become leading doctors, they in turn gave of their best to their places of work.

Foreign doctors

It is a tribute to the local medical profession that, from an early period, there were very few foreigners in the local medical service, while many other government departments were amply staffed by them. This aspect was commented on by two Governors.

Sir William Gregory told the Legislative Council on 7th May, 1877: 'Principal Civil Medical Officers have always entertained in the aptitude of the natives of Ceylon for the medical profession, and I need hardly remind you that this department is almost exclusively composed of natives—Sinhalese, Burghers and Tamils.'¹ Nearly three decades later, Sir West Ridgeway, in his address to the Ceylon Medical College at the distribution of medals on 28th August, 1903, had occasion to remark: 'Ceylon is proud of its medical service, and justly proud, and it has always been a great pleasure to me to be associated with it. The medical service of Ceylon is Ceylonese, essentially Ceylonese, and Ceylonese I hope it will remain.'²

The head of the Medical Department was always a Britisher till 1936 when the first Sri Lankan was appointed to the post. When the PCMO was on leave, the Colonial Surgeon, Western Province, usually acted for him. It was in this capacity that Dr. P. D. Anthonisz, a Sri Lankan, acted on more than one occasion for Dr. W. R. Kynsey. There were a few European doctors from time to time who were professors and lecturers at the Ceylon Medical College, which then came under the Medical Department till the University of Ceylon was created in 1942. In addition, there were a few Europeans in the Medical Department in other capacities at various times, but no particular post was reserved for them. This issue came up before the House of Commons. In reply to a question asked by Mr. MacCallum Scott on 29th February, 1912, the Secretary of State for the Colonies, Mr. L. Harcourt,

replied: 'I am not aware that any posts are exclusively reserved for Europeans, though it is considered desirable to have a certain comparatively small number of European officers in the Medical Department.'³

Shortly after the second World War, when the entire Medical Department was staffed by Sri Lankans, it came as a surprise to the medical profession when several so called Viennese specialists were recruited on contract. These doctors had to face much hostility from their local colleagues.⁴

A century ago, however, it was not unusual for the government to advertise in medical journals in Britain for European medical officers to fill vacancies, specially in the planting districts. A doctor from Kandy, writing to *The Lancet* on 30th September, 1877, gave a graphic description of the travails of a district medical officer of his day:

'The roads, as a rule, are very bad, and severe upon both horse and rider; over most of these anything but a walking pace is impossible. Owing to the size of the districts (twenty five to thirty miles in diameter), the district surgeon is compelled to remain away from home two or three nights in each week, and is fortunate indeed if he gets a bed to sleep on; but in most instances will have to be content with a sofa, and exposure all night to the attacks of mosquitoes. Considering the onerous nature of his duties, and the great cost of living in Ceylon, the pay is very small and quite inadequate, as in most districts private practice is a myth. There is no retiring allowance nor regular leave of absence, so should a surgeon break down in health, as several have done since the ordinance came into force, he has nothing for it but to resign and leave the island, very likely a poorer man than when he came into it. Good horses are scarce and very expensive; the price ranges from 500 to 1000 rupees.'⁵

Sri Lanka Medical Association

While the Colombo medical institutions gave a solid base to the doctors, professional cohesion was provided by an institution of another kind, namely the Ceylon Branch of the British Medical Association, which later became the Sri Lanka Medical Association. With the progressive increase in the number of doctors a century ago, the need for establishing an association to serve as a common platform to the profession was felt. Doctors, for example, did not have a forum for the exchange of professional knowledge. There is an instance where a doctor, due to the lack of such a medical association, was obliged to present a case report before the Ceylon Branch of the Royal Asiatic Society.⁶ It is little realised today how much support and sustenance was given by the Association to the profession, specially in its formative years.

A century ago, it was the practice for the British Medical Association in London to permit the formation of branches in the colonies. As these were the only medical associations in those countries at the time, the parent body naturally exercised some control over the medical profession in the colonies through these branches.

A meeting was held at the Colonial Medical Library in Colombo on Saturday, 26th February, 1887 to promote the formation of a Ceylon Branch

of the British Medical Association. It was attended by 15 doctors who included prominent members of the profession such as W. R. Kynsey, J. L. Vanderstraaten, J. D. Macdonald, W. G. Van Dort and W. G. Rockwood. They were all British qualified, except E. N. Schokman who held the Licence of the Ceylon Medical College (LCMC), a qualification which later became Licentiate in Medicine and Surgery (LMS). Dr. Kynsey and Dr. H. Keegel were unanimously elected president and secretary respectively of the meeting, to which only Colombo doctors were invited.

The objectives of the proposed branch, as referred to by Dr. Kynsey, were 'to bring the profession together, to facilitate investigation into matters of professional interest, and to promote discussion.' The chairman proposed, and P. G. Borrowman seconded a resolution 'that it is desirable that a branch of the British Medical Association be formed in Ceylon, and that this meeting do hereby proceed to form a branch, subject to the approval of the home authorities.' It was also decided to adopt a suitable constitution.⁷

This matter was taken up at a meeting of the council of the British Medical Association in April 1887: 'The Council gladly recognised this new addition to our Colonial Branches, and the necessary formal steps were taken towards the due formation of the Branch under suitable by-laws. The continued extension of the Association throughout the British Colonies is a subject of great congratulation and we feel sure that this last acquisition to our body will be most cordially welcome.'⁸

The Branch was formally inaugurated on 17th December, 1887 at the Colonial Medical Library. Notice convening the meeting was issued to members of the parent body resident in the country. The 19 members who attended the meeting came from Colombo, Kandy, Galle and Kalutara. On this occasion, there were in addition, a few more prominent members, such as P. D. Anthonisz, J. Loos, J. Attygalle and T. F. Garvin, who did not attend the first meeting. Dr. Schokman was again the only locally qualified doctor present. Dr. Kynsey, while declining to be elected as president as he was due to go abroad on furlough, himself proposed the name of Dr. Anthonisz, who thus became the first president, while Dr. Keegel became secretary.⁹

The rules of the parent body required that at least 20 of its members should sign a request for a branch association. This requisite number of signatures was duly obtained as there were 34 members in Sri Lanka at the time, and another 31 had applied for membership. It was felt that with 65 members on the roll, it would be one of the largest branches in the colonies.¹⁰ By 1898, the membership had risen to 113. Every member was entitled to a personal copy of the British Medical Journal. The name of the association was changed to Ceylon Medical Association in 1951, and all connections with the parent body were finally severed in 1957. In 1972, after the promulga-

tion of the new republican constitution, the current name of Sri Lanka Medical Association was adopted.¹¹

Perhaps the only occasion that the Ceylon Branch played host to the parent body was in 1935 when the British Medical Association was on its first world tour. A large party of its members travelled by ship via the USA to Sydney where the annual meeting of the British Medical Association was held in that year. On their return, they touched at Colombo. They were met at the pier by the office bearers of the Ceylon Branch, namely the president-elect for 1936, Dr. (later Prof.) J. R. Blaze, vice-presidents, Dr. H. M. Peries and Dr. (later Sir) Frank Gunasekera, secretary and treasurer, Dr. (later Prof.) P. B. Fernando, and members of the council, Dr. (later Sir) Nicholas Attygalle, Dr. J. H. F. Jayasuriya and Dr. P. C. C. de Silva. The party was taken round places of interest in the city, and later was entertained to refreshments at Queen's House.¹²

The Times of Ceylon of 15th October, 1935, in a leader, commented on the visit of the members of the British Medical Association, led by its president, S. Watson Smith: 'The visitors due this morning count among them some of the most eminent physicians and surgeons of Great Britain who have helped to maintain and advance the reputation of medical science in that country. Among them are also several under whose tutelage local medical men have worked and gathered knowledge in British hospitals and medical institutions.'¹³

Throughout its long history, the most prominent members of the profession in the country, both expatriate and local, deemed it a privilege to hold office in the Association. The ranks of president and secretary were filled at various times by representative personalities of the profession who included heads of the Medical Department, professors and lecturers of the Ceylon Medical College and later of the Faculty of Medicine, senior consultants of the Colombo hospitals, and outstanding general practitioners.

In 1937, the year of the golden jubilee, the president was Dr. (later Sir) Nicholas Attygalle, and the honorary secretary, Dr. E. M. Wijerama, both of whom distinguished themselves in later life. Sir Nicholas, at various times, held the office of professor of obstetrics and gynaecology, dean of the Faculty of Medicine, president of the Senate and vice chancellor of the University of Ceylon. In the latter post, he succeeded Sir Ivor Jennings, the first vice chancellor. Sir Nicholas' contribution to medical education, first as teacher and then as administrator, were outstanding, as was his service to the people through the practice of his speciality.

Dr. Wijerama, who was a consultant physician at the General Hospital, Colombo, for many years, was an excellent clinician, able teacher and an erudite medical historian. A lasting monument to his memory is Wijerama House which he donated to the Association in 1964. Till then the Association did not have a home of its own, having been housed in the Ceylon

Colonial Library for 73 years and then in the consultant' lounge of the General Hospital, Colombo, for another 4 years. It was at this juncture that Dr. Wijerama donated his palatial residence.¹⁴ McCarthy Road, on which the house stood, was renamed Wijerama Mawatha in recognition of his signal service to the profession. It was an honour given to very few men in their lifetime.

Throughout its long history, one of the principal aims of the Association was the dissemination of knowledge among the medical profession. Publication of the *Ceylon Medical Journal* and hosting of seminars, workshops and lectures were some of the activities aimed at achieving this goal.

Medical Department

A Medical Department, independent of the military and with a civilian head, was created in 1858. Before this, the rudimentary Civil Medical Department was under military control, and was mainly tuned to the control of communicable diseases, specially small pox and cholera. This change took place during the administration of Sir Henry Ward (1855-1860). At the time of the separation, the Deputy Inspector of Hospitals, who was a military officer, was also PCMO. His staff consisted of a medical assistant who supervised the central provinces, 3 superintendents of vaccination who were stationed in Colombo, Kandy and Jaffna respectively, 33 medical sub-assistants who were mostly Burghers, and 100 'native' vaccinators. The medical sub-assistants were of two grades, namely those who received their training in the Department itself and those who qualified from the Calcutta Medical College. After separation the Department was reorganised in 1858, when two colonial surgeons were appointed.¹⁵

Sir William Gregory (1872-1877), who was responsible for many medical reforms, reorganised the Department on the advice of the PCMO. The number of doctors was increased from 36 to 52 and the system of classification was changed. The number of colonial surgeons, which was now three, was increased to four. The 10 first class, 15 second class and 8 third class assistant surgeons were replaced by 18 assistants in one grade. 30 sub-assistant surgeons were also to be recruited. Hitherto, third class assistant surgeons were not required to possess a diploma, but hereafter, only qualified, diploma holders were to be recruited. The reduction in the higher class appointments, and increase in the number of subordinate officers were significant changes. This meant a decrease in the employment of higher paid European doctors and a bigger intake of lesser paid Sri Lankan sub-assistant surgeons.¹⁶

In 1893, Kynsey put forward a scheme for the unification of the Civil and the Estate Branches of the Medical Department. It was approved by the government. While there were four colonial surgeons, the number of deputy assistant colonial surgeons was increased from 4 to 25. Each of them, while serving in the plantation districts as district medical officers, was entitled

to an allowance of Rs.500, in addition to his salary of 1500 a year. He lost this allowance if he was transferred out of the plantation district at his request or as punishment. Only those with a British or a higher Indian qualification were eligible to get into this grade. The number of sub-assistant colonial surgeons was raised from 29 to 44, and their requisite qualification was the possession of a licence from the Ceylon Medical College or an Indian College.¹⁷

In the 20 years between 1875 and 1894, there was a considerable increase in the number of hospitals and medical personnel. In 1875, there were only 58 hospitals and asylums with 52 officers, of whom 22 possessed British qualifications, 12 had the licence of the Ceylon Medical College and 18 were locally trained officers. There were only four dispensaries for out-patients. By 1894 the picture was different. The number of hospitals had risen to 108, with 191 officers. 64 had British qualifications, 52 were licenciates of the Ceylon Medical College, and 75 had local training.¹⁸

Private practice

All government doctors, with a few exceptions, were entitled to private practice outside their official hours of work. This privilege was enjoyed by them from the inception of the Medical Department till 1956 when it was abolished for the first time.¹⁹ There were attempts in the past at removing this privilege but being a sensitive issue such attempts provoked much resistance.

In 1898, when the Governor requested permission from the Colonial Secretary to appoint an extra surgeon to the General Hospital, Colombo, the latter questioned why one surgeon would be insufficient if he was not allowed private practice. The Governor, Sir West Ridgeway, in his reply said: 'with the exception of the Principal Civil Medical Officer and the colonial surgeons, all members of the Ceylon Medical Service enjoy the privilege of private practice, and thus alone are we able to secure their services for the small salaries which we give. A change in this system would not only largely increase the cost of the service, but would be greatly resented by the public.'²⁰ These remarks are valid even today when doctors who would command much higher salaries abroad, opt to remain in the country since they could augment their income with private practice.

Another attempt at removal of this privilege was made, shortly after the second World War with the recruitment of Viennese doctors, to certain specialist posts in the Medical Department on contract without the right of private practice. It was admittedly an experiment leading to a full time specialist service without this right, but it failed as these Viennese observed the rules in the breach, and engaged in private practice.²¹

General practice

Before the advent of western medicine to Sri Lanka, the traditional ayurvedic practitioners exercised their art in an individualistic manner in the sense they were self employed and did not receive any remuneration from

the state. Some of them, in fact, considered their knowledge a gift which it was their duty to apply for the benefit of humanity without any financial gain. But this attitude rapidly changed in a materialistic world.

Self employment in ayurvedic practice was the rule in ancient times. However, it is conceivable that those physicians who managed to catch the king's eye were bestowed various benefits. The king's personal physician, for example, enjoyed much influence and advantages.

There is no record of self employed practitioners of western medicine during Portuguese or Dutch times. It was only in the British period that private practitioners, as they were called, in western medicine first made their appearance. This introduction probably reflected the transfer of the rich tradition of general practice possessed by the British.

One of the earliest references to general practice was in 1835. Dr. Misso, who was in immediate charge of the Maradana small pox hospital, was described as one of the most active and intelligent medical officers in the service. Dr. Misso, 'after spending twenty years in the public service, with equal credit to himself and satisfaction to those under whom he was employed, having retired from it....opened an exceedingly well furnished dispensary in Pettah.'²²

At first, general practitioners set up practice only in Colombo and Kandy where there were sizeable European populations to make it worth their while. In a debate in the Legislative Council in 1844, Mr. Armitage, who was an unofficial member complained that 'except in Colombo and Kandy, there is scarcely a duly qualified private practitioner.'²³ With the popularisation of western medicine, doctors progressively spread out to other towns. In the early days, there were several British doctors in private practice. Eric Shipton, the mountaineer of Mt. Everest fame, who was born in Sri Lanka in 1907, says that his grandfather, who was a doctor, came out to Sri Lanka in 1870.²⁴ Towards the end of the nineteenth century, many local doctors who were products of the Ceylon Medical College took to private practice.²⁵ Some of them set up practice after retiring from government service. A few reached eminence in their profession, and in recognition, were appointed members of the Legislative Council, or were conferred imperial honours. Frank Gunasekera, for example, was conferred a knighthood.

One of the most notable general practitioners in the early days was Dr. C. Elliot, who had come out to Sri Lanka as editor of the *Colombo Observer*. He was a critic of the government. He led a campaign for the separation of the Civil Medical Department from the military, and when this was finally achieved in 1858, he was appointed the first PCMO. By then, he had been a general practitioner for many years.²⁶ He died the next year, and Elliot Place in Colombo was named after him.

Another prominent general practitioner of the early days was Dr. W. G. Van Dort, who was president of the Ceylon Branch of the British Medical

Association for three years from 1900. He 'was always correctly attired in a morning coat, striped trousers following the traditional dress of European doctors of the Victorian period.'²⁷ He was a French and German scholar, and his translations have appeared in the *Ceylon Medical Journal*. He represented the Burgher community in the Legislative Council.

Group practice was not unknown in those days. Dr. George Hay had a flourishing practice in Kandy. He engaged three assistants, who attended to the dispensary work, while he busied himself visiting estates in the Kandy district.²⁸

With the increasing number of general practitioners, a logical development was the creation of an association to look after their interests. Established in 1929, the Independent Medical Practitioners' Association is perhaps one of the oldest of its kind. On the other hand, the government doctors' interests were looked after by the Government Medical Officers' Association, which was a trade union that was established in 1926.

General Hospital, Colombo

General Hospital, Colombo, was planned during the administration of Sir Henry Ward (1855-1860) when £ 3000 was voted for its establishment. This was a departure from government policy at the time which was to make contributions to hospitals started by local effort such as the Friend-in-need Societies.²⁹

The General Hospital was built as the successor to the Pettah hospital, which had accommodation for only a small number of patients. It was built at Longden Place during the stewardship of Dr. Charsley, PCMO, and opened in 1864. Longden Place was renamed Kynsey Road in 1900 in recognition of the contribution made by Sir W. R. Kynsey.³⁰ At the time, Mutwal was the fashionable residential quarter of Colombo, and the hospital was built in Cinnamon Gardens so as to be in the country.³¹ A description of its location in those spacious days was provided by Dr. Andreas Nell, who was born in the year the hospital was opened:

'The General Hospital was built in a not too populated neighbourhood of the city. Approaching from the north was a leafy lane behind 'Tichborne Hall' and 'The Gatharium,' two large residences in Maradana. From the east, there was a similar lane from the Welikade Jail on which among the very few other houses were two rival establishments providing coffins. From the west, from Turret Road one saw, where the Eye Hospital now stands, a small low built bungalow which was called the 'Mango Lodge'. This was used by the later Dutch Governors as a hunting lodge. From there right along Regent Street there were only five houses. Leaving the hospital southward was a long avenue to the cemetery at Kanatte. When naming streets in Colombo this avenue was called Kynsey Road, after Sir William Kynsey, head of the Medical Department.'³²

In 1885, the hospital had 22 wards with 212 beds. The wards were connected to each other by corridors, and included the following wards: Seamen's, paying, European surgical, accident, native surgical, syphilis, male

native, ulcer, native medical, ophthalmic, general native medical for children, female surgical, dysentery, diarrhoea and lock. There was only one physician, Dr. G. W. Fowler, and one surgeon, Dr. W. G. Rockwood, who were assisted by Dr. H. G. Thomas, house surgeon and pathologist, and Dr. Eliathamby, house physician. The 212 beds were divided into 112 medical and 100 surgical. The number of in-patients in 1882 was 3714, of whom 1509 were surgical cases. In 1894, the number of wards was increased to 24 and the bed strength to 280.³³

In 1886, Dr. Fowler, who went to England on sick leave resigned due to ill health, and Dr. J. D. MacDonald was appointed in his place. On Dr. MacDonald being made assistant to the PCMO in 1891, Dr. T. F. Garvin was appointed physician in charge of the hospital.³⁴ Dr. Rockwood, who was appointed surgeon in 1885, was in the grade of assistant colonial surgeon.³⁵ When he retired in 1898, Dr. Allan Perry recommended the appointment of a British surgeon, the name that was mentioned being Dr. Llewellyn Thomas.³⁶ This move evoked much resentment in medical circles, as this post was a coveted one. The Governor requested Dr. Perry to reconsider his recommendation. He then recommended Dr. Garvin who was physician at the time.³⁷ This appointment underlines the facility with which specialities were interchanged in those early days. This period was replete with other examples of leading medical men switching their specialities at the will of the PCMO. Dr. H. M. Fernando was the head of the Bacteriological Institute. Dr. Lucian de Zilwa, a gynaecologist by choice was a *de facto* physician. It took several more years for the hospital to adopt the main specialities such as gynaecology and anaesthesia. It was only after the second world war that finer specialities, such as orthopaedics, neuro-surgery and thoracic surgery, were established.

The post of Second Physician is mentioned for the first time in the administration report of 1897, when Dr. H. M. Fernando was the holder.³⁸ Within one year of Perry assuming the office of PCMO, he set about improving the hospital. The number of surgeons was increased from one to two, and the physicians from two to three, and again within a few years to three surgeons.³⁹

Nicholas Senn, who was professor of surgery in the University of Chicago and surgeon general of Illinois, painted a very favourable picture of the hospital which he visited in 1905:

'The hospital is made up of numerous one-storey brick-and-mortar pavilions connected by roofed colonnade, cemented walks which impart to the whole complex of buildings a fine architectural appearance. The snow-white walls and pillars and the red tile roofs are in strong and beautiful contrast with the perennial green surrounding the building inside and outside of the large square court which they inclose.'⁴⁰

In 1913, the Governor announced that the hospital was being rebuilt.

The out-patient department, which is now being used as the radiology department, was already completed. In consequence of the high value of land in the area, the new buildings were to be of several storeys, instead of spreading them over the site in a series of single storey building as was the practice earlier.⁴¹ At the turn of the century, many of the wards were thatched.⁴²

The first ward in the country reserved for Buddhist monks was established at the General Hospital, Colombo in the 1920's. However, there was a furore over the one and only ward reserved for Europeans in a government hospital. The offer of this ward, made by Mrs. Baker, was accepted by Sir West Ridgeway in 1895. Baker's ward, which was built at Nuwara Eliya hospital, was solely for the use of planters and other Europeans. It was the subject of a debate in the Legislative Council in October 1929, when Mr. V. S. de S. Wikramanayake, Member for Southern Province, Eastern Division, moved a motion requesting that all the papers relating to this ward be tabled. In the course of the debate, the government accepted the position that such reservation for a single community was wrong in principle.⁴³

Many of the men who held consultant posts at the hospital from the early days were giants of the profession. They were the yardstick by which the medical profession was measured, and the sum total of their achievements reflected the progress of the profession. Several of them made their mark in other spheres such as politics, writing and the arts.

In the first fifty years of its existence, the hospital had only physicians and surgeons on its staff, other specialities being unrecognised. Some of these men who held these posts occupied a special niche in the profession, not only for their prowess in medicine, but also for their success in other fields of endeavour. W. G. Rockwood, H. M. Fernando, T. F. Garvin, S. C. Paul, Lucian de Zilwa, R. L. Spittel and A. M. de Silva belonged to this category, while other men of similar vintage were H. G. Thomas, Frank Grenier, and E. Garvin Mack, who were all leading medical men of the day.

Dr. W. G. Rockwood, who qualified MD from the University of Madras, succeeded Dr. E. L. Koch as surgeon, General Hospital, Colombo in 1878. He was the second doctor to obtain MRCP London, the first having been Dr. Anthonisz. He retired in 1898, and was appointed Tamil member in the Legislative Council.⁴⁴

Dr. H. M. Fernando, by all accounts, was a brilliant man of many parts. He was described as one of the brightest students Sri Lanka ever produced. At various times, he was director of the Bacteriological Institute, public analyst, physician at the General Hospital, Colombo and superintendent of de Soysa Lying-in-home. He was the first Sri Lankan to obtain MD London. After his retirement he took to scientific agriculture, of which subject he became an authority.⁴⁵ He was appointed a member of the Legislative Council, and was on the Governor's Executive Council as well. Edinburgh

Crescent in Colombo was re-named Sir Marcus Fernando Mawatha in his honour.

Dr. T. F. Garvin was a strict disciplinarian who had the unique experience of having been successively both physician and surgeon at the hospital. He made a name for himself by his successful handling of the typhoid epidemic among the Boer prisoners of war at Diyatalawa. He was described by Dr. Lucian de Zilwa: 'Thomas Garvin, the medical superintendent was an M. B. Aberdeen, and he practised medicine, surgery and midwifery with equal skill. He was Lord High Everything and was good all round.'⁴⁶ In carrying out his duties of medical superintendent, he drew from a choice vocabulary of English, Sinhala and Tamil.⁴⁷

Dr. S. C. Paul was the first Sri Lankan doctor to qualify FRCS England, and on return from England was appointed the first lecturer in anatomy at the Ceylon Medical College. In 1904, he obtained MD Madras for a thesis on diabetes. In time, he became First Surgeon at the hospital. He retired in 1932.⁴⁸ He interested himself on cultural matters, and read more than one paper before the Ceylon Branch of the Royal Asiatic Society.

Dr. Lucian de Zilwa, having qualified MD London, returned to Sri Lanka in 1907. Though his heart was in gynaecology, he was appointed a physician. He continued to perform surgical operations as well as the duties of a physician. In the diarrhoea wards, most of the patients 'lay on beds with boards, without a mattress, with a hole cut in the middle, and a pail under the bed.'⁴⁹ He lived in retirement in Kandy at 'Tree Tops', a house by the Mahaweli. He not only became an eminent physician, but also attained distinction as a writer. He was the author of *The web of circumstance*, *The dice of the gods*, *The Chandala woman*, *Interludes* and *Scenes of a lifetime*. His novels were based on local themes.

Dr. R. L. Spittel was a very successful surgeon, but his fame rests on his work on Veddahs. He also wrote more than one medical book. In his spare time, he hit the Veddah trail, travelling on foot and by bullock cart through unchartered jungles. Though a medical man, his work on Veddahs barely touched their medical aspects. He mostly used the narrative as the method of conveying information about them.

Dr. A. M. de Silva was appointed an acting physician in 1907, and retired as surgeon in 1940. He was later knighted for his services.

The hospital was intimately connected with the teaching of medicine from 1870, just 6 years after it was opened. It continued as the teaching hospital after the University of Ceylon was created in 1942. The first clinical professors were Milroy Paul (surgery), P. B. Fernando (medicine) and G. A. W. Wickramasuriya (obstetrics and gynaecology), who were appointed in 1936. Prof. Paul, built an international reputation for his research on a wide spectrum of subjects.⁵⁰ Prof. Fernando was the first Sri Lankan to have been elected FRCP London, while Prof. Wickramasuriya was the first

to obtain the triple Fellowship, FRCS, FRCP, and FRCOG. Prof. W. A. E. Karunaratne was appointed pathologist to the hospital in 1936, and in the same year professor of pathology.⁵¹ His work on rhinosporidiosis was internationally recognised, and he received many academic honours.

In the period between the first world war and the year of Independence, the number of specialists in the hospital rapidly increased, and among them were some eminent doctors who have left an indelible imprint on the profession. They included Nicholas Attygalle, V. Gabriel, H. O. Gunawardena, M. V. P. Pieris, J. R. Blaze, J. H. F. Jayasuriya, G. S. Sinathamby, V. E. P. Seneviratne, D. J. T. Leanage, E. M. Wijerama, Cyril F. Fernando, A. S. Rajasingham, P. R. Anthonis, L. N. Bartholomeusz and L. D. C. Austin.

In 1903, paying wards in the hospital were used by planters and passengers from ships, besides the general population. The planters', passengers', and seamen's wards were named after these categories of users. Anthonisz ward was in memory of Dr. Anthonisz, while Cargills' ward was established by the department store of that name. These wards had a few beds each, the total being only 44. They were served by a special nursing staff, which in 1903 had a few European nurses. In 1903, these wards were lit by gas, and electric lights were yet to come. Electric fans were still not installed.⁵² In 1906, one room with four beds in planters' ward was set apart for postal workers. It was known as Skinner Memorial ward.⁵³ In later years, other paying wards, such as Gnanasekaram and Matapan wards were established.

de Soysa lying-in hospital

The de Soysa lying-in hospital was built by Mr. C. H. de Soysa and presented to government, the site having been purchased from Mr. Samson Rajapakse. The object of the hospital was to provide a home for lying-in women, who were either too poor to pay for medical assistance and nursing, or who wished to enter as paying patients. It was opened on 15th December, 1879 by the Governor, Sir James R. Longden, and patients were first admitted in 1880. It was in charge of a surgeon who was responsible for the maternity department, while a physician was responsible for the out-patient department for women and children. It had a school for nurses in midwifery. Some of the pupils were paid a stipend, which in the case of Europeans and Burghers was Rs.10 a month, while for 'natives' it was only Rs.7.50 a month.

The hospital consisted of three blocks connected by corridors. The first was the quarters of the matron who was an European. The second block was divided into two wards, one being for cases awaiting confinement, and the other for those after confinement. There was a separate labour room for European and Eurasian patients. In 1884, Dr. Rockwood was surgeon, and Dr. G. W. Fowler physician.⁵⁴ In the early years, it was the practice for the physician and surgeon to hold concurrent appointments at the General

Hospital, Colombo as well. Others who followed suit were Dr. H. M. Fernando and Dr. Murugesu Sinnatamby.

Lady Havelock hospital

A sum of over Rs.46,000 was subscribed by the general public for building a hospital for women and children which was to be named after the Governor's wife, Lady Havelock, who had 'taken the deepest interest in still further extending the benefits of European medical practice to those suffering women whose caste or religious prejudices prevent them from calling to their assistance medical men.' The foundation stone was laid in January, 1885 by the Governor.⁵⁵ It was opened in October, 1886 during the administration of his successor, Sir West Ridgeway. At the same time, the Special Hospital for Diseases of Women and Children was closed down.⁵⁶ A training school for nurses was established, and this was run by an European matron and assistant matron.⁵⁷

A significant number of women who sought admission to the hospital were Muslim. After Sir West Ridgeway relinquished his administration, one section of the hospital was named after his wife. It was referred to as the Lady Ridgeway Block for Children, and in time it became the Lady Ridgeway Hospital for Children. The demands on this hospital increased considerably, and it became necessary to expand it. This was done at the expense of the Home for the Incurables and the Police hospital which stood on the site. Castle Street Maternity Hospital was opened on 4th December, 1950.⁵⁸ Lady Havelock hospital was finally closed down in 1954.⁵⁹

Bacteriological Institute

About 1892, Mr. J. W. Charles de Soysa, whose philanthropic contributions to the cause of medicine in Sri Lanka dot the pages of history, made an offer of Rs.10,000 for the building of a Pasteur Institute, but this was not accepted. In 1900, *The Lancet* reported.

'In 1897, however, Mr. de Soysa renewed his offer for the purpose of building a bacteriological institute, and further when it was found that the proposed building would cost far more than the sum originally offered, he undertook to find funds for the erection of a building on a plan approved by the Government. In this work he was ably assisted by Dr. Marcus Fernando, who spared no time or trouble in arranging the details of the building and in personally superintending its construction after the best European models.'⁶⁰

The Institute was opened by the Governor, Sir West Ridgeway, on 31st January, 1900. The first director was Dr. H. M. Fernando.

Mr. de Soysa's offer, which was in commemoration of the Diamond Jubilee of Queen Victoria, was a very far sighted one. At the time, the British government was receiving criticism from foreigners that research in the British Empire received scarcely any aid at the hands of the state.⁶¹ Mr. de Soysa's munificence ushered in the first systematic promotion of medical research

in Sri Lanka. During the time of Aldo Castellani and Lucius Nicholls, two successive directors, local research was placed on the world map.

Prof. Aldo Castellani was the most outstanding research worker to have come to Sri Lanka. Many of his achievements were accomplished while in Sri Lanka from 1903 to 1915. He was professor of tropical medicine, lecturer in dermatology and professor of pathology at the Ceylon Medical College, director of the Bacteriological Institute, director of the Colombo Clinic for Tropical Diseases and physician to the seamen's ward of the General Hospital, Colombo. The organisms he discovered were many, and included those which caused sleeping sickness and parangi. He described many new local diseases, such as tea factory cough, tea taster's disease and dhoby's itch. Combined vaccines were introduced for the first time by him, when he used a mixture of vaccines against typhoid and paratyphoid. While in Sri Lanka, he wrote many papers to international journals, and he enriched the pages of the *Journal of the Ceylon Branch of the British Medical Association* by his numerous contributions.⁶²

Over the years, the Institute expanded its activities, and in keeping with its new role, new buildings were added. Its name was changed to Medical Research Institute on 1st March, 1946.⁶³

Nursing

At present there are many professions allied to medicine, but one with the longest historical association is nursing. The existence of ancient hospitals in Sri Lanka implied some sort of nursing care. It is very likely that in ancient monastic hospitals, monks themselves attended on the patients. The *vinaya pitaka* containing the code of conduct for Buddhist monks exhorted on them to attend on their sick brethren. The qualities essential for such medical attendants included the ability to perform without revolting the purely nursing duty of removing evacuations, saliva and vomit.⁶⁴

The first hospital to employ female nurses was the General Hospital, Colombo. In 1878, a superintendent and a qualified nurse were sent from England to establish a nursing school. It was opened at the General Hospital in October 1878 with 'six respectable, well educated young women' as pupils. It was organised after the system introduced in England by Florence Nightingale. The intention was to recruit pupils who were willing 'to take up work, not so much from necessity, as from choice.' Recruitment was hindered by prejudices of caste. The PCMO reported that the introduction of nursing to General Hospital 'completely changed the place.'⁶⁵

In England, the first training school for nurses was established in July, 1860 when the Nightingale Nursing School for Nurses opened at St. Thomas's Hospital in London.⁶⁶ It may thus be seen that it took only 18 years for Sri Lanka to follow suit.

By 1879, a system of nursing was well under way, and regulations regarding the duties of nurses were framed in that year. The nurses came

under the head nurse of the hospital. At first, these nurses had no special training, the only qualification for recruitment being ability to read and write, as well as the submission of a satisfactory certificate of good conduct. Each ward or set of wards, according to their size and number of patients, was under a nurse. They had to take turns at night duty. The daytime duty was a 14 hour one from 6 am to 8 pm.⁶⁷

The government had difficulty in recruiting suitable nurses for the hospital, and the Governor appealed to the Catholic church for nursing sisters. The Franciscan Missionaries of Mary agreed to send nursing nuns to Sri Lanka, and the first batch arrived in Colombo in 1886. They took over the nursing of 200 patients accommodated in six long wards. The nuns were lodged in St. Peter's House, which continued to be their home till their services were terminated.

In 1905, the government opened an annex at Ragama to take in the overflow of patients from the General Hospital, Colombo. They comprised the old and the chronically ill. The nuns went to Ragama to look after these patients. In 1912, cholera broke out at the Ragama quarantine camp, and the annex was taken over to house these patients. The patients, who originally occupied the annex, were returned to the General Hospital, Colombo. In 1914, the Franciscan nuns volunteered to look after leprosy patients, first at Hendala in 1914, and then at Mantivu in 1921. In later years, the number of nursing nuns at General Hospital, Colombo, rose to 80. In 1964, the government terminated the services of all nursing nuns in Sri Lankan hospitals.⁶⁸

A training school for nurses was opened at Lady Havelock hospital in 1896 under a British matron. Another was established at Kandy hospital. These two schools were to supply nurses to small hospitals as well as the private sector.⁶⁹

In 1905, there were three qualified European nurses at General Hospital, Colombo, and a matron at Lady Havelock hospital. The school at the latter hospital had accommodation for 6 pupils, while the Kandy school had room for 10 pupils. Till 1900, the courses were different in that the one at Kandy lasted two years, while the Colombo course was only of a year's duration. There was much difficulty in getting suitable pupils for these schools. The PCMO attributed this reluctance to poor pay, and he strongly recommended an increase of pay. In 1905, 32 hospitals out of the 65 hospitals and asylums in the country had authority to employ nurses. The reluctance of suitable girls to take up to nursing was reflected in the 17 vacancies that existed in these hospitals. Finally, an increase in salaries was authorised in 1905.⁷⁰

The first attempts at training nurses at General Hospital, Colombo proved a failure, and this resulted in the recruitment of nursing nuns. Some of the girls admitted for training were from the Girls' Orphanage at Buona

Vista near Galle. This failure was attributed to the 'unsatisfactory local material available for nurses.' Successive lady superintendents resigned their posts 'because it was impossible to make satisfactory conscientious nurses out of the girls given to them.' Dr. Loos was of the view that the fault was not entirely on one side. He blamed the frequent changes in the post of lady superintendent: 'A doubt suggests itself to my mind as to whether the material was properly worked.....It is possible that they came out under an impression that they were to have the superintendence of nurses thoroughly conversant with their work, who required but slight supervision.'⁷¹

In 1879, the only hospital besides the General Hospital, Colombo to have nurses was Galle hospital. It was hoped to introduce the system to Kandy.⁷² The Kandy hospital was served by Anglican sisters, while Kurunegala hospital, too had Catholic nursing nuns. Other hospitals with nursing facilities in 1894 were Badulla, Matara, Kalutara, Gampola and Matale. General Hospital, Colombo, Lady Havelock hospital, and the hospitals at Kandy, Kurunegala and Badulla had European matrons in charge, and they were assisted by local girls. The small hospitals had only attendants.⁷³ With the passage of time, nursing services gradually extended to other hospitals, and became an integral part of the health care system.

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PUBLIC HEALTH

A study of the Mahavamsa and some of the archaeological remains in ancient cities provides evidence that some services of a public health nature, such as drainage, sanitary facilities and cemeteries, were provided by ancient kings. The technical ingenuity of some of these measures, practised by a people who lived twenty centuries ago, is truly surprising. *Vinaya* rules for the Buddhist clergy, as well as tenets of ayurveda, by their injunctions on good living, have probably contributed significantly to this health consciousness.

The Dutch took pains to keep their streets clean. According to an advertisement dated 8th August, 1731, throwing dirt on to the street was prohibited. The punishment for the offence was a fine of six rix-dollars.¹ This ban was repeated by proclamation on 15th April, 1758,² probably implying that the first advertisement was not heeded. The British, who followed, made orders of a similar nature. A regulation was enacted on 8th May, 1813 for 'enforcing cleanliness in the Fort and Town of Colombo and four gravets thereof.' It stipulated that 'any person laying down dirt, rubbish or filth of any sort in the public streets' be fined two rix-dollars or imprisoned for 14 days. 'All rubbish and filth shall be deposited in places to be pointed out by constables of each district under the orders of the sitting magistrate.'³

With the creation of a separate Civil Medical Department in 1858, maintenance of public health became a function of this department, but in effect it was limited to the control of communicable diseases only. The next step in the development of public health services was the enactment of the Public Health and Suppression of Nuisances Ordinance No.15 of 1862.⁴ Under the provisions of this ordinance, Boards of Health were appointed for every province.⁵ Rules were framed by these boards to safeguard public health. The chairman of the Colombo board was the Government Agent, Western Province, and it had two or more members appointed by the Governor. Its by-laws published in 1862 were the first to have been issued by a local authority in Sri Lanka. These provided for inspection of public or private premises with a view to detecting cases of infectious disease, enforcing abatement of nuisances, ensuring sanitation of public and private places, and instituting legal proceedings against those who violated these by-laws.

In 1864, Major General O'Brien, Officer Administering the Govern-

ment and Officer Commanding the Forces in Sri Lanka, complained to the Secretary of State about the insanitary conditions in the barracks in Colombo. The Governor, Sir Hercules Robinson, decided that administration of the city was an extra burden on the central government. The result was the Municipal Councils Ordinance No.17 of 1865 which gave the councils public health responsibilities, such as conservancy, disposal of night soil, housing, prevention of overcrowding, construction of bathing places, public lavatories and sewers, and control of bread, meat and fish supplies.⁶

With the creation of the municipalities of Colombo, Kandy and Galle in 1867, Boards of Health ceased to exercise their functions in these towns. In the other towns, their functions were taken over in 1876 by the newly established Local Boards of Health and Improvement.⁷ In 1892, a new organisation of local administration was created to administer small towns. A group of small towns was brought under a Sanitary Board, which as its name indicated, dealt with matters of sanitation. In 1928, there were 19 such boards administering 110 towns. In 1898, each of the larger towns was placed under a Local Board, which generally exercised the same powers as the Sanitary Boards did for a group of small towns. An attempt at placing some of these larger towns under Urban Councils was made in 1920.⁸

In response to a movement towards improvement of sanitary conditions in towns, villages and estates,⁹ Sir Henry McCallum, in November 1912, appointed a committee to consider the question of establishing a Sanitary Department subordinate to the Civil Medical Department. Its recommendations were approved by the Secretary of State, and a sanitary branch was created under a Senior Sanitary Officer. This post was filled by Dr. K. McGahey who came from Northern Nigeria.¹⁰ This branch at first concentrated its energies in Local and Sanitary Board towns of the Western Province.¹¹ The first sanitary inspectors, who were later designated public health inspectors, were trained in 1913 by Dr. McGahey.

Assistant sanitary officers, later called medical officers of health, were appointed to look after the health of large districts. Their functions included investigation and control of infectious diseases and epidemics, bazaar sanitation, and sanitation of estates, rural and urban areas. An indication of the growing importance of sanitary work was the change in designation of the PCMO to that of Director of Medical and Sanitary Services (DM & SS) in 1925.¹² Dr. J. F. E. Bridger became the first DM & SS. After a long line of British heads of the Department, Dr. S. T. Gunasekera, who was in the forefront of health activities from 1914, was appointed the first Sri Lankan head in 1936.

Sanitation

There is convincing archaeological evidence that an efficient system of sanitation existed, at least in principal monasteries and palaces, in ancient Sri Lanka. Some of the archaeological remains point to the adoption

of sound scientific principles in the construction of sanitary facilities, a fact which is not surprising in a people who evolved a sophisticated irrigation system. There is little doubt that the emphasis placed by both Buddhism and ayurveda contributed to the observance of sanitary habits. The *vinaya pitaka* of the Buddhist canon laid down minute details which bound monks to observe various sanitary measures. Treatises on ayurveda laid down certain regulations for the observance of personal hygiene.¹³

The remains of several toilet complexes in ancient Buddhist monasteries have come to light, and some of them, which have been conserved, give an idea of the engineering capability of the designers. Each complex consisted essentially of a urinal stone and a soakage pit. Many of these urinal stones had elaborate decorative motifs carved in relief on them. Some of these, such as the urinal stone near Ruwanwelisaya in Anuradhapura, depict a shrine in which the open doorway has been utilised as the orifice of the urinal stone. These stones have intrigued archaeologists, who, in trying to explain the reason behind the elaborate dressing of such utility structures, have invoked religious reasons in support of their theories. These stones were found in the courtyard of monasteries where monks meditated in a seated posture or during perambulations. One writer contended that the handy situation of the toilet enabled monks to answer a call of nature with least disturbance to their meditation.¹⁴ Another writer did not attach much significance to this ornamentation.¹⁵

A beautifully carved urinal stone, with a drain leading to a terra-cotta soakage pit behind it, was discovered at Galabadde in the Eastern Province.¹⁶ Recent excavations at Alahana Parivena in Polonnaruwa too brought to light a toilet complex in which one room was used for bathing and the other as a toilet. Two soakage pits, built of bricks, were found behind each of these two rooms. Bricks lining the interior of the pit were laid with wide spaces filled with plaster, an arrangement that would have facilitated soakage of water.¹⁷

Remains of toilets have generally been discovered in ancient monastic sites, but the one at Panduwasnuwara was attached to a corner of the palace. A stone conduit drained the water from the toilet floor to a circular, brick built pit lined with rings of terra-cotta. A stone slab once sealed this seven foot deep pit, but treasure hunters had smashed it under a mistaken notion that it hid valuables.¹⁸

In some instances, drainage water, instead of running into a pit, was led into an earthenware pot or a series of pots, placed one above the other, behind the urinal stone. In the latter arrangement, the pot below was larger than the one above, and there was a hole at the bottom of each pot.¹⁹

It may be seen that these toilets were attached to the living quarters of monasteries and palaces. Their very situation demanded that they should

have been free of smells. The arrangement of drainage, as could be pieced together from existing remains, would have ensured this requirement.

The system of toilets that existed in ancient dwelling houses is not clear. It cannot be assumed that the general population too enjoyed attached toilets, as in monasteries and palaces. The majority of the population may not have had any toilet facilities at all, as was the case with Veddahs till recent times. In fact, Veddahs, even in modern times, scorned the use of toilets provided for them by the government at Dambana.²⁰ One could only speculate, in the absence of archaeological remains of ancient houses, that pit latrines would have had a place in those times.

The Dutch, with their long tradition of battling with the tides in their native Holland, made ingenious use of the rising tide to clear the sewage in the town of Galle. Some parts of the town being below sea level, Dutch engineers harnessed the ebb and flow of the tide to flush the sewage out. For this purpose, they laid a network of drains in the Galle Fort, 6 to 12 feet below ground level. This system still functions to this day and carries drainage from houses to the sea.²¹

In early British times, the leading civilian hospital, namely the Pettah hospital, had attached toilets. This hospital, which was opened in 1819, had toilets at the rear of the ground floor.²² On the other hand, the small pox hospital at Maradana, had the toilets situated in the garden, far behind the main building.²³ These were probably served by buckets from which the excreta was collected and removed for disposal by burial. There is some evidence that this system prevailed in ancient Sinhala times too. At the Dalada Maligawa in Polonnaruwa are the remains of a lavatory. It has a stone seat with four legs that probably acted as a commode. Paranavitana speculates that a bucket would have been placed under this seat, and the night-soil removed by sweepers.²⁴

All government hospitals in 1879 were required to adopt the dry earth system in the lavatories. Patients were instructed to sprinkle finely crushed dry earth, provided for the purpose, on the pan as they rose from the seat.²⁵

Towards the end of the last century, disposal of night-soil in large towns presented problems. In Colombo, even in 1899, the popular practice was for the individual household to bury the excreta in its own garden. Gradually, the Colombo Municipal Council was able to wean the population away from this practice. It undertook the collection of night-soil and its burial in central cesspits.²⁶ It is on record that in 1879 the night-soil from the Galle hospital was buried in the nearby sea shore. During the south western monsoon, the powerful breakers dug it out and exposed the disgusting spectacle of it being washed ashore.²⁷

Sanitation on estates was particularly poor, and a major consequence of this was the widespread prevalence of hookworm infestation among the immigrant labour. Planting interests were fighting shy of incurring additional

expenditure on latrines with the lame argument that labourers would not use them even if provided.²⁸

Before the introduction of the sewerage scheme, sanitation in Colombo was very poor, but still compared favourably with other Eastern cities. The more affluent classes had latrines equipped with galvanised buckets which were daily collected by labourers paid by the householder. Municipal carts, drawn by bullocks, used to go round in the night collecting these buckets. The contents were buried in trenches at Narahenpita. This service was provided by the Colombo Municipal Council. One of the two leading hotels in Colombo employed earthenware buckets which lent themselves to easier cleansing.²⁹

Sewage from about a third of the Colombo city flowed into the harbour, and when the harbour was enclosed by the construction of the breakwater about 1896, a change in the sewerage system became a necessity. A consultant from England, James Mansergh, was commissioned to report on a scheme, but his proposals were found to be too costly. After protracted consultations and negotiations, drainage work involving a part of the city was started in 1902, and completed in two stages in 1910 and 1922 respectively.³⁰

Sanitation was worse in Jaffna. In 1914, when Jaffna had only a local board and no municipal council, disposal of sewage was left to the inhabitants themselves, who according to their means, utilised cesspits, buckets or fenced pits in a part of their compound.³¹

Water

Ancient Sinhala kings developed a sophisticated system of irrigation consisting of tanks and channels. The then populous areas happened to be in the dry zone of today, and it is a tribute to this system that the little water that flowed through it was harnessed to give maximum service to the people. Water for drinking and personal hygiene would have come from this system, as well as from wells. Several old wells have been discovered in the ruined cities. These wells were lined with brick, rubble or dressed granite, thus ensuring as clean a supply of water as possible. The remains of ancient baths at Anuradhapura, Polonnaruwa and other ancient sites, which are noteworthy for their artistic appearance, demonstrate an engineering arrangement by which clean water was led into them from neighbouring tanks and channels by means of underground pipes of stone or terra-cotta.³²

A feature of the ancient irrigation system was the flow of water from a large tank into a smaller one till the smallest unit of village tank was reached. The remote villages scattered in the dry zone were served by their own little tank which, in addition to irrigating paddy fields, served as a community water supply. It was fouled by people bathing and washing in it, and by cattle which drank from and wallowed in it. The health of the little village community, to a large extent, hung on the quality of its water. It was incriminated in the spread of not only water borne diseases, but also in other conditions

such as parangi which till the 1950's afflicted almost every villager in these remote outposts. Tanks bordering the migrant routes of South Indian labour used to get contaminated by victims of cholera and dysentery, and these constituted a grave health hazard to the local population.³³

While some of the large Buddhist monasteries were built in cities such as Anuradhapura and Polonnaruwa, hundreds of smaller ones were scattered in remote sites which have since been claimed by the jungle. One of the constant features of these ancient monastic sites was the presence of a naturally occurring water-hole, which in the first place probably would have determined its original choice as a site for a monastery. The most enduring water-holes are found in the outcrops of gneiss rock, the caves of which provided monks with a puritan abode. Often, the rock slab sloping gently towards the hole, provided a catchment area for rain water, and its depth ensured a water supply through months of drought.³⁴ Monks used strainers to clear the water of insects,³⁵ which were numerous in the stagnant water.

