

Republished Article

An outline of the history of Medical Research Institutes in the Sudan

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Recorded medical research in the Sudan commenced with the foundation of the Wellcome Research Laboratories at the Gordon Memorial, College, Khartoum, in February 1903.

The objectives of these laboratories were as follows:

- a) To promote technical education.
- b) To promote the study, bacteriologically and physiologically, of tropical disorders especially the infective diseases of both man and beast peculiar to the Sudan, and to render assistance to the officers of health, and to the clinics of the civil and military hospitals.
- c) To aid experimental investigations in poisoning cases by the detection and experimental determination of toxic agents particularly the obscure potent substances employed by the natives.
- d) To carry out such chemical and bacteriological tests in connection with water, food stuffs, and health and sanitary matters as may be found desirable.
- e) To undertake the testing and assaying of agricultural, mineral and other substances of practical interest in the industrial development of the Sudan.

These laboratories were situated on the first floor in the east wing of the College and formed three separate laboratories: Bacteriological, Entomological and Chemical, under the Directorship of Sir Andrew Balfour - the first Director of the laboratories. All the equipment and apparatus of the laboratories were donated by Hendry Solomon Wellcome, an American pharmacist, who settled in England in 1880 and together with Burroughs founded the world famous firm of Burroughs and Wellcome. In later year the name of the Laboratories became Wellcome Tropical Research Laboratories.

The Laboratories were an autonomous body independent both from the Medical Department and the Department of Education and so Balfour was in sole charge - though nominally owing allegiance to the Director of Education Sir James Currie. The initial staff consisted of the Director, a laboratory assistant and two attendants. In 1904 a chemist joined the staff- Dr W. Beam, and in 1906 Mr. H.H. King was appointed entomologist.

In 1907 the work of the laboratories was augmented by the addition of a floating laboratory which was housed upon a special barge towed by a launch. This was of great value to research workers particularly to Dr. Wenyon the travelling pathologist and protozoologist

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who used it for research purposes in the villages scattered all along the banks of the Nile.

The names of the Directors of the Wellcome Tropical Research Laboratories during the period 1902 - 1934 were as follows:

1. Sir Andrew Balfour, M.D., B.Sc., F.R.C.P., D.P.H., 1902 - 1913.
2. Dr Albert Chalmers, M.D., F.R.C.S., D.P.H., 1913 - 1920.
3. Sir Robert Archibald, M.D., C.M.G., D.S.O., 1920 - 1934.

Dr Balfour conducted routine investigations and carried out research into most of the common diseases in the Sudan; but his activities were centered on the sanitation of Khartoum. In those days the fight against mosquito larvae was gaining ground after Sir Ronald Ross had demonstrated it at Ismailia in 1904. So Balfour initiated a campaign against mosquitoes in Khartoum by forming a mosquito brigade on the lines suggested by Ross. This arrangement was useful and fruitful.

Balfour and his associates did research work of wide nature on such heterogeneous subjects as soil chemistry, identification of various pests of man, animal and plant, mosquitoes, sand flies, ticks, poisonous local drugs, endemic diseases, scorpions, snakes etc.... They published four invaluable reports covering the period 1902 - 1911. The fourth report consisting of two volumes; A (medical) and B (general science). They also published two big volumes reviewing advances in tropical medicine.

Balfour resigned his post in 1913 and proceeded to England to establish the London School of Hygiene and Tropical Medicine. He was however, succeeded in Khartoum by Albert Chalmers, who gained his experience mainly from work done in the Gold Coast and Ceylon. For seven years Chalmers devoted himself to research and laboratory work.

During this period significant additions to knowledge on schistosomiasis were made. Leiper's discovery of

