

HISTORICAL DEVELOPMENT OF THE LABORATORY SERVICES IN MALAYSIA

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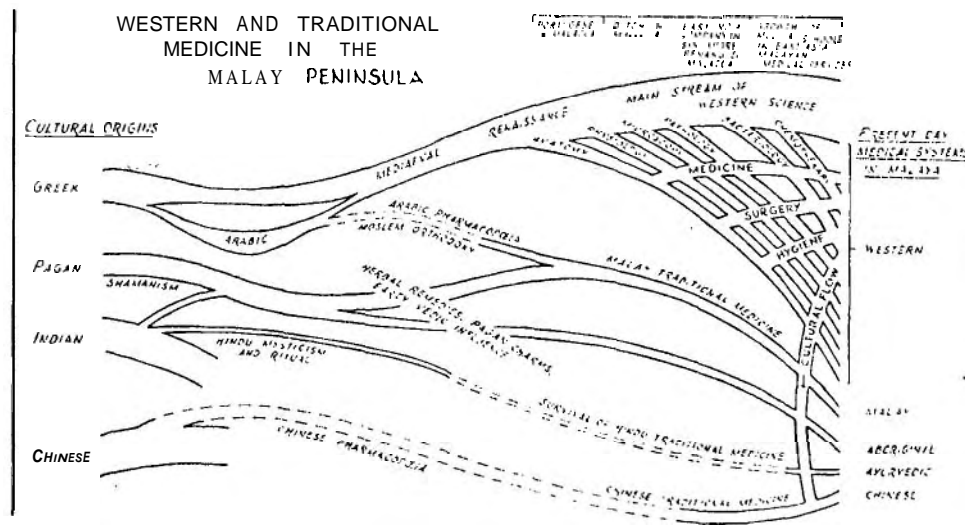
THE CULTURAL BACKGROUND

The medical laboratory services in Malaysia were developed to support the medical practices of the country and therefore, reflects the history of medicine in Malaysia.

Historically, five types of medical practices (often intermixed) are recognisable in Malaysia today. *Pagan medicine* (for want of a better word) is practised by primitive people and is a blend of the supernatural and the occult. *Malay traditional medicine* is a blend of ancient folk-lore, Hindu mythology, Muslim orthodoxy and is enriched by the Arabic pharmacopoeia. The Malay medicine-man sometimes invokes the Hindu gods. The pawang who specialises in the healing art is the bomoh or the kampong medicine-man who is often a simple herbalist. *Chinese traditional medicine* comes from China and comprises an empirical and dignified system, semi-scientific, but with an undertone of mysticism and magic. *Ayurvedic medicine* unlike the traditional system of the Malays and the Chinese does not appear to have firm roots in this country. This system arose in India from the ancient Vedas. The *Ayurveda* is a part of one of the four Vedas and is believed to be a collection of medical writings communicated to man by *Brahma*. From these origins in Hindu mythology arose the Ayurvedic system of medicine which was possibly one of the foundations on

which Greek medicine and finally modern medicine was built. Ayurvedic medicine and the other Indian systems which evolved from it are credited with a period of great enlightenment in medicine, surgery and public health, but unfortunately all this ancient knowledge was lost through slow decline and decay, with the result that Indian traditional medicine today is considered to be a degenerated form of the original Ayurvedic system of medicine. *Western medicine* was brought to Peninsular Malaysia by the Portugese (1511), the Dutch (1640) and mostly by the British (1766) who also introduced it to Sarawak in 1841 and to Sabah in 1846. The British were mainly responsible for the establishment of western medical practices at the trading ports or posts of the British trading companies and its later spread in the country. This period coincided with a world-wide enlightenment in medicine when modern clinical medicine grew on the solid foundations of morbid anatomy, physiology, histopathology, microbiology, biochemistry and other basic sciences brought about by the rapid biomedical researches and discoveries of the 19th century and the further rapid advances in science and technology of the 20th century.

The figure below (after Field, reproduced from the IMR Studies No. 25) gives the speculative outline of the cultural origin and courses of medicine in Malaysia.



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This diagram is open to the criticism that the cultural inter-flow of the medical systems is not sharply defined in time but long-drawn over centuries. Malay medicine, for example, was exposed to Arabic influence throughout the period of Malay rule in Malacca and thereafter. The influence of the Hindu *Vedas* on pagan medicine possibly extended over a thousand years. The debt of the West to Chinese medicine is not shown. On a single diagram it is not easy to present these complexities of relationship.

Since, of the five systems of medical practices mentioned above, only the Western system relies heavily on laboratory support for its rational practice, its spread and development during the pre-Independence and post-Independence periods shall be considered at some length.

PRE-INDEPENDENCE SPREAD AND DEVELOPMENT OF WESTERN MEDICINE: BRITISH PERIOD (1766-1957)

Although uncertain, it is believed that in the later years of the East India Company, the western medical system of the towns spread to the hinterland of Malacca and to the mainland settlements of Province Wellesley and the Dindings. The Company was dissolved in 1858 and a few years later, the control of the medical services passed on to the Colonial Office. The British intervention in 1873 in the affairs of the Malay States led to the spread of the system and the development of the medical services into the states of Malaya. Within a few years, hospitals were built in most of the main towns. The original buildings of most hospitals in Peninsular Malaysia date from this period.

At the turn of the century (1900) almost all medical and health services within the country were provided by the Government. This monopoly was, however, diluted slightly with the enactment of legislation requiring rubber estates and tin mines employing more than a specified number of workers to build a hospital and provide some basic health services for their employees. These hospitals, controlled directly by the rubber and tin mining companies, were outside the direct jurisdiction of the Government's medical and health service, and were directly responsible to the Labour Department. The medical department could act only in an advisory capacity.

In recent years, especially after Independence, a few private hospitals founded by missionary

groups and other non-governmental organizations (medical centres) have sprung up in almost all the state capitals in Peninsular Malaysia, Sabah and Sarawak. Faced with ever increasing demands for medical and health services, the Government has welcomed this growing trend of private sector participation in the provision of medical facilities and services. Likewise certain local authorities have undertaken some of the preventive health work within their own boundaries. These services have been beyond the direct control of the Federal Government and within local authority areas the Ministry has only an advisory function. Even with the assumption of some of the responsibility for medical and health services within the country by local authorities and private hospitals, the bulk of the medical and health services to the public is still largely the responsibility of the Government.

Even though medical and health services have been the responsibility of the Government, they have not always been under one administration. Until 1932, the Government health services were divided into two departments, one maintained by the Federated Malay States (Perak, Selangor, Negeri Sembilan and Pahang) and the Non-federated Malaya States (Johore, Kedah, Perlis, Kelantan and Trengganu), and the other by the Straits Settlements (Singapore, Penang and Malacca). In 1932 the two services merged with a common professional head acting as executive 'Director' of the Health Services, Straits Settlements and as an 'Advisor' to the Federated and Non-Federated Malay States on health matters.

In 1948, the Federation of Malaya Agreement decentralised federal control to such an extent that, except for certain institutions like mental hospitals and leprosariums, medical and health services became a state matter, administered by a state medical officer. In 1957, with the declaration of Independence, health became once again a federal matter with the exception of certain preventive measures carried out by municipal and other local area authorities. Finally, with the formation of Malaysia in 1963, health in Sarawak also became a federal matter while in the state of Sabah, it remained a state matter until 1970. The central government in the form of the Ministry of Health assumed responsibility for all health matters throughout Malaysia in 1971.

The British established themselves in Sarawak in 1841 and in Sabah in 1846. These states formed what came to be known as British North Borneo. Prior to Independence in 1963, the historical development of the health services in these British protected states followed a similar pattern to that

in Peninsular Malaysia, but were relatively less developed mainly due to poor communications, difficult terrain and scattered population. After Independence, despite poor communication, the health services have expanded rapidly both in Sabah and Sarawak, so much so that today, even the remotest settlement or long-house is visited by health teams. These health teams use all forms of transport such as the landrover, riverboat or helicopter to reach their outposts.

POST-INDEPENDENCE SPREAD AND DEVELOPMENT OF THE HEALTH SERVICES IN MALAYSIA

Although at Independence in 1957, Malaya had inherited a fairly sound medical and health delivery system from the British, there were major deficiencies in the system. These were attributed to the colonial policies which were primarily designed to protect specific vested commercial, industrial and administrative interests. The health delivery system was almost wholly urban-based and cure-oriented, lacked a rural health component and was almost wholly lacking in basic laboratory support services.

After Independence, the first and second Malaya plans and the successive three Malaysia plans were designed specifically to overcome most of the obvious deficiencies that existed at the time of Independence. These have resulted in:-

- the establishment of rural health services,
- the establishment of training programmes (local and overseas for all cadre of staff) such as post-graduate training, training doctors locally and a step-up in the training of nurses and other para-medical staff including medical laboratory technicians,
- the establishment of national control/eradication programmes of communicable diseases e.g. yaws, tuberculosis, malaria, filariasis, surveillance of gastroenteritis, diarrhoea and dysentery and sexually transmitted disease (STD), family planning and PAP smear examinations, etc.
- improvement of the existing district hospitals and the building of new hospitals to better meet the needs of referred cases as a first line treatment of the rural people.

The rapid acceptance of modern western medicine by the rural people resulted in a big increase in the workload in hospitals. From these district hospitals, cases needing specialist care were referred to general hospitals, thus increasing the workload there as well. Out-patient attendances at hospitals and polyclinics also spiralled. The strategy of development of the health services has been continual extension of the medical and health services

with special emphasis on a more balanced distribution of such services between urban and rural areas and between the various states throughout the country. The strategy also envisages a rapid increase in trained and qualified manpower to man both existing and new facilities planned under each successive five year National Development Plan. These objectives have been pursued in the successive five year Development Plans of the Ministry of Health through programmes and projects covering the following areas:-

- training of manpower,
- development of rural health services,
- development of urban health services such as patient care services including improvements to existing hospitals and the construction of new hospitals,
- expansion of dental services,
- development and expansion of support services which includes pathology laboratory services, blood transfusion services, public health services, forensic service, etc., and
- development of more sophisticated super-specialities such as nuclear medicine, neurology, nephrology, thoracic surgery, cardiology, etc.

With the passage of time, the health services have expanded many fold and extended to the far corners of the country. Specialised medical care not available just a few years ago is now available in the general hospitals. Basic medical services once unobtainable in the remoter areas of the country are now accessible to large segments of the population through the expansion of the rural health service and the establishment of new district hospitals. New health programmes to eradicate diseases endemic in Malaysia, through the practice of preventive health measures have come into being and now benefit a large number of Malaysia's people.

The Ministry's objective throughout the development of these services has been to provide Malaysia with the highest attainable standard of health and medical care. Underlying this objective has been the Ministry's desire to improve the health of less fortunate Malaysians so that they too can measure up to the needs of the country's economic development and continuing social progress.

HISTORICAL DEVELOPMENT OF PATHOLOGY LABORATORY SERVICE INCLUDING BLOOD TRANSFUSION SERVICES IN MALAYSIA

Pre-Independence laboratories

During the pre-Independence era the medical laboratories within the hospital were clinical

laboratories undertaking simple diagnostic tests such as those currently carried out at Level I pathology laboratories (out-patient clinics, polyclinics and health centres) by junior laboratory technicians. A few hospitals particularly the state hospitals offered a wider range of biochemistry tests and bacteriological investigations. Histopathology, cytology and serology services were poorly developed or non-existent even in the larger hospitals. The bulk of public health laboratory work was handled on a routine basis by the Institute for Medical Research (IMR), Kuala Lumpur (which was founded in 1900 for research, training and laboratory investigations) and its branch laboratories at Ipoh (1929) and Penang (established in 1923 and became an IMR branch in 1952) and the other state pathology laboratories at Melaka (1940), Johor Bahru (1940) and Sungai Petani, Kedah (1941). In short, after 1902, with the establishment of the IMR the historical development of the pathological laboratory services is closely associated with the development of IMR at Kuala Lumpur and its branch laboratories.

1928 saw the first expansion of the IMR i.e. the opening of the South Block. This housed the bacteriology division, smallpox vaccine production unit and the library on the ground floor while the upper floor was taken up by the pathology division and administration. This expansion of the Institute coincided with the establishment in 1929 of a branch laboratory in Ipoh. In 1952/53 the Central Block marked the second expansion of the Institute and this coincided with the conversion of the state pathology laboratory in Penang to an IMR branch. The new central building provided space for the new division of virus diseases and medical zoology in 1954, which to begin with, was mainly involved in research. In 1966, under a new directorate, this division was separated into two namely, the Division of Virology and the Division of Medical Zoology. These divisions began to undertake more diagnostic work in virology and parasitology respectively. This period also saw the state pathology laboratories at Johore Bahru, Seremban, Alor Star and Malacca coming under IMR technical control as its branch laboratories. The Central Block also provided space for the new IMR library. The old library in the South Block was renovated to provide more laboratory space for the divisions of bacteriology and serology. By this time (1955) the Division of Bacteriology was recognised nationally and internationally as a National *Salmonella* Reference Centre for Malaysia and it provided a national service for serotyping of *Salmonella*, *Shigella*, and enteropathogenic *E. coli* and phage-typing of *S. typhi* for epidemiological investigations and surveys.

The IMR and routine diagnostic laboratory services

The IMR and its branches provided a diagnostic and advisory service for the country. In 1954 some 120,000 bacteriological, biochemical, histological and serological examinations were performed for the medical services and the private practitioners in the country. This workload increased to 341,188 tests in 1968. In 1980 the IMR, Kuala Lumpur performed 453,985 tests, while the pathology laboratory services of the States of Peninsular Malaysia performed 7,342,500 tests and the blood transfusion services performed 892,455 tests. As early as 1954, the IMR divisions and branches which undertook routine diagnostic examinations had complained that the burden of this work was increasing annually and severely affected their research programme. This was, however, the natural result of the expansion, improvement and rapid specialization of the medical services after World War II and especially after Independence. New hospitals had to be built and the medical services had to be extended to meet growing demands, and improved and modernised to keep up with the rapidly advancing medical technology. Thus the research programme of the IMR service divisions and branch laboratories continued to suffer. More staff, laboratory space and equipment were urgently needed to keep pace with increasing public demands for more and better health services. In this context, the IMR since its inception has had a broad responsibility to the medical services and the community. Until 1928 the IMR services were open to the Customs Department for analysis of liquors, spirits and *candu* and until 1946 to the Police for scientific investigations of crime. This latter service is now provided by the Department of Chemistry, Petaling Jaya. How much routine medical investigations contributed to the research at the IMR is difficult to say, but it is a fact that the first research work done by the Institute on typhus, leptospirosis, typhoid, dysentery and melioidosis came through these fertile channels of laboratory routine.

Post-Merdeka Development of the IMR, Kuala Lumpur

With Merdeka on 31st August 1957, the IMR suffered further due to the inevitable retirement of expatriate officers (European and Asian) who made up about 75% of the staff. The Institute lost quite a few senior and junior local officers, some of whom joined the newly established Faculty of Medicine at the University of Malaya, Kuala Lumpur. This declining state of affairs at the IMR persisted until December, 1965 when Dr. Ungku Omar Ahmad was appointed as Director. The author as

the Deputy Director (unofficial until confirmed in the post in 1971) and some of the current senior IMR officials had the good fortune to be closely involved in the Ungku's aspirations and were heavily committed with him in the formulation of the IMR plans. This date marked a turning point in the affairs of the Institute and the pathology laboratory services in the country. The Ungku had a strong conviction that the IMR should undertake not only medical research but also teaching and other national activities such as the development of national health laboratory services, malaria eradication and rural health research. Thus the IMR development programme consisted of:

- (i) immediate re-organisation of the IMR. This was completed in 1966.
- (ii) formulation of a five-year Development Plan to provide space for new IMR divisions and expansion of the existing ones. This was implemented during the Second Malaysian Plan (SMP) 1971-1975. Construction of hostels for 240 trainee laboratory technicians began in March 1973 and was completed by October 1974. Construction of Phase I of the IMR complex began in 1974 and was completed in 1976, while construction of Phase II of the IMR complex began in 1974 and was completed in 1977. The new IMR complex was officially opened by the Honourable Prime Minister Datuk (now Tun) Hussein Onn on 25.2.80.
- (iii) planning and development of a national medical and health laboratory service (including a national blood transfusion service) for the Ministry of Health. The five-year development plan was prepared by an IMR committee chaired by Dr. R. Bhagwan Singh.
- (iv) establishment of a School of Medical Laboratory Technology in the IMR complex. Crash training programmes for junior laboratory assistants started in 1967 and for the medical laboratory technologists (MLTs) in 1968 in temporary buildings. The new school for medical laboratory technology in the new IMR complex (Phase I) was developed as a priority project. Its construction began in 1973 and the school became fully operational from 18.5.76.
- (v) development at the IMR, KL, of a National Centre for Tropical Medicine under the South-East Asia Ministers of Education Organisation (SEAMEO) and annual provision of a six months' course in applied parasitology and entomology, leading to the DAP & E diploma. The IMR was declared a SEAMEO — TROPMED Centre for