In areas where rivers, tanks and channels were not available, wells provided the main source of water. Remains of wells have been discovered in ancient sites other than the ruined cities. At Kudaramalai, which was an ancient habitation now falling within the Wilpattu National Park, Brohier discovered the remains of a well near the coastline which was lined by cylinders placed one above the other in a stratified fashion. These perfectly circular cylinders, made of baked clay, were approximately 3 feet in diameter, 18 inches in height and 1 3/4 inches in thickness. Brohier suggested that this clay lining helped to keep the water cool.³⁶ The period of the site has been assigned to the eleventh century AD.³⁷

A pipe borne water supply to Colombo was introduced in 1887 when the Labugama reservoir provided water.³⁸ This supply has since been augmented with water from Kelani river. In the days before the water scheme, Colombo was served by numerous shallow wells. At the beginning of the century, despite pipe borne water, Colombo had 2119 wells, of which 141 were public bathing wells. Many of these wells were polluted.³⁹

Percival mentions that water in the wells in Colombo Fort was brackish, and therefore, drinking water for the troops was brought from springs about a mile away. It was carried by bullocks in leathern bags known as puckally bags.⁴⁰

The reduction in the incidence of cholera was an index of the impact an improved water supply had on the health of the people. There were no cases of the disease in Colombo from 1887, in which year the water supply scheme was inaugurated, to 1894. Similar results were seen in Kandy where a water supply was introduced in 1878. Only 25 cases of cholera occurred from that year till 1894.⁴¹ A pipe borne water supply was introduced to Galle much later, when in 1911 water was supplied from Hiyare reservoir.⁴²

The majority of hospitals, even in 1948, were served by wells. One

of the earliest references to a water supply to a hospital dates from Dutch times. The Dutch hospital in Colombo Fort had only a single well within its premises. Alleman, the chief surgeon, and Andriga, another official had occasion to complain to the Political Council that it used to run dry during drought, when labourers were employed to carry water from nearby wells. There was insufficient water to clean the lavatories, and the smell of urine, it was argued, even caused disease. The washroom was without a well, but it was considered too dangerous to dig one as it would have jeopardised the adjoining building.⁴³

In 1879, instructions were issued to medical officers that water for drinking should be filtered in improvised filters. It may be noted that filtration rather than boiling was recommended. Filters were easily devised with the help of three earthenware pots, placed one above the other. The bottoms of the upper two pots were pierced with one or more holes. Water for filtration was poured into the uppermost pot. It trickled into the next one which acted as the filter. It was filled to two thirds of its capacity with well washed sand, above which was a layer of powdered charcoal. The lowest pot acted as the storage vessel.⁴⁴

About this time, patent cistern filters were being introduced to hospitals by Governor Gregory, who took an active interest in improving the sanitary conditions in hospitals. Patients had to walk to the nearest river or tank for a bath. By 1875, he had provided hospitals at Ratnapura, Negombo, Trincomalee, Badulla and Nuwara Eliya with their own baths. He also furnished some hospitals with latrines and improved drainage systems.⁴⁵

In the dry zone, lack of water caused many problems to the public as well as hospital patients. Every effort was made to conserve water to the utmost. The British, when they built Anamaduwa hospital off Puttalam, devised a system of drains by which rain water which fell on the roof was collected into a central tank. This system, though now in decay, could still be seen at this hospital.

Drainage

Ancient builders were aware of the principles of drainage of water. Many of the ancient *dagabas* had provision for drainage of rain water. The ground immediately surrounding an ancient *dagaba* was usually at an elevated level, and it served as a stage for worshippers to make their religious observances. In order to provide an egress for rain water that fell on the *dagaba* and its precincts which were surrounded by a parapet wall, stone drains a few feet long were fitted through holes made in the wall. These ancient gutters, which have survived, are a common sight at these historic monuments.

At the ruins of the Mihintale hospital, a cubicle has been identified as a bathroom that served sick monks, by means of an outlet drain.⁴⁶ Similar drains too have been demonstrated at Alahana in Polonnaruwa.⁴⁷

One of the most interesting items of ancient engineering skill in

drainage is to be seen in the hundreds of jungle girt rock caves which many centuries ago provided homes for Buddhist ascetics. On the brow of each cave was chiselled a drip ledge which interrupted the flow of rain water and directed it to dribble downwards vertically, instead of allowing it to flow along the under surface of the roof into the living quarters of monks. Some of these drip ledges are found at great heights, and the fact that artisans had to toil at such dizzy elevations indicates the importance attached to this concept by ancient builders. The drip ledge now has become the hallmark for identifying ancient caves that provided habitation to monks.

When heavy rains lashed the entire country during the north east monsoon, major floods resulted from time to time. Special effort was required on the part of the health authorities to prevent or combat outbreaks of communicable diseases, such as dysentery and typhoid. Malaria had a well established relationship with the rains. Respiratory diseases were found to be common in the hill country during the north east monsoon, and were attributed to sudden changes in temperature. Eye affections were extremely common during high winds, and were due to the dust and sand being blown about.⁴⁸

Beira lake in Colombo was considered a health hazard by Perry. He described it as a receptacle for sewage. During drought, its level fell considerably, and the receding waters exposed offensive mud. He suggested that it be drained, and the area converted to an open space.⁴⁹

Burials and cremations

There is archaeological evidence that burial and cremation of the dead were practised even in pre-historic times. In 1956, a Stone Age burial site containing several skeletons was discovered at Bellan Bandi Palassa.⁵⁰ In the Iron Age burial site at Pomparippu, earthenware urns contained bones, sometimes of several individuals in the same vessel. In the case of children the stains on teeth indicated that cremation had taken place before burial.⁵¹ These sites constituted virtual cemeteries.

The written history of Sri Lanka too refers to cemeteries. Some of the public health measures employed in ancient Anuradhapura were of a high order. In the fourth century BC, King Pandukabaya laid out a cemetery in the town: 'He set five hundred Canadalas to the work of cleaning the (streets of the) town, two hundred Canadalas to the cleaning of sewers, one hundred and fifty Canadalas to be watchers in the cemetery.'⁵²

The earliest description of a cremation in Sri Lanka was written by the Chinese monk, Fa-Hien during his travels (399-414 AD). He was witness to the cremation of a Buddhist monk at Anuradhapura. The body was placed on a huge pile of firewood at the top of which was laid sandal, aloe and other kinds of fragrant wood. The body was wrapped round and round with white silk-like cloth and placed on the pyre. After the cremation, 'they collected and preserved the bones, and proceeded to erect a tope.'⁵³

Parker, in his excavations near the bund of Tissawewa at Tissamaharama, found an interesting example of a burial. A large, wide-mouthed *chatty* (earthenware vessel) that was unearthed contained a number of calcined bones. Parker believed that these remains belonged to the fourteenth century AD.⁵⁴

It appears that the manner of disposal of the dead, whether by burial or cremation, was determined by the circumstances. In 1681, Knox mentioned that cremation was reserved for people of quality. The sketch of a funeral pyre, which illustrates his description, agrees with Fa-Hien's account which stated that the body was placed at the top of the pyre, as opposed to the present practice of placing a coffin within the pyre. He also described an unusual method of disposal of the dead that is not practised at present: 'they cut down a tree that may be proper for the purpose, and hollow it like a hog-trough, and put the body being embowelled and embalmed into it, and filled up all about with pepper. The body was then kept in the house till the king commanded its burning.' If a person died of small pox, whatever was his position, he was 'buried upon thorns.'⁵⁵

The practice of commemorating the dead by placing inscribed tombstones began with the Portuguese, but only a few of them have survived, the earliest being one dated 1536.⁵⁶ The Dutch buried their dead in cemeteries and churches. The Pettah burial ground was started by the Dutch and was used by those who could not pay the high fees required for burial in the Fort church. The British continued to use it during their first few years in the country.⁵⁷ This historic cemetery, though unused for several decades, survived till the 1950's when commercial establishments were set up on the grounds. A tombstone of medical interest that was located in the cemetery was that of Dr. Ewart. When Governor North arrived in Sri Lanka in October 1798, he found Dr. John Briggs of the Madras establishment as Head Surgeon of the island. He was replaced by Dr. Ewart. His memorial was 'a splendid slab, a species of hornblende, the letters being deeply cut and perfectly chiselled.' His epitaph read: 'John Ewart, MD, Physician General to His Majesty's troops in India and Inspector General of Hospitals in Ceylon. Died 13th March, MDCCC, aged XXX years.'⁵⁸

The Galle Face burial ground was opened in 1803 and became the main cemetery for the British.⁵⁹ The first burial at the General Cemetery at Kanatte took place in May 1866.⁶⁰ Cemeteries in Colombo, Kandy and Galle were vested in the respective Municipal Councils in 1893.⁶¹

Disposal of the dead by the Veddahs in the early part of the last century was described in an official report to the Resident at Kandy in 1820: 'They pay no respect to the dead. The body is thrown into the jungle without ceremony, to be devoured by wild beasts.'⁶²

Festivals

Annual religious festivals, where large numbers of people from all

parts of the country congregated for short periods of one to two weeks, placed a heavy responsibility on the health authorities. Spread of communicable diseases, such as cholera, small pox, dysentery and malaria posed an ever present threat, specially in times of drought when the water supply became precarious. The health authorities did their utmost to prevent epidemics, and to control them if they did occur.

The annual festival at Kataragama, held in July, was the most important festival that was a challenge to the health authorities. Kataragama has been a well frequented sacred place for hundreds of years. People from all parts of the country, as well as from India, used to visit the shrine. Davy, who visited Kataragama in 1819 with the Governor, Sir Robert Brownrigg, noted that the number of pilgrims was annually getting less.⁶³ In 1858, a terrible outbreak of disease, including cholera occurred among the pilgrims with appalling results;

‘The pilgrims when at Kataragama were attacked by cholera and other epidemics, and great mortality ensued. Whether the diseases were brought by them to Kataragama, or sprang into life and energy there spontaneously, all the predisposing causes of unhealthy locality, exposure, unwholesome and scanty food, bodily weakness and weariness, and overstrung nervous excitement, being abundantly present, was disputed; but once introduced their ravages were appalling. Regardless of the rites they have travelled so far to take part in, regardless of the closest ties of kindred or friendship, the panic stricken pilgrims fled for their lives, leaving in many cases their companions to perish by the waysides, and spreading pestilence wherever they went. Like wild fire, cholera spread from hamlet to hamlet, from station to station. It was piteous to see forlorn women, forsaken by their husbands, their children dying besides them, wailing in all the agony—short-lived but incredibly passionate—of oriental grief.’⁶⁴

In 1870, the government introduced a system of medical attendance, magisterial supervision and other amenities, such as huts for the pilgrims. Thereafter, the number of pilgrims gradually increased. In July 1873, as it happened occasionally in previous years, the Menik Ganga, which supplied water to Kataragama, dried up completely. An epidemic was averted by cutting off the water supply to farmers upstream at Buttala, thereby increasing the flow of water downstream.⁶⁵

Both preventive measures and curative services were introduced at Kataragama a century ago. Preventive measures included ‘the preparation of camping grounds, the supply of pure water and wholesome articles of food, the erection of public latrines, the scavenging of the camp, and the maintenance of cleanliness and public order.’ Other services were ‘medical supervision, distribution of medicines and medical comforts during the prevalence of an epidemic, the establishment of temporary hospitals for the treatment of the sick, the observance of the strictest quarantine, the prompt sepulture of the dead, and the disinfection and burial of all cholera and other excreta requiring immediate removal.’⁶⁶

Pearl fisheries

The pearl banks off the west coast of Sri Lanka, between Puttalam and Mannar, were internationally famous for many centuries, and were a major attraction to successive foreign powers. The conduct of a fishery entailed special medical considerations which provide an interesting insight into a bygone age. Marichchakaddi, Silavaturai and Arippu were used as headquarters for pearl fisheries at various times. The Doric at Arippu, which is now in ruins, was originally an extravagant mansion built by Governor North to personally supervise the fisheries.⁶⁷ These locations, which normally exhibited a barren and desolate look, suddenly assumed a busy atmosphere when a township of 25,000 to 35,000 sprang up overnight.

The Colonial Surgeon of Northern Province, who in later times was designated Provincial Surgeon, was in charge of the health services at the camp. He was assisted by one or two medical officers, several apothecaries, sanitary inspectors, vaccinators and other ancillary staff. The township, which usually had a population equivalent to that of Galle of that period, demanded a full scale hospital, which usually consisted of an out-patient dispensary and a few wards. In a large camp, there were at times two dispensaries at convenient distances to serve the population. The hospital was capable of accommodating 50 to 60 patients. In addition, a short distance away, was an infectious diseases hospital with wards for small pox and cholera cases, together with a quarantine camp. In some fisheries, a separate dispensary was sited in the divers' quarters for their use.

Maintenance of proper sanitation in a camp of this nature was most important. The medical officer and his assistants paid daily visits to all the huts in their respective sections. One important reason for these visits was the necessity for ensuring that cases of infectious diseases were not concealed in the huts. Adequate water for the use of the population was obtained from nearby tanks and wells. In the later fisheries, the water was chlorinated before release.⁶⁸

Provision of latrines was an important aspect of sanitation. In the 1925 pearl fishery held at Marichchakaddi, 46 bucket type latrines were provided for government officials, and 6 public latrines with a total of 53 seats were constructed for the public.⁶⁹ The divers' quarters were provided with three sets of open areas in the jungle which did duty as latrines. Labourers stationed for the purpose removed the excreta to the trenching grounds. These jungle defaecation grounds were euphemistically named Twynam latrines after Sir W. C. Twynam, Government Agent, Northern Province and superintendent of the fisheries from 1862 to 1896.

The fisheries attracted large numbers of merchants and divers from abroad, and there was always a lurking threat of introduction of communicable diseases such as small pox and cholera. Vessels arriving at the fisheries were subject to quarantine regulations which were enforced by the

medical officers. In the 1907 fishery, an epidemic of cholera occurred in Tuticorin, and therefore, the direct sea route from Tuticorin to Marichchakaddi was closed down.⁷⁰

The very nature of a pearl fishery resulted in very insanitary conditions. The method of extracting pearls from the oysters depended on the quantity to be handled. Merchants who bought large stocks allowed time for blue bottles to lay eggs in the oysters which hatched into larvae. Myriads of maggots consumed the flesh of the oysters. After about four days, the oysters were washed in sea water in large vessels. Millions of maggots which floated in the water were tipped off. The residue at the bottom of the vessel contained the pearls along with other sediment. When dealing with small quantities, the individual oysters were split and the pearls extracted. The flesh with shells was discarded and allowed to rot. The stench in the camp from rotting oyster flesh was overpowering at times, depending on the direction of the wind. The blue bottles as well as the maggots which used to creep into the living quarters of the hut were incriminated in the spread of infection.⁷¹

The commonest disease treated at the dispensary and hospital was malaria. This was not surprising as the fisheries were held in an endemic malarial belt. The next commonest disease was dysentery. In the earlier fisheries few escaped the disease, but in the later ones, as in the 1925 fishery, the incidence fell as a result of better sanitation being insisted on.⁷² The other diseases treated at the dispensary and hospital were similar to those in a routine hospital, and did not bear any special relationship to pearl fisheries.⁷³

Quarantine

Quarantine comprises all measures adopted for the purpose of preventing communicable diseases entering or leaving the country. Quarantinable diseases were plague, cholera, small pox, yellow fever and typhus.⁷⁴ The history of quarantine in Sri Lanka is largely that of plague, cholera and small pox, which subjects are discussed elsewhere. These diseases were invariably introduced from neighbouring India, and the peculiar relationship of traffic between the two countries was responsible for some of the special aspects of quarantine that were introduced from time to time. The establishment of examination centres by the government of Sri Lanka in South Indian ports, opening of a quarantine camp at Ragama and measures introduced at pearl fisheries were outside the common run of quarantine regulations adopted in other countries, and stemmed from this special relationship with India.

A sense of urgency overtook the government when an epidemic of plague swept Bombay and the rest of the west Indian coast in 1896.⁷⁵ Upto that time, quarantine regulations for Colombo and Galle were framed from time to time by the Governor under the Ordinance No.8 of 1866 entitled 'An ordinance to provide against the spread of contagious diseases in the island'.⁷⁶ In applying these regulations, the government was perhaps over stringent,

and the government of Bombay protested against the unnecessarily long period of quarantine for ships arriving from Bombay. It was disturbed by the possible repercussions on trade between Bombay and Sri Lanka.

The epidemic of plague in Bombay induced the government to enact the 'Quarantine and prevention of disease ordinance, 1897.' The Local Government Board, London, to which this piece of legislation was referred by the Governor found its provisions too stringent. It contended that the regulations went beyond the spirit and the letter of any international code. However, the Governor was not inclined to relax them.⁷⁷

Many years later, Sri Lanka became a signatory to two international conventions. The 1926 convention related to sea and land routes, while the 1933 one dealt with aircraft.⁷⁸

At the turn of the century, when plague posed a constant threat, the authorities resorted to the unusual expedient of having a quarantine ship anchored in the Colombo harbour. This ship, *Sultan Secundra*, was used to place 'natives' from India in quarantine. The maximum period each person had to spend in the ship was three days. Europeans from an infected area were treated differently in that they were allowed to land subject to certain restrictions.⁷⁹

Nutrition

The history of Sri Lanka was punctuated from time to time by famines which probably had a hand in the collapse of the ancient Rajarata civilisation.⁸⁰ These famines were caused by either drought or war. In the twentieth century, the two Great Wars had their impact on the nutrition of the people. During the second war, the food that was grown in Sri Lanka could support barely a third of the population. *The Lancet* made a serious indictment on the state of nutrition in the country:

'During the war, when Burma was occupied and India was facing a famine, Ceylon had to turn to Australia for wheat and other foodstuffs. She has few or no cottage industries to help the peasant population and occupy their time when idle. That the diet is bad there can be no doubt. The state of nourishment is so poor that it is impracticable to use European and American standards..... In 1944, 40 per cent of the families examined were obtaining too few calories (standard 2000 calories a day!), 65 per cent too little protein, and 54 per cent too little calcium. Toad skin and Bitot's spots in the children examined pointed to gross deficiency of vitamin A, and there was evidence of a lack of the B vitamins..... The death rate is 20 per 1000 and the infantile mortality close on 140 per 1000 live births.'⁸¹

The first surveys on nutrition in Sri Lanka were carried out in 1933 by Dr. Lucius Nicholls, who was director of the Bacteriological Institute from 1915 to 1939. He did considerable research on nutrition while in Sri Lanka, and became a world authority on tropical nutrition. He was the author of a masterly work on the subject which went into several editions.⁸² He was also a lecturer in nutrition, tropical diseases and parasitology in Colombo. His book incorporated much of his research experience in Sri Lanka.

A scientific demonstration of the nutritional situation in the country emerged only after these surveys. Features of malnutrition were specially noticeable among school children who had toadskin, sore mouth and blindness due to keratomalacia. *Mandama* was a form of infantile malnutrition,⁸³ which was recognised in Sri Lanka for generations. In those days, registrars of deaths returned many deaths under this cause. It was mistakenly translated into English as rickets.⁸⁴ Rickets occurred in Sri Lanka, but was uncommon. The reasons for recording *mandama* under the heading rickets were not clear.⁸⁵

Nicholls found that there were three conditions which caused anaemia among the working classes. These were malaria, hookworm infestation and malnutrition,⁸⁶ but a good diet cushioned the effect of the first two conditions. An interesting observation that Nicholls made during his short visit to Sri Lankan jungles was that animals such as deer and bear drank liquid mud in preference to clean water in times of drought. His explanation was that these animals were seeking minerals found in the mud. These were found in insufficient amounts in roots, barks and grass.⁸⁷

Progress in nutritional matters depended on a study of the foodstuffs commonly consumed by the majority of the people. In 1935, the State Council voted Rs. 30,000 for chemical analysis and biological assay of vitamins in common foodstuffs. Work was carried out in a couple of British laboratories, and the results indicated most serious deficiencies in the diet of the masses.⁸⁸

Cases of scurvy occurred in the past from time to time, but its occurrence in most of the jails gave much anxiety to the authorities in 1874. It was realised that the diet of prisoners was deficient in nutrients. Dr. Vanderstraaten pointed out that the occurrence of scurvy among the prisoners was attributable to their diet.⁸⁹

In 1944, milk was considered a vital necessity in a country with a consistently high degree of malnutrition. However, Sri Lanka was at that time one of the poorest milk producing and milk consuming countries in the world. One contributory factor to the low consumption of milk was the villager's prejudice against it on the ground that it caused illness in children. With the introduction of health work in all parts of the country, this prejudice was largely overcome, and the consumption of milk gradually increased.⁹⁰

There was one instance where the tax policy of the colonial government was responsible for starvation among the affected people. A grave charge that 1048 cultivators in the Nuwara Eliya district died of starvation during the period 1882 to 1885 was laid against the government. It was claimed on behalf of the affected people that starvation was due to their lands being confiscated for defaulting to pay the grain tax. This allegation touched the British government's basic pride in their much vaunted fair mindedness. It reacted by restoring the lands to the original owners.⁹¹

Health units

The establishment of the health unit system in 1926 was a major advance in the field of public health in Sri Lanka. Till then, assistant sanitary officers were responsible for large districts. Their work was centralised to the urban areas, while the rural sector was largely neglected. In contrast to the district type of health work, each health unit looked after small areas with 40,000 to 80,000 population. The activities of the Rockefeller Foundation in Sri Lanka, headed by Dr. W. P. Jacocks, who worked in the country till 1934, was largely responsible for this new orientation in health policy.⁹² The successful hookworm campaign by the Foundation convinced the authorities of the value of public health measures.⁹³

The first health unit in Sri Lanka, or for that matter in Asia, was established at Kalutara in July 1926. The second unit was set up in Weudawili Hatpattu in North Western province in November 1927, and the third at Matara in May 1928. The intention was to create 63 units in all, at the rate of two a year, with a medical officer of health for each. A town coming within the area of a health unit became its responsibility only if the local authority of the town requested it.⁹⁴

The only curative work undertaken by a unit was the treatment of hookworm infestation and minor ailments discovered at school inspections and maternity clinics. This was a fundamental departure from health unit work in other tropical countries at the time. In Mauritius, Uganda and Southern Natal, for example, health unit work combined both preventive and curative medicine. Health units in Sri Lanka undertook the usual duties of a public health department in a tropical country, including health education, general sanitation, collection of vital statistics, study and control of preventable disease, vaccination, maternal and infant welfare and school inspection.⁹⁵

Public health personnel

The staff attached to a health unit consisted of a medical officer of health, sanitary inspectors and public health nurses and midwives. The health unit at Kalutara, which eventually became the National Institute of Health Sciences, served as the training centre for various categories of health personnel.

The formal training of medical officers of health in Sri Lanka started only in 1936, while doctors before and since have gone to Britain and the USA to obtain postgraduate qualifications in public health. With the inauguration of the malaria control scheme in 1936, a large number of field medical officers was recruited. They were given an organised course of training for one month at Kalutara. Health work was unattractive to the majority of doctors, who were lured by the glamour of curative medicine. In later years, health authorities had to resort to a system of compulsory service by

which every medical officer had to serve as a medical officer of health for two years.

Sanitary inspectors were first recruited and trained when the sanitary branch of the Medical Department was established in 1913. There was an interruption in training between 1931 and 1936, when it was again resumed on a more organised scale, on a syllabus approved by the Royal Sanitary Institute in England. The examination was conducted by the local branch of this Institute. The training was given in Colombo till 1945, when it was transferred to Kalutara.⁹⁶ The designation of sanitary inspector was changed to that of sanitary assistant in 1937, then back to sanitary inspector, and finally in 1952 to public health inspector.⁹⁷

The first public health nurse was recruited in 1926 with the establishment of the Kalutara health unit. A few were originally recruited from Madras,⁹⁸ before their training was first started in 1928. After training in general nursing for three years, they were given six months training in midwifery and another six months in public health at Kalutara.

Public health midwives had to follow one year's course of training at one of the provincial hospitals, followed by training in public health midwifery for one month at Kalutara, Kadugannawa or Padukka. The latter part of the training was extended to six months after 1938.⁹⁹

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MILITARY MEDICINE

Sri Lanka has had a chequered history of military campaigns extending over several centuries from ancient to modern times. The local population had to contend with waves of Chola and Pandyan invasions from South India, which were followed by wars with the Portuguese, the Dutch and the British. There are also instances where the tide was reversed and Sinhala armies invaded neighbouring countries. Internecine conflicts among the various kings and princes added a further dimension to the military scene. The European invaders maintained a military presence in Sri Lanka both in times of peace and war. In the present century, the two great wars, while not affecting the country directly except during the two air raids in 1942, had a tremendous impact on Sri Lanka.

Medical support for these military hostilities was a *sine qua non*, for not only had the injuries to be treated, but epidemic diseases peculiar to massed concentrations of manpower in a tropical climate had to be controlled. In this respect the plight of the invading armies was sometimes worse than that of the local forces. The European invaders facing the enemy in an unfriendly climate sometimes found that disease which took a heavy toll posed a bigger threat than the enemy.

Ancient period

The few references to military medicine pertaining to the ancient Sinhala campaigns occur in the Mahavamsa. The earliest king to have interested himself in the health of his soldiers was Buddhadasa (388-416 AD) who appointed physicians to look after them.¹

The army medical service of today had its antecedents during the reign of King Parakramabahu (1153-86 AD). The army that he equipped for the invasion of Pegu in lower Burma carried:

'different kinds of medicines preserved in cow horns for the healing of venomous wounds caused by poisoned arrows, as well as all kinds of remedies for curing the poison or infected water in the many swampy stretches of country; also iron pincers for extracting arrow-heads which are difficult to move when they have pierced deeply and the shaft has broken, lastly also skilful physicians and serving women - everything in complete fashion.'²

In a battle with Manabarana, 'Parakramabahu left those who had

received wounds to the care of physicians.’³ He devised his own brand of medical examination for testing recruits as to their fitness to join the army: ‘He arranged fights in the street, sifted out the most skilled and granted them high distinction. Those unfitted for fight he dismissed out of pity.’⁴

Epidemics of disease among soldiers living in camps were not an uncommon feature in the past. The Mahavamsa records an instance where such an outbreak influenced the issues at stake. King Moggalana 111 (611-617 AD) suffered defeat in battle, for many of his people contracted fever and died.⁵

Military medicine in those times had to reckon with the health of elephants and horses as well. These animals constituted a strategic wing of the army. King Buddhadasa appointed physicians to look after them.⁶

When King Dutugemunu (101-77 BC) attacked Vijithapura, his enemies under King Elara (145-101 BC) poured molten pitch on the royal elephant, Kandula. He withdrew in pain. Then the elephants’ ‘physician washed the pitch away and put on balm.’ Thereupon, the elephant returned to the fray and succeeded in crashing down the gate of the city.⁷

European occupations

The arrival of the Portuguese in 1505, followed by the Dutch and the British, heralded a new turbulent phase in the country’s history which lasted more than three centuries. During this period, Sinhala kings in defending their country were constrained to engage in several wars with varying fortunes. The invaders built forts and garrisoned them with their own nationals as well as local recruits. The medical needs of these garrisons were served by hospitals established in the main fortress towns which were manned by their own doctors.

The medical facilities available to the Portuguese army were quite modest. It was served by only four hospitals, namely those at Colombo, Mannar, Jaffna and Galle. The Dutch, on the other hand, had the benefit of hospitals in a few other towns such as Batticaloa, Matara and Negombo. They also set up temporary hospitals in the field during their military campaigns. In their Kandyan wars, waged from 1764 to 1766, the Dutch improvised such hospitals at Gonawila, Sitawaka and Wisenawe.⁸

All three European powers had their largest military establishment in Colombo, which naturally became the venue of the principal military hospital in the country. Since most of the fighting during European domination was concentrated within reasonable distance of Colombo, this hospital became the nearest referral centre for the war casualties. In times of hostilities, the hospital became overcrowded beyond manageable proportions. The British fought three wars with the Kandyans in 1804, 1815 and 1818 respectively, the last being during the time of the Kandyan rebellion. During these campaigns the Colombo hospital experienced a particularly large influx of patients. In 1804, the hospitals in Colombo ‘were crowded with sick and dy-

ing; and the barracks occupied by a small number of invalids and convalescents.⁹

Warfare in wet, hilly, tropical jungles was a novelty to the British army. The Kandyans found that tropical diseases which afflicted the invaders and leeches which tormented them were two of their great natural allies. Malaria and dysentery were frequent visitors, while epidemics of small pox and cholera even in the vicinity of their camps sent waves of panic among the British.

Leeches

Leeches figured prominently on the side of the Kandyans in their fight against the European invaders. Henry Marshall, who was senior medical officer in the Kandyan provinces from 1816 to 1821 wrote about the ravages caused by leech bites during the Kandyan wars. British soldiers of all grades suffered from ulcers of the lower extremities, the majority of which were due to leech bites. The scratching of bite marks to relieve subsequent itching tended to promote infection, inflammation and ulceration. Long marches made the condition worse, and by the time they entered hospital the victims had extensive sloughing ulcers that often were infested with maggots.¹⁰

Davy says that the leech caused more deaths than the rest of the animals in the country put together,¹¹ but of course he did not reckon with the mosquito at the time. He mentions that extensive ulceration from leech bites resulted in loss of limb or life. These remarks were probably apt for foreign soldiers bent on war, but the local population was hardly affected with ulceration, even in the pre-antibiotic era, for they knew the art of removing the biting leeches without tearing off the dermis.¹²

In the campaign to suppress the Kandyan rebellion, 2073 British soldiers were admitted to hospital during April and May 1818 with fever or ulcers. The latter, which were often infested with maggots, were attributed to leeches.¹³

The Portuguese and the Dutch too had their share of misery from leech bites. Schweitzer, a German who was in Sri Lanka during Dutch times, relates how a Sinhala king's sister invented the idea of harassing Portuguese soldiers with leeches.¹⁴

Ribeiro names the leech as the most noxious, harmful and disgusting animal found in the country: 'When on our march we would all frequently have our legs streaming with blood.'¹⁵

Schweitzer writes:

'Ceylon is not unjustly called the Dutch soldier's slaughter house; and when they are commanded thither they reckon themselves going to execution. For the Cingulaish inhabitants and soldiers are not the only enemies they have here, but the blood suckers with which the ground is alive after a shower of rain will suck the blood out of them.'¹⁶

Climate

Several British writers of the nineteenth century have commented adversely on the climatic conditions in Sri Lanka which they blamed for most of their ills. The unfriendly climate failed to induce any departure from tradition when it came to soldier's uniform. His attire was totally unsuited for the climate. Marching in the hot sun while carrying guns and other equipment would have been enough of an ordeal, but the heavy woollens in which they were draped would have multiplied their woes several fold. The tight fitting coat surmounted by a stiff upstanding collar, old fashioned breeches and gaiters were the lot of the British soldiers on the march against the Kandians. The heavy leather hat induced violent headaches and the matted hair underneath incubated scalp infections.¹⁷

In the mid-nineteenth century when medical science had not progressed sufficiently towards specific treatment of disease, climate played a key role in the concept of health care. The unfriendly climate in the East became a matter of concern to the British army which was anxious to keep its men fighting fit. In 1860 a sanatorium for British troops serving in India to be located in Sri Lanka was first mooted. It was argued that the establishment of such an institution in the region itself would result in an immense saving, for the then practice was to send men in large numbers to England.¹⁸

On 18th May, 1861 *The Lancet* reported that the government had decided to build a large sanatorium and hospital for soldiers at Nuwara Eliya. It was claimed that European invalids rapidly regained their health in the cool climate of Nuwara Eliya where 'ice sometimes forms of the thickness of half a crown.' Its salubrious effect was most evident after attacks of cholera and diarrhoea which were prevalent at the time.¹⁹

In 1861, Parkes made the interesting observation that though there were marshes near the station, fever was uncommon at Nuwara Eliya. He also observed that neighbouring Horton Plains was even better than Nuwara Eliya: 'Probably in the whole of Hindustan a better sanitary station does not exist. It is inferior, if it be inferior, only to the Neilgherries (Nilgris) and one or two of the best Himalayan stations.'²⁰

Eight years later Parkes' thoughts were echoed by Surgeon Roe, acting Principal Medical Officer, who strongly urged the government to construct the proposed barracks at Horton Plains. He was confident that if newly arrived soldiers were taken straight to a cool hilly station there would be at least 50 per cent reduction in morbidity and mortality. The hilly areas of Central Province with an elevation of 1650 to 2300 metres above sea level would bear comparison climatically with health resorts in Europe. He objected to the contemporary proposal to build the barracks in Colombo after demolition of the Dutch fort. During a visit to the interior of the country, Roe was struck by the suitability of Horton Plains, which was a plateau at an elevation of 2300 metres for the location of the barracks.²¹ It is fortunate

that his proposal was not implemented, for Horton Plains remains today as one of nature's gifts to the country.

The barracks, which later came to be known as Echelon barracks, were finally built in Colombo. Many years later, after the departure of the Boer prisoners, Roes' arguments were partially vindicated when an army camp was established at Diyatalawa at an elevation of 1350 metres.

Early British period

Sri Lanka was administered by the British East India Company from 1796 to 1801 when it became a crown colony. During this period, Sri Lanka did not have a separate medical service of its own. The set-up was considered part of the Madras Presidency, and the officers were appointed from Madras.²² The military were responsible for both the military and civil medical establishments. In 1798, a campaign that started against small pox developed into a civil medical establishment under the military.²³ At this time, J. Ewart of the King's Army was Physician to the Forces and Inspector General of Hospitals in Sri Lanka. He was appointed about June 1798 on a salary of 2899 rix-dollars a month. He took over from 'Head Surgeon' Briggs.²⁴

Brig. General P. F. de Meuron, who transferred the allegiance of his mercenary Swiss regiment from the Dutch to the British, was in 1797 appointed by Lord Hobart, Governor of Madras, as the commander of the troops and chief authority of Sri Lanka. He held these offices till the arrival of Lord North, the first Governor in October 1798.²⁵ On 25th September, 1798, only a few weeks before North's arrival in Colombo, de Meuron wrote to the Madras authorities requesting that the Medical Department be placed under Ewart.²⁶ Apparently, at the time of his first appointment, Ewart was not in administrative control of the health services.

North saw difficulties ahead for himself in the direct appointment of Ewart by the British East India Company. His misgivings were realised when the first conflict of his uneasy stewardship began with Ewart when the latter, in May 1799, wrote direct to Lord Mornington, Governor General of India, that the health of the troops was being endangered by the free consumption of liquor. He alleged that certain officers profited by the sale of liquor to the garrisons. North protested against this direct communication to India.²⁷ Before the matter could be decided, Ewart died on 13th March, 1800.²⁸

When Ewart took charge of the establishment he found that medicines and other stores were not stocked in Sri Lanka, but supplied from the Company's establishment in Madras. His recommendation to locate the medical stores in the country was accepted.²⁹ By October 1799, a General Dispensary of European Medicines was established in Colombo for the use of the troops.³⁰

In 1798, North was authorised by Madras to organise the medical services according to his judgement.³¹ Accordingly, he divided the maritime

provinces into three divisions under Christie, Orr and Carnie respectively, who were designated superintendents.³² In 1800 North commended the good work done by these men, and created a fourth division at Galle under Yates.³³

In 1817, Dr. Charles Farrell, Deputy Inspector of Hospitals, declared that the health of the troops that year was on the whole good and certainly much better than was usual in other tropical countries:

‘...for the last twelve months we have not had more sick than 1 in 20, and not more deaths than 1 in 250, including sick and healthy. Now this does not exceed much what is found to be the case among our troops at home, certainly less than what might be reasonably expected in an intertropical country.’³⁴

Farrell found Colombo remarkable for its healthiness at all times, while Trincomalee was sometimes the reverse. He argued that climate alone could not be blamed. The barracks were not suitable for the climate. He advocated the reduced consumption of arrack among soldiers, thus voicing Ewart’s views.³⁵ Percival, on the other hand, expressed a different opinion about arrack: ‘Our soldiers too, by drinking plentifully of arrack and smoking tobacco, counteract the bad effects of the atmosphere and the water.’³⁶

Military hospitals

The British who captured Colombo in 1796 continued to use the Dutch hospital in the Fort as a military hospital.³⁷ Captain Robert Percival came to Sri Lanka in that year, and stayed for three years. He wrote:

‘The hospital which is designed for soldiers and sailors is roomy and convenient. It is very properly divided into distinct wards, so as to keep the sick of different disorders completely separate, and thus prevent infection from spreading. Close by it is a house for the chief surgeon, where all the hospital stores are prepared and kept. It is with much pleasure I add that this hospital (an institution so indispensably necessary in these hot climates) is extremely well managed; and that every attention is paid to the health of the troops who are sent here for medical attention.’³⁸

This institution continued to be a military hospital till 1872 when the new hospital at Galle Face was completed.³⁹ A map of the military establishments in Colombo Fort published in 1864⁴⁰ confirms the continuation of the British military hospital in the same site in the Fort for over half a century.

The building has had many vicissitudes during its long existence. It was repaired several times during the Dutch and British periods and again recently in 1985. Soon after the British took over, Brig. General de Meuron found it necessary to seek authority from Madras to repair the building.⁴¹

The Colombo military hospital was set apart for European troops, and was 60 metres from the nearest barracks. The barracks for the European troops occupied ten detached blocks which were spread over two thirds of the circumference of the fort, while the native troops were quartered in Slave Island.⁴² The hospital consisted of ten wards with a total strength of 232 beds. The average surface area for each bed varied from 37 to 64 square

feet. The Royal Commission appointed to inquire into the sanitary state of the Indian army commented that there was no 'healthy accommodation for more than 100 beds even if buildings were otherwise unexceptional.'⁴³ The sanitary facilities of the hospital, including the water supply, drainage, latrines, baths and ventilation were all condemned by the Commission as being unsatisfactory.⁴⁴

In the 1860's the morbidity rate of European soldiers in Sri Lanka was exceptionally high. In 1860, 1861, 1862 and 1864, 34 officers and 336 soldiers were invalided out of a force of 112 officers and 874 soldiers. In one year, admissions to hospitals were 1358 and deaths 26 out of a force of 894.⁴⁵ The Secretary of State for the Colonies, alarmed by this situation, wrote to Major General O' Brien, Officer Administering the Government and Officer Commanding the Forces in Sri Lanka in 1864 expressing grave anxiety about the sanitary conditions of the barracks in Colombo. There being a high mortality from 'diseases which are the known consequences of using impure water, it seems hardly possible to evade the conclusion that an improved water supply should accompany improved drainage.'⁴⁶

In response to these oft repeated criticisms, a new military hospital along with barracks was built at Galle Face. It was completed in 1872 and was described as a magnificent two-storeyed structure with quarters for a surgeon and assistant surgeon.⁴⁷ However, one major drawback was the water supply which on analysis was found to be contaminated from the nearby Beira lake into which sewage was dumped.⁴⁸ It may be mentioned that all military hospitals throughout the country obtained their water from wells, before the introduction of pipe-borne water supplies. Drinking water had to be sent down daily for the use of the hospital. While the hospital was nearing completion, it was proposed that it should provide accommodation for both the European and local troops.⁴⁹

Besides the Colombo military hospital, there were similar institutions, though on a smaller scale, at Kandy, Nuwara Eliya, Galle and Trincomalee. The hospital at Kandy had provision for 102 beds, though there was sufficient space for only 44.

In 1866, the European military hospital at Kandy consisted of three irregularly shaped buildings which were formerly the zenana of the Kings of Kandy. It was situated on a small promontory on the eastern side of the lake into which the town latrines opened. The hospital obtained its water from a well nearby which was close to the main road. On analysis of water by the best scientific methods available at the time, this well was found to have the best drinking water in the Kandy town.⁵⁰ The various barracks were scattered throughout the town, but all were a considerable distance away from the military hospital.

The zenana was used by the ladies of the royal household. Its proximity to the lake would have made it an ideal stage for the ladies to have

their baths. The identification of its exact position has been made possible by a map drawn in 1866⁵¹ which shows the hospital was located by the lake at the beginning of the present day Victoria Drive, opposite the statue of Anagarika Dharmapala.

The Royal Commission condemned this building made of mud as being totally unsuited for a hospital. It marvelled why it was ever chosen for such a purpose. It held 'that the seclusion and want of air of a zenana present conditions the very opposite of those required for a hospital.'⁵²

Nuwara Eliya was first visited by Europeans in 1826 and became a military station in 1828.⁵³ In 1864, the barracks had accommodation for 100 men. The hospital was burned down in 1860, and a room did duty for a hospital till 1866, when a new hospital was constructed a short distance away.⁵⁴

The Royal Commission considered Galle as the healthiest station in the country. The mortality rate at Galle from 1820 to 1836 was only 23 per 1000. In the ten years preceding 1860, there were 1621 hospital admissions, of which 205 were for fever with only one death. The hospital consisted of an open roofed hut with a verandah on one side. There was only one ward with accommodation for 16 beds.⁵⁵

The Dutch maintained a hospital at Trincomalee, and when the British took over the town, they inherited a ready made institution. Trincomalee, with its strategic position, became an important naval base where the British stationed a considerable land and sea force. In the early years of British rule the limited medical facilities there were inadequate to cope with the large numbers which succumbed to malaria in Trincomalee, which was described as the unhealthiest station in the country. In order to meet this situation, in 1797, the British commander in Trincomalee, Lieutenant Colonel J. Champagne was obliged to despatch his sick men by ship, presumably to Madras. Patients were transferred to ship by boats which were hired for the purpose.⁵⁶ Despatch of patients to Madras did not present much difficulty at the time, for there was frequent sea traffic to and from Madras as it was the centre from which the British ruled Sri Lanka.

By 1803, hospital facilities in Trincomalee appeared to have improved. Alexander Alexander, who was a British soldier stationed in Trincomalee in that year, spent two months at the Trincomalee hospital for a chronic diarrhoea which he attributed to unwholesome food.⁵⁷

In 1864, a new military hospital was built in Fort Frederick at Trincomalee. It had three wards with accommodation for 40 patients.⁵⁸

Morbidity pattern

British soldiers were admitted to hospital for a wide variety of disorders, but the commonest were fevers, digestive diseases, skin ailments, accidents, and syphilis. When the morbidity pattern among the troops varied from the average figures, the army authorities took pains to attribute causes

for the increase or the decrease. In 1873, for example, a low morbidity rate was ascribed to favourable weather conditions with little rain and low temperatures, and the occupation of new barracks,⁵⁹ while in 1863 lack of flannel underclothing and defective boots were blamed for the high morbidity.⁶⁰

The white soldiers, as a rule, fared worse than the Asiatic troops as regards health. In 1866, there was an average of 886 white troops in Sri Lanka, and hospital admissions amounted to 1177 for the year. On the other hand, there were 1366 admissions from a total complement of 1207 Asiatic troops. The average number of hospital admissions per year from 1859 to 1865 for white troops was 1557.1 per 1000 troops with a mortality of 26.5 per 1000, and that for Asiatic troops was 1064.0 with a mortality of 14.61 per 1000 troops.⁶¹ The increased tendency in white troops to disease in a tropical climate was understandable as they were alien to these conditions.

Every year a number of white soldiers were invalided home, and of these a proportion were discharged from the army at Netley in England. In the case of the Asiatic troops, they were discharged from the army while in Sri Lanka. In the ten year period, 1863-72, an average of 45.65 per 1000 European soldiers were invalided to England, and of these 23.6 were discharged from the army at Netley. During the same period, an average of 23.03 Asiatic troops were discharged in Sri Lanka.⁶²

Military prisoners

The European military prisoners were kept in the Welikada jail where disease prevailed to a notorious degree. There were epidemics of dysentery and cholera from time to time, with much morbidity and mortality. There was a growing agitation for the removal of military prisoners from Welikada which was the principal civilian jail in the country. The high figures from Welikada inflated the total morbidity rate for the troops in the country. The *Army Medical Department Report for 1872* states:

'....two fatal cases of enteric fever occurred among the military prisoners confined in the civil jail at Colombo, a building from gross sanitary defects, quite unfit for the reception of Europeans, and from which it was subsequently found necessary to remove the remaining military prisoners on account of the prevalence of desentery in a severe and fatal form among them.'⁶³

The Deputy Surgeon General, Watt in his report for 1873 partly attributes the better health of the troops in that year to the removal of military prisoners from Welikade.⁶⁴

The Governor appointed a commission to inquire into the high morbidity and mortality in the Welikada jail during 1870-72. The commission consisted of the chief justice, three puisne judges, an officer of the public works and Dr. Watt. The judges attributed the high mortality to the lack of co-operation between the Principal Civil Medical Officer and the governor of the prison. Dr. Watt, in a dissenting report, blamed overcrowding

as the cause. The government accepted Dr. Watt's report, and the sick were immediately removed to another place.⁶⁵

Medical personnel

In the early years of British rule, troops were stationed in both large and small towns. Army doctors who were appointed to these stations were designated staff surgeons and assistant staff surgeons, who were all qualified men from Britain. The military hospitals which were established in the main towns having large complements of soldiers were often manned by holders of the MD degree. The Civil Medical Establishment, which was at first called the Native Medical Establishment, came under the Army Medical Department which had, as its head, the Deputy Surgeon General. Army surgeons, therefore, worked in the few civilians hospitals functioning at the time, as well as in the control of communicable diseases such as small pox and cholera.

The army surgeons were assisted by hospital assistants, who were also British, as well as locally trained men who served as underlings. The local men were designated medical sub-assistants, medical pupils and medical volunteers.⁶⁶ When the British took over from the Dutch, some of the Dutch descendants and local men, who were dressers and dispensers under Dutch doctors, joined the British service in subordinate capacities.⁶⁷ Subsequently, these lower rungs of the service were filled by men trained locally by the British army doctors themselves. Hospital assistants and sub-assistants worked in the main towns as well as in small military stations such as Batticaloa, Ratnapura, Chilaw and Kadugannawa.⁶⁸

Soldiers' diet

Soldiers' diet was considered as important as the climate in determining their health. One of the accepted strategies of warfare was the interruption of enemy supply lines, and the Kandyans, with mastery over their own terrain, were adept at such tactics. As a result, the British soldiers suffered from deficient diet during the Kandyan wars.

Alexander Alexander who was stationed in Trincomalee in 1803 has left an interesting account of a soldier's diet during the Kandyan war in that year. The food was not only of poor quality, but cooked by 'black cooks' belonging to the garrison in the most dirty and careless manner. When the midday meals were brought to the barracks, 'the soldiers gathered round them like as many voracious hounds with their *chatties* in their hands, bawling, blaspheming and grumbling, not so much at the quality, as the quantity of their food.' Meat was more like carrion than beef. It had a heavy and loathsome odour, was offensive to both sight and smell, and hurt him more than the climate. Alexander bemoaned the shortage of food when there was plenty in the fertile valleys in the interior, but out of reach during the Kandyan war.⁶⁹

The soldiers' diet did not improve appreciably even decades later. In 1866, bread for the soldiers stationed in Nuwara Eliya was brought from

Kandy 75 km away. It was four days old on arrival, and during the wet weather was almost always mouldy. The reason for this importation was that proper bread could not be baked at Nuwara Eliya. Bread failed to rise, and soon became sour, probably due to some change in the yeast used at the time.⁷⁰

The British experienced difficulty in obtaining suitable vegetables for the troops. The type of vegetables they were used to in Europe such as cabbages, carrots and beans could not have been cultivated at the time on a large scale as now. The Deputy Inspector General of Hospitals had occasion to complain of this deficiency in soldiers' diet in 1866.⁷¹

The meat supplied to soldiers came under attack again in 1869. It was described by the acting Principal Medical Officer as tough and very lean, unpalatable or non-nutritious, and its daily use monotonous and distasteful. This condemnation was directed particularly at the meat supplied at Nuwara Eliya. He recommended salt beef twice a week, but later discovered that the issue of salt beef to the command in Sri Lanka had been suspended.⁷²

Duke of Wellington

Trincomalee was considered the unhealthiest station by the British. It acquired this dubious reputation due undoubtedly to the high incidence of malaria. It was the only major garrison town that was situated within the malaria belt. Trincomalee, from the inception of the British rule, was used as a major naval base, and its unhealthiness was a matter of concern to the British who were at the time in the process of building their empire. However, it is interesting to speculate how different British military history would have been if not for the unhealthiness of Trincomalee.

The Duke of Wellington, who later defeated Napoleon at Waterloo, was serving in India. In 1800, Colonel Arthur Wellesley, as he was then known, was ordered by his brother, the Earl of Mornington, Governor General of India, to lead an expeditionary force of 5000 men to attack the French in Mauritius. Wellesley brought the force to Trincomalee where he set about preparing for the expedition. He spent a few months at Trincomalee equipping and provisioning for the campaign. Without waiting for orders he set sail for Bombay where he arrived in March 1801. In the meantime, without his knowledge a senior officer, Major General David Baird was appointed to the command in his place.

Ill health among the troops became a problem. In one regiment alone, 20 men died after leaving Sri Lanka and a hundred had to be admitted to hospital in Bombay after arrival. In another regiment, 120 were on the sick list.