the snail intermediate hosts in Egypt in 1915 were confirmed by Chalmers in Khartoum; and in 1917-1919 Christopherson, the Director of Khartoum Civil Hospital made important contributions to tropical medicine by successfully treating schistosomiasis by intravenous tartar emetic. Together with Aldo Castellani, Dr Chalmers wrote a manual of tropical medicine which went through three editions. Chalmers made many contributions to medical science and his name is further perpetuated in Chalmer's medal of the Royal Society of Tropical Medicine and Hygiene, which is bestowed, from time to time, for outstanding contributions to tropical medicine. In 1920 Chalmers was succeeded by Sir Robert Archibald who did a great deal of research on schistosomiasis, leishmaniasis, cotton diseases etc. . . . For fifteen years Archibald was directing research and routine work in the Laboratories. Together with Dr Byam he edited *The Practice of Medicine in the Tropics* in three volumes. In 1925 The Laboratories were taken over by the Sudan Government under the Department of Education. Need was however felt for the reorganization and expansion of laboratory work in the Sudan. The materialization of the Gezira scheme and the Kitchener School of Medicine, however, have created a situation requiring readjustment of views. The former necessitated a considerable expansion of the chemical and entomological sections, while the latter required a reorganization of the bacteriological section so that it would be placed in a more favorable position and status for obtaining material for teaching pathology and chemical pathology to medical students. The Wellcome Laboratories were therefore split up into various sections.

In 1934 dismemberment of the Wellcome Tropical Research Laboratories took place; the bacteriological section being taken on by the Sudan Medical service, the Geology survey by the Public Works Department and the Chemical and Entomology sections by the Department of Agriculture and Forests as

the Agricultural Research Institute. The original chemical laboratories then formed two sections of the Agricultural Research Institute; the Soil Research section at Wad Medani and the Chemical Analyst section in Khartoum, the latter retained the name of Wellcome Chemical Laboratories and became part of the research section of the Sudan medical service.

Sir Robert Archibald the last Director of the Wellcome Tropic Research Laboratories retired from the Directorship in 1934 but continued to do Research work on leishmaniasis for a further period of two years.

THE STACK MEDICAL RESEARCH LABORATORIES

The Stack Medical Research Laboratories is one of the offshoots of the original Wellcome Laboratories. These laboratories were built in 1927/ 28 as a memorial to the late Sir Lee Stack to house the bacteriological unit of the Wellcome Laboratories and became an integral part of the Sudan Medical Service as from April 1st 1935 under Dr Eric S. Horgan as Assistant Director for Research. The research section of the Sudan Medical Service consisted of the Stack Laboratories, The Wellcome Chemical Laboratories and the Medical Entomology section at Wad Medani. These sister laboratories formed the three limbs of the medical research triangle and were administered separately by Dr E.S. Horgan, Dr A.J. Henry and Drs F.G.S. Whitfield and J.D. Lewis respectively. The Stack Medical Research Laboratories were thus destined to become a great tower for initiating and planning research on the public health problems of the country. The cost of building and equipping the laboratories was covered by a grant of twenty-four thousand Egyptian pounds from the Sir Lee Stack indemnity Fund Committee. A travelling railway

saloon for laboratory work in the outstations was also provided.

The activities of the Stack Laboratories were three-fold; teaching of medical students and other auxiliary staff, routine diagnostic work and vaccine preparation and thirdly research on endemic and epidemic diseases.

Research work done in the Stack Medical Research Laboratories was of a practical nature and was usually initiated to solve, a definite problem connected with endemic diseases. Ad hoc research was carried out as and when required to reveal the cause of an epidemic or to help in control measures.

Epidemiological surveys on various endemic diseases were planned: An entomological survey on malaria in the Gezira under Dr. Lewis and a serological survey for yellow fever started by Dr. Hewer in 1934 and continued by Kirk, Haseeb and others.

Kala-Azar, cerebrospinal meningitis, smallpox, enteric fever and other endemic diseases were all subjected to investigation and research.

The routine-activities consisted of routine diagnostic examination of specimens from patients in the hospitals and preparation of vaccines: smallpox, antirabic, cholera, T.A.B. and occasionally autogenous vaccines. The educational activities of the Stack included teaching of pathology, bacteriology, parasitology and forensic medicine to medical students of the Faculty of Medicine, Khartoum, the teaching of forensic medicine to the police cadets, the training of laboratory assistants and technicians and teaching of laboratory work to the students of the Khartoum Nursing College.