Malaysia in 1965 and the first batch of 14 DAP & E students (medical scientists/doctors) from South-East Asia graduated in 1970/71.

- (vi) collaboration in the national malaria eradication programme prepared by the Ministry of Health. This programme began in 1967.
- (vii) establishment of a Division of Rural Health Research to initiate and co-ordinate the studies of rural health problems. This was established in 1967, and became fully operational in 1970/71 when it moved to a new temporary building.
- (viii) establishment of a snake farm (taman ular) venom collecting and research laboratory, in Kangar, Perlis. The director of the IMR was made Project Director on 25.11.74. Funds were allocated under the Second Malaysia Plan. However construction was only completed in 1979/80.

The New IMR Complex

The new IMR was designed to work closely with the medical faculty of the Universiti Kebangsaan Malaysia and the General Hospital, Kuala Lumpur. It was hoped that these three Institutions together shall become a major medical centre for medical graduate training, medical treatment and research in South-East Asia. The walls and fences were not in the original design of the complex. These separate and isolate the IMR from the hospital which has been its traditional source of clinical material and from the medical faculty which should be a source of academic advancement. The walls should be pulled down as soon as possible so that there can be better co-operation and collaboration amongst the professional and technical staffs of the three institutions.

Health Laboratory Service

In December 1966, Dr. R. Bhagwan Singh, as Deputy Director of the IMR, was assigned the duty of submitting a plan for the development of the medical and public health laboratory services throughout Malaysia. By 1968 the following were ready:

- (i) IMR: Five-year development plan for national medical and health laboratory services, presented to the Ministry of Health in June 1968,
- (ii) Standardization of laboratory procedures for Parasitology, Bacteriology and Serology, Haematology, Biochemistry and Histopathology were issued in IMR manuals of laboratory procedures in 1977/78,
- (iii) The first IMR handbook, containing 'Notes for guidance on the collection and submis-

sion of specimens for pathological examination' was published in 1968, revised in 1976 and re-issued in 1977.

Under this re-organisation, the state pathology laboratories at Johore Bahru, Seremban, Malacca and other states also came under the technical control of the Director, IMR, Kuala Lumpur. Thus the Director, IMR continued until September 1975, to implement the plan and develop an integrated health laboratory service, as more trained laboratory manpower became available each year.

Establishment of a unit for the development and improvement of health laboratory services, Bahagian Hospital, Ministry of Health, Kuala Lumpur

The Director, IMR continued to develop the laboratory service until September 1975 when the Ministry of Health established a unit for the development and improvement of the national health laboratory service within the Bahagian Hospital. During this period the state pathology laboratories were handed back by the Director, IMR to State Directors who thus assumed responsibility of the pathology laboratory services and the blood transfusion service in their respective states. The IMR, Kuala Lumpur and the Central Blood Bank at the General Hospital, Kuala Lumpur became the respective central reference laboratories for the pathology laboratory services and the blood transfusion services in Malaysia.

The post-Merdeka **status** of laboratory service (including blood transfusion service)

The Ministry of Health being well aware that modern medicine, be it curative, preventive or promotive, cannot be practised without adequate laboratory support and that a good standard of medical practice cannot be maintained without sustained medical research in the country, has embarked on the development of an integrated medical and health laboratory service which will not only provide a service to the hospitals, the health sector of the Ministry of Health and private practitioners, but will also make available facilities for clinical and applied research in every state of Malaysia.

Our national health laboratory service is an integral part of the national health organisation and is being planned to be easily accessible to the hospital staff, health medical officers, industrial officers and general practitioners. It is organised such that there will be a quick turnover of the routine tests, and sufficient qualified medical and technical staff available to service the major disciplines of clinical pathology, blood transfusion service, public health and forensic medicine. This

integrated laboratory service ensures co-ordination, collaboration and uniformity and avoids unnecessary duplication in the variety of services available in all the laboratories in the country and above all, ensures economy of staff, equipment, laboratory space and operating cost. Such a laboratory service combines the function of the hospital and public health laboratories, and hence is known as the health laboratory service.

In recent years with more trained technical staff, equipment and other facilities, the laboratory services provided by the Ministry of Health have improved tremendously. The national health laboratory service also had facilities allowing for clinical and applied research to be carried out in every state laboratory in Malaysia thereby supplementing and complementing the research capabilities of the IMR, Kuala Lumpur.

The state health laboratory service is divided into four functional levels where the range of laboratory investigations provided is dependent on and appropriate to the bed strength and the specialist services available at the hospitals. Level I laboratories are present at out-patient departments, polyclinics and health centres, level II at small district hospitals, level III at larger district hospitals with clinical specialists and level IV at state hospitals.

The practice of medicine today relies heavily on sound laboratory backup and demands on the laboratories are on the increase. To help the laboratory achieve an efficient service, it is essential that the number of tests requested is within its capability and that specimens submitted are correctly collected, labelled and transported to the laboratory. The result that a laboratory is able to produce can only be as good as the specimens provided by the clinicians.

The state laboratories are equipped to carry out a wide range of investigations both for the hospitals and the public health sector. Virology and some of the more complicated biochemical investigation are sent to IMR, Kuala Lumpur which is the central reference laboratory. The state pathology laboratories also prepare reagents, media, standards and controls for the peripheral laboratories. Methodology for each investigation and apparatus used are standardised in all laboratories so that staff transferred from one laboratory to another will find the methods familiar. Senior staff from the national reference laboratories in Kuala Lumpur and the state pathology laboratories make periodic supervisory visits to the peripheral laboratories.

A blood transfusion service is available in all hospitals in Malaysia. The main problem faced is the reluctance of the public to donate blood.

The work and development of the state laboratory health services are co-ordinated by the unit for the development and improvement of the national health laboratory service, Bahagian Hospital, Kementerian Kesihatan, Jalan Young, Kuala Lumpur.

The current development phase of the health laboratory services in Malaysia dates back to 1968, when the five-year development plan for the service was accepted by the Ministry of Health, Malaysia. This plan has had the blessings and continued support of the WHO from its very start. Following the recommendation of the WHO and the Ministry's task force, a unit of health laboratory service was established within the hospital division at the Ministry of Health. This unit was set up in September 1975 with the objective of continuing the development of an integrated medical and health laboratory service. This laboratory service is today 55-60% developed. The target is to meet the annual increase in workload (15-20%) and develop functionally by 5% each year.

Currently, in addition to the approved laboratory services available during working hours, the state pathology laboratories also provide a service after normal office hours. As the national health laboratory service develops further, it can hope to provide 24-hour coverage on a shift duty basis.

It is indeed a great achievement that the training institutes for para-medical staff, established by the Ministry of Health since Independence are now turning out their full complement of the much needed trained para-medical staff. This has made possible not only rapid development and expansion of the health services (preventive and curative), but also that of the supportive laboratory services which have been extended to rural and sub-urban areas of the country. The result to date have been most encouraging. In 1980, the annual workload by the laboratory service in each state ranged from 200,000 to 650,000 tests. Today, besides meeting in full the laboratory service needs of the specific national disease control programmes of the Ministry of Health like malaria eradication, tuberculosis, filariasis, leprosy, etc., pathology laboratories have been established at some 213 health centres, 38 polyclinics, 75 district and 14 general hospitals and all other federal/state medical and health institutes in Peninsular Malaysia, Sabah and Sarawak. Laboratory facilities for sexually-transmitted diseases (STD) diagnosis, drug detection, surveillance of gastroenteritis, diarrhoea and dysentery and PAP smear examinations are being strengthened as more trained staff and laboratory space become available each year. The emphasis

today is not only on the quantum of the laboratory service but also on its quality. This is being implemented through the standardization of laboratory procedures, strict on-the-spot day-to-day supervision especially of junior laboratory staff, and the institution of stringent quality control measures throughout the service in Malaysia. Programmes for standardization of laboratory procedures, equipment and quality control have been functioning since 1977.

Medical science is advancing very rapidly. In Malaysia, although much has been achieved, much remains to be done. The public health laboratory service has to be expanded rapidly and the forensic medicine service has still to be developed. This lag is mainly due to the acute shortage of trained professional staff and laboratory space. Many modern mortuaries with excellent post-mortem facilities have been built and more are planned. The acute shortage of trained pathologists, forensic medicine experts, microbiologists and laboratory space in the country is a matter of grave concern.

Water bacteriology and chemistry

Bacteriology and chemistry of treated water was performed by the IMR and its branches and the state pathology laboratories (Johore Bahru, Penang, Malacca and Kedah) until gradually taken over from 1955 onwards by the Department of Chemistry as its branches in Penang, Johore, Trengganu, Sabah and Sarawak were established.

Food bacteriology

Food bacteriology was carried out at the IMR and its branches and some state pathology laboratories until taken over by the Department of Chemistry in the early 1970s. However, epidemiological investigations of food-poisoning out-breaks etc., are still undertaken by the IMR and state pathology laboratories. The Ministry of Health is currently establishing food examination laboratories at appropriate points of entry of food into the country.

Virology

Virology investigations were first undertaken at the IMR, when the Division of Virus Research and Medical Zoology was established in 1954. It was renamed the Division of Virology in 1957 and has since provided and met the growing demand for virological investigations in the country. The workload has increased to 30,946 examinations in 1980. This service shall be provided at state level as soon as laboratory facilities and necessary professional and technical staff become available.

Pathology laboratory service in **the** private sector

Until about 1960 there were no private pathology laboratories in **the** country. The private practitioners were dependent on the IMR and state pathology laboratories for their laboratory diagnostic services, whereas most private hospitals and medical centres (except a few like the Assunta Hospital, Petaling Jaya which has maintained its own pathology laboratories and blood transfusion service and engages a full-time qualified pathologist) have their own limited laboratory service which depends on the calibre of the laboratory staff employed. These hospitals/medical centres supplement their needs by using the IMR or the state pathology laboratories or more recently the private pathology laboratories set up by pathologists who have resigned from government service. Over the past decade or so, some four such private organisations began to function in Kuala Lumpur and one in Penang. These private pathology laboratories with qualified pathologists should be encouraged as they help to relieve the overloaded government pathology laboratories. However, they should be controlled by suitable legislation. In my opinion, it would be timely to bring this legislation into force by the mid-80's when it is anticipated that enough trained MLTs will be available to overflow into the private sector.

TRAINING OF PROFESSIONAL AND TECHNICAL STAFF

Since the establishment of the IMR in 1902 most of the preliminary training of the required professional and technical staff had been carried out in the respective divisions of the Institute; mostly by employing an "on-the-bench-training" method. This has been mainly monovalent and on an ad hoc basis in the beginning and largely depended on the needs of the particular division. Subsequently this training became more organised and polyvalent, yet it remained mainly an "on-the-bench-training" type and was specially geared for those required to provide service in hospitals. By 1951, the professional staff (priority to expatriates) after 2 or 3 years of local experience, proceeded overseas to obtain a higher qualification (DCP, London) or experience in their chosen field of specialization. The technical staff from the pathology laboratories of hospitals (and later IMR staff as well) were attached to the IMR for 2 years, during which they rotated through the various IMR service divisions such as bacteriology and serology, parasitology, biochemistry, pathology, haematology and later virology. On completion of their training in each division, the technicians were required to sit for an examination to obtain certification.

Several attempts between 1955-65, (even with the assistance of WHO consultants) to set up and organise a course for training medical laboratory technicians at the IMR were not successful, until the IMR crash training programmes for junior laboratory assistants (JLA) and medical laboratory technologists (MLT) took off in 1967 and 1968 respectively.

JLA Training

1967 — JLA training for 1 year started with 47 candidates in a borrowed laboratory of the newly completed Public Health Institute. It moved to a temporary school built in the IMR compound in 1971 when intake was increased to two batches of 50 each annually.

MLT Training

1968 — The old photographic unit was converted into the School of Medical Laboratory Technology. The first intake of 41 candidates began their 3-year course in this temporary school (now converted into the SEAMEO-TROMED School for DAP. & E).

1976 — The new School for Medical Laboratory Technology was ready and training of JLAs and MLTs began there with an increase in annual intake of MLTs.

1980 — A total of 802 MLTs and 961 JLAs have been trained at the IMR School for Medical Laboratory Technology. The faculties of medicine, University of Malaya, Universiti Kebangsaan Malaysia and Universiti Sains Malaysia train their own medical laboratory technologists to meet their own needs.

FUTURE OF THE PATHOLOGY LABORATORY SERVICE

Much has been achieved but much more remains to be done. There is an acute shortage of pathologists which has to be overcome. The quality of work, especially in the peripheral laboratories, has to be improved. There is a need for continuing education to update knowledge and medical laboratory methodology through seminars, workshops, conferences and other similar programmes. These programmes of continuing education could be organised through co-operation and collaboration among the medical faculties of the universities, the research and training institutions of the country and the Ministry of Health.

Today, a fine infrastructure for a functional laboratory service has been laid and much of the groundwork necessary for the erection of a sound superstructure has been done. The laboratory service is currently in various stages of implementa-

tion to ensure continued improvement and expansion of the existing laboratory service, availability of a comprehensive laboratory service at all levels of patient care and health activities and the provision of a sound consultative and advisory service.

The 1980s will see new milestones in quality and sophistication of the laboratory services in Malaysia, provided more pathologists, forensic medicine experts, microbiologists and more laboratory space can be made available. If this can be done, the laboratory services in Malaysia can soon be comparable to those of the developed countries.

Finally, regarding the health services it would be appropriate to quote the YB Tan Sri Chong Hon Yan, Minister of Health, Malaysia, who, while addressing the WHO Annual Assembly in May 1982 at Geneva, said:

"We embarked after Independence on a deliberate and consciously planned programme of preventive, promotive and curative medicine. We emphasise access to health services particularly in the rural areas and a greater interaction of community resources with that of health workers. We now reach over 90% of the population in Peninsular Malaysia and 60% in Sabah and Sarawak where there are still communication difficulties. We had 5 million out-patients 5 years ago. Today we treat 14 million. Life expectancy at birth in 1979 stood at 67.2 for males and 72.5 for females. These indicators reflect the growing impact of our health services on the well-being of the population.

There are still weakness, however, to be overcome, much more requires to be done in the whole field of health education, preventive and curative medicine. We are still at a stage when basic health care has to be provided. At the same time, however, there is also increasing demand for more sophisticated technology and high-cost curative care. We must cope with both demands."

The above statement indeed reflects the positive contribution by the laboratory services to national health and welfare in the past and its role in the development of future health services in Malaysia. Hence, the laboratory services must strive for rapid expansion and excellence, so as to cope with the future needs and demands on it by the health services of Malaysia. In this context an integrated national health laboratory service will ensure an economical use of the limited available resources of trained manpower, laboratory space, equipment and funds and avoid duplication in laboratory methodology and purchase of equipment. In view of the acute shortage of manpower and laboratory

space these two constraints must first be overcome before the current integrated laboratory services can be smoothly and effectively separated into its three component laboratory services, namely, the hospital laboratory service, blood transfusion service and public health laboratory service. Otherwise, such a move shall surely result in severe competition by the three laboratory services for the limited laboratory space and trained staff. This shall inevitably lead to dilution of the established laboratory services and erosion of the currently attained quality. Furthermore, to ensure smooth development and expansion of the laboratory service, the integrated approach should proceed through to at least 1985 or preferably to the middle of the Fifth Malaysia Plan (1986-1990) before any breaking up of the current laboratory service is contemplated. In the meantime, the current laboratory service can be positively and effectively improved immediately by:

- (i) its development as a separate programme/activity of the Ministry of Health and not, as at present, as a sub-activity within an existing Division of the Ministry,
- (ii) an all-out effort to train or acquire that much needed professional staff and to step up training of more medical laboratory technologists,
- (iii) urgently building more laboratories, using the modular standardised plans,
- (iv) employing more sophisticated available laboratory technology (i.e. automatic and even computerised). However, it should be always borne in mind that the efficiency, effectiveness and trustworthiness of the service will largely be determined by the quality, character and integrity of the men behind these machines because even at their best machines will remain tools and shall never, ever be managers.

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