Wellington himself went down with fever on reaching Bombay, and was unable to accompany Baird to the Red Sea.⁷³ It was fortunate for him that this happened, for the ship in which he was to have embarked sank with all on board. Wellesley was troubled not only with fever but also with Malabar itch or scabies as it was then known. He contracted the itch while at sea by

sleeping in a bed used by an infected man. He had to undergo prolonged treatment with nitrous baths before he recovered from the itch.⁷⁴

Foreign service

Since the invasion of Pegu by King Parakramabahu (1153 - 86 AD), there was a long lull in foreign military service till the advent of the British. During British times, troops from Sri Lanka served in other parts of the British Empire. In 1866, four companies of the Ceylon Rifle Regiment were posted for service in Hong Kong.⁷⁵

In the late 1860's, a detachment of the Ceylon Rifle Regiment was stationed in the island of Labuan with serious consequences to the health of the men. The island, which was off the north west coast of Borneo, was hilly and swampy with a population of a few thousand. It was ceded to the British in 1846 by the Sultan of Brunei. In 1869, the average strength of the detachment was 162 men, and there were 10 deaths, the rate being 61.73 per 1000. Six deaths were attributed to remittent fever.⁷⁶

Next year the situation was worse. There were 256 hospital admissions and 34 deaths, the average strength of the troops being 139. This death rate of 244.6 per 1000⁷⁷ was alarming. The medical officer in charge of the detachment was Assistant Surgeon Barry, MD, of the Ceylon Rifle Regiment. Staff Surgeon Jessop was detailed to proceed from Sri Lanka to Labuan to investigate and report on the cause of this high morbidity and mortality. W. C. Roe, acting Principal Medical Officer based his findings on the reports submitted by these two officers and other data available to him.

There was much doubt about the nature of the disease and its cause. Roe concluded that the disease was beri beri which was due to 'malaria', which term he used in its literal sense of 'bad air'. The cause of both beri beri and malaria was not known at the time. He said that the soldiers were exposed to foul air from the swamps, and as a consequence developed beri beri. The other possible causes of the illness suggested by Jessop in his report were the lack of meat in the diet of the soldiers and the consumption of opium. Roe discounted both these possibilities. However, soldiers' wives were not as frequently affected as the husbands, and Roe advanced the theory that the husbands who were frequently on night duty were more exposed to 'malaria'.⁷⁸ In retrospect, it is very likely that the outbreak was really due to malaria, transmitted by mosquitoes from the swamps, and not beri beri.

In the first Great War several officers and other ranks of the Ceylon Volunteer Medical Corps served in their individual capacities in France, England, Mesopotamia and Uganda. Some served in the Indian Medical Service. Again, in the second Great War members of the Ceylon Medical Corps served in the Middle East, Cocos Islands and the Seychelles.⁷⁹

Boer war prisoners

Boers, who were the descendants of Dutch settlers in South Africa, waged a war with the British from 1899 to 1902 in which year they surrendered

to the latter. In the course of the war, a large number of Boers were taken prisoner. During the Easter of 1900, the British authorities requested the Governor, Sir West Ridgeway to accommodate 2000 prisoners in Sri Lanka. The Principal Civil Medical Officer, Sir Allan Perry was directed by the Governor to make the necessary sanitary and medical arrangements. A definite site had not yet been decided on. Several places were suggested but Diyatalawa was decided on, the only drawback being the lack of a good and sufficient water supply. This difficulty was eventually overcome. At the time Diyatalawa, which was on an elevation of 1350 metres, was uninhabited. It could boast of only two or three buildings, including a deserted railway station where trains did not stop.⁸⁰

Construction of the camp was begun in May 1900. Within a short period of ten weeks, several buildings, each measuring 120 feet by 20 feet (36 metres by 6 metres) were constructed around an iron framework and roofed with glistening galvanised corrugated iron sheets.⁸¹

The camp was opened on 9th August, 1900 with the arrival of the first batch of prisoners. Perry boarded each vessel on arrival. Those who were found sick on board were transferred to the General Hospital, Colombo (29 patients) and the Borella Convict Hospital (25). On arrival they were dejected and forlorn, and many were covered with vermin. The healthy prisoners were transferred to Diyatalawa.⁸³

Originally 64 prisoners were allocated to each hut. Officers were quartered in separate huts. Two generals who were among the prisoners were provided with separate huts, as were also two black boys who were not allowed by the whites to share their huts.⁸⁴ Apartheid was not unknown even at that time!

The camp was built to accommodate 2500, but at one stage it had to house 5089. Outside the Boer camp were the quarters for a British guard of 1000 military men. The health of the prisoners was a matter of concern to the Imperial Government. At first the hospital had only one ward of 25 beds, and was in charge of Dr. Griffin, Colonial Surgeon.

Sanitation in the camp was quite good. The water was from mountain streams and was generally uncontaminated, the population upstream being very small. It was stored in tanks and distributed by pipes. Excreta from latrines was removed by light railway to a distance and buried in pits. Garbage was also treated in the same way or burnt.

The first medical problem was an outbreak of measles introduced by a prisoner from South Africa. There were 251 cases with 7 deaths. Even before this epidemic subsided, the most serious problem that the Boers faced in Sri Lanka was upon them.⁸⁵

In September, 1900, the first case of enteric fever appeared in the camp. It was again introduced by a South African prisoner who was brought in the ship, *Bavarian*. The number of sick in each month escalated in alarm-

ing proportions: 2 in September, 33 in October and 370 in November. It was a virulent type of South African enteric fever. In desperation the government ordered Dr. T. Garvin, Surgeon in charge, General Hospital, Colombo, to take charge of the Boer hospital. The single ward was found inadequate to cope with the outbreak and it was supplemented by the addition of two other wards with 25 beds each. Subsequently, four huts each accommodating 50 patients were added as wards. All the then known sanitary measures were adopted. The medical staff, which originally consisted of two assistant medical officers, was enlarged to five at the request of Dr. Garvin. Sister Lucy, an English woman, was in charge of nursing, and her devotion to her country's erstwhile enemies was highly appreciated by her patients. She was assisted by three nurses and several orderlies.

Sister Lucy and her small band of nurses faced a daunting task in those Victorian times when they undertook the nursing of ragged prisoners of war. She later made the pleasant discovery that they were quite unlike patients in English hospitals. They never used foul language, nor intimidated her young nurses in any way.⁸⁶

There was no doubt that the epidemic of enteric fever was introduced from South Africa. The first case was infected before arriving in Sri Lanka.⁸⁷ In South Africa itself, typhoid was a problem during the Boer war. Colonel T. Y. Wright, who was a member of a volunteer contingent that went to South Africa from Sri Lanka, himself fell victim to the disease.⁸⁸ A common fever in South Africa which came to be known as 'remittent' or 'Pretoria' fever was claimed to be a mild type of typhoid and not malaria, as originally believed.⁸⁹

The typhoid epidemic in the Boer camp was cited in the *British Medical Journal* in support of an unusual theory that epidemics of typhoid were possible through airborne transmission as well, when the accepted notion was that they were always waterborne. The British guard quartered outside the Boer camp also became victims of a minor epidemic of typhoid in which there were 24 admissions and 5 deaths. It was argued that the guard had no direct contact with the Boers, the water supply was separate, the food was always cooked and hawkers were not allowed to enter the camp. The only logical route of entry of infection, it was claimed, was through the air. The guards, while on duty, stood very close to the camp, and in that situation were readily exposed to infected dust wafting in their direction from the camp.⁹⁰

Another possible reason for the epidemic was enunciated by Perry, who blamed the prisoners themselves:

'The habits of the Boers at first were far from cleanly. After defaecation it was usual not to use any means of cleansing the person; in this way the inside of the trousers became fouled, and the dried excrement may have been disseminated in the huts (although it should be remarked that some of the clothing was examined bacteriologically, but no true *Bacillus typhosus* was found.)'⁹¹

The epidemic was gradually brought under control. In December, 1900, the number of cases showed a decline, being 196.⁹² The epidemic accounted for 755 cases in all, with 68 deaths.⁹³ However, enteric fever continued into 1901 in a less virulent form. There were 111 new cases with 12 deaths. In 1902 there were 46 cases with 6 deaths.⁹⁴

Patients convalescing after typhoid were sent to a camp established at Mount Lavinia for the purpose. A hospital ship, *Atlantian* was anchored in the Colombo harbour for several months, serving as a convalescent ship.⁹⁵

Subsidiary prisoner-of-war camps were later established at Ragama, Urugasmanhandiya and Hambantota. A medical officer was in charge of the medical supervision at each of these camps. The one at Ragama was opened on 8th January, 1901. As there was a shortage of local medical officers, a military officer from India was recruited. The largest number of prisoners it had, at any one time, was 358 in July 1902.⁹⁶ The hospital ward had 20 beds, but the largest number of patients on any single day was 14 and the smallest was three.⁹⁷ The camp at Ragama was closed down on 20th November, 1902.⁹⁸

The camp at Urugasmanhandiya was opened on 11th September, 1901. On 31st December, 1901 there were 356 men. The hospital had two wards with 5 beds each.⁹⁹ The camp was closed down on 5th November, 1902.¹⁰⁰

A small camp was opened at Hambantota on 19th September, 1901. The jail was utilised for the purpose. It accommodated 57 prisoners. With the declaration of peace, 50 of them left for Urugasmanhandiya by SS *Gordon*, a local coastal steamer. The camp was closed on 27th July, 1902 when the remaining 7 who were unfit to travel by boat were sent by coach. There were no admissions to the hospital during the period.¹⁰¹

Next to enteric fever and measles, malaria caused the greatest morbidity. The majority of cases were relapses of malaria contracted in South Africa. In 1900, 153 prisoners were affected and there were 10 deaths.¹⁰² In 1901 there were 108 cases, all of whom recovered.¹⁰³

Dysentery was another disease which harassed the Boers throughout their stay. In 1901, there were 72 cases with 3 deaths,¹⁰⁴ while in 1902 the morbidity was 95 with 9 deaths.¹⁰⁵

With the departure of the prisoners towards the end of 1902, the activities of the various camps came to a close. Dr. Garvin returned to General Hospital, Colombo, where he resumed work on 20th January, 1903.¹⁰⁶ Dr. Garvin was credited with having saved the lives of many Boers. On his return to Colombo, the medical profession hosted him to a complimentary dinner. A few years after Independence, the members of the South African parliament who were in Sri Lanka for a Commonwealth Parliamentary Conference paid homage to him by ceremonially laying a wreath at his grave at the General Cemetery, Kanatte, on behalf of the South African government.¹⁰⁷ This action demonstrated the high regard in which Garvin was held by the

South Africans even several decades after his services to the prisoners.

Among the prisoners of war were four well trained doctors. In September, 1900, they offered their services during an epidemic of cholera near Kandy, and again in November, 1900, during the epidemic of typhoid at Diyatalawa, but on neither occasion were their offers accepted. One of them, Dr. Van Houten was a bacteriologist who had done research on the leprosy bacillus at the University of Utrecht in 1896. As he was anxious to continue research on leprosy, he was given permission to live in Colombo on parole. He was attached to the Bacteriological Institute while in Colombo.¹⁰⁸

Sri Lanka Army Medical Corps

Sri Lanka Army Medical Corps had its origins in July 1881 when a Bearer Company within the Ceylon Light Infantry was formed. As its name implies, it had the rather unpretentious duty of bearing stretchers. It had a nucleus of 8 medical students under the command of Dr. T. H. F. Tothill, a retired officer of the British Army Medical Services who was designated Surgeon. By the end of the year, the rank and file who were entirely drawn from medical students numbered 24. Later, others who were not medical students were also recruited.

The close liason between the Colombo medical school and the medical corps continued uninterrupted for many decades. The principal of the Ceylon Medical College, Dr. J. L. Vanderstraaten was commissioned as Assistant Surgeon.

The Bearer Company was trained on the lines of the infantry, but in addition was given stretcher drill and instruction in first aid and medical duties in the field. Drill was held twice a week on the grounds of the Medical College.

In 1911, the Bearer Company became an independent unit designated Ceylon Volunteer Medical Corps, having severed its connections with the Ceylon Light Infantry. It consisted of 10 officers and 102 other ranks. Its services were made available to all the service personnel in the country and not restricted to the Ceylon Defence Force. Non-medical personnel were also recruited, but about half were medical students, apothecaries, pharmacists, sanitary officers and laboratory workers.¹⁰⁹

In April 1918, the designation of the unit was changed to Ceylon Medical Corps. It was only in 1923 that local medical qualifications were recognised for a commission in the Corps. Previously, only British qualifications enjoyed this privilege.¹¹⁰

The Ceylon Army was created after the attainment of Independence in 1948, and as a result the Corps again changed its name in 1949 to Ceylon Army Medical Corps.¹¹¹ When the Ceylon Army changed its name to Sri Lanka Army, the Corps fell in line by adopting the name, Sri Lanka Army Medical Corps.

First World War

The first World War (1914-1918) cast heavy responsibilities on the Ceylon Volunteer Medical Corps, which was mobilised for active service. A tented hospital was opened on Rifle Green for the Ceylon Defence Force casualties. A separate hospital for British servicemen was available at Galle Face. This military hospital, completed in 1872, was staffed by British doctors at first, but with the depletion of its staff due to deployment in other countries, Sri Lankan doctors were asked to assist at the hospital. The tented hospital was later closed down after transfer of its staff to the British Military hospital.¹¹²

The main feature connected with the medical services in Sri Lanka during the war was the arrival of transport ships carrying British, Indian, Australian and New Zealand troops. Several of these ships put into Colombo harbour with epidemics of various infectious diseases on board. The medical personnel of the local command had to contend with a rush of patients as these ships disgorged their sick. Haemorrhagic measles, cerebrospinal meningitis, mumps and influenza were the most frequent of these diseases. When an outbreak occurred on board, all the troops had to be landed before the ship and the equipment were disinfected. 500 to 800 men were landed for periods varying from 2 to 14 days, at a time, on several occasions, and once 2000 troops were accommodated in a camp for 14 days. In order to cater to the sick, an improvised hospital was set up in a building loaned from the Colombo Municipal Council. The number of admissions to the British military hospital rose from 198 in 1915 to 980 in 1918 as a result of this influx of patients from outside the command.

On 29th April, 1916, 46 cases of haemorrhagic measles from an Australian transport were transferred to the military hospital. On 13th July 1917, the transport *A.17* landed 750 troops owing to an outbreak of cerebrospinal meningitis. They camped on Rifle Green and an infectious diseases hospital opened. On 24th July 1917, *A.15* landed 280 patients. The officers' mess at Flagstaff was opened as a hospital. Next day, 46 Australian contacts of cerebrospinal meningitis were transferred to the military infectious diseases hospital. On 6th December 1917, an infectious diseases hospital was opened for mumps. In September and October 1918, there was an influenza epidemic. A block in the Echelon Barracks in Fort was opened as a hospital in which 136 patients were treated. A further 53 cases of influenza were landed in October from the *Dilwara*, and 17 cases from the *Duneera* the following month. Finally, on 9th November 1918, 830 troops were landed from the *Malta* on account of an epidemic of cerebrospinal meningitis. They were camped on Rifle Green, and the ship disinfected. It sailed the next day.¹¹³

In 1917 and 1918, a large number of officers were sent to Sri Lanka

on leave from Mesopotamia. Special arrangements were made for their treatment by the civil government medical officers at Nuwara Eliya.

On 14th November 1914, 8 British and 46 German casualties from the naval action off Cocos Island between the Australian ship *Sydney* and the famous German cruiser *Emden*, were landed in Colombo and transferred to the military hospital. All of them recovered. The Germans were then interned in a prisoner of war camp at Diyatalawa, the medical supervision of which fell on the doctors of the Ceylon Volunteer Medical Corps.

There appeared to have been some friction between the army, navy and civil authorities over the sanitary arrangements at Diyatalawa. An attempt was made to bring all the interests under one sanitary control, but owing to the lack of funds the scheme was abandoned early in 1918.¹¹⁴

There was an epidemic of influenza in the country during September and October 1918. About two thirds of the local troops of the Ceylon Light Infantry suffered from the disease, but very few cases occurred among the European troops. The sparing of the latter was attributed to the 'simple measure of daily sprinkling floors with cresol and the use of a lysol gargle.'

Another duty that fell on the doctors of the Ceylon Volunteer Medical Corps was the medical examination of recruits to the forces. In May 1918, all Europeans of military age, numbering 1142, were examined for categorisation as to their fitness for military service.¹¹⁵

Second Great War

Between the two wars the British military hospital at Galle Face, which came under the Royal Army Medical Corps, served the medical needs of the regular British army stationed in Sri Lanka. At the outbreak of the war, Sri Lankan troops were provided for by setting up new wards. The total bed strength of the European and Sri Lankan wings of the hospital was 40. As this was deemed inadequate, a ward at the General Hospital, Colombo was set apart for the Ceylon Defence Force. It was manned by the Ceylon Medical Corps under Lieut. Milroy Paul. This ward helped to relieve pressure on the military hospital. It was closed down a few months later. The military hospital in Colombo received patients from all other stations in Sri Lanka when specialist attention was required.

All nationals of countries at war with England were interned at Diyatalawa, and their medical needs were looked after by the Ceylon Medical Corps under the command of Major F. G. Smith, at the Internment Camp Hospital. The Trincomalee military hospital, which was set up in Fort Frederick a month before the outbreak of the war with Major Smith in charge was placed under Temp. Capt. H. C. Serasinghe. At the end of 1940 it was absorbed into the Indian General Hospital. At Diyatalawa, Major Smith relieved Dr. Adams, a British general practitioner of Bandarawela, who was looking after the medical requirements of the internees.

In 1940 over 2000 Italian prisoners of war from the Middle East were

brought to Sri Lanka and interned at Welisara. There was a small sick room at Welisara which was looked after by the Ceylon Medical Corps under Capt. Serasinghe. The prisoners were then transferred to a camp at the Boossa racecourse near Galle. Italian doctors looked after their medical requirements under the supervision of Capt. Serasinghe.

With the entry of Japan into the war in 1942, the Colombo military hospital, which had been extended to house 90 patients, became a target area and it was transferred to requisitioned buildings at Royal College and Training College where the two wings for European and Sri Lankan personnel were established.¹¹⁶

The Japanese air raid on Colombo on the Easter Sunday, 5th April, 1942 came as a shock. It lasted 20 minutes. Bombs, presumably intended for the nearby Kolonnawa oil installations hit the Mental Hospital, Angoda, killing 7 inmates and injuring many others, besides causing panic and alarm on a tragic scale.

The civilian casualties amounted to 85 dead and 77 injured. 47 were treated at the General Hospital, Colombo. Most of them were from ships and wharves in the harbour where casualties occurred among East African troops unloading food ships.¹¹⁷

Following the Japanese air raid, the hospitals at Royal and Training Colleges, due to their proximity to the Royal Air Force aerodrome at the racecourse, were evacuated to other schools which were requisitioned for the purpose. The Sri Lankan wing moved to Nalanda College, the Indian wing to Wesley College and the British wing to Holy Family Convent with Major Milroy Paul as surgeon.

With the transfer of the Italian prisoners to Boossa, Welisera became a camp for Australians. A hospital was built for them at Welisera.

The expansion of the Ceylon Defence Force necessitated an increase in hospital accommodation. The 132 Ceylonese General Hospital was opened on 29th June, 1942 in answer to this requirement. It was a large, 600 bed hospital with permanent buildings. The staff numbered over 100, including civilian nurses. It had its own operating theatre, resuscitation ward and specialist facilities in medicine, surgery, ophthalmology, dentistry and venereal diseases. It had a pathology laboratory and a radiology unit. This hospital was closed down in February 1946. The buildings exist to this day as the Regent Street section of the General Hospital, Colombo where the out-patient department and some medical and orthopaedic wards are now housed.

With the end of the war, the British military hospital returned to its old location at Galle Face where it had a wing for Sri Lankans as before.¹¹⁸

Notes

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11

OPIUM

Opium figures in most pharmacopoeias of the East and the West, but its sinister reputation as a narcotic overshadows its medicinal properties. In Sri Lanka, for centuries, it enjoyed unrestricted sales and uninhibited consumption like any other article of commerce. It was not till the middle of the last century that the public became alive to its baneful effects. In response to public protests, the state placed progressively tighter restrictions on the sale and use of opium.

Opium was native to West Asia, which included Persia and Afghanistan. It was known to the Greeks as early as the third century BC, and they were credited with having discovered its narcotic properties. It was introduced to the East largely by Arab traders, and was known to the Chinese by the ninth century AD. Indians learnt of its medicinal properties probably through Arab physicians, who came to India with the Mohammedan conquerors in the twelfth century AD.²

Early history

In Sri Lanka, opium has been used in ayurvedic medicine during the last few centuries. The earliest reference to its medicinal properties is in *Yogaratanakara*, an ayurvedic book written in Sinhala verse in the sixteenth century.³

There is no evidence that opium was ever grown successfully in Sri Lanka. According to the *Dagh-Register* of 1664, an attempt was made by the Dutch to grow opium poppy in Sri Lanka, but it is not clear what success attended this experiment.⁴ The next attempt at cultivation was made by J. W. Bennett when he was stationed at Magampattu: 'Having ascertained by trial that the soil and climate of the banks of the Wallewe river were well adapted to the cultivation of the opium poppy, I sent for a further supply of seed.'⁵ This abortive experiment which ended with his departure from Magampattu, was the last attempt at cultivating the opium poppy in Sri Lanka. It is, therefore, clear that all the opium was imported into the country.

There is evidence that opium was being imported from Portuguese times. The Portuguese Viceroy of India, D. Francisco de Almeida sent to the King of Kotte 'a large jar full of opium' in 1507.⁶ In 1613, the Viceroy, Don Jeronimo de Azevedo charged the Captain General of Sri Lanka, D.

Francisco de Menezes Roxo, of selling opium, among other goods, to the local inhabitants at a higher price than was current. It may be inferred from this fact, as well as other data, that at the beginning of the seventeenth century, at any rate, there was sale of opium in the low country districts occupied by the Portuguese.⁷ The hidden thrust of the charge was that Francisco preferred to trade with the local inhabitants rather than torture and massacre them as his predecessor had done for eighteen years.⁸ Queyroz mentions that during the Portuguese occupation opium was imported by the king of Kandy, the point of entry being Cotiar, near Trincomalee.⁹

The Dutch, far from discouraging the use of opium among the local inhabitants, took over from the Portuguese and continued the monopoly.⁰ The importation of opium during the Dutch period is substantiated by Governor Ryckloff Van Goens in his memoirs. He mentions that it was imported from Surat and Bengal in India.¹¹

In the latter part of the seventeenth century, opium trade was carried on by Moors from the low country among the inhabitants of the Kandyan kingdom. This was about the time that Robert Knox was held captive by the King of Kandy, though he does not mention the use of opium in his celebrated book.¹² This fact suggests that the consumption of opium was not general, but in all probability confined chiefly to the Moors resident in the hill country.¹³

The Dutch, for security reasons, recruited soldiers from their own possessions in the Far East. These soldiers belonged, by and large, to the Malay community, and they are generally regarded as having popularised the opium habit in Sri Lanka.¹⁴

The Dutch attempted to monopolise the sale of opium, as well as other articles of commerce, such as chaya root, arecanut and salt. A proclamation, dated 22nd January, 1675, prohibited the traffic in these items. This order was binding on government servants, 'natives and other free inhabitants of Ceylon,' and 'foreign natives, whether merchants, Moormen residing in the island of Ceylon or abroad' on pain of punishment. This proclamation was renewed again on 19th December, 1709, and the prohibition against trading in opium was reissued on 1st October, 1761.¹⁵

Customs duties

As soon as the British East India Company took over the administration of Sri Lanka, all import duties were suspended except those on arrack, a spirit distilled from the coconut palm, and opium.¹⁶ A customs duty of 20 rix-dollars or 22½ rupees per pound of imported opium was levied. This was a considerable amount at the time. Some years later, it was reduced to 5 rix-dollars, and by 1840 to one shilling per pound. In 1885, the import duty was fixed at one rupee per pound, in 1897 it was raised to two rupees, and again in 1907 to four rupees per pound.¹⁷ These rates of duty were con-

sidered heavy, and resulted in an increase in smuggling. The authorities viewed this smuggling as a loss of revenue rather than a danger to the public.

The growth of the opium trade¹⁸ is shown in Table I. The total consumption of opium in the country was probably much higher, if the quantity smuggled is taken into consideration. Smuggling took place not only from the established ports but also from minor ones such as Kalmunai on the east coast.¹⁹

Table I - The growth of the opium trade

| Year | Pounds of opium imported |
|------|--------------------------|
| 1840 | 1562 |
| 1850 | 852 |
| 1860 | 8379 |
| 1870 | 12449 |
| 1880 | 10117 |
| 1890 | 12807 |
| 1900 | 23755 |

At the beginning of the century, opium was imported in the form of balls. The material itself was semi-liquid and of the consistency of treacle. It was covered with a hard shell of leaves that resembled the rind of a cheese ball.

The opium habit

Opium was ostensibly imported into the country as a drug. It was widely prescribed in ayurvedic medicine, at least in the nineteenth century, for the alleviation of pain and induction of sleep. This was the manner by which the majority of opium addicts first came into contact with the drug.

In the early British period, opium was freely peddled by itinerant traders with tobacco and curry powders. It is on record that in 1834 a police sergeant went on a historic mission disguised as an itinerant opium-seller. He was sent to investigate a rumour that a Kandyan chieftain, the First Adigar Molligoda, was involved in a plot to poison the Governor and the principal officials at a banquet, to corrupt the Malay troops, and with their assistance to destroy the English garrison and so re-establish the independence of the Kandyan kingdom.²⁰

The free availability of opium was no doubt responsible for the escalating consumption shown in Table I. However, the first official frowns on the habit appeared quite early in the nineteenth century. In 1806 and 1807,

the Governor, Sir Thomas Maitland, enacted a series of regulations aimed at combating lawlessness. One of these prohibited the smoking of opium in Colombo after sunset without permission from the constable of the division.²¹

Certain communities appeared to have succumbed to the opium habit more than others. Large quantities of opium were imported into China during the last century, and Sri Lanka figured in an incident which underlined this vast traffic. In June 1857, during a squall, the P & O liner, *Erin* struck a sand bank and sank at the mouth of the river, Kaluganga, thirty miles south of Colombo. She was carrying, among other goods, a consignment of opium worth £ 170,000 from Bombay to China. This was an enormous sum of money, and the entire consignment was lost.²²

It was observed by Major Thomas Skinner, the famous road-builder of the last century, that the consumption of opium among the Malay troops in the British army in Sri Lanka was high. They were held in high esteem by the British authorities, but the use of opium rendered them unfit for service at an early age.²³

Opium shops

A novel feature of the history of opium distribution in Sri Lanka was the system of licensed shops that existed in the second half of the last century. Ordinance No.19 of 1867, entitled 'An ordinance to prohibit the sale of opium and bhang except by duly licensed persons,' permitted the opening of opium shops under licence from the government. The bill was referred by the Legislative Council on 13th November, 1867 to a sub-committee headed by R. F. Morgan, Queen's Advocate, the equivalent of the Attorney General today. The sub-committee reported 'that the ordinance will prove useful in restricting the use of opium and bhang (ganja or hashish), and giving the police due surveillance of the places where they are consumed.'²⁴ However, these intentions were not fulfilled, for opium consumption increased, probably helped by its free availability in opium shops.

In the middle of the last century, opium was used as security for obtaining money on loan. Chettiars, a race of merchant bankers from South India, had in their custody large stocks of opium that had been pledged to them by the opium dealers. This aspect was taken into consideration in drafting the ordinance. It prohibited the possession of more than two pounds of opium without a licence.²⁵

Opium was widely prescribed as a medicine by both the qualified western and ayurvedic practitioners. In the absence of any legal provision concerning medical qualifications in the country, the sub-committee was not prepared to restrict the sale of opium to any particular class of medical practitioners.²⁶

Opium shops were opened even before legislation was enacted in 1867. The first such shop was in Chilaw, and it was in existence in 1850. A second shop was opened about 1860 in Hambantota, a small town with a considerable

Malay population. The number of shops rapidly increased after 1867, there being 31 in 1890, 56 in 1897, and 65 in 1907.²⁷

The revenue from these shops was considerable. The licence fees from the shops in the villages went to the government and this amounted to Rs.4100 in 1893. In 1906, it increased to Rs.69,119. The Municipalities and Local Boards received the revenue from shops in cities and towns. It increased from Rs.37,360 in 1893 to Rs.122,189 in 1907.²⁸

Opium shops were subject to several conditions. The hours of business were restricted to 6 am to 8 pm, and the maximum quantity that could be sold to an individual was 180 grains. The sale of opium to women and children under 15 years of age was prohibited. Cigars were the only other items that were permitted to be sold in these shops. Bartering of opium in exchange for other goods was prohibited.²⁹

At first, consumption of opium within the premises of the licensed shop was allowed. An opium 'den' was attached to the shop where opium was smoked by the consumers, who paid a monthly rental, usually a rupee. Subsequently, this practice was prohibited. This step may not have had the desired effect of restricting the use of opium, for the customers by taking it home exposed others to the habit.³⁰ It may be mentioned that according to official returns the number of habitual users of opium in the country in 1908 was 19,847.³¹

The wishes of the people were not consulted in opening opium shops. There was no evidence that a request was ever made by Sinhala or Tamil villagers to have an opium shop in their midst. In fact, Buddhists condemned the use of the drug.

Agitation

Towards the end of the last century, there were many prominent people who were still unconvinced about the demoralising effects of opium. Mr. John Ferguson, a member of the Legislative Council, was one of them, but after a visit to opium dens in Colombo, where he saw the levels of depravity to which opium users had sunk, he was convinced that 'victims were being freely manufactured.' He drafted a memorial to the Legislative Council, and through correspondence and interviews, a public meeting was arranged for 11th December, 1893.³² It was held in Colombo to agitate for sanctions in the sale of opium. This large meeting was attended by representatives of all races and classes, and it adopted a memorial to the Legislative Council. The extent of public opposition to the government's policy on opium was shown by the number who signed this memorial. The signatories, who were confined to those who could write, comprised 13,957 Sinhalese, 11,878 Tamils, 1265 Burghers, 265 Europeans and 465 of other nationalities.³³ It was described as 'one of the most widely and influentially signed of any ever drawn up in Ceylon.'³⁴

No action was taken until 1896 when Mr. Ferguson obtained an in-

terview with the Secretary of State, Mr. Chamberlain in his chamber in the House of Commons. The latter agreed to request the Governor to grant a commission of inquiry, which Sir West Ridgeway promptly did. Unfortunately, Sir W. W. Mitchell, an earnest reformer, was outvoted by the two official members who were backed up by medical advisers. Ferguson asserts: 'Medical men in Ceylon almost invariably show a strong sympathy with the views of their professional brethren in regard to the use of opium in Northern India.'³⁵

However, as an outcome of the commission, the Governor in 1897, by an ordinance doubled the duty on opium from Rs.1 to Rs.2 per pound, and banned the import of bhang or ganja. In 1898, he appointed a select committee, which reported that the opium habit had spread among the people to a remarkable degree. The committee unanimously recommended that no further opium shops be opened except with the express sanction of the government. The number of opium shops increased despite this restriction.³⁶

The opposition to the government policy on opium was spearheaded by the Rev. Hikkaduwe Sri Sumangala, a leading figure in the Buddhist renaissance, and Mr. S. C. Obeysekera, a member of the Legislative Council. The condemnation of the government policy reached the ears of British parliamentarians. In 1902, Mr. W. S. Caine, MP, asked the Secretary of State for the Colonies in the House of Commons, 'Whether he is aware that the importation of opium into Ceylon last year was 21,005 lb., in 1895 12,827 lb., in 1880 10,116 lb., while in 1870 it was only 2499, thus increasing over eight-fold in thirty years; and whether he will order an inquiry into the causes of this increase, with a view to its abatement?.' The Secretary of State for the Colonies, The Rt. Hon. Joseph Chamberlain, MP, replied: 'The figures quoted appear to be correct, except for the year 1870, when the imports amounted to 12,449 and not 2499 lb. I will ask the Governor of Ceylon to make inquiry into the causes of any increase.'³⁷

A few years later, another question was asked in the House of Commons. Dr. Rutherford, MP, directed a searching question at the Under-Secretary of State for the Colonies on 15th April, 1907. He asked 'whether the Sinhalese people grew the poppy in Ceylon or used opium under their native kings, or during the Portuguese or Dutch rule, or until the middle of last century, when the British Government established licensed shops for the sale of opium in towns and villages; and whether, seeing that the importation of opium has increased from 1000 lb. in 1850 to 20,000 lb. in 1905, and that the Buddhist High Priest Sumangala and the Sinhalese representative on the Legislative Council, Mr. Obeysekere, have appealed to the Government to close the licensed shops, His Majesty's Government will take steps to suppress the opium traffic in Ceylon?.'

Winston Churchill, holding his first government office, in answering the question said that he could not 'dispute nor confirm the facts which the

Honourable Member has assembled; but the increase of imports of opium into Ceylon under British rule has already formed the subject of official inquiry and correspondence, and is engaging the serious attention of the Secretary of State.'³⁸

This question turned out to be the catalyst for a chain of events that radically changed government policy on opium. A few days later, the Secretary of State for the Colonies, the Earl of Elgin and Kincardine, wrote to the Governor, Sir Henry A. Blake, expressing the view that the importation of increasing quantities of opium into Ceylon could not be defended. He suggested the appointment of a committee. Accordingly, the Governor appointed a committee headed by Sir Allan Perry, PCMO, and including Mr. S. C. Obeyesekere. It recommended far reaching reforms in the sale and use of opium. The main recommendations were that all opium shops be closed, that the importation, distribution and the sale of opium be made a government monopoly, and that opium for medicinal use and for addicts be sold by government dispensaries. These recommendations were accepted by the Governor and approved by the Secretary of State. The government decided to compensate the Municipalities and Local Boards which would lose revenue by the closure of the licensed shops.³⁹

Cultural background

The agitation against the opium policy of the government, which started in the latter part of the nineteenth century, had cultural and religious undertones. It was a time when the local population was demanding increased representation and a bigger voice in the Legislative Council. The Buddhists, who comprised over seventy per cent of the population, resented the relegated status given to their religion under an alien government. This resentment gradually developed into a movement for the revival of Buddhism. One of the five precepts of the religion was abstinence from intoxicating liquor. Therefore, as a corollary to the Buddhist revival a temperance movement aimed at the excise policy of the government began to take shape. Though the use of opium was not specifically denied to Buddhists, it was natural that a substance imported by the British with a profit motive and which induced much depravity in the people should be condemned as much as or more than alcohol. This attitude was shared by other religions in the country, and the agitation against opium found common support among all the races, as shown by the numbers that signed the memorial to the Legislative Council.

International trade

In the eighteenth and nineteenth centuries, the biggest supplier of opium to the East was India, and the largest consumer, China. The opium habit in China spread rapidly when, shortly after the introduction of tobacco in the early seventeenth century, it was mixed with pipe tobacco and smoked. On the other hand, the habit did not find such ready dissemination in

Sri Lanka, where the first contact with opium was invariably as an ayurvedic drug in times of illness.

The Indian opium trade, which was in the hands of the Portuguese, passed to the British East India Company in 1773. At the beginning of its administration of Sri Lanka, the Company imposed an import duty on only two products, one of which was opium. This policy was probably dictated by the prospect of making a considerable profit margin, as the Company controlled the export of opium in India.

The importation of opium into China was banned by the Chinese emperor in 1796. However, illicit smuggling into China from British depot ships carrying opium from India continued. In 1839, this conflict between Britain and China led to open war that ended in the cession of Hong Kong to the British. After the treaty of Nanking in 1842, the importation of opium into China was legalised in 1858. Thereafter, imports increased considerably while at the same time opium was grown extensively in China. Still India supplied one-seventh of the total opium consumed in China. In 1906, it was estimated that twenty seven per cent of adult males in China smoked opium. In that year, the Chinese, regarding opium addiction as one of the most acute moral and economic questions, decided to put an end to the drug's use within ten years.

In 1906, the American government in the Philippines, perturbed by the opium trade there, raised the question of joint action by interested powers for its suppression. As a result, delegates from several countries including China, USA, and UK met in Shanghai in 1907.⁴⁰ This conference, the first international one on the control of opium, resolved that respective governments should prevent the export of opium to countries prohibiting its importation.

These international developments were echoed in Sri Lanka. The upward trend in the importation of opium, which began in the 1850's, came in the wake of the opium war that resulted in the uninhibited importation of the drug into China. The opium imported to Sri Lanka came from India. The policy in India at the time was one of free cultivation, but the cultivator was required to sell his produce to the government. Opium cultivation was a profitable agricultural venture, and its extent in India may be gauged from the magnitude of trade with China, which in 1880 amounted to over twelve million pounds. The Indian government, obliged to buy large stocks of opium from cultivators, would have looked out for other countries to push its exports, and neighbouring Sri Lanka would have been an obvious choice.

The international agitation against forcing opium on uninterested countries started in 1906, and in 1907 Dr. Rutherford directed his question in the House of Commons. It is likely that the international climate, which favoured controls on the export of opium, influenced the British government to react favourably in curtailing the opium trade in Sri Lanka.

Present position

Government policy has changed little since reforms were introduced over 70 years ago. The entire requirement of the country is imported by the Superintendent of the State Medical Stores, who is also the Chief Opium Officer. Raw opium is issued only to registered ayurvedic practitioners on a permit issued by the Government Agent of the district after the application has been duly investigated by the police. Addicts are no longer provided with opium. The drug is issued by the respective district hospitals.

These measures have succeeded in reducing the importation of opium, all of which still comes from India, to an average of 150 kg a year. This figure does not include the amount smuggled into the country. When smuggling is detected, the opium is confiscated and then quality tested. If it conforms to British Pharmacopoeia Standards, it is taken over by the State Medical Stores to supplement its stock.

Ganja

It is appropriate, while on the subject of opium, to briefly consider other habit forming substances, one of which is ganja. The products of the plant, *Cannabis sativa*, have been known by several names, some of which are ganja, bhang, and hashish. The hemp plant is referred to in ancient Sanskrit literature as *bhanga*, *indracana* (Indra's food) and *jaya* (joy). The earliest mention of the word, bhang, occurs in the *Atharva veda*, which probably dates as far back as 2000 to 1400 BC. The first references to bhang as a medicine occurs in the work of Susruta. In the tenth century AD, the intoxicating properties of the plant appear to have been already recognised, for the name, *indracana*, first appears in the literature. In the Indian work, *Rajanighanta*, written around the fifteenth century AD, a detailed account of the plant and its medicinal properties are given. Some of the names referred to in this work, such as *ajaya* (unconquered), *virapatra* (hero-leaved), ganja, *capta* (light heart), *ananda* (joy) and *harshini* (the rejoicer), reflect the intoxicating properties of the drug. In *Sarangadhara samhita*, a medical work written in India about 1500 AD, it is described as an excitant.⁴¹ Ayurvedic books written in Sinhala refer to ganja as kansa.

The hemp plant has been grown in Sri Lanka for several centuries. Perhaps, the first reference to its cultivation was made by Queyroz, who wrote: 'There is little hemp, because only a little of it is cultivated.'⁴² He again wrote about ganja when referring to a battle waged by the Portuguese in Jaffnapatam. He implied that the drug bolstered the courage of the opponents: 'The battle lasted nearly two hours, because the Moors, taking bhang.....fought with all resolution.'⁴³

The use of bhang during Dutch times was placed in a different light by Robert Knox. While escaping from the Kandyan kingdom, he and his companion, Stephen Rutland, suffered much from fever, presumably malaria,

while on their way through the north-central region. He attributed it to drinking bad water. He discovered a remedy:

'At length we learned an antidote and counter-poyson against the filthy venomous water, which so operated by the blessing of God, that after the use thereof we had no more sickness. It is only a dry leaf; they call it in Portuguese *Banga*, beaten to powder with some of the country jaggory: and this we eat morning and evening upon an empty stomach. It intoxicates the brain, and makes one giddy, without any other operation either by stool or vomit.' ⁴⁴

The importation and sale of *bhanga* was banned by Sir West Ridgeway in 1897. In spite of the ban, the large scale illicit cultivation of *ganja* has been carried on in the remote, dry zone jungles during the past few decades.

Tobacco

Tobacco was undoubtedly introduced into Sri Lanka by the Portuguese, but an enormous increase in its usage occurred under the Dutch, as shown by the large number of brass tobacco boxes left behind by them in all parts of the country. This spread of the tobacco habit was chiefly confined to the low country occupied by the Dutch. ⁴⁵

Robert Knox, who was captive in the Kandyan kingdom during the Dutch period, makes frequent reference to tobacco. It was apparently a common article of commerce at the time. His book carries an illustration of a *Veddah* smoking a pipe. ⁴⁶ He refers to the use of tobacco: 'Tobacco likewise they account a vice, but is yet used both by men and women, but more eaten than drunk in pipes.' ⁴⁷ This idiom of drinking tobacco, while obsolete in the English language, is current in Sinhala.

Christopher Schweitzer, who was in Sri Lanka from 1676 to 1682 wrote of the Sinhalese: 'They smoke tobacco too, not out of pipes, but wound up in a dry leaf (*cheroot*).' ⁴⁸

Not only Knox, but Schweitzer too vouches for the fact women smoked at the time: 'The women lead very lazy lives; they chew betel and smoke (sic) tobacco.' ⁴⁹ When tobacco was first introduced into the country, society would not have frowned on women indulging in a new habit, but with time cultural characteristics developed by which women smoking tobacco were looked upon with disfavour. Knox based his observation on women in the Kandyan provinces. In a survey conducted in Kandy nearly three centuries later, it was found that only 1.6 per cent of women smoked. ⁵⁰

Alcohol

During early times, the type of alcohol consumed in Sri Lanka was *arrack*, which was distilled from the sap of the coconut palm, as it is today. It has a very long history of usage. Chinese writers of the fifth century AD, when Galle was a chief port of trade between the East and West, mention that *arrack* was produced in Sri Lanka. ⁵¹

A temperance movement, which was started as part of a Buddhist revival, found an ally in Mahatma Gandhi, who visited Sri Lanka in 1927.

He addressed a series of meetings all over the country, and he made temperance one of his themes. At a public meeting held in Matale on 18th November, 1927, he said:

'In studying the statistics of this Island, I found that the drink revenue was a substantial part of the general revenue. I was still more shocked to discover that, unlike us in India, the drink habit did not carry with it a sense of shame and disrespectability.

'You know that I belong to the country where Gautama was born, where he found his enlightenment, and where he passed his life. Whatever the Ceylonese scholars in Buddhism may say to the contrary, I want you to take it from me that this drink habit is totally against the spirit of the Buddha.'⁵²

He followed a similar theme in addressing the Hindus of Jaffna on 27th November, 1927: 'Remember that since you are in a vast majority, the responsibility rests on your shoulders to make Jaffna, and through Jaffna, Ceylon also perfectly dry. Hinduism does not permit you to drink.'⁵³

One of the earliest Buddhist leaders to preach temperance was Anagarika Dharmapala. He wrote: 'I consider the alien white, who for the sake of filthy lucre gives us alcohol, as a national foe.'⁵⁴

As stated by these two leaders the government banked heavily on revenue from alcohol. The temperance movement failed to make a significant dent in the excise policy of the government.

One Governor who was not deterred by loss of revenue if drunkenness was reduced was Sir William Gregory. Throughout his administration, he assiduously tried to reduce the number of taverns. He realised that total abolition was not possible. He blamed the British for extending drunkenness: 'Some years ago, a drunken Kandian (sic) would have been disgraced in the eyes of his fellows. Now the occurrence is so common that the disgrace has passed away. Drunkenness is extending itself into villages where it was before unheard of, and even the women are accustoming themselves to intoxicating drinks.' He went to the extent of ordering a map, in which taverns were depicted by red crosses to be placed in the Legislative Council room. Suppressions and additions were indicated on this map.⁵⁵

Notes

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3. *Ibid.*, p.10.
4. D. Ferguson, *Ceylon National Review*, 1907, 2, 82.
5. J. W. Bennett, *Ceylon and its capabilities*, pp.134-135.
6. D. Ferguson, *Ceylon National Review*, 1907, 2, 59.
7. *Ibid.*, pp.60-61.
8. D. Ferguson, *Tropical Agriculturist*, 1903, p.109.
9. F. de Queyroz, *The temporal and spiritual conquest of Ceylon*, p.65.
10. D. Ferguson, *Ceylon National Review*, 1907, 2, 61.

11. R. Van Goens, *Memoirs*, p.2.
12. Robert Knox, *An historical relation of Ceylon*.
13. D. Ferguson, *Ceylon National Review*, 1907, 2, 62.
14. D. C. Jayasuriya, *Narcotics and drugs in Sri Lanka*, p.4.
15. *Legislative acts of the Ceylon government*, pp.408, 409, and 412.
16. Colvin R. de Silva, *Ceylon under the British occupation*, vol.2, p.445.
17. SP 5 of 1908, p.2.
18. *Ibid.*, p.7.
19. *Ibid.*, p.7.
20. G. K. Pippet, *A history of the Ceylon Police*, vol.1, p.155.
21. *Ibid.*, p.33.
22. *Ibid.*, p.141.
23. *Ibid.*, p.146.
24. SP 11 of 1867, p.2.
25. *Ibid.*, p.2.
26. *Ibid.*, p.2.
27. SP 5 of 1908, p.2.
28. *Ibid.*, p.3.
29. SP 19 of 1903, p.6.
30. SP 5 of 1908, p.7.
31. *Ibid.*, p.17.
32. J. Ferguson, *Ceylon National Review*, 1907, 1, 322.
33. SP 5 of 1908, p.2.
34. J. Ferguson, *Ceylon National Review*, 1907, 1, 324.
35. *Ibid.*, p.324.
36. SP 5 of 1908, p.2.
37. SP 19 of 1903, p.3.
38. SP 5 of 1908, p.1.
39. *Ibid.*, pp.19 and 20.
40. *Encyclopaedia Britannica*, p.130.
41. R. N. Chopra and G. S. Chopra, *The present position of hemp-drug addiction in India*, pp.1-2.
42. F. de Queyroz, *op. cit.* p.72.
43. *Ibid.*, p.360.
44. Robert Knox, *op. cit.*, pp.248.
45. D. Ferguson, *Ceylon National Review*, 1907, 2, 65.
46. Robert Knox, *op. cit.*, opposite p.100.
47. *Ibid.*, p.159.
48. R. Raven-Hart, *Germans in Dutch Ceylon*, p.46.
49. *Ibid.*, p.77.
50. C. G. Uragoda and B. Senewiratne, *Journal of Tropical Medicine and Hygiene* 1971, 74, 145.
51. J. Ferguson, *JRASCB*, 1906, 19, 50.
52. M. Desai, *With Gandhiji in Ceylon*, p.71.
53. *Ibid.*, pp. 140-141.
54. Anagarika Dharmapala, *Return to righteousness*, p.511.
55. Sir William Gregory, *An autobiography*, pp.315-316.

SMALL POX

Small pox was eradicated from the face of the earth through the efforts of the World Health Organization, and in that sense the disease itself has become part of history. The triumph of man over this dreadful scourge which held sway in many lands through millennia of years is one of the most spectacular success stories in the history of medicine. While it was endemic in neighbouring India, the disease never obtained a permanent foothold in Sri Lanka. Whenever cases occurred, they were invariably introduced from India. The appearance of the disease was a much feared event, and its presence often left its imprint on the military, social and economic scene.

In old Sinhala treatises on medicine, small pox was referred to as *masurika* or *vaduru rogaya*. *Madhavanidana*, an ancient ayurvedic treatise on pathology written in Sanskrit, devotes an entire chapter to the disease. This book consisting of 1375 verses was in common use in Sri Lanka in the early part of the nineteenth century.¹ One of the oldest Sinhala books to deal with the subject was *Yogaratnakaraya*. Sinhala medical books treated the subject on a purely clinical basis. No data on its history are available from ancient or mediaeval Sinhala sources. The Mahavamsa and the lithic inscriptions, which convey considerable medical information of historical value, are silent on the subject. However, Portuguese, Dutch and specially British writers have left behind considerable information on small pox.

Small pox sometimes influenced the numerous military campaigns which the invading foreigners directed against the Kandyans. Since the disease was always introduced from a foreign country, people living in the maritime provinces were more vulnerable than the Kandyans living in their mountain fastness. In consequence, the enemy suffered more than the Kandyans.

The Portuguese army was handicapped by outbreaks of small pox.² The non-Portuguese component of their army suffered more severely from privation and epidemics than their masters.

The Dutch military campaigns were equally affected by small pox. There was open war between the Dutch and the Kandyans from 1761 to 1766, when hostilities ended with the signing of a peace treaty between the Dutch Governor Falck and the Kandyans. During this war, small pox was a spectre that haunted the Dutch army which also included Indians and Malays. In-

stances where the disease struck them at Galagedara³ and Kandy⁴ are on record. As with the Portuguese, it was the non-white component of the army that suffered most.