In 1949 Dr Horgan retired from his post and left for Uganda to become the Director of the Virus Reference Laboratories at Entebbe. In Khartoum he was succeeded by Professor Robert Kirk, who conducted research in most of the common diseases in the Sudan especially leishmaniasis, relapsing fever and yellow fever. In 1952 he left the laboratories to become

whole time Professor of Pathology in the Faculty of Medicine, Khartoum. In 1943 Kirk was awarded the Chalmers Medal of Tropical Medicine and Hygiene. In 1952 Kirk was succeeded by Professor Mansour Ali Haseeb to become the first Sudanese Director of the Stack Laboratories. Haseeb carried out research work on several endemic diseases. He and Horgan carried out many experiments on smallpox vaccine preparation until they developed a successful technique for the mass production of sufficient vaccine for the country. Together with Richard Taylor and Telford Work of the Rockefeller Foundation, Haseeb carried out serological surveys on yellow fever in 1954. Simultaneously with the beginning of Haseeb's leadership, some important developments took place in regard to the training of Sudanese laboratory workers, i.e. technicians and assistants. The year 1952 witnessed a unified policy for the training of laboratory assistants in the whole country: north and south. The laboratory assistants who used to receive their training in Juba hospital started to receive the same instructions as their northern colleagues in the Stack Laboratories at Khartoum.

In 1953 training of laboratory technicians was started and candidates were recruited from among secondary school graduates for a three-year course in advanced bacteriology, hematology, pathology and biochemistry. The purpose of this was to fill the gap created by the withdrawal of the British technicians who left the country in 1954 with the independence of the Sudan and also to feed the various expected development plans.

Several other important developments in the laboratories took place during this critical period which marked the beginning of independence.

In 1953 the Sudan Medical Journal was started as the official organ of the Sudan Medical Association to serve the purpose of encouraging research and diffusion of medical scientific knowledge, among doctors and research workers in the Sudan. Professor Haseeb was

elected the first editor of the journal which continued for several years as a useful medium for spreading medical work. However for financial difficulties its flow was interrupted but it resumed its appearance again in 1962 with vigour and enthusiasm.

In 1960 the United States Naval Medical Research Unit Number Three (NAMRU-3 Cairo) started a five-year investigation (1960 - 1964) on the epidemiology of visceral leishmaniasis in the Malakal - Paloich area of Bahr El Ghazal Province.

In 1963 Dr Haseeb left the laboratories to become the first Sudanese to hold the Chair of Microbiology and Parasitology and also the Dean of the Faculty of Medicine, Khartoum (1963 - 1969).

On the basis of his publications, he was made Fellow of the Royal College of Pathologists in 1965. Four years later he was made Fellow of the Royal College of Physicians, London.

In recognition of Haseeb's significant contributions to medical education and research in the Sudan, the W.H.O. General Assembly in its twenty-sixth meeting at Geneva decided to award him the Dr A.T. Shousha Prize and Medal for 1973.

Conscious of the need of young research workers for guidance Professor Haseeb compiled a monograph collating most of the references on biomedical research done in the Sudan during the period 1902-1972. The book has been accepted for publication by the Sudan National Council for Research.

Professor Haseeb was succeeded in the Directorship of the Stack Laboratories by Dr M.H. Satti, another pioneer research worker. Satti carried out extensive research on leishmaniasis, infective hepatitis and many other endemic diseases. Amongst several developments in the laboratories he planned programmes for the training of some B.Sc. graduates in the United Kingdom in biomedical subjects, e.g. schistosomiasis, entomology etc.... Theses for higher degrees by these and other graduates proved to be useful in research programmes sponsored by the

Sudan Ministry of Health.

In 1969 Dr. Satti was succeeded by Dr. Mahmoud Abdel Rahman Ziada, who did research and routine work in the Stack Laboratories until they moved to the new building called The Sudan National Health Laboratories.

The names of the Directors of the Stack Laboratories were as follows:

Dr Eric S. Horgan, M.D., B.A. - 1935-1949.

Dr Robert Kirk, M.D., B.Sc., F.R.C.P.S., D.P.H. - 1949-1952.

Dr Mansour Ali Haseeb, D.K.S.M., Dip.Bact. (Lond), F.R.C. Path., F.R.C.P.(Lond) - 1952-1963.

Dr Mohamed Hamad Satti, D.K.S. M., M.P.H.- 1963-1968.

Dr Mahmoud Abdel Rahman Ziada, D.K.S.M., M.R.C. Path. - 1969-1973.

In 1960 need was felt however for the expansion and reorganization of the laboratory service in the Ministry of Health and so plans were made to build new premises to house all the laboratory sections. The construction of the new laboratories commenced in 1964 and in the same year Sir Graham Wilson, formerly Director of Public Health Laboratories of England and Wales, was invited by the Sudan Ministry of Health to advice on the laboratory services in the country. The new five-storey laboratory buildings were completed and ready to be occupied. After thorough discussion with the former directors of the Stack Laboratories, Haseeb and Satti, Sir Graham emphasized the following points (Wilson, 1964).

1. The formation of a national laboratory service under a special board appointed by the Government.
2. The accommodation of the departments of microbiology, pathology, parasitology, entomology and epidemiology in the new laboratory buildings which should act as a central public health laboratory and a nucleus

for work on communicable diseases.

3. The building up of mobile epidemiological units, to be attached to the central laboratories with the aim of extending services to the periphery.
4. The training of more technicians.

Sir Graham's recommendations were partly adopted and the Sudan National Health Laboratories, as they are called now, started work in April, 1969. The new premises, a five-storey building covering an area of about 9000 sq.m. adjacent to the old Stack Medical Research Buildings, house the bacteriology, pathology, chemical pathology, the Government Analyst laboratories, medical entomology sections of the Ministry of Health as well as the Department of Medical Microbiology and Parasitology and the Department of Pathology of the Faculty of Medicine, University of Khartoum. The Sudan National Council for Research, an autonomous body, started its work also in these new buildings.

The construction of the premises of the national health laboratories was completed at a total cost to the Government of a little over two million dollars.

All these departments which are housed in the Sudan National Health Laboratories are engaged to a greater or lesser degree on research on medical problems connected with endemic diseases in the Sudan.

In 1970 a National Council for Research was established by a Presidential Decree. In 1973 the constitution of the National Council for Research was amended to suit the prevailing conditions and to give more power and authority to the Council as an autonomous body directly under the President of the Republic. Its objectives are:

- 1) To effect coordination in research and scientific activities:
- 2) To formulate and follow up the nation's service policy especially in the field of research and development.
- 3) To render advice to the Government in

training scientific manpower on use of technology in the development of the country.

- 4) To create a healthy atmosphere for scientists and research workers to use their knowledge and energy to solve problems facing the country in its development.

The council consists of four sub-councils:

- 5) Medical research council.
- 6) Agricultural research council.
- 7) Industrial research council.
- 8) Economic and social research council.

British Red Cross	2,000.000
Egyptian Club, Khartoum	75.000
Sayid Abdel Rahman El Mahdi	100.000
Dr Waterfield	50.000
Khartoum International Committee	1,760. 000
Sayid Hassan Khalifa Sherif (House)	82.000
Messrs. J. & T. Coats Ltd.	72.000
Joint British War Committee & Red Cross	12,675.000
Lord Gretnar	19.500
Bimb. G.R. Grant	6.000
Hoghton	10.000
Willis	10.000
Sh. Ahmed Hassan Abdel Moniem	10.000
Sudan Schools Club	429.702
British Cotton Growing Association	500.000
Beit	500.000
Carson & Son	210.000
Drapers Co.	100.000
Newton Chamber	20.000
Rhodes Trust	2,000.000

THE KHARTOUM MEDICAL SCHOOL

The proposal to establish a medical school in Khartoum was put forward by Lord Kitchener (Governor General of the Sudan, 1898 - 99) on the occasion of his last visit to the Sudan in the summer of 1914. However, the outbreak of war in August, 1914 put an end to any immediate development of plans for such a school. It was not until 1916, when the news of Lord Kitchener's death at sea reached the Sudan that it was decided to follow up the proposal. The idea of establishing a medical school appealed very strongly to the people of the Sudan, who had great respect for medicine and were anxious that their young men be trained as doctors. Therefore, it was decided that the medical school should be built and that it should stand as a memorial to Lord Kitchener.

In 1921 an endowment fund «Lord Kitchener Memorial Fund» was opened by the Governor General of the Sudan.

First contributions were received from the Sudan and England as follows:

Sudan Plantation Syndicate Ltd. LS. 2,500.000m/ms

The school was administered by three bodies:

(1) The executive committee consisting of:

- a. Principal, Gordon College.
- b. Financial secretary
- c. Director Medical Service, Dr O.F.H. Atkey
- d. Honorary Treasurer

(2) The School Council consisting of:

- a. Director, Medical Service - Chairman. (Dr O.F.H. Atkey)
- b. Director, Tropical Research Laboratories- Vice-Chairman (Sir Robert Archibald)
- c. Medical Director, Khartoum Civil Hospital. Dr H.C. Squires, F.R.C.P.
- d. Surgical Director, Khartoum Civil Hospital. Mr G.R. Footner, F.R.C.S.
- e. Government Analyst.
- f. Government Biologist.
- g. Registrar (Dr Norman F. Smith)

- (3) The General Board consisting of:
- a. Principal, Gordon College.
 - b. Financial Secretary.
 - c. Dr Alex Granville.
 - d. Director, Medical Service.
 - e. Ahmed Bey Hashim El Baghdadi
 - f. Sir Sayid Ali El Mirghani, K.C.M.G., K.C.V.O.
 - g. Sir Sayid Abdel Rahman El Mahdi, C.V.O.
 - h. El Sherif Yousif El Hindi, C.V.O., M.B.E.
 - i. Two representatives of Sudan Chamber of Commerce.
 - j. Director of Intelligence-Honorary Secretary.
 - k. Mr. F.S. Norton, Manager National Bank of Egypt-Honorary Treasurer.

Construction of the Kitchener School of Medicine began in May, 1922 and the School was opened on February 29, 1924. The Khartoum Civil Hospital which had been in operation since 1908 became the major teaching hospital for the school. The students were housed in a hostel adjacent to the School.

The Kitchener School of Medicine is the second medical school with a comprehensive syllabus to be established in northern Africa. The first was Kasr El Aini Medical School, which was opened in 1825 in Cairo, Egypt.

The objectives laid down for the Kitchener School were the following:

1. To build up a cadre of Sudanese doctors who would be in a particularly favorable position to combat the epidemic and endemic diseases that were wasting and debilitating the population of the country and preventing its natural increase.
2. To afford an opportunity to educated Sudanese to take part in the development of their country.
3. To provide postgraduate courses for

doctors trained at the School and to provide opportunities for special study and research.

Initially, the course of training covered four years; in 1934 it was extended to five years, and in 1939 to six years. The classes were small; the enrollment quota was limited to ten students a year until 1938. For a number of reasons, no students were enrolled in the years 1926, 1937, 1941, 1945 and 1947. Applicants to the Kitchener School of Medicine were the top graduates of the Gordon Memorial College, a school established in 1902 in honor of Charles Gordon, Governor General of the Sudan in 1884 - 85.

The college started as an elementary school and later became a secondary school.

All the School of Medicine faculty were government officials either from the Sudan Medical Services or the Wellcome Tropical Medical Research Laboratories and the courses were taught in English. One doctor was appointed by the Medical Service both to act as Registrar (in later years called Dean) and to teach anatomy and physiology.

In September, 1951 the School of Medicine and the Gordon Memorial College were amalgamated into the University College of Khartoum and the School officially became a Faculty of Medicine in the University College. In the twenty-seven years of its separate existence, 106 Sudanese, two of whom were women, graduated from the School. During this same period, a total of 194 students entered the School.

Table I shows the number of students who entered and who graduated from the School each year from 1951 to 1973. The annual enrollment rose sharply in 1952; reached 30 by 1955, and was as high as 64 in 1966. During 1964 - 65, there were 59 students in the second-year class, (for the first year of study the students are enrolled in the Faculty of Science) 56 in the third, 46 in the fourth, 38 in fifth, and 38 in the sixth. The enrollment figures for 1965 - 66 for

the respective classes were 61, 64, 46, 45 and 39. were women. In 1969 the annual enrollment rose to Eighteen of the total student population in 1965 - 66 110, in 1970 to 120 and in 1971 to 180 students.

TABLE I
NUMBER OF STUDENTS ENTERED
AND GRADUATED 1951-1973

YEAR	NO. ENTERED	NO. GRADUATED
1951	14	--
1952	24	10
1953	23	6
1954	23	12
1955	30	2
1956	28	14
1957	26	12
1958	30	19
1959	32	18
1960	38	22
1961	40	26
1962	50	22
1963	52	32
1964	60	27
1965	61	34
1966	54	37
1967	65	44
1968	65	44
1969	110	58
1970	120	44
1971	120	66
1972	180	56
1973	180	55

RELATION OF THE SCHOOL TO THE INTERNATIONAL MEDICAL COMMUNITY

From the start it was intended that the School should be a part of the international medical community. Competent assessors, including professors from the Cairo Medