5. EVOLUTION OF HEALTH SERVICES

A medical doctor, seen by a patient, may carry out his own professional obligations during the individual contact or by a one-to-one discussion with the patient. The doctors responsible for safeguarding public health and sanitary protection of huge and sparsely populated areas where human resources are ravaged by endemic and epidemic diseases, can fulfill their functions only in a well-adapted administrative structure, which cannot remain limited to a medical activity. Indeed, numerous and intricate components of health, economics and human ecology must be taken into account. The health level of a collectivity is dependent on food resources, the economic situation and socio-cultural traditions. Therefore, the medical organization should have, ideally, inter-disciplinary links, so that realistic goals and guiding principles may be drawn up.

As soon as the Congo Free State was founded, the medical organization became the authorities’ main concern. Sanitary committees were put in charge to define the indispensable health measures. Laboratory researchers studied scientifically the health problems that constituted a serious obstacle for development. Right from the start, the authorities strove to define the adversaries.

In 1909 a frame for the medical service was created but it remained, nevertheless, dependent on the administrative and even military hierarchy, in which doctors could not have higher grades than captains. Conflicts were frequent.

In 1932, the Public Health Services were reorganized and therefore the respective roles of the government, charities and companies’ medical services were better defined and agreements were concluded.

The coverage made by medical institutions was progressively extended without, however, reaching out to the entire population, except by special mobile teams to control sleeping sickness. The professional and auxiliary staffs, the infrastructure, supplies and technical equipment had been affected by the economic crisis of the 30’s. This situation led to the creation in 1931 of an important institution: the Queen Elisabeth Fund for Native Medical Assistance (Fonds Reine Elisabeth pour l’Assistance Médicale aux Indigènes) or FOREAMI. The organization’s aims were to complete medical occupation of a defined region and to extend intensive efforts, limited in time, in order to improve the population’s health. This action, based on an efficient and wide-spread network, guaranteed the detection of the main diseases as well as the treatment and the organization of the specific fight against the so-called social diseases: malnutrition, malaria, schistosomiasis, tuberculosis and sleeping sickness. FOREAMI also set up a large network of medical establishments. Once the sanitary situation was turned, the treated region was turned over to the general medical service that thus benefited from a more solid action basis.

The Bas-Congo Province was chosen for the first experience. Kwango was next on the list but the war delayed until 1946 the effective establishment of activities in that new region. In 1947, the Van Hoof-Duren plan extended the programme to all the administrative territories, circles or sectors. The Native Welfare Fund (FONBEI), whose aim was to improve living conditions in the tribal areas, finally completed the infrastructure.
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Map 7 — The Congo Free State in 1897, with Lado enclave on the left top (from Atlas De Rouck, 1946)
EVOLUTION OF HEALTH SERVICES

HISTORICAL BACKGROUND
(See also the chronological memorandum, p. 1849)

1. The era of pioneer doctors

The first doctors were few and scattered. Some were members of the various expeditions or assigned to trading posts such as Boma, Leopoldville, and Stanley Falls, which served as bases for the expeditions exploring the interior.

Some merely acquired tropical experience by traveling through tropical countries but did not undergo any special training. All was yet to be discovered.

For treatment, the sick might be lucky if a doctor happened to pass through at the time of their illness. Otherwise they had to cover great distances on foot, in a tipeye (African transport on chair and shafts, or by boat, or they had to treat themselves, or simply accept their fate.

The medical staff belonged to three government departments, namely, the Department of Foreign Affairs, Justice and Religious Affairs, the Finance Department, and the Department of Interior, which included police, transportation, scientific collections, and public health. Some dates illustrate the evolution:

- 1855 and 1868-1871: the presence in Africa of the missionary doctor David Livingstone.
- 1878: Dr. P. Dutrieux, former military doctor and professor in Cairo, known for his work in ophthalmology, volunteers to join the African International Association (AIA, 1876-79) to replace Arnold Maes, a young Ph.D. who died at the start of the Crespel-Cambier expedition. Dutrieux was fascinated by anthropology and ethnography but disappointed by the nature of his duties. He returned to Cairo at the end of 1879. He is the author of an 1885 medical and health handbook for travellers in Central Africa.
- 1879: The African International Association is dissolved and replaced by the Committee for the Study of the Upper Congo (Comité d’Études du Haut-Congo – CEHC, 1879-1882).
- 1879-1881: Dr. T. Van den Heuvel joins the Popelin-Wautier expedition and leaves Zanzibar with an elephant caravan to take care, at Tabora, of the sick members and the logistics of the expeditions.
- 1882: Dr. Atiman, a graduate in medicine and catechist working for the White Fathers, practices medicine on the eastern shore of Lake Tanganyika.
- 1882: Dr. Lacan, a French doctor attached to trading posts, settles in Banana.
- 1882-1896: Dr. A. Simx, a Protestant missionary doctor, travels around the Lower Congo region, then settles in Matadi, and later in Leopoldville.
- 1882: Dr. Jones, also a missionary, travels around the Upper Congo region.
- 1882-1885: Dr. J.B. Allart, a veteran of Garibaldi’s campaign in Calabria, Italy, in 1862, is recruited by the CEHC to cover Boma and Vivi. He works at Boma’s hospital until June 1885.
- 1882-1885: Dr. Van den Heuvel joins Dr. Allart and is assigned to Leopoldville.
- 1883-1884: E. Courtois, a newly arrived pharmacist, finds himself practising medicine and is assigned to Stanley Falls. He explores Ubangi and sets up a post at Basoko, where he dies of blackwater fever after less than a year.
- 1883: The White Father, Father Vyncke helps to vaccinate the population of Lake Tanganyika’s west shore against smallpox.
- 1884 late June: Dr. J. Nisius, a military doctor, arrives; but is repatriated after two attacks of blackwater fever.
- June 30, 1885 – May 4, 1887: Dr. Carl Mense, a German citizen, is hired after two trips as ship’s doctor aboard a Dutch liner sailing to the Dutch Indies. He became the author of the Rapport sur l’Etat sanitaire de Léopoldville de novembre 1885 à mars 1887, a report on the health situation in Leopoldville, and reported the existence of beri-beri among workers recruited in Liberia. As he climbed Mount Mangue near Leopoldville its summit bears the name of Mense Peak. He later became a professor at the Colonial School at Witzenhausen, near Kassel (Germany). He founded the journal Archiv für Schiff- und Tropenhygiene in 1897.
- 1887: Dr. J. Paternotte is assigned to Leopoldville, then to Stanley Falls from 1892 to 1895.
- 1887-1895: Dr. E. Reyter is assigned to Boma, where he stays for almost 8 years. He subsequently becomes physician to the King of Siam.
- 1888, December 31: On the initiative of Dr. Reyter the Congoese and African Association of the Red Cross, is founded.
- 1889: Dr. H. Dupont arrives in the Congo and is appointed to the post at Basoko, then is sent to recruit workers on the coast, and accompanies the Chaltin Expedition against the muslim tribes dominated by Arabs in Lomami.

The Higher Council of the Congo Free State is instituted by royal decree.
Map 8 — The Bas-Congo province in 1897 (adapted from De Rouck, 1946)
1893: Dr. H. Dupont publishes a study of health conditions at Aruwimi camp: La situation sanitaire du camp de l’Aruwimi, station des Basokos, 1890-1891, in the Belgian medical press.
- 1894: a Secretary of State becomes the head of the central administration of the Congo.

2. The first medical establishments and health arrangements

The first establishments were built of local materials and corrugated iron. Garbage was neither collected nor incinerated, rats swarmed everywhere, and mosquito netting was only the means of protection against mosquitoes.

2.1. The hospitals at Boma, Leopoldville, Moanda, Banana, and Kinkanda

The hospital at Boma was built as early as 1882 and consisted of a series of mud huts and an operating theatre.

Dr. Allart shuttled back and forth between Boma and Vivi. Stanley wanted to make Vivi his capital and have a hospital built there; but the site did not suit Dr. Allart. Thus the first treatment buildings, made of prefabricated materials from Belgium, were set up, just ten minutes from the commercial centre of Boma.

The word hospital had a derogatory ring, so doctor Allart wanted to call it a sanatorium. According to Stanley’s adjutant, Lieutenant Troup, the sanatorium was equipped with beds, bedding, chairs, sofas, and many bath tubs, and the Englishman was pleasantly surprised to find the place so well furnished. Nursing staff was unfortunately lacking, but the King refused to allow the French Fathers of the Holy Spirit to bring in compatriot nuns, for fear of increasing France’s influence in the region.

Dr. Allart had many heated arguments with the commandant at Boma. These were the forerunners of the tension that would exist between the administration and the doctors, who were subordinate to the head of the post. The doctors would often be asked to carry out judicial and administrative tasks and even had to replace the head of the post in his absence.

In February 1884, Stanley was replaced by Sir Francis de Winton, Administrator-General of the International Association of the Congo (AIC), who was accompanied by his private physician, Dr. R. Leslie. The Administrator-General did not support Dr. Allart and recommended that the hospital be transferred to Moanda, on the Atlantic seacoast, as he wished to house his administration in the sanatorium buildings. Dr. Allart returned to Europe for good in June 1885. At the end of the same month Dr. Mense moved to Vivi, then joined an expedition to explore the Kwango region.

In 1883 Dr. Van den Heuvel was given the task of building a hospital in Leopoldville, but work progressed slowly and was at a standstill by 1890, when the Red Cross stepped in. The new hospital, for natives in Boma (built in 1904), and the convalescent centre for whites and blacks at Moanda, were also financed by the Red Cross. Later a hospital was constructed at Banana.

The first Sisters of Charity arrived in 1892 to staff the railroad company’s hospital on Kinkanda plateau, near Matadi.

In 1904, the Red Cross built a new hospital for Africans in Boma.

2.2. The first health measures

The authorities of the International African Association (AIA) were well aware of their health responsibilities since the King used every opportunity to stress the importance of hygiene. Occupying the Central African territories involved the moral obligation of providing a sound administration to increase the prosperity of the territories and of taking responsibility for the health of the populations.

An order dated December 7, 1887, established the first measures of health control to be implemented in the ports of Banana and Boma. Their aim was to protect Congo against sea-borne introduction of diseases. Anticipating the serious public health problems that might arise, the authorities promulgated regulations for the control and prevention of contagious diseases. These were set out in the ordinance of August 22, 1888 which followed the decree of August 5, 1888, organizing the Congo’s medical corps. The ordinances made it possible to screen for germ carriers and to apply the best methods for controlling the spread of epidemics.

On November 27, 1888, the government adopted measures to safeguard the health of African State workers. The art of healing was regulated by an ordinance of July 24, 1894 (see the section on health laws on pp. 162 to 167).

Baron Wahis, a general in the Belgian Army, took over from Janssen as Governor-General in 1892. He held this post for the next 25 years, even after the Congo’s transfer to Belgium. The territory’s medical staff would be augmented and Public Health Committees set up, first in the towns of the Lower Congo (Bas-Congo), then in all administrative centres.
Dr. E. Etienne was put in charge of health inspection in Banana in 1893 and performed this function until 1912.

The first measures to control smallpox were taken through the local vaccine production. All the explorers’ reports mentioned the frighteningly high death toll caused by smallpox epidemics. In 1884 the first missionaries in Tanganyika had to deal with a violent epidemic which occurred several times. In the hope of protecting the population from this high mortality they proceeded to immunize the inhabitants, not unsuccessfully, with the lymph collected from the pustules of mild cases. The natives accepted this technique quite readily because they already knew and applied it, while its use by the whites was a further guarantee of its effectiveness. Both missionaries and natives, however, were aware of the risk involved; and in fact, they did have some severe cases, but no fatalities. The missionaries helped vaccinate first the school children (including those at boarding-school) and then the entire population of their area. They worked in the eastern part of the country using secretions from pustules of vaccinated populations colonized by Germany. Laboratory lymph for vaccination brought from Europe by missionaries became quickly inactive in the tropical conditions.

2.3. The Boma smallpox vaccine production centre

Dr. H. De Marbaix arrived in Boma in July 1894. He had been chosen two years earlier from among Prof. J. Denys’s students at Louvain University to conduct medical research in the Congo and was prepared for laboratory research by training in Strasbourg, Paris and Italy and by travel to India and the United States.

He prepared smallpox vaccine in Boma and initiated research. However his health began to fail and he had to be repatriated in January 1896. He died of pneumonia a year later.

2.4. The Leopoldville research laboratory

The Belgian Society of Colonial Studies (Société belge d’études coloniales), founded by private initiative in 1894 and under the presidency of the King and General Donny, set up a committee for the study of the diseases in the Congo. The university professors on this committee included Professor J. Denys and Professor Ch. Firker, who was the first to fill the University of Liège’s Chair of Tropical and Subtropical Diseases. Leopoldville’s research laboratory was financed by the Society, while the Congo Free State covered the cost of construction and salaries.

Very little was known about tropical diseases at the end of the 19th century, despite the awareness since the first century B.C. that living close to marshes was dangerous because small insects could be the cause of serious diseases.

While Pasteur and Koch had discovered germs, the parasites causing tropical diseases had not yet been identified except for the filiform bodies “aspirated from the blood by mosquitoes” as observed on Formosa and in Amoy by Manson in 1878. Koch visited Africa and Asia several times. He discovered Vibrio cholerae in Alexandria in 1887, studied cattle plague in South Africa (1896), East Coast Fever in Dar-es-Salaam (1898), recognized pernicious malaria in Usumbura (1897), and carried out research on the reservoir of sleeping sickness.

When King Leopold II decided to embark the Belgians on a colonial undertaking his objectives included the creation of a chain of hospital and research stations. The physician chosen by the Congo Diseases Committee of the Belgian Society of Colonial Studies’ to lead research at the Leopoldville laboratory was Dr. J.E. Van Campenhout. He had already accompanied expeditions in the Upper Nile region in 1890 and completed a three-year assignment at Nouvelle-Anvers (New Antwerp, now Makanza). He had prepared himself to work in Africa by a period of study in Rome, followed by one at the Seaman’s Hospital, Greenwich.

Dr. Van Campenhout began working in 1899, in Boma, while waiting for the laboratory building at Leopoldville to be completed. He put up posters in Boma to warn newcomers on their arrival of the dangers of mosquitoes and on the need to take quinine regularly. Having already seen sporadic cases of filarial disease in Uele, Aruwimi, and Equateur, he described the perstans, diurna (Loa loa), and nocturna (Wuchereria bancrofti) forms of these filaria, then turned his attention to blackwater fever and sleeping sickness. He devoted several months to the study of the sleeping sickness epidemic in the school colony at the mission of the Scheut fathers in Berghe-Sainte-Marie.

Yet again, sickness thwarted a scientist’s achievements. Dr. Van Campenhout had to be repatriated and the laboratory’s management was taken over by Dr. A. Broden in August 1900. Dr. Broden had likewise completed his training as a bacteriologist and tropical pathologist in Professor J. Denys’s laboratory at Louvain with training under Bignami in Rome and Flügge in Berlin. His arrival started the most fertile period of research in the Congo. The laboratory became world famous for its research on trypanosomiasis and its treatment and prevention.

Broden was joined by Rodhain.
Both were followed by a long line of illustrious scientists: Dubois, Mouchet, Van den Branden, Pearce, Brown, Kleine, Van Hoof, Brutsaert, Wanson, Henrard, Neujean, Evens, etc. Laboratories would subsequently be set up by the government and private companies in various parts of the Congo (see the chapters Biomedical research, p. 221 and Public Health laboratories, p. 245).

3. The medical service's limited knowledge and facilities at the end of the 19th century

During the era of geographical exploration, settlement, pacification, and organisation of the Central African territories, the medical service was but a skeleton of what it was to become. The few and isolated doctors could only handle the most urgent cases and so concentrated on the sick around the trading and military posts. The authorities sought to hire competent and, if possible, experienced physicians, but candidates were scarce, partly because they feared having to work as subordinates to the territorial authorities.

The Congo Free State had only sketchy data on the overall health situation of the area. Information existed on malaria, diarrhoea, and amoebic abscesses of the liver in Europeans, and on smallpox among the natives but no accurate statistics were available. There was a sharp need for information but its sources were extremely limited. In view of these conditions it would be unfair to reproach them for relying on the only available means, namely the existing regulations and the still elementary technology against epidemics developed in the West.

A report on the climate, soil and health in the Congo was presented at the National Congress of Health and Medical Climatology of Belgium and the Congo in 1897. This report, *Rapport sur le climat, la constitution du sol et l'hygiène de l'Etat Indépendant du Congo*, proved that work was in progress and that medical research in the Congo was of interest to Belgian scientists.

The first doctors, who remained faithful to the contemporary motto *one patient, one disease*, were quickly faced not only with the multiple aetiology of disease but also with the lack of means to treat tropical diseases. Research in the late 19th and early 20th centuries resulted in a great advance into the field of tropical medicine.

4. The health situation, 1879-1905

The health situation facing the pioneers is illustrated by the following five-year mortality statistics for Europeans in the Congo (1879-1885):

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of staff or members</th>
<th>Deaths %</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuckey Expedition (1816)</td>
<td>48</td>
<td>21</td>
<td>11 accidents or suicides plus those repatriated</td>
</tr>
<tr>
<td>African International Association (AIA)</td>
<td>298</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Baptist Missionary Society</td>
<td>48</td>
<td>24</td>
<td>plus 13 repatriated</td>
</tr>
</tbody>
</table>

The mortality statistics for expatriates of companies are also significant. Expressed in deaths per thousand, they demonstrate the severity of the problem:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of European employees</th>
<th>Number of deaths</th>
<th>Death rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1879</td>
<td>20</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>1880</td>
<td>32</td>
<td>5</td>
<td>156</td>
</tr>
<tr>
<td>1881</td>
<td>34</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>1882</td>
<td>74</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>1883</td>
<td>106</td>
<td>17</td>
<td>169</td>
</tr>
<tr>
<td>1884</td>
<td>187</td>
<td>16</td>
<td>86</td>
</tr>
</tbody>
</table>

Among the 113 deaths of the 1,136 whites employed to build the railroad who resided in Lower Congo for 9 to 16 months, 17 were due to accidents, dynamite explosions, or drowning, and 96 to disease. Official staff mortality records of the Congo Free State show that:

- death rate among officials from the Department of the Interior was 56% between 1885 and 1896 with 46% due to disease alone. It was lower among Justice Department employees, living mainly in towns.
- mortality in 1905 was still 54% as compared to only 4% for military service men in Belgium.

The major cause of fever was malaria. Blackwater fever remained notorious for its severity, with one in ten cases proving fatal, although it was rare in some regions. Sleeping sickness joined the ranks of "unknown fevers" in 1903.

These figures are not surprising when one considers the prevailing poor hygiene, the few and inadequate preventive measures and the very few state medical staff. There were two state doctors in 1885 to cover 45 posts where Europeans lived, eight in 1891 (six of whom worked in larger centres), 14 in 1897, 25 in 1899 (for 215 posts), 27 in 1903, 59 in 1910, and 81 in 1914. Also there was an unspecified but equally small number of doctors hired by private companies and religious missions.

Intrepid young men who plunged into their work and tended to disregard the surrounding dangers, proved particularly vulnerable to the fevers and dysentery.
Stanley wrote "if there had been a railroad to carry the men to their work places, the diseases which decimated them during their journey through the forests and savannahs would have disappeared". Many took no prophylactic medication when settled in a post.

Very few drugs were used: only Cinchona bark, quinine sulfate, ipecacuanha, calomel or laudanum for dysentery, Rigolot paper to be plastered on the chest in the case of pneumonia, castor oil and Epsom salts, the elixir of a certain Dr. Warburg for tertian fever, and lotions for sprains (Cornet, 1970).

5. The first scientific explorations and their practical consequences

5.1. Medical observations during explorations

Some of the expeditions listed in the chronological review were accompanied by scientists and physicians.

Arnold Maes, a Ph.D. in botany, died shortly after his arrival in Zanzibar in 1876 and Dr. P. Dutrieux agreed to replace him. He published an account of his adventures, Souvenirs d'une exploration médicale, in 1885.

Dr. G. Dryepondt accompanied the Van Kerkhoven expedition in 1891 before being assigned to Leopoldville. In 1895 he published a handbook for travellers in the Congo, Guide pratique hygiénique et médical, which was distributed on ships bound for Africa. He later became professor at the Solvay Institute (Free University of Brussels) and at the Agricultural Institute of Vilvoorde (just outside Brussels). Doctors J.H. Moloney, A. Briart and J. Amerlinck took part in the Katanga Campaign expeditions. Dr. J. Magery of Dinant was assigned to accompany the expedition led by Hodister, who was given the task of opening trading posts in Maniema. They were both massacred near Riba-Riba (Lokandu) on May 15, 1892. The same month Dr. Sidney L. Hinde, a British national, joined the "Arab Campaign" led by Dhanis at Lusanbo and subsequently published The Fall of the Congo Arabs in London. Dr. J. Meyers, who also accompanied Dhanis, is known for his military adventures in Maniema and his book Le prix d'un empire (the price of an empire). Dr. L. Védy was also member of the expedition of 1897 to occupy Lado. Dr. Inge Valdemar Heiberg, a Swede initially assigned to the same expedition, later accompanied the Dutton-Todd expedition before becoming the Congo's head of medical services in 1911.

5.2. The French du Bourg de Bozas-Brumpt expedition (1901-1902)

This purely scientific expedition set off from Djibouti for Addis-Ababa, then continued on to Lake Rudolph, reached the Nile, where it met up with the Belgians in the Lado Enclave and finally entered the Congo Free State. Viscount du Bourg died of malaria on Christmas Eve 1902 at Amadis, on the left bank of the Uele. Dr. E. Brumpt continued the descent of the Limbiri (or Rubi) to its convergence with the Congo River at Bamba. He suspected the tsetse fly to be instrumental in the transmission of sleeping sickness and described Onchocerca volvulus (filaria infection) as well as tertiary yaws. He met up with the Liverpool School of Tropical Medicine's expedition in Boma.

5.3. The Dutton-Todd-Christy scientific expedition (1903-1905)

King Leopold II took advantage of his relations with the Liverpool School of Tropical Medicine and its president, Sir Alfred Lewis Jones, to have this renowned institution send a study mission to Central Africa at his expense. J.E. Dutton, who had already worked in Gambia, and J.L. Todd were chosen and set off on board the "Albertville", a ship belonging to the Compagnie Maritime Belge which offered a free passage on board. They were met at Banana in September 1903 by Dr. Heiberg, who was appointed to accompany them for the study of sleeping sickness and for the collection of other scientific data. A third Liverpool research worker, Dr. C. Christy, who had been a military doctor in Nigeria, India, and Uganda joined the expedition but only for six months.

These scientists installed their laboratory and dealt with 162 cases, and worked like demons for one month in Boma, and then a further month in Matadi before boarding the train for Leopoldville on November 21. They worked there with Dr. Broden until June 23, 1904 and received information and specimens of flies sent from all over the country, particularly from the Katanga Special Committee (Comité Spécial du Katanga – CSK). At Leopoldville they also carried out their first experiments of transmitting the disease to animals.

The doctors boarded a small steamboat, Roi des Belges, placed at their disposal, and spent each day studying the collected samples. They stayed longer at some of their stopping places. Reaching Coquilhatville on July 18, 1904, they learned that Doctors Greig and Gray in Uganda had discovered the presence of trypanosomes in the cervical lymph nodes. They disembarked at Stanleyville and continued over-
land to Maniema, where they isolated *Borrelia duttoni* and discovered its mode of transmission by the vector *Ornithodoros moubata*. Dutton died of relapsing fever on February 27, 1905, and was buried in Kasingo cemetery. Todd and his caravan of some 300 porters pressed on through areas infested with sleeping sickness to reach Tschofa and then Lusambo from where a small steamer brought him back down the Kasai and Congo rivers to Leopoldville (Photocopies from the Dr. John Lancelot Todd Foundation are available at the Institute of Tropical Medicine).

5.4. The Rodhain, Van den Branden, Becquaert and Pons expeditions to Maniema, Katanga, and Uele (1910-1913)

Following the Congo Free State’s transfer to the Belgian State and Prince Albert’s trip in 1909 (see below, p. 106) the Minister of Colonies decided to send a medical expedition made up of the doctors Rodhain, Van den Branden and Pons together with the entomologist, J. Becquaert, to Maniema and Katanga. The expedition was well equipped, even carrying portable bungalows, and travelled up river by steamer and rail via Kindu, halting for three months at Nyanga and one month at Kongolo before reaching Bukama. The region was infested with sleeping sickness, which was a matter of concern to the two major companies in the area, *Société Union Minière du Haut-Katanga* and *Compagnie des Chemins de fer des Grands Lacs*. While there Rodhain showed that in this area *T. gambiense* was not transmitted by *G. morsitans*.

In 1913 Dr. Rodhain was sent to Upper and Lower Uele, where sleeping sickness remained a major concern. He also took the opportunity to study filarial infections, identified a number of parasites of various large and small anthropoid monkeys and rodents, and continued his entomological research on the Oestridae. On his return in 1925 he was appointed professor at the School of Tropical Medicine in Brussels where he replaced Dr. Broden who died in 1929, he became director of the Prince Leopold Institute of Tropical Medicine in Antwerp.

Other expeditions followed: the expedition of the League of Nations’ International Committee on Trypanosomiasis and that of Dr. Hissette, who discovered the eye lesions of onchocerciasis (river blindness) in Zaire. There was also a series of missions led by Doctors Schwestz, A. Dubois, and L. Van den Berghe, who gathered a wealth of information about various diseases and their vectors (see the chapters Malaria, Schistosomiasis, Leprosy, Bubonic Plague, and Filarial Diseases). A number of other missions were financed by the United States: in 1926-1927 the Harvard African Expedition, led by Strong, to obtain more precise information about onchocerciasis; the Rockefeller Foundation’s 1923-1933 yellow fever expedition, and the Scientific Exploration Society’s 1974 expedition along the Zaire River to commemorate the centennial of Stanley’s discovery.

6. Company doctors

The companies in Central Africa appointed doctors to care for their expatriate staff and native workers. Among these were Dr. Lakan, working at a French trading post, Dr. Koch, a German doctor attached to the Nieuwe Afrikaanse Handels Vennootschap (NAHV) at Banana; and the doctors Bertrand, Poskin, Bourguignon, Etienne, Willems, and many others working for the *Compagnie du Chemin de Fer du Congo* (the Congo Railway Company).

D. Poskin, who stayed in Africa only six months, published the book *L’Afrique Equatoriale. Climatologie-Nosologie-Hygiène* on the climate and health conditions in Equatorial Africa, that won a prize instituted by the king.

The Katanga Special Committee hired a number of Italian doctors, among whom were Poldori and Ascenzo. Tanganyika Concessions Ltd. and Union Minière appointed Dr. Pearson, then Dr. Neave and his entomologist nephew. Other companies – *Compagnie du Kasai*, *Forminière*, *Compagnie du Lomami*, and *Compagnie des Chemins de Fer du Congo supérieur aux Grands Lacs* (CFL) – also had their own doctors.

7. Government doctors on fixed assignments and the missionaries’ contribution

Besides the doctors who accompanied the various expeditions a number were assigned to fixed posts, at Boma, Leopoldville (Kinshasa), Stanley Falls (Kisanganji), Basoko, and in Uele. They gradually spread to other posts, and became too numerous to name individually. However we can point out that:
- many were foreigners and some were Protestant missionaries;
- many were naturalists and expedition leaders rather than practising doctors, since they had no tools to combat tropical diseases;
- few of them published their findings.

Initially they attended to the most pressing needs while the administration undertook public health measures. These doctors were subordinate and accountable
Map 9 — Catholic missionary centres in the Congo by 1959
(Source: Annuaire des missions de Belgique)
to the administrateur de territoire (District Officer); given their different objectives, this was a source of conflict. The administrative view was that the communication network and steamers had priority. It was also not unusual for post commanders leaving for the interior to give the local doctor a judicial or even administrative role for which he was totally untrained.

The few available men could not handle everything, so the king called on the missionaries who, alongside their evangelical work, provided instruction, as well as medical assistance, in outposts to fight against smallpox and sleeping sickness.

As already mentioned, between 1891 and 1908, the Congo Free State's medical department numbered eight to 30 resident doctors to cover more than 200 posts, each of which served over 1,000 Europeans and a large number of natives who either worked for the administration or were simply grouped around the centres. Only 386,790 francs or a meager 1.93% of the State's total budget of 20 million francs was allocated to the medical department.

As companies grew, they also began to appoint their own doctors. This was particularly the case with the railway companies, who engaged, amongst others, Dr. Briart, Dr. Amerlinck, Dr. Bourguignon and Dr. Willems.

The missionaries were the civilization of the unexplored territories. The Reverend George Grenfell arrived in 1878 accompanied by Dr. Sidney Comber, who died a year later. Grenfell was a geographer whose endurance was matched only by his scientific mind. A young African who was named after Grenfell, became the first graduate of Yakuusu Nursing School and went on to gain a medical assistant's certificate at the government school in Leopoldville.

While some missionaries could be somewhat rough in their zeal to evangelize and wanted the Congolese to adopt the European form of Christianity, they were nonetheless the teachers of French, writing, and various manual skills. In 1892 the so-called school colonies (colonies scolaires) that the State no longer had staff enough to run, were placed in the care of various philanthropic societies and religious organizations. The missionaries trained catechists and organized so-called chapel-farms (fermes chapelles), small farms run by a catechist which were sometimes the cause of disputes with local chiefs, who opposed such utilization of land. Educational initiatives were nevertheless launched; and the inevitable mistakes inherent to all innovation were made.

The missionaries' assistance provided valuable help for the control of sleeping sickness. Some took courses in microscopy to help with early detection. Illustrious examples of this breed of missionary were Father Kindi, a member of the White Fathers, who worked west of Lake Tanganyika in 1904, Father Cambier, who became a prefect apostolic, Priest H. Vandereyst, who gave Dr. Broden in Leopoldville the idea of setting up systematic courses for missionaries (see below 1.2.2. p. 113 the Agent Sanitaire). Father Greggio together with many other missionaries took on the work of trypanosomiasis detection.

Vicariates and apostolic prefectures had already been set up by 1908. Also Protestant Missions had been erected.

Their location and also those of governmental settings in 1897 are shown on maps 9 and 10.

8. Creation of the School of Tropical Medicine

King Leopold II made a personal donation to help found Liverpool's School of Tropical Medicine in 1897, and gave it another grant in 1906.

Meanwhile the Colonial School was established in 1904 to train individuals before their departure for the Congo.

Courses on diseases prevalent in hot countries had already been started in various Belgian universities such as Liege and Ghent. Following the recommendations in Dutton and Todd's report, Professor Firket of the University of Liege suggested to the king that a school of tropical medicine be set up in Brussels.

In March 1906 it was the Ministry of Agriculture that convened a committee to study the creation in Antwerp of an Institute of Hygiene and Exotic Diseases. A course to prepare doctors for a career in Africa was instituted with the objective of training doctors in microscopy to correctly diagnose parasitic diseases by examining blood films and stools. The first classrooms in Brussels were lent by the Ministry of Agriculture and located in the former observatory, Quetelet Square.

The School of Tropical Medicine was created by the royal order (arrêté) of September 10, 1910. Dr. Broden was its first director. All doctors wishing to practise in the Congo were required to obtain a degree from this school.

The school was later transferred to Duden Park, in Forest (Brussels). In 1933 it was moved to Antwerp and renamed Prince Leopold Institute of Tropical Medicine in honour of the future King Leopold III. With its more spacious premises, the new institute was able to set up research laboratories and the Leopold II clinic for returning expatriates and sailors, was built next door.
Map 10 — Protestant missionary centres in the Congo by 1957
(Source: Administration of the Belgian Congo)
9. The Congo Free State central administration and the Colonial Charter of 1908

Before the creation of the Congo Free State the administration was handled by a minimal staff. The bodies responsible for executing King Leopold II's ideas were:
- the African International Association (AIA, 1876-1879),
- the Upper Congo Study Committee (Comité d'Etudes du Haut-Congo – CEHC, 1879-1882), and

The AIA's Secretary-General, Baron J. Greindl, was mandated by the king and became president of the CEHC in 1879, leaving his former position to be filled by Colonel M. Strauch. In his task of directing the administration, which was simplified to the utmost but highly centralized, he was assisted by the king's aides-de-camp, some elite junior officers and a few rare civilian clerks.

The inevitable extension of the administration was modelled on that of Belgium. Three departments were headed by a Secretary of State. These were the Department of the Interior, which encompassed the administration, police, communications and transport, public works, agriculture, industry, and health and sanitation; the Finance Department, and the Department of Foreign Affairs, Justice and Religious affairs. A single Secretary of State, E. Van Eetvelde, headed the entire administration from 1894 until 1901, when he resigned because of ill health. The king then became his own Secretary of State.

The law on the government of the Belgian Congo of October 18, 1908, known as the Colonial Charter, gave executive power to the King, who was seconded by the Minister of Colonies who was subjected to Belgian common law and accountable to Parliament. The Ministry of Colonies was thus a Belgian institution running the Colony according to Belgian laws and regulations. However the Belgian Constitution stipulated that any colonies the country might gain should be governed by special laws, so that the Brussels offices referred basically to the Colonial Charter. This Charter put all colonial matters in the hands of the king and his Minister of Colonies except for relations with foreign powers. Thus the Minister retained the power of a Secretary of State for the Congo Free State.

The Ministry headed by a General Secretary had four (later five) departments or General Directorates: 1) Justice and Instruction; 2) the Interior, including public works, civil service, and health; 3) Finance; 4) Industry and Trade; and 5) Agriculture.

A first attempt to decentralize the Congo was made under the royal order (arrêté) of July 28, 1914, which also introduced the principle of less concentration of responsibility in central offices of the colony.

Jules Renkin, minister from 1908 to 1918, made a strong mark on the administration of the Ministry of the Colonies.

Prime Minister H. Jaspar was concurrently Minister of the Colonies from 1927 to 1931. He could rely on the Colonial Council, a body composed of eminent Belgian personalities, for advice. The minister governed by decree. However a second administration existed in the Congo itself, where the Governor-General governed by ordinance. This dual administration posed many problems. The autonomy of the Administration of the Congo asserted itself during the two world wars, as did the authority of the Minister and his General Secretary in Brussels on the one hand and that of the Governor-General in Africa on the other. The Colonial Charter had placed the legislative power for the Congo in the Parliament of Brussels while providing space for special laws issued directly by the Minister of Colonies and the Governor-General, representing the King.

The Brussels-based medical department had merely an advisory role. The Higher Council of Colonial Hygiene also had an advisory role under the Ministry of the Colonies. A commission on the art of healing (Commission de l'art de guérir) made decisions on degree equivalence for foreign medical staff wishing to work in Africa.

At the same time the decentralization of the colony was progressing outwards from Leopoldville as a centre towards the interior giving considerable autonomy to the provincial governors, district commissioners, and district officers (administrateurs territoriaux).

The Ministry of Colonies was renamed "Ministry of the Belgian Congo and Ruanda-Urundi" in 1958.

As developments speeded up, Belgium was intending to offer the Congo a choice between complete independence and association with Belgium. This process was to be influenced by De Gaulle's Brazzaville speech in December 1958 in which he offered France's African possessions immediate independence.

On June 1, 1960, the Ministry of the Belgian Congo and Ruanda-Urundi was renamed the Ministry of African Affairs which in turn was dismantled in 1961 and replaced first by the Office de Coopération au Développement or Office of Cooperation for Development (Overseas Development Office), then the Administration Générale de la Coopération au Développement (AGCD or General Administration of Cooperation for Development).
10. **Prince Albert's visit in 1909, the creation of the Public Health Department and the post of Head of the Public Health Service**

At first the doctors were left to organize the health services themselves and no strong coordinating structure was responsible for countrywide public health work; a rigid structure may have hindered rather than have brought support to health workers in the field.

At the end of his life King Leopold II bore almost the whole weight of his undertakings on his own shoulders; consequently he urged his nephew and heir to the throne to visit the Congo to evaluate the achievements and assess future needs.

Prince Albert sailed for Cape Town and entered the Congo via Katanga, where he was shown what was best and was often not shown the worst. He did manage to see the victims of sleeping sickness and leprosy. No one knew at the time that King Leopold II would die on December 17 of that year.

Prince Albert's discussions with Minister Renkin and Dr. Rodhain, whom he met at Leopoldville, effectively paved the way for future developments. The Congo entered a new era with its transfer to the Belgian State.

11. **The medical service from 1911 to 1928**

The Medical Assistance Service for Natives (Service d'Assistance Médicale Indigène or SAMI) focused initially on the control of sleeping sickness. Its work subsequently expanded to cover the major communicable diseases.

Agreements were signed with the missions and industrial companies so as to give these private medical units the possibility of receiving government support and to have them providing health care for the local population of this area. These were the seeds of the Auxiliary Medical Service for Natives or SADAMI (Service auxiliaire d'assistance médicale indigène), which also included the medical services of philanthropic organisations and missionaries.

The Congo’s medical establishments had been funded for the past 15 years by the African and Congolese Red Cross Association, but this association was in financial difficulties and could not raise enough funds in Belgium or abroad to cover its activities. Consequently it handed its establishments over to the Minister of the Colonies on January 26, 1909.

The Central Office of the medical services was set up in Boma in 1909 to centralize information, coordinate efforts, organize medical interventions, and to keep Brussels informed. On January 17, 1910 J. Renkin, Minister of the Colonies, sent to the Governor-General a document dealing with the general organization of the health service. In 1911 Dr. Heiberg became the first Head of the Health Services (Doctor-in-chief) and held this post until 1920. His successors were Dr. Rodhain, from 1920 to 1925, and then Dr. Trolle until 1932.

In 1920 the State Medical Department superintended 34 establishments for natives with a total capacity of 3,040 beds, and 10 clinics for Europeans totalling 150 beds. The number of doctors fell to 39 after World War I, then gradually rose to 97 by 1926. These doctors were assisted by 137 special health auxiliaries called agents sanitaires (see p. 113). In addition to the government doctors there were 52 industrial and mining company doctors and 24 missionary ones assisted by 114 missionaries with degrees from the School of Tropical Medicine, all of whom shared responsibility with the government doctors for the population's health.

The medical service was given its final structure in 1922 as an autonomous department directly under the Governor-General. At the time Governor Maurice Lippens, an energetic, original person, proved particularly sympathetic to health needs. In the interior, however, the doctors continued to remain under the orders of the district administrative officer.

The doctors belonged to three categories:
- Category A: those running the central and provincial services.
- Category B: those attached to laboratories and the public health services.
- Category C: those providing direct medical assistance to the natives or SAMI.

Category C doctors, who provided medical care in the field, had to fill responsibilities in fixed town hospitals as well as the interior, where they played a mobile role, especially in sleeping sickness control.

Also in 1922 a public hygiene service was created under the direction of Dr. Duren. This service was responsible for sanitation in ports and towns and for controlling vectors and intermediate hosts of communicable diseases. It worked closely with the industrial companies' doctors in the field of occupational health.

The first peripheral permanent dispensaries were set up in 1924 in the Eastern Province to provide consistent treatment for patients who had been diagnosed by the mobile screening units. These early dispensaries were staffed by African auxiliaries and were the first stage in a national network of permanent medical posts providing primary health care to the population.
Dr. G. Trolli, (an Italian), Head of the Health Services for almost ten years from 1925 onwards presided over the creation of the intensive work zones of the Queen Elisabeth Fund for Medical Assistance to the Natives or FOREAMI. (FOREAMI, see hereafter p. 119)

12. The development of medical services in Ruanda-Urundi

These two countries in the heart of Central Africa were first explored in 1894 by Count von Götzen, who ensured that they were annexed by Germany.

Missionaries opened a post in 1900, but an administrative office for the country was not set up in Kigali until 1908.

There were few serious health problems in this temperate area which, except for a narrow strip in Bugerama infested with tsetse flies from Tanganyika, was free of sleeping sickness. A high incidence of respiratory infections caused by cold, yaws and relapsing fever were, with periodic famines, the main problems. Major famines occurred in 1916, 1928 and 1943-1944. After the 1914-1918 war, Belgium became responsible for the countries. A laboratory was set up in Kitega (Urundi) in 1920 to prepare vaccines, especially against meningitis and in 1922, also in Kitega, a school for assistants médicaux was opened. In 1923 Belgium was officially mandated by the League of Nations to administer both countries.

For a long while travel in the area was on horseback or by foot, and porters were the norm until 1930, when official government records reported 13,000 man-years of portage. This work was “limited to eight hours a day and the burden to 25 kg per man”.

There were six doctors for the two countries in 1925. Not until 1929, after the previous year’s famine, did the Belgian authorities start to organize the country and to take economic and medical measures. Mobile units from the Medical Service for Natives (SAMI) travelled from village to village countrywide. The population was counted and each case of yaws was treated.

Seven medical assistants graduated from Kitega in 1929. This training was continued until 1934, when Kitega’s school for medical assistants had too few applicants with an adequate knowledge of French. Nurses were also trained, and those students competent to perform medical assistance without having completed the entire course were employed as nurse-aids.

The medical laboratory was transferred to Astrida (Butare) in 1936 together with the school for medical assistants at the time of the opening of the groupe scolaire (schools complexe) by the Brothers of Charity.

However, the religious missions had established a network of dispensaries even before the government’s medical service was expanded. There were only ten doctors in Ruanda in 1930: six government doctors, three belonging to Protestant missions – one at Gahini, founded by the Church Missionary Society in 1928; one at Ngoma, founded by the Adventists and one at Kirinda, founded by Belgian Protestants – and one mining company doctor.

Yaws had almost been eradicated by the eve of World War II. This was achieved not just by medication but also by the wearing of more protective clothing and the widespread use of soap. In the fifties, the government doubled the number of doctors and multiplied the number of dispensaries so that no one would live more than 10 km from a source of health care.

Laboratory research continued during the war. In 1943 the epidemic of louse-borne typhus resulted in the isolation of Rickettsia prowazeki (Pergher and Casier, 1933; Jadin, 1947). Shortly after, the theory that malaria could not be contracted above 1,400 m altitude was quashed, as Anopheles mosquitoes were found at 1,800 m (Vincke and Jadin, 1946 and 1949). The incidence of malaria was rapidly reduced by spraying with DDT and drainage work, which started around Astrida in 1950 and continued later in the Bubanza and Usumbura Territories. The result was a sharp fall in infant mortality. In 1950 Chlamydia were recognized as a cause of venereal disease.

After research on tuberculosis control and intervention by the Native Welfare Fund (Fonds du Bien-être indigène), CEMUBAC (Medical Centre of Brussels Free University in Central Africa) opened a sanatorium in Kibumbu (Burundi), in 1953. A second sanatorium was opened in Rwamagana, (Ruanda), in 1955. Detection of patients and BCG vaccination were extended to include the Ruanda-Urundi territory.

Independence, which would be granted in 1962, was already in the air, and the two separate countries were to be named Rwanda and Burundi. The government wished to open a medical school as part of the National University of Rwanda in Butare. This school was inaugurated on November 2, 1963.

Shuttle negotiations between Rwanda and congregations of the Brothers of Charity were launched in 1964 to draw up a national programme for mental health within primary health care. Ndera Neuropsychiatric Centre, in Kigali, was built in 1968. It was followed by two decentralized units, one in Ruhengeri and the other in Butare, and a dozen secondary centres.
Map 11 — Religious missions in Ruanda-Urundi by 1959
(Source: Ruanda-Urundi, Inforcongo, Brussels, 1959)
Africa's seventh cholera epidemic, swept across the continent in 1970 and reached Rwanda in July 1978. It was contained successfully in the districts bordering Lake Kivu. Burundi's medical services also overcame cholera and bacillary dysentery successfully.

By 1980 Rwanda had three reference hospitals (Kigali, Ruhergeri, and Butare which was a teaching hospital!), four district (préfecture) hospitals, and 19 rural hospitals including 12 mission hospitals. The country was covered by more than 107 dispensaries, of which 27 were run by religious missions. It had a total of 222 doctors, 170 of them were Rwandans, and 227 African assistants médicaux. Over 50 years the school for assistants médicaux turned out a total of 273 graduates. Consequently the country was well equipped to provide its population with comprehensive medical care.

In Burundi to promote primary health care and particularly to supply essential medicines, a local scheme to manufacture and package drugs and an analytical laboratory were planned in Bujumbura, Burundi, as of 1974. These facilities got under way in 1976 under the supervision of the National Drug Administration or ONAPHA (Office National de Pharmacie). An identical institution, LABOPHAR, was inaugurated somewhat later in Butare, Rwanda.

Prior to the countries' independence a psychiatric ward had been functioning at Usumbura General Hospital since 1949.

Negotiations were also started in 1977 and culminated in the construction in 1981 of a national reference centre including a village for mental patients at Kamenge.

Burundi's Department of Health had been seeking since 1978 to implement a development plan for the medical service known as the "health coverage" plan. Its major achievements to date include the building of Bujumbura's university hospital, the modernization of the capital's two reference hospitals, and the building of three new centres for medicine and surgery at Rutova, Makamba, and Mujako. Burundi's public health policy is directed towards the social side of medicine.

ORGANIZATION AND DEVELOPMENT OF HEALTH SERVICES

Health service organization is a dynamic process linked to the population's needs, the prevalence of disease, the availability of control methods and equipment, qualified personnel and the financial resources that can be devoted to these factors. However, one must also allow for the population density, usable means of transportation (tracks, waterways, baggage carriers, pack animals, bicycles, and motor vehicles), reliance on traditional as well as modern medicine, and community participation in organizing and running health services. The level of health also depends on the area's overall agricultural and economic development, the education and nutrition of the population, and earlier developments.

These services are thus not static; they are ever subject to change. Nevertheless, in Africa they long remained subordinate to priority goals, notably sleeping sickness control.

It may be stated that these methods were actually applied in a decentralized manner long before one could talk about health centres, basic health services, mass campaigns, and integrated services. Besides sleeping sickness control, radiological screening for TB, and smallpox eradication campaigns there were not two distinct health care systems in existence, one focusing on eradicating a widespread disease by means of an independent mobile structure (the so-called "vertical approach") and the other consisting of a series of decentralized fixed health stations, hospitals, and urban and rural dispensaries (the so-called "horizontal system"); both systems were applied in each medical area.

Active community participation was instituted in the 1960s and 1970s in the form of health education, health committees, and local financial contributions to cover part of the health services that had been able to develop and remain free, given the country's wealth (see pp. 149 to 156, and p. 289).

As the development of the health services occurred in the socio-political context of the time, a chronological review from the time of the first explorations to the early 20th century has been included at the end of this compendium.

1. Main characteristics of the health services in the Congo

The health system applied in the Congo changed with the times, for its organizers were influenced by the constant concern to adapt to local problems and contingencies. This adaptability was founded on the high priority that was given to research. The health policy was also guided, right from the start, by the desire to bring the benefits of medicine to the most
distant points on the map in order to ensure an as adequate coverage as possible of the population. To do this, the State relied on the combined intervention of its own staff, including Congolese auxiliaries, and the collaboration of religious missions, industrial and mining concerns, and charitable organizations.

The characteristics of the Congo's health services reflected the concern for efficacy and the typical pragmatism of the Belgian, who tends to be a man of action rather than theory.

Being very practical and reacting immediately to local problems have advantages that the strict application of pre-established plans cannot always offer. Many people interpreted this flexibility of the people in the field as improvisation. The pioneers left few written accounts of their experiences and we have neither strict blueprints of their plans of action nor detailed descriptions of the stages of their work.

1.1. Importance of scientific research

The historical background to this chapter has already shown the importance given to the research conducted by the Belgian and foreign expeditions.

We can quote the declaration made to a scientific meeting in 1876 by the botanist Arnold Maes, who would pay for his arrival in Africa with his life before ever entering the interior: "I make the solemn commitment not to neglect for an instant to do all in my power to serve mankind and science. All my youth and ardour will be put to use in the achievement of my duty and if I should fail, I shall at least have the consolation of having deserved the kindly esteem that I am constantly shown." (Maes, 1876).

Research focused on studying the at-the-time totally unknown determinants of disease, as this was a prerequisite for any future efforts of control.

The medical laboratory set up in Leopoldville in 1899 provided support for field studies, laboratory studies, and animal experiments. This support broadened with the creation of the provincial laboratories and specialized institutes. A new laboratory, called the Princess Astrid Institute of Tropical Medicine, was also built in Leopoldville in 1937 (see the chapter Public Health Laboratories, pp. 247-248).

In line with the principle of decentralization so dear to the Belgian system, laboratories were set up in the major towns and areas where specific endemic diseases occurred. Thus Blukwa Laboratory was set up in 1928 in the heart of a region of endemic bubonic plague (see the chapter Plague, p. 1547). Routine examinations were conducted at these facilities, but they always went hand in hand with research to discover less known or new diseases. These laboratories produced vaccines and often worked on specific tasks depending either on the dominant local endemic disease or on a scientist's specialization.

Besides the medical and research laboratories, public health laboratories and stations were set up to monitor the quality of water, vector control and disease reservoirs and foci. Some laboratories would become specialized in onchocerciasis control (for example in Leopoldville) and schistosomiasis control (such as in Bukavu). The state-affiliated institutions and industrial concerns' health departments equipped their own research laboratories (see the chapter Biomedical Research, pp. 225 to 226).

The Institute for Scientific Research in Central Africa (IRSAC) was set up after World War II, in 1947. Its medical sections included a nutrition section and a second section on vector research (see pp. 226 to 228, see the chapter Nutrition and particularly, p. 380).

A wealth of research was also conducted by doctors in the provincial laboratories. Some of this work deserves to be singled out:
- Dr. Mottoule, working for the Geominies mining company, explored the left bank of the Lukuga, which feeds into Lake Tanganyika. He sought to eliminate the tsetse fly – a constant threat to the company’s workers – to counter the danger of sleeping sickness. His work would be continued first by Dr. Gerard, then by Dr. Mouchet.

The doctors detected another danger among the railroad workers, namely, beriberi. They eventually succeeded in proving that beriberi developed when high-carbohydrate rations were given to compensate for the lack of animal proteins (see the chapter Nutrition, p. 365).
- Dr. J. Schwetz, born at Vitebsk, in Byelorussia, and forced to leave Saint Petersbourg during the 1905 revolution, continued his studies in Lausanne and eventually joined up with the Boers in South Africa. In 1908 he met the Belgian Socialist leader, Emile Vandervelde, through Professor Stilling in Lausanne, and joined the Belgian Congo's medical department. He was given the task of directing a sleeping sickness lazaret in the Lake Tanganyika area. He did not shut himself up in his hospital ward, but combed the entire west bank of the lake and the hinterland, looking assiduously for tsetse flies. Thereafter he continued the fight against sleeping sickness in Kwila-Kwango (1921), Kasai (1924), and Katanga (1927). He also took an interest in medicinal plants and efforts to control malaria (from 1928 to 1943, see the chapter Trypanosomiasis, p. 1711) and published research on medical entomology (from 1930 to 1947), animal trypanosomiasis, schistosomiasis
(from 1942 to 1956, see the chapter Schistosomiasis, p. 1639), and on bubonic plague.

- Dr. Ignace Vincke (1948) discovered rodent malaria. His scientific curiosity marked a new era in malariaology. He discovered the plasmodia’s sporozoites in the salivary glands of Anopheles darenii and worked relentlessly to find the carrier, which proved to be a rodent, Thamnomys surdaster. The first plasmodium to be isolated was Plasmodium berghei, the first in a series of rodent plasmodia, of which P. vinckei was one, that contributed to the experimental study of the transmission, treatment, epidemiology, and control of malaria (see the chapter Malaria, p. 1449).

- Dr. Marcel Wanson studied the cycle and behaviour of Simulium damnosum, the vector of Onchocerca volvulus (1949). This was such a scourge in Leopoldville that a campaign to eradicate 65,000 breeding grounds had failed to overcome it. Only airborne spraying of the arborescent legumes and Euphorbiaceae that grew on the islands in the middle of the rapids succeeded in eradicating the vector, as the males were attracted to the odoriferous plants. This success never had the scientific recognition that it deserved (see the section on onchocerciasis in the chapter Filariases, p. 1359).

The Antwerp Institute of Tropical Medicine conducted experimental research on malaria, the ecology and life cycles of the vectors, agglutination and immunofluorescence test research, and antigen variation studies. The Institute studied Mycobacterium leprae reproduced on mouse footpads to determine the most effective drug combinations and the bacilli’s resistance to drugs; at the same time research on abnormal haemoglobins, superficial and systemic mycoses, and the isolation of new viruses forged ahead.

The Congolese medical services’ experience in sleeping sickness control work prompted the Commission of Technical Cooperation in Africa (CTCA) to recommend that the Tsetse Fly and Trypanosomiastis Permanent Inter-African Bureau or TFPI (BPITT in French) be set up in Leopoldville. The Bureau's first director was a Belgian, Dr. G. Neujean, who shared the post with Dr. J. Ceccaldi of the Pasteur Institute of Brazzaville. The latter took on this task after the upheavals of independence. The CTCA’s activities would be taken over by the Organization of African Unity (OAU).

Various university departments also contributed to the study of specific problems, such as endemic goitre and cretinism. The International Institute of Cell and Molecular Pathology (ICP) was a trailblazer in the study of modern biology. It participated, along with other institutes and laboratories, in research into the cellular mechanisms of parasites. ICP is currently conducting a promising study of the selective introduction of molecules bound to carrier proteins that can enter cell lysosomes without damaging the body’s normal cells – a method that holds great promise for chemotherapy. This international research was supported by the special fund created by WHO in 1977 for the Tropical Disease and Research (TDR) programme. Belgium has contributed to this multinational programme from the very beginning with a substantial financial contribution.

At the same time pharmaceutical research was exploiting the metabolic mechanisms and specific biochemical needs of parasites to prepare broad-spectrum compounds for use in therapeutic and preventive medicine based on the scientific foundations laid by such doctors as Broden and Rodhain at the start of this century.

Belgium’s Royal Academy of Overseas Sciences furthered contacts among investigators and gave field workers a chance to publicize their work and gain a wider audience. The Academy publishes memoirs under various subject headings (natural and medical sciences, moral and political sciences, etc.) and the proceedings of its meetings.

The Belgian Society of Tropical Medicine was founded in 1920. The society continues to publish tropical medical research in its annals.

The Katangan medical journal Bulletin médical du Katanga was published in Elisabethville from 1924 until 1939.

The Recueil de Travaux de Sciences médicales au Congo Belge was published in Leopoldville from 1942 to 1947 so that the war did not prevent or delay the publication of the research being conducted in the Congo.

1.2. Peripheral health activities

For the smallpox epidemics, vaccine was readily produced and distributed to all government employees, to all the people of the State’s stations, and finally to the villagers in areas where smallpox raged. Besides smallpox, an important and most alarming problem was the extension of sleeping sickness, which literally decimated entire villages.

The possibility of using new drugs developed by Paul Ehrlich in Frankfurt according to the instructions for use laid down by Broden and Rodhain, as well as a better knowledge of the parasite and its vector, led to the use of appropriate diagnostic methods and much more effective control methods. Indeed, the detection of carriers of the parasite at certain checkpoints along
the roads, in river ports, or in health posts and hospitals, as well as the isolation of patients in lazarrets, was far from enough for conscientious physicians. From then on health action would reach out to the people and be aimed at treating several ailments at the same time.

1.2.1. The Belgian system of decentralized mobile units

In 1911 Dr. E. Lejeune decided to go and look for the patients in their villages. He inaugurated a policy of early detection and field treatment that led to the organization of mobile units in which the doctor was accompanied by nursing aids, microscopists, and baggage carriers for the scientific equipment. These units travelled on foot.

The regulations in effect at the time authorized the gathering of the population in the villages that were visited by the SAMI (Native Medical Assistance Service) team. The local chiefs were responsible for rounding up the population. The medical staff had to set this ruling because the indigenous population did not understand the dangers of disease and the importance of checking its spread. Local understanding of disease was far removed from the scientific knowledge underpinning Western medicine, although this knowledge was still embryonic.

The missionaries who set out to penetrate into the interior to convert the country agreed to collaborate as health service auxiliaries. In doing so they helped to spread health services to regions where sleeping sickness, yaws, and other diseases were serious problems that could not be met by the limited medical staff.

Using this emergency service to stop the immediate spread of a given disease was eventually adopted as a permanent form of intervention to treat diseases, detect health problems at an early stage, and improve hygiene and sanitation in the villages. At the same time A. Dubois and R. Mouchet were screening and treating the victims of sleeping sickness along the Congo River on an out-patient basis.

Two special medical missions were created in 1918-1920, one in Kwango, the other in Uele. In Kwango it was directed by Dr. Schwetz, who was to come into criticism from the missionaries regarding sleeping sickness screening measures; in Uele by Dr. Rodhain. Some of the important foci of sleeping sickness in Mayumbe, Equateur, Katanga (Kongolo and Bukama), Kasai, and Lomami were already under control from 1922 and were constantly monitored. About 40 of the State’s 97 doctors were assigned to these mobile units on mission into the interior. These missions were the cornerstone of any medical system that Belgium would set up in the Congo.

Turning to the French colonies, Jamot, in 1917, organized medical care along similar lines on the banks of the Ubangi and Chari Rivers, first in the Central African Republic, then in the Cameroon. This system would be extended by Muraz in French Equatorial Africa (1930), then to French West Africa (1939), and would be called the Mobile Hygiene Service (Service d’hygiène mobile), then the General Office of Mobile Hygiene and Prevention or SGHMP (Service général d’Hygiène mobile et de Prophylaxie) run by the military medical services of the Navy. This was a centralized department with its own budget that worked across "state" borders.

The French mobile system (Medical Field Units) was thus independent of the permanent health care services of the hospitals and dispensaries and served as a link for the organization of mass campaigns covering an entire country or even several countries.

The features peculiar to the "Belgian system" were:

1) The mobile unit covered a limited region and was directly attached to the district hospital. Services were neither purely mobile, as in the case of the French mobile units, (for each unit attended to local health problem activities as it passed through), nor a stationary system with mobile activities. While distinct mobile units did exist, they were an integral part of the medical services of each circle or sector (the forerunner of the "health district") and were supervised by the doctor in charge of the medical and surgical complex of peripheral dispensaries that served the district.

2) While the system’s activities were initially vertical and concentrated almost exclusively on sleeping sickness, the mobile unit’s functions gradually embraced the major epidemics (trypanosomiasis, yaws, malaria, tuberculosis, leprosy, venereal diseases, and schistosomiasis) as well as including vaccinations, mass treatments, individual health care, hygiene, and census-taking. Specialized sanitation crews strengthened the activity of the hospital and sector’s decentralized services in various regions and at certain times of the year. They were involved notably in the malaria, trypanosomiasis and schistosomiasis control campaigns and tuberculosis screening and immunization.

3) The system was based on semi-annual medical check-ups of each and every inhabitant. These check-ups were used not only for the early detection of epidemic diseases, but also as a means to achieve a better understanding and monitoring of the health of a
community that was subjected to regular re-examination. It also included a record of births and deaths and other demographic information useful for health monitoring.

4) The system was implemented by auxiliaries who had been specially trained for the tasks of early screening of diseases in the community, out-patient care, and public health campaigns. Each hospital’s mobile unit was headed by an agent sanitaire, health responsible, a genuine staff of the Belgian system, under the supervision of a doctor from the peripheral hospital.

1.2.2. The agent sanitaire

The government’s inability to have enough doctors to man urban hospitals and dispensaries, medical laboratories and health services, run the central and provincial services, direct itinerant missions and inspect dispensaries, led the authorities not only to call on the private companies and religious missions’ doctors for assistance, but also to rely on medical auxiliaries. The latter consisted of two categories, namely: - local auxiliaries for simple, repetitive, but essential tasks, (such as those African microscopists trained on the job, who had been assisting doctors since the beginning of the century); and - leaders, in particular for the mobile health units, the first ones being European volunteers for the most part, Catholic and Protestant missionaries trained at the Leopoldville Medical Laboratory from 1907 onwards. One of these, priest Hyacinthe Vanderyst (1860-1934), was an effective pioneer in the fight against sleeping sickness. He was joined by Father Greggio and many others.

Summary but precise scientific knowledge and clinical acumen were necessary. Given his university training as an agricultural engineer, priest Vanderyst was well placed to familiarize himself with the diagnostic microscopy of trypanosomiasis as well as screening for and treating the patients with Atosyl®. During his spell at the vicariate of Kisantu he became aware of the magnitude of the problem and the urgent need to combat it by the best means possible.

A. Broden proposed having as many missionaries as possible to attend practical courses at the Leopoldville Laboratory. This proposition culminated in the admission of volunteer missionaries at the School of Tropical Medicine in Brussels in 1910.

These first missionaries attached to the medical department were given certificates. The authorities had proposed giving them the title of chief of observation post. This title was not chosen, but explains well the role of a sentinel that these auxiliaries played. They also marked the start of the practice of training other European auxiliaries.

The education provided by this school from 1910 onwards was officially recognized by the creation of the rank of agent sanitaire in 1919. The school’s work was continued at the Antwerp Institute of Tropical Medicine from 1933 onwards.

The number of native paramedics trained in official or approved schools in Africa, nurses, and nurse-aids continued to fall short of the number required by the need to set up a large number of mobile units and to staff the wide range of medical services (administration, medical supplies, accounting, reports, and statistics).

a) The training of the agent sanitaire

In the beginning the training for agents sanitaires was open to medical students, graduates of two-year university curricula in science, pharmacists, and missionaries. Later applicants who had completed the entire classic human sciences cycle were admitted after a personal interview and a composition on a set subject. The students completed a six-month curriculum at the School of Tropical Medicine and received the degree of agent sanitaire, a diploma that was recognized from 1919 onwards.

The curriculum itself consisted of an introduction to the major endemic diseases (30 hours of courses) and common cosmopolitan diseases (120 hours); considerable practice in medical microscopy to recognize blood and lymph parasites on fresh and stained slides and parasite eggs in the stools (90 hours); an introduction to mycology and bacteriology (50 hours); precise identification of vectors (60 hours), and principles of public sanitation (45 hours) dealing with water supply, latrines, health laws, food sanitation, and domestic sanitation, and administrative training.

b) The tasks of the agent sanitaire

After one month’s training in Africa under the supervision of the doctor in charge of the medical sector or a veteran of the profession, the agent sanitaire began his career as head of a medical circle or district under the supervision of the doctor to whom he was administratively and technically accountable.

The Government thus could rely on a corps of agents sanitaires, who were versatile medical auxiliaries responsible for a medical sector that comprised rural dispensaries in the main villages to enable everyone to benefit from a medical post no more than 12-15 kilometres from their homes.

The agents sanitaires played a major role in controlling endemic diseases, maintaining public health, and ensuring proper sanitation at a time when the
number of doctors in the region could be counted on the fingers of one hand.

This role was expanded when the medical department was reorganized to provide effective service to the entire population. The agents sanitaires became the doctors' indispensable right-hand men for the spread of medical care to the entire population.

The agent sanitaire's specific tasks included the following activities:

1) the medical census, which was his main activity. The agent sanitaire personally directed the mobile unit that took down the villagers' names, ages, and marital status before proceeding with a medical check-up and other attentions. The demographic census was recorded in registers and completed by successive semestral or annual medical records. People living outside the bounds of recognized tribal centres, called the "floating population," were covered by a separate census. The agent sanitaire was responsible for the accuracy of the information in the registers.

The medical check-up was strictly his responsibility. He was assisted in this by nurses. The check-ups were performed twice a year, in theory, in the endemic sleeping sickness areas, but could be quarterly in very active foci. The measures to be taken vis-à-vis sleeping sickness, leprosy, syphilis, yaws, and TB patients were also up to the agent sanitaire. He was also responsible for carrying out the FOREAMI-inspired system of sorting out and monitoring sleeping sickness patients by a series of successive lumbar punctures.

Starting in 1950–1951 the agents sanitaires concentrated on the detection of leprosy, as treatment with sulphonamides had proved to be really effective. Preliminary sorting and a first classification based on these data were performed on the site, at which point the agent sanitaire drew up a health card for each leper that summarized all the findings of the medical examination and the treatment prescribed. The agent sanitaire likewise performed the clinical examinations of the lesions and sensitivity tests on the site. Microscopic examination of the nasal mucus, skin lesions, and lymph, haemoglobin counts, and RBC counts were done by the microscopist nursing aid. The doctor then verified the diagnosis during his rounds of the rural dispensaries, wrote down the state of the lesions periodically on the individual health cards, and made sure that the treatment was followed assiduously.

2) Inspecting the rural dispensaries was also one of the agent sanitaire's tasks. The agent sanitaire checked four times a year the individual treatment records, the collective records of the patients requiring mandatory treatment, the daily condition of the hospitalized patients (bed occupancy, daily admissions and discharges), and child welfare clinic records. The agent sanitaire also had to assess the nursing aid's work, the way he selected patients to be referred to hospital and the cleanliness of premises.

3) The agent sanitaire conducted periodic inspections of village hygiene, checked the cleanliness and maintenance of huts, the sanitary facilities and water supply points where the villagers obtained their drinking water, washed their clothes, and retted cassava. Clearing these water supply points and other tsetse fly-infested habitats, as instructed by the agent sanitaire, was one of the community obligations borne by the native chieftains.

As he was constantly in contact with the natives in their own environment, the agent sanitaire was their health and hygiene educator. He waged an active, ceaseless propaganda campaign for medical and social activities (MCH clinics, etc.), detected various cases requiring surgical treatment, performed prenatal check-ups, and supervised the transfer of pregnant women to the hospital or maternity clinic at the right time in their pregnancies.

4) The agent sanitaire's tasks further included serving the medical sector: drug and equipment supply and distribution to the various dispensaries and the hospital, keeping the circle's ledgers, etc.

The agent sanitaire was also a technician who could service vehicles, generators for X-ray equipment and operating rooms, and machines for sterilizing equipment. They were also entrusted with the administrative and financial management of the hospital and medical sector.

5) At his home base the agent sanitaire compiled the monthly statistics for the hospital and his health district and collated the results of the health check-ups that had been performed each month. He also had to produce a yearly compilation of health statistics, notably the new case index (NCI), total endemicity, recovery rates, and residual endemicity for sleeping sickness and leprosy, and send these statistics to FOREAMI's chief medical officer for the region, the provincial medical department, and administration.

The agent sanitaire had other activities as well: giving courses to student nursing aids, improving roads and bridges, overseeing the building of schools and housing for the health or educational staff, conducting preventive campaigns, vaccinating the population, distributing skimmed milk, etc.

Hereby the mobile unit's activity became multivalent.
All of these activities show that the *agent sanitaire* was an important link in the organization and development of the colony's medical services. If a relatively scanty medical corps was able to master most of the major endemic diseases and extend a health monitoring and primary care network to most of the country in just a few years, it was due to the close and effective collaboration of these versatile auxiliaries who were able to reach the inhabitants of even the most inaccessible areas.

Some of these *agents sanitaires* went on to become laboratory technicians or sanitary inspectors or were given administrative duties in the offices of the provincial or Governor-General's medical administration. Only a small number continued to be engaged in sleeping sickness control or work in the medical department's central administration after 1960. In 1961, at the request of WHO, the Prince Leopold Institute of Tropical Medicine in Antwerp trained technical staff to help fight malaria. Some of the *agents sanitaires* joined WHO's malaria control units or were hired by the pharmaceutical industry in Belgium.

1.2.3. The rural dispensaries

Sending mobile units to screen for people with endemic diseases in the interior of the country made sense only if the patients could be properly treated immediately upon detection, for by ensuring their recovery one eliminated so many foci of infection. Such reasoning lay behind the creation of rural dispensaries close to the patients' places of origin. This enabled the therapy to be administered not only to the patients discovered by the mobile units, but also to those who came spontaneously in the interval between the units' visits. Although these dispensaries were originally set up to treat the endemic diseases, the progress of which had to be checked, they quickly became versatile centres of medical care for all of the inhabitants of the region. They were set up in the tribal areas, usually in the chiefdom's main village, so as to be easily accessible to the entire population and the medical staff responsible for supervising the dispensaries. They became the peripheral links in the network of care in the interior.

Their systematic creation began in 1924, in the Eastern Province, where their prime objectives were to monitor yaws and leprosy and treat ulcers. These dispensaries were set up by a private charity for aid to the native dispensaries of this province, ADIPO (*Aide aux dispensaires indigènes de la province Orientale*), which was itself the work of Dr. Mouche, the provincial medical officer. He was supported in this by Vice-Governor-General de Meulemeester, who was responsible for this province. The population provided its labour to build the dispensaries and money for the purchase of drugs.

These dispensaries generally included a waiting room, examining room, bandaging/dressings room, and pharmacy, a small infirmary, a separate room to isolate infectious patients, a kitchen for the use of the patients and their families, and a hut for the nurse. The first buildings were modest constructions of dried clay blocks, called banco, covered with leaf roofs, this being the most appropriate construction material in this forested region. They could thus be erected with the help of the villagers, who provided the materials and labour. Later buildings were made of bricks and cement.

The dispensaries' effectiveness depended on the competence of the nurse in charge (the level of training improved coincidently with advances in paramedical education) and the regularity, frequency, and quality of the visits made by the doctor or *agent sanitaire* responsible for supervising the nursing auxiliary's activities and keeping his knowledge up to date.

In 1959 there were 2,160 peripheral dispensaries in the country, including those of the government, religious missions, industrial companies, and philanthropic organisations. Moreover, the population had built some 1,500 health posts and treatment centres using the chiefdom's own resources. This means that if the hospitals' outpatient clinics were included, there was a total of 3,560 medical posts in Zaire, or an average of 1 post per 3,300-4,700 inhabitants.

1.3. Agreements and conventions with the Government

1.3.1. Agreements between the Government and the religious missions

From the outset, the missionaries exhibited great interest in relieving the suffering of the sick among the populations that they wanted to convert. King Leopold II attached great importance to the work of the missionaries and considered them a powerful tool for spreading basic education.

Protestant missionary doctors arrived well before the Catholic missionaries. Dr. Aaron Sims of the Livingstone Congo Inland Mission (the future American Baptist Mission) arrived in 1882 and worked for close to 20 years in a Bas-Congo mission. Dr. Jones of the Baptist Missionary Society, who sailed up the river to the Equator, worked with comparable zeal. Dr. Karl Wolfdiss, of the Swedish Mission, founded the Mukibungu Mission on the Congo River, in 1889, in
an area in which half of the patients had sleeping sickness. He sent slides to Sir Patrick Manson in London and was allegedly the first person to see trypanosomes, some ten years before Forde. Other posts were created, some of them manned by a doctor, at Bolenge, Kimpese, and Yakusu (Stanley Falls), where later Dr. Chesterman worked on his Manual of the Tropical Dispensary. A post was later set up in Maniema, followed by other posts in various parts of the country.

As the Portuguese wanted to exercise the prerogatives granted to them under their 15th-century agreements with the Vatican, and the French were likely to win predominance for their interests through the missionaries of the Holy Spirit in Bas-Congo and the White Fathers of Cardinal Lavigerie, the King negotiated with the Vatican to have a Belgian vicaricate in the Congo. As a result of these negotiations, a vicarage was opened in the Congo on May 11, 1888, staffed by the Belgian order of Scheutist Fathers and a second vicarage – the provicariate of the Upper Congo – was set up in 1895 by the White Fathers, most of whose missionaries were Belgians.

Meanwhile the Jesuits set themselves up at Kimwenzu in 1893, then at Kisantu, whence they set off for the regions around the Inkiisi and Nsele rivers. Afterwards they fanned out across Kwango.

Three types of agreements were concluded with the missionaries, namely:
1. Agreements with the religious congregations to have teams of nursing sisters as staff of the Government’s hospital establishments.
2. State certification of hospitals and dispensaries founded by the missions to make these entities eligible for subsidies to pay their staff and enable them to receive government medical supplies.
3. Fixed reimbursements of the expenses incurred by non-governmental hospitals in caring for the natives and government employees.

1.3.2. Conventions between the Government and charities, industrial companies, and institutes

Each philanthropic or scientific society was covered by a specific agreement. These institutions are described pp. 133 to 136. They sometimes covered a specific medical district or special field of activity.

Agreements were also signed with industrial companies. These companies had to abide by regulations governing their workers and took on responsibility for the health of the inhabitants of the area in which they recruited their workers as well as the health of the villagers near their areas of operation. The companies thus helped control leprosy, tuberculosis, malaria, and the bubonic plague in the northeastern Congo.

Similar arrangements were made with institutes such as the National Institute of Agricultural Studies of the Congo (INESAC), that contributed to the public health efforts effecting the populations around its research centres in addition to its food crop improvement work.

1.4. Utilization of African auxiliaries

The use of African auxiliaries, whose training is described in the chapter Medical education p. 185, requires explanation of the changing meaning of personnel apppellations (see p. 188).

1.4.1. Nursing aids with in-service training

In the early twentieth century the doctors working in Central Africa trained on the job aids who had to perform specific duties, such as helping patients, screening for diseases with the visiting medical teams, giving injections, and examining specimens under the microscope. The microscopists proved very meticulous and freed the doctors of a very time-consuming task. A Bangala tribesman, Johan Bokengere, who had been cured of sleeping sickness by Broden, became the latter’s faithful microscopist.

This very empirical training nevertheless enabled its beneficiaries to achieve very high technical performance levels through a constant process of selection and elimination of the less skilled auxiliaries and limiting the work to a small number of duties that were repeated for days and weeks.

These auxiliaries allowed the doctors to broaden their spheres of activity. The only conditions were motivation, demonstration of simple techniques, which the auxiliaries executed with precision, and regular supervision.

When schooling reached a certain level more diversified curricula were instituted and sanctioned.

1.4.2. Nursing aids, auxiliary nurses, and auxiliary birth attendants

The Belgian system was rather original in the way it used these categories of nursing staff, for they were assigned to dispensaries to do much more than provide nursing care and treatment. These persons learned how to establish diagnoses and use the stethoscope, an instrument that may have helped to enhance their medical authority.

Auxiliary birth attendants likewise soon found themselves assuming important responsibilities both in the maternity clinics, where they could take some
rather specific initiatives, and in the rural posts (see the chapters MCH p. 749, and Obstetrics, p. 1055).

1.5. *The assistant médical*

By 1936, a good level of schooling had already been reached, and from then on it was possible to train medical staff to a professional level.

The *assistant médical*, that is the second version formed from 1936 onwards, was at one and the same time the best qualified and the most controversial product of the Belgian Congo’s vocational training efforts. The main criticism levied at this training stems from confusion with the medical training given in other countries:

- the *assistant médical* in the Congo, trained on the basis of four years of secondary education, received a professional training of six years, two of them in practical work. He was therefore better trained than what was called the *assistant médical*, the African doctor or the assistant medical officer (see p. 191).
- his medical knowledge was that of a doctor, with the exception of some areas of the basic medical study of certain illnesses, rare enough to make their exclusion justifiable.
- he was responsible for his own work, and carried out medical functions of a curative and preventive nature, particularly in the outlying dispensaries.

The *assistants médicaux* formed a professional category in their own right to the point that, in 1954, the possibility of upgrading the curriculum to university level came under discussion. This plan was put into effect by the WHO in 1960 and 1961. In 1959, it was decided at Brussels to reduce the length of this training, so as to avoid conflicts in competence with doctors with university degrees.

Added to these considerations was what one can only call the *myth of the equivalent diploma* dear to the hearts of European university graduates and to Africans with access to university level education.

2. *Intensive medical action: FOREAMI*

The characteristics of the Belgian medical health system served as a basis for the quite original and unique organization of medical care for the population, by both fixed facilities and mobile units attached to a medical district with a doctor and a hospital. In the same district the medical departments of companies and of missions worked with the government’s district service.

Despite the converging efforts of government services and various organisations who were interested in the country’s development and in the advancement of the indigenous population, much remained to be done to control the endemic and epidemic diseases and to ensure health protection in all parts of the country. A much higher number of doctors would have been needed to cover the entire territory, something that was achievable only in the very long term, especially since the 1927 worldwide economic crisis imposed major manpower and financial restrictions.

*FOREAMI* (Fonds Reine Elisabeth pour l’Assistance Médicale Indigène – Queen Elisabeth Fund for Native Medical Assistance) was set up to supplement the action of the government’s medical services. The system on the one hand, grew out of previous experience and on the other hand was to influence the medical system later on.

Conceived more than 60 years ago as a very concrete and complete organization, “the originality of the method turned FOREAMI into a precursor of coordinated health action programmes in rural areas”, as was stated by WHO (1954). Today Zaire, Rwanda and Burundi continue to apply this system, which they inherited at the time of their independence.

2.1. *From empiric medical assistance and scientific research to systematic organization*

The specific system of medical assistance developed by FOREAMI was not born from a pre-established plan but from practical experience gathered during the first years after the very large Congolese territory had been explored. The map of the Congo superimposed onto the map of Europe on the same scale, covers this continent from the north to the south starting at Norway down to the Mediterranean sea, and from the west to the east, from Great Britain to Russia (see Map 1, p. 2).

2.1.1. *Previous experiences*

The previous experiences were schematized in different stages by Dr. Troili (1935), and it is meaningful to recall the evolution he described:

- the doctors accompanying the exploratory expeditions, or those settled in the first governmental posts, carried out simultaneously scientific detection or enquiries and medical care throughout their travels; the number of fixed posts, the extension of the country and the eight doctors working in the medical service in 1891 (three years after the government had appointed medical personnel), forced these doctors to set off on tour for various weeks, by boat or on foot;
- the following years the first hospitals were built;
- in 1894 a research laboratory and the vaccine production centre were established.
- in 1904 the School of Tropical Medicine was set up and scientific expeditions were organized: at the same time, trading posts, farming concerns and religious missions settled, and they developed their own medical service as imposed by the government on all companies and every organization that recruited rural manpower. This was at the origin of a medical system made up of a government service and of auxiliary services of agronomic or industrial concerns and religious missions.

- In 1910, the 56 doctors working in the Congo had to perform a medical practice that was very different from the one they had learned. Indeed, it was necessary to control the spread of tropical diseases the diagnosis of which required the permanent use of a microscope, a duty rapidly entrusted to local aids trained on the job, called microscopists. In 1911, in order to control sleeping sickness, Dr. Lejeune inaugurated a mixed system of mobile teams to screen systematically sick people, and fixed health centres to ensure regular treatment near to the place of origin of the patients. At the same time La Ligue de Protection de l’Enfance Noire (The League for the Protection of Native Children, see Chapter MCH, p. 751) was created, to become, in 1925, L’Oeuvre de Protection de L’Enfance Noire (the Welfare Service to Protect African Children). In addition, some missionaries active in the most distant regions wanted to acquire a medical training in order to help control endemic diseases; they applied either to the laboratory in Leopoldville or to European institutes during their days off. This was at the origin of the training of volunteers already called the Agents sanitaires (see pp. 113-114).

The organization was starting to take shape: on the one hand, the double medical system of government’s health services and religious missions, or hospitals of trading and agrobusiness companies with their health posts, and on the other hand the use of local nurse-aids and European volunteers as sanitary agents. This system was applied in mobile and fixed posts.

- World War I (1914-18) reduced the number of doctors as they were called up by the army and were no longer recruited in Europe. In order to control endemic and epidemic diseases, the medical service, in 1911, adopted the system of Specific Medical Missions whose mobility covered the places where sleeping disease was the most prevalent. In some regions, these medical missions continued their action independently from the government’s health service and from the responsibilities taken on by FOREAMI. Moreover, as soon as 1919 the position of agent sanitaire was officially recognized in order to regularise the volunteers who had made up the medical service staff.

- From 1924 onwards, thanks to private financing, the medical service in Eastern Province (Stanleyville, later Kisangani) erected dispensaries with local materials in crowded areas. Local auxiliary nurse-aids were assigned too, but unfortunately supervision was difficult to ensure.

2.1.2. Dr. Trolli’s first project

Dr. Trolli, appointed in 1923, who had been in charge of the Medical Missions for the control of sleeping sickness and the treatment of various diseases encountered during the systematic examination of the rural population, became Head of the government’s medical service in 1925. Assessing the experiences and the results obtained by the medical assistance, he concluded that in order to cover the whole territory, counting some 13 million inhabitants, and to control epidemic diseases by the system of mobile teams, 400 doctors and 800 health auxiliaries would have been needed. This, in fact, was not achievable since he could only use 97 government doctors and 137 Agents sanitaires, with the possible help of 36 doctors from companies or religious missions, and 114 missionaries acknowledged as Agents sanitaires, most of them having acquired this degree.

The doctors were in charge of very large areas, and could hardly satisfy the requirements for mobile units to control sleeping sickness. Aside from this, rural areas were deprived of dispensaries, so that the sick who were detected could not continue to follow the treatment.

In order to provide the population of the most isolated regions with regular and constant medical assistance, Dr. Trolli proposed the following system:

- the systematic medical examination of the population improperly, the so-called medical census, having as a first goal the knowledge of the health environment, not the demographic or patient count, since “numbers are dead things” (Trolli 1932); this census allowed for endemic diseases, regular treatment and the easy follow-up of the sick for exhaustive and continued treatment;

- fixed posts manned by an auxiliary nurse-aid, ensuring the continuity of treatment without forcing the population to cover long distances, longer, that is, than one and a half hours walk;

- the establishment of a medical certificate or a treatment record, the latter excluding the former, for each member of the population examined in totality, in such a way that the sick could be recognized wherever they went. Those who did not have a certificate had to
undergo a thorough medical examination by a doctor; the latter was the only one entitled to deliver this veritable passport, to be requested by anyone responsible for transport, by medical staff posted at certain crossroads or routes, or by any village chief for each newcomer in his territory.

However the system could not be applied to the whole Congo since it would have required the immediate recruitment of hundreds of doctors. It was implemented in a few test areas only.

This new organization aimed at a gradual but high degree of decentralization, so that once the region had become healthier, the intensive action teams could be sent on to another region, leaving to smaller teams the work of maintaining the results already achieved.

2.2 King Albert and Queen Elisabeth’s 1928 trip to the Congo and creation of FOREAMI

In 1928, King Albert and Queen Elisabeth visited the Congo, accompanied by Professor Nolf of the University of Liège. This time they entered the Congo from the west, visiting coastal ports and then Leopoldville, and continued on to Kasai to view the achievements of the Forminière. They inaugurated the railway, Port-Françqui (Ilebo) - Elisabethville (Lubumbashi). There they saw what the Unión Minière had achieved in Upper Katanga, particularly L’Oeuvre de Protection de l’Enfance Noire and the stabilization policy of native manpower set up by Dr. Mottoulle. They also visited the railway building sites of the BCK company (Railway of Lower Congo to Katanga), the CFL (Railway Company of the Great Lakes) as well as some mission posts.

Following this journey, Professor Nolf promoted Dr. Trolle’s plan and obtained for it the agreement of Henri Jaspar, who was Prime Minister and Minister of the Colonies. Despite the 1929 economic crisis, the Parliament voted unanimously for a national endowment of 50 million BEF, to which was added an exceptional budget from the Colony for an amount of 100 million BEF, and a personal gift from the Queen. The annual income of this capital was equivalent to more than 10% of the budget of the medical service, the income of which was thus increased.

The Fund was named the Queen Elisabeth Fund for Native Medical Assistance, or FOREAMI (Fonds Reine Elisabeth pour l’Assistance Médicale Indigène), and was set up by a Royal Charter on October 8, 1930.

2.3 FOREAMI: its goal, structure and organization

This Fund, the outcome of the will of the Belgian government and sovereigns, named Professor Nolf as its first president. His successor was the Duke of Brabant, who remained at the head of FOREAMI until he ascended the throne as King Leopold III. The Prince’s name was also attached to the Institute of Tropical Medicine when it moved to Antwerp in 1933.

2.3.1. Goal

The Fund’s main goal was to expand health protection to all of the Congolese populations, especially in rural areas. The work would be started by intensive action carried out in a limited region and was complementary to the government’s action and would be taken over by the Government once the region was free from the main endemic and epidemic problems.

FOREAMI’s intervention was not only aimed at treating the various diseases but also at ensuring their prevention and improving the overall living conditions. Special attention was given to the protection of the health of mothers and children in the fight against the so-called social diseases (leprosy, tuberculosis and venereal diseases) and to solving the problems of low birth rate.

Thus the goal was more than just controlling one single endemic disease (nosological coverage) by independent prophylactic missions, since there was a geographical coverage of the entire population for an integrated fight against the various health problems affecting it.

2.3.2. Structure

The Fund was given complete autonomy in technical as well as in financial aspects, in order to guarantee a structure that would be more flexible, more adaptable and rapid than that of the medical administration which was so strongly tied by regulatory constraints.

With its headquarters based in Brussels FOREAMI was endowed with a civic identity and was managed by a Board of Trustees, made up of an independent renowned personality as president and representatives from each Belgian university, the Institute of Tropical Medicine in Antwerp, the research and development institutions, Belgian and foreign religious missions, private companies working in the Congo, as well as the director of medical services in the Ministry of the Colonies and an administrative representative of the latter.

In Africa, a general committee was set up presided over by the Governor-General and an executive Committee headed by the Chief of the Health Services. This committee had offices in each province where FOREAMI concentrated its action and kept the same autonomy thanks to its own means. The doctor responsible for the covered area, however, worked in
close collaboration with the Chief of the Health Service of the Province while depending on the Chief of the Health Services of the Colony who, until 1932, was none other than Dr. Troilli.

2.3.3. The organization

Each province where FOREAMI worked was divided into medical sectors corresponding to a district, or part of a district, with from 200 to 350,000 inhabitants according to the density of the population. These sectors were equipped with one hospital, a maternity clinic and one or more secondary hospitals, belonging to either private companies or religious missions. Each sector was divided into subsectors corresponding more or less to one or two territoires (administrative subdivision managed by a government employee of the colony) so as to meet the geographic conditions of accessibility to the area where the population lived.

Each subsector was manned by a FOREAMI doctor, and one or more agents sanitaires (special health officers of the Belgian health system, see 1.2.2.), was equipped with a hospital and a caravanserai to shelter those coming from a long way off, pregnant women awaiting their delivery or the people accompanying the inpatients. The subsector covered a number of chiefdoms headed by a tribal chief recognized by the administration.

This medical subsector played a key role in the decentralised medical assistance. It carried out the systematic record of all health data, updated them regularly and constituted an epidemiological record to be translated into a medical cartography of the covered area.

Nevertheless, it was the chief medical officer of the sector who determined the amount of medical staff that was necessary to cover the entire population and decided on the location of the new hospitals and dispensaries. These hospitals and dispensaries were built by the civil administration which often delayed the work due to either staff shortages or by dealing with other priorities.

The dispensaries were erected in a chiefdom, or in a site chosen according to its accessibility, in order to cover a radius equivalent to a maximum distance of a three hour walk (about 15 km).

The floor of each dispensary was made of cement. Durable materials were supplied by FOREAMI, while the population undertook the construction. A building plan was provided which included a large veranda to shelter the sick and to conduct microscopic examinations in daylight, an examining room and a safe for containing drugs. Local craftsmen provided the furniture. In addition, the population built huts to take in the sick and their families, up to about 30 people.

Other secondary medical centres could be decided upon at the doctor’s initiative and were manned, on a fixed day, by an aid from the main dispensary. They were controlled by the agent sanitaire.

In contrast to the 125 different drugs available at the hospital, the drugs for the dispensary consisted of only 64 items. The inventory was controlled by the doctor or the agent sanitaire at each visit.

In 1930-1932, this system prefigured the organization of the rural health centres, then the primary health care, and the list of essential drugs later advocated by WHO (1954; 1978; 1988).

2.4. The choice of the regions of activity and the implementation of the FOREAMI system

Before a first area was chosen for FOREAMI’s health control teams, a methodical study was conducted, at Dr. Troilli’s request in various parts of the country by doctors who were very familiar with each zone.

The studied areas were those of the Lower Congo, Kwango, Equator and North Katanga, where the following information was recorded:
- access facilities, river network, orography and means of transportation, either existing or to be created;
- the town sites, villages, markets and gathering places;
- areas served by a Company, or a Mission’s medical service, and dispensaries and hospitals to be set up.

The Lower Congo was chosen for the first application of FOREAMI’s work because it had many communication routes and was densely populated. Kwango was next on the list. Both areas are reproduced on Map 12.

2.4.1. First area of activity: FOREAMI in the Lower Congo Province

In 1931, the area chosen covered a territory stretching from the Atlantic Ocean to the Inkisi River. The Lower Congo had a satisfactory density of hospital facilities owned by the State, the commercial companies or religious orders, as well as roads and cycle and motorcycle tracks allowing an easy access. Agreements were made with the hospitals’ owners to treat the patients diagnosed by the mobile units and, in turn, to report on the individuals suffering from endemic diseases who came to them of their own accord.

The programme was entrusted to Dr. Dupuy, a Frenchman who had conducted the preliminary survey of the area. He also became FOREAMI’s first area doctor.

This area formed the medical sector of Inkisi-Mayumbe, corresponding to the Western part of the province of Leopoldville (Kinshasa), delimited eastwards by the Inkisi River.
During the preliminary survey, it clearly appeared that, even in this relatively well-developed district, some subsectors were distinctly underprivileged with regard to agriculture, economy and even demography. The population was even decreasing because of high death rates, low birth rates and malnutrition.

a) Scheme of operation: the medical census

The mobile unit that conducted the exhaustive medical examination of the population from village to village, and hut by hut, thus carrying out the "medical census", was thus able to control a population of about 30,000 individuals. These were examined twice a year, at the rate of 400 persons per day during 15 days, five months per year. During the last 15 days of each month the mobile teams visited the fixed posts and the treatment centers while the sixth month of each semester was reserved for data analysis and the organization of future work.

In the villages, the daily work lasted about ten hours, as long as daylight permitted, with a short break for meals. A veritable sorting out was conducted: at that time (1930-1935) of 400 persons, 300 would be healthy and could be examined easily in three or four hours, leaving more than six hours for the 100 others who were considered suspect cases. Among the latter, 40 to 50 ganglion carriers (evoking trypanosomiasis) were diagnosed and entrusted to three microscopists for the examination of ganglion puncture, blood and cerebrospinal fluid (the ambulatory lumbar puncture was carried out with all necessary precautions; the hundreds of thousands of punctures that were made never caused an infection or incident). Only 30 to 40 other patients required simple treatment that could be given by an auxiliary nurse. Finally some twenty persons needed a more thorough medical examination conducted by the doctor and a possible prescription for treatment.

Such a method, and its efficiency, depended on good organization and on the medical supervision guaranteed by the doctor and his agent sanitaire, despite the discomfort of staying in villages and despite routine methods that could disappoint those who were trained in the individual care of outpatients. Strong personalities were required and their selection was based on their endurance under such working conditions. Rapidly a doctor who was used to the job trained one or two of his aids for the medical examination of a small number of individuals.

When night fell, the contact was continued in discussions with the notables and inhabitants, and relationships of trust were created that gave rise to a better knowledge of the population's living environment. At the same time, the introduction of healthier customs and the removal of some beliefs or superstitions was possible.

The medical certificate, or the treatment record set up by the doctor, made it possible to check if someone had escaped the medical examination or necessary treatment. And since the population respected such a document, it was hardly ever lost.

The dispensaries were open from 7 o'clock a.m. to noon and from 2 o'clock p.m. to 5 o'clock p.m., although the staff had to respond to any emergencies at all times. The religious dispensaries became the sites of antenatal and infant welfare clinics.

In order to avoid wasting personnel hours and available drugs (limited to a specific list) by a too large number of minor ailments, drugs were not free except for the sick who were victims of epidemic diseases, for the families with more than four children and for products distributed to pregnant women and children up to the aged five, and finally for the government employees.

b) Collaboration with the existing services

1) The cooperation with the regional administrative authorities posed more difficulties due to either the small number of administrative personnel or to the priority given to other duties.

The administrative authorities supplied the personnel who were responsible for maintaining order during systematic medical examinations and for planning for new village water points when the latter were contaminated. They even had to move villages when they had been built near glossina habitats that transmitted sleeping disease (see chapter Trypanosomiasis, p. 1704).

2) This collaboration involved a close relationship between the government medical services (hospitals, dispensaries and medical missions) and those of religious missions and private companies, a collaboration that was indeed satisfactory. The enlargement of motorcycle or simple cycle tracks of 2.5 m, with the necessary bridges over rivers, was very often the duty of the agent sanitaire, even if this programme reduced by nearly two thirds the number of baggage carriers provided by the chiefdoms for transferring the health administrative staff and his personal material (camp beds, kitchen, mosquito net, tent and technical equipment). On this subject, it had been necessary to convince some local chiefs who, sometimes acting out of revenge, always designated the same persons to carry the luggage.

Likewise for the building of dispensaries or lodgings for the staff during their travels, the agent sanitaire was often used as an odd-job man or jack-of-all-trades.
c) Organization in the Inkisi-Mayumbe sector of the Lower Congo

In the Lower Congo, the entire medical coverage was applied from July 1, 1931, under the supervision of Dr. L. Dupuy (FOREAMI Report, 1932). The work was concentrated on five subsectors to the west of the Inkisi River.

The medical staff

Apart from the seven hospitals in the main cities, manned by government doctors, there was the Medical Mission to control sleeping sickness.

In the beginning, the rural medical service consisted of, on the one hand, the FOREAMI staff who received a certain sum out of the budget of the government medical service, and included 10 doctors and 10 Sanitary agents, and on the other hand four doctors from religious missions and one company doctor, as well as 29 agents sanitaires, midwives or nurses, all of them certified by the government. These 34 staff members constituted the Auxiliary Medical Service for Natives (Service d’Assistance Médicale aux Indigènes or SAMI). Some 30 dispensaries were staffed by a certified nurse or a religious missionary.

Infrastructure

FOREAMI financed the building of 83 dispensaries, the total exceeding 120 establishments, or one dispensary for about 3,200 inhabitants.

Communication routes were developed, staging posts and rural gites were built as were houses for the medical staff. The programme thus acquired pluri-disciplinary features.

The main health problems

1) Among the endemic and epidemic diseases, sleeping sickness remained the most prevalent. Screening and treatment were guaranteed by the staff of the five subsectors completed by a mobile unit that screened for the sick among the caravan carriers coming from Angola; 2) Malaria was an important cause of death among young children. Distributions of quinine for prevention were made in welfare clinics; 3) Among cosmopolitan diseases, were pneumonias and diarrhoeas, to be cured only much later with sulphonamides; 4) Treatment of yaws, leprosy and tuberculosis was properly organized, and different epidemic infectious diseases were recognized and treated, as well as some cases of schistosomiasis; 5) Venereal diseases were spreading over new non-tribal centres or worker’s camps where the inhabitants no longer abided by rigid traditional rules;

6) Besides treating tropical and common diseases, the doctor had to educate the population, local chiefs and notables, school teachers, religious missionaries (who were very devoted but who did not always know the health hazards) and finally the clerks from different technical services who, unlike the doctors, were often less in touch with the populations’ way of living;

7) Among the social measures, the increase in the number of maternity hospitals, of Ecoles des mères (Mothercraft schools) for the training of young girls, and consultations in infant clinics, meant real progress, although the knowledge of certified nurses or midwives was often rudimentary in mother and child welfare or even ill-adapted to local conditions. This was only solved by the creation of ORAMEI (see the chapter MCH p. 754).

Handing over the Lower Congo sector to the Government

It was foreseen that the system set up by FOREAMI would be handed over to the Government in 1934 and that FOREAMI’s activities would be moved to the region of Kwango-Kwilu.

The difficulties in recruiting medical staff forced the Government to consider a transfer in stages.

This transfer was made in late 1935 because of alarming information about the health situation in Kwango and Kwilu, relayed by the missionaries living in those regions.

d) Evaluation of the FOREAMI method

It would be foolish to try to make an objective evaluation of the results obtained on the basis of figures gathered more than 50 years ago, taking into account the means available at that time. But it is interesting to know the main criticisms expressed about the methods applied and also the justifications given by the FOREAMI doctors. (FOREAMI Report, 1934). The objections were as follows: 1) "The medical census as it is required prevents the doctor from playing his medical role properly".

It was admitted by Dr. Dupuy that the systematic examinations and data recorded in the census register were tiresome to apply for doctors trained to diagnosis and to the individual treatment of patients, but it was pointed out that experience in rural medicine showed the nominative census to be essential in order to identify diseases and their causes, as well as to guarantee the follow-up of the treatment. Gathering data to determine the frequency of diseases and their epidemic outbreak, enabled an improvement to be brought about in the health of individuals living in a specific environment.
Map 13 — Medical network according to FOREAMI’s plan in the rural medical sector of Kisantu by 1959. (Sketch by Dr. A. Triest)
2) “The difficulty of controlling the staff activity and the exactitude of the information gathered.”

Dr. Dupuy answered that the difficulty was not as great as it appeared to those who only knew the administrative control of figures, which were quite devoid of meaning if examined without being linked to real situations. On the contrary, when activities were organized on a fixed daily basis and when drug expenditure was recorded regularly, control became easy.

3) “The method used by FOREAMI involves high costs considering the confined region to which it is applied. The Jesuit missionaries, for example, have obtained the same good results in health improvement at little cost.”

Dr. Dupuy recognized that covering the entire population was more expensive than giving just care to those patients who came for consultation when dispensaries become more popular. He also pointed out that the care given to some individuals could not reduce the transmission of diseases, and that the control of them would take more time and would require higher sums than those invested by FOREAMI.

Instead of the Government spreading its efforts and its budgets over the entire territory, it could have concentrated them on one or more specific regions. This would have been similar to the system adopted by FOREAMI, but without using its strict methods of detection, follow-up of patients and social assistance.

The work carried out by missionaries with small subsidies was remarkable. However, one could not compare their cost with the activities of FOREAMI staff since the working conditions accepted by the missionaries could not have been accepted by laymen, devoted as they were.

Moreover, it must be underlined that if the aim to clear the area of its main health problems by the exhaustive FOREAMI action in four to five years was not realized, the aim of eradicating malaria or good health for all by the year 2000, still remain unachievable; such an achievement can only be reached by solving the numerous problems by global action. The latter obviously depends on appropriate methods but also on the good will of those responsible and on the efforts of the beneficiaries; while those responsible belong to different departments, such as health, agriculture and civil administration, making coordination difficult, one should not forget the efforts of the missionaries and their role in the field of education. An ideal situation will never be reached without hindrance due to the many human susceptibilities that impair collaboration.

2.4.2. Application of the FOREAMI plan in FOMULAC’s rural medical sector in Kisantu

An agreement concluded with FOMULAC (Medical Foundation of Louvain University in the Congo, see p. 134) in order to serve the area to the east of the Inkiisi River to Kwango, allowed the application of the same principles as those applied by FOREAMI in the Inkiisi-Mayumbe sector.

FOMULAC, settled in Kisantu in the Lower Congo since 1926, was not part of FOREAMI, but agreed to follow the same principles in its work from 1933 onwards. The region where the hospital was set up covered a territory of 6,700 km² (equivalent to one-fifth of Belgium), and the distances that had to be covered ranged from 40 to 150 km. This area stretched from the Kinshasa (Leopoldville)-Matadi road, more or less parallel to the Congo River, west to the Inkiisi River, south to the Angolan border and eastwards to a less defined border, that of a rather barren, sparsely populated plateau.

One-fifth of the population lived in non-tribal centres, where there was a floating population looking for work in the ports and in the capital.

Agriculture was based on family fields and simple methods of ground tilling with a hoe. The roads were only hard-packed soil, allowing the passage of trucks to bring farm produce to the capital and consumer goods (household goods, fabrics, radios and bicycles) to the rural areas. Such a trade stimulated the farming production, while a cooperative run by the mission contributed greatly to the region’s development.

a) The medical network

The layout of this network is shown on the map of this medical sector (map 13) that also reproduces a classic example of the service given to the population by FOREAMI. This model was adopted subsequently by the Van Hoof-Duren Plan (see p. 139).

It consisted of:
- a 250-bed central hospital staffed by five doctors, with a maternity ward, sanatorium and a school for medical assistants;
- three health centres with maternity clinic and inpatient wards (30 to 50 beds), each manned by a medical assistant and a religious sister as midwife;
- seven dispensaries with 10 to 20-bed wards run by a local male nursing auxiliary;
- and eight rural dispensaries run by a local male experienced auxiliary nurse.

This medical network existed side by side with a network of traditional healers. There was no close relationship nor hostility between the two systems.
b) Supervision of the dispensaries

All the hospital doctors, including surgeons and obstetricians, had to make monthly visits to the dispensaries, where they provided technical advice based on cases under observation or those referred to the hospital.

c) Four mobile units for the semi-annual screening for communicable diseases succeeded in eradicating sleeping sickness and leprosy from the area by 1954. The new cases of sleeping sickness detected after that came from Angola.

True collaboration by the population started from 1954 onwards thanks to the climate of confidence generated by the infant and antenatal clinics and by the constant information provided to chiefs and people by the medical assistants. It was due to this approach, that the authoritarian image of the mobile units disappeared. Kisantu was however unusual, as Congolese medical assistants held positions of responsibility as heads of Health Centers or mobile team.

Tuberculosis control was organized systematically. It included examination of the families and the entourage of tuberculous patients, but also immunization with BCG vaccine.

2.4.3. FOREAMI campaign against sleeping sickness in the Rusizi Valley (1931-1934)

At the same time as the Bas-Congo zone was developing FOREAMI waged a campaign against trypanosomiasis in the Rusizi Valley.

The epidemic had struck tens of thousands of people, who fled the valley’s villages for the mountains (Hans Meyer in: Ford, 1971). The new case index (NCI) in 1931 was 2.5%.

The preventive administration of Bayer 205® succeeded in controlling the epidemic and in 1937 the villagers started returning to their villages and themselves took part in the control of the tsetse fly by clearing the bush. The endemic persisted at a low level (NCI = 0.15 %) to flare up again in 1942 and 1946 (NCI = 1% in 1946). The preventive administration of pentamidine reduced the number of new cases to only one in 1960 and seven for the period 1960 through 1965, at which time the disease could be considered to have been eradicated (Burke, 1982).

Here, too, FOREAMI’s guiding principles were applied: a special team sent to combat the endemic up to the moment a surveillance and treatment of residual cases could be undertaken by the government services.

2.4.4. FOREAMI’s work in Kwango

In early 1935, FOREAMI gradually started to transfer its teams and concentrate the action on the Kwango area. There the task proved to be harder as the general development was less advanced and there was but a rudimentary medical infrastructure. Census of the population, screening and treatment of endemic diseases were completed by the establishment of a network of dispensaries, hospitals and maternity clinics meeting the population's needs and offering doctors the basic facilities for laboratory examinations, therapeutic and preventive care.

FOREAMI’s work was directed at the entire population, visited hut by hut. The census was exhaustive and included visitors, seasonal workers, and floating populations.

In Kwango, the projects became highly varied and polyvalent, for roads had to be laid down, dispensaries and schools built, as well as houses for the doctor and the Sanitary agent in each circle. The health system of curative care, prevention and education was considered as an integral part of a development plan, also including agriculture.

The basic system remained the same. It was centered on the district hospital, with a number of fixed dispensaries and mobile units. The health auxiliary heading the mobile unit was in charge of the complete census, did the screening for diseases and started the treatment to be continued locally by the dispensaries that were regularly supplied with drugs.

When FOREAMI settled in Kwango, the region was arid, uncultivated and barely explored by missionaries or a few territorial agents. The roads were scarce, or even nonexistent and in any case not adapted for any intensive work.

The pessimistic description of the area made by Dr. Duren, Inspector General of the Ministry of the Colonies, during his prospection trip at this time to the Bayakas in Kwango, did not discourage the medical staff. In fact it acted as a stimulant to both European and native personnel to take up the challenge of improving the living conditions in this new sector, for a limited period of five years. This was the period foreseen theoretically by the programme to improve the different health areas later to be turned over to the government Medical Service.

In the beginning of his stay, Dr. Duren pointed out that indeed the Kwango was not yet sufficiently developed to undertake and support the intensive medical work advocated by Dr. Trolli.

It was probably this factor of immaturity that delayed FOREAMI’s transfer to Kwango until 1960.

However, due to the economic crisis, the capital income of FOREAMI was reduced while the difficulties of recruiting doctors and health auxiliaries became a real handicap. The difficulties met by the territorial
administration to extend the network of roads, schools and its different services through shortage of staff, also slowed down the medical coverage.

Moreover, the means of controlling leprosy in the Nepoko (see p. 1408, chapter Leprosy) and of launching a programme against venereal diseases at Leopoldville took up part of the budget, and therefore reduced the financial resources for the Kwango-Kwilu.

a) Progressive medical coverage of the population

From the beginning, and on the request of the local authorities and the missionaries, a main departure from the FOREAMI method was introduced by concentrating efforts on the control of sleeping sickness.

The medical mission for the control of sleeping sickness, set up by the government about ten years earlier, could only cover the northern part of the medical sector, in the subsectors of the Lower and Middle-Kwilu.

The FOREAMI team first concentrated action in the subsector of Bas-Kwango (see map 14 p. 128) to move on later towards the Middle-Wamba, Lukula and Middle-Kwilu sectors.

In 1937, Dr. De Brauwere, Director of the FOREAMI area in Kwango, decided to restrict the coverage to seven sectors and to hand back to the government the Kwiku area. A four-year plan, to be executed from 1939 to 1942, was prepared to ensure that the work would be carried out efficiently.

The staff consisted of 18 doctors and 20 sanitary agents, the subsectors being divided into 20 sections.

World War II disrupted these plans as various doctors and sanitary agents were conscripted, reducing the staff to seven doctors and 13 sanitary agents. Not until 1947, three years later, did normal working conditions resume.

b) Reorganization of FOREAMI's interventions

A double change in the organization of the FOREAMI medical work was decided in 1947. Instead of intensive "clearing up" of main health problems by the FOREAMI teams for a limited period, and then handing over the work in the future to fewer government teams, the five-year plan in the process of being elaborated, foresaw the following set-up:
- FOREAMI should remain in the Kwango without a deadline, covering the smaller area delimited in 1937, and including the subsectors of Lufimi-Basse-Sele (see map 14, p. 128);
- the FOREAMI, backed by the newly planned surgical and medical centres (Van Hoof-Duren plan, see p. 139, hereafter) with their three or four main dispensaries and secondary treatment centres, would allow more thorough medical examinations, more precise diagnoses and scientific medical research.

While FOREAMI maintained the systematic work (each six months) by sending its "shock troops" to all the villages, the hospital and dispensary staff paid more attention to the treatment of patients in the medical centres (FOREAMI Report 1947). The population coverage reached 90% of the inhabitants.

The agents sanitaires remained the pre-eminent doctors' collaborators in their control of main endemic diseases. By living with the villagers, they acquired a knowledge of the language, customs and environment that was linked to the professional conscientiousness shared by the whole staff. Among the nursing-aids, a spirit of competition aroused by the possibility of promotion to the official staff of the government, brought a qualitative improvement in their services. Several doctors specialized in controlling specific health problems, such as tuberculosis, leprosy and nutrition.

The general efficiency of the FOREAMI system, as appraised by their most experienced doctors, showed that for the serious epidemic diseases the data gathered were accurate, but that for transient diseases such as yaws and malaria, the figures did not reflect the complete incidence. Moreover for some problems such as helminthiasis, where the frequency and spread of the disease exceeded the means available for its eradication, the diagnosis was also incomplete.

c) Intervention for special health problems

If the control of the main health problems was to be exhaustive, it required the specialization of many doctors and the training of special teams.

Tuberculosis control

In 1950 a more thorough survey for screening tuberculosis was set up by systematic radiophotography. When supplementary radiographic equipment arrived in 1956, the acquired experience allowed the reorganization of the screening work. Instead of examining the entire population at a slow pace, a more selective examination, that left out children under five years (unless they belonged to a tuberculous family), allowed the elimination of 30% of the population, neglecting less than 1.5% of the patients detected by the examination of the whole population. This small number was detected when patient's relatives and close contacts were examined by skin tests applied by Sanitary agents during the medical check-up, and by the microscopic examination of sputum, enough in itself to confirm suspicion (FOREAMI Report 1957). At a rate of 10,000 persons monitored per month, 10 months a year, by each of the two radiological teams, the whole population could be covered by selective examination in slightly more than two years.
Map 14 — Medical sector of FOREAMI in Kwango with subdivisions in sectors, subsectors and medical circles
(From Report FOREAMI, 1952)
Malaria control

That 26% of the parasitic infectious diseases should be due to malaria is less than the true state of affairs. Indeed, all malaria episodes were not examined and registered. Malaria control was only centred on infant clinics, pre-school children and schools. The plasmodium index, already high for children from one to three years old, rose even higher for those between six to twelve years (see the chapter Malaria for bibliography of Schwetz & coll., 1938, 1940, 1949; Duren, 1940; Geukens, 1950; Himpe & Pierquin, 1950; Brou, 1953; Rezette, 1953; Delannoy & Hugon, 1954; Lejeune, 1958).

Following these studies, preventive distribution switched from nivaquine to pyrimethamine (Daratrim®) in child welfare clinics and was no longer applied each week, but only each fortnight or each month. Further more, the use of DDT, sprayed on the interior walls of the hut, was abandoned since it only covered a limited area and implied that Anopheles were endophytic, while preventive drug administration was incredibly more efficient.

Social work

The lack of maternity and infant clinics, even among religious dispensaries, encouraged religious missions and the Native Welfare Fund (Fonds du Bien-Etre Indigène) or FBEI to build such centres.

In 1950, a catholic mission’s hospital was opened at Yasa and maternity clinics at Masi-Munimba, Kenge and Feshi spread their activities rapidly.

In 1954, FOREAMI included in its new statute, published in August 13, 1955, the Queen Astrid Institution for Native Mother and Child Care (Oeuvre Reine Astrid pour la Mère et l’Enfant Indigène or ORAMEI) (see below p. 131 and chapter MCH, p. 754).

Nutrition

As early as 1950 Professor Lambrechts, holder of the chair of paediatrics at the University of Liege, was impressed by the quality of the infrastructure set up by FOREAMI in Kwango. Upon returning in 1952 he suggested creating a research centre.

The doctor in charge of the district of Feshi, aware of the importance of nutrition, especially for young children and lactating mothers, prepared a programme with the help of the United Nations International Children’s Emergency Fund (UNICEF). It consisted of skimmed milk distribution (see chapter Nutrition p. 389). FOREAMI, eager to improve the population’s living conditions, decided to evaluate scientifically the impact of food supplements, and carried out a global analysis of nutrition in Kwango and undertook a research programme (see chapter Nutrition pp. 388 and 391).

Drinking water supply

In order to solve the problem of amoebic dysentery, a programme of water supply was studied with FBEI and REGIDESO. The budget granted being insufficient, FOREAMI itself allocated the necessary funds and entrusted the realization of the programme to an agent sanitaire (Pirot, 1954).

d) Appraisal of results of the FOREAMI intervention in Kwango

The government medical service was now sufficiently well-established and no longer needed FOREAMI’s help. FOREAMI’s action was orientated differently. The maintenance of FOREAMI in Kwango after World War II, gave the organization the opportunity of improving screening and treatment methods, and of carrying out the construction of rural hospitals, maternity clinics, laboratories and dispensaries built with long-lasting materials. This continued and intensive action made it possible to undertake specialised activities, such as the radiophotographic mission in Kwango, the sanatorium and the pilot leprosy hospital in Mosango, the experimental maternity clinic in Pay-Kongila and the nutrition laboratory in Feshi, where Dr. Holemans undertook research in collaboration with Professor Lambrechts, professor of paediatrics at the University of Liege.

Besides their scientific interest, all these specialised studies were aimed at clearing up the rural health problems in an underdeveloped country, looking for lasting solutions in the fight against endemic and epidemic diseases with more efficiency, improving the living conditions of the populations and, finally, at succeeding in providing satisfactory health care to these populations, while taking into account the limited means available. Indeed, FOREAMI aimed at not only treating the very frequent and often serious diseases in tropical countries, but at ensuring their prevention and at improving the local living conditions by health education and better sanitation.

They attached special attention to the protection of mothers and children; to the control of social diseases (leprosy, tuberculosis, venereal diseases); to low birth rate and high death rate, and especially to the high infant mortality due to malaria, worms, anaemia of all kinds, acute respiratory and gastro-intestinal infections of small children, especially malignant malnutrition, kwashiorkor, that raged in many areas of Kwango. The latter particularly affected the Basukus in Feshi.
(south of Kwango), and the Bayakas in the subsector of Upper Kwango, in the Kasongo-Lunda territory.

Some criticism has been made about the method used at the beginning by FOREAMI; that is to say, the systematic medical census of all the population living in the sectors covered by the FOREAMI teams.

FOREAMI was accused of causing a loss of time for the doctors by the medical census to the detriment of their essential duty of treating the sick.

It is important to realise that the mobile units' activities for the medical census were supervised by an agent sanitaire, initiated after his training by the doctor and by a three-week field work under the supervision of an older and more experienced colleague.

The doctor of a medical circle or a district only intervened in order to define the methodology to be applied, in those places where the local pathology required his presence and where the start of new activities in a specific field was necessary.

Besides the collective activities run by European and native auxiliaries, the hospital doctor, although he was usually only a general practitioner in the European sense, had to deal with medical specialties as surgery, obstetrics, gynaecology, internal medicine, paediatrics, biological examinations, etc.

He would also concern himself with the proper functioning of activities outside his hospital, in particular the dispensaries and the mobile units engaged in the medical census.

In this respect it is interesting to quote the introduction of the 1953 annual report, by Dr. Dricot, FOREAMI's medical director, who became later the Head of the Health Services of the Colony: "The FOREAMI action, in the Lower Congo and in Kwango, consisted mainly in screening diseases on the basis of systematic population examination. In fact, it was not the patient who came to the doctor but the doctor who went to the patient and singled him out among healthy persons. This conception was also valid for trypanosomiasis detection and, in general, for all diseases of which the beginnings are not apparent to the sick themselves."

Another method, usually employed in developed countries, leaves the initiative of seeking for a doctor to the patient himself. It would be underestimating the black people's intelligence to think that they are not able themselves to make the necessary moves and to appreciate the value of a treatment. It is well-known that endemic leprosy is better understood since the existence of an effective drug; the most precise census only detected half the number of people suffering from this disease.

In a local environment, it was best to combine both methods which happily complemented one another. The census was routine and did not require the doctor's permanent presence as he was only there to control and train his staff and to make difficult diagnoses or to apply special treatments (classification of leprosy patients, preventive administration of pentamidine, special surveys, etc.)

The medical census, such as it was carried out by the FOREAMI services at the beginning of its existence, and especially in Kwango, represented the starting point of the most successful and rewarding achievements of its presence in an area.

The following information was recorded in the registers: identity, the composition of families, births, deaths occurring between two censuses with their approximate dates, earlier diseases and the medical recordings of each census. Information found in the registers constituted the mobile unit's most useful and polyclental working tool. This same information was further used for general preventive activities.

When civil registration for such populations was lacking, it often happened that a district officer used these registers for certain of his own duties.

The census was indispensable in the control of sleeping sickness and leprosy and it was the origin of preventive measures such as: administration of pentamidine in trypanosomiasis foci, immunizations with the BCG vaccine and other vaccinations, the radiophotographical mission for tuberculosis in Kwango, the distribution campaigns of skimmed milk (carried out thanks to the help of FISE-UNICEF) and of peanut milk, and the detection of pregnant women in need of maternity clinical delivery.

But such activities would have been short-lived and superfluous, had not a programme been undertaken at the same time as the exhaustive census of the population was being carried out, to build hospitals, maternity clinics, dispensaries, and laboratories in durable materials. They were not all sophisticated, but their design and use met the on-the-spot medical requirements. If the entries in the census registers sometimes appear long and fastidious to the non-initiated, the work did not hold up or in any way delay the census process, and these registers have proved of great utility in successive and consecutive programmes of population control.

Despite initial difficulties in Kwango, FOREAMI had one advantage. It benefitted from a programme (entirely carried out) of construction and equipment which encouraged initiatives to be taken that
contributed to the harmonious development of its plans.

It was also fortunate to be supported by Her Majesty Queen Elisabeth and to benefit from the moral and political support of Belgium.

It benefitted widely from subsidies granted by the Native Welfare Fund (Fonds du Bien-Etre Indigène or FBEI).

At its disposal it had the well-informed advice of professors from the Institute of Tropical Medicine in Antwerp and from the University of Liege in the person of Professor Lambrechts, who took part in all Dr. Holemans’ work in the nutritional Laboratory of Feshi (See the chapter Nutrition, p. 388).

It had above all the great advantage of being permanently in touch with such medical authorities as Dr. De Brauwere and Dr. Dricot, who were both FOREAMI directors before the latter was promoted to Head of the Health Services of the Colony. Their skills were matched only by their devotion to the institution they had run and developed in Lower Congo, and chiefly in Kwango.

It should also be recognized that FOREAMI was equipped with a team of well-informed and enthusiastic doctors endowed with high professional integrity.

In 1958, the FOREAMI sector in Kwango was the best equipped Congolese area (see map 14, p. 128). It included:

- 12 main government hospitals (150 beds each)
- 14 mission hospitals
- 10 main dispensaries
- 181 rural dispensaries
- 26 maternity clinics
- 1 sanatorium (650 beds)
- 1 leprosy hospital (60 beds).

The maternity clinics had registered more than 15,000 deliveries, representing 42% of all births. The birth rate has remained at the same level for 20 years, at about 40%; the overall mortality has reduced by half, and since 1938 infant mortality has fallen from 167 to 66 per thousand.

2.4.5. The ORAMEI and Damien section of FOREAMI

In 1938 the Head of the Health Services and Governor-General of the Colony laid the first foundations of an agency that pursued the same objectives as the child welfare agency l’Oeuvre Nationale de l’Enfance in Belgium. Originally, the idea had been to place this agency under the aegis of Queen Astrid, but the war interrupted its organization. Consequently, the Queen Astrid Charity for the African Mother and Child (l’Oeuvre Reine Astrid pour la Mère et l’Enfant indigènes) or ORAMEI was created in 1956 as part of FOREAMI and began operating in early 1957 (see the chapter MCH, p. 754).

Its role was to coordinate the work and the requests for subsidies for the numerous initiatives taken to help mothers and children. A comprehensive programme of activities was drawn up. The major initiative was to provide for a paediatrician in each province to visit the medical establishments and identify problems that were within the programme’s jurisdiction. Two pilot stations were built, one in Usumbura, (Burundi), the other in a rural area in Pay-Kongila, Kwango (Vincent, 1957). Guidelines for the antenatal and infant clinics were worked out, as were methods for the technical activities, such as biometry, laboratory analyses, and staff training.

The Government also called on FOREAMI to provide lepers with sulfone therapy. Consequently, FOREAMI created its Father Damien Section in conjunction with the Father Damien Foundation (FOPERDA; see p. 135).

2.4.6. FOREAMI’s work in Uele

Given the seriousness of the problems raised by the social, medical, and demographic situation of the Azande tribes living in Uele along the border with the Sudan and the Central African Republic, the Minister of the Colonies called on FOREAMI in 1957 to focus on this area. This region is a part of the Eastern Province and comprises the territories of Dungu, Niangara, Poko, Argo, and Bondo.

The Royal Academy of Colonial Sciences had already called attention to the sudden decline in number and the precarious health of these Zande and Zande-assimilated populations. This situation had been described by the district administrators, socioanthropologists, and doctors. The Academy urged that an organization experienced in medical and social assistance be given the task of extricating the Azande from the health and social problems that plagued them.

Besides the falling birth rate, which was in striking contrast with the growth exhibited by most of the other groups in the country, the region had a very high rate of endemic goitre (21-81%, depending on the village), accompanied by manifestations of cretinism and dwarfism and a high prevalence of leprosy (7-8%).

Trypanosomiasis had decimated the inhabitants of the northern part of Ango. Preventive medication gradually controlled this epidemic to bring it down to an endemic level. Acute respiratory infections and their complications occupied a predominant place in the nosological picture and were associated with a high infant mortality. Tuberculosis was also an important problem.
Finally, the region was swept by seasonal epidemics of haemorrhagic viral infections, such as the yellow fever epidemic in Doruma in October 1958. The gonococcus appeared to be ubiquitous and may have been largely responsible for the sterility of the young Azande women.

The sharp population decrease was the first concern when FOREAMI took over Dungu and Poko Territories, with a total population of 221,000, on July 1, 1958.

The population had decreased 23% over 16 years and the proportion of children per 1,000 population had been halved over the past 20 years.

The birth rate, which fluctuated around 40‰ in Kwango, was only 10-13‰ in Upper and Lower Uele, whereas the death rate was 22‰.

If one considers that a demographic regression index of the order of 6‰ can reduce a population by 25% in 50 years, it is easy to imagine the fate of the 400,000 Azande people in the Belgian Congo, given a regression index that was twice as high.

A campaign of great intensity was conducted at the same time against goitre, leprosy, and venereal diseases. The entire region was also vaccinated against yellow fever. The medical, social, and sanitary facilities and structures available to the population entered a period of unprecedented growth thanks to a special budget from the Government and Native Welfare Fund.

FOREAMI incorporated the Niangara Territory into its zone of action one year later and on January 1, 1960, its operations were extended to include the Ango and Bondo Territories.

As political events halted FOREAMI’s action in Uele in June 1960 it was not possible to make any later assessments. All that can be said is that the demographic situation in the territories taken on by FOREAMI was stabilising after the first two years of operating.

2.5. FOREAMI’s achievements

FOREAMI’s many experiences led to a better understanding of rural health and development problems and to the implementation of an efficacious system that was a forerunner of the primary health care system.

This experience must be linked to the mining companies and agricultural plantation owners’ experiences in treating the medical problems of their workers and dependents and local inhabitants, as well as conducting prevention and health education activities.

The following important conclusions may be drawn from these methods:
1. Patient care, prevention, and health education cannot be separated from the general development and well-being of the population.
2. The health objectives to be achieved are influenced by the successes obtained in the surgical wards, maternity clinics, paediatric wards, and other hospital wards, since positive results foster confidence among the people.
3. The success of medical interventions depends on a sound analysis of the situation, constant adjustment to changing ecological conditions, flexible planning, well-organized logistics, and a devoted staff. The head of each mobile unit must have his own office at the hospital where he can keep his records of cases that are identified and the records of those sent to the hospital, as well as an epidemiological register that must be updated after each round. All this information should be plotted on a detailed map of the region. A doctor must organise and supervise this coverage and screening work.
4. A variety of medical auxiliaries who perform specific tasks according to a standardized examination, diagnostic, and treatment can, when brought together to form a coherent, well-run team, do what might seem impossible in a medical department organized along theoretical or abstract lines.
5. The mission dispensaries play an important role because they have the means of transport to bring the patients to the hospital. Smaller dispensaries should be set up at the crossroads of the tracks that lead to the most isolated villages. Their positions should depend on population density and geography.
6. The mobile units go to the very heart of each village to inculcate notions of health and hygiene.
7. Improvement of roads, providing housing and rural gites are multivalent activities to the benefit of global development.
8. Complete coverage of the population cannot be obtained without community involvement. The community not only wants to be informed and guided, but also wants to contribute to improving its health status and development by making suggestions and taking on individual and collective responsibilities. This was shown later by the 1971-1974 primary health care approach in Kisantu Medical Zone (see p. 150).

3. The Welfare Fund for Nationals (FBEI)

The Welfare Fund for Nationals (Fonds du Bien-Etre Indigène) was a semi-private agency set up by an
order (arrêté) of the Regent dated July 1, 1947. Its capital, which came from the money reimbursed by Belgium for the sovereignty expenditures borne by the Congo during World War II and was increased each year by large endowments from the National Lottery and African Lottery, and it was to be used to fund social investments in the rural areas.

The Fund divided the territory into zones for multi-disciplinary action so that the separate services would work together to develop different parts of the country. These improvements were made in the poorest, most densely populated areas of the country.

The objective of this fund was to improve the living conditions of the nationals of the Belgian Congo and Ruanda-Urundi through improved animal husbandry, cropping, fishing, and fish-farming methods, as well as by improving the basic medical infrastructure of the rural areas (maternity clinics, dispensaries, hospitals, sanatoria, training schools).

One of the Fund’s priorities was to supply the villages with safe drinking water. To this end a hydrology department was put in charge of studying, planning, and carrying out work to improve wells and springs and collect and pipe water. Entire regions were provided with pumps, piped water, and even more sophisticated installations, complete with pumping stations (see the chapter Water Supply p. 328).

By the end of 1959 the Welfare Fund had built and equipped 32 medico-surgical centres and rural hospitals, 481 dispensaries, 125 maternity clinics, 139 infant clinics, 17 training schools, and five sanatoria on the territory of the Belgian Congo and Ruanda-Urundi. These buildings were part of the ten-year and medical infrastructure plans (see pp. 140 and 157). The Fund also financed various specific medical activities, such as the leprosy control work conducted by FOREAMI and the Father Damien Foundation, tuberculosis screening and treatment campaigns, CEMUBAC’s BCG vaccination campaign, and various arthropod eradication campaigns to control malaria, relapsing fever, and exanthematic typhus (see the relevant chapters). It also conducted studies on the causes of falling birth rates in some regions (see the chapters MCH and Obstetrics, pp. 756 and 1055) and a study of African psychology (Ombredane, 1954).

4. The achievements of the philanthropic or scientific organizations and industrial companies

A number of Belgian university institutions and various philanthropic institutions worked parallel to and in conjunction with the government medical services to improve the health of the population. The Government alone could not provide total health coverage. It thus promoted the creation of various institutions and signed agreements with the mining and industrial agricultural concerns. Among these institutions and companies we can cite:

4.1. The Congolese Red Cross

4.1.1. The Congolese and African Association of the Red Cross

The Congo Free State had already signed the Geneva Convention on the Treatment of the Wounded in Times of War at the end of the 19th century. A Congolese and African Association of the Red Cross, founded in Belgium on the initiative of King Leopold II in 1888, had built hospitals in Boma (1889) and Leopoldville (1897) as well as a sanatorium for convalescent patients in Banana. The Association ceased operating in 1908 from lack of funds. The Belgian Government took over its work.

4.1.2. The Red Cross of the Congo

A commission formed of a few leading figures who were alarmed by the disproportion between the medical infrastructure in the towns and the lack of medical care in the rural areas was set up by King Albert in 1923 and proposed the creation of a non-governmental entity to promote health work in the interior. The Belgian Red Cross created an administratively and financially autonomous section called the Red Cross of the Congo by royal order arrêté of May 14, 1926, to be responsible for the following activities:

a) Nepoko

The Red Cross chose to carry out its work in Nepoko, an area fanning out from the post at Pawa in Uele District. This area was somewhat densely populated (some 100,000 inhabitants) and still devoid of medical services. The project included the creation of a hospital centre at Pawa and a series of rural dispensaries, several of which later became small hospitalization centres with maternity wards, on the periphery.

Besides the construction and operation of these basic health facilities the Red Cross shouldered the work of combating the major endemics in the region, especially yaws and leprosy. The latter was very widespread, affecting 4-5% of the population. At the instigation of the territorial administration and various tribal chiefs a certain number of lepers were resettled in farming villages isolated from the rest of the population. The Red Cross encouraged this policy. The
The advent of sulphonamides in 1945 changed the outlook radically, as lepers could henceforward be treated as outpatients (see the chapter Leprosy).

b) The Red Cross of the Congo undertook other activities at the instigation of its local committees. For example,

- Venereal disease dispensaries were opened in Leopoldville in 1929 and Matadi in 1938.
- A Paediatric centre was created in Leopoldville in 1948 that included an inpatient ward that had 120 beds in 1957 and a specialized laboratory. The directors of the centre, Doctors Lambotte and Legrand, carried out studies on sickle cell anaemia – a disease that was poorly known at the time – at the centre.
- The Leopoldville and Stanleyville Committees of the Red Cross opened blood transfusion centres in their respective towns in 1953.
- Dr. Vander Elst set up a prosthetics and re-education centre for the mutilated and physically handicapped in Elisabethville in 1956.
- A social home for the education of women was opened in Leopoldville in 1951. Courses to train first-aid workers and ambulance drivers were given in this establishment starting from 1953. A Youth Section of the Red Cross was created in 1956, as was an emergency relief service to transport the victims of accidents.

4.2. FOMULAC

FOMULAC «the Medical Foundation of the Louvain University in the Congo» was founded in 1926.

4.2.1. Medical organization in Kisantu

FOMULAC set up an important health complex in Kisantu (Lower Congo). It included hospital services, a school for nurses and medical assistants, and a research laboratory. The goal was to create a Centre for the treatment and the study of tropical diseases, to enable Belgian doctors to receive training in Central Africa and to train African health professionals: nurses, birth attendants, and medical assistants. The initiative was due to Father Charles, a Jesuit and active member of the AUCAM, and to Professor F. Malengreau. In 1932 FOMULAC, was asked by FOREAMI to take over responsibility for the rural sector attached to Kisantu, and set up dispensaries staffed by nurses who had graduated from its school. These nurses worked under the supervision of FOMULAC doctors (See the Kisantu rural medical sector on pp. 124-125 above.)

Plans were already afoot in 1953 to train doctors in Kisantu and preparatory courses were given. In the end, however, the medical school was set up in Kinshasa by Louvain University and called Lovanium University.

4.2.2. Medical organization at Katana

FOMULAC created a second hospital post at Katana (Kivu) in 1929 at the Government’s request. FOMULAC was entrusted with organizing curative and preventive medical care for the entire population of the neighbouring region and training nursing staff.

4.2.3. Medical organization at Kalenda

In 1954 the Native Welfare Fund completed the construction of a 275-bed hospital and a school for nurses and assistants médicaux at Kalenda (Kasai). The government authorities and mining and agricultural concerns in the area called on FOMULAC to run this complex.

These facilities at Kalenda were heavily damaged during tribal warfare in 1961. FOMULAC then moved on to Disele (Mbuji-May), working out of hospital buildings that were placed at its disposal by the Bakwanga Mining Company (MIBA). It was active at Disele until 1975, when the company’s medical department was in a position to take charge of all medical activities in the region.

4.3. CEMUBAC

CEMUBAC – Scientific and Medical Centre of Brussels Free University in Central Africa – was created in 1936. Its goals were medical assistance and scientific research.

CEMUBAC began working in two dispensaries in Lomani under an agreement with the Compagnie du Lomami et du Lualaba. A hospital and a laboratory were set up in 1938, but the centre had to discontinue its activities during World War II.

Resuming its work after 1945, CEMUBAC turned its attention to tuberculosis. Under the direction of Professor Millet it sent missions of radiographic surveys to Maniema and Ruanda-Urundi to study the disease (tuberculin test and X-ray investigations), the best methods of treatment, and the preventive value of BCG vaccine. Hospitals for patients suffering from tuberculosis were opened at Shabunda and Kasango (Maniema) and Rwamagana in Rwanda.

After the Congo’s independence CEMUBAC took over some of the work being carried out by IRSAC (Institute for Scientific Research in Central Africa). This included a study of the medical and socio-economic aspects of malnutrition in Kivu’s mountainous regions and the study of endemic goitre, under the direction of Professors Ermons and Delange, on Idjwi Island
(Lake Kivu) and in Ubangi. The study of goitre revealed
the goitrogenous role of eating improperly retted cas-
sava and the protective action of iodated oil injec-
tions given in minimum doses at three to five-year intervals.
Mobile units have been patrolling northwestern Zaire
since 1972 to supply the population with the necessary
iodine supplements, in the form of iodated oil injec-
tions, to prevent goitre and cretinism.

4.4. The Kivu Social Fund

Created in 1933 by the National Committee of Kivu,
a body responsible for the general development of the
region, the Kivu Social Fund was conceived to carry
out the humanitarian, social, educative, and medical
tasks incumbent on the Committee.

Its medical team worked out of Walungu, in the
Ngweshe Mountains, 50 km from Bakavu. Working
out of a temporary dispensary its members waged a
campaign against the region's main endemics dis-
eases, notably yaws, tropical ulcer, and cerebrospinal
meningitis. At the same time the Fund offered antena-
tal and infant clinics while a 250-bed hospital com-
pleted in 1950 was being built. A maternity clinic and
a school for auxiliary nurses were attached to this
complex. The medical team devoted a considerable
amount of its time to teaching women the rudiments
of health and nutrition, given the prevalence of vari-
cous forms of malnutrition linked to the agricultural,
both, economic, and demographic conditions in the region.

At the present time the Kivu Social Fund continues to
run a 300,000-person health district served by Walungu
Regional Hospital and a score of health centres.