Epidemics

Epidemics of small pox occurred in Sri Lanka with considerable frequency during the past few centuries, specially during foreign domination. These foreign powers imported manpower on a large scale from India either to swell their forces or to provide labour for the plantations. This human traffic provided a ready opportunity for the introduction of small pox to Sri Lanka. Before the advent of the Portuguese, there was only limited intercourse with India, mainly through trade, pearl fisheries, or, during the early Sinhala period, through South Indian invasions. It is conceivable that small pox was introduced even in those times, but there is no record of any such instance. While minor epidemics would have occurred at rather frequent intervals, some notable ones, which left a trail of devastation in their wake, have found a place in history.

Queyroz the Portuguese historian, alludes to an epidemic of small pox which devastated the country.⁵ Ribeiro, writing in 1685, states that the most feared disease among the Sri Lankans was small pox;

‘If a son, brother, wife or even one’s own mother is attacked by it, the patient is immediately segregated in a separate hut built fifteen paces to leeward of their dwelling. His food is brought on a shovel and brought near the house, but no human being would venture close to him, and he is thus left isolated; this is why a large proportion of them die.’⁶

A similar attitude prevailed during the time of the Dutch Governor, Joan Gideon Loten:

‘It is not exactly because this disease is actually or naturally fatal, but it is the behaviour of the inhabitants themselves that renders it so terrible, for when one is attacked, even his nearest blood relations leave him to perish miserably without help or medicine; and if any one among them is found to be of a more compassionate and helpful nature, even that is of little avail to the sufferers as, owing to unsuitable medicines and a wrong method of treatment, they usually have to perish all the same.’⁷

Loten was a distinguished naturalist, and had the unusual distinction, for a former colonial Dutch governor, of being elected a Fellow of the Royal Society, London.⁸ His governorship was marred by two natural disasters, namely an epidemic of small pox and a hurricane. Small pox raged from 1754 to 1755 in the maritime provinces.⁹

Another major epidemic during the Dutch period occurred in 1697. It was islandwide, but Mantota, Puttalam and Kandy were severely affected. During this time, a Catholic priest from Goa, Father Joseph Vaz braved the anti-Catholic sentiment of the Dutch and landed in Jaffna. He smuggled his way to Kandy, and was present during the epidemic. He found many of the victims abandoned in the woods by their masters and relatives. He nursed

them with food and medicines, gave them baths and helped many to recover. He consulted local physicians, some of whom recognised the salutary effect of bathing the victims. Washing the victims as a method of treatment originated in the East.¹⁰

In 1786, a serious epidemic of small pox occurred in the city of Galle. Within a short period 800 persons died. The victims received scant attention.¹¹

The visitation of small pox was usually heralded by the fleeing of the inhabitants from their homes and leaving the sick to their mercies. The social upheaval caused by the disease during Dutch times was taken advantage of by the government. The lands and homes abandoned by the relatives of victims were declared *nilapalu* or abandoned gardens, and such property was taken over by the government.¹²

The epidemics that occurred during British times are well documented. Christie wrote in 1809 that previous to the introduction of vaccination, 'it scarcely ever failed to visit us at Colombo, during the prevalence of the south-west monsoon, when the port was open, and generally carried off a great proportion of the inhabitants.'¹³

Shortly after the British took over, small pox became a major problem. In 1799, there was an outbreak in Jaffna. Patients were treated in four hospitals, each of which was large enough to accommodate 200 patients. The staff consisted of a superintending surgeon, an assistant surgeon and three 'native' medical officers. On an average, there were 500 to 600 patients under treatment, many of whom died.¹⁴

Cordiner describes an epidemic at Batticaloa in 1800. On his visit to some of the villages, he found them deserted by the inhabitants: 'On such occasions the husband forsakes the wife, the mother her children, and the son his father, often leaving them in their miserable huts to the ravages of famine, and the wild beasts of the forest.'¹⁵

In the nineteenth and early twentieth centuries, hardly a year passed without the appearance of small pox. The death rate was invariably high, being as much as 25 to 30 per cent. In later years the authorities managed to contain the disease to reasonable proportions by extensive vaccination and opening of small pox hospitals. But in the early nineteenth century, vaccination was not widespread, and therefore the disease spread more rapidly. One notable epidemic of that period was the one in 1819. It was islandwide, but the Kandyan areas, where vaccination was started only three years previously, suffered most. The infection was introduced in July 1819 through a dhoney which arrived from the Malabar coast. In six months, 7874 persons were affected and 2945 died.¹⁶

In the 1830-31 epidemic, which dragged on for 14 months from January 1830, 1228 persons were affected and 257 died. The next big epidemic started on 24th October, 1833, and it raged for about six months. During this period 353 cases and a further 107 of modified small pox were recorded.¹⁷

It is thus seen that as vaccination became widespread, the major epidemics progressively declined in intensity.

The 1819 epidemic affected the largest number of people during British times. Major Skinner, the reputed roadmaker, has left an account of this epidemic as seen by him at Maturata where he acted as the commanding officer at the age of 15 years:

‘In the years 1819 and 1820 the awful scourge of small pox for the first time made its appearance in the interior of Ceylon, and was very fatal. Vaccination or inoculation had not previously been introduced, and the disease spread with fearful rapidity. Directly persons were attacked, they were banished from their houses. Sometimes a temporary shed was built for them in which they were placed, with a little cooked food, to take their chance of recovery. Many of the poor creatures thus deserted were attacked and torn to pieces by wild animals before life was extinct.’¹⁸

Supernatural beliefs

The attitude of despair instilled by small pox was the outcome of its extremely infectious nature and the high fatality rate. The people believed that the goddess Pattini was responsible for the disease, and in the absence of effective treatment they sought protection in supplications and performance of ritual games, namely *an-keliya* (horn game) and *pol gahanawa* (coconut game).¹⁹

An-keliya was played either with natural horns or with horn-shaped roots. The village divided into factions and tugged at interlocked horns till one gave way or cracked. At one time, it was one of the great national games of the Sinhalese and was performed on a magnificent scale in the presence of thousands of spectators.²⁰ In the coconut game, a thick-shelled nut was hurled at the opponent who tried to crack it with another coconut held by him in both hands.

These were semi-religious games which were undoubtedly of considerable antiquity. In the 1697 epidemic, Father Joseph Vaz found preparations being made for *an-keliya* in Kandy.²¹

Notable victims

Sri Wickrama Rajasinghe, the last king of Kandy went down with small pox in 1805, but recovered. At the time, the kingdom was experiencing a famine and the situation was aggravated by an outbreak of small pox. This was said to be the first time a king of Sri Lanka contracted the disease.²²

There is, however, a record of a deposed king of Kandy dying of small pox. He was Karaliyadda Bandara, who was the father of Dona Catherina, the tragic figure of Sri Lankan history. Queyroz wrote: ‘But as the divine judgements are inscrutable the deposed king died here of small pox, with his wife and sons, there remaining only a little girl, one year old, and she it is who was afterwards called Dona Catherine and became the wife of the tyrant D. Joao.’²³

The great epidemic of 1819 took a heavy toll in the Kandyan pro-

vinces where vaccination at the time was not as widespread as in the maritime provinces. Several Kandyan chiefs, including Walapane Dissawe contracted the disease. The widow of Ellepola Adigar, who was executed by the British in 1818 in connection with the rebellion, died of small pox in the same epidemic. Her body was discovered, abandoned by everyone, and the British spent 8 rix-dollars to bury it.²⁴

Inoculation

Inoculation against small pox, as distinct from vaccination, was practised in India from ancient times, for it is mentioned in *Atharva Veda*.²⁵ It was performed by the Brahamins, who dividing themselves into groups of three or four toured the country for the purpose. They moved from house to house, inoculating only those who had abstained from fish, milk and ghee for a month. The operator first rubbed a piece of dry cloth on the skin of the area to be inoculated, which was usually the forearm in the male and the upper arm in the female. He then lightly touched the skin with an instrument till a little blood appeared, and then applied a small wad of cotton wool, which was 'saturated with matter from the inoculated pustules of the preceding year; for they never inoculated with fresh matter, nor with matter from the disease caught in the natural way, however distinct and mild the species.' The eruptions appeared usually three days after inoculation.²⁶

Inoculation was introduced to England by Lady Montagu, wife of the British ambassador to Turkey. She had her two daughters inoculated in 1717. Subsequently, it was enthusiastically adopted in Europe and America. However, it was not an entirely safe procedure, about 2 per cent dying of small pox.

There is evidence that inoculation was practised in Sri Lanka during the Dutch period. It is not clear whether the procedure was introduced by the Dutch or was in vogue from the time of introduction of ayurveda from India.

In connection with the epidemic of 1754-55, Loten refers to the unwillingness of the local people to get themselves inoculated: 'much less would they be willing to submit to the use of the so very salutary and universal remedy (inoculation), which having originally come from Asia, and passed into several countries in Europe and even to America, has had such happy and certain results in various climates, temperate as well as tropical.'²⁷

In 1786, Frans Wolkers, chief surgeon of Galle requested permission from the Governor to make inoculation more generalised in Sri Lanka. This request was prompted by an outbreak of small pox in Galle with high mortality. Wolkers suggested the adoption of inoculation on a trial basis. He asked for the appointment of a junior surgeon as additional staff for the purpose.²⁸

Despite the partiality of officials such as Loten and Wolkers towards inoculation, the Dutch inhabitants in the country were opposed to it, and

they never encouraged the local people to submit to it.²⁹ On the other hand, the British encouraged inoculation. Soon after assumption of office, Governor North established hospitals in the four principal towns, namely Colombo, Kandy, Jaffna and Galle both for the purpose of inoculation and reception of naturally occurring cases of small pox. Many thousands were inoculated at these institutions before vaccination was introduced. The proportion of deaths from this procedure was about the same as in Europe.³⁰

In 1799, when small pox was raging in Jaffna, Mr. Toussaint was one of the 'native' medical officers at the four special hospitals set up for the purpose. According to him, these hospitals housed natural cases as well as inoculated cases.³¹ An inoculation hospital existed in Jaffna in 1801, shortly before the introduction of vaccination. In a memorandum to the Court of Directors of the British East India Company, Governor North commented on the growth of inoculation and the good response to the procedure in the Tamil districts.³²

Vaccination

The immunity that was conferred by cow pox against the spread of small pox was traditional knowledge in England in the seventeenth century, but it was Edward Jenner who introduced vaccination. He showed that inducing cow pox in the human with serum from cattle suffering from the disease prevented the development of small pox. This measure was first introduced in England in 1796, the year that the British took control of the maritime provinces of Sri Lanka.

At first there was some resistance to vaccination in England, India, as well as in Sri Lanka. The situation in India was attributed to the expected success of inoculation³³ or variolation as it was later termed. The English poet, Robert Bloomfield (1766-1823) called on the people of India and Sri Lanka to accept vaccination and reject inoculation:

'Where India's swarthy millions crowd the strand,
And round that isle which crowns their pointed land,
 Speak loud to parents; - know ye not the time,
 When age itself, and manhood's hardy prime,
 With horror saw their short liv'd friendships end
 Yet dar'd not visit e'en the dying friend ?
 Contagion, a foul serpent lurking near,
 Mock'd Nature's sigh and Friendship's holy tear,
 Love ye your children ? - let that love arise,
 Pronounce the sentence, and the serpent dies;
 Bid welcome a mild stranger at your door.
 Distress shall cease, these terrors reign no more.
 Love ye your neighbour ? - let that love be shown;
 Risk not their children while you guard your own;
 Give not a foe dominion o'er your blood,
 Plant not a poison, e'en to bring forth good;
 For, woo the pest discreetly as you will,
 Deadly infection must attend him still.'³⁴

The British were alarmed at the high incidence of small pox in Sri Lanka, and their resources were taxed by outbreaks of this disease. The situation caused much concern at the highest level, both in Sri Lanka and England. Henry Dundas, Secretary of State in England wrote the following letter to Governor North, dated 16th March, 1801:

‘Upon this subject (small pox) I think it right to mention to you that a disease called the cow pox has of late years been introduced in this country as a specific against small pox, and as the symptoms of it are admitted to be much milder when produced by inoculation than those of the small pox contracted by the same process. I have directed an enquiry to be made to ascertain whether the peculiar virus of the cow pox can be conveyed to Ceylon, and in case, as I have reason to believe it can, I shall endeavour to have it taken out, by the present opportunity, by some person acquainted with the mode of applying it, and the treatment of the patients during its operation, as now practised in this country.’³⁵

The problem of transporting the effective virus from England to Sri Lanka, when ships took several weeks over the journey, confronted the authorities. Dr. Merton, army surgeon, was selected to go to Sri Lanka. The plan was to carry out a chain of vaccinations on board the ship whereby one vaccinated person yielded the material for vaccinating another, so that on arrival of the ship in Sri Lanka, fresh material for vaccination would be available. Jenner was consulted, and he wrote: ‘I should have been happy in seeing Mr. Merton and of conveying to him the most ample instructions in my power on the subject of the vaccine inoculation.’³⁶

However, when vaccine did reach Sri Lanka it was not through this method. The material was obtained from infected cows in Lambardy by Dr. Sacco and despatched by D. de Carro from Vienna to Bagdad, Bussora and Bombay. The infected threads sent to Bombay failed to take, but others transmitted to Trincomalee succeeded.³⁷

Several attempts with this vaccine failed. The first successful vaccination was carried out on a healthy boy of 12 years at Trincomalee on 11th August, 1802 with vaccine sent out from Bombay on 10th July. The pustule occurred on the 20th, and the matter from this was taken out by Mr. Gilbert Hall, surgeon to the Malay Regiment, who introduced it into 15 persons, all of whom showed successful vaccination.³⁸ The British authorities thereafter pressed on with vaccination as the chief measure in the drive against small pox, and this campaign was spearheaded by Dr. Thomas Christie.

Thomas Christie

Thomas Christie was the first Britisher to have left his imprint on the medical scene in Sri Lanka. He was born in 1773 and educated at Aberdeen University. He entered the service of the British East India Company in 1797, just one year after the British annexed the maritime provinces. He was posted to Trincomalee in his first appointment.³⁹

In 1800, Governor North, in a despatch to the directors of the Com-

pany, commended the services of Christie, as well as Orr and Carnie, as medical superintendents of their respective regions.⁴⁰ In 1801, he again informed the directors of the appointment of Christie as Inspector General of Civil and Military Hospitals.⁴¹ In this post he succeeded Dr. John Ewart who died in 1800 as head of the medical service in Sri Lanka.⁴² Christie was confirmed in his post in May 1803.⁴³ In 1804, he was also appointed Surgeon General of Sri Lanka.⁴⁴ In the meantime, when the administration of the country was taken over by the British government from the Company, his services were transferred to it.⁴⁵

Christie will be best remembered for his work on vaccination in Sri Lanka. Vaccination was introduced to the country during his stewardship in 1802. He fully supported the procedure at a time when there were doubts about its efficacy in his own country. He promoted vaccination with much diligence as the main plank against small pox. In addition to his other duties, he also became Superintendent of Vaccination, for which he was paid a special allowance by the new Governor, Sir Thomas Maitland.⁴⁶

Christie had the distinction of being the first person to write a paper in a medical journal on a subject pertaining to Sri Lanka when he wrote 'Letters on vaccination in Ceylon' to the *Edinburgh Medical and Surgical Journal* in 1809.⁴⁷ He also contributed a paper on diabetes in Sri Lanka to the same journal in 1811.⁴⁸

Christie was a friend of Cordiner and accompanied him on a trip from Arippu to Rameswaran in South India.⁴⁹ He also contributed a chapter to Cordiner's book on a trip he made from Trincomalee to Batticaloa and Hambantota.⁵⁰

In 1810 he went back to England and in the following year he settled in practice at Cheltenham, where he died on 11th October, 1829.⁵¹ It was from Cheltenham that the first ever book on a medical topic in Sri Lanka, namely 'An account of the ravages committed in Ceylon by small pox, previously to the introduction of vaccination; with a statement of the circumstances attending the introduction, progress and success of vaccine inoculation in that island', written by him, was published in 1811.⁵²

The paper he published on the success of vaccination was regarded as an extremely valuable document at the time. Jenner viewed with much appreciation the facts presented from Sri Lanka, and he encouraged Christie to write the report after the latter's return to England. In 1838, the biographer of Jenner wrote: 'He (Jenner) had an opportunity during the latter years of his life of enjoying much friendly intercourse with Dr. Christie in Cheltenham; and I am certain that intimate knowledge of that gentlemen strengthened the feelings of respect and regard which his previous conduct had given rise to.'⁵³

Progress of vaccination

A total of 21,000 persons were vaccinated up to 13th April, 1804.⁵⁴

Vaccination was temporarily suspended in 1804 due to the deployment of medical staff in the Kandyan war.⁵⁵ Table I shows the numbers vaccinated in the first 33 years.

The Kandyan convention was signed in 1815, and the next year vaccination was for the first time introduced into the Kandyan provinces. The only Kandyan chief of consequence who submitted himself and his family to vaccination was Keppitipola⁵⁶ who was executed by the British in 1818 in connection with the Kandyan revolution.

The extension of the procedure to the Kandyan provinces is reflected in the larger numbers vaccinated in 1817. However, the numbers fell from 23,464 in 1817 to 13,563 in 1818 due to the Kandyan rebellion. The island-wide epidemic of 1819 was met by more vigorous vaccination, and therefore the numbers rose to 62,660 in that year. The highest number of vaccinations during the first 33 years was in 1830 when there was another major epidemic.

Table I

The numbers vaccinated against small pox from 1802 to 1833.⁵⁷

| Year | Number Vaccinated | Year | Number Vaccinated | Year | Number vaccinated |
|-----------|-------------------|------|-------------------|------|---|
| 1802-1806 | 54,958 | 1816 | 19,539 | 1826 | 20,236 |
| 1807 | 21,870 | 1817 | 23,464 | 1827 | 16,735 |
| 1808 | 26,207 | 1818 | 13,563 | 1828 | 16,901 |
| 1809 | 25,697 | 1819 | 62,660 | 1829 | 38,015 |
| 1810 | 35,076 | 1820 | 34,492 | 1830 | 63,284 |
| 1811 | 30,491 | 1821 | 18,796 | 1831 | 42,180 |
| 1812 | 26,783 | 1822 | 14,542 | 1832 | 29,172 |
| 1813 | 20,509 | 1823 | 17,735 | 1833 | 24,556 |
| 1814 | 19,198 | 1824 | 26,623 | 1834 | 34,401 |
| 1815 | 17,214 | 1825 | 27,424 | | |
| | | | | | 285,480 |
| | 278,003 | | 258,838 | | 258,838 |
| | | | | | 278,008 |
| | | | | | 822,321 |
| | | | | | Number vaccinated in 33 years..... |

As early as 1809 Christie was enthusiastic about the beneficial effects of vaccination. He attributed the reduction in the number of cases in the preceding few years to this procedure.⁵⁸ The success of the vaccination drive in Sri Lanka pleased Edward Jenner at a time when doubts about the success of vaccination were being voiced in England. In replying to a letter, which appraised him of the rumours circulating regarding the ill effects of vaccination, he wrote: 'In our settlements in India.....all ranks of people, from the poor Hindoo to the Governor General hail vaccinia as a new divinity. In

the island of Ceylon, my account states that upwards of thirty thousand had been vaccinated a twelve month ago. I could march you round the world, and where ever you rested you should see scenes like these. *There* I have honour, *here* I have none.’⁵⁹ In a letter dated 28th February, 1810 to his friend James Moore, Jenner wrote: ‘The report from Ceylon I have before spoken of, but do not know whether you have seen it. You may get a copy at the Transport Office (I obtained it from thence under a promise of returning it). Perhaps, too, of your neighbour, Sir Walter, as it comes from his friend Christie.’⁶⁰

The local people were not enthusiastic about vaccination. This attitude, which Governor Brownrigg observed in the epidemic of 1819, was attributed by him to the fact that small pox occurred in some individuals who had undergone vaccination. Failures were not uncommon, probably due to technical faults. In that epidemic, only Burghers and ‘native inhabitants’ were affected, and not a single European contracted the disease. The latter fact was held out by Brownrigg as evidence for the efficacy of vaccination. In order to meet this situation, he contemplated compulsory vaccination, but was deterred by a ‘consideration that the policy and constitutional justice of such a measure, had been doubted by many able men!’⁶¹

The question of compulsory vaccination next came up in 1852. The Governor appointed a committee to report on the system of small pox quarantine. It recommended compulsory vaccination in place of the irksome system of quarantine practised at the time. Compulsory vaccination was then in force in some other countries such as South Africa.

However, this measure was not adopted. The Governor, Sir Charles J. MacCarthy in his address to the Legislative Council on 12th August, 1863 said:

‘The increase in the incidence of small pox in various districts of the island has induced me to invite your concurrence to a measure rendering compulsory the one great prophylactic - vaccination - against the one indubitably contagious disease now remaining in the world. I have, however, thought it advisable so to frame this enactment that it may be cautiously, and if necessary partially, introduced in those portions of the island where its provisions may be most called for, and best appreciated by the population.’⁶²

In spite of all these official intentions spanning the better part of the century, compulsory vaccination did not find a place in the statute books till 1886 when it was introduced by Ordinance No.20.⁶³ In 1834, long before this legislation was enacted, the Colonial Secretary instructed the Principal Civil Medical Officer that all persons admitted to hospital and all persons committed to prison for a criminal offence should be vaccinated if they did not bear satisfactory marks of small pox or ‘the vaccine diseases’.⁶⁴

The committee on small pox quarantine felt that there was no actual

antipathy to vaccination, but only indifference due to indolence and probably ignorance of the benefits of vaccination.⁶⁵

The Moors resented vaccination of their women by males. A woman vaccinator was therefore appointed, and she had to travel all over the country, vaccinating Moor women on a house to house basis.⁶⁶

In 1852, Dr. James William Fleming, Superintendent of Vaccination, Colombo, announced:

It affords me peculiar pleasure to state that I have been enabled to import into the colony a supply of English vaccine lymph, trials with which (notwithstanding the drawback of climate and other unfavourable influences) have succeeded beyond all expectations; so that at Colombo, Kandy, Galle, Jaffna, Negombo and Kurunegalle, the inhabitants are at present vaccinated with the English virus. Within a very short period the vaccine department, it is hoped, will be in a position to afford to the entire population of the island the means of protecting themselves with lymph, about the genuineness and efficacy of which there can be no doubt.⁶⁷

In times of epidemics, due to the shortage of vaccine, direct vaccination from a calf was carried out. Lymph from an infected calf was used directly in this procedure.⁶⁸

The number vaccinated gradually showed an increase. In 1905, for example, 154,090 were given primary vaccination, of whom 15,426 were unsuccessful.⁶⁹

Management

The first civilian hospitals established by the British were for the admission of small pox patients. These were set up in Colombo, Kandy, Jaffna and Galle.

In Colombo, during the 1833-34 epidemic, a hospital was established at Maradana near the site where Tripoli Market and the State Medical Stores are now situated.⁷⁰ It had rooms for the sick, a special room for the 'more respectable patients', a room in which warm rice broth was kept for the patients, a ward for cases of chicken pox and a temporary building for convalescent cases. A resident medical officer had his quarters in the premises. Water was obtained from three wells. The hospital was situated in a spacious coconut garden, 900 feet long and 240 to 270 feet broad. Thus, there was ample space for the construction of temporary buildings, if the necessity arose for expansion. It was opened on 24th January, 1834 and the maximum number of cases it housed at any one time was 77. Both males and females were admitted. It was in charge 'of one of the most active and intelligent native medical officers in the service (Mr. Misso), assisted by a well educated and promising pupil, and was daily visited by the Superintendent of Vaccination for district.'⁷¹ Only persons who bore marks of small pox or vaccination were allowed to be with the patients. An unpleasant duty the police had to perform at the time was escorting pauper patients to the Maradana hospital.⁷²

In the 1833-34 epidemic, before the Maradana hospital was established, small pox cases were accommodated in the Pettah hospital. The ground floor was reserved for these cases, while the other patients were housed in the upper storey. The largest number of cases at any one time in the Pettah hospital was 41.⁷³

There were small pox hospitals in other big towns, namely Kandy, Jaffna and Galle. In addition, temporary hospitals, which were such by name only, were set up by utilising vacant public buildings or renting out private premises when a suitable number of cases occurred in other towns. It was considered more convenient and less expensive to the government to quarantine two or three cases in one building than to place guards individually at each patient's house.⁷⁴

Quarantine

The government in 1800 viewed with concern the practice of the inhabitants of a village 'leaving their homes to the great damage to their own property and to the damage of their lives.' On the orders of the Governor, a proclamation was issued on 7th September, 1800 requesting government officials to send medical supplies to the threatened villages. It urged the inhabitants not to desert their homes 'as all communication with infected persons will be cut off, and the sick treated with all tenderness and care.'⁷⁵

On 2nd March, 1820 a regulation was enacted 'to prevent the spreading of small pox within these settlements.' It was made lawful for a small pox patient to be forcibly removed from his home or elsewhere to a hospital. Only persons who have had small pox or had been vaccinated were allowed access to the patients in hospitals.⁷⁶ Another regulation, issued on 16th November, 1820 made notification of small pox cases obligatory.⁷⁷

The first two items of legislation were much resented by the people, who in 1852, petitioned the government against them. When a case of small pox was detected, two guards were placed at the house on night and day duty to prevent the ingress and egress of persons. This resulted in the bread winner being shut out from the house. Forcible removal of patients would have prevented the relatives from rendering any assistance to the victims.

In response to these petitions, the Governor appointed a committee consisting of C. P. Layard, acting Government Agent, Western Province, F. Saunders, Collector of Customs, and J. W. Fleming, Superintendent of Vaccination, Colombo, to report on the system of small pox quarantine. Their report declared that quarantine was not desirable, and it was liable to abuse, for it was possible for the inmates to obtain egress, specially at night, by bribing the guards. The committee recommended that the system of quarantine be scrapped, and in its place compulsory vaccination be imposed.⁷⁸

Since small pox was always introduced to the country from outside, strict rules were applied to ships calling at the ports of Colombo, Galle and Trincomalee. By a regulation enacted in 1820, no person was allowed to land

from a ship till the port authorities were satisfied that there were no cases of small pox or other contagious diseases on board.

Chicken pox

In the early part of the nineteenth century, there were doubts about the nature of chicken pox. Some considered it a mild form of small pox, while others regarded it as a separate disease entity. Kinnis, after discussing the epidemiological aspects of the 1833-34 epidemic, concluded that chicken pox 'arises from an infectious matter essentially different from that which produces small and modified small pox.'⁷⁹

Differentiation between small pox and chicken pox posed difficulties to the medical practitioners. Kinnis wrote: 'we cannot expect much precision or uniformity from practitioners of whom the greater number have been educated in the army hospitals and military medical library and museum of the island.'⁸⁰ This difficulty in diagnosis resulted in apparent cases of chicken pox being quarantined and admitted to small pox hospitals. The Maradana small pox hospital, for example, had a ward for chicken pox cases which was sited a considerable distance away from the small pox wards. The authorities, preferring not to take chances, treated chicken pox cases as if they were small pox.

Changing pattern

In the latter part of the nineteenth century and in the twentieth century, outbreaks of small pox became less intense. Large scale epidemics became part of history. Extensive vaccination, helped by legislation, was largely responsible for this happy situation. Whenever cases of small pox occurred, energetic vaccination in the area was carried out, thereby preventing further spread. The increased demand for vaccine was met by the Bacteriological Institute, Colombo which undertook its manufacture.

With the cessation of the Indian immigrant labour, the biggest threat was removed. Thereafter, outbreaks became few and far between. The last definitive case in Sri Lanka occurred in 1967,⁸¹ while in 1972 a single case of doubtful etiology occurred in a foreign national. With the eradication of small pox in 1977, when the last endemic case in the world occurred in Somalia, a disease, which dominated medical history in Sri Lanka for centuries, made its last bow.

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94. *Ibid.*, p. 117.

95. *Ibid.*, p. 117.

96. *Ibid.*, p. 117.

97. *Ibid.*, p. 117.

98. *Ibid.*, p. 117.

99. *Ibid.*, p. 117.

100. *Ibid.*, p. 117.

MALARIA

Malaria, before the discovery of its causation, was believed to develop from foul air emanating from swamps, marshes and similar locations. Its name is derived from the Italian words, *mala aria*, bad air.

In 1880, Laveran, a Frenchman working in Algiers, discovered the malaria parasite, and in 1894 Sir Patrick Manson advanced the mosquito-malaria theory which led to the demonstration in 1898 by Sir Ronald Ross of the transmission of the parasite to birds by the mosquito. Shortly afterwards, Grassi in Rome confirmed its transmission to man by the anopheles mosquito.

Early history

It is generally believed that malaria was one of the important factors leading to the decadence of the ancient Sinhala civilisation, but it is remarkable that the ancient chronicle, Mahavamsa, is silent on this point, for there is no mention of a disease even suggestive of malaria.¹ This omission is rather intriguing, as fever in epidemic form would have drawn the attention of the authors of the Mahavamsa in which more trivial matters relating to health are mentioned. On the other hand, there are Portuguese and Dutch references which prove the existence of malaria during a part of the period covered by the Mahavamsa.

The theory that Sri Lanka was free of malaria till its appearance about 700 years ago is a plausible one. The highly sophisticated irrigation system consisting of rivers, channels and tanks (reservoirs) which supported a populous dry zone, declined after the reign of Parakramabahu the Great in the twelfth century. Foreign disturbances, and to a much greater extent, the appearance of malaria accounted for the collapse of this system.² In Plaucius' map of 1592, Yala which is now rich in both wild life and archaeological remains, is depicted with the legend (in Portuguese): 'Kingdom of Jala deserted and depopulated for 300 years by reason of unhealthiness.'³

In 1921, Nicholls wrote:

'The north-central areas of Ceylon could not have bred or supported the vast numbers of the active race that built and developed its ancient cities, had malaria existed there at that time, and the gradual fall of these people was due to the importation from India of malaria, and possibly also of the anopheline mosquitoes, the

conveyors of the disease. When once malaria was established, the people and their culture would drift to the less malarious parts, and that is what has happened.’⁴

According to Paranavitana and Nicholas, malaria, after its appearance, sapped the vitality of the people of Rajarata. There was an exodus to the wet zone where rice fields were rain-fed and not dependant on tanks for irrigation.⁵

It was popularly believed that tanks which held large sheets of water became stagnant pools once their bunds were breached by the South Indian invaders. The subsequent creation of conditions conducive to the breeding of mosquitoes resulted in malaria becoming epidemic in the once populous districts of Rajarata. However, such a supposition fails to explain why in modern times malaria persists in spite of a restored irrigation system.

The Portuguese were undoubtedly pestered by malaria. According to Ribeiro, ‘the sicknesses which were usual among the Portuguese were dysentery and some kinds of fever due to poverty of blood.’⁶ About the same time, Queyroz wrote: ‘After this (small pox), there broke out a kind of quartan fever or ague like a general pestilence which buried many.’⁷ This statement is an indication that the Portuguese had noticed the rhythmicity of the fever that was characteristic of some cases of malaria.

In 1678, Schweitzer, who was a German in the employ of the Dutch East India Company, described Arippu as a very unhealthy place where Europeans each year expected a fever that would kill half of them. The Dutch at Arippu were, therefore, replaced with men from Mannar after a stay of only four months.⁸

In 1679, when Robert Knox arrived in Colombo via Arippu, after his escape from the Kandyan kingdom, his companion suffered from ‘ague’.⁹ His failure to mention about fever during his incarceration suggests that malaria was rare in the Kandyan highlands then as it is now.

Early British times

John Davy, one of the early British writers, found that fever was one of the commonest diseases that newcomers to the country experienced. He thought it was due to the ‘imprudent exposure to the sun or some act of intemperance.’¹⁰

The first elaborate, and what proved to be an accurate, description of malaria in Sri Lanka was written by Henry Marshall in 1821. He divided ‘endemic fever’ into remittent and intermittent types:

‘The distinction between remittent and intermittent fever is often equivocal, in as much as cases sometimes commence as intermittent, which become remittent, and then again intermittent.

‘The following are the leading symptoms of remittent fever: loss of appetite, listlessness, dorsal pains, alternate sensations of heat and cold; to these symptoms succeed ardent heat over the whole body, headache, thirst, anxious breathing, white tongue, uneasiness in the epigastrium, sometimes a full quick pulse, nausea and in some instances vomiting. After a longer or shorter period, the fever remits, com-

monly with a moistness of the skin. For the most part, a remission supervenes within twenty four hours after the accession of the fever. The forenoon is the ordinary period when the violence of the symptoms abates. After a few hours' remission, the febrile symptoms recur, often with increased violence. In this manner, exacerbations and remissions succeed each other.'¹¹

Marshall carried out post-mortem examinations too and gave a description of his findings.¹²

He made the observation that the incidence of remittent fever was very high near swamps and partially inundated grounds. As regards treatment, venesection was resorted to in the early stages. The fever was kept down by applying cold water or frequent sponging of the body. Purgatives and repeated use of the lancet were also resorted to.¹³

In the Kandyan wars waged by the British, malaria proved to be the worst scourge faced by the British troops 'although beri beri (with its painful dropsical effects) killed just about as many of them. Often a man who had been weakened by beri beri caught the fever and died.'¹⁴

Thomas Christie, in a report dated 6th June, 1803, explained that *kala una* or jungle fever originated from marshy ground over which was strewed a layer of decaying vegetable matter 'which by the generation and extrication of foul and inflammable air, is known to vitiate the atmosphere so highly, particularly in situations where the miasmata cannot be dispelled by the sun or wind, that a disease of the greatest malignancy is often produced by even a few hours exposure to its influence.'¹⁵

It is an interesting fact that in March 1810, the British painter, Samuel Daniell was on the right trail in avoiding malaria. He was the brother of another painter, William Daniell, who worked in India. The well publicised painting of the Queen of Kandy, the wife of Sri Wickrama Rajasinghe, was done by one of the brothers, but there is a controversy as to which one of them was the actual painter. In March 1810, Samuel Daniell was spending some days sketching an elephant kraal: 'The night air in the woods occasioning intermittent fevers....to defend himself from the bad effects of his sylvan life, he smokes and lights great fires within and without his tent.'¹⁶ Over a century later, long after the mode of transmission of malaria was established, enlightened campers still light fires round their tents to drive away the mosquitoes (and wild animals).

The theory of causation of disease by foul air was carried to the extreme in trying to improve the health of the prisoners at Welikada jail, which was established on 1st December, 1843. During the first four years, ill health among the prisoners was less than in the general population in the immediate vicinity. Thereafter, the morbidity and mortality started to rise. Various reasons were assigned for this increase, but the most plausible, according to A. G. Green, the governor of the establishment, was the action of foul air. At that time, there were large tracts of marshy land and paddy fields

around the jail. In order to increase the security of the prison, a belt of trees and shrubs that stood between the prison and the marshes was cut down, with the result 'the miasma exhaling from the marshes, instead of being intercepted by the trees as was formerly the case, now settles on the prison as the most elevated spot in the vicinity.' Dr. Roe, the Principal Medical Officer, obtained from the government a grant of 500 young trees and plants of a useful and ornamental nature. These were planted in rows between the marshes and the prison.¹⁷ It is not known what beneficial effect this exercise had on the health of the prisoners.

An example of the accurate observations of the British army doctors concerns malaria at Nuwara Eliya which at the time was a military station reserved as a health resort. In 1866, Prof. Edmund A Parkes commented that 'although there is some moist and even marshy ground near the station (Nuwara Eliya), ague is very uncommon.'¹⁸ It is now known that the anopheles mosquito does not breed at such high altitudes, and Parkes' observation on the rarity of malaria at Nuwara Eliya was in conformity with subsequent discoveries on the transmission of malaria.

Malaria proved the bane of the British troops, both white and non-white, who were stationed in Sri Lanka in the second half of the last century. Over the years, it was either the commonest or the second commonest cause of ill health in the white troops. In 1869, for example, when the strength of the white troops in the country was 906, there were 246 admissions for fever and 344 for digestive diseases.¹⁹ Among the non-white troops, febrile illnesses were the commonest for several years.²⁰ The high mortality of the Sri Lankan troops stationed in Labuan was attributed by Dr. Barry to malaria.²¹

Kynsey believed that malaria was one of the diseases which, by the anaemia it caused, was responsible for the syndrome of beri beri.²² There is a doubt whether some cases, at least, of beri beri of the early British writers were not actually complications of malaria.

Malaria harassed the British soldiers, not only in the outposts, but even in Colombo. In 1871, *The Lancet* reported an outbreak of fever of the remittent type among soldiers in a barrack room in Colombo in close proximity to a canal. At that time the barracks were situated in the Fort. The epidemic was attributed to the disturbance of the shallow waters of the canal by boats. The fever 'was attended with rigors, headache, a considerable elevation of temperature, and in some cases jaundice and occasionally delirium.' There were a few deaths. *The Lancet* commented that most naval and military surgeons, who had served in warm climates, had seen such cases.²³

An international controversy

In 1905, the Governor, Sir Henry Blake was the central figure in an international controversy regarding the transmission of malaria.

On 6th February, 1905, Blake addressed the annual general meeting

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On 6th February, 1905, Blake addressed the annual general meeting of the Ceylon Branch of the Royal Asiatic Society, of which he was patron. In the course of his speech, he made the following point on malaria regarding the discoveries of Manson, Ross, and others:

'The question to be asked is: Are we not merely recovering the crumbs of knowledge that fell from the table of the long-buried East? A short time ago Government instituted an inquiry into the incidence of malarial fever at Mutwal, and during the inquiry I was surprised to see a communication from the secretary of the Ceylon Native Medical Association mentioning that in old books the mosquito was mentioned as one of the means of propagating malarial fever. I was so struck that I made further inquiries, and found that in the medical works of Charaka, Susruta and other ancient Sinhalese writers, it was mentioned that there were sixty seven kinds of mosquitoes, and further that there were four kinds of malarial fever caused by the bite of those mosquitoes.... So that, as a matter of fact, recent discoveries are only rediscoveries.'²⁴

Shortly afterwards, on 1st April, 1905, Blake elaborated on his theory in a paper read before the Ceylon Branch of the British Medical Association, which is now the Sri Lanka Medical Association. He quoted two Sanskrit passages from Susruta, which at his instance were translated into English by five leading oriental scholars of his day, led by the learned Ven. Hikkaduwe Sri Sumangala. In one passage, Susruta enumerated 12 kinds of 'life-taking' insects:

'Their bite is as painful as that of serpents, and causes diseases resulting from the three humours joined together; the bite, as if burnt with caustic or fire, is red, yellow, white and pink colour, accompanied by fever, pain of limbs, hair standing on end, pain, vomiting, diarrhoea, thirst, heat, giddiness, yawning, shivering, hiccup, burning sensation, intense cold, vesicles or pustules increasing, swelling, knots under the skin, circles etc.'

Susruta also listed five types of mosquitoes. Their bites caused swelling of the bitten parts and itching. The bite of one of them, *parwatiya*, had similar qualities as those of the life-taking insects. Blake wrote:

'These passages, written possibly three thousand, and at least fourteen hundred years ago, are of singular interest, foreshadowing as they do the great discoveries of Manson and Ross. Truly, there is no new thing under the sun.'²⁵

The Governor's remarks were naturally received locally with acclaim. Sinnnetamby commented: 'It is the custom in certain quarters to treat anything Indian with contempt and scorn, but H. E. (the Governor) with the spirit of a true Englishman has taken a great deal of interest in this subject and the thanks of the Association are due to him for having brought this to the notice of the profession and the public at large.'²⁶

It was courageous, to say the least, for a proconsul of the British Empire, to publicly belittle one of the greatest scientific achievements of the British in his day. The western press was quick to take up the news. In England, *The Times*, reported: 'Sir H. A. Blake, Governor of Ceylon, announced at a meeting of the Asiatic Society that Sinhalese books of the sixth century described 67 varieties of mosquitoes and 424 kinds of fever caused by mosquitoes.' An English surgeon, F. H. Welch writing to *The Lancet* of 18th February, 1905 commended this information to the notice of prospective researchers.²⁷

Blake's theory attracted much notice in Europe and India.²⁸ Prof. J. Jolly, Professor of Sanskrit and Comparative Philology in the University of Wurzburg, Germany, made a critical analysis of the paper read by Blake before the Ceylon Branch of the British Medical Association. He used his own translation of the passages from Susruta, which were quoted by Blake, in disproving the latter's theory. He was of the opinion that the fever was of the type known as wound fever 'which is constantly mentioned by Susruta as arising from the bite of insects,....of various poisonous spiders, of scorpions, of certain serpents, of rats or mice, or from the wound caused by a poisonous arrow.'²⁹

Sir Ronald Ross himself dismissed Blake's theory: 'Personally, so far as I can judge, I doubt whether these (ancient) writers ever really connected malaria even in imagination with the insects.'³⁰

The outbreak of malaria at Mutwal which triggered off this incident was probably the last recorded epidemic of the disease in the city of Colombo. The commission appointed by the Governor to inquire into the outbreak consisted of the Principal Civil Medical Officer, Dr. Chalmers, Dr. Castellani, Dr. Philips and Mr. Skelton (the Municipal Engineer). After many fruitless searches, a few anopheles mosquitoes were found.³¹ In a report to the Colombo Municipal Council, Dr. Philip, the Medical Officer of Health, Colombo recorded that five species of anopheles mosquito were found in Mutwal. *The Lancet* deplored that the number of infected insects found in the vicinity was not determined.³²

Cinchona and quinine

In 1640, cinchona bark was introduced into Europe from Peru where it had been used by the Indians to treat fever. It was named after Countess d' El Cinchona, wife of the Viceroy of Peru who was cured of fever in this manner. In 1820, the alkaloid, quinine was extracted from it. In addition to being a blessing to millions of sufferers, it proved to be a means of separating malaria, which responded to it, from other fevers on which it was ineffective.³³

Cinchona was originally called Jesuit bark after the missionaries of that order who learnt the secret from the Peruvians.³⁴ Cinchona bark was

introduced into Sri Lanka by Jesuit priests who used it to treat fever during the Portuguese occupation.³⁵

Cinchona bark was also used during the Dutch occupation. The Belgian physician, Aedigius Daalmans, who was in Sri Lanka in 1687, advocated the bark of *kina kinae* (cinchona) for the treatment of quartan fever.³⁶ However, it does not figure in the official pharmacopoeia which was in use, during the Dutch occupation, from 1757.³⁷ This is rather interesting in that Java which was then administered by the Dutch was at one time one of the biggest producers of cinchona.

It is unlikely that cinchona was used by the British in the early days of their occupation, though malaria was a regular constraint in their campaigns against the Kandyans. Marshall does not mention cinchona as a method of treatment of malaria.³⁸

Perhaps the earliest reference to quinine in Sri Lanka was by Tennent. He recommended quinine before and after exposure as a prophylactic for those visiting endemic areas:

‘In traversing districts suspected of malaria, experience has indicated certain precautions which, with ordinary prudence and firmness, serve to neutralise the risk - retiring to rest punctually at sunset, generous diet, moderate stimulants, and the daily use of quinine both before and after exposure. These, and the precaution, at whatever sacrifice of comfort, to sleep under mosquito curtains, have been proved in long journeys to be valuable prophylactics against fever and the pestilence of the jungle.’³⁹

Tennent’s comments on mosquito nets are very significant. These were made at a time when the connection between malaria and mosquitoes was not even thought of. Tennent, who was Colonial Secretary, was probably only voicing popular local sentiment on the prevention of malaria.

In the nineteenth century, the demand for cinchona bark grew enormously in the tropical world, and in the 1880’s it fetched as high a price as 12 shillings an ounce. In the coffee days, the enterprising British planters saw in cinchona a new product which would enhance their prosperity. In 1859, the first few cuttings of this valuable tree arrived at the Royal Botanical Gardens, Peradeniya, and Dr. G. H. K. Thwaites, its director, planted them. The Hakgala gardens were first opened in 1861 for the purpose of propagating this tree. Within a few years hundreds of thousands of cuttings were distributed to estates for planting.⁴⁰

In 1864, Thwaites reported: ‘Complete success is attending the cultivation and propagation of the different species of cinchona now growing in the Hakgala gardens. The plants exhibit the most perfect condition of health and vigour.’⁴¹

In 1865, Clements R. Markham of the India Office, London, inspected the cinchona plantations in Sri Lanka. The tree was being grown so successfully, thanks to Dr. Thwaites, that he could not suggest any improvements. The

quinine content of the local bark was very high. The result was a heavy demand for the Sri Lankan produce compared to that from Java and India.⁴²

With the crash of coffee in the 1870's, the planters turned to cinchona as a substitute, but the resultant increase in production killed the world demand, and the price fell. The planters, not to be outdone, next turned to tea which has since maintained its position as the leading product of the country.⁴³

Anti-malaria activities

Malaria was endemic in the dry zone, but epidemics occurred from time to time, both in the endemic and non-endemic areas. The influence of rain on the occurrence of malaria was observed even before the demonstration of the anopheles mosquito as the vector. It was noticed that the incidence in the dry zone was highest shortly after the north-east monsoon.⁴⁴ Chalmers too found a definite relationship between the prevalence of the disease and the amount of rainfall.⁴⁵

In 1895, an epidemic of malaria occurred in the town of Galle which had not experienced such an event within living memory. Dr. Marcus Fernando was despatched to Galle to investigate this epidemic. He found that opening the Galle-Matara railway line was responsible for it. The epidemic occurred along the railway trace, and Dr. Fernando attributed it to the disturbance of the soil and its drainage caused by the opening of the railway. He postulated that exposure of marshy soil to sun and air during excavations liberated malarial poisoning.⁴⁶

Malaria was a big problem in such places as religious festivals and pearl fisheries where people congregated in large numbers for short periods. The annual festival at Kataragama drew large numbers of estate workers from Uva and other up-country areas, many of them travelling on foot. Every year several of them succumbed to fever. In 1860, W. C. Ondaatje, Assistant Colonial Surgeon, Badulla found that 'Kataragama' fever destroyed great numbers of pilgrims when cholera did not break out among them, as was usual on such occasions.⁴⁷ Many of the pilgrims, on their return to the respective estates, were incapacitated with fever for sometime. This economic loss was a subject of concern to the authorities, and in 1922 the Government Agent, Uva raised the possibility of this illness being sand-fly fever rather than malaria. Sand flies were at the time frequently found in some localities in Sri Lanka in the course of investigations on malaria. However, H. F. Carter, the malariologist who visited Kataragama found that the fever was really malaria.⁴⁸ Sand-fly fever has so far not been reported from Sri Lanka.

The only type of anti-malarial activity practised in the second half of the last century was the administration of quinine. In 1860, Boyd Moss, FRCS, reported that self-medication with quinine was a common habit among the British residents in Sri Lanka whenever they fancied themselves 'feverish'.

He deprecated this indiscriminate use of quinine, but recommended three or four grains with the morning coffee only when visiting a malarial district.⁴⁹

Towards the end of the last century, in times of epidemics, house to house treatment was carried out by personnel of the Medical Department, and the services of other personnel, such as vaccinators, were diverted to the control of malaria.⁵⁰ At the same time a few positive steps were taken to expand the anti-malaria activities. The Governor sanctioned a scheme by which packets of quinine powder were made available at government dispensaries and post offices at a little over the cost price. It was anticipated that this scheme would prove a success by placing this valuable drug within easy reach of the poorest villager at a trifling cost.⁵¹ By 1908, prophylactic treatment of malaria with quinine was widely established in the country, with apothecaries and headmen acting as distributors. In 1907, a sum of Rs.50,296 was spent on quinine.⁵²

In 1901, for the first time, a new approach was considered for the control of malaria. By this time, of course, the mode of transmission of malaria was known, and therefore, a more rational approach to the problem was possible. Allan Perry, Principal Civil Medical Officer, proposed a package strategy consisting of the prevention of mosquito bites, elimination of stagnant pools of water and destruction of the anopheles, in addition to treatment with quinine.⁵³ However, the practicality of these measures was limited, and distribution of quinine and educational pamphlets for the public remained the only control measures for malaria.⁵⁴

In 1910, shortly after Dr. H. M. Fernando read a paper on the prevention of malaria before the Ceylon Branch of the British Medical Association,⁵⁵ the government appointed a committee consisting of Dr. Fernando, Dr. A. J. Chalmers and the Hon. Mr. T. B. L. Moonemalle who was the Kandyan Sinhalese Member of the Legislative Council and who lived in Kurunegala, to report on preventive measures in that town. Kurunegala was, at the time, a notoriously malarial area.⁵⁶ The town is situated at the base of a contiguous chain of large rocks, and a century ago the people attributed the high incidence of malaria to the heat radiated by these rocks.⁵⁷ The report of this committee formed the basis of the anti-malaria campaign.

Anti-malaria campaign

The committee recommended certain measures in Kurunegala, and Dr. S. T. Gunasekera, who was later to become the first Sri Lankan head of the Medical Department, was appointed Superintendent of the Anti-malaria Campaign in 1911. The campaign which was at first confined to Kurunegala was the forerunner of the organisation as it exists today.

The campaign found it possible to carry out only a few of the measures recommended by the committee. These included distribution of quinine, and reduction of the mosquito population by clearing compounds and drains, oiling pools of water and spraying larvicide.⁵⁸ Some hospitals in malarial

areas were provided special mosquito-proof wards for malaria patients. The rationale was to interrupt the chain of transmission from the infected to the uninfected patients in the hospital.

As a result of negotiations between the government and the International Health Board of the Rockefeller Foundation, Dr. M. E. Barnes and Dr. P. F. Russell came out to Sri Lanka in 1925. Their objective was to formulate a programme for the control of malaria in Sri Lanka, but their report mostly marshalled already known facts and offered little that was new.⁵⁹

The organised control of malaria on a country-wide basis began in 1921 with the appointment of Mr. H. F. Carter as malariologist.⁶⁰ Before his appointment, Carter was Lecturer in Medical Entomology at the Liverpool School of Tropical Medicine for over 10 years. He was appointed on a three year contract which was subsequently extended till the post was made permanent in 1925. When he was first appointed he had a number of scientific publications on malaria to his credit. He continued his research while in Sri Lanka and contributed several papers.⁶¹ He was the first to prove that *Anopheles culicifacies* was the sole vector of malaria in Sri Lanka.

In the 1920's, several measures aimed at controlling malaria were adopted in different areas depending on their practicality. Administration of quinine to the population at risk during the rains was carried out with the hope of reducing the incidence during the ensuing drought, but was not always successful as many people refused the treatment.⁶² Larvivorous fish, first introduced by S. T. Gunasekera in 1913,⁶³ were found by Carter to be of little effect in practice.⁶⁴ Oiling of pools and swamps over limited areas, specially near malarious towns, was carried out. Other measures adopted included clearing of jungle, draining of pools and swamps and filling of pits.⁶⁵ These activities were, of necessity, costly, labour intensive and time consuming. In spite of these measures the incidence remained very high, reaching epidemic proportions in some years (Table I). The Anti-malaria Campaign functioned through a chain of centres located in some of the highly malarious areas such as Anuradhapura, Kurunegala, Chilaw and Trincomalee.⁶⁶

Table I

Incidence of malaria at 5-year intervals.⁶⁷

| Year | No. of cases | No. of deaths |
|-----------|--------------|---------------|
| 1910/1911 | 515,590 | - |
| 1915 | 485,082 | - |
| 1920 | 505,370 | - |
| 1925 | 808,638 | - |
| 1930 | 1,759,648 | - |
| 1935 | 5,459,539 | 47,326 |

| | | |
|------|-----------|-------|
| 1940 | 3,413,618 | 9,169 |
| 1945 | 2,539,949 | 8,539 |
| 1950 | 610,781 | 1,903 |
| 1955 | 23,370 | 268 |
| 1960 | 422 | 0 |
| 1965 | 308 | 1 |
| 1970 | 468,202 | 12 |
| 1975 | 400,777 | 5 |

The turning point in malaria control came in November 1945 with the introduction of DDT spraying in dwelling houses by mobile units in Anuradhapura and Kekirawa.⁶⁸ As the scheme was gradually extended throughout the country, the incidence of malaria steadily declined over the next 20 years, reaching the lowest ever figure of 17 cases in 1963. The results were so spectacular that Prof. D. McDonald of the London School of Hygiene and Tropical Medicine was lavish with his compliments: 'It amazes me that the people of Ceylon do not realise the magnitude of what they have achieved in bringing malaria under control. Ceylon's malaria control is the best in the East. Any country interested in malaria control should study Ceylon's progress in this direction.'⁶⁹ However, General Hance, medical adviser to the Secretary of State for Commonwealth Relations, sounded a warning in 1956 which later events proved correct. He said that increasing numbers of anopheles mosquitoes have acquired resistance to DDT, though happily for Sri Lanka there was as yet no evidence of such resistance. He commended unremitting vigilance.⁷⁰

Planters' Association

First the coffee, and then the early tea estates were situated in the highlands, which enjoyed a relative freedom from malaria. But with the subsequent opening of rubber and also tea estates in the mid and low country, malaria became a problem. The economic impact of the disease was felt by the planters. The British dominated planters' interests which wielded much influence with the administration of the day became perturbed at the situation. Arrangements were made in 1925 for Sir Ronald Ross to address the Ceylon Association in London. Thereafter, Ross, who was in retirement at the time, was invited to visit Sri Lanka and advise the Association. He came to Sri Lanka in 1926.⁷¹ His recommendation that the estate interests should appoint their own malariologist to deal with plantation malaria was adopted. The malariologist was to liase with the government anti-malaria campaign. Some 300 estates agreed to subscribe towards the expenses of this proposed scheme for an initial period of three years, and the Ceylon Estates' Proprietary Association Malaria Control Scheme was inaugurated on 15th September,

1926. This scheme was maintained on a system of renewal every three years till 1941 when it was placed on a permanent footing. With the amalgamation of the Ceylon Estates' Proprietary Association with the Planters' Association of Ceylon, the scheme was renamed Planters Association Malaria Control Scheme. With the progressive control of malaria on the estates as well as in the country with the spraying of DDT, the activities of the scheme were enlarged to include other health problems as well on the estates, and its name was accordingly changed to Planters Association Estates Health Scheme in 1949.

The post of malariologist was successively held by appointees from Britain, and included Dr. G. MacDonald who was an Assistant Director of the Ross Institute, London when he was appointed in 1937. He returned to the Ross Institute after a year's strenuous work in Sri Lanka, and later became Professor of Tropical Hygiene in the London School of Hygiene and Tropical Medicine and Director of the Ross Institute.

The control methods employed by the scheme were similar to those used by the government anti-malaria campaign. One of its main strategies was the oiling of Deduru Oya and Kospothu Oya in the Kurunegala district, and Kumbukkan Oya in Monaragala in the dry season. The larvae were washed away by the rains, but the puddles in the dry season became the breeding grounds for the mosquito. Much money was spent on this oiling project, and with the economic depression of 1931 this procedure was curtailed. However, it was reintroduced after a lapse of two years when the 1934-35 epidemic erupted.⁷²

The 1934-35 epidemic

The epidemic of malaria that ravaged Sri Lanka in 1934-35 was described by Gill as the greatest pestilence in the recorded history of the country.⁷³ It affected almost all parts of the country and killed 80,000 people. Its violence was particularly felt in a quarter of the country's area and by a third of the population.

At the beginning of the century it was clearly shown by reference to graphs that rainfall, which influenced the development of the mosquito, had an enormous effect on the incidence of malaria and, therefore, on the health of the people.⁷⁴ The logic of this relationship was brought home with telling effect in 1934. After four years of regular rainfall, both the south-west and the north-east monsoons of 1934 were partial failures. The result was the epidemic of malaria which commenced in Kurunegala and Kegalle districts in November 1934, and rapidly spread to other parts of the country with an abruptness and violence that took the health authorities by surprise. The misery of disease supervening on a population already famished by failure of the rains resulted in economic disruption that left the people helpless and at the mercy of the government. The government did its best to meet its obligations. The services of every available person in the Medical Department were

requisitioned. In addition, 59 private medical practitioners and 284 apothecaries, dispensers, and vaccinators were engaged temporarily. Medical and apothecary students were encouraged to volunteer their services. By these means, 261 treatment centres and 429 sub-centres were opened by December 1934. A thousand beds were added to existing hospitals by utilising temporary accommodation, and another 1300 beds were provided by opening up temporary hospitals, mostly in government schools. Approved private organisations were provided with grants to open temporary hospitals and convalescent homes. A Commissioner of Relief was appointed to organise relief measures.

The peak of the epidemic was in December 1934 and January 1935. Thereafter, it declined till June. The south-west monsoon of 1935 effectively ended the epidemic.⁷⁵

Resurgence of malaria

The initial success of DDT in controlling malaria was due to several factors. It was an efficient insecticide. The spraying of dwelling houses at regular intervals left residues of DDT which were lethal to mosquitoes. The 'house resting' habit of *Anopheles culicifacies* rendered it particularly vulnerable to the insecticide. Spraying houses was technically much easier than oiling wide areas of unexplored terrain, where swamps and streams were obscured by undergrowth.

Resistance of the anopheles mosquito to DDT has altered the entire outlook. Alternative insecticides were far more costly. DDT was given up in 1977 and malathion was used instead. As regards treatment, with the advent of drugs such as chloroquine and primaquine, quinine which did yeoman service in the past was given up as a standard antimalarial drug in Sri Lanka.

Notes

1. C. G. Uragoda, *CMJ*, 1975, 20, 25.
2. H. W. Codrington, *A short history of Ceylon*, p.64.
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LEPROSY

Leprosy was a disease which had been known in Ceylon since the Dutch occupation, but records of its prevalence are very few. It was described by the Dutch physician, J. F. E. Bridger, in 1928. The disease was not known to the planters of Ceylon, and it was not until the late 19th century that it was first reported in the island. With the progress of time, the disease has become more and more common, and it is now a serious public health problem.

There are two main types of leprosy, the tubercular and the nodular. The tubercular type is characterized by the presence of tubercles in the skin, and the nodular type by the presence of nodules. The disease is caused by the bacillus *Mycobacterium leprae*, which was discovered by G. H. de Bary in 1873. The disease is most common in the tropics, and it is particularly prevalent in the island of Ceylon.

The Portuguese were the first to describe the disease in Ceylon, and they called it 'lepra'. The Dutch physician, J. F. E. Bridger, was the first to describe it in detail, and he called it 'leprosy'. The disease is now a serious public health problem in Ceylon, and it is particularly prevalent in the island of Ceylon.

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LEPROSY AND TUBERCULOSIS

Leprosy and tuberculosis have followed separate courses in history, but an apology, if one is needed, for grouping them together is that both diseases are caused by bacilli belonging to the same group of organisms, namely Mycobacteria. Leprosy bacillus was discovered by Hansen in 1871, while Robert Koch was the first to identify the tubercle bacillus in 1882. Both diseases are infectious to a varying degree, and have a stigma attached to them, but the latter has considerably diminished over the years. Leprosy largely affected the skin, and therefore, its diagnosis would have been easily made by inspection, which was the main method then available. Tuberculosis, on the other hand, mostly involved internal organs and its diagnosis was not easily made with the limited diagnostic facilities then available. As a result, the definitive history of tuberculosis in Sri Lanka extends only over a comparatively short period.

LEPROSY

Leprosy was a historically important disease, specially during Dutch occupation, but in terms of numbers affected, it did not occupy a pre-eminent place. It was described by Susruta and Charaka under the name, *kushtha*. Their descriptions agree with the clinical features of leprosy.¹ Local treatises on ayurveda which borrowed heavily from these authors dealt with the condition at length. With the passage of time, *kushtha* in the later Sinhala parlance acquired a wider connotation to include all skin diseases.

There are two references to lepers in the Mahavamsa. Vasabha (127-171 AD) heard from a leper who was a fortune teller that he would become king.² King Buddhadasa (362-409 AD) had an enemy who was a leper.³ There is a popular tradition that the colossal stone statue, Kustarajagala found in Weligama near Matara in the south was that of a king who was afflicted with leprosy. But now archaeologists are of the view that it is a statue of Mahayana Buddhism, and it represents a Bodhisatva or a future Buddha.⁴

The Portuguese period was devoid of any significant events in regard to leprosy, except in the manner in which the present Sinhala terminology is derived. The currently used Sinhala word for leprosy is *lathuru*, which is

probably a corruption of the Portuguese, *lazaro*, meaning a leper.⁵ St. Lazarus was the patron saint of lepers, and hospitals set up in mediaeval Europe were called lazar houses after him.

Dutch period

With the Dutch, leprosy became a phobia and the leprosy asylum at Hendala was the product of this fear. Leprosy came into prominence when the chief surgeon of the Dutch hospital in the Fort first noted that several patients admitted to hospital suffered from leprosy. He stated that the disease was spreading to children born to local women by European husbands. Prompted by this increase in incidence, the Governor sought permission from the authorities in Batavia to construct a leprosy asylum where patients could be incarcerated in order to prevent spread of infection.

Other steps too were taken. The Governor, Thomas van Rhee, issued a *placcaat* or decree setting out certain measures to be taken. He appointed a commission which included the chief surgeon of the Colombo hospital for the purpose of visiting all the families in Colombo, both European and local, in order to detect patients with leprosy. Such persons were barred from using public roads, or mixing with the public or selling food. Those who disobeyed these laws were threatened with banishment to Tuticorin⁶ in South India which came under the administration of the Governor.

Permission having been received from Batavia, construction of the leprosy asylum at Hendala was started during the governorship of Simons. He actually spent twice the approved budget. His illness prevented him from personally supervising its construction.⁷ It was completed by his successor, Hendrick Becker, who found it too large, being about eight times the size required.⁸ With approval from Batavia, he demolished part of it so that its maintenance cost would be reduced. It was run by a board of regents consisting of the head physician of the Dutch hospital and two others.⁹ It became the first western-styled hospital for civilians in the country. Before the records pertaining to its construction came to light, there was a tradition that it was built by the daughter of a Dutch governor, who being herself afflicted with the disease, wished to show her sympathy with fellow sufferers by erecting with her private funds a hospital for lepers.¹⁰

At the entrance to a part of the building is a stone with the date 1708 and a monogram, which was deciphered by Sophia Anthonisz as that of Becker, inscribed on it.¹¹ This inscription exists to this day. Though the date read 1708, the asylum was operational by 1706, for a proclamation was issued on 24th March, 1706 by which all persons infected with leprosy were required to 'give information of their sickness, in order to be sent to the Leper Hospital, and prohibiting all infected natives and beggars coming to the Fort or town on pain of being whipped away by the Caffres or servants of the Fiscal.'¹²

The Dutch experimented with exotic methods of treatment for leprosy.

A Dr. Marwal treated two patients at Hendala in 1788 with 'lizard treatment', but they failed to show improvement even after ten months of treatment.¹³ The Belgian physician, Daalman, was prevented from carrying out his own brand of treatment on lepers. While residing in Colombo, the Dutch Governor, Laurens Phyl asked him to visit the hospital for slaves, which was at Slave Island, as it was reported that there were several patients there with leprosy. He found nine such patients with 'trophi or hard, movable flat knots above and below the knees, and also some thickness of the skin of the nose and ears.' On his consenting to treat them, he was asked to submit a list of items that would be necessary. He later received all items on his list except 'the volatile salt of snake wood, together with the same snake wood dried (which could be obtained in abundance thereabouts, and especially at Negombo, 4 (Dutch) miles thence, under the name of Kopere Kapellen).' He also failed to obtain a suitable place to carry out the treatment. Having waited in vain for one and a half years for these, he was then told that all those patients had died in the meantime.¹⁴

British period

The leprosy hospital was apparently neglected during the change over from the Dutch to British administration. It was again revived in October 1800 by Dr. Thomas Christie, who had succeeded Dr. Ewart early that year as the head of the medical establishment. It was placed in charge of Dr. Joseph Sansoni, a Sri Lankan who had been educated in Pisa. Originally, patients were divided into three categories, namely lepers and venereal patients actually under treatment, patients who were being prepared for treatment, and the old incurable cases. Patients in these three different categories received 5, 2½ and 2 rix-dollars a month respectively for their expenses. It was found that patients quickly squandered this money, and the system was altered in January, 1802 whereby all categories received a flat rate of 9 fanams for them to buy betel and tobacco. The hospital had 20 patients at the time.¹⁵ It remained the only civilian hospital in the country till the establishment of the Pettah hospital.

In 1803, Percival commented that leprosy was very common among the local population in Sri Lanka: 'the streets of Columbo swarm with Cinglese beggars labouring under this distressing disease. I have seen some of these objects with their skin partly coloured, half black and half white, for this disease leaves white blotches and spots in those places of the skin where it breaks out, and it is not uncommon to see one limb completely white, while the other retains its natural black colour.'¹⁶

Early British writers referred to leprosy as elephantiasis, which term in modern terminology is applied to the external complications of filariasis, and corresponded to Cochin leg or elephas of the early writers. The two different meanings of elephantiasis during the respective early and recent British

periods add a further dimension to the already existing confusion in Sanskrit, Sinhala, Tamil and Portuguese terminology.

Davy described a fatal case of leprosy he examined in 1816 at the leprosy hospital at Hendala, which institution he apparently visited several times during his sojourn in Sri Lanka. He carried out a post-mortem examination on this patient.¹⁷

There was a long gap in the literature before leprosy was discussed again. This probably reflected the relegated position that the disease occupied in British thinking compared to that of the Dutch. The state of the disease about a century ago was described by Kynsey, who stated that the Sinhalese frequently confused this endemic disease with parangi. It did not affect the general population to any noticeable degree. It was mainly a disease of the poor classes among the Sinhalese, Tamils and Moors. It was less frequent among the Eurasians, and rare among the pure Europeans. The disease was mostly prevalent in towns and villages of the Western, Southern and Eastern provinces. The majority of inmates of the leprosy hospital came from the first two provinces. The anaesthetic form of the disease was twice as frequent as the more severe tuberculoid form.¹⁸

Kynsey made the interesting observation that lepers were not shunned by their relatives, who looked after them in their houses without fear of infection.¹⁹ This attitude was probably the result of the generally accepted sociological view that the disease was a blemish on the family that had to be kept secret. Therefore, the number of cases in the leprosy hospital did not reflect the true incidence in the country. Lack of an ordinance to enforce compulsory segregation of the disease was deplored by Perry in 1899. For the first time, he made an approximate assessment of the incidence according to the provinces. While 506 cases were treated in various government hospitals, it was estimated that there were an additional 208 cases in the country.²⁰

As already stated, there was a high incidence of leprosy in the Eastern province, and this posed problems to the authorities. The only hospital was at Hendala, and the question arose whether to enlarge it to take in these patients or to build a separate hospital in the Eastern province. While the first alternative was less expensive, there were difficulties in regard to transport where patients had to be transferred from Batticaloa to Colombo by ship. Further, Hendala was a long distance away from their homes, and this caused distress to the patients. As a remedial measure, a leprosy ward was initially established at Kalmunai hospital at the end of the last century, but still accommodation was limited.²¹

On 14th October, 1908, the Governor, Sir Henry McCallum announced before the Legislative Council that the Royal College of Physicians had officially pronounced leprosy as a contagious disease. Segregation of patients from the public was more stringently enforced. A parapet wall was built round

the leprosy hospital. He also announced his intention to build a separate hospital in the Eastern province.²²

In 1913, the Governor declared that the hospital would be built in the island of Mantivu, off Batticaloa, and that nursing nuns would be invited to serve there as well as at Hendala.²³ Since segregation was an overriding aim, it was a shrewd move to establish the hospital on an island. It was to be different from the one at Hendala. It was to consist of a number of cottages, with gardens and cattle, which would permit patients to live a more normal life. Intervention of the war delayed its construction, and it was finally opened in 1921, when both patients and nursing nuns arrived together. Nursing duties at Hendala were handed over to the nuns in 1914.²⁴

Dr. Van Houten, who was a Boer prisoner of war at Diyatalawa, was placed on parole and given permission by the government to work in Colombo. He was a bacteriologist who had been an assistant to a professor at Utrecht University, where attempts were made to culture the leprosy bacillus. Van Houten, in his work at Hendala and the Bacteriological Institute, Colombo tried his hand at culturing the bacillus, a task which was to defy scientists for many more decades. In another piece of research, he failed to detect the bacillus in the nasal secretions in the anaesthetic type of case. However, Perry commented that competent critics were not convinced of Van Houten's findings.²⁵

The Lepers Ordinance of 1901 became operative on 1st January, 1902. On the assumption that the disease was contagious, it provided for compulsory detention of leprosy patients at Hendala, though it was envisaged that the hospital would not be able to cope with the number of cases.²⁶ The operation of this ordinance was suspended in 1933. Dr. R. G. Cochrane pointed out that there was a tendency to isolate the mutilated but non-infectious cases, while allowing highly infectious patients with little external evidence of the disease to be at large.²⁷

TUBERCULOSIS

The diagnosis of tuberculosis before the advent of definitive aids for detection, such as the stethoscope, sputum examination and radiography, was largely empirical, and depended primarily on the pattern of symptoms and their progress. While diseases such as leprosy and small pox, which were recognisable by their external appearances, figure prominently in historical records of Sri Lanka, very little on tuberculosis could be gleaned from such sources.

In ancient ayurvedic works, tuberculosis was referred to as *kshaya roga* (wasting disease), *shosta roga* (disease that dries up the system) and *rajyakshme* (king of diseases). In the earliest ayurveda book to originate from Sri Lanka, *Sarartha sangrahava* there is a passing reference to tuberculosis, where goat's milk is recommended for the condition. *Bhesajja manjusa*, which

is a later work, gives a detailed description of the disease. While some of the symptoms mentioned may not be appropriate, others such as cough, expectoration, headache, fever, loss of appetite, chest pain and foul breath fit in with the present concept of tuberculosis. It is surprising that hoarseness of voice was recognised 'as a symptom even then.

Apart from these purely medical works, the ancient Pali chronicles, and the Portuguese and Dutch records pertaining to Sri Lanka are silent on the subject. However, there is some evidence that during Dutch times tuberculosis was a recognised entity. In the old Dutch church at Wolfendhal Street, Colombo, among the Dutch period furniture and other items, is a set of four silver communion cups. One of these is an odd one out in that its appearance is plain, without any engraving as in the others. In the church inventory, against the entry describing these cups, is the remark that one of these, presumably the plain cup, was set apart for tuberculosis patients.²⁸ The implication is that the Dutch regarded tuberculosis as infectious, and they took care to set apart one cup for their use.

The Belgian physician, Daalman, who worked for the Dutch East India Company in Sri Lanka in 1687, was told in India that nothing answered better than a glassful of coconut toddy morning and evening for consumption. He was unable to test its efficacy as he had no patients with this disease.²⁹

It has been claimed that the creation of the window went a long way in preventing tuberculosis by promoting ventilation and admitting sunlight into dwellings. Some of the old *walauwas*, the stately homes of the then Kandyan chieftains were found wanting in that the rooms lacked windows altogether, or were provided with only rudimentary ones. Tennent, on a visit to a *walauwa* in Bintenne in 1848, found that the rooms were 'little dingy dens from ten to twelve feet square, each lighted by a single window, or rather a hole, the area of which did not exceed a square foot.'³⁰ Some of these old *walauwas* which have survived to the present day still have this arrangement where a series of dark rooms, unlit by the sun, face a central courtyard through an open verandah. An example of this arrangement is the Maduwanwela Walauwa in Panamure. Spittel, who paid a professional visit to the dying Maduwanwela Ratemahattaya, found that 'bounding court-yard was a square varandah on to which gave the doors of dark rooms.'³¹ If privacy was the reason for this architectural design, it was at the expense of hygienic considerations.

British period

Some interest in tuberculosis by the government became evident only in the latter part of the last century. The PCMO reported that 198 acute and 99 chronic cases were admitted to government hospitals in 1888, and of these 66 and 34 respectively died.³² About the same time, the health authorities became interested in adopting the latest techniques in treatment. Dr. J. D. Macdonald, Physician in charge of General Hospital, Colombo, was sent

to Europe by the government in 1891 to study Robert Koch's new method of treatment with tuberculin. He was not impressed with what he saw in several hospitals in Berlin. He met Prof. Virchow, and later Louis Pasteur in Paris. In London, he visited the Consumption Hospital, Brompton. He wrote back to the PCMO prophetically: 'I do not think tuberculin will ever become a specific in tuberculosis.'³³

In 1903, Perry, for the first time, made an attempt to estimate the prevalence of tuberculosis in the country, as he did for leprosy. He called for special returns from various institutions in the country. He computed the total number of cases as 878, a rate of 1 case per 4200 of the population. These figures were much lower than those for European countries at the time. Another unusual finding was that the disease was several fold more common among the Burghers than the Sinhalese and the Tamils.³⁴ In 1905, the total number rose to 1037, the rate being 1 in 3600.³⁵

All tuberculosis patients were at that time treated in general hospitals. It was Dr. Marcus Fernando who first made a plea for special sanatoria, as was the practice in Europe.³⁶ The government finally accepted the concept of establishing sanatoria when the Governor announced his intention to build one at the vacated Ostenburg barracks in Trincomalee.³⁷ However, the Trincomalee site was later abandoned. In the Legislative Council, Dr. W. G. van Dort impressed on the government the necessity for adopting special measures to combat tuberculosis. As a result, the Governor, Sir Henry McCallum appointed a Tuberculosis Commission in 1910 to inquire into the problem of the disease and to recommend control measures. It recommended far reaching proposals which became the basis for subsequent anti-tuberculosis measures. Among these were the compulsory notification of cases, establishment of clinics for out-patients, sanatoria and hospitals for advanced and chronic cases, creation of an anti-tuberculosis society and promotion of health education.³⁸ Over the years these recommendations were implemented one by one.

Early institutions

The Commission's recommendation that a central dispensary or institution, as well as a sanatorium for acute cases and a hospital for chronic cases, be constructed in or near Colombo was influenced by the high incidence of the disease in the city. The Colombo Municipal Council offered to bear half the cost of construction and maintenance of these institutions,³⁹ but this offer was not availed of. It was decided to build these institutions with the money contributed by the public towards a memorial to the late King Edward VII.⁴⁰

A site on San Sebastian Hill, Pettah, was selected for the Anti-Tuberculosis Institute. The commission recommended that the sanatorium be built at Kandana, 12 miles from Colombo, in view of the magnificent gift of 40 acres of land, together with some buildings, by Mr. A. E. (later

Sir Ernest) de Silva, who also promised Rs.60,000 towards the construction of the sanatorium.⁴¹ A site in Thimbirigasyaya, by the Parsee burial ground, was first suggested for the hospital for chronic patients. However, Mr. H. K. Hillyer, CCS, secretary to the King Edward VII anti-tuberculosis fund, who was also secretary to the Tuberculosis Commission in 1910, wrote to the Colonial Secretary in Colombo on 26th June, 1913 that this proposed site was unsuitable. He recommended the site at Ragama where the segregation camp for South Indian Immigrants was located.⁴² This camp, which was established in 1899, was to be closed down in 1914 due to the opening of the railway from Mannar and the concurrent establishment of a labour camp at Mandapan in South India. This suggestion was accepted by the government.

The proposed expenditure on these three institutions was Rs. 248, 030. The King Edward VII memorial fund, which was augmented by a gift of Rs.150,000 from Mr. and Mrs. J. N. Campbell in 1910, (and which stood at Rs.165,825.61 with interest) was more than sufficient for its construction, as well as for equipment. The balance was sufficient to meet only half the cost of maintenance of these institutions. The Governor, Sir Robert Chalmers, asked for and obtained from the Secretary of State for the Colonies in London permission to meet the balance half from government funds.⁴³

On 2nd June, 1914, the Governor laid the foundation stone for the Anti-Tuberculosis Institute at San Sebastian Hill,⁴⁴ and it was opened in 1916.⁴⁵ It remained the hub of anti-tuberculosis activities in Sri Lanka till it was closed down in 1970.

In 1915, the government handed over to the Medical Department the buildings at the segregation camp at Ragama.⁴⁶ These were repaired and the hospital for advanced cases opened in 1917.⁴⁷ With the gradual decline in the incidence of tuberculosis in the country, it was closed down in 1971.

The work on the Kandana sanatorium was delayed as the donor was abroad at the time.⁴⁸ Construction was started in 1915,⁴⁹ and it was opened in 1919.⁵⁰ This hospital was named the King Edward VII Memorial Sanatorium. With the passage of time, all types of cases without distinction between acute and chronic, were admitted to Kandana and Ragama.

The number of hospital beds for tuberculosis patients was gradually increased by opening new hospitals and setting up special wards in general hospitals. Hospitals in the provinces were all built in arid areas, namely Kankasanturai in 1932, Puttalam in 1952 and Wirawila in 1953. At its peak in 1969, the bed strength was 3346. With the decline in incidence, the Puttalam and Wirawila hospitals, as well as some of the special wards, were closed down.

Welisera Chest Hospital

The establishment of the Welisara Chest Hospital, which is the premier hospital for tuberculosis patients, was conceived at a public meeting held

on 31st May, 1937, presided over by the Governor, Sir Edward Stubbs, for the purpose of erecting a memorial to the late King George V. It was decided at this meeting that tuberculosis institutions be built as a memorial to the late king, and that funds be raised by public subscription.⁵¹ It may be seen that monuments to two consecutive kings took the form of tuberculosis institutions.

A sum of Rs.136,241.45, including Rs.30,000.00 from the Colombo Municipal Council, was collected, and this was matched by an equal amount contributed by the government. Welisara Chest Hospital was built with this money. It was expected to be ready for occupation in 1940,⁵² but the war intervened and it was requisitioned for the use of the military. It was finally opened in 1946 as the King George V Memorial Hospital.⁵³

Incidence

There was no system of notification of tuberculosis cases before 1910. The problem of tuberculosis in the country was gauged either from mortality figures of the Registrar General or from hospital admissions. Shortly after the Tuberculosis Commission issued its report in 1910, notification of cases was made compulsory, but at first it was made applicable only to the city of Colombo. Patients were admitted to General Hospital, Colombo till 1916 when the first tuberculosis hospital was opened. Some years later, compulsory notification was extended to the rest of the country, and in 1957, a central tuberculosis register for the entire country was established.

The number of tuberculosis cases admitted to hospitals increased from 297 in 1888,⁵⁴ to 1986 in 1946,⁵⁵ and then to 12,926 in 1962-63.⁵⁶ This increase reflects the improved notification from 1910, better hospital facilities from 1916 and the rise in population.

The authorities, however, felt that these low figures reflected only the surface of the problem. The Governor, Sir Henry McCallum, was presiding at a durbar of Kandyan Chiefs on 18th and 19th November, 1912 at the King's Pavilion, Kandy. Tuberculosis was one of the subjects discussed. The Governor said that though the Tuberculosis Commission had recommended compulsory segregation of patients, it was unworkable as the estimated number of consumptives was no less than 40,000. The existing facilities did not permit this measure. He placed the problem in the correct perspective when he said that the total bed strength in all the hospitals in Colombo did not amount to more than 1500. Many of the chiefs present argued in favour of segregation, but the Governor stood his ground.⁵⁷

Tuberculosis Committee

The high incidence of tuberculosis aroused public awareness of the problem. In spite of the recommendations of the Tuberculosis Commission, mortality remained high. A group of doctors from the government and private sectors which met to consider the problem recommended that a committee be appointed to study the subject and make recommendations. The result

was the Tuberculosis Committee which was appointed in 1945 by the Minister of Health. All its members were medically qualified men. It made far reaching recommendations which formed the basis of future control measures.⁵⁸ Many technical developments had taken place since 1910, and these were incorporated into its recommendations. These included the establishment of chest clinics in the nine provinces, provision of mass miniature radiography (MMR), examination of contacts, provision of adequate hospital beds, and formation of tuberculosis associations with branches in the provinces. It also recommended financial assistance to tuberculosis patients and their dependants, and special paid leave for employees suffering from tuberculosis. All these proposals were subsequently adopted by the government. A member of the committee, Dr. C. C. de Silva, who later became Professor of Paediatrics, added a rider recommending BCG vaccination of new born babies.

With the decline of malaria in the 1950's, tuberculosis became one of the most important public health problems in the country, and this dubious status prompted the government into a phase of intense activity. The subsequent history of tuberculosis in Sri Lanka largely revolved round the manner in which the recommendations of the Tuberculosis Committee were implemented, but since most of these proposals were put into effect after 1948, they are outside the scope of this work.

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33. J. D. Macdonald in: AR, PCMO (W. R. Kynsey), 1891, pp.29-31.
34. AR, PCMO (Allan Perry), 1904, p.4.
35. The incidence of pthisis in Ceylon by Albert J. Chalmers in: AR, PCMO (Allan Perry) 1905, pp.33-34.
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38. Sir Henry McCallum's address to the Legislative Council on 7th March, 1913, in: *Debates in the Legislative Council*, 1912-1913, pp.407-408; SP 19 of 1910.
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40. *Ibid.*, p.1.
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BERI BERI AND HOOKWORM INFESTATION

Beri beri was reported as being very common in European and Asiatic troops during the early British period, but its nomenclature has led to much confusion. Towards the latter part of the nineteenth century it was suggested that early writers on beri beri misdirected themselves by including under this name other diseases, the most important of which was severe anaemia due to hookworm infestation. It was about this time that hookworm infestation or anchylostomiasis was recognised as a separate disease entity. While conceding that beri beri may have occurred among foreign troops, it is very unlikely that the disease was prevalent among the local population. All the reports of the disease in Sri Lanka have emanated from army sources, and the disease has not figured in the local medical literature during the past hundred years.

BERI BERI

True beri beri is now known to be a disease caused by a deficiency of vitamin B1 or thiamine in people subsisting almost entirely on a diet consisting of highly polished, non-parboiled rice. There are two varieties of the disease. Dry beri beri affects the peripheral nerves causing weakness and numbness of the extremities. Wet beri beri, on the other hand, affects the heart and causes swelling of the lower limbs or even the whole body, with other features of heart failure. It is the latter variety which possibly could have caused confusion with the cardiac manifestations of severe anaemia from either hookworm infestation or malaria.

It is inconceivable that the average Sri Lankan, living on a mixed diet consisting of rice and thiamine-containing foods, would develop a deficiency of this vitamin severe enough to induce beri beri. On the other hand, during times of war, the foreign soldiers' lot would have been an entirely different one. These foreigners, harassed by Sinhala kings whose one strategy would have been to cut off their food supplies, may have experienced food shortages at various times. Available Portuguese, Dutch and British records show that beri beri was a serious problem with their soldiers.

Nomenclature

With all its confusion regarding nomenclature, it is the only disease

where the origin of the name is credited to the Sinhala language. Possible derivation of the name from other languages such as Malay and Hindi were suggested by various authors, but its origin from Sinhala was given the stamp of authority by the Oxford dictionary. In spite of its Sinhala origin, the name beri beri, according to erudite oriental scholars, does not occur in any Sinhala medical book, nor is it found as the name of a disease in Sanskrit, Pali or any of the Prakrit languages of India.¹ This implies that beri beri was either a disease unknown to the Sinhala people or of such rarity that it did not merit notice in their books. The question then arises how a Sinhala name could have been conferred on the disease. The Sinhalese, who were inclined to ridicule the Portuguese whenever the opportunity arose, would have probably labelled the soldiers they saw with swollen bodies and weakness by the literal appellation of beri beri, meaning 'unable to, unable to.'

Marshall discusses the Sinhala origin of beri beri at length:

'In regard to the word beriberi, I have not found that the Sinhalese who reside in the maritime provinces or the Kandyans understand that term as descriptive of a particular disease. Bae or beri, I am informed, means in the Sinhalese language 'unable' or 'unwilling'.....Frequently, they express a sense of great weakness. Natives confined to bed often use the following expressions in a tone of great agony, 'mata bae' or 'mata beri' (I am unable). To render the word intensive, it is sometimes repeated as 'Bae bae', 'beri beri'.²

Bentley, in his monograph on beri beri, cites 'the bad sickness of Ceylon' as an alternative name of the disease.³ It is apparent that historically or linguistically there is no justification for this name.

Early references

Beri beri was first described in 1645 by Bontius, a Dutch physician from Batavia. The next available reference was from Sri Lanka in 1686, and was by Ribeiro who was in Sri Lanka from 1640 to 1658:

'The Portuguese in the Island were subject to another disease which the natives call bere bere; when a man was apparently in good health and free from pain, he would suddenly fall to the ground; and this was the worst disease of all; he would have no sensation from his hip down to his feet, which would seem quite devoid of life; one might cut off his legs without his feeling it, just as if they formed no portion of his body. This malady can only be cured by eating pork and biscuits, by drinking palm wine, and smoking tobacco; after three or four months continuous treatment, the patient regains perfect health.'⁴

It may be mentioned that palm wine or toddy has a high content of vitamin B which undoubtedly would help patients with beri beri. Marshall disputes what Ribeiro described as beri beri, and suggests cholera, which may set in with violent spasmodic symptoms, as a likely alternative.⁵ But it is difficult to accept that cholera could produce loss of sensation in the lower part of the body. Queyroz, writing in 1686, described the havoc caused by beri beri among Portuguese soldiers: 'There were many suffering from beri beri, a disease caused by insufficient nourishment, and weakness of body.

They were never cured, because they were never given the necessariesIn the last siege of Colombo, there were more than 200 sick of this disease, because they were not given the necessaries, little food and putrid rice.’⁶

Queyroz was remarkably near the truth when alluding to its causation. He described another epidemic of beri beri in the war waged against Kandy from the fort at Menikkadavara. More than 300 died of beri beri.⁷

The Dutch too had their problems with beri beri in Sri Lanka. Johan von der Behr, a German in the employ of the Dutch East India Company, was in Sri Lanka from 1644 to 1650. He wrote that ‘this distemper called barbire lasts for 4 to 5 years.’ He recommended coconut toddy for the condition. He also mentioned that many Hollanders died of the disease.⁸ Daalman, a Belgian physician under the Dutch wrote:

‘Besides these, there is a malady regarding which patients themselves cannot say what ails them; yet Ceylon is its home more than any other place; they suffer from a total lack of appetite, are weak, languid and so on, and in a word are scorbutic; that is, their humours are so sluggish that they (humours) may be said to creep rather than circulate freely, yet so slowly as to cause any marked obstruction, on which account the patients are dull and slow in everything they do, and afterwards in the course of time come to the end of their existence as if from exhaustion or wasting.’⁹

The first British writer to refer to beri beri in Sri Lanka was Thomas Christie. He gave a classic description of the disease:

‘The beri beri is a disease of a peculiar nature which has been extremely frequent and fatal amongst all the troops, both European and native in Ceylon. In the milder cases of this disease, the patients are first attacked with some stiffness of the legs and thighs, and this is succeeded by numbness and oedema, sometimes paralysis of the lower extremities.

‘In the course of a few days, if not prevented by medicine, these symptoms are succeeded by swelling of the whole body, attended with a sense of fullness of the belly, and more particularly with weight and oppression at the precordia; dyspnoea starting in the sleep, and all the usual symptoms of hydrothorax. In the latter stage, the dyspnoea and anxiety become extreme, the uneasiness at the epigastrium increases, attended with almost constant vomiting and occasionally with spasms of different muscles; the pulse becomes very feeble, the lips and countenance livid and the extremities cold.....

‘It would appear that a stay of some months on the station is almost essential for the production of the disease; and that the greatest predisposition to it exists when troops have been about eight or twelve months in the settlement.

‘The 72nd Regiment and Coast Artillery landed here in July 1795. The beriberi with them was most prevalent in the Autumn of 1796, but they had little of it in March 1797, when it was extremely frequent with the 1st battalion European infantry who had arrived here in August 1796.

‘The 80th regiment relieved the 72nd in March 1797, but suffered little from the disease till the November following. The Honourable Company’s Malay corps arrived here from Jaffnapatam in June 1797, but the complaint did not appear amongst them till the January following when it became very frequent and fatal. Two hundred drafts joined the 80th at Trincomalee on the 3rd of January, 1798, but none

of these men had the disease in January, February or March, although it was then very frequent with the other men of the regiment: since that time, however, these drafts have been at least as subject to it as the other men.' ¹⁰

Christie took the trouble to perform post-mortem studies on some of the patients who died, and his findings are perhaps the earliest such studies on beri beri. While he found the disease extremely common in Sri Lanka in his time, he did not see a single case in a woman or an officer or a boy under the age of 20 years. ¹¹

Marshall writing a few years after Christie found only one fatal case from 1817 to 1820 inclusive. He wrote:

'The disease described by Christie under this name has not affected many of the troops employed in the Kandyan provinces.....Beriberi was very prevalent among all classes of troops at Trincomalee about the beginning of the present century. The Madras native infantry stationed at Colombo suffered much by it about the same time. Beriberi was likewise very prevalent among the troops employed in the Kandyan country in the year 1803. Since that period the disease has been comparatively but little known in Ceylon.' ¹²

The problem posed by beri beri in the early years of British occupation was highlighted in communications by Governor North. In 1801, in a dispatch to the directors of the British East India Company, North reported the outbreak of beri beri among Indian sepoy. ¹³ Three years later, another outbreak among sepoy was reported by North in a dispatch to Lord Hobart, the Secretary of State for the Colonies, who had by then taken over the administration of the country as a crown colony. ¹⁴

After a lapse of many years, the question of beri beri came up again in 1869 in the course of investigations into the high morbidity and mortality of Sri Lankan troops serving under the British in Labuan. The acting Principal Medical Officer for the first time suggested the possibility of this condition being malaria:

'Although at first considerable difference of opinion prevailed amongst the medical authorities at Labuan as to what the disease really was, I believe that all are now unanimous in declaring it to be beri beri, a disease which although well known and very prevalent and fatal in this island about sixty years ago, is still but imperfectly understood, and the etiology and pathology of which are still open to scientific research. This disease is in many respects so closely allied to paludal fevers that it may be, and not infrequently is, mistaken for them; and one recent authority has gone so far as to deny its existence altogether, and regards the peculiar symptoms which characterise it as sequelae of fever of the intermittent type.' ¹⁵

Roe further stated that no cases of beri beri occurred during the preceding 25 years. He attributed the eradication of the disease to improvement in sanitation of the military stations. ¹⁶

In 1886, Kynsey suggested that the disappearance of the disease from the local scene was the result of separating cases earlier labelled as beri beri into different clinical entities such as dropsy, paralysis, rheumatism and

anaemia. He went so far as to state that there never was any beri beri in Sri Lanka, but that the name was a collective one for a group of diseases, which better diagnostic methods have since helped to separate. Anaemia, which was one of the principal conditions thus labelled, was mainly due to malaria or anchylostomiasis. He concluded that the latter condition was the only disease in Sri Lanka which meets the description of beri beri.¹⁷

A consideration of historical data leads to the conclusion that true beri beri did not occur among the local population in Sri Lanka. What was described as beri beri at the beginning of the nineteenth century was probably the sequelae of malaria and hookworm infestation. As regards foreign troops, the diagnosis of beri beri was over exaggerated. Many of the cases described as beri beri were probably due to other causes, but it cannot be denied that a few cases of true beri beri may have occurred among them during times of food shortages brought about through their numerous campaigns against Sinhala kings.

HOOKWORM INFESTATION

Hookworm was discovered in Milan by the Italian, Dubini in 1838 who named it anchylostoma or hook-mouth. However, it was only in 1880 that it came into prominence during the building of St. Gothard tunnel when many Italian workers fell ill with anchylostomiasis. The parasite was first recognised in Sri Lanka by Dr. P. S. Brito,¹⁸ who was lecturer in physiology, biology and histology at the Ceylon Medical College.¹⁹ Hookworm, under the name, *Dochmius duodenalis*, first appears in the administration report of the PCMO in 1888, when a total of 31 cases of the disease were diagnosed at the General Hospital, Colombo (18 cases), and Civil Hospitals at Badulla (11), and Kurunegala (2).²⁰ Thereafter, the numbers gradually increased, and in 1899 there were 1255 cases.²¹ The subsequent administration reports referred to the hookworm as *Anchylostoma duodenale*. By 1905, the number had increased to 2804 cases.²²

Hookworm disease, from the time it was recognised in Sri Lanka, became a major scientific, political and public health issue in the country. It acquired this position of importance mainly due to the efforts of Sir W. R. Kynsey and Sir Allan Perry.

Immigrants

Hookworm infestation was recognised as a major public health problem in Sri Lanka when it was discovered that the condition was exceedingly common among South Indian immigrants. Perry had occasion to stress this point in his administration reports. He wrote:

'This disease, like many others in the Island, is brought over from India by the Malabar coolies, in whom it is almost a natural condition to house an intestinal parasite. The ravages of this disease lie in the sequelae, and a very large death rate

exists from the profound anaemia which results from this affection. Unfortunately, the disease is not confined to the hosts who bring the parasites, but it is spread broadcast from the habits of the cooly, who pollutes the soil with his excreta and thus affects the water supply of others. The disease, in consequence, is said to be on the increase.²³

Again in 1903, Perry asserted that the disease was being constantly introduced from India by the immigrants, and was spread owing to their careless habits.²⁴ The disease was most prevalent in planting districts with their large concentrations of Indian labour.²⁵ However, it was not confined to immigrants. In 1894, Thornhill, Senior Medical Officer, Uva, in his address to the first Indian Medical Congress declared: 'Whether the disease existed among the Sinhalese in past times or not, I can only say that it is now widespread amongst them in the Uva and other provinces of Ceylon, apparently mostly in the provinces where immigrants from India are employed.'²⁶

In a series of 783 cases of anchylostomiasis reported by Thornhill from Uva, 470 were in immigrant labourers and 231 in Sinhalese. Europeans and Burghers were not affected.²⁷ The District Hospitals Mortality Commission, which was appointed in 1893 to report on the high mortality rate among immigrant labourers, found that bowel diseases, of which anchylostomiasis was one, was the chief cause of death among them.²⁸ There was little doubt that the level of hookworm infestation was very high among the immigrants from India. Sir Allan Perry again drew the attention of the government to the rising incidence of the disease in the country.²⁹ As a result, in 1906, the Colonial Secretary wrote to the Planters' Association of Ceylon urging it to take remedial action. This was the beginning of a bitter controversy between the powerful planting interests on the one hand and the health authorities on the other.

Planters' interests

The planters were in a dilemma. The high morbidity and mortality among the labourers were undermining their economy. Many man days were lost and the productivity of even those who reported for work was at a low level, as their energy was sapped by anaemia resulting from the disease. The main remedial action suggested by the authorities was the improvement of sanitation on the estates, but it entailed the construction of thousands of latrines. This was a costly undertaking which the planters wished to shirk on various grounds. On balance, they felt that anchylostomiasis was the lesser evil, and therefore, resisted to the utmost the good intentions of the health authorities.

The Planters' Association sidetracked the issue by requesting that a pamphlet on the disease be compiled for distribution to the estates. But when Perry published one, he had occasion to complain that it 'was severely criticised and made fun of' by the planters.³⁰

In 1908, the government appointed a committee on sanitation on

estates which was headed by Perry. It recommended several measures for its improvement, but the planters, attributing various reasons, evaded the issues. They claimed that immigrant labourers would not use latrines even if they were built. The Labour Commissioners, who inquired into the recommendations, were not in favour of implementing the one on labourers' latrines.³¹

At this juncture, the government's hand was strengthened by happenings in England. Several other colonies, such as British Guiana and the West Indies, were experiencing problems with anchylostomiasis, and the British Medical Association in 1908 hosted a discussion on sanitation in reference to anchylostomiasis in the tropics. It was led by Sir Patrick Manson whose opinion was highly respected in the field of tropical medicine. Later, a committee which included Sir Patrick and Prof. J. S. Haldane recommended to the Secretary of State for the Colonies, the Earl of Crewe, certain measures for the prevention of the disease. In 1909, armed with this recommendation, Crewe wrote to the Governor, Sir. H. E. McCallum informing him in strong terms that the colonial authorities were exaggerating the difficulties of enforcing preventive measures. He did not agree with the view that eradication of the disease was impracticable or the cost of preventive measures prohibitive. He directed the Governor to enact legislation if necessary, and enforce the construction of simple latrines on estates. It was proposed that a penalty be imposed on a person 'found avoidably defaecating in a place where contamination of the soil or water would be likely to cause risk of infection.' He also enjoined on the Governor to issue anti-helminthic drugs at cost from convenient centres such as schools and post offices.³²

The Planters' Association was more responsive to Crewe's letter, probably aware that its ambit of influence did not go beyond the Governor. However, it still prevaricated with Crewe's recommendations. The Governor was torn between his obligations to the British government and his awe of the influence wielded by the planters. He compromised by appointing a committee consisting of officials and planters to recommend measures for the control of the disease.³³ The committee recommended the treatment of newly arrived immigrants by superintendents of estates and also the treatment of labourers in affected estates. It also stressed the importance of providing latrines and impressing on all employers of labour that they be put to good use.³⁴ It may be emphasised that construction of latrines was not a recommendation. The Governor tried to appease the planting community by saying that 'it is only the realisation of the extreme gravity of the present situation that induces the Government to depart in some measure from its general policy of non-interference with the internal economy of estates.'³⁵

The Governor received some support from the results of an investigation he ordered at the quarantine camp at Ragama.³⁶ The study was carried out in 1909, and a total of 864 newly arrived immigrants were admitted to

the study. Only one stool was examined in each person, and it was found that 598 persons were infected with one or more intestinal worms, but 417 had hookworm ova.³⁷ The results of this study confirmed what was earlier only a surmise that newly arrived immigrants very commonly harboured the parasite.

Rockefeller Foundation

John D. Rockefeller was on the look-out for a suitable project on which to spend his millions, but to qualify for his approval the project had to be one which would help people to avoid disease through education, rather than one directed primarily at curing a disease. He invited a few leaders of the medical profession to meet him, when he posed his enigmatic question. He asked them to name a disease, the cause of which was visible through the naked eye and which affected large numbers of people. The disease had to be easily preventable and curable. Unable to give an immediate answer, they left in order to consider the question further. Sometime later they returned with the answer which was hookworm disease.

Consequently, the Rockefeller Foundation set up a hookworm control programme in the East, based in Manila. Its head, Dr. Victor Heiser paid a preliminary visit to Sri Lanka in 1915. The Rockefeller Institute would provide the funds, and the Medical Department the machinery for a hookworm campaign. Since other British colonies tried to emulate Sri Lanka, a successful campaign here would encourage other countries in the orient to adopt similar measures. However, Heiser had to contend with the antipathy of the planters towards the medical authorities.

Heiser met the incoming PCMO, Dr. G. J. Rutherford who succeeded Perry. Rutherford admitted that the hookworm situation was frightful. He told him that 'the tea planting interests are all powerful, and they are opposed to taking adequate measures against hookworm. We issue a regulation - they get it suspended. We're helpless.'

The same evening, Heiser met the president of the Planters' Association at Colombo Club. The latter was indignant when Heiser spoke of the hookworm situation. He said: 'We are not going to have a lot of health fellows crashing into our affairs. There was a plague scare just when our best harvest was due. It amounted to nothing, but those health inspectors came along threatening to inoculate our labourers, and almost before we could turn round, thousands of them were on their way to India. It nearly ruined us. If ever we let the health service to get started on hookworm, all our labourers would run away and we could not harvest our tea and rubber. No! No health business for us.'

However, with persuasive arguments on the economic advantages of reducing ill health among labourers, Heiser won over the Planters' Association. The planters permitted the Rockefeller Foundation to establish pilot projects in a few estates under the auspices of the Medical Department.

Heiser then met with another obstacle. The Governor, Sir Thomas (later Lord) Chalmers had indicated at first that he did not want any 'Yankee men or Yankee methods introduced; Ceylon was capable of running its own affairs and paying for its own health work.' The Planters' Association, however, brought its influence to bear on the Governor who capitulated. Agreement was signed, but the campaign was held up by World War I which delayed supplies to the country. Finally, in December 1915, the International Health Board of the Rockefeller Foundation commenced its philanthropic operations in Sri Lanka in what was probably the first occasion when a foreign agency co-operated with the government in the health field.

The Rockefeller Foundation first selected a few estates and concentrated on demonstrating the salutary effect of treating the labourers. The drug administered was oil of chenopodium in the form of capsules. At first, the labourers were scared of swallowing these capsules, but their reluctance was gradually overcome. It claimed an efficiency rate of 91 per cent. The excellent results on these few estates were compelling, and the owners realised the economic advantage of a reduction in hospital attendance and death rate. Treatment was rapidly extended to other estates, and by 1921, 200,000 labourers were treated.

After demonstrating the success of treatment, the Foundation started on preventive measures. On realising the economic value of the measures so far adopted, planters were now willing to instal latrines on their estates. Labourers were trained to use them. Having been successful on estates, the Foundation extended the campaign to the Sinhala villages.³⁸

Several American doctors were stationed in Sri Lanka at various times to supervise the programme, and they included Dr. J. E. Snodgrass,³⁹ Dr. W. C. Sweet and Dr. W. P. Jacocks of the Rockefeller Foundation.⁴⁰ The American campaign found its way to the schools. It was discovered that even in leading schools the disease was rampant, though the authorities were unaware of the problem. In 1915, Trinity College, Kandy 'began to taste the bitterness of anchylostomiasis.'⁴¹

The Rockefeller Foundation worked for 12 years from 1915 to 1927. Its work was extended to cover the whole country in 1926 and 1927. An anchylostomiasis committee, with the Colonial Secretary as chairman, planned the campaign for each year. This committee unanimously decided to wind up in 1928. In that year, control work was taken over by the Sanitary Board of the Medical Department. Dr. Jacocks, director of the campaign, was succeeded by a local doctor with the title of Superintendent, Anchylostomiasis Campaign.⁴²

While the efforts of 15 years of work had reduced the problem to some extent, in 1931 79 percent of the population was still infested. Treatment was provided for in schools, estates, hospitals and dispensaries, as well as Mandapam camp, by medical officers and by a special category of workers

designated anchylostomiasis dispensers. With the development of the health unit system and the appointment of medical officers of health, treatment was also provided by sanitary inspectors and public health nurses. The special category of dispensers dwindled in numbers once their recruitment ceased. In 1952, 1,809,722 were treated, and this was a measure of the problem.⁴³

A notable piece of research was done on anchylostomiasis in pregnancy by Dr. G. A. W. Wickramasuriya, who later became professor of obstetrics and gynaecology. He was jointly awarded the Katherine Bishop Harman prize in 1936 for his work on malaria and anchylostomiasis in pregnancy, which was carried out at the de Soysa Lying-in-home, Colombo. He was the first to demonstrate the profound effect of anchylostomiasis on pregnancy, labour and puerperium.⁴⁴

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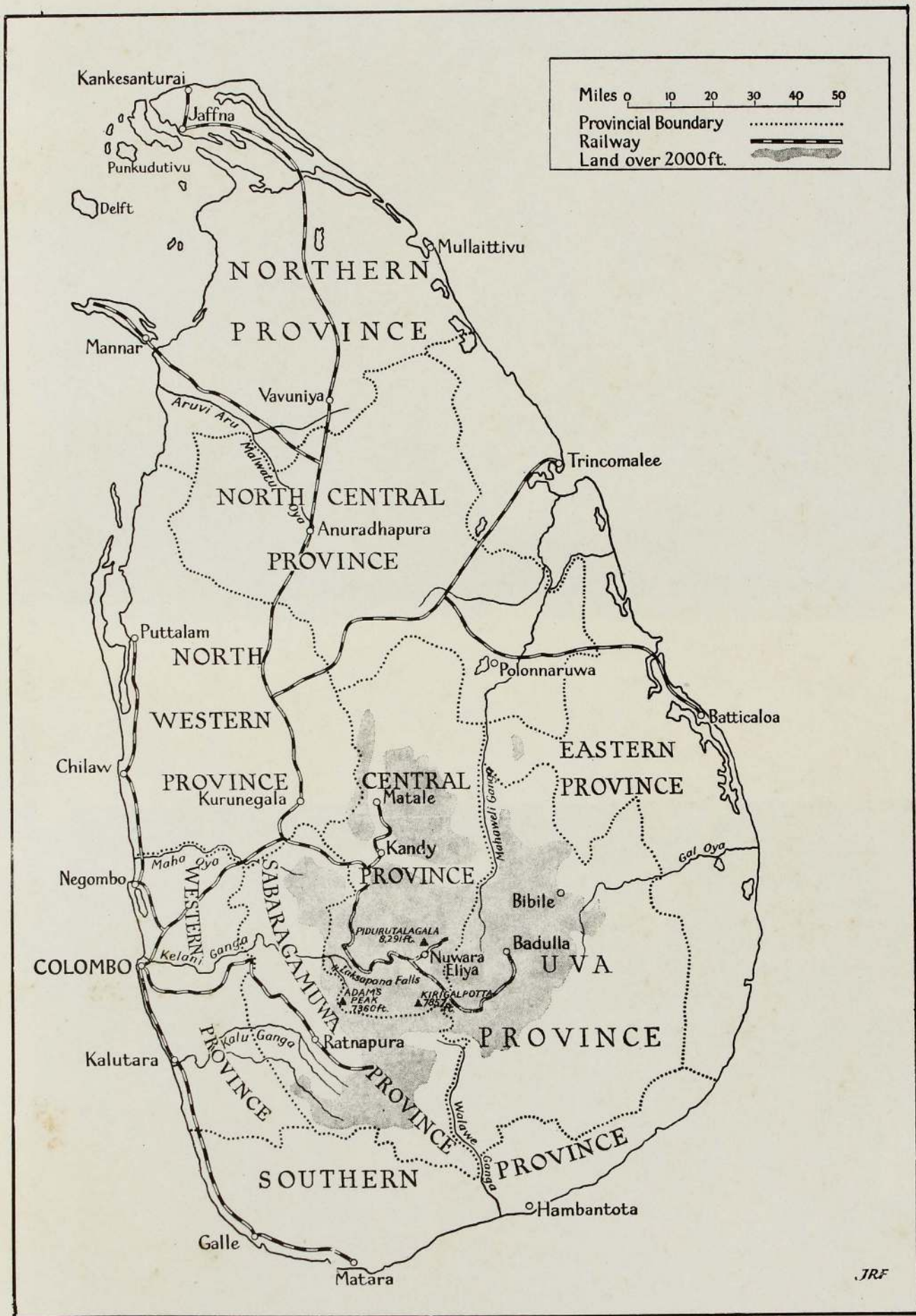


Fig. 1 Map of Sri Lanka

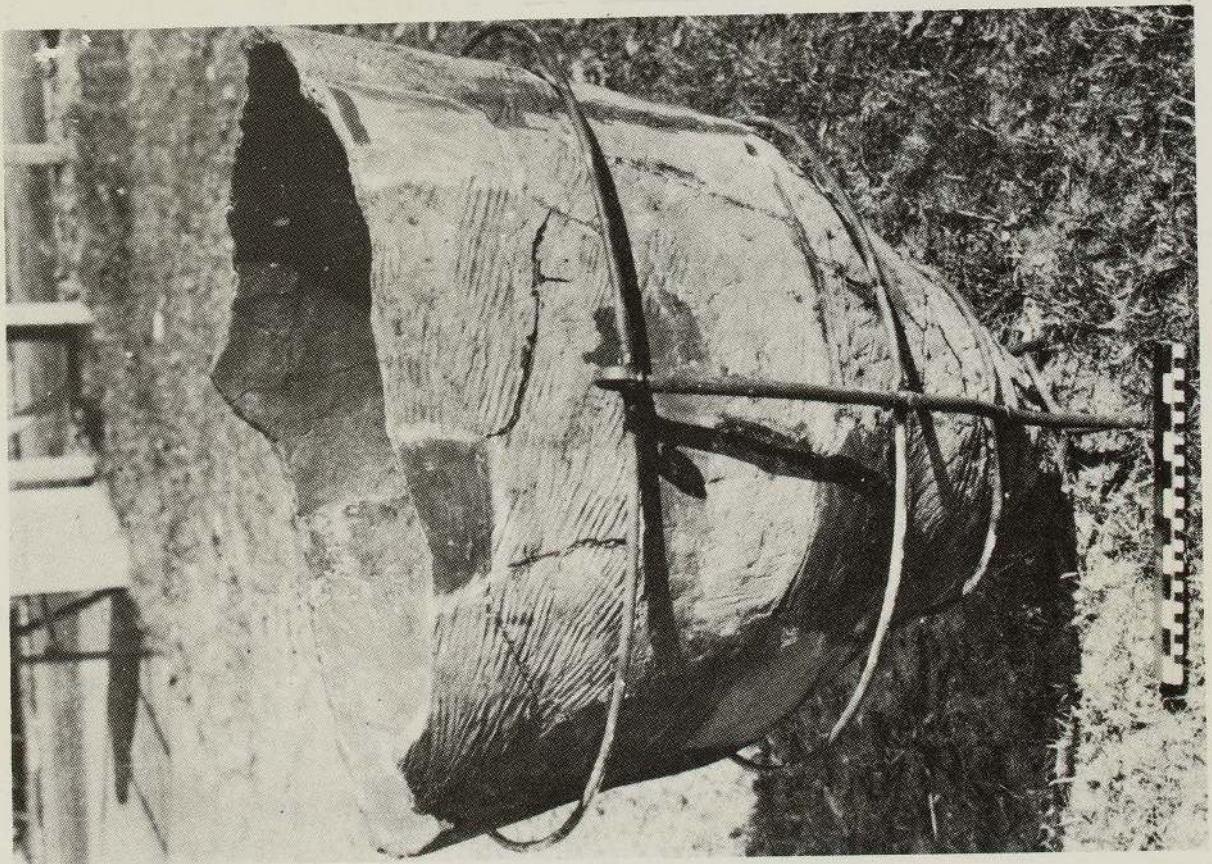
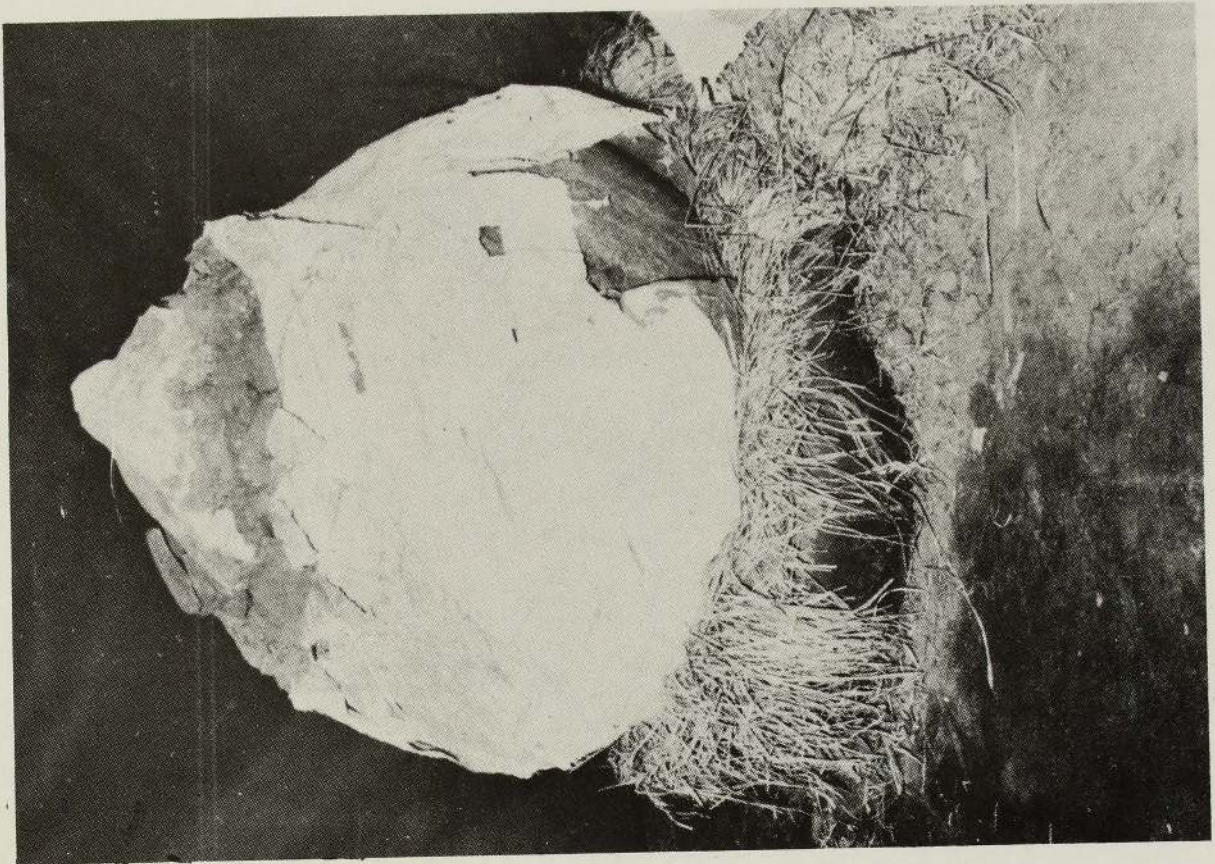


Fig. 2 Iron Age burials from Pomparippu (p.7)

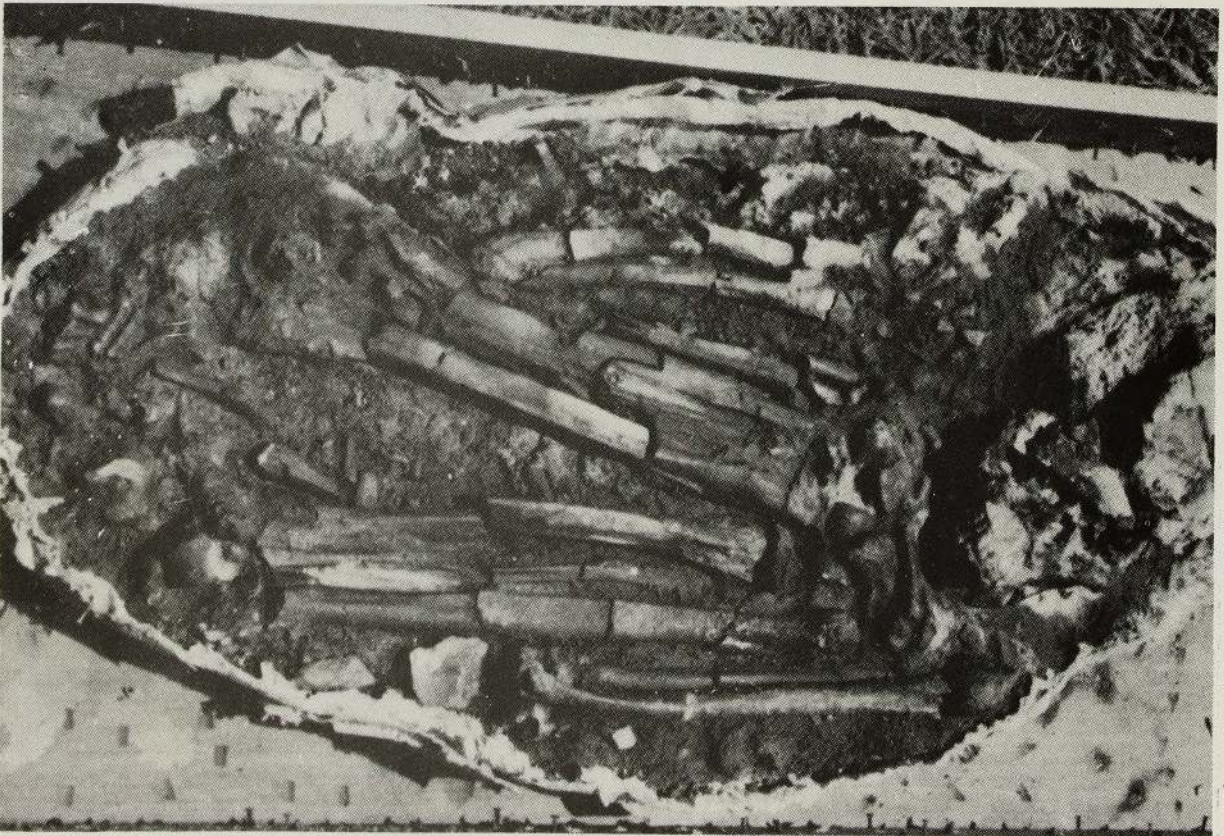


Fig. 3 Bones, 6000 years old, from the mesolithic burial site at Bellan Bendi Palessa (p.8)

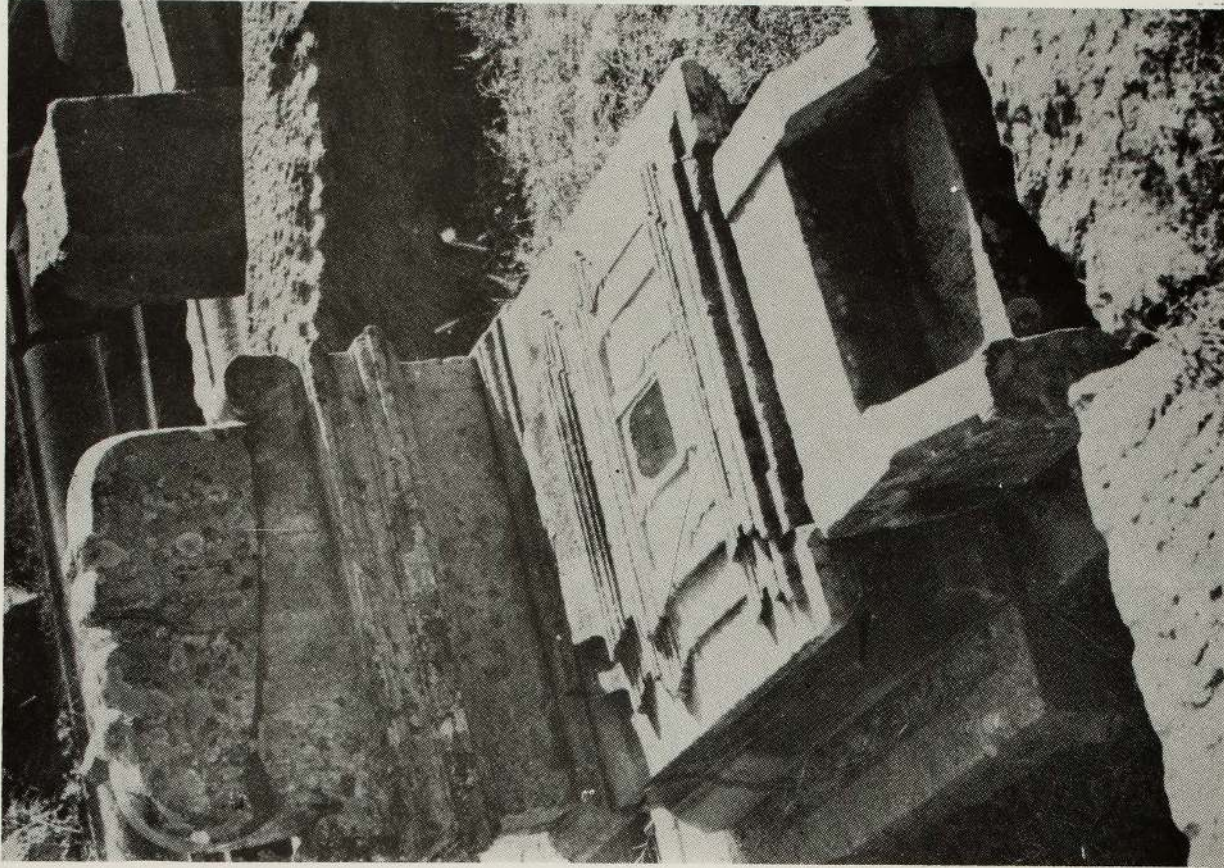


Fig. 4 A urinal stone with an elaborate motif depicting the doorway of a shrine, from Anuradhapura (p.151)

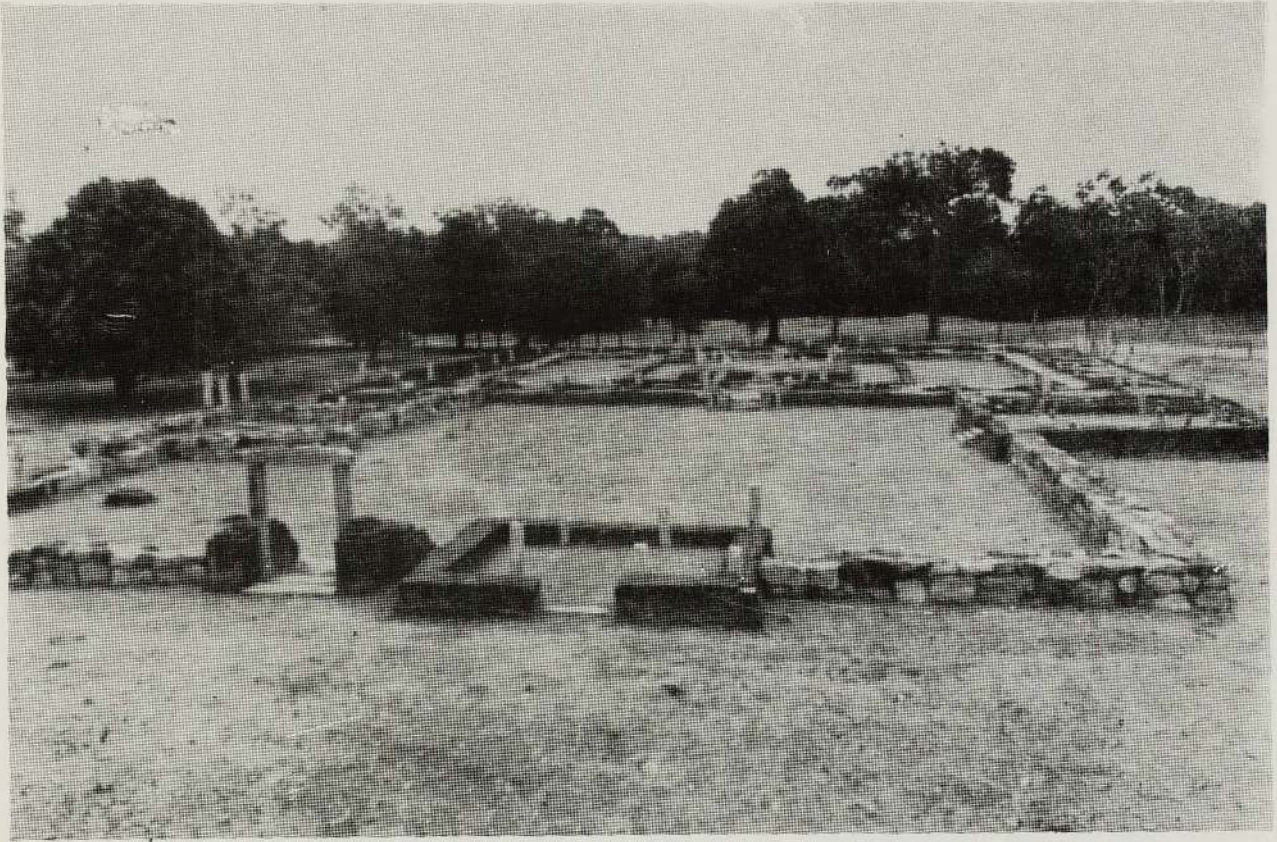


Fig. 5 Ruins of the ninth century hospital at Mihintale (p.28)



Fig. 6 Ruins of the ninth century hospital at Medirigiriya (p.29)

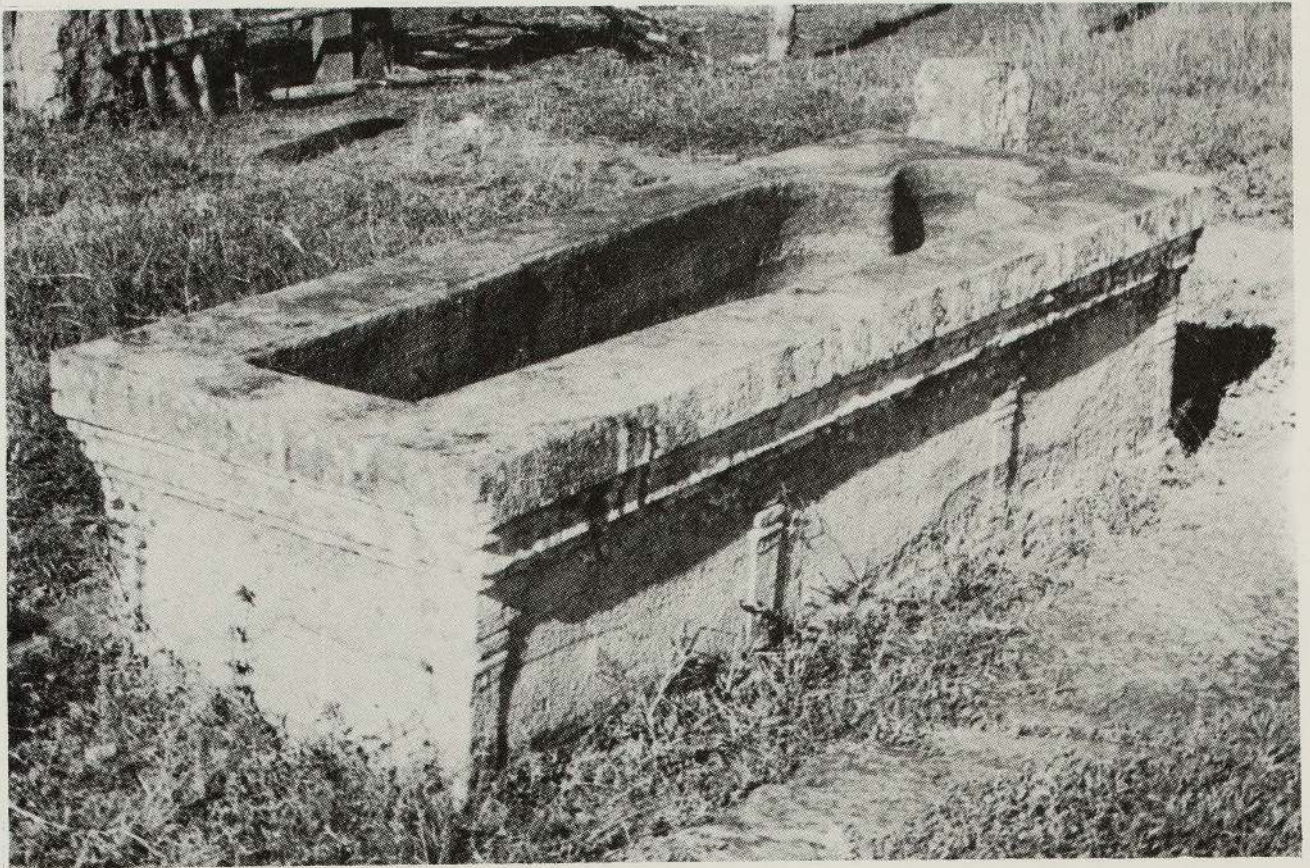


Fig. 7 Medicine trough from Mihintale hospital (p.26)

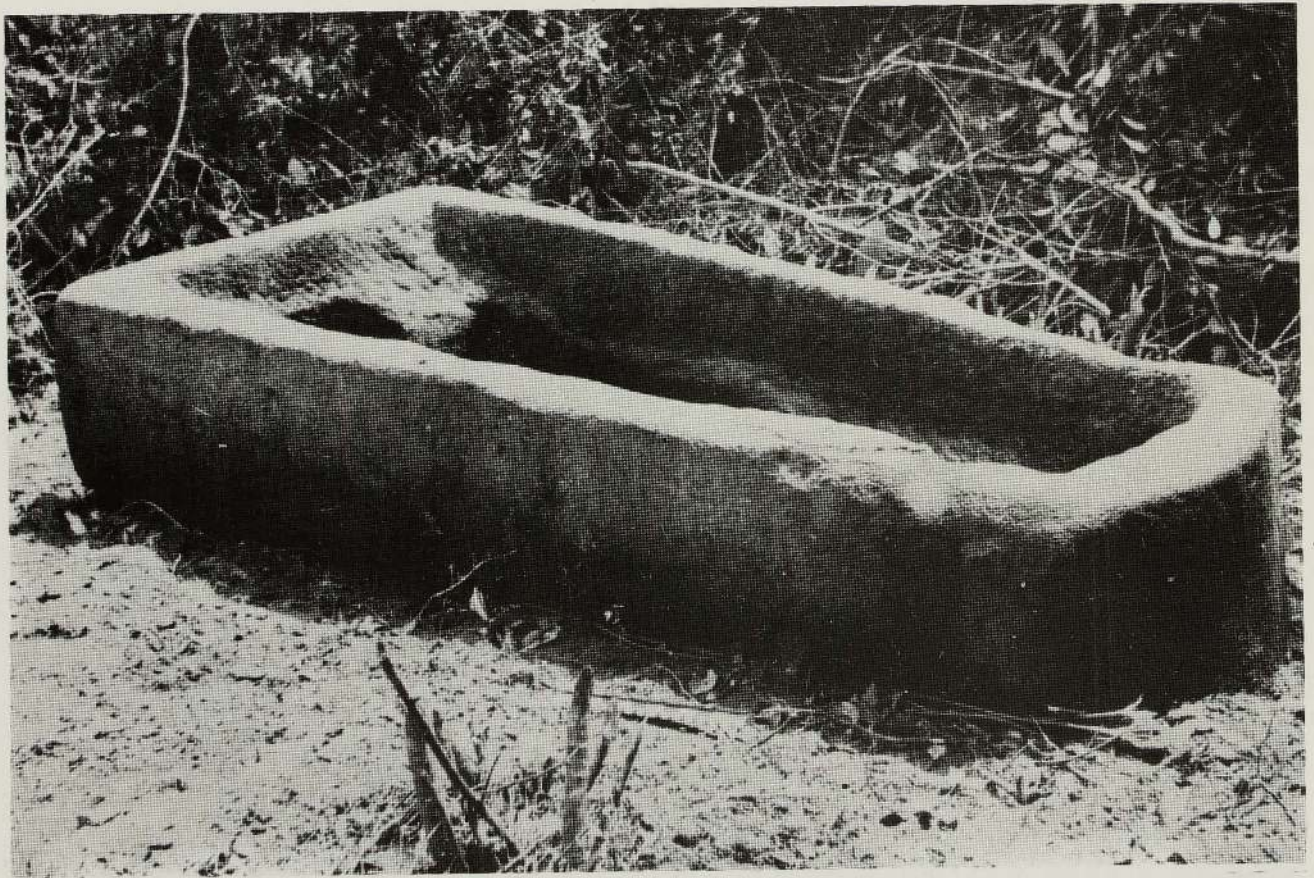


Fig. 8 Medicine trough, Dighavapi (p.26)

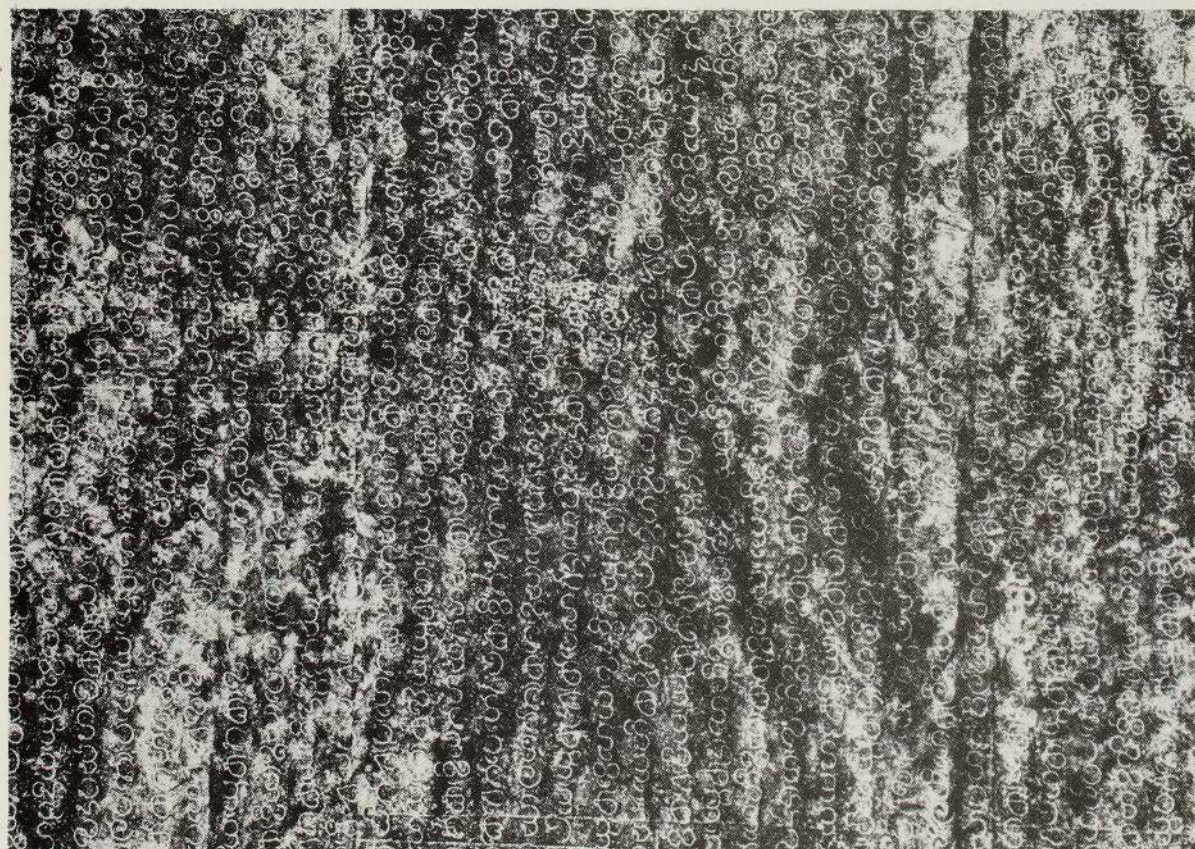


Fig. 9 A part of the Mihintale inscription which refers to the hospital (p.29)



Fig. 10 The colossal, rock-carved statue, Kustarajagala at Weligama (p.233)



Fig. 11 Mortar for pounding medicine (p.39)



Fig. 12 Stones for grinding medicine (p.39)

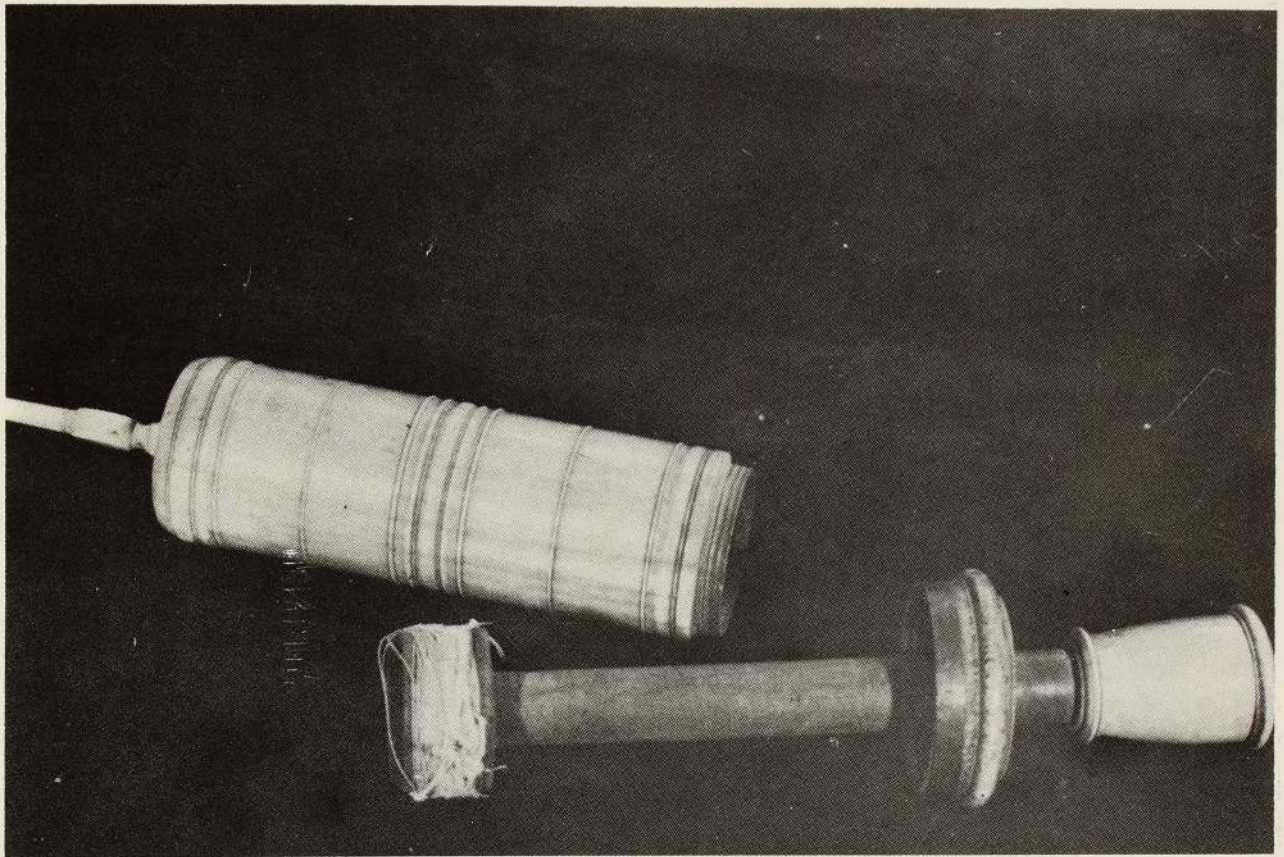


Fig. 13 Ivory enema syringe

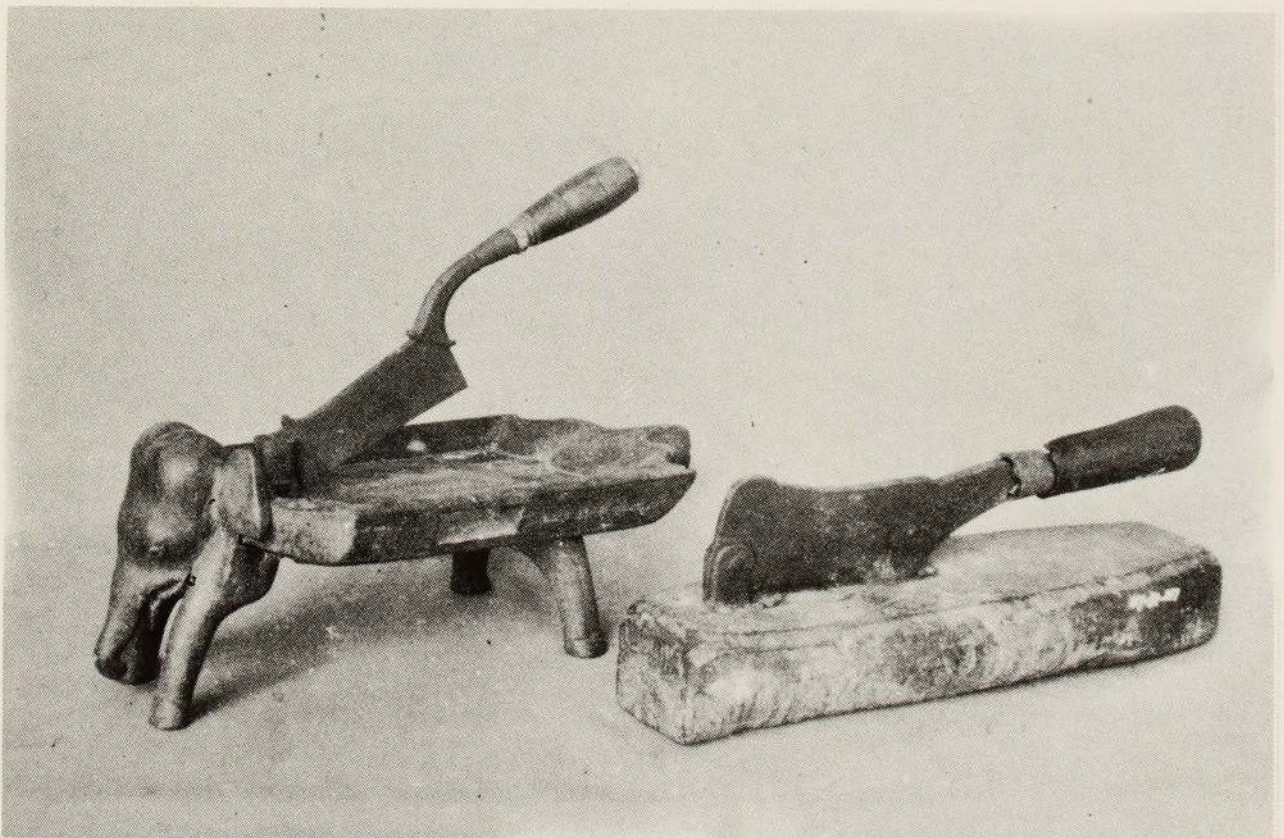


Fig. 14 Medicinal cutters (p.39)

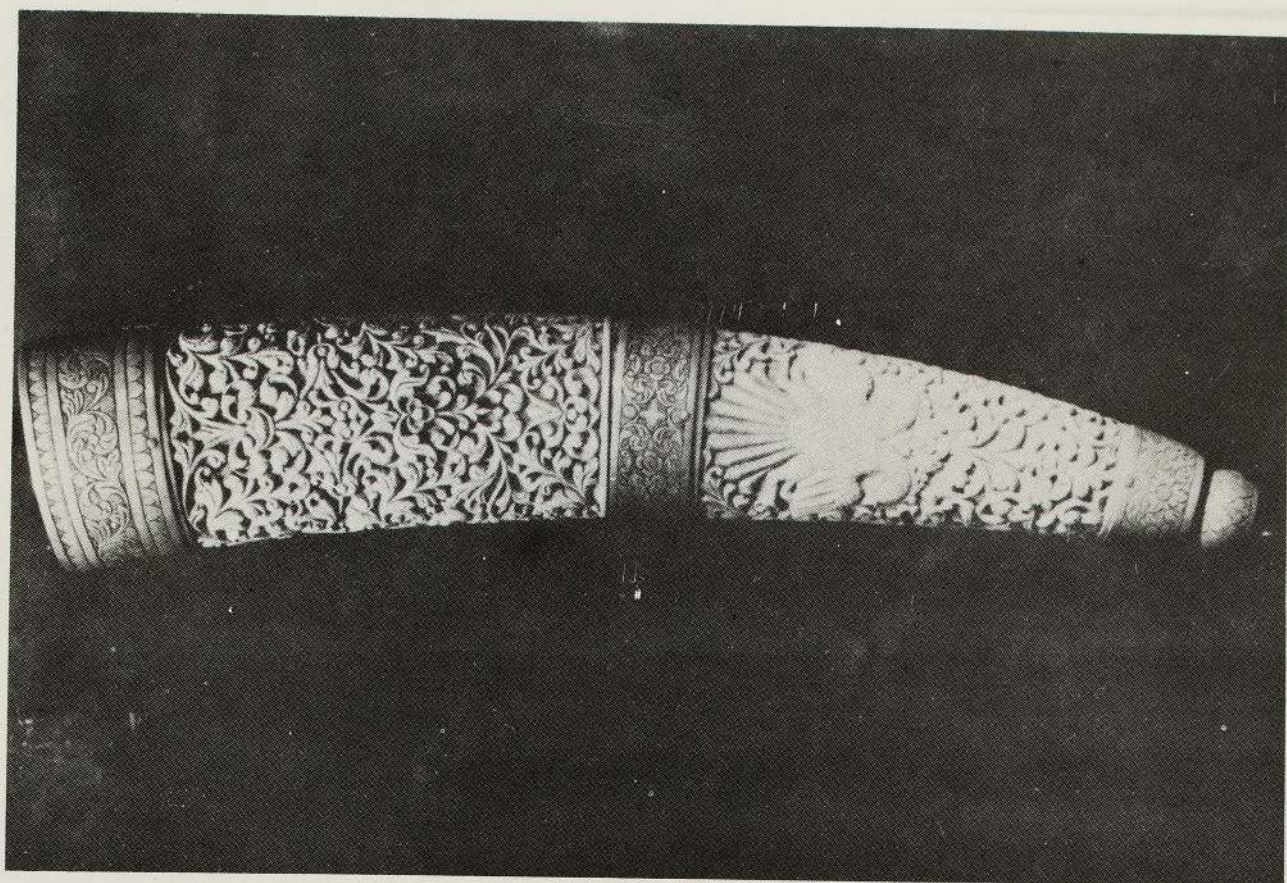


Fig. 15 An ivory medicine container, beautifully carved and capped with a precious stone

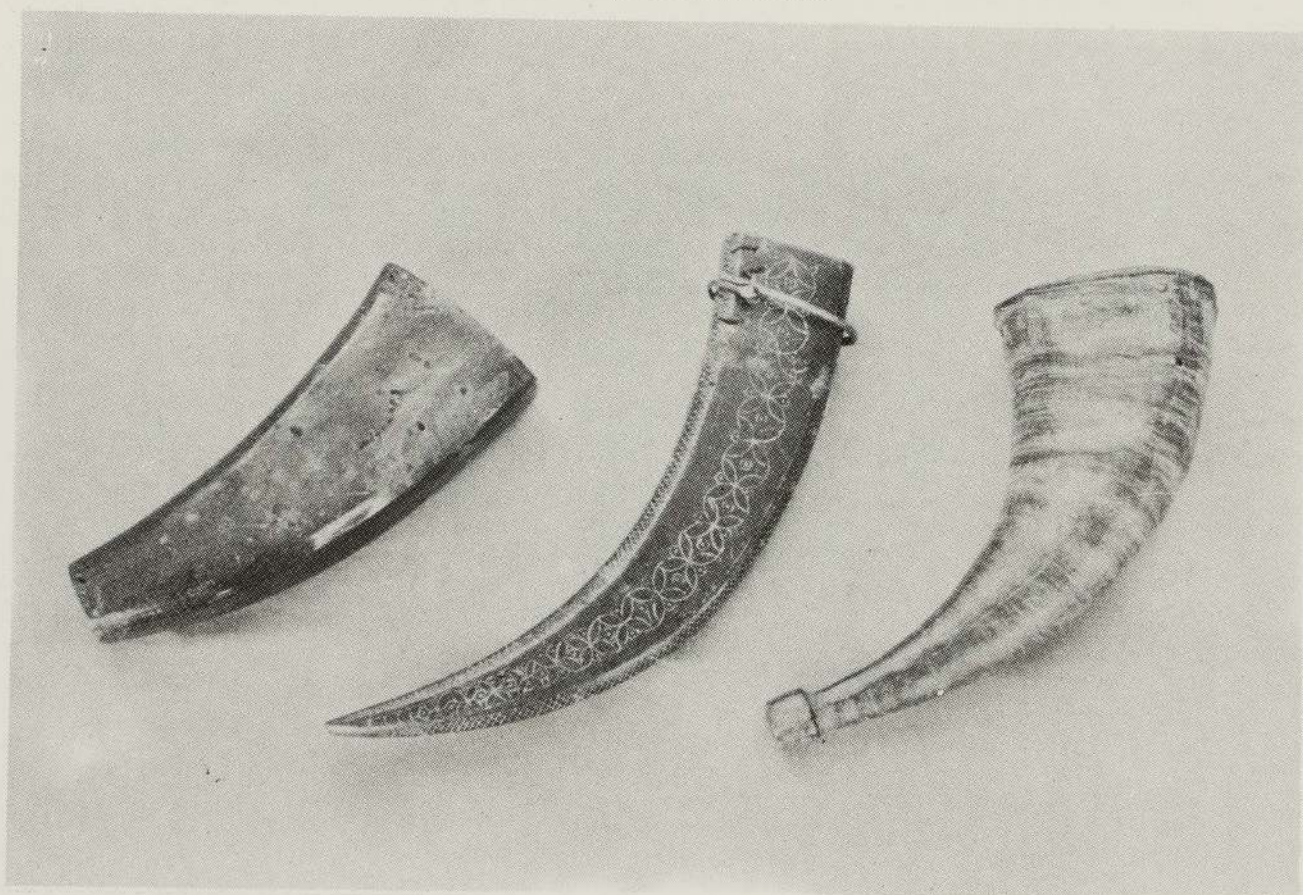


Fig. 16 Buffalo horn for storing medicine (p.167)



Fig 17 Jars from Mihintale hospital for storing medicine (p.40)

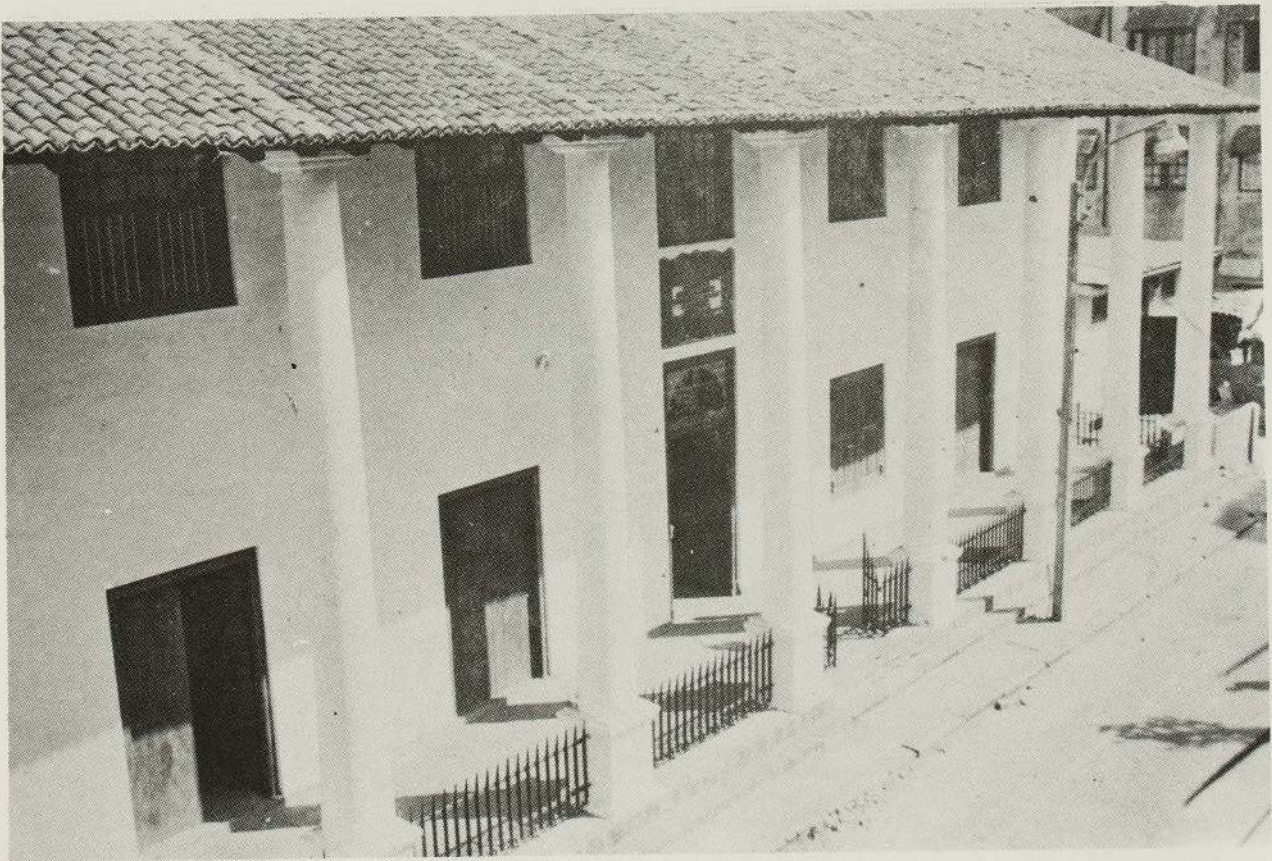


Fig. 18 Recently renovated Dutch building where the Pettah hospital was situated (p.85)



Fig. 20 Snake stones (p.275)

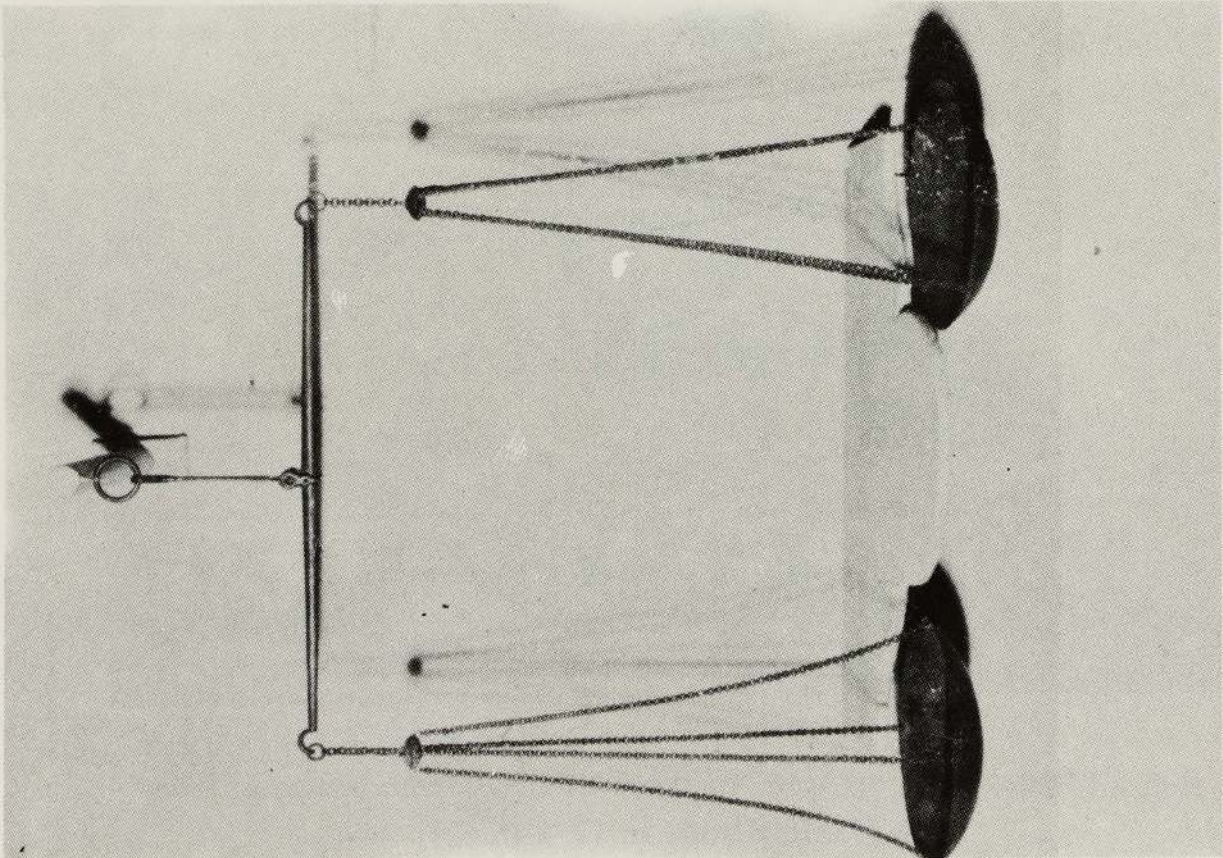


Fig. 19 A scale for weighing medicine (p.39)

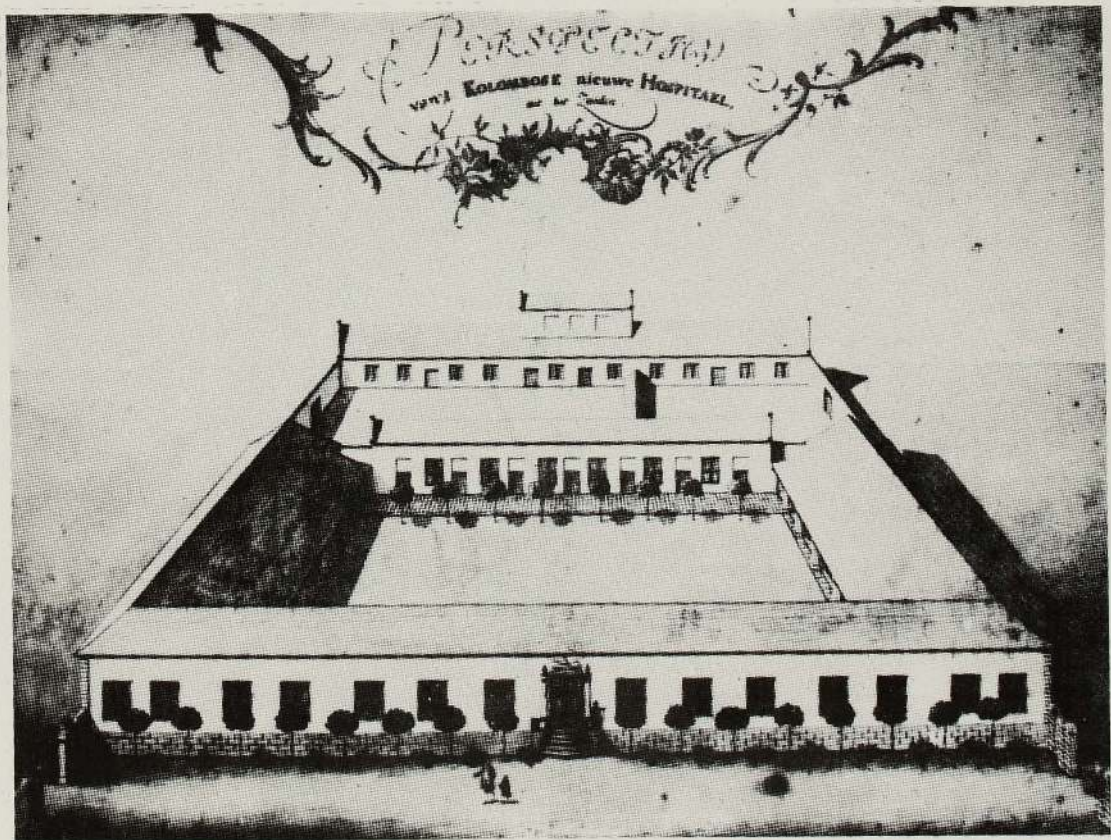
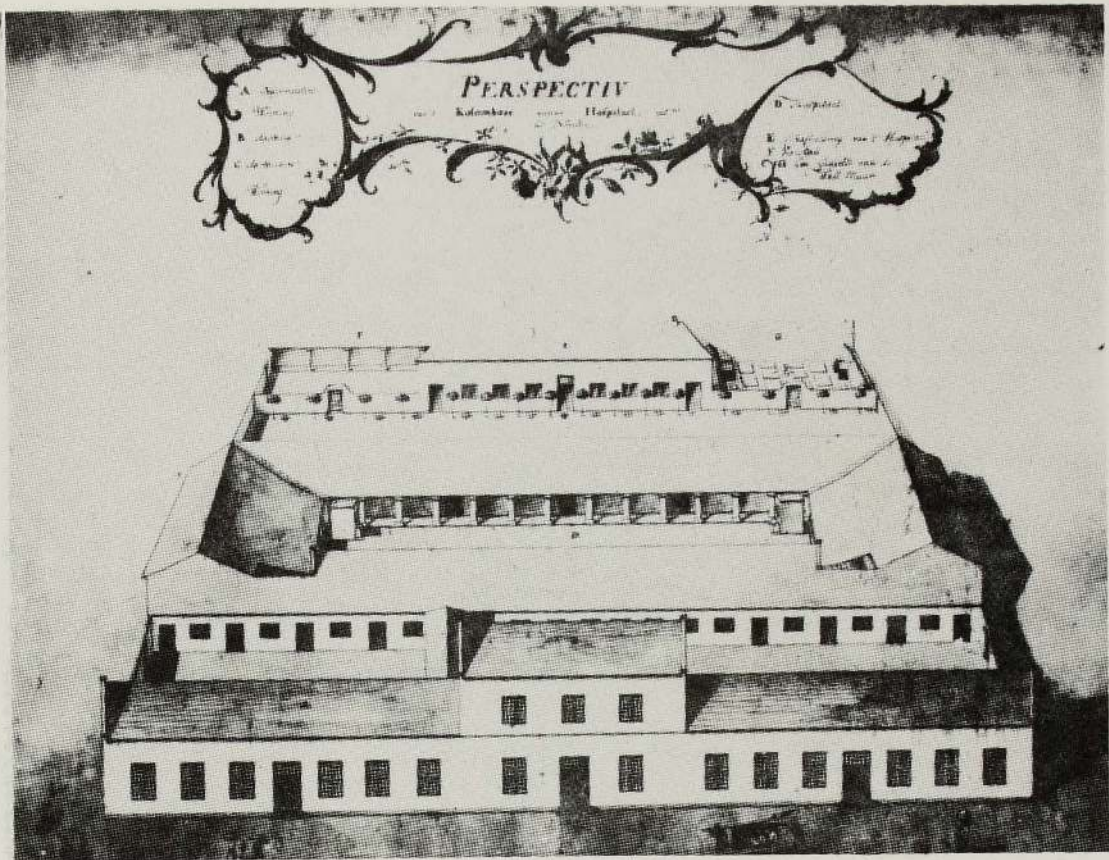
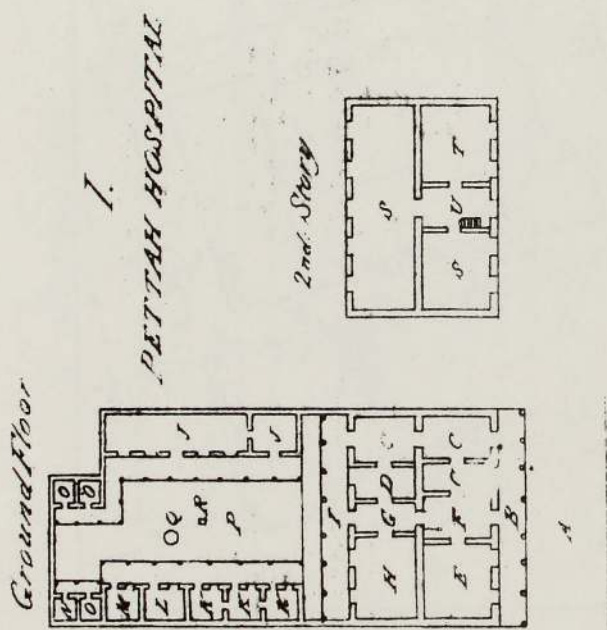


Fig. 21 Front and rear views of the Colombo Dutch hospital, from a painting done in 1771 (p.62)



REFERENCES

| | |
|--|------------------------|
| A Prince Street | 31 1/2 in breadth |
| B Front veranda | 79 ft by 10 |
| C C.C. Quarters of the Medical Officer | 21 by 15 |
| D Payner Surgery | 28' 20 |
| E Pioneer Surgery | 20, 16, 21, 8 |
| F Hall | 34, 21 |
| H Ward | 79, 10 |
| I Back veranda | 53 & 16 together by 15 |
| J Male Wards | 41 together by 12 |
| K K. Female Wards | 15, 12 |
| L Kitchen | 13, 12 |
| M Store room | 100, 35 |
| N Pioneer Store room | |
| O O. Privies | |
| P Back Court | |
| Q Well | |
| R A San shed | 76, 22 & 29, 20 |
| S W Wards | 30, 22 |
| T Store room | |
| U Shut case | |

Fig. 22 Plan of the Pettah hospital in 1834 (p.85)

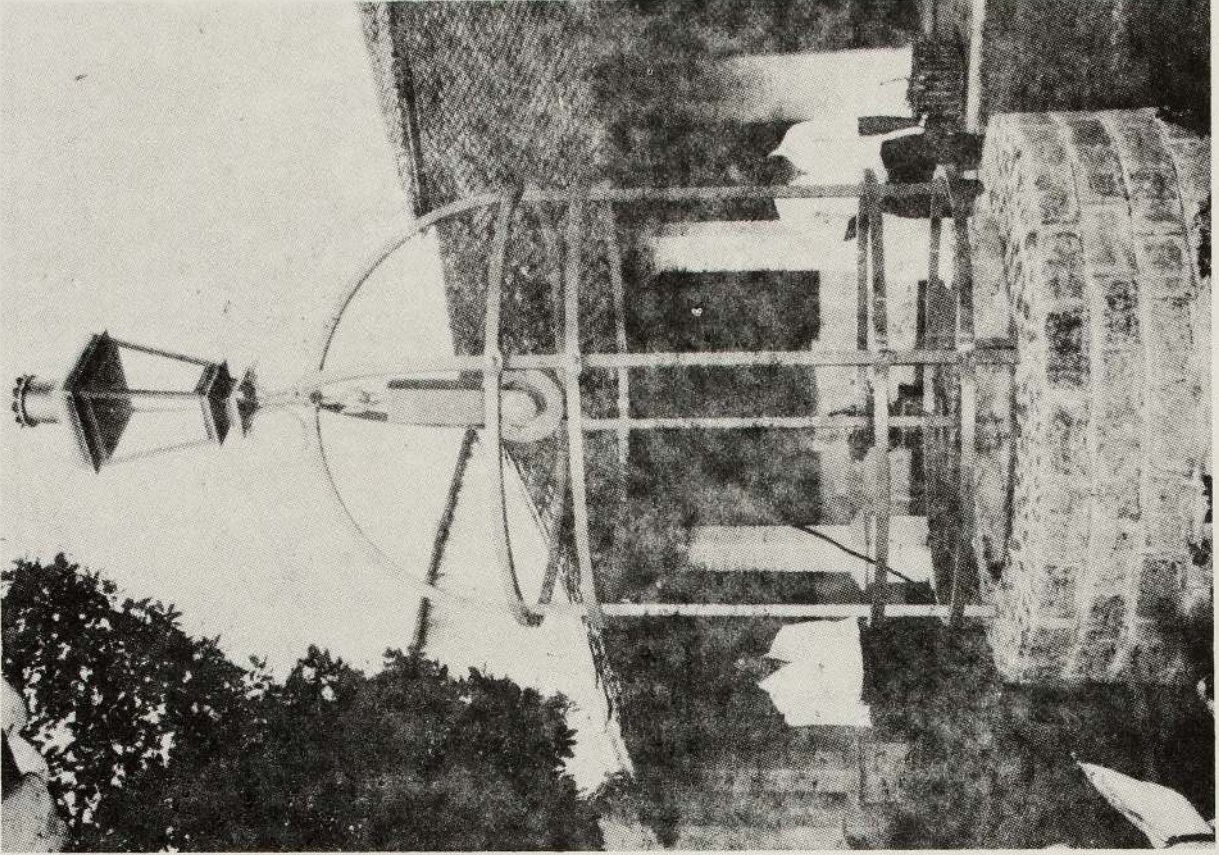


Fig. 23 The well depicted in the plan of the Pettah hospital, as seen today (p.88)

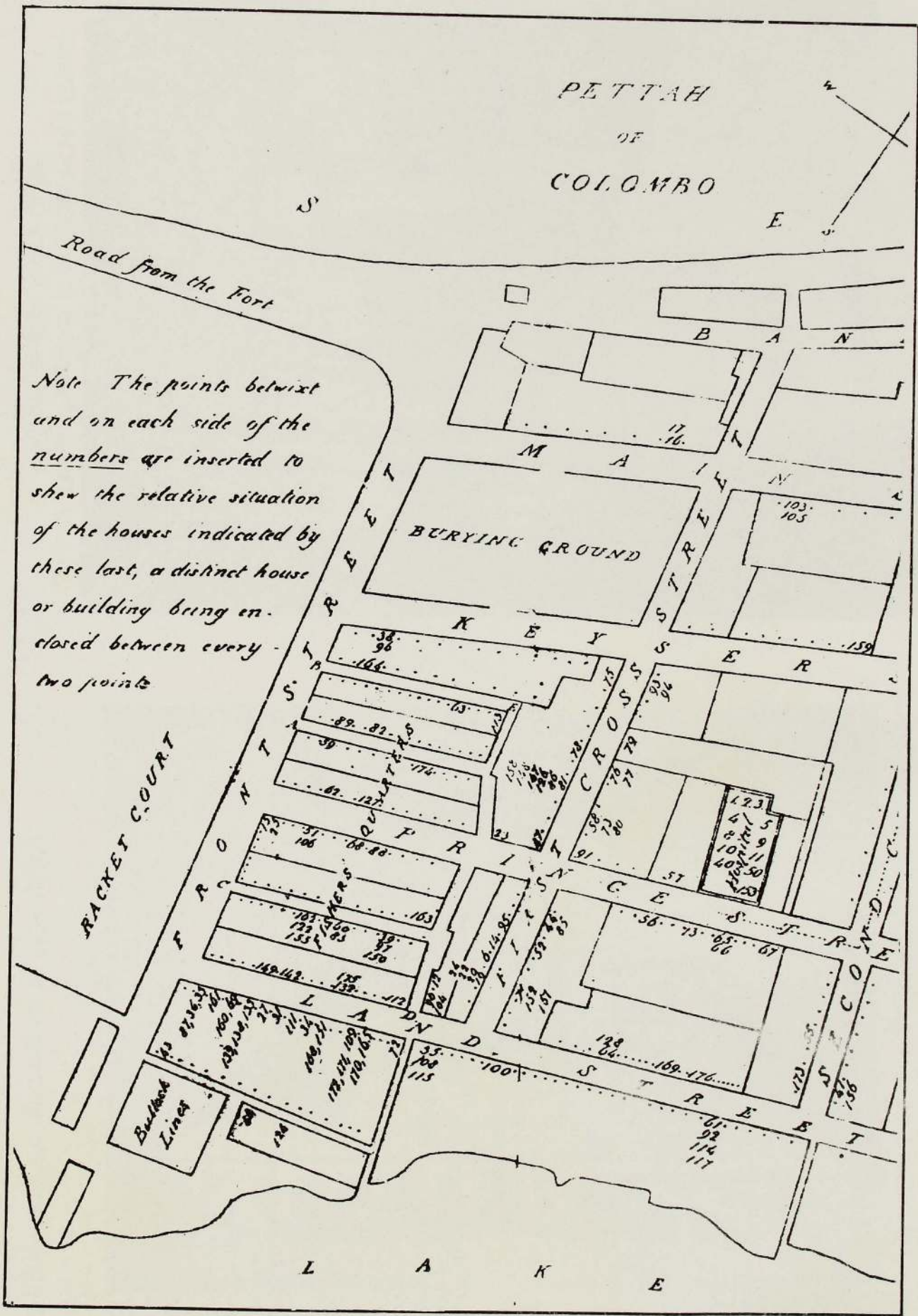


Fig. 24 Plan of Pettah, showing the situation of the Pettah hospital, 1834, (p.85)

● REFERENCES

- AAA Verandas.
 BBB Rooms used for the Sick, respectively 15 ft by 14, 13 by 14, 48 by 12, and 15 by 13.
 CC Store rooms.
 D A small room used as a surgery 12 by 10.
 E A closet in which warm congee and water were kept for the use of the sick, 10 by 4.
 F Three back rooms for cases of confluent small pox, each 16 1/2 by 13.
 G An open shed to keep firewood.
 H Men's privy.
 I Cook House 16 1/2 by 13.
 J A room in which the remains of Patients who died were removed until arrangements had been made for their burial.
 K A temporary shed used for a privy by the females.
 L The premises of Mr _____
 M A temporary building for the inspection of the sick on their first arrival.
 N An old building occupied by the resident Medical Officer.
 O Temporary sheds for the Police Boys.
 P Temporary buildings for the accommodation of the more respectable Patients, respectively 18 and 25 by 10.
 Qiff Wells.
 R Chicken pox ward 25 by 9 and 7.
 S A temporary buildings used as convalescent wards, 36 by 14, and 37 by 12.
 T An enclosed area planted with flowers.

Note. The temporary cypress buildings were lighted and ventilated by Pandacals which are represented in the Plan by lines on the outside of the walls. One of the two marked c had also three windows.

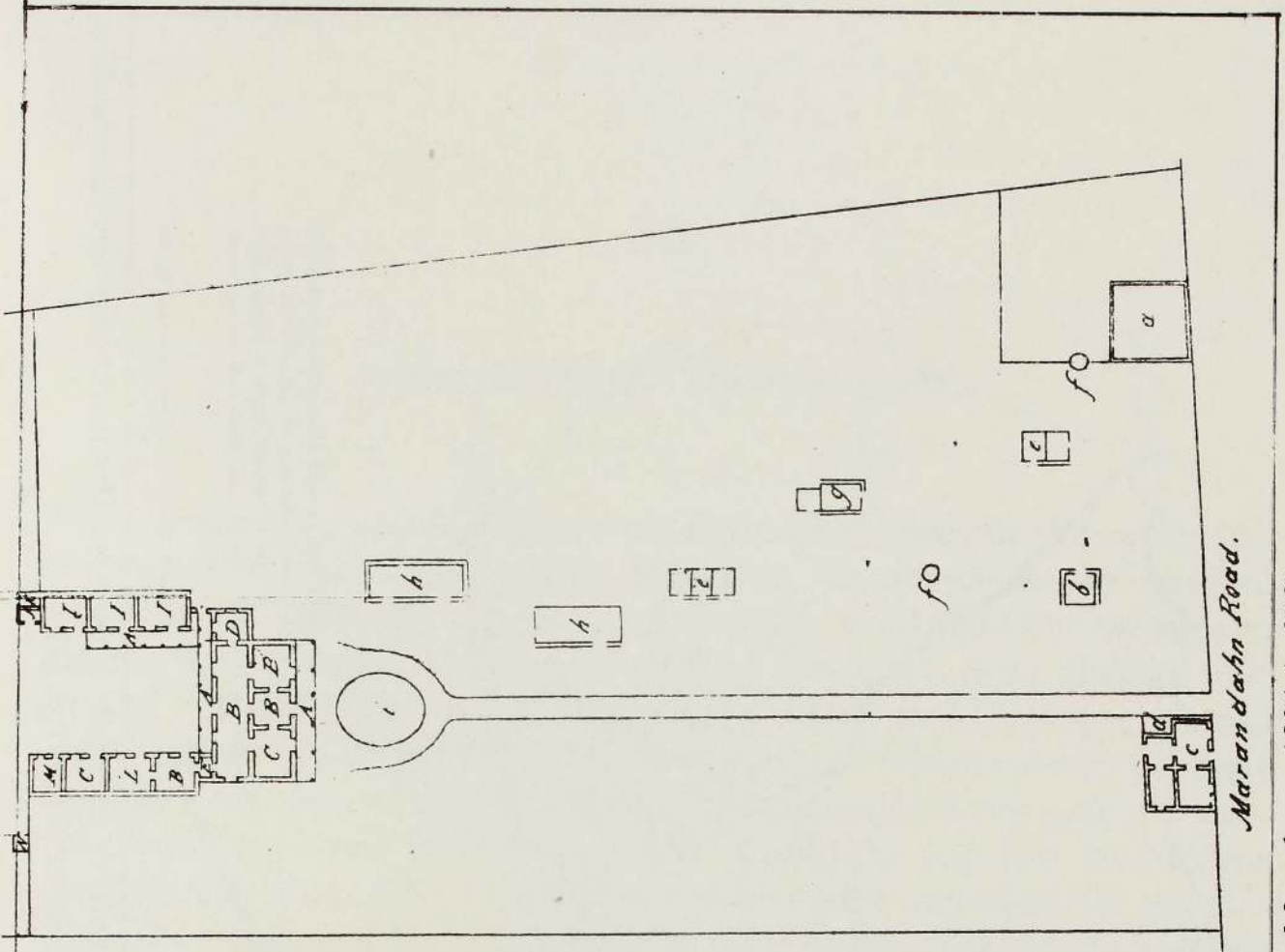
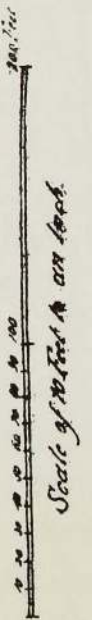


Fig. 25 Small pox hospital at Maradana, 1834 (p.212)

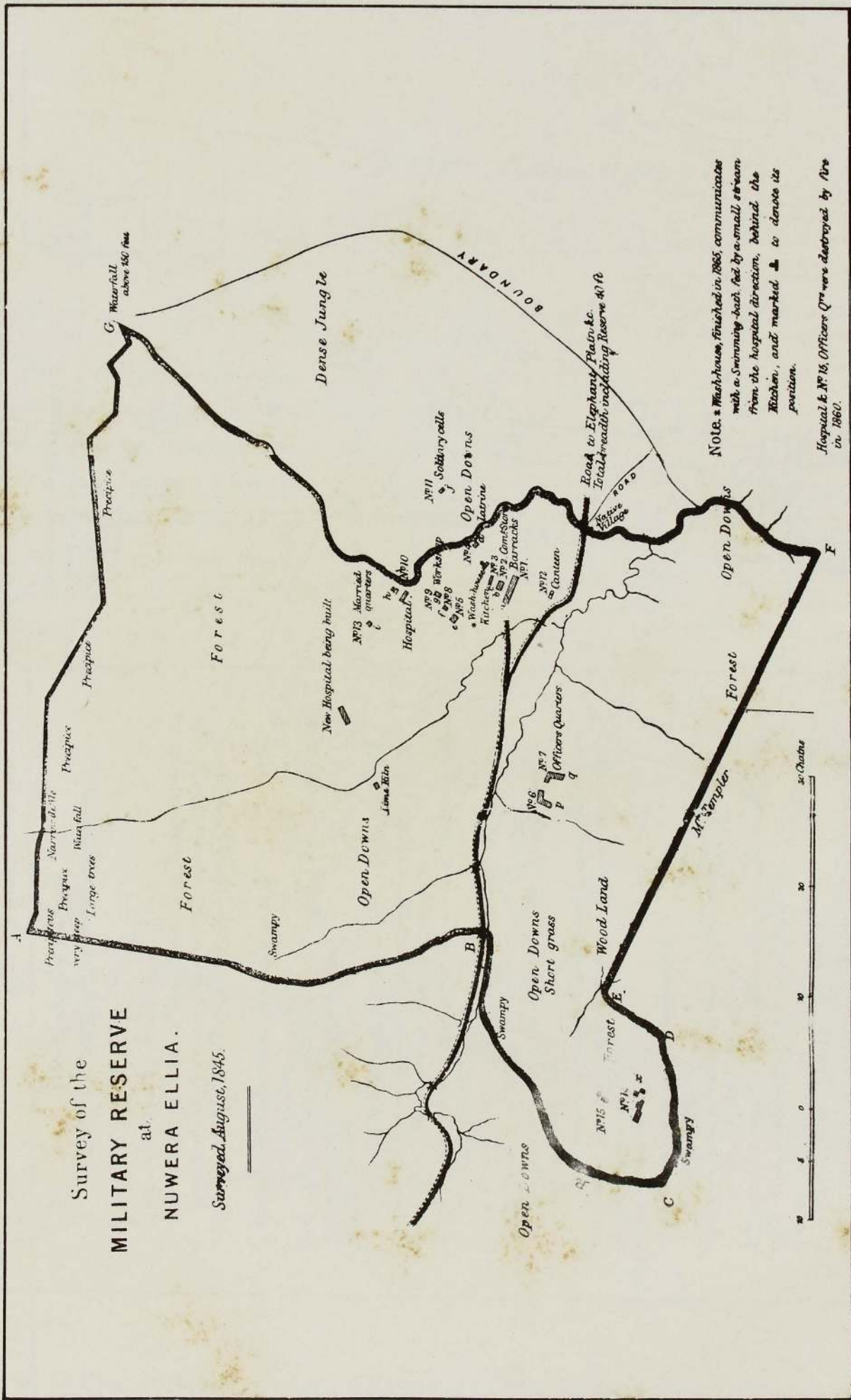


Fig. 26 Plan of the military reserve at Nuwera Eliya, showing the site of the hospital destroyed by fire in 1860 and the situation of the new hospital under construction (p.174)

SOME DISEASES OF THE PAST

A few diseases which held sway in the past, specially during the last century, have had a tremendous impact on the contemporary medical, economic and political scene of the country. It is difficult for the present generation to conceive at this point of time how much these diseases were dreaded by the administration and the people. Asiatic cholera, plague, parangi (yaws) and sprue are only names to the majority of doctors today, but there was a time when the whole machinery of the government was geared to control them. Since their control was often beyond the scope of the Medical Department alone, other government agencies were harnessed for the purpose. The reaction of the government to these diseases depended largely on the particular circumstances of each.

Sprue was the least important of these diseases, but since it involved the most articulate sector of the public, namely the British planters, the reaction of the colonial government was out of proportion to the numbers affected. The condition disappeared from the scene with the departure of the British planters. Asiatic cholera killed tens of thousands, specially during the last century. No government could remain unmoved in the face of such devastation. All the resources of the Medical Department were strained to the utmost in coping with this periodic visitation, and it is a credit to its officers that the disease was never allowed to obtain a permanent foothold in the country. Plague was a universally dreaded disease which touched the very foundations of international shipping. The economic loss to an infected country, through restrictions in shipping, was tremendous. The government clamped down stringent regulations, perhaps more rigorous than called for by the international community, in an attempt to protect the country's trade. Parangi was a very common disease that was with the rural folk for a long time, but it affected the least vociferous sector of the people. Therefore, it took the government an unduly long time to wake up to its obligations.

Cholera

Cholera existed in India for an indefinite period, for references to it were found in ancient Sanskrit writings, but the earliest authentic account of the disease was furnished by Garcia da Orta of Goa in 1563.¹ The Indians called it *morxi* which was corrupted by the Portuguese to *mordeshi*.²

Cholera probably occurred in Sri Lanka too during the Portuguese period. Queyroz described how 'a pestilential disease of beriberi' attacked the Portuguese camp at Menikkadawara. It rapidly killed more than 300.³ Paul E. Pieris believes that this disease was actually cholera.⁴ However, the only evidence that Pieris relied on for his conclusion was the rapidity of a fatal outcome, but this assumption on such inadequate evidence is not convincing.

The first Dutch description was in 1629 by Bontius, a physician from Batavia.⁵ Baldaeus writing in 1641, did not refer to cholera by name, but Macpherson was of the view that one passage had an allusion to it: 'Care must be taken to cover well your belly, hips and legs, for fear of the cramps.' According to his interpretation, cramps referred to cholera.⁶ A Dutch professor, Then Rhyne, writing in 1679, described a colic, which again was interpreted as cholera. He found that it was specially common among Dutch soldiers in Sri Lanka.⁷ The first historical reference to cholera in Sri Lanka was made by Aegidius Daalmans, the Belgian physician, who was in Sri Lanka from 1687 to 1689. He described it as 'a disease which in addition to diarrhoea, is marked by excessive vomiting, and is there known under the name *bort*.' *Bort* or *boort* was the Dutch word for cholera.⁸ Again, during the Dutch period, cholera was reported from Trincomalee in 1774, as well as in 1782. In the latter year, it was raging in epidemic form, and ships at anchor in the harbour were severely affected.⁹

The first great epidemic during British times occurred in 1818, the year of the Kandyan rebellion. It spread from India where an epidemic of huge proportions prevailed in 1817. It first broke out at Jessore, and then spread over India, killing 600,000 during the first year of its rampage. It rapidly spread from South India to Sri Lanka where it first appeared in Jaffnapatam and Colombo. Finally, the whole country was affected. Kynsey wrote: 'I have been informed by competent Sinhalese scholars that previous to this year there was no word in the Sinhalese language for the disease, and that one had to be coined to explain the peculiar symptoms of the seizure.....The word in use is *jala-sanniya*, literally a water-fit, with reference to the serious purging from the bowel.'¹⁰

In 1878, Kynsey found that the earliest records available at the office of the PCMO related to the years 1834, 1835 and 1836, but accurate and continuous records dated only from 1842. However, on the basis of data available from the Army Medical Department, he concluded that from the first appearance of cholera in 1818, the country was frequently visited by outbreaks of the disease. During the period 1842 to 1878, cholera occurred either in epidemic or sporadic form every year except in 1868. Some epidemics were of massive proportions, and literally carried away thousands each year. The biggest outbreaks occurred in 1854 (11,145 cases), 1866 (10,541), 1867 (10,127), and 1877 (22,586). The death rate was invariably over 50 per cent

and in some large epidemics it was as high as 71.11 per cent (1854). The southern part of the country was often spared.¹¹

The epidemic of 1866 and 1867 devastated the Northern province in particular, where a total of 19,156 cases with 11,850 deaths occurred. The rest of the country had only 1512 cases with 980 deaths.¹² This fact prompted the government to appoint a Cholera Commission in 1867. The commissioners traced the disease to an arrival from India.¹³ Ten years later, Jaffna was again visited by another epidemic and the government again reacted by appointing a commission.¹⁴

In 1894, Kynsey declared that cholera was not endemic in Sri Lanka. The disease erupted in epidemic form every nine or ten years. The history of every epidemic demonstrated that it originated from India.¹⁵ Allan Perry, who succeeded Kynsey as PCMO was also of a similar view: 'all outbreaks of cholera can be traced to India.'¹⁶ The spread of cholera by immigrant labour constituted one of the main threats to the health of the people of Sri Lanka. Cholera, being a disease with a short incubation period of two to five days, manifested itself soon after the arrival of an infected person in Sri Lanka. Proper sanitation, which in turn was dependant on a good water supply, was of paramount importance in controlling the spread of the disease. Cholera was common in Kandy till 1878, the year in which a proper water supply was introduced. Since then, for the next 16 years only 25 cases were registered. Again, a water supply scheme was established in Colombo in 1887, and since then not a single case was recorded up to 1899. The disease became entirely limited to districts where water was obtained from wells or tanks which were liable to pollution.¹⁷

Perry reported that there were no cases of cholera in 1899, while for the previous 30 years the disease was present every year in more or less severe epidemic form in some part of the country. He attributed this freedom from the disease in 1899 to the closure of the North Road to immigrant traffic.¹⁸ The number of cases declined to insignificant levels from 1921. During the ten year period, 1941-1950, there were only 242 cases with 164 deaths.¹⁹

In the extensive epidemic of 1854, Dr. S. F. Green, who was in the forefront of the fight against cholera, himself contracted the disease, but recovered after an anxious period. He recorded some strange customs of the people of Jaffna. When cholera was prevalent, the people applied margosa oil on their heads instead of gingelly oil, so that its smell would drive away the devil and prevent cholera. He described another practice:

'The people of Caradive loaded a raft with boiled rice and fruits, and by enchantments got the cholera devil to board it, and then had it towed off into the mid sea, and left it to be driven to some shore or other. They think the cholera was formerly confined to the adjacent continent, but in this way it has reached this, and now they hope thus to get rid of it.'²⁰

Another unusual practice, this time under official patronage, was

reported from Kandy in 1845. Cholera was attributed to the consumption of *mora* (S) (*Nephelium Longana*) fruit. The police were ordered to prevent these fruits being carried into the town, but this precaution had apparently little effect, for soon after, the 95th Regiment which was stationed in Kandy lost 52 men from cholera.²¹ The 1845 epidemic was particularly severe on Kandy, where it was claimed a fifth of the population was carried away. Bishop Chapman visited Kandy to hold a thanksgiving service after the epidemic was over, and to comfort those soldiers of the 95th Regiment who had survived.²²

Epidemics of cholera invariably instilled panic into the affected districts. Life was disrupted and economy at a standstill. In a situation where the cause of the disease was unknown, people were ready to grasp at any plausible preventive or remedial measure. In the 1858 epidemic, for example, the police were stationed outside Galle in order to prevent pilgrims entering the town.²³ Various types of treatment had their own advocates. Covington used 'opium as the sheet anchor in cholera and as antidote to the poisonous action of sulphuretted hydrogen and other similar gases in the human system.'²⁴ Dr. Green directed physicians 'at Manepy, Oodooville and Tillipally in the use of the castor oil treatment.'²⁵ The newspaper, *Colombo Examiner*, of 7th October, 1846, carried an advertisement on a 'cholera preventive or sedative mixture' prepared by Clarke and Romer of Colombo and Kandy.²⁶

In the cases of cholera, the invariable complaint has been that the disease was imported from elsewhere. In 1819, there was a counter accusation that the disease was introduced to Mauritius from Sri Lanka:

'The disease (cholera) appeared extensively in the island (Mauritius) in November 1819, and has been supposed to have been brought thither from Ceylon by the *Toapaze* frigate, which arrived at the Mauritius in October. But a careful inquiry into the circumstances of the case convinced a committee of British medical officers that the disease was not imported nor of foreign growth.'²⁷

The Medical Department, for its part, did its best to control the spread of cholera. Several emergency measures were taken after proclaiming a diseased area. Patients were removed to hospital, and when necessary, extra accommodation was found by opening temporary hospitals. The houses and the streets where the disease occurred were guarded by the police. Inmates were removed from infected houses, and allowed to return only five days after disinfection, for which rigorous measures were sometimes adopted. Furniture was washed with a solution of carbolic. Soiled linen of little value was burnt. Boiling of other clothes in carbolic solution, burning the floor of the house with straw and kerosine oil, fumigation of the house for three to four hours with burning sulphur, and painting the walls with a mixture of carbolic and lime were other measures adopted. In case of death, burial was

enforced as soon as possible, the funeral procession being allowed to proceed only along a fixed route.²⁸

It was not possible to enforce these regulations always, specially in times of large epidemics. There was often opposition to hospitalisation of patients, and this fear of segregation led to concealment of cases. One reason for refusing to enter hospital in the north was the reluctance of high class people to be nursed by low caste attendants. In the Trincomalee epidemic of 1891, the Assistant Government Agent, in an attempt at discouraging the drinking of polluted water, soiled a well with tar. This act led to a riot in which he was assaulted.²⁹

In the preventive sphere, efforts were made at reducing the importation of cholera, along with other communicable diseases, by immigrant South Indian labourers. Quarantine camps were established in South India, and immigrant hospitals built along the North Road. When necessary, temporary hospitals too were set up *en route*. In 1888, for example, such temporary hospitals were established at Aluvihara, Nalanda, Maradankadawala, Tiripane, and Madawachchiya. Each was in charge of a medical officer.³⁰

Recognition of immigrant labour as the root cause of all cholera epidemics, and the application of preventive measures directed at this sector, began to yield results. While in the ten year period, 1871-1880 there were 36,756 cases of cholera, there were only 3868 cases in the next decade. With the closure of the North Road, the figures fell further, there being only 1718 cases from 1901 to 1910.³¹

At the time of closure of the North Road in 1899, a camp was opened at Tattaparai in South India, nine miles from Tuticorin. It was in charge of a medical officer. This camp served as a place of detention for labourers and others on their way to Sri Lanka. On arrival in Sri Lanka, they were quarantined at Ragama.

With the opening in February 1914 of the Indo-Sri Lanka railway route, a quarantine camp was established at Mandapam in 1914. The practice of stationing quarantine medical officers at the ports of Tondi, Ambapatnam and Pamban in Romnad District for the purpose of issuing health certificates to passengers enabling them to land in Sri Lanka was discontinued. The traffic was instead diverted to the Indo-Sri Lanka railway route through Mandapam and Danuskodi. With the establishment of Mandapam camp, the Tuticoin route was closed to estate traffic. Ragama camp too was closed and quarantine was enforced at Mandapam instead. These quarantine camps helped to prevent the introduction of not only cholera, but also other communicable diseases such as small pox and plague.

Plague

Plague is a disease of great antiquity, dating back to biblical times. At first, the term was used loosely for any kind of fatal epidemic disease, but was later restricted to the disease caused by the plague bacillus, *Bacillus pestis*, which was discovered by Yersin in 1894. It is essentially a disease

of rats, and is conveyed to man by the bite of fleas which have fed on infected rats.

There is no evidence to suggest the occurrence of plague in Sri Lanka before the British period. The first time a plague warning was sounded in Sri Lanka was in 1802 when there was an epidemic in Egypt. Governor North issued a proclamation on 23rd June, 1802. Its preamble read:

‘Whereas we have received authentic information that the plague has broke out in different parts of Egypt, and whereas there is reason to expect that some part of the army of India returning from that country, may touch at this island, we taking into our most serious consideration the fatal consequences that might ensue from that disease being introduced into these settlements, have resolved to guard against that danger by every means in our power.’³²

Any ship arriving in Sri Lanka after the issue of this proclamation was subject to strict quarantine. Unauthorised boats were not allowed to reach such ships, nor boats from those ships allowed to touch ashore. Arrangements were also made for quarantining persons and goods landed from such ships:

‘And whereas we have deemed it expedient to establish temporary lazarettos at Colombo, Trincomalee and Galle for the reception of persons who may arrive from any port in the Red Sea or coast of Arabia, and for the reception of any goods, wares or merchandise brought by any ship, doney or other vessel from any port or ports as aforesaid, there to remain during the performance of their quarantine, we do strictly forbid and prohibit all persons whatsoever from entering these lazarettos, except by permission of the medical superintendents.’³³

Many years later, in 1896, there was another threat, this time from India, when plague raged in Bombay and the western coast. This pandemic originated in the Canton province in China in 1894 and within a few years spread to many countries, including Japan, Australia, Egypt, Uruguay, Kenya and Uganda. In India, plague occurred in Bombay after a lapse of nearly two centuries. In India alone the mortality was 12½ million.³⁴

The Governor appointed a Plague Commission to recommend ways and means of averting the introduction of the disease into Sri Lanka.³⁵ This plague epidemic in India turned out to be a turning point in the control of communicable diseases in the country. As a result, health requirements for entry into the country from India were tightened, and this had the salutary effect of reducing the entry of plague, as well as cholera and small pox into Sri Lanka.

In 1896, the Governor, Sir West Ridgeway, appointed a standing committee, known as the Plague Committee, to advise him on the measures to be adopted at the ports. Despite its name, this committee which met regularly advised the Governor on measures to prevent the entry of cholera and small pox as well.³⁶

Intense and careful preparations were made to deal with the situation in case plague was introduced into Sri Lanka. Galle was selected as the quarantine harbour for plague infected vessels. The infectious diseases

hospital on Buona Vista Hill was converted into a temporary plague hospital. In other ports and towns, too, land was cleared and kept ready for treatment of plague if cases occurred.³⁷ These preparations were justified, for in 1898, the country was faced with the first case of plague. The patient was a lad from Bombay who had joined the ss. *Ballaarat* at Bombay. The ship, which arrived on 20th August, was quickly diverted to Galle where the patient was landed. He was taken to the plague hospital where he died. The body was buried in the premises of the hospital under proper precautions.³⁸ The medical officer and the attendants were kept under quarantine for twelve days.³⁹ In the same year a second case occurred in a ship which again came from Bombay. The patient died on board the ship, and the body was buried at sea.⁴⁰ There was a happier ending to a third case landed in Galle in 1903. The patient recovered.⁴¹

In 1897, the Quarantine and Prevention of Diseases Ordinance was enacted. The government decided to open the Tattaparai camp for labourers and other passengers travelling to Sri Lanka.⁴² The stringent preventive measures appeared to have been successful, for the country remained free of plague for 18 years after the outbreak in Bombay.

The first ever recorded case of plague of local origin was detected at Sea Street in Colombo on 25th January, 1914, by Aldo Castellani and Marshall Philip. The plague bacillus was identified by Castellani in the blood of the victim.⁴³ In the first five years after its introduction, 1347 cases with 1192 deaths occurred in the country. Plague was present every year from 1914 to 1938 when the last case was reported. During this period, the total number of cases was 3305 and the mortality 2965 (90 per cent).⁴⁴

Plague first appeared in South India only in 1912. Allan Perry remarked in 1912 that 'for the last 14 years, only 5 to 6 cases of plague have been brought to its shores (Sri Lanka) by ships from Indian ports.' In this regard, he paid a compliment to the government of India for the measures adopted regarding plague and emigration.⁴⁵

The fact that South India and Sri Lanka remained free of plague for so long, while it was raging in the west coast of India, puzzled the medical profession. The solution was provided by Dr. L. Fabian Hirst working in Sri Lanka. He was the first microbiologist of the Colombo Municipal Council, having been appointed in 1911. His work was recognised internationally.⁴⁶

Hirst found that the common rat flea of Sri Lanka was *Xenopsylla astia*, which again was the prevalent type in Madras. This flea seldom bit man at temperatures over 80° F. It displayed more activity between 70 and 80° F. Hirst argued that both Colombo and Madras had high mean temperatures, and since the predominant type of flea in both places was *X. astia*, these cities were relatively free of the disease.⁴⁷ This hypothesis received confirmation from workers in India.⁴⁸ In 1932, Hirst was able to successfully predict an outbreak of plague in Kurunegala by detecting that the popula-

tion of *X. cheopis* which was mainly responsible for the spread of the disease, had risen.⁴⁹ In the epidemic in Colombo which started in 1914, cases were most frequent in the cooler months of December and January when the mean temperature was just above 70° F, and least common when the temperature rose to 80° F.⁵⁰

The first case of plague in Sri Lanka in 1914 was traced to a shipment of rice received from Burma via Nagapatam. Burma was at the time infected by the pandemic. Sri Lanka was then heavily dependant on imported rice which was stored in Sea Street. With the outbreak starting in Sea Street, provisional storage space for rice was found elsewhere, and in 1915, Chalmers Granaries were built to serve as a permanent rice store.⁵¹

During the 25 years that plague prevailed in Sri Lanka, several towns, besides Colombo, were affected from time to time. Dr. Victor Heiser, head of the hookworm control programme in the East of the Rockefeller Foundation, was in Sri Lanka on one of his periodic visits when an outbreak occurred in Kandy. He rather colourfully summarised the then colonial attitude to plague:

‘People in Ceylon were generally accustomed to having natives die horribly of plague, but when members of the nice clean English club also began to die horribly, consternation reigned. Some had already died, many more would die, and the instant the news became public, the tourists, on whom the material prosperity of Kandy largely depended, would seek a safer playground.’⁵²

Immediately on arrival in Colombo, Heiser was called in as a consultant to Kandy. ‘We spent hours poking about in native houses and dirty narrow alleys. I could point to nothing which had not been done. Sometimes, however, the obvious is overlooked. A large English store on the main street backed upon the main area.’ He inquired from the ‘plague expert of the Health Department’ whether this building had been investigated. The reply, that it was a European store that was kept perfectly clean, was not reassuring. Heiser inspected the two floors, without finding any suspicious indications. However, on inspecting the basement, he found the tell-tale rats, dead and dying by the dozen.⁵³

There was a widespread epidemic of bubonic plague in Galle in 1922.⁵⁴ Plague again broke out in Galle in 1929, and Dr. W. G. Wickremesinghe, who was Medical Officer of Health, Matara, was requested to take charge of the control measures. Shortly after returning to Matara, Dr. Wickremesinghe, who later became Director of Medical and Sanitary Services, was faced with the first ever epidemic of the highly lethal pneumonic plague. It occurred in the village of Badhalgoda, which was situated within the Matara health unit area. The only other recorded epidemic of pneumonic plague occurred in 1933 in Dewinuwara, again within the area of the Matara health unit.⁵⁵ Dr. Wickremesinghe thus had the distinction of successfully controlling the only two such epidemics in the country.

Apart from quarantine measures, other steps were taken to control plague. One was the systematic trapping of rats, the number caught being more than 100,000 a year. Another measure that was taken was the fumigation of suspected cargo with hydrogen cyanide gas. This was started in 1936, when lighters loaded with rice or other cargo were fumigated at a special mooring in the Colombo harbour.⁵⁶ An attempt was made to protect contacts with a vaccine from Bombay, but had to be abandoned as its use led to a panic which threatened to cause labour unrest.⁵⁷ The strict enforcement of control measures and the constant vigilance of the authorities met with ultimate success when the last case of plague was recorded on 29th May, 1938, and the last infected rat was found in Colombo on 23rd August, 1938.⁵⁸

Parangi

One of the commonest and most important diseases in Sri Lanka, till recent times, was parangi. Considerable confusion existed in the use of the term, parangi, till its etiology was elucidated at the beginning of this century. In the early writings on this subject probably more than one disease was included under this name, syphilis being one of them. In the 1880's it was suggested that parangi was the same as yaws of the West Indies, a supposition that was later proved correct.⁵⁹

It is believed that parangi was introduced into Sri Lanka by the Portuguese in the sixteenth century. The Portuguese were accompanied by a large number of negro slaves from Africa who probably introduced parangi. They were also credited with having introduced syphilis. The Portuguese were known as Feringees, and since 'f' is pronounced as 'p' in the Sinhala language, the term became corrupted to parangi. Parangi means the disease of foreigners.⁶⁰

The earliest reference to parangi occurs in the *Yogaratnakara*, a book written in Sinhala verse and covering the whole ayurvedic system of medicine. It was written in the twelfth year of the reign of King Bhuwaneka Bahu VII, who ruled in Kotte from 1521 to 1550. This book was thus compiled only three decades after the arrival of the Portuguese. It does not carry a description of the disease, but only provides a few prescriptions for parangi in which mercury figures prominently.⁶¹

The next reference was in 1685 by the Portuguese writer Ribeiro who mentioned that 'parangi rere' or Portuguese disease was introduced by them. Kynsey had little doubt that the word referred to syphilis.⁶²

Marshall referred to *parangi lede* or parangi disease, of which seven varieties were mentioned.⁶³ Here, too, there is a doubt whether he was referring to syphilis.⁶⁴ It is likely that early writers included under the term, parangi, several diseases which included, besides syphilis, yaws, lupus and some common forms of skin disease.⁶⁵

The raspberry-like appearance of the lesions of the skin that covered the whole body, gave the disease another commonly applied name, fram-

boesia, derived from the French, *framboise*, for raspberry.⁶⁶ The disease became endemic in the country, spreading untold suffering among the impoverished, drought stricken people of the dry zone. It ravaged jungle hamlets, mutilating villagers in their thousands. An indication of the magnitude of the problem was that from 1916 to 1920, over 30,000 cases a year were treated at government health centres.⁶⁷ The eruption disappeared spontaneously after a few months, but the infection remained dormant. After years, enormous ulcers developed and bones became affected. The face was often involved, and the victims developed a hideous appearance.

In 1860, Mr. Russell, Government Agent, Jaffna, though a layman, submitted a memorandum to the government in which he gave an accurate picture of the disease prevailing at the time. His statement that 'many of the diagnostics are more or less syphilitic, although its origin is rarely, if ever, venereal' could hardly have been bettered even with modern laboratory techniques. In his area, the main form of treatment was *Smilax chinensis* (*seenappa*, T), a type of yam.⁶⁸

In spite of the magnitude of the problem, parangi did not create any significant awareness among doctors serving in large towns, for the disease was essentially a rural one. Parangi was first highlighted in 1867 by the Committee of the Legislative Council on Irrigation Works and Rice Cultivation. It reported that the Wannu was being ravaged by cholera introduced by South Indian immigrants, as well as by a disease 'said to be of a syphilitic character.' As a result, the PCMO, Dr. Charsley, in 1868, appointed Dr. James Loos, who was Colonial Surgeon, Northern province to inquire into the various aspects of depopulation of the Wannu. He visited many parts of the parangi affected areas in the north, including Mannar and Mullaitivu. His report submitted to the PCMO on 26th August, 1868, had far reaching repercussions, not only in the control of parangi, but also on the future of medical education in Sri Lanka.

Dr. Loos recommended that proper medical assistance be provided as close as possible to the afflicted people. On his suggestion, hospitals were established at Mullaitivu and Vavuniya-Vilankulam.⁶⁹ He also recommended that in order to train an efficient class of medical practitioners to man these parangi affected areas, a medical school be established in Colombo.⁷⁰

In 1872, hospital reports sent from Sri Lanka to the Colonial Office attracted the attention of Dr. Gavin Milroy, who was an authority on yaws prevalent in the West Indies. He was convinced that, from the description submitted to him, both parangi and yaws were the same disease. However, this view was not accepted at the time by experienced local doctors. Dr. Loos was inclined to the view that it was a form of syphilis, while Dr. Danforth, who was appointed to the newly established hospital at Vavuniya-Vilankulam, in his report suggested that it was a form of syphilis degenerating into leprosy.⁷¹ However, in the course of time, Dr. Milroy's contention was proved correct.

The exact causative organism of parangi was then unknown. A number of different bacteria and even a fungus were incriminated.⁷² It was Castellani, working in Sri Lanka, who detected the spirochete responsible for the condition, and named it *Spirochaeta pertenuis*. The spirochetes causing parangi and syphilis are morphologically and serologically indistinguishable from each other, the diseases being differentiated on clinical grounds alone. It may thus be seen that early writers had a scientific excuse for their confusion regarding parangi and syphilis.

There was no known treatment for this scourge till Castellani introduced an iodine mixture which helped to improve the condition though it failed to cure it. He used it in Sri Lanka till Ehrlich sent him his newly discovered salvarsan.⁷³

Parangi was causing much concern to the health authorities. At least three committees were appointed from time to time to investigate its prevalence and to recommend remedial measures. Special institutions, known as parangi or field hospitals, were established in remote outposts. Field hospitals were so named to distinguish them from civil hospitals. They were intended to be temporary institutions built in districts where permanent hospitals were not available. In 1889, the first two field hospitals were established, one at Medagama and the other at Alutnuwara, both in the Uva province. While primarily meant for parangi patients who could not be satisfactorily treated at out-patient dispensaries, other cases too were admitted.⁷⁴ Later, regular parangi clinics were conducted in some of the larger hospitals where patients were treated with arsenicals. These clinic were held even in the early 1950's, but with the advent of penicillin and its recognition as a cure for parangi, the picture changed dramatically. The disease was eradicated through a campaign conducted in the 1950's in which penicillin with 2 per cent aluminium monostearate was used. There are many senior doctors today who have never seen a case of parangi. One may rarely come across a previous sufferer showing stigmata of the disease, such as sabre tibia.⁷⁵ This eradication was a major achievement of the health service, for parangi, along with malaria, impeded economic development of the affected areas.

Sprue

The majority of doctors in Sri Lanka today are unfamiliar with even the name, sprue, but there was a time when this disease caused much concern to European planters. The name is of Dutch origin, the term, *spruw*, indicating forms of chronic diarrhoea. It was introduced to English medical literature by Patrick Manson in 1870. The disease was characterised by flatulent dyspepsia, relieved by the frequent passage of large, pale, frothy acid stools. The tongue assumed a peculiar raw appearance, giving rise to the synonym, Ceylon sore mouth. This disease, which was also referred to as psilosis, ran a chronic course over a number of years with alternating remis-

sions and relapses. In many instances, the lesions extended into the oesophagus, causing much pain and difficulty in swallowing.⁷⁶

The disease was essentially one affecting Europeans who had lived several years in the tropics. The native was only occasionally, if ever, affected. Some writers went so far as to record that no pure blooded native ever came under their observation.⁷⁷ The disease usually ended fatally if untreated.

The high morbidity and mortality from this disease among European planters in Sri Lanka caused much anxiety to the government and the planters alike. It was decided to initiate an investigation into the problem. The Planters' Association of Ceylon contributed £ 250 towards its expenses.⁷⁸ The government voted a sum of £ 750. This was the outcome of the correspondence the Governor, Sir Henry Macallum had for sometime with Sir Patrick Manson. The London School of Tropical Medicine was requested to nominate a person to carry out the survey. It accordingly selected Dr. P. H. Bahr who arrived in Sri Lanka on 16th March, 1912. He left on 3rd June, 1913.⁷⁹

Bahr married the daughter of Sir Patrick Manson, and assuming her surname, became Manson-Bahr. He was knighted in 1941, and himself became a reputed authority on tropical medicine. During his stay in Sri Lanka, he also did research on filariasis. Bahr set up his small laboratory at Nuwara Eliya, which was within easy reach of the planting districts where planters, who were the victims of the disease, lived. He completed a record of all the cases he could lay his hands on, and wrote a detailed monograph on the subject.⁸⁰

Sir Patrick Manson, FRS, was in Sri Lanka from December 1912 to March 1913, and helped Bahr in his investigation. Sir Patrick was a world authority on tropical medicine, and his views on the subject were highly regarded by the Colonial Office, to which he acted as medical adviser. He was the first to suggest that the malaria parasite was carried by the mosquito.

Bahr claimed that he diagnosed sprue in 11 local people. He found it difficult to differentiate these cases from those of ankylostomiasis, and his basis for diagnosis was the absence of hookworm ova in the stools.⁸¹

One of the persons who helped Bahr was Dr. R. J. Drummond.⁸² He was apparently a general practitioner who worked in Talawakelle, a town in a leading plantation district. Drummond, who has had considerable experience of the disease, was of the view that sprue tended to occur in Europeans who lived in Sri Lanka for 10 to 15 years.⁸³ With the departure of European planters from Sri Lanka, sprue ceased to be a problem.

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A MISCELLANY OF DISEASES AND DISCIPLINES

The medical history of Sri Lanka would not be complete without the inclusion of a disparate group of diseases and disciplines which could not find a logical place elsewhere in this work. These topics were selected, not so much for their medical importance, but for their historical significance. Treatment of snake bite poisoning and eye diseases, for example, have had a long historical tradition going back to several centuries. Other subjects that are included, such as forensic medicine, have had their own historical perspectives, which deserve a place in a history of medicine in Sri Lanka.

Filariasis

Elephantiasis, which is a manifestation of filariasis, was common in Sri Lanka till about 30 years ago. It affected one or both lower limbs, usually below the knee, and rarely other parts of the body. The condition figures in ancient Indian ayurvedic medicine. The surgical treatment of *slipada*, 'a leg that was like a stone', was described by Susruta. It was stipulated that no one suffering from elephantiasis be admitted to the Buddhist priesthood.¹

Perhaps the earliest local reference to elephantiasis occurs in the *Suddharma Ratnavaliya*, a collection of Buddhist stories in prose written in the thirteenth century AD by a Buddhist monk. This book is replete with similes, and the reference to elephantiasis occurs in several of them. The performance of an inappropriate act, for example, is compared to applying medicine on the neck when the elephantiasis is in the leg.² There is also a Sinhala proverb which says that a kick from a leg swollen with elephantiasis gives the false impression of being a formidable one.³

Davy referred to the condition as *elephas* or Cochin leg,⁴ the name being derived from Cochin in South India, where the condition was very common. Tome Pires, who lived in Malabar from 1511 to 1516 estimated that a fourth or a fifth of the population of Cochin had elephantiasis, which was attributed to wading through water. The condition was so common in Cochin that it was considered the curse of St. Thomas, who was believed to have been killed and buried there.⁵

At the time Davy described *elephas*, leprosy was referred to as elephantiasis, thus giving rise to confusion in nomenclature in the early writings. Davy noticed that *elephas* was common along the south western coastline

of Sri Lanka,⁶ an observation which was valid till the incidence began to decline recently. Marshall was probably the first writer to refer to it as Galle leg. He found the condition very rare in the Kandyan provinces.⁷ Castellani too found it very common in Galle in his time.⁸ With the introduction of specific treatment for filariasis, there is now little opportunity for the condition to progress to elephantiasis.

Sri Lanka has a cultural heritage of ancient wall paintings in Buddhist temples, and elephantiasis is depicted in some of these. These paintings usually portray, by means of a series of panels, stories regarding the previous births of the Lord Buddha. One of these stories, the *Vessantara Jataka*, concerns a king, who having conquered desire, donates his two children to a mendicant by the name, Jujaka. In a wall painting at the famous Dalada Maligawa or Temple of the Tooth in Kandy, which is venerated by Buddhists throughout the world, Jujaka is shown with one leg swollen with elephantiasis, probably a painter's attempt to make him appear loathsome.⁹

W. C. Ondaatje, acting Colonial Surgeon, Central and North Central Provinces, records that three cases of elephantiasis were treated in hospitals in his charge in 1879, one being at Kandy and two at Matale.¹⁰ Since then, increasing numbers were treated in government hospitals.

Till the introduction of diethyl-carbamazine as a specific in the treatment of filariasis, there was very little that could be done to control the disease. One aspect was the conduct of surveys. P. H. Bahr, who was in Sri Lanka in connection with tropical sprue, undertook the first countrywide survey of filariasis in 1914. He found that the distribution of the disease was mainly confined to the south and south west, while there were isolated pockets in the north west and the east. Subsequent surveys too yielded similar results.¹¹

In 1945, there were 429 known cases of filariasis scattered in 196 villages. Pistia plants were removed from 69 villages out of the 167 localities in which the plant grew.¹² This was the pattern of control measures adopted at the time. In order to achieve more efficient functioning of the machinery for the control of the disease, an anti-filariasis campaign with a superintendent as its head was established in 1947.

Rabies

Rabies or hydrophobia was recognised as a necessarily fatal disease by Susrutha. The outlook remains the same even after the passage of more than a couple of millennia. Susrutha considered a person suffering from hydrophobia as doomed. Ancient ayurvedic treatment was directed at preventing the development of the disease in a person bitten by a rabid animal.¹³

The treatment of persons bitten by rabid dogs was considered a speciality by local ayurvedic physicians, whose aim was to prevent the development of hydrophobia. In 1887, Dr. John Attygalle wrote: 'Still I think it cannot be altogether denied that many persons in Ceylon bitten by mad dogs and treated by native doctors escape from hydrophobia to a greater extent

than those treated otherwise.’¹⁴ Pasteur first introduced his vaccine in 1885, and when Attygalle wrote this two years later, there was still a controversy as to its safety and efficacy. It is important to realise that dog bite victims before this date had to resort to ayurvedic treatment anyhow, as western medicine did not offer any prophylaxis.

Ayurvedic physicians of yore kept their recipes as family secrets. Attygalle cites the case of a Moor physician from Matale who had a great reputation in this field. His family, for generations past, were specialists in the treatment of dog bites.¹⁵

In the seven year period from 1880 to 1886, the number of cases reported to the Registrar General was 299, an incidence of 1 in 65,173. It was nine times more common than in England and Wales.¹⁶

The problem of rabies was considered an important one by the British from the beginning of their rule. They enlisted the police force to help in controlling the disease. One of the duties of the police in the 1830’s, necessitated by constant outbreaks of hydrophobia, was to engage labourers to club dogs in the Fort and Pettah. They were paid at the rate of 6 pence a dog.¹⁷

Towards the end of the century, the government became acutely aware of the problem. The Governor, Sir Arthur Havelock, announced before the Legislative Council on 18th October, 1893 that the absence of legislation to control the disease was to be rectified by an ordinance to be introduced in the course of the sessions. It was to be fashioned on the lines of the order passed by the Board of Agriculture in the United Kingdom. It provided for the destruction of stray dogs and measures for the ‘suppression of hydrophobia.’ The provisions of the ordinance which embodied suggestions made by the PCMO and the Inspector General of Police, had met with the approval of the Government Agents of several provinces.¹⁸ The ordinance was passed by the Council in 1893.¹⁹

In 1891, Dr. W. G. Vandort spent part of his holiday in Paris studying Pasteur’s anti-rabies treatment.²⁰ He was received by Louis Pasteur himself who was very pleased that the British government was considering introducing his method of treatment to Sri Lanka. Vandort learnt the technique of preparing the vaccine using rabbits, but for a successful introduction of the method to Sri Lanka it was necessary to have a suitable laboratory and a supply of rabbits. Mr. Charles de Soysa, with whom he discussed the proposal, offered to put up a building on condition it was named ‘The de Soysa Pasteurian Institute’ in memory of his father.²¹ But the country had to wait many years before this method of treatment was introduced. In the meantime, a Pasteur Institute was established at Coonoor in South India. The Sri Lankan government gave an annual grant to it. All persons bitten by rabid animals and who could not afford a journey to Coonoor were sent there free of charge by the government.²² In 1917, the Legislative Council

passed money for a local Pasteur Institute and this was opened on 15th April, 1918. It was situated opposite the Medical Research Institute. When extensions were later carried out to the adjoining Lady Ridgeway Hospital, the Pasteur Institute was demolished.²³

In Sri Lanka, rabies has been confirmed in dogs, cats, cattle, goats, deer, horses, squirrels, mongooses, polecats and monkeys, but until recently all human cases were attributed to bites by dogs. True vampire bats which transmit rabies are not found in Sri Lanka. Carnivorous bats, such as the Indian 'vampire' are probably responsible for the myth that vampires occur in Sri Lanka and other Asian countries. These bats may have been responsible for the suspected vampire bat bites incurred by some visitors to the Demaliya Galge cave, off Tanamalwila, in the 1950's.²⁴

Venereal diseases

It is said that syphilis was first introduced to Asia in the sixteenth century, soon after its epidemic-like outbreak in Italy when the army of Charles VIII was laying siege to Naples. Syphilis was apparently unknown in India before this. While old Hindu writers described various maladies of the genital organs, they were unacquainted with venereal diseases. At first, there was no term for it in Sanskrit. However, later Sanskrit works referred to the disease as *Faringa roga* or Portuguese disease. In the *Bhavaprakaso*, a work on Hindu medicine by Bhava Missa, written about 400 years ago, it was stated that syphilis was introduced by the Portuguese.²⁵

The early attempts to control venereal disease in Sri Lanka were born out of a fear on the part of the British authorities that the disease would spread among their service personnel. In 1867, ordinance No.17 for the 'better prevention of contagious disease' was promulgated. These diseases were defined as those incidental to prostitution, namely syphilis and gonorrhoea. This Act was based on the British Act which was passed a few years before, in 1864, the operation of which was restricted to British naval and military stations. The local Act too was enforced only in a few places, namely Colombo, Kandy and Galle, which were then much frequented by the British. It was a controversial piece of legislation, which was seen as encroaching on the freedom of the individual, and even the authorities had their misgivings about its success after a few years of its operation.

The Act envisaged the compulsory incarceration of prostitutes in special hospitals where they were submitted to treatment. These contagious disease hospitals, also known as lock hospitals, probably from the fact that patients were locked up in them, were specially built or separate wards set apart in existing general hospitals for the enforcement of the Act. In Kandy, for example, on completion of the hospital in 1869, the Act was brought into operation in that town. It is noteworthy that only women were submitted to this treatment, and it was a direct violation of their personal freedom.

On the other hand, soldiers for whose benefit this law was enacted, did not even have to submit to examination.

One section of the Act stipulated that the visiting surgeon should issue a printed notice after examining each registered prostitute. This notice was used to advantage by these women who flaunted it before their customers as a clean bill of health. Another ruse adopted was to transfer this notice for a fee to another woman, who may have been infected, thus promoting the spread of the disease among the latter's clients.²⁶

The lock hospitals had a list of women on their books. At the end of 1886, there were 218 women on the roll in Colombo, Kandy and Galle, but 82 of them deserted. 48 of them were brought back by the police.²⁷ The results, after several years of operation of the Act did not reveal any noticeable decline in the diseases. There were several objectionable features in this piece of legislation which went against the grain of the medical officers who enforced it. The working of the Act was mentioned for last time in 1886.²⁸ The lock hospital at Mahaiyawa, Kandy, was closed down on 31st December, 1903.²⁹ The subsequent control of sexually transmitted diseases was entrusted to a special unit, the Anti Venereal Diseases Campaign, which was established in 1947 with a superintendent in charge.

Snake bite

Sri Lanka is the home of many poisonous snakes, which are particularly common in the dry zone where the ancient civilisation based on agriculture was established. The consequent familiarity with snake bite would have fostered a rich tradition of treatment for the condition. Its popularity, specially in the rural areas, has withstood to a considerable measure, the inroads of western medicine.

Many of the ancient texts on medicine devoted at least a chapter to snake bite treatment. A few books were monographs entirely devoted to the subject. *Sarartha Sangraha*, the earliest medical book written in Sri Lanka, had a chapter on the subject.³⁰ Snakes caught the imagination of early European writers on Sri Lanka, and they seldom failed to mention them. In an indirect reference to snake bite, Garcia da Orta thought highly of snake wood.³¹ Robert Knox records that if the victims were treated early, they were cured by herbs and charms.³²

Treatment of snake bite was an accepted speciality in ayurvedic medicine. General physicians too took an interest in snake bite treatment. There was much individual variation in the handling of snake bite victims by ayurvedic practitioners. The actual medical treatment of a patient took cognizance of astrological and demonological considerations.

The application of snake stone in an attempt to suck the venom has engaged the attention of many writers over the past few centuries. Baldaeus, writing in 1672, found that these stones were the most effective method of treating snake bite, but even at that time deception was common.³³ One of

the earliest descriptions of snake stones was by Thunberg. In the 1770's, while in Sri Lanka, he bought several stones, for which he paid high prices at first. He later sold some of them at Cape of Good Hope for a rixdollar each. The commonest shape was that of a bean. He says that it was prepared from the ashes of a certain root, which was burnt with a particular type of earth. It was claimed at the time that scrapings from the stone, if drunk in wine, were effective in malignant fevers.³⁴ The formula for the preparation of snake stone is usually a guarded secret, but John Still described a recipe using charred sambhur antler.³⁵ Tennent described two instances of successful treatment,³⁶ while Spittel, a qualified surgeon, was once witness to its successful use in the case of a gypsy bitten by a cobra.³⁷ Davy, on the other hand, concluded that snake stones tested by him were inert.³⁸ Tennent advanced the view that the porous nature of the animal charcoal that constituted the stone acted by physically absorbing the venom.³⁹

An attempt to test the efficacy of ayurvedic treatment was made about 1919 by the trustees of the Oriental Medical Science Fund, who decided to offer Rs.5000 to a particular ayurvedic practitioner for his secret remedy, provided he demonstrated its efficacy. It was tested under the supervision of Dr. Lucius Nicholls; and was found to be unsatisfactory.⁴⁰

Ophthalmology

Ophthalmology was a well established speciality in ancient time. A hospital for the blind was established as far back as the fourth century AD.⁴¹ An ayurvedic physician first trained either as a physician in *kaya chikitsa* or as a surgeon in *salya chikitsa*. A physician later branched into one of six specialities, namely general medicine, ophthalmology, boils and ulcers, snake bite, rabies and mental health.⁴²

Dr. E. L. Koch, principal of the Colombo Medical School, was constrained to comment on the state of the art over a century ago, when British administrators did not take kindly to ayurveda:

‘It would however be fair to admit that notwithstanding the crude notions entertained by the Sinhalese doctor on the general subject of anatomy, some of them carried the study of ophthalmology to a pretty fair extent. This is the only branch of general surgery that they have ventured to practice (*sic*). They possess instruments of their own design and make which though faulty and defective in comparison with those of European manufacture have been the means of even temporarily saving the sight of hundreds of people.’⁴³

The ayurvedic tradition in ophthalmology dates from the time of Susrutha, who dealt in detail with the anatomy and surgery of the eye. He described the operative treatment of cataract, and the complications following surgery.⁴⁴ His teachings have come down the line from generation to generation of ayurvedic physicians in Sri Lanka, and couching of cataract was occasionally practised even in recent times. There is little doubt that

ophthalmology was a forte with ayurvedic physicians. Numerous *ola* leaf manuscripts on the subject testify to its preeminent position in ayurveda.

Restoring vision is a highly regarded meritorious act in Buddhism. This theme is illustrated in the *Sivi Jataka*, in which a king who in a later birth became Lord Buddha, donated both his eyes, out of compassion, to a blind beggar who requested one eye so that he could see.⁴⁵ This story is depicted in two temple paintings, one at Mulkirigala in the south, and the other at the Rajamaha Vihara in Kotte.⁴⁶ This Buddhist attitude to eye donation has found expression in the willingness of many Buddhists to gift their eyes after death.

The art of cutting quartz (crystal) was understood from remote times, the crystal Buddha statue at Dalada Maligawa in Kandy being an example of this craftmanship. A non-religious direction which this art took was in the manufacture of spectacle lenses which was carried out by hereditary workers in Uda Dumbara.⁴⁷ Lenses and spectacle frames were first made in Sri Lanka during the reign of King Bhuwaneka Bahu IV (1344—1353 AD), at the beginning of the Gampola period. An Indian architect, who was commissioned to build the Gadaladeniya temple, brought several hundred stone masons from Kanchipura (Conjeevaram) in South India. The master craftsmen among them settled down in the village of Kirivavula off Kaduganawa. The chief of them, Devanarayana, was said to have fashioned the first pair of glasses for the king. The descendants of these families, even up to the present time, have been engaged in this art.

The frames were made of tortoise shell, or more correctly turtle shell, in the south, where this commodity was available from the sea, while in the Kandyan areas buffalo horn was used. The lenses provided only spherical corrections, either convex or concave. The quartz, which came from Ratnapura; 'was either *palingu* (crystal), *ambethis* (amethyst), *diya tharippu* (citrine) or *padiyang* (topaz), - the ambethis or amethyst being their version, and a very good one at that, of the tinted lens.⁴⁸

During Dutch and early British times, spectacles were imported to Sri Lanka. The Colombo Museum acquired in 1897 a pair of spectacles of Dutch origin.⁴⁹ It is on record that Dr. Green of Manipay got down a pair of spectacles from his brother in the United States. He wrote to his brother, William, on 4th June, 1870: 'I have today received the nice spectacles you so kindly sent me. They seem to be exactly what I shall need to wear. I thank you very much for such a valuable article, and for the fraternal love that prompted the gift.'⁵⁰ Incidentally, he performed cataract operations in 1849, shortly after his arrival in Sri Lanka.⁵¹

The first institution for eye patients was built in 1894 and opened in 1895 in the premises of the General Hospital, Colombo, which at the time was bounded on two sides by Regent Street and Norris Canal Road. It was situated close to the area where the General Hospital Post Office is now

situated. It was known as the Grenier Eye and Ear Infirmary. It was built by public subscription in memory of Sir Samuel Grenier, who was Attorney General.⁵² It consisted of an out-patient department and wards, which were part of the General Hospital. It was in charge of Dr. W. H. de Silva, who attended to eye work, while Dr. Harvey Hilliard was appointed ear surgeon.⁵³

The work at the Infirmary increased rapidly. Dr. W. H. de Silva, who was designated ophthalmic surgeon, made a strong plea for the establishment of a separate eye and ear hospital and asylum for the blind. The PCMO, Allan Perry, was himself an ophthalmologist before he became an administrator, and was receptive to Dr. de Silva's suggestion. When finally the Victoria Memorial Eye Hospital was built, the plaque commemorating Sir Samuel Grenier was moved to the new institution, but the Colonial Secretary and the Governor both turned down the suggestion to name it Victoria and Grenier Memorial Eye and Ear Hospital. A Grenier alongside Victoria was unacceptable.⁵⁴

In January, 1901, on the death of Queen Victoria, arrangements were made to perpetuate her memory. It was Lady Ridgeway who first suggested an eye hospital as a memorial. The fund was launched by the Governor in the Legislative Council chamber on 17th March, 1902. He promised that the government would subscribe an amount equal to the subscription collected. He declared there were 6000 blind people in the country at the time.⁵⁵ The site selected for the hospital had a small house known as Mango Lodge, which was used by the later Dutch Governors as a hunting lodge. There was much quail shooting available in the area.⁵⁶ The hospital was built on the Hindu Saracenic style to give it an oriental touch. The pillars and wall plates were of Kandyan design.⁵⁷ It was opened on 2nd April, 1906, with Perry as consulting surgeon, W. H. de Silva as honorary visiting surgeon and Andreas Nell as resident surgeon. The hospital consisted of four paying wards and several non-paying wards. The largest wards had only 10 beds each. The children's ward had 6 cots. The large reserve space on the grounds proved useful a few years later when Mr. J. S. W. de Soysa donated the de Soysa ward in memory of his mother, Lady de Soysa. He also donated the ophthalmic departments at the Galle and Kandy Civil hospitals.

On the death of Dr. W. H. de Silva in 1907, Dr. Andreas Nell became surgeon in charge. He retired in 1924, after 17 years of service.⁵⁸ Nell is best remembered as an erudite orientalist and antiquarian. His contributions to the Ceylon Branch of the Royal Asiatic Society were polished, well considered and always evoked respect. In the early 1950's, in the evening of his life, he was a familiar figure in Colombo, riding his favourite mode of transport, the rickshaw. He died in 1956 at the age of 91 years.

After the eye hospital was moved to the present multi-storied building opposite the old site, the magnificent old building with its domes and ar-

ches became the accident service of the General Hospital. The only reminder of Victoria in the new hospital is her statue which was moved from the old site. It is undoubtedly a beautiful one, as Sir West Ridgeway remarked: 'We are to put up a magnificent effigy, a statue which will be second to none as regards grandeur and dignity.'⁵⁹

Mental health

Mental health was not unknown in mediaeval Sri Lanka. It was appreciated by King Kittsirirajasinha (1747-1782 AD) that there were two kinds of diseases, namely of the body and of the mind. Preaching the Buddhist doctrine was used as a means of curing the mental diseases, while he appointed physicians to cure the bodily ones.⁶⁰

It was the British who fully recognised mental health. On 5th December, 1839, the Governor, J. A. S. Mackenzie introduced 'An ordinance to establish lunatic asylums.' Its aim was to provide for the protection, and in some cases, for the maintenance and support as well, of mentally ill patients. He declared: 'In some parts of the Island it is absolutely necessary to confine insane persons in the common jail, where while they are without proper attendance themselves, they are the source of great annoyance to the prisoners and other inmates.'⁶¹ The Leprosy Asylum at Hendala was also used for sometime to house these patients.⁶²

The small pox hospital at Borella, which was situated close to what is now the Campbell Park, was converted into a lunatic asylum at a cost of £ 2000. It was opened in 1847. The government placed the institution under the medical care of a specialist, Dr. Davy, who was sent out from England. The building was enlarged from time to time, but the growing needs and the poor sanitation at the site led to the adoption of another situation for the asylum.⁶³

Sir William Gregory, who initiated several medical reforms, first mooted a new asylum at Jawatte, what is now Torrington Place, in 1876. His plans were not approved by the Secretary of State for the Colonies. Revised plans were submitted by his successor, Sir J. R. Longden, and construction started in 1879. Accusations were made in the Legislative Council that the building was too grandiose: 'the building is one of great size, with massive iron beams, slate and cement floors, such as would compare favourably with Queen's House.'⁶⁴

In response to the Governor's request for an officer experienced in psychiatry, the Secretary of State appointed Dr. Plaxton, who arrived in Sri Lanka in 1879 and assumed duties as Medical Superintendent. He objected to the plans. The first pavilion, the central administration block and the entrance block, were almost complete when a demand was made in the Legislative Council for the appointment of a commission, which the government conceded. Members of the commission could not reach unanimity, and finally the Governor, Sir J. R. Longden addressed the Secretary of State:

'As soon as I received Your Lordship's decision upon Dr. Plaxton's proposal to increase the number of single rooms, I will proceed at once to have the No.1 pavilion and rest of the building completed for the reception of male patients.' Finally, the Secretary of State approved certain changes.⁶⁵ This imposing building now houses several government offices.

In time, this building was found inadequate. A new hospital with accommodation for 1830 patients was constructed at Angoda. It was opened in 1926. Prof. Edward Mapother was invited to advise on the reorganisation of the mental health services, and as a result of his recommendations,⁶⁶ several improvements were effected.

Homeopathy

Homeopathy is the system of medicine founded by Dr. C. F. S. Hahnemann, who was born in Germany in 1753. He discovered that when he took a quantity of cinchona bark, it reproduced the very symptom of fever which it was expected to cure. He then enunciated the theme of homeopathy, *similia similibus curantur* (let likes be cured by likes).

It is not known when homeopathy was introduced to Sri Lanka, but Dr. Green of Manipay was aware of it in 1853: 'Though loyal to medical science as learned and taught by him, he (Dr. Green) was hospitable to every improvement or help from whatever source, whether homoeopathy (*sic*), water cure or the experience of unscientific common sense.'⁶⁷

In the 1950's, there was agitation by organisations interested in homeopathy for its official recognition. In 1952, a motion was introduced in Parliament requesting the government to 'consider the desirability of recognising the homeopathic system of medicine and encouraging its study and practice in Ceylon.' In 1955, the Minister of Health appointed a committee with Dr. P. N. Banergee from India as chairman. The committee recommended the recognition of homeopathy and the registration of homeopathic practitioners.⁶⁸

Forensic medicine

An inquest in the case of a violent, sudden or suspicious death was an ancient Kandyan institution.⁶⁹ Davy referred to the existence of a coroner's system in Sri Lanka, in which the principal officials of a district, such as the *lekam*, *korale* and *vidane* functioned as an investigating team.⁷⁰

At the commencement of the British period, the doctors were military officers who were normally exempted from medico-legal work. Mr. Armitage, an unofficial member of the Legislative Council, declared in 1844:

'Except at Colombo and Kandy, there is scarcely a duly qualified private practitioner so that over the remainder of the island, where they might be advantageously made use of for the ends of justice (for instance, around Galle, Jaffna, Trincomalee, Badulla, Nuwara Eliya, etc.), no competent medical evidence will be available to the coroners in consequence of the exemption of the military. If it were not for the evidence of the military men at outstations, many cases of murder could never have gone to trial.'⁷¹

Probably the first scientific paper on a medico-legal topic was published in the 1860's. It was written by Dr. W. C. Ondaatje, Assistant Colonial Surgeon, and concerned the death of a man who died in Chilaw. The stomach and intestines with their contents were sent to Ondaatje for examination in March 1864. The salient fact of the case was that the deceased had been given an emetic containing *wara* (*Calotropis gigantea*) by an ayurvedic physician. Immediately afterwards, he developed incessant vomiting and died. As *wara* was not considered a poison up to that time, Ondaatje carried out an experiment with it on a dog, who died two hours later. The ayurvedic physician was tried for manslaughter, and sentenced to two years imprisonment on the strength of Ondaatje's evidence, which was based on experimental findings. In presenting this case report to the Royal Asiatic Society (Ceylon Branch), he commented that it was 'the only literary and scientific body in Ceylon, through which the fact can be communicated.'⁷² This remark underlined the acute need for a medical association, a void which was later filled by the Sri Lanka Medical Association.

About the same time, Dr. Green of Manipay was involved as an expert witness in another type of case. Some Englishmen, offended by the odour of retting coconut husks opposite their house, had filed action in the District Court against some local inhabitants. The Englishmen argued that this industry was a nuisance. Green, whose sympathies were with the thousands of local people who earned a living by working in the coir industry, gave evidence for the defence.⁷³

Before the appointment of judicial medical officers to large towns, medico-legal work was shared by the available doctors. This system still prevails in rural areas, where district medical officers are called upon to do forensic work. Dr. J. Carberry, demonstrator in anatomy at the Ceylon Medical College, was, for example, sent out of Colombo to perform autopsies at coroner's inquests.⁷⁴

Mass poisoning due to consumption of items of food was a subject of special medico-legal interest. From time to time, consumption of turtle flesh was attended by multiple deaths. A specially tragic instance was reported in 1841:

'We have been horrified by hearing of the most extensive mortality we ever remember to have known from eating noxious food, that occurred within the last few days near Pantura (Panadura). It appears that two turtles were caught and brought to the bazaar, when they were cut up and sold; and that every individual who ate a part of them was seized, in about twenty fours, with a species of cholera, of which it has been ascertained, beyond a doubt, at least thirty eight persons — men, women and children — died, and that upwards of forty more are dangerously unwell.'⁷⁵

Poisonous fish were another interesting phenomenon. Tennent wrote:

'The sardine has the reputation of being poisonous at certain seasons, and accidents ascribed to eating it are recorded in all parts of the island. Whole families

of fishermen, who have partaken of it, have died. Twelve persons in the jail of Chilaw were thus poisoned about the year 1829, and deaths of soldiers have repeatedly been ascribed to the same cause.'

In February, 1824, the Governor issued a proclamation prohibiting the capture of sardines in the months of January and December under pain of fine and imprisonment.⁷⁶ The sardine referred to by Tennent was the *koramburuwa* (*Sardinella ovis*), specially plentiful at Galle and Hikkaduwa, where it still has a reputation of being a poisonous fish.

There was a time when the Medical Department, in addition to its medico-legal functions, was responsible for the Government Analyst's duties. Dr. H. M. Fernando, acted in addition to his other duties, as Public Analyst from 1891⁷⁷ to 1898.⁷⁸ This arrangement continued till 30th June, 1913, when the Medical Department severed its connections with the work of the Government Analyst.⁷⁹

Medico-legal duties, which devolved on the Medical Department from its inception, continue to be the responsibility of its successor, the Department of Health up to the present time. It was only in 1951 that the first chair in forensic medicine was created.

Dermatology

Skin diseases were described in ancient medical literature under broad generic names. Caraka divided skin diseases into 7 categories, while *Madhava Nidhana*, written about 2000 years ago in India listed 18 categories, made up of 7 major and 11 minor ones.

Some of the skin diseases, which have figured prominently in the past, are leprosy, elephantiasis, parangi and ulcers, specially resulting from leech bites.⁸⁰ These have been discussed elsewhere in this work.

The first dermatological case report in Sri Lanka is found in a proclamation issued by Dr. John Davy and Dr. C. Farrell on 6th January, 1820, regarding the condition of the Governor, Sir Robert Brownrigg. He was much hampered, in his campaign to suppress the Kandyan rebellion, by a skin ailment he suffered for three years. Davy and Farrell declared:

'The complaint first made its appearance in the hands and feet; it soon left the hands, increased in the feet, spread to the legs, and even extended above the knees. The character of it more resembled prurigo than any other disease of the skin; the eruption was papular, bright red, itched insufferably, discharged considerably, and the parts affected were generally much swollen — many different modes of treatment were tried — but with little success. In addition to this complaint of the skin, His Excellency, during almost the whole period he was in the interior, at the time of the rebellion in the Kandyan provinces, was labouring under a chronic gout, which for about eighteen months deprived him almost entirely of the use of his lower extremities.'⁸¹

Brownrigg wrote to his brother-in-law, George Bisset, complaining about his Malabar itch. It rapidly grew worse till it was with difficulty that he could sit down. It caused violent itching which was particularly

troublesome at night. Sir Robert tried various forms of treatment, such as sulphur and citron ointments, but to no avail. He even tried local remedies. He fomented the affected parts with a decoction of boiled tamarind leaves, a popular remedy, but he failed to obtain any relief.⁸² Scabies, which is a disease of great antiquity, was particularly common among soldiers in the past, and it is said that military campaigns suffered as a result of this disease.

Aldo Castellani made significant contributions, both nationally and internationally, to the development of dermatology. He was the first lecturer in dermatology at the Ceylon Medical College. He found that *gomara*, the golden beauty spots of Sri Lankan damsels, the praises of which were often sung by old Sinhala bards, were but caused by a fungus.⁸³ He made notable contributions to the study of fungal diseases. He will, perhaps, be best remembered by dermatologists for Castellani's paint,⁸⁴ which is still used in the treatment of ringworm.

Occupational diseases

On a consideration of the occupations practised in mediaeval Sri Lanka, it is likely that accidents would have constituted a major hazard to the workers. Industries involving metal, wood, and stone were widespread. Iron smelting and manufacture of steel were two common industries, which have now become almost extinct.⁸⁵ While Sinhala medicine was stronger on the side of drugs and applications than in practical surgery, surgical instruments were some of the products of these iron and steel industries.⁸⁶ H. C. P. Bell records that the Getaberiya family of Gopala Moors were in possession or 'some implements of surgery, made of iron, steel and brass, for excising wounds, cauterization, etc.'⁸⁷

The industry associated with the most amount of occupational risk to the workers was graphite mining. In early times, graphite was used for medicinal purposes, as well as for glazing pottery. It assumed commercial importance only in 1834. In 1891, Mr. (later Sir Ponnambalam) Arunachalam, when District Judge of Kurunegala, drew the attention of the government to the serious accidents which occurred in the plumbago mines in the district. In 1889, 28 men were seriously injured, with one fatality, while in 1890, 23 men were injured with 9 fatalities. Mr. Walsh Wrightson, Provincial Engineer, was asked to report on the safety of the mines. He declared that the methods adopted were positively and needlessly dangerous to life.⁸⁸ The danger arose from falls and injuries that occurred with the various processes connected with mining. However, lack of ventilation within the mine was another factor that was adversely commented on. It was the practice in the 1890's for a light to be lowered into the depths of the mine before a worker descended. If it was extinguished, no work was undertaken. This precaution appears to have been similar to the one adopted by coal miners in the United Kingdom, when Davy's lamp was used for the purpose.

In 1945, a writer from England first suggested that exposure to

graphite dust caused lung lesions in workers.⁸⁹ In 1948, Dassanayake confirmed this finding on the basis of a survey carried out by him among graphite workers in Sri Lanka.⁹⁰ His contribution went a long way in establishing graphite pneumoconiosis as an occupational disease.

An unusual group of workers who were exposed to an occupational hazard in the past were the pearl divers. In the 1890 fishery, bronchitis and pneumonitis were particularly severe in the divers, who were subject to sudden changes of temperature when diving, the bottom of the sea being much colder than the surface.⁹¹ Accidents occasionally occurred while diving, but they rarely resulted in fatalities. Divers stayed underwater usually to the utmost of their endurance before surfacing. Sometimes, by sheer exhaustion, they collapsed at the bottom. The non-appearance of a diver would attract the attention of others on board, who would attempt prompt rescue operations.⁹² One of the commonest mishaps was the stinging of divers by poisonous fish or sea urchins. First aid was available on the flotilla, and hardly a day passed without a request for such assistance. The victim was usually incapacitated for the whole day.⁹³ Sea snakes, which abounded around the pearl banks, constituted a potential hazard to the divers.⁹⁴

Castellani found that many workers handling copra, which he described as the 'dried coconut 'meat' from which coconut oil has been expressed,' suffered from an extremely itchy eruption on the arms. This copra itch was caused by myriads of tiny mites. Castellani also described tea taster's cough, which was caused by a fungus. It was similar to tea factory cough, which the planters had noticed in workers in tea factories. The workers exposed to tea dust developed a cough with scanty sputum. The planters, by experience, found that when these workers were sent to work on the field, the condition slowly disappeared.⁹⁵

Notes

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ABBREVIATIONS

| | |
|----------|---|
| AR | Administration Report |
| Arch Com | Archaeological Commissioner |
| BMJ | British Medical Journal |
| CJHSS | Ceylon Journal of Historical and Social Studies |
| CMJ | Ceylon Medical Journal |
| Cv | Culavamsa |
| DHS | Director of Health Services |
| DM & SS | Director of Medical and Sanitary Services |
| ed | editor, edited, edition |
| et al | et alia (and others) |
| EZ | Epigraphia Zeylanica |
| Fig. | Figure |
| Ibid | ibidem (in the same book, paper) |
| JCBBMA | Journal of the Ceylon Branch of the British Medical Association |
| JCGH | Journal of the Colombo General Hospital |
| JRASCB | Journal of the Royal Asiatic Society, Ceylon Branch |
| JRASSLB | Journal of the Royal Asiatic Society, Sri Lanka Branch |
| Mv | Mahavamsa |
| op cit | opere citato (in the work quoted) |
| p | page |
| PC | Minutes of the Dutch Political Council |
| PCMO | Principal Civil Medical Officer |
| S | Sinhala |
| SLNA | Sri Lanka National Archives |
| SP | Sessional Paper |
| T | Tamil |
| TCCP | Transactions of the Ceylon College of Physicians |
| tr | translated |
| vol | volume |

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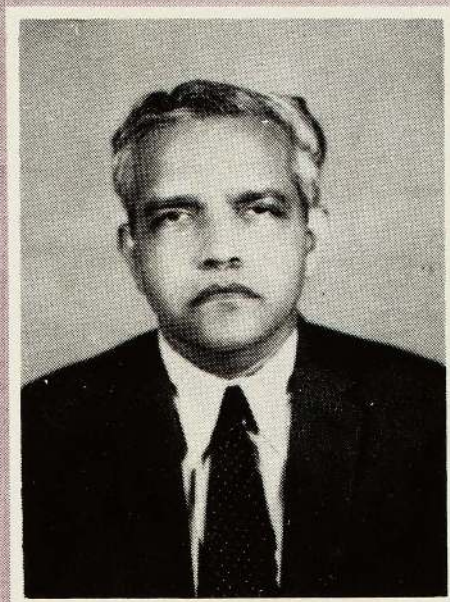
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