4.5. FULREAC and GANDA-CONGO

In 1956 the Universities of Liège and Ghent created,
on an independent basis, institutions to promote scien-
tific research and development activities in various
fields, notably health.

4.5.1. FULREAC

The University of the Liège Foundation for Scientific
Research in the Congo and Ruanda-Urundi, or FUL-
REAC, had its seat in Elisabethville (Lubumbashi). Its
aim was to carry out studies and multidisciplinary
research in Katanga in collaboration with the Official
University of the Congo. This work included a study of
nutrition that was linked to an agricultural development
project based at Mangobo, near Jadotville (Likasi).

4.5.2. GANDA-CONGO

A similar institution named Ganda-Congo was set
up by the University of Ghent. Its goal was to conduct
various studies (ethnographic, sociological, linguistic,
and rural economics, *inter alia*) in Ituri. An in-depth
study resulted in a dictionary of the Alur language
with French, English, and Dutch translations of the
entries. An agricultural study was conducted among
the Jupalirí (Pauwels, 1965). Medical action was to
spread out from Nyarembe (Mahagi), where a hospita-
al, for a school for nurses, and a multidisciplinary
laboratory were being built. The events surrounding
the country’s independence hampered the progress of
these projects.

4.6. FOPERDA

A national association to combat leprosy, the Father
Damien Foundation (FOPERDA), was founded in
1936, the year that the remains of Father Damien, who
had died of leprosy among the lepers of Molokai in
1889, were transferred to Belgium.

This institution triggered a huge wave of interest in
Belgium for helping lepers, especially those of the
Belgian Congo and Ruanda-Urundi. It also gave impetus
to scientific and operational research by creating a
medical committee to study the best ways to combat
endemic leprosy and draft technical guidelines for all
people caring for such patients.

Working with the Damien Foundation, FOPERDA
helped to subsidize many institutions that sheltered
and treated leprosy patients. Under FOPERDA’s
impetus the Government included the stepping-up of
leprosy control measures in its Ten-Year Plan for the
Economic and Social Development of the Belgian
Congo. The Native Welfare Fund also contributed to
this effort by setting up a large number of leprosy
treatment centres.

FOPERDA, which had no staff of its own in Africa,
signed an agreement with FOREAMI in 1953,
whereby the latter’s Father Damien Section was put in
charge of monitoring the implementation of a Govern-
ment-approved joint leprosy control programme in
Africa (see the chapter Leprosy on p. 1413).

4.7. Social assistance provided by industrial compa-

The major companies in Central Africa, such as
Union Minière, Foreminière, Les Huileries du Congo
Belge, Les Mines d’or de Kilo-Moto, Minière des
Grands Lacs, Symétain, Otraco, etc., created model
medical organizations with fully-equipped hospital
centres and specialized laboratories.

As required by labour laws, workers underwent
physical examinations right from the time they began
working. They were vaccinated, treated for endemic
diseases, and given a balanced diet. Acting at the Government’s request, the companies’ medical staffs extended their assistance to the local population. Indeed, the services that they rendered to pregnant women and newborn babies were invaluable.

In 1925 the Union Minière decided to create the Oeuvre de Protection de l’Enfance Noire to reduce the frequency of stillbirths and infant mortality.

Working hand in hand with the Government the major companies’ medical departments also contributed to controlling the major epidemics. Thus, Forminière made a name for itself in the fight against sleeping sickness in Kasai. Under agreements signed with the Government, the companies’ medical activities embraced the entire population of a defined area, for which the companies received State subsidies.

5. From environmental health to Public Health Services and community health

Public health services consist of all the practices which preserve and improve the health of the largest number of people possible within a community. Protection is aimed at the threats coming from the environment or the behavior of the people themselves.

In the tropics more than anywhere else the environment is a major factor in the spread of communicable diseases, due to both the climate and the economic situation of the population. That is why the sanitation services must intervene in three key areas, namely:
- controlling the communicable diseases for which human beings are the reservoirs of infection and that are spread either directly or via a vector;
- environmental hygiene, which includes waste disposal, cleanliness, and pollution control measures to avoid the spread of germs or vectors that breed in infected areas;
- protecting the health of various risk groups, i.e., workers, the under-fives, school children, and mothers.

5.1. Public Health Services in townships and special zones

Public Health problems were tackled in stages by the Services d’Hygiène.

1) In the beginning, cleaning up the environment required the intervention of a specialized service, as the community alone could not provide the effort needed to prevent certain diseases. Measures to protect the population from imported pathogens were taken as early as 1887 (harbour health and sanitation measures) and 1888 (screening for disease carriers).

2) Next, epidemiologists sought means to prevent outbreaks of diseases via the vectors and intermediate hosts, the patients themselves, who could be the source of infection, and waste matter. Identifying sick individuals or healthy carriers as early as possible not only increases their chances of recovery, but also prevents the spread of the diseases they carry. Controlling smallpox was a rather simple matter, for the disease is spread by direct contagion, whereas controlling sleeping sickness raised serious problems that have not yet been completely solved.

The approaches to maintaining public health are drawn from laboratory and epidemiological studies. They may be found, with descriptions of the appropriate measures for each endemic tropical disease, in the corresponding chapters in the fourth part of this work.

Among the main public health activities we can cite:
- the research into the factors behind the spread of malaria. This research was pushed to great lengths in Africa and now calls for a more sophisticated attitude toward malaria control measures that avoids the exponential escalation of costly methods that have failed to eradicate the disease in Africa;
- the control of schistosomiasis by the detection of breeding places of its intermediate host, a snail, but also by the surveillance of the irrigation systems (particularly in the Rusizi valley);
- the eradication of the well-defined breeding grounds of the blackflies that transmit onchocerciasis (river blindness) in Leopoldville (Kinshasa); and
- bubonic plague control, involving regular efforts to check the spread of the enzootic form among rodents and their fleas (Plague Laboratory at Blukwa);
3) The public health services were responsible for sanitation in the towns and for measures of prevention and control regarding insects and rodents that are vectors of disease (decree of 1888).

A department of Public Health (or hygiene) was created in 1922. Urban sanitation, water quality monitoring, and waste disposal required the collaboration of engineers, architects, and agronomists. The job of supplying drinking water was entrusted to the water and electricity distribution service Régie de Distribution des Eaux et de l’Electricité du Congo Belge et du Ruanda-Urundi (REGIDESO). The Welfare Fund for Nationals and its hydrology department supplied drinking water to the poorer regions by developing natural water sources and providing pumps and pipes (see the chapter Water Supply, pp. 325 to 343).

Collaboration with the public works’ department and entities such as the water supply and Office des Cités indigènes required great tact, the medical officer’s role being that of an adviser.
The African Cities Office (Office des Cités africaines) guaranteed 25,479 decent, clean housing units for the urban population. In the rural areas, 146,700 farms had been set up under the paysannat (farming community) scheme by the end of 1956.

4) Nutrition was a constant concern of the Government (see the chapter Nutrition, p. 357). The Agriculture Department made an effort to increase the volume and market value of the crops in order to ensure sufficient incomes but, as we have seen, cash crops had a detrimental effect on nutrition in many areas and supplant the small family plots that were a source of diversity and food supplements.

5) At the same time the medical services drew up programmes to combat the so-called social diseases - tuberculosis, leprosy, and venereal diseases - given their repercussions on society (see the corresponding chapters).

6) From the start of the century onwards the health services also paid attention to the companies' workers. The medical department examined newly hired workers for the presence of bacteria or parasites from areas where diseases remained localized. The workers were then prepared for the physical exertion that awaited them by a good diet and gradual acclimatization to the work. The work force's health was maintained by regular inspections for the diseases linked to the plantation, mining, or industrial activities in which they were engaged (see the chapter Occupational Health, p. 785). Protection of mother and child health was organized by a variety of initiatives (see the chapter MCH, p. 751).

5.2. Public health in rural environmental

The doctors in charge of the regions were responsible for public health. This involved above all measures to protect groups that were forming new communities.

5.3. Public health and specialized departments

The fragmentation of health protection into separate programmes had to be cancelled and led to an integrated public health programme. However, epidemiological analyses and the research necessary to improve public health may be hampered if too rigid a structure is imposed on specialized interventions, and health measures are carried out by a single department responsible for all the programmes. The scientific and economic justifications of the various activities require the intervention of specialists to guide the fieldworkers and measure the impact of their work.

Thus, an epidemiological analysis of the causes of perinatal maternal mortality revealed that the most important factor was travel time. This meant that in one region an obstetrician had to be assigned to an outlying facility so as to be much closer to several health centres, whereas in other places auxiliaries or auxiliary birth attendants were authorized to perform interventions usually reserved for a doctor. Nevertheless, two essential conditions had to be met, namely, the auxiliaries had to be trained to recognize cases in which intervention could be dangerous; and qualified staff had to give these workers regular guidance and support in order to evaluate their performance and redirect them. Only to the extent that GPs and specialists do not confine themselves to treating individual cases in their hospital departments will the health services be able to fulfill their vocation of bringing health to the whole community.

The development of judicious public health measures was made possible by the existence of biomedical research laboratories and a few specialized laboratories (bubonic plague control, nutrition research), as was seen throughout the course of the medical services' development.

The experience of the Congo Medical Services in the fight against sleeping sickness prompted a recommendation by the Commission of Technical Cooperation in Africa (CCTA) that an office be opened in Leopoldville to be called the Bureau Permanent Inter-africain de la Tsé-tsé et de la Trypanosomiase – BPITT, (Tsetse Fly and Trypanosomiasis Inter-African Bureau). The first director of this Bureau was the Belgian Dr. B. Neujean; Dr. Cecchaldi of the Pasteur Institute in Brazzaville took over from him after the upheavals of independence.

The work of the CCTA was later to be taken over by AUO (African Unity Organization).

5.4. Active participation of the people

The mechanism of making the people responsible for their own well-being, i.e., proper health education and financial contributions, were not developed sufficiently during the period that preceded the era of African independence. While medical services were free, some of the missions demanded payment for services and medication, and it became evident that many Africans liked to pay for the services, which acquired more value in their eyes.

After independence health education and primary health care expanded (see pp. 149 to 156).
Map 15 — Medical establishments in the Congo (Zaire), 1958
(Source: General Directorate of Health Services, General Government of the Congo)
6. The development plan of a decentralized medical infrastructure

At the close of World War II the Belgian Government decided to devote large sums to developing the Congo. It launched the Ten-Year Plan of Economic and Social Development and created the Native Welfare Fund to finance a number of construction programmes and facilities, notably in the health sector (see pp. 132 and 133 above).

6.1. The Van Hoof-Duren Plan and Native Welfare Fund

A medical infrastructure programme called the Van Hoof-Duren Plan was drawn up in 1945. It was included in the Ten-Year Plan and benefited from funds from the Welfare Fund. Its aims were to build a 100 to 150 bed medico-surgical centre in each of the Congo's 120 territories as well as to build schools for nurses and, for the interior of each territory, main rural dispensaries that would oversee other secondary dispensaries or treatment centres, as needed.

The medico-surgical centre would be manned by two doctors who would share the hospital practice, the dispensary visits to support the auxiliaries who staffed them, and the supervision of the mobile units that carried out the medical censuses in the villages.

Each medico-surgical centre (MSC) included a polyclinic for outpatients, four hospital departments (internal medicine, paediatrics, surgery, and maternity ward), and technical departments (sterilization, X-rays, laboratory, and pharmacy). Antenatal and infant clinics were held in the maternity ward.

The whole formed the "Medical Sector". In 1974 it was to become the "Health Zone" (see the appendix of this chapter, pp. 159 to 162).

The medical sector itself was divided into four to 15 subsectors or circles, as they were called by FORE-AMI. The subsector might have a small secondary hospital and a maternity clinic such as the missions often built. More often than not it had a dispensary plus a few hospital beds that was located in a place frequented by the population and linked to the sector hospital by rail, road, or water. In this way, all serious cases and women who were expected to have difficult pregnancies could be easily transferred to the hospital.

The doctors had the necessary equipment for studying the regional diseases and providing therapeutic and preventive treatment.

The avant-garde action of the mobile units – the cornerstone of the system – was thus gradually complemented by the creation of a network of health care facilities meeting the demand and needs of the population. The medical infrastructure thus took the form of a network of stationary facilities within which the epidemiological and nosological information, collected by the census units and doctor in charge of the sector, circulated. (see map 15, p. 138)

6.2. Laboratories for medical diagnosis, for research and for public health

At the same time as health services were developed for curative and preventive activities, a laboratory for the analysis of urine, stools and various specimens or for the detection of germs and parasites, was organized in each province. They were staffed by medical laboratory specialists (see p. 110 and the chapters Biomedical research p. 226 and Public Health laboratories pp. 247-256).

The hygiene and sanitation services set up their own public health laboratories in the big towns.

6.3. Medical and paramedical training

This training kept pace with the extension of the medical services. Schools for assistants médicaux, auxiliary hospital and public health nurses, gardes sanitaires (lower-level sanitary inspectors) and auxiliary midwives were created by the State or certified private institutions. The latter compiled with the government curricula and issued diplomas recognized by the State. Lovanium University opened a medical school in Kinshasa in 1954 while the Official University of the Belgian Congo and Ruanda-Urundi opened in Labumbashi in 1956 (see the chapter Medical education pp. 203 to 205).

The training of auxiliary nurses, nurses' aids and birth attendants made it possible to achieve the ratio of one medical auxiliary per 2,300 inhabitants.

6.4. The pharmaceutical services and the Medical and Pharmaceutical Central Depot

Pharmaceutical inspection and management offices were set up in each province, crowned by a central office. Each hospital had its own pharmacy and prepared ointments and lotions. This required the supervision of the provincial pharmacist.

The Léopoldville-based Medical and Pharmaceutical Central Depot (DCMP) and the provincial deports that served as its relay, ensured the regular supply of drugs, materials, and equipment to all the country's health centres and stations.

Supplies were ordered every six months as allowed by the budget allocated by the provincial medical office. An additional order was possible, depending on
the service’s needs. One had to allow for travel time and the unloading and reloading delays between the boats and railroads in the very extensive but complex transportation network.

Repairs and maintenance of the machines and instruments were carried out by a central maintenance office and its decentralized branches, that could send maintenance crews to effect the repairs on site in the outlying establishments.

6.5. The medical set-up and personnel in the Congo in 1957-1959

The medical set-up managed to both control the epidemic diseases and provide medical assistance to the population even in the most peripheral places. To achieve these goals, the medical department could rely on the following organization:

1) mobile medical teams of each hospital;
2) a network of rural dispensaries, health posts, and medico-surgical centres;
3) the collaboration of missions, philanthropies, and private companies, each of which monitored the health of the population in their respective areas;
4) a public health department in each province that was responsible for drainage works and controlling disease vectors and animal reservoirs (primarily insects and rodents);
5) the services responsible for community preventive medicine, occupational health, and prevention in the schools, as well as mass vaccination campaigns and the enforcement of international health regulations concerning travellers and transport;
6) in the major towns, medical analysis and research laboratories to complete the infrastructure and to manufacture vaccines and sera;

The central offices comprised the medical services organization department, the medical supply, departments, analytical and research laboratories, and medical training offices.

a) Budget

The medical services’ ordinary budget was 12% of the Congo’s budget. One-third of this sum covered drug procurement. The special budget met the needs of building the facilities considered in the Ten-Year Plan and was divided more or less equally between the rural areas and towns, if one adds the Native Welfare Fund’s considerable contributions. This made it possible to implement the Van Hoof-Duren Plan of medical coverage. Besides this the services could count on considerable inputs from philanthropic organizations and private companies.

b) The following tables summarize the situation at the end of the colonial period:

<table>
<thead>
<tr>
<th>Type of Establishment</th>
<th>Number</th>
<th>No. of beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals, clinics, and maternity clinics:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- government</td>
<td>172</td>
<td>19,732</td>
</tr>
<tr>
<td>- missions and philanthropic organizations</td>
<td>145</td>
<td>14,095</td>
</tr>
<tr>
<td>- private companies</td>
<td>105</td>
<td>13,219</td>
</tr>
<tr>
<td>Dispensaries, infirmaries:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- government</td>
<td>1,183</td>
<td>8,092</td>
</tr>
<tr>
<td>- missions and philanthropic organizations</td>
<td>251</td>
<td>5,226</td>
</tr>
<tr>
<td>- private companies</td>
<td>726</td>
<td>2,086</td>
</tr>
<tr>
<td>Peripheral medical posts</td>
<td>2,560</td>
<td></td>
</tr>
<tr>
<td>Special units (leprosy, TB, mental asylums, etc.):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- government</td>
<td>36</td>
<td>4,396</td>
</tr>
<tr>
<td>- missions and philanthropic organizations</td>
<td>54</td>
<td>8,957</td>
</tr>
</tbody>
</table>

| - Number of beds per 1,000 population | 6.2 |

State medical staff in the Congo (Zaire), 1959 (by profession and assignment)

<table>
<thead>
<tr>
<th></th>
<th>Adminstration</th>
<th>Education</th>
<th>Laboratories</th>
<th>Public Health</th>
<th>Hospitals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>12</td>
<td>5</td>
<td>25</td>
<td>19</td>
<td>417*</td>
<td>478</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>15</td>
<td>5</td>
<td></td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Med. assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>132**</td>
<td>132</td>
</tr>
<tr>
<td>Biologists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Dentists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9*</td>
<td>9</td>
</tr>
<tr>
<td>Agents sanitaires</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>472</td>
<td>472</td>
</tr>
<tr>
<td>Nurses and birth attendants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>131*</td>
<td>131</td>
</tr>
<tr>
<td>Auxiliary nurses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>892**</td>
<td></td>
</tr>
</tbody>
</table>

* To these figures should be added 88 doctors from the missions and philanthropic organizations, more than 165 doctors employed by companies, 46 pharmacists, 28 dentists, 272 registered nurses and birth attendants, 282 non-certified nurses and birth attendants, plus those who had private practices (1956 figures).
** A large part of this group worked in outlying dispensaries.

c) Medical care was organized as follows:

- Hospitals and a network of dispensaries operating as outpatient clinics, however equipped with 10 to 14
hospital beds in rural areas, and the medical sector's mobile unit.
- Infant clinics held in the dispensaries while the maternity clinics were responsible for monitoring pregnant women.
- The annual medical census, first created to screen for sleeping sickness, which was expanded into a permanent system for the screening and early treatment of six major diseases, namely, sleeping sickness, malaria, tuberculosis, yaws, leprosy, and venereal diseases. The mobile teams vaccinated the population against smallpox, tuberculosis, yellow fever, poliomyelitis, and the conventional diphtheria-tetanus-whooping cough combination, as needed. They also treated common disorders as they passed through on their rounds.

7. Independence of the Congo

The events that shook the Belgian Congo in 1960, after the territory's independence, had repercussions on the medical infrastructure which help to explain the current situation and provide insight into the future.

Agreements signed between Belgium and the Congo under the Friendship Treaty of 1960 were supposed to ensure the continuity of the colony's administrative, economic, social, and medical activities, but the mutiny of the Force Publique led, in just a few days, to the breaking off of diplomatic relations between the two countries and a major exodus of European personnel. The country was thus deprived of manpower needed for its administration, teaching, companies, and medical services.

In the context of health, it was vital that the medical network set up over the preceding years should remain active. The devotion of the 200 or so Belgian doctors and paramedics who remained at their posts was clearly not enough; so emergency assistance was organized on several fronts to help the young Republic of the Congo.

WHO, the International Red Cross, bilateral aid projects, and an unofficial Belgian task force (see below, p. 145) stepped forward - in no specific order - to compensate for the shortage of personnel and to give the population the care it expected. With the exception of a few areas, the hospitals themselves were barely affected by the events, and all the new medical personnel could rely on a particularly well-equipped network. The number and size (particularly in the remoter areas) often surprised them.

7.1. Assistance from WHO

A remarkable movement of solidarity sprang up to cope with the disruption of the Congo's health services. It gave rise to WHO's "Operation Congo" and to the provision of health workers by the Red Cross Societies of various countries.

7.1.1. Emergency aid from WHO

The Secretary-General of the United Nations asked WHO on July 20, 1960, to "take, together with the International Red Cross, all necessary measures to undertake emergency action immediately so as to guarantee minimal public health services" (WHO, Proceedings, 106). Following this appeal, a representative of the WHO Director-General was sent immediately to the country; and an agreement was signed by the UN, the Red Cross, and the Ministry of Health of the Congo, whereby WHO was made responsible for "coordinating, through the Ministry of Health, the activities of all international workers called upon to protect the health of the civilian population".

Despite the readiness of a great many national Red Cross societies to provide aid in the form of manpower, materials and medication, it soon became obvious that these worthy but uncoordinated efforts would provide only localized, temporary, and often rather ineffectual aid.

The improvisational approach meant that volunteers were inadequately prepared for their jobs, thus their effectiveness in the unfamiliar working conditions were far from satisfactory. Frequent disagreements with medical auxiliaries who were often more competent brought these generous efforts to a halt. Only the Swiss and Danish Red Cross teams continued working effectively.

a) It was felt that greater international responsibility should be taken for the health services. Consequently WHO was required to recruit field personnel for the United Nations Fund for the Congo, who would then be seconding the Congolese Government to help maintain the country's health services. One hundred and thirty-four people were to be recruited in October 1960 (WHO, Proceedings, 106); however it is hard to determine to what extent the objectives were achieved.

A remarkable and objective analysis by Dr. Btesh of WHO, who was commissioned by the Director-General to provide an assessment of the situation in October 1960, stressed that 761 doctors had been working in the country in 1959 within a substantial medical infrastructure. Despite this report it was fashionable to state that everything set up in the Congo by the colonial regime was inappropriate and should thus be radically altered.

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b) The most spectacular action, which aroused some controversy, was without question to have sent 144 assistants médicaux among the 150 or so employed in the field, to French universities so they could become doctors after a four-year accelerated training course. Others were sent to Switzerland and Belgium. A first group of 61 assistants set off in 1960, a further 55 followed in 1961, and a third batch went in 1962. This measure, at a time when the Congo was seriously short of doctors deprived the country of its best trained local medical professionals, the assistants médicaux.

The quality of the clinical training given to the medical assistants was confirmed by the success with which they completed their additional training. Of the 144 scholarship holders, 133 obtained the title of doctor of medicine (WHO, 1968).

The particularly good results achieved by these new doctors, both academically and later when practising, somewhat masked the difficulties the initiative had caused. In human terms, it did add to the esteem in which these professionals, whose training was recognized automatically, were held.

7.1.2. Aid by practising doctors

According to a report dated May 15, 1961, WHO had provided personnel for 88 positions, in addition to the 35 Red Cross doctors who had remained at their posts (WHO, 1960).

One year later, in May 1962, there were 129 doctors and nurses in the country and seven professors were teaching at Lovanium University. Meanwhile, however, WHO had undertaken to assign 200 personnel to the country's medical and paramedical services.

The system established had been shaken to its very foundations by the catastrophic reduction in the health budget. Moreover, some rather widespread criticism of the Belgian medical system led to the dismantling of an organization with which the health professionals and the people were familiar.

This situation illustrates both the merits of the World Health Organization, which had virtually to improvise such large-scale technical assistance for just a single country, and the limits of this action in relation to the needs of the population. WHO's successive reports stress that the country was still far short of the 450 doctors considered essential (WHO, Official Acts, No. 118); and one can well imagine the difficulties involved in coordinating the work of all these medical professionals, given their diverse backgrounds and qualifications.

Meanwhile the national authorities were trying as best they could to manage a heritage subjected to a barrage of contradictory advice from foreign emissaries.

The inevitable tensions developed between WHO and the Health Ministry, which became increasingly irritated at seeing its prerogatives limited; what is more, the Belgian doctors who had stayed in the country were used to dealing with local health problems and were trusted by the people.

7.1.3. Longer-term aid

Gradually WHO directed its efforts towards actions more in line with its vocation, such as support for the control of certain epidemics and particularly assistance in the training of Congolese personnel.

The decision to stop training assistants médicaux may be regretted because medical workers were needed to serve the population; but the psychological aspects of the medical assistant's poorly recognized status (see pp. 193 and 194 in the chapter Medical Education) and the will of the independent government which hold this decision when taken.

While the first Congolese doctors had not yet graduated from Lovanium University, the foreign doctors sent by the national sections of the Red Cross or recruited by WHO were not at all familiar with the health problems they encountered and the number of Belgian doctors and paramedics was lower than before independence. Medical staff thus had to be trained without delay.

WHO provided grants to train doctors at Lovanium and abroad, as well as grants to enable graduate nurses to specialize.

The Minister of Health of Zaire gave the duty of reorganizing medical education to a Belgian doctor (July 7, 1960). After he had reconstituted the necessary teaching staff for the medical and nursing schools, the Government requested a higher number of recruits, foreseeing that the best students would be able to specialize and thus to attain a higher grade (see pp. 197-198).

Applicants for the short vocational nursing course were recruited after completing successfully the first two years of the secondary cycle and passing an entrance examination. The intermediate level was equivalent to the higher technical level and underwent major changes concerning nursing per se. This level also included health technicians and pharmaceutical technicians (pharmacists' assistants).

The higher level of training was open to applicants who had completed six years of secondary schooling. Two graduate courses were proposed: hospital management training and medical graduation. The latter was suspended in 1966 due to unclear promotion possibilities that would have made these graduates second-class doctors (see p. 199).
7.2. The medical schools of the Congo (Zaire)

These are without a doubt the institutions that ensured the smoothest transition between the colonial period and the take-over, by the Zairean authorities, of the country's health policy.

7.2.1. Lovanium University's Medical School

Five students entered the first year of pre-medical study at Lovanium University in 1954. By 1959 their number had risen to 74; and by independence in 1960 the university had opened hospital wards containing a total of 400 beds.

This asset was kept in operation during the difficult days of July 1960 thanks to the energetic action of the university's rector, Monsignor Gillon, who kept the professors, laboratory staff, and students on the campus against all odds (Gillon, 1988).

The exams ended on July 23, the jury deliberated and then announced the results of a rather disturbed examination session. Most important, however, was the fact that the hospital wards continued to function and in October 1960 the university opened its new academic year as usual, with great ceremony, on the last Tuesday of the month, the normal scheduled date (Gillon, 1988). All the medical school's teaching staff was not only maintained, but reinforced: it consisted of 125 teachers and took on an international character, as it included Germans, Americans, Canadians, Frenchmen, Poles, Israelis, and other nationalities. Some were contracted by WHO.

As for the students, while the number of Europeans declined because of recent events, unrest in Angola and Nigeria channeled students from these countries into Zaire. They adapted quickly to the new conditions and after obtaining their degrees in medicine were able to return home.

Many patients attended the clinics. Also the clinical and practical training provided by the faculty was particularly advanced and attracted large numbers of Belgian last year students wishing to complete their clinical and practical training at Lovanium, or even young doctors wishing to specialize. The first two Zairean doctors graduated in 1961.

Although teaching and patient-care demanded a great deal of time, scientific research was not neglected.

In-depth studies of blood proteins and bone histology produced theses for teacher’s certification in higher education. Systematic studies of sickle cell anaemia, lactase deficiency, Kaposi’s disease, African child development, the aetiology of meningitis, bone involvement in smallpox, etc., were carried out. This research generated a wealth of publications.

The growth of the university withstood the trials of the post-independence problems; and the determination of the academic authorities to continue developing the university along African lines allowed it to be incorporated smoothly within the National University of Zaire (UNAZA), the creation of which was decided in 1971.

At the time Lovanium University had 3,500 students, of whom 907 were in the Medical Faculty.

7.2.2. Official University of the Congo and Ruanda-Urundi

This university was founded by a decree of October 26, 1955. It was based in Elisabethville (Lubumbashi) and could open schools, faculties, institutes, and interdisciplinary centres wherever it felt they were necessary.

The university was inaugurated officially on November 11, 1956, in the presence of the Minister of Colonies, A. Buisseret. Two faculties were opened at the time: one for Philosophy and Letters and the other for Sciences and Applied Sciences, which encompassed various branches from geography and agronomy, to medicine.

The lecture halls and laboratories were lent by IRSAC and the provincial medical laboratory and the students were housed in the former Athénée Royal.

Enrolments stood at 111 (including eight African students) for the 1956-1957 academic year and 141 (including 17 African students) for the 1957-1958 period.

The Astrid Agricultural Institute was opened in Rwanda in October 1958 (see also pp. 203 to 205).

The Ruashi Medico-Surgical Centre was inaugurated on June 1, 1960, but various medical departments were still housed in the town’s hospitals, notably the hospital of the mining company Union Minière du Haut-Katanga.


The university held university conferences and produced a series of scientific publications called the Publications scientifiques de l'Université Officielle.

A five-week trip to Western Europe was organized for 17 students.

Belgian sixth-year medical students came to complete their training in Africa because contact with the teachers was closer and participation in the activities of the various services was more extensive.

Also the number of students and assistants was lower whereas the number of patients was high, students could thus see a very broad range of both cosmopolitan and tropical diseases.

Ordinance law of September 9, 1966 (see p. 205) promulgated the status and organic regulations of the Official University of the Congo in Lubumbashi.
When the country's universities were reorganized into the single National University of Zaire (UNAZA), Lubumbashi's medical school was merged with the faculty of Kinshasa (1971; see p. 210).

7.3. FOMETRO's assistance and the Belgian overseas development agency (AGCD)

Despite the severing of diplomatic relations between Belgium and the Republic of the Congo on July 13, 1960, a certain number of Belgian doctors and medics remained at their posts.

To help them an unofficial task force led by Prince S. d'Areberg, M.D., undertook a broad investigation of the country's needs. This survey started in July 1960 and took several months. On his return to Belgium, the prince brought with him a number of urgent requests from several Congolese officials, notably the Health Minister, who aimed at obtaining the return of the Belgian doctors and the Belgian financial aid that would enable the country's health services to continue functioning.

Belgium's Minister of African Affairs agreed to the idea of entrusting the centralization of all Belgian medical efforts to a private organization. All the country's medical faculties and the Institute of Tropical Medicine in Antwerp backed this initiative and founded a non-profit organization called Fonds Médical Tropical (Tropical Medical Fund) or FOMETRO. Under the patronage of the minister of African Affairs, the representatives of these institutions signed the Fund's constituent document on April 17, 1961.

FOMETRO introduced itself to the Congolese Government as a technical medical organization responsible for coordinating and supporting the action of the Belgian doctors, organizing the doctors' collaboration with the ministry's health programmes, and liaising with the other aid donors especially WHO. In Belgium FOMETRO was the driving force behind the continuation and resumption of medical activities. It was designated as the body to implement medical cooperation programmes and in a very short time it succeeded in reversing the tide of disaffection that had developed in Belgium regarding medical action in the Congo.

In 1962 the relations established with the Zairean Health Ministry culminated in the drawing up of a Health Programme for the Republic of the Congo to be implemented by Belgium.

The presence and work of Belgian doctors and health technicians in Zaire thus fitted into a contractual framework in which FOMETRO provided logistic and medical support (see p. 145). The medical staff was managed by the Office of Cooperation for Development (OCD) created in October 1962, which became the General Administration of Cooperation.

7.4. The Administration Générale de la Coopération au Développement or AGCD

Belgium's overseas development agency was erected in 1968. Meanwhile, in 1961 the Belgian Institute for Scientific Research Overseas (IBERSOM) had recovered 275 scientists, to maintain a Belgian expertise. This initiative was shut down in 1962 (see p. 208).

7.5. The work of the religious missions

That the disruptions of independence did not leave the rural areas more to their own devices is due to the work of the Catholic and Protestant missions. Many had dispensaries of various sizes, some had maternity clinics, and there was even one hospital that continued to function.

The participation of many doctors and nurses not only kept the rural hospitals and dispensaries running as facilities complementary to the state health care network, but also enabled them to respond effectively and appropriately to the health needs of the people.

In several places missionaries paid with their lives for the services they rendered to the people. If the unrest caused some of them to retreat, it was only so that they might return soon afterwards.

Relying on all their ingenuity, missionary doctors, nursing sisters, and other nursing aides in the orders, managed to maintain a minimum level of health care for the people of the region.

7.6. Medicus Mundi

In 1960 two specialists in tropical medicine founded Medicus Mundi in Belgium and the Netherlands simultaneously. The goal of this association was to guide and support the health professionals sent to a medical establishment set up by a Catholic mission. The medical services it provided went beyond the treatment of diseases to cover all the health needs of the population living in its area. Medicus Mundi was one of the first organizations to implement a public health policy. From its very inception it was able to count on the cooperation of other European countries (Germany, France, etc.), eventually becoming Medicus Mundi International and broadening its scope to include health activities outside the confines of religious missions.

8. Health services in the Congo and Belgian cooperation after independence

8.1. The first decade

A poorly prepared independence inevitably gave premature birth to precarious service.
The first ten years following the wave of African independence coincided more or less with the first Development Decade of the United Nations Organization. Policies during this period drew inspiration from the success of the Marshall Plan (European Recovery Programme, 1947) to rebuild postwar Europe; it included controlling production, growth rates, the GNP, and individual income levels. This purely economic approach, inspired by Western countries where situations were totally different, was doomed to failure. It led, in the words of U. Thant, to a "decade of frustration".

This failure at least had the merit of making decision-makers acknowledge that a health policy covers many more aspects of life and society than mere disease control, that it encompasses sociology, agriculture, economics and politics, and the complex interactions between all of these. Economics also has a place in public health but without being an exclusive or dominant factor; and this fact had escaped the experts responsible for the first decade of development.

The young countries' leaders at the time, just like the development advisers, clung to the false hope that economic development alone would guarantee mankind's overall development and happiness. This delusion led those responsible for Belgian technical assistance to neglect the importance of health in their priorities and planning. This remained a handicap to the implementation of effective assistance for health advancement in Tropical Africa.

8.1.1. Belgian medical overseas development workers

In the first decade after independence, a small group of Belgian development workers were already working with a team of WHO advisers who, delivered of their earlier complexes, had updated their approach. Some practitioners maintained the attitude of misunderstood parents. Not everyone has the ability to break free from the past; but the work of these rear-guard of unofficial doctors still benefited their patients, even if the emotional factors motivating them were liable to cause serious friction between foreign development workers and local personnel. Fortunately public health remained the major concern of all these partners, and the continual demands placed on them by their activities caused a new sense of solidarity to emerge.

8.1.2. Programmes backed by the OCD/AGCD and FOMETRO

Various programmes received Belgian funding.

a) Study grants for medical education, aid for hospitals

FOMETRO offered doctors scholarships for specialization, especially in public health; and also provided grants for extensive training of the health technicians and nurses who were required to run the mobile sleeping-sickness control units. Priority was given to applicants entering the medical administration and to graduates in hospital management or public health.

FOMETRO also provided medical schools with manuals, teaching materials, microscopes, and other types of laboratory equipment.

At the express request of the health minister, a Belgian medical officer Dr. Triest, was for over seven years in charge of the country's medical education system.

FOMETRO also provided medicines and scientific documentation (medical journals and books) to doctors in the field, supplied health district officers with service vehicles.

This sustained and long-term support offered the first Zairean doctors a favourable environment in which to embark on their rural careers.

b) Sleeping-sickness control

Belgium supported specialized programmes such as the sleeping-sickness control.

Reports of the preliminary surveys carried out from 1964 onwards showed clearly that the originally observed simple local increase in a few residual trypanosomiasis foci was in fact a much larger phenomenon, possibly signifying the widespread resumption of endemic sleeping sickness (see the chapter Trypanosomiasis p. 1784). This resurgence became evident over the following decade, and most of the foci turned out to be the source of new flares-ups on an epidemic scale.

In 1964, Zaire's Health Minister and the Belgian Overseas Development Agency drew up a plan of action to resume the fight against sleeping sickness. It included the recruitment of former agents sanitaires who were still available; the provision of a fleet of vehicles and equipment for the mobile unit as well as miscellaneous equipment (mainly for laboratories), and specific drugs; and finally the re-engagement of Zairean auxiliaries, many of whom were undisputed experts in the control of sleeping sickness.

A presidential ordinance-law formalized the action begun by FOMETRO; and the Central Trypanosomiasis Bureau (Bureau Central de la Trypanosomiase, BCT) was created (1968).

Over the years the number of mobile units rose to a total of thirty odd specialized units covering the areas of endemic sleeping sickness. Almost two million people in these areas could be kept under surveillance; and 70% of them were examined regularly, in most cases twice a year (see p. 1789).

In 1972 the campaign entered the graduated containment phase based on the work of the mobile units.
This containment was limited because, if the units had successfully checked the intensity of the disease and wiped out practically all the foci, they failed to control the insidious spread of the infection to new areas, nor could they prevent the eruption, as sudden as unexpected, of new foci.

c) Tuberculosis control

The National League against Tuberculosis of Zaire continued to work uninterruptedly with a Belgian team. FOMETRO and the AGCD helped support the operation of the tuberculosis screening centre (Kabinda Centre in Kinshasa) and the sanatorium at Makala (see the chapter Tuberculosis p. 577).

This substantial aid made it possible to expand and improve the screening and surveillance network in order to cover all the health centres of Kinshasa city (three million inhabitants), and to concentrate on outpatient treatment.

Zairean doctors were able to take over this work without a break, and the lasting support of the overseas development agency could guarantee the availability of some of the means necessary to extend and improve the programme.

d) Community health education

The chapter on health education describes the work done in this area. Working from the Kangu Hospital and with the help of the medical staff who continued its work in Mayumbe after Zaire’s independence, the Health Promotion Research and Production Centre for health education materials and manuals increased their activities exponentially (see pp. 804 to 808). The Health Ministry made health education one of its main priorities, and inputs from the overseas development agency helped to increase the number of slides, posters, information brochures, manuals, etc. The work gained an international dimension thanks to the support of WHO, and today the materials produced at Kangu are available in many African countries.

8.1.3. Assistance provided by scientific, philanthropic, and missionary institutions

This assistance was maintained, and in the course of the second decade of independence it was considerably developed in the form of projects subcontracted to university or philanthropic institutions and of co-financed projects (see also pp. 147 and 149).

8.2. The second decade

While the first decade after independence was marked mainly by a series of individual efforts and the devotion of those reluctant to abandon the communities which were entrusted to them, the second decade (the seventies) was characterized by better-organized collaboration between the Zairean and foreign staff.

Slowly but surely the African leaders could take over backed up by a political will. Having had the opportunity of visiting other countries of tropical Africa, they began to compare and evaluate objectively the value of their own heritage. They took a certain pride in their country’s medical infrastructures and appreciated the advantages which the set-up offered.

Thus, the number of high-grade African health officials was increased. To it must be added the doctors who returned from training in Europe, or after the completion of specializations, and even teaching certification. The long-term planning of the educational system proved justified.

The magnitude and scope of the responsibilities shouldered by the medical corps forced decision-makers to think and to renovate. The analysis, organization, checking, evaluation, and choice of public health programmes is an intellectual exercise of prime importance, especially for young countries, if a methodology appropriate to current conditions is to be established (see the contribution of Health Economic p. 287).

8.2.1. The hazards and weaknesses of international and bilateral cooperation

The failure of the international development policy implemented in the first decade of African independence led to a detailed re-examination of the objectives. An example is the Pearson Report commissioned by the International Bank for Reconstruction and Development (IBRD), better known as the World Bank.

The section on health, limited to one-and-a-half pages and two small tables out of a total of 280 pages, boldly declared that malaria is no longer a problem. This triggered an official protest to the report’s author from the Conference of Directors of Institutes of Tropical Medicine and the intervention of Robert McNamara, World Bank president at the time, who gave public health a more appropriate place in the World Bank’s new development policy.

8.2.2. Reorienting the health services

Gradually the experience of local officers and overseas development workers in Africa gave rise to a new form of cooperation.

Expatriates working in the African health services strove for the inclusion of native health professionals in their ranks, and endeavoured to devise new strategies for providing the population with medical and
preventive care via such peripheral posts as could be rendered operational. These programmes were the basis for the national health plan described in the appendix (p. 159) and for primary health care projects (see p. 149).

The importance placed on the right to be different and respect for native values encouraged Africans to take over projects formerly dependent on foreign assistance. However, the projects remained strongly influenced by the Western model of public health care; but this was understandable at a time when galloping urbanization was leading to the emergence of a deprived suburban sub-proletariat, hopes placed in the Green Revolution had crumbled, and the oil crisis of the seventies was looming. In such circumstances the country’s new leaders would have needed extraordinary vision and foresight to think up a more Africanized system.

The three main areas considered were:
- improving the clinical sciences of diagnosis and treatment with essential drugs;
- the human behavioural sciences and the delicate problem of distinguishing between real and perceived needs;
- the emphasis given to prevention, nutrition, and epidemiology.

This required a new balance between the horizontal infrastructure and vertical actions. Thus it was necessary to:
- practice effective medicine in the primary health care services and peripheral hospitals;
- understand the health problems of a given community in order to gain its participation in a comprehensive, multidisciplinary approach;
- contribute to teamwork by training native medical staff and auxiliaries and encouraging them to assume their responsibilities.

8.2.3. Belgium’s medical cooperation projects with Zaire

The medical cooperation projects of AGCD were of various types:
1) Those in which the manpower, equipment, and operating costs were borne completely by the AGCD itself;
2) Those financed via FOMETRO;
3) Projects contracted by Belgian university or philanthropic institutions carrying out public health work in Africa;
4) Those proposed by private charities known as non-governmental organizations (NGOs). In such cases 25% of the funding was covered by donations from the Belgian population and 75% from AGCD co-financing, provided that the NGOs’ activities were approved as meeting the beneficiaries’ needs and were complying with the official development policy stipulated. These institutions, which are many and varied, run a large number of development projects throughout the country.

a) Projects financed entirely by the Belgian Overseas Development Agency (AGCD).

By a special agreement concluded between the governments of Zaire and Belgium in 1972, the Belgian Overseas Development Agency (AGCD, see p. 144) was put in charge of:
1) Running the Ngaliema Clinic in Kinshasa, including the administrative management of the clinic, its specialized medical and nursing departments and support given to Mama Yemo Hospital at Kinshasa in the form of specialists, health technicians, and an annual financial package.
2) Assistance to the Central Depot for Medical equipment and Pharmaceutical products (Dépôt Central Médical Pharmaceutique, DCMP) and the Pharmaceutical Laboratory at Kinshasa (LAPHAKI). The AGCD helped the DCMP to ensure the supply of state hospitals with drugs and medical equipment. In 1977 an agreement was signed between the two countries to establish a semi-industrial plant to manufacture, package, and analyse essential drugs in line with WHO recommendations. This unit was able to offset the purchase of overseas supplies, and could save considerable amounts of foreign currencies through bulk imports. The Zairean Government provided the buildings, while the AGCD provided the technology and the services of two pharmacists, an economist, and a maintenance engineer.
3) Support for the primary health care programme in 62 health districts (see below pp. 149 to 156).

b) Projects provided by FOMETRO:
- 25 mobile sleeping sickness control units headed by Zairean health technicians, with medical supplies and logistical support; these units were supervised by five Belgian technicians. Between 1972 and 1977, 26,000 new cases of sleeping sickness were detected, but the results of the campaign were reflected by a lowered new case index (NCI) from 0.84 to 0.17%, meaning that the action of the mobile units had reduced the disease’s transmission by two-thirds. Unfortunately, 1977 and 1978 were marked by the emergence of new foci in previously unaffected areas or areas from which the disease had been eradicated, such as Bas-Zaïre, the banks of the Kwa-Kasai River, and along the Kongolo-Kindu railroad line. Over this period from 5,000 to 6,000
patients were diagnosed annually, while the new case index remained constant around 0.40% (see the chapter Trypanosomiasis p. 1789). After 20 years of operation the project had consolidated its international reputation. Some may find the time required to control the disease excessive or may doubt the present registered results; but in 1963 planners estimated it would take at least 20 years to control the epidemic, but even this has proved too optimistic. 
- Drugs and means of transportation for some thirty health districts; FOMETRO also provided support for community medicine and for efforts to control tuberculosis.
- Help to promote research and circulation of audiovisual materials, brochures, and technical information on community health education.

c) Contracts with scientific institutions

The projects carried out by these institutions were financed by AGCD via contracts concluded with them.

1) Prince Leopold Institute of Tropical Medicine (ITM)

This institute has been the training centre for all the Belgian and foreign medical and paramedical staff who worked in the Congo before the country's independence. It continued to train doctors and nurses, including foreign missionaries and Zairians who came to Antwerp to complete their instruction and to work in its laboratories.

The institute developed its research and teaching activities and the initiation of projects on many tropical health topics, particularly in Central Africa.

An agreement, concluded with Kinshasa's medical school in 1970, entrusted the Institute of Tropical Medicine with the function of a parasitology laboratory set up on the university campus, in which research on trypanosomiasis, filarial diseases, and schistosomiasis was conducted.

The Kasongo Hospital in Maniema, taken over by the Institute of Tropical Medicine in 1958, became a base for operational research into the distribution of curative and preventive care to rural populations and worked for the application of primary health care (see 8.2.4.b). The ITM also managed the Kindu Hospital and its health district in Maniema.

2) FOMULAC (Medical Foundation of the Catholic University of Louvain in Central Africa)

Various programmes are ongoing:

Contributions to primary health care (PHC) in the Kisenso Health District in Lower Zaire (see p. 150) and at Katana (Kivu), where the 680-bed hospital with its technical resources and specialists is a reference point for a district of 200,000 inhabitants.

At Katana, FOMULAC offered professional-level training for nurses and organized monthly refresher courses for nurses in the health centres and hospital. Doctors doing specializations could complete part of their training at the hospital, where general practitioners aiming to run rural health districts and final-year students at Zairean or foreign medical schools could also do post-graduate studies in public health.

The research programmes included study of the spread of malaria and *P. falciparum's* resistance to chloroquine; research into appropriate treatment; the treatment and prevention of cholera, and bacillary dysentery with multiple resistance, and the teaching of oral rehydration to the population; epidemiological surveillance of the target diseases of the Expanded Programme on Vaccination; and the epidemiology of cancer and Kaposi's sarcoma.

3) Scientific and Medical Centre of Brussels Free University (CEMUBAC) in Central Africa

After independence CEMUBAC concentrated on nutrition and continued the associated research and activities which were started by the nutrition section of the Institute for Scientific Research in Central Africa (IRSAC) at Lwiro (Kivu). In-depth clinical and biochemical studies of the various forms of malnutrition (kwashiorkor, marasmus, vitamin A and other vitamin deficiencies) common in the area revealed various electrolyte imbalances and elucidated aspects of anaemia as well as the relationships between anaemia and infectious diseases and parasites (see p. 382).

Population growth trends and the area's economic and ecological conditions (lack of arable land, industrial plantations, pastures, soil erosion, etc.) were studied thoroughly by CEMUBAC (see p. 388), which also set up a paediatric and nutritional rehabilitation hospital unit at Lwiro, carried out vaccination campaigns, and held family planning clinics.

In 1970 CEMUBAC was invited to open up again the hospitals of Mamvu, on Idjwi Island, of Kirotshe, Masisi, and Ruishuru. It repaired the buildings and provided them with doctors. CEMUBAC enabled a certain number of Zairean doctors to specialize, mainly but not exclusively in paediatrics and nutrition, through a scheme that alternated instruction at Brussels Free University with supervised work in Zaire.

CEMUBAC researchers participated in the 1958-1959 inter-university field study of endemic goitre and cretinism in Uele and on Idjwi Island, Lake Kivu (see p. 449), where the phenomenon was studied from 1963.
onwards. These studies established the connections between the presence of goitre, iodine deficiency, and the consumption of cassava; the latter containing thiocyanate which is an inhibitor of the thyroid function. Subcutaneous injections of slow-release iodized oil proved a practical method for treating and preventing both goitre and cretinism in children born of women with goitre.

CEMUBAC, in charge of the goitre and cretinism control campaign in the Ubangi subregion, planned to integrate in this area this campaign of iodized oil injections into the scheme of care administered by the health centres.

d) The role of the religious mission in medical care and cofinancing by AGCD

The missions greatly influenced medical care in Central Africa. The Christian Medical Commission of the Ecumenical Council of Churches and the Bureau of Medical Charities (BOM, see p. 154), played important roles in coordinating the missions’ activities with the government health plan, and in adapting to a new situation by continuing to provide care in the mission hospitals and dispensaries that had remained operational in the rural areas.

It came as a surprise (and was a great test of character and devotion) for many very generous members of the religious orders, when they had to accept that objective analysis of their care and efforts showed they did not always reach the neediest villagers.

The community approach and community involvement ran counter to a tradition of individual care that had given great moral satisfaction. To include the missions’ activities in the Government’s policy became in many circumstances a model for national planners and a precursor of WHO’s primary health care programmes. On the other hand, the new concept of development required a comprehensive approach meeting the needs of the individual as a whole; and the limited resources available for medical work were integrated in a community-based plan involving communal participation.

The PHC and development projects run by missionary institutions generally proved to be highly effective and the least expensive by the co-financing of AGCD.

e) Philanthropic institutions and non-profit organizations as cofinanced by AGCD

Many of these bodies continued to play major roles and aligned themselves with Government policy.

For example, the non-profit organization Les amis du Père Damien (APD) and the Damien Foundation were able to reach an agreement with the Government of the Republic of Zaire whereby the APD placed volunteer doctors at the disposal of the National Leprosy Bureau (see the chapter Leprosy, p. 1414).

The APD had some interesting features. It belonged to a global leprosy control coordinating body, International Leprosy Control (ILEP); and it planned its activities (which included tuberculosis control and primary health care programmes) strictly in agreement with the national government, renouncing diverse individual projects.

Many projects were submitted to the AGCD by various organizations in the hope of obtaining 75% cofinancing. The 25% to be borne by the applicant came from the donations of private individuals in Europe. As a consequence numerous small projects were prepared and submitted, scaled to the donors’ abilities and the beneficiaries’ needs. Such schemes often proved very effective and less costly than those financed by bilateral or international development agencies. They are sometimes difficult to integrate into more comprehensive regional development plans.

8.2.4. Primary health care projects

These were launched in various parts of Zaire. Each was an attempt to adapt to the local situation using whatever infrastructure was still functional and requiring active community participation.

The projects were the brainchild of the expatriate development workers, the Zairean staff and the native population. They also contained the fruit of experience gained since World War I by such pioneers and by organizations such as FOREAMI.

The problems of financing health care influenced the choice of a health system. Given the heavy financial burdens borne by the young state, a policy of free health care as applied during the colonial period and as enshrined in the fundamental laws of most African countries was not feasible. Consequently, a new orientation emerged: that the Welfare State would no longer be the only one to bear the cost of health care. Instead the population would, through local health committees, be able to decide how its contributions to health care should be spent and how the local health centre should be run or even organized. Moreover, the message of preventive action and environmental hygiene was grasped much more easily by those who took responsibility for their own health problems.

As a result, medical coverage of the population was no longer dictated by the authorities alone, but was backed up by the active involvement of the people themselves. This made the medical services far more effective.

However, as well as this new approach to health care, integrated programme of development, to
improve means of communications, agricultural production, trade, and the country’s administrative organization, was also essential. Aid in the form of vehicles, medical equipment, and pharmaceuticals was supplied to 62 primary health care zones.

Many of the broader initiatives taken in Zaire, such as Dr. Fountain’s work at Vanga (Kwilu), deserve to be mentioned. We shall cite only three examples of this new orientation in medical care, the Kisantu and the Kasongo health area, the programme led by the Bureau of the Medical Charities (see p. 154) and by the Bwamanda Integrated Development Centre (p. 155).

a) Kisantu (Bas-Zaïre)

The director of the Kisantu Hospital managed to set up a cooperation project involving the Government of Zaire, Belgium, Lovanium University, and the local religious authorities. It was limited to the hospital and was known as the Kisantu Medical Centre (CEMKI) Dr. Jancloes, assigned by the AGCD to FOMULAC’s operations in Kisantu, understood that his responsibilities could not be confined to hospital practice. Consequently, on his own initiative, he set out with a group of Zaïrean health workers to analyze the health problems and organize field activities for the population in their villages (Jancloes, 1977; 1978).

1° The infrastructure in 1969

Although the medical assistants had left the services, including the mobile units for screening for endemic diseases to get additional training abroad (see above p. 142), a basic infrastructure still functioned. It consisted of:

- a base hospital with five doctors, specialized departments appreciated by the population, and skilled Zaïrean staff;
- nine rural maternity clinics with a dispensary run by religious missions and financed partly by the population and partly from outside sources (the staff was paid regularly by the Government);
- and seven rural dispensaries that were staffed by State employees who were more or less qualified but no longer received drugs nor doctors’ visits.

2° Analysis of local possibilities

Surveys conducted among the villagers by investigators, trained in repeated interview techniques, together with study of the various registers and activities revealed the following:

- Medical coverage depended on population density and the proximity of a pole of socio-economic development on the one hand, and the distance villagers had to cover to reach the dispensary and the seriousness of the illness on the other. The percentage of the population using the dispensary fell sharply when it was beyond a four km radius, the seriousness of their disorders increased when the distance exceeded eight km, and mild cases either did not turn up for treatment or got worse if they did not recover on their own.

- Studies of the frequency of recourse to medical care, whether from modern practitioners or from traditional healers, indicated the rate of priority given to various disorders. Bearing in mind the importance of a quick remedy, in other words one which gave a rapid and visible result without too much expense, intestinal parasites and malaria all came top of the list.

Possible errors due to the choice of criteria, sample size and selection, the time at which the interviewer passed (this was impossible to standardize), or even errors in the manipulation of the data are discussed by the author (Jancloes, 1977). One must also allow for the mistakes inherent in all innovation, and for the impossibility of applying a standard model to projects all of which had local particularities.

3° The phases of activity were:

- Gaining the trust of the people and the dispensary staff through regular drug supplies and periodic visits.
- Instruction by the paramedical staff in the use of a simplified range of drugs with unified dosage regimens and standardized diagnostic and treatment charts. After that the nurse from each dispensary, instead of waiting as usual for the patients to arrive, would go out to the people in the villages. This made better use of his or her potential, and benefiting from various gifts or gratuities, his or her status improved and volunteers were attracted to the dispensary.

- The efficacy of health education dispensed by a group of community workers, an agricultural technician, a social worker, a teacher, a nurse who also worked as a microscopist, two female educators, a housewife as model, and a mason was put to the test in the schools, hospital wards, neighbourhood bars, etc. In the villages the main community worker spent several days making contact with the local authorities and identifying, through lengthy palavers, problems of concern to the villagers and the acceptability of proposed solutions (latrines, compost pits, clearing brushwood, building paths to or around the water source, etc.). A month later the community worker visited each village and gave out the advice that was needed. He would then return several times, for Bantu wisdom requires time, thought, and palaver.

The population affirmed that this education made public a medical knowledge that had been previously kept secret.

- Once trust had been established, the collective effort required of the population focused on a specific problem chosen by the community. Worming was
preferred because of its impressive visible results (the expelled worms) and because it introduced the villagers to the notion of epidemiological causes. Another important activity was to improve the water supply by connecting the source to a pipe leading to a gravel and sand filtration bed, both of them easy to maintain.

In six months 125 villages had been reached, 93 of them had started the programme and four had completed it. Villages that achieved their chosen objectives were given a token of success, visible to all passers-by, in the form of a white flag, following the example of the Vanga initiative in Kwiliu (Fountain, 1972).

- The last stage was that of structuring the community’s participation by setting up community health committees. These assumed responsibility for health care with the aid of the nurse, the community workers, and the supervisory staff. This phase showed how, if the site of a dispensary was chosen on the basis of epidemiological and operational considerations without consulting the population or using the peripheral staff’s full potential, a hospital’s out-patient services could be overloaded with minor disorders while the dispensary was scarcely used. The same phenomenon has been observed in other countries.

One result of community involvement was the building of seven new dispensaries and the provision of their running costs. They covered far more patients and were more effective than the earlier dispensaries, as well as being more viable financially.

A really good community worker or a devoted nurse, whose guidance the community accepts, is a vital factor in the success of such activities.

b) Kasongo (Maniema)

1º History

The biomedical research activities which were launched in Kasongo by the Institute of Tropical Medicine (ITM) of Antwerp in 1958, had to be abandoned in 1960 due to the political instability in the country. In the Maniema region, the political turmoil lasted until the end of the sixties. During these difficult years the local nursing staff ran the hospital to the best of their abilities. At the end of 1966, an ITM hospital administrator started restoring the most elementary equipment and resources of the hospital. Only in 1968 was it again possible to appoint two medical doctors, in order to upgrade the clinical activities and the laboratory to acceptable standards. When the resumption of the research activities was reconsidered it was felt necessary to define the framework within which they would be carried out.

In 1971, the Institute’s Public Health Unit was given the responsibility for the management of the health service in Kasongo. The new content of the research was to study the possibility of organizing in Kasango a sustainable, technically adequate and socially and financially accessible health care delivery system.

The research was intended to supply a body of information which would be of value to Zaire, enabling it to define a policy and plan for the promotion of health at the national level. The Institute for its part would be able to enrich its teaching by the experience gained in Kasongo (The Kasongo project team, 1982).

When in February 1971 the project started, the Institute’s responsibility was limited to the hospital and the catchment area of its out-patient department. The reorganization started with the rationalization of the functions of the hospital and the working out of a health centre model by implementing it for and with the population of a limited area of Kasongo township.

In 1962 the Zairean government trusted the ITM with the management of all public health services in the district (rural dispensaries as well as the hospital), with the exception of the trypanosomiasis control programme which remained in the hands of a central agency. In that period, the human resources available were: five doctors, one fully qualified nurse, one hospital administrator, 49 auxiliary nurses or midwives, 17 clerks and maintenance personnel. The total population of the administrative district of Kasongo (an area of about 15,000 sq. km) was estimated to be about 180,000 of which nearly 30,000 lived in the Kasongo township.

2º The intended model of health care system

The two researchers in charge of the Public Health Unit of the ITM designed a system based on four principles of organization:

1. The health service offers a complete range of health care activities (curative, preventive and promotive), supplying the population with integrated, continuous and holistic health care.

Hence, the most simple structure of health service required for this type of care was implemented:
- a network of urban and rural health centres, responsible for the provision of first level curative and preventive care to a registered population and for the creation of channels for dialogue and interaction with that same community.
- a general hospital as a referral level.

2. The results of the service, the way in which they are achieved and the resources used are subject to continuous evaluation. The aim is to reach a gradual
improvement of the relevancy, effectiveness and efficiency of the service provided. Hence, an adequate information system, ranging from monitoring to health systems research was implemented.

3. The functioning of the system should enhance the ability and responsibility of both the population and the local staff.

Teamwork and the supervision of tasks delegated to the auxiliary Personnel were therefore organized as a continuous training process.

Continuous communication and co-operation between the population and the health service was organized on the side, in order to enrich the population’s health culture and to increase their ability and responsibility to look after their health problems. On the other hand, the aim was to secure the involvement of the population concerned by encouraging people to express their own perception of needs, and to adapt their demand for health care to what is rational given the resources available or which can be made available.

4. The planning of the health service activities begins with the needs felt and expressed by the population: which were care for acute and chronic illnesses and the protection of high risk groups such as pregnant women and children. New demands would only be taken into consideration when those existing are met in a satisfactory way and when it is clear that the services are sustainable.

3° Development of the system

A harmonious functioning of the system at different stages of its development implies that each of its components reaches a certain level of development. For the sake of a harmonious growth of the project, five axes were developed simultaneously and adjusted to each other continuously.

1. The first axis, which was given the fastest growth, was an adequately functioning local steering committee, composed of all medical doctors (five on average), the senior nursing officer and the administrator. They all shared responsibilities in the delivery of care, management of the system, training of personnel and research.

An intensive supervision (twice a year during one month) by the senior staff of the public health unit was necessary in order to strengthen the capacity of the steering committee without losing sight of the basic principles of organization. At the same time, these supervisions were an opportunity for the senior staff to develop, in close collaboration with the steering committee, methodologies of planning, management and research on health care systems.

2. A second axis was the development of the available human resources. A first step was the standardization of tasks (for curative, preventive and administrative tasks). These tasks were delegated to the existing nursing staff. For the hospital personnel, the tasks were learned on the spot under supervision.

The responsibilities of the male nurse-aid in the health centres and the work he had to carry out were so new and at the same time so important for the model to be achieved, that only the most skilled and motivated nurse-aids were selected for the first health centres. They were assigned to a health centre after a three months practical training. Their performance made this job very attractive to the other nurse-aids.

The other members of the health centre team (clerk and medical-social worker) were locally recruited and trained. Monthly scheduled supervisions by one of the doctors, teamwork and weekly team meetings were used as methods for continuous training in order to develop the technical as well as the communication skills of the health centre team. Either types of skill were indeed considered essential in the process of dialogue with the population. Hence, they were crucial if people’s ability to look after their health problems was to be strengthened. In 1978, a school offering a four year training for nurses was opened.

3. The third axis was the rationalization of the existing facilities (mainly the hospital). The hospital was organized as a reference centre. At the out-patient department, every day during a few hours, one of the doctors attended only to referred patients. The first contact took always place at the health centre. For those people who were not yet covered by a health centre, they were referred to a dispensary located on the hospital compound which was run by an auxiliary nurse. It disappeared when the health centre network was completed. The casualty department was then only dealing with real emergencies. Criteria for hospital admission were made very specific, but referred patients were not charged for an admission, nor for the drugs, nor for the care provided in the in-patients department. The quality of diagnosis and treatment was monitored and feasible measures for improvement were discussed at weekly meetings of the medical staff.

4. The extension of the coverage was the fourth axis. Only a limited number of nurse-aids with an acceptable level of training (auxiliary nurse-aids) were available. Provided that at the hospital level the nursing staff would be limited to the minimum necessary for its normal functioning, it was clear that per ten thousand inhabitants, only one nurse-aid could be assigned to each health centre. Chronologically the priority was the creation of a new health centre model. It was
decided to locate the first one in the Kasongo township because the first implementation of that model had to be followed-up very closely and readjusted continuously by the steering committee. Three areas, each of them of approximately 10,000 inhabitants were defined. People who lived in the urban area most remote from the hospital were the most motivated to collaborate. When their participation in the building of the facility (a 10 by 15 m building) had sufficiently progressed, the future nurse-aid visited every household, explained the activities and the organization of the health centre, and notified the names of all household members on a family file. The types of activities organized from the beginning of the project were: general out-patient curative care, treatment and follow-up of some chronic diseases (tuberculosis and leprosy), preventive clinics for pregnant women and young children. The staff consisted of the nurse (in charge of the team), a clerk, a medico-social auxiliary and a sweeper.

In order to build and strengthen different channels of communication, time was specifically allocated for home visits, for group discussions (animation) with preventive clinics’ users and for monthly meetings with a health committee representing the population covered by the health centre’s activities.

Supportive activities such as a few simple laboratory techniques relying upon the use of a microscope and an information system for case-management and for service management were developed from the beginning.

A complementary community financing, covering all the salaries except the one of the nurse-aid in charge, and covering in addition most of the health centre’s other operating costs, had to be achieved by the population. A lump sum payment per sickness and per preventive episode was chosen because it enhances the continuity of the care.

The first new model health centre opened in February 1972. When it reached a satisfactory level of functioning, the launching of a new centre was considered. The process of establishing a health centre relied upon four stages: firstly, the building in local materials by the community of a fully equipped health centre; secondly, the training of the staff to be assigned to that health centre; thirdly, a census of the population; and finally, the opening of the health centre under close supervision during the first few months. Later on, monthly supervisions took place. In order to facilitate the rationalisation process at the hospital level it was decided to cover first the urban and suburban area. Two new urban health centres were opened respectively in October 1973 and March 1974. This was followed by the progressive coverage of the rural area according to the planning laid out in the master plan. The criteria for the identification of chronological priorities were accessibility for supervision, willingness of the population to cooperate, favourable prospects of development of other sectors, and density and stability of the population.

In 1975 and 1976 the first six rural health centres were opened. Later on the pace went down to two and one per year. Finally 16 rural health centres were established out of which two could not be sustained. About 90% of all the district inhabitants were finally registered at a health centre. Two thirds of them lived within a five km radius of the health facility.

5. The fifth axis was the development of new activities. It had the slowest growth. Indeed, this option presupposed a stable, if not a slowly growing, economy. From the second half of the seventies onwards, the economic situation gradually worsened and led to a decrease in the population’s purchasing power. If at that time, in some health centres minor extensions of the activities took place, they were limited either to an extension of the range of acute or chronic diseases dealt with at the clinics, either to an increase of the accessibility of existing activities for remote villages. The socio-economic regression during the second half of the eighties even imposed a reduction of the activities (Criel and Van Balen, 1993). In July 1990 the debacle was complete: payment of salaries of government workers in all the sectors was suspended. Once again, the health care system collapsed.

4° The local benefits of the model developed

The acceptability to the population of the system developed is illustrated by an acceptable utilization rate of the curative clinics in the health centres (0.5 to 0.7 new sickness episodes per inhabitant and per year in the urban, and 0.2 to 0.4 in the rural health centres); a 70% coverage rate for antenatal care; a 80% coverage for the under-five’s clinics, three out of four under-five’s having received their third DTP vaccine and their measles vaccine before their first birthday; a patient compliance of 70% amongst chronic patients; the regularity of the monthly scheduled health committee meetings (on average, two-thirds of the scheduled meetings took place); the willingness to pay the lump sum for curative or preventive episodes, which in 1988 was the equivalent of about 1.5 times the daily wage of an unqualified worker.

Negative reactions against the strict rationalization of the patient flow and of the care itself came mainly from better-offs in the community and from some of the nurse-aids. The acceptance by the nurse-aid of the
rationalization process and the inevitable loss of power linked to it had indeed to be compensated by a strong job satisfaction and by the trust of the population.

The effectiveness of the system was illustrated by a regular drug supply of essential drugs, by an increase of detection and adequate treatment of the most important diseases at an earlier stage and by the very strong reduction of measles and tetanus.

The efficiency was assessed by the decrease in useless or avoidable hospital admissions for the population covered by the health centre network compared to the population not covered by it; by a referral rate of 50 to 100 per 1000 new health centre attendees (around 30 per 1000 inhabitants per year) and by a hospital admission rate of 15 per 1000 inhabitants per year, out of which 70% required nursing skills and/or medical surgical techniques that could not possibly be made available on an ambulatory basis; an average length of stay of around 10 days (Van Lerberge and Pangu, 1988).

The running costs (excluding investments and capital costs) of the whole Kasongo district was, in the mid eighties, about 120 BF per inhabitant and per year. About one-third of the costs resulted from the functioning of the health centres, more than one-third from the functioning of the hospital and somewhat less than one-third from the logistic support and the functioning of the steering committee (Pangu, 1988).

5° The influence on national policy

The Kasongo project influenced the formulation and implementation of the Zairean health care policy through several channels.

At the national colloquium Health and Community in Zaire, organized in Kinshasa by the Bureau of the Medical Charities (BOM) with the support of the Ministry of Health, the Kasongo experience was presented and discussed. This also occurred at regional colloquia on the same topic (Bukavu 1976, Kananga 1977, Lubumbashi 1977). In 1983 the Zairean project leader was appointed technical advisor of the Minister of Health. From 1981 onwards, members of the Kasongo team were regularly asked to organise national training sessions for district medical officers in Kinshasa. In 1987, the Faculty of Medicine of Lubumbashi intended to use the Kasongo district for the practical training of its medical students. Because of the very poor communication infrastructure, the Lubumbashi Faculty preferred to send one of its staff members to Kasongo for practical training after receiving his Master in Public Health degree in Antwerp. The faculty then developed a similar system in the catchment area of Kapolowe hospital which became the training site for its medical undergraduates.

From 1975 onwards, several district medical officers, after a practical training in Kasongo, reoriented the health care system of their own districts relying upon the same principles of organization as in Kasongo. A very intensive collaboration for that purpose was developed with Kindu, Kongolo and to a lesser extent with Uvira and Kisantu.

6° International relevance

Medical officers from several African countries came to Kasongo, for practical training, with the purpose of learning how the reference model could be applied in their own setting.

The most significant contribution however took place, and still takes place, through the teaching activities at the ITM in Antwerp. The experience that the ITM staff gained in Kasongo, the lessons they have drawn from it and the research on the applicability of the model in other settings made it possible to organize a relevant and consistent training programme in health service planning, management and research.

c) The Bureau of the Medical Charities

This Bureau of the Medical Charities (Bureau des Études Médicales, BOM) was created in 1970 at the request of the Zairean Government and the episcopal conference of Zaire to centralize the conventions granted to the various religious orders and to ensure that their activities complied with Government regulations and policy, while defending the interests of the religious orders.

The BOM was able to solve the administrative difficulties of various religious orders whose medical staff did not meet the conditions set by the law on the Art of Healing in Zaire, although they did have valid qualifications. Thus the nun who directed the BOM organized, with Professor Ngwetc of UNAZA, courses in tropical medicine for nurses who had not studied it in a specialized institute recognized by the above-mentioned legislation. The BOM also drew up the agreements to be signed between the Zairean Government and various religious orders.

Subsequently the BOM addressed the problem of aligning the medical activities of Catholic missions with the Governmental health policy. A preventive community approach to medicine was planned with the coordinators of the Church of Christ in Zaire in 1974, and a national colloquium was organized to promote the adoption of common MCH and nutrition policies as well as the active participation of the population. This colloquium was held on October 18-26, 1975, with the approval of the Commissioner of State for Public Health.

The main themes covered were the organization of health care in rural areas, the advancement of the
auxiliary staff, integrated development, community participation, the standardization of treatment, health service management, and desired pregnancies (Medical Colloquium: Health and the Community in Zaïre, 1985).

Meanwhile a nun, who was also a medical officer in charge of an urban health centre, joined the office, and regional updating sessions were held in various provinces in 1976 and 1977. The BOM’s influence continued to spread, and a liaison bulletin was issued three times a year to inform the most isolated mission outposts of the experiments being conducted in Zaïre and other countries or to suggest more appropriate working methods than only individual care (see p. 149).

d) The Bwamanda Integrated Development Centre

The starting point of this project (in 1968) was the wish of the missionaries of Bwamanda Mission (Ubangi Subregion) to resume medical and agricultural action using Bwamanda Hospital and the surrounding rural dispensaries that had been left practically abandoned.

The project’s promoters were convinced that isolated medical action would have no impact on the excessively low socio-economic level of the population, who depended almost exclusively on the sale of cotton for cash income. Consequently, they opted for integrated community development in which health action was combined with initiatives to boost the agrarian economy and with cultural, educational, and social measures, all developed on the basis of community participation. Initially the project was limited to the villages surrounding Bwamanda Mission, or about 50,000 people. Twenty years later, due to popular demand, it covered a large part of Ubangi subregion and affected some 500,000 people.

1° Structure of the project

- A development committee was set up in each village. It consisted of members selected by the villagers, the village chief, a person responsible for agricultural activities, a village social organizer (animateur social), village health workers (animateurs sanitaires, who were the village equivalent of agents sanitaires), and sometimes the village sports organizer. Teachers and influential members of the village were at the committee’s disposal as advisers.
- Rural Integrated Development Centres (RIDCs) were established in the main villages. They consisted of delegates from five to ten of the smaller surrounding villages. These RIDCs consisted of a church or chapel, a school, a health centre, an open barn used as an all-purpose meeting hall, a storage shed for the agricultural produce, and a store. These were built by the people themselves and were staffed by paid managers supervised by a multi-disciplinary mobile team.

- The RIDCs could rely in turn on six main reference centres that offered selected chicks for poultry farming, warehousing and milling facilities for agricultural products (soya, maize, rice, and coffee), the services of a hospital or main health centre with programmes of nutrition and village hygiene, social services (rural improvement, cultural activities and athletics, a shop selling basic requirements, and technical services: garage, agricultural machines, buildings, roadwork). Each centre was run by a general coordinator and a team of technicians to help the villagers carry out the programmes they had chosen by common accord. A multi-disciplinary mobile team made the rounds of the villages to help find solutions to local problems.

- The administrative headquarters were set up at Bwamanda, where the organization was placed under the supervision and responsibility of the Board of Directors of the non-profit association set up under Zaïrean law.

2° The medical service

This comprised the hospitals of Bwamanda, Yakoma, Abumonbazi, Wapinda, and Gemena. Each of them had a reference centre for health care that in turn supervised several peripheral health centres, many of which had maternity clinics and nutrition centres.

For each village a person was appointed to oversee village sanitation and to advise the villagers on the subject.

The project created two schools for auxiliary nurses, one at Bwamanda and the other at Wapinda, to train intermediate-level nursing auxiliaries (A3 in the Belgian system). The schools were soon upgraded to professional level (A2).

A regional pharmacy at Bwamanda supplied basic drugs to 70 medical units in the network.

The social service concentrated on raising the people’s consciousness so that they would participate actively in the development work. It also strove to help the weakest members of the community, that is the illiterate, the elderly, and village outcasts.

3° Other services

The agricultural and livestock services gave the villagers the means to market their products.

A service for road maintenance and repair endeavoured to obtain the help needed to maintain the roads, this being an essential condition for reaching the villages and bringing the produce to market.

The drilling service for piped water supplied pumps, but was financed by the population.
Technical instruction was organized in the form of two training sectors for automobile mechanics (intermediate level) and one electricity sector (professional level).

The service for women’s activities concentrated on developing the women’s awareness and giving them training in agriculture, nutrition, health, and home economics.

A permanent dialogue between the project’s grassroots communities and its management bodies was organized.

9. Medical services in Ruanda-Urundi

These two nations were administered by Belgium under a United Nations mandate and were legally and administratively separate from the Congo. However, their health care systems were modeled on that of the Congo (see map 16).

Two particular characteristics should be highlighted, namely,

- the very high population density (approx. 135 inhabitants per square kilometre);
- their primarily rural nature.

The budget allocated to the medical services represented about 16% (for some years up to 20%) of the total ordinary State budget. To this should be added not only the contribution made by private companies or philanthropic organizations but also the input from local taxes.

The following tables give the number of medical establishments and personnel in Ruanda-Urundi in 1956:

<table>
<thead>
<tr>
<th>Medical personnel in Ruanda-Urundi (1956)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government &amp; seminarian institutions</td>
</tr>
<tr>
<td>Doctors</td>
</tr>
<tr>
<td>Pharmacists</td>
</tr>
<tr>
<td>Medical assistants</td>
</tr>
<tr>
<td>Dentists</td>
</tr>
<tr>
<td>Nursing &amp; birth attendants</td>
</tr>
<tr>
<td>Local nurses</td>
</tr>
<tr>
<td>Nursing aids</td>
</tr>
<tr>
<td>Aux. birth attendants</td>
</tr>
</tbody>
</table>

The medical services were as efficient as those in the Congo, but the greater density of population meant that they cost less. The per capita medical coverage was slightly lower, but the services were closer to each other. Thus, each medical post served almost 20,000 inhabitants, none of whom lived more than 11.5 km away.

The hygiene services and mobile units were organized along the same lines as those in Zaire. They made it possible to control the major endemic diseases and ensure decent sanitation. The Native Welfare Fund and REGIDESO (Régie de distribution d’eau et d’électricité) tapped springs and dug wells. The Native Welfare Fund also laid pipes to supply the population with drinking water (see p. 329).

10. New dimensions

Two rather different life-styles, the Western and the traditional system were in contact with each other for 80 years. Humanity is a single unit: it is inconceivable that neither the one nor the other should not have retained some useful aspects of this coexistence - as well as others of less value. Results will depend on the use ultimately made of these reciprocal assets; for one may give and receive and yet still remain unchanged. Our common past must be reviewed together, from a fresh angle. The thirty years that have elapsed since Zaire’s independence have changed the way of cooperation between Zairean decision-makers and Belgian expatriate doctors, and has placed them in a more normal relationship.

Whoever tries to discern what will be tomorrow must look first at yesterday and the day before. But if the past is reduced to a mere memory, it becomes no more than a dried-up root. We must view the march of time with new eyes, able to distinguish and draw conclusions of lasting value.
The day before yesterday is the colonial period, with its rich harvest of health and medical data and the valid and valuable lessons they offer. This period was characterized above all by an amazing human solidarity, despite various shortcomings and a sometimes ambiguous context.

The European doctor was plunged without proper preparation into a new world where disease and socio-cultural values were inextricably intertwined. He knew he held the only key able to unlock the door to better health in the tropics. His accustomed notions of normality were challenged and he was confronted by a range of epidemic diseases as rich as it was varied. Some, such as smallpox, were already known; while others, such as the sleeping sickness decimating the population, were totally new.

The doctors quickly realized that they could better preserve the country’s human heritage – an essential factor of all development – through community health rather than by individual medicine. Their most effective tool was the outreach of medical care, brought to the patient in their villages, with mobile units and back-up treatment at the peripheral posts which paved the way for the rural dispensaries. The effective aid of auxiliaries who had been trained on the job to perform standardized and repetitive tasks would be the starting point for various programmes, including health education and research.

A League for the protection of native children was created in 1912 to organize infant clinics and childcare courses. This initiative drew attention to the beneficial effects of care not just on child health, but also in terms of the confidence instilled in the children’s mothers. As a result, the mother and child protection services (see p. 749) formed the keystone of human relations.

The essential recruitment and transportation of strong young men for the major civil engineering works, the Force Publique, and the industrial companies remained a constant concern. Companies in Africa had to comply with regulations governing staff selection, transport conditions, diet, housing, and clothing well before similar labour laws affecting companies in Belgium were adopted.

In fact the basis of multi-disciplinary activity had been laid down before the First World War, and needed only minor adjustments to become a primary health care system for the entire population (see pp. 114 and 132). The current policy is thus not a new concept, but a different approach with regard to terminology and material details.

Yesterday is the transitional period between colonization and independence, which swept across so many African countries like a tidal wave originating in Bandjoun (1955). The euphoria of the early days of independence unfortunately gave way quite soon to serious frustration among large groups of the population. Part of the territory was plunged into a state of inadequate medical care due to the lack of suitable personnel to fill the vacancies. It is futile to conjecture whether the conflicts that plagued the period of transition could have been avoided had the Zaireans taken over the medical infrastructure more gradually. Besides, independence was a new experience for all the parties involved.

The past three decades – with all their difficulties – have enabled the various officials and leaders to extricate themselves from the climate of inconsistencies inevitable in a long transitional period full of pitfalls. The desire to succeed led to a comprehensive analysis of all aspects of health in an atmosphere of renewal adapted to the people’s aspirations. The return to authenticity, whose value has not yet been perceived correctly, was the real driving force and guide.

The contribution of Today to the health of the less privileged countries requires three factors:
- knowledge of the past as well as adaptation to the present accompanied by basic and applied scientific research;
- continual re-training and upgrading of personnel;
- support for their motivation and efficacy.

To meet health needs we must combine development efforts from different countries and disciplines. This should be done in concert with local decision-makers, using a scientific cost/benefit analysis that transcends any chauvinism, personal interests, or all too human pride at putting one’s name to an original publication.

Tomorrow, as yesterday, the medical, biological, socio-anthropological, agricultural, and economic sciences will improve the situation of the underprivileged, by getting things done, and by doing them well.

Belgian medical cooperation for less favoured regions possesses a potential of people with practical field experience; and this is more useful than books, plans, or theoretical systems analyses. The models proposed are often inapplicable, cannot be copied and are traps for those who expect such initiatives to better their situation.

Former development workers, armed with both knowledge and first-hand experience of overseas problems, have been appointed to key posts in the World Bank, WHO, and other international technical organizations; for the efficiency of these Belgian experts is recognized.

The new generation will continue the work started by its elders, to build a future founded on the past whose development has been described in this volume.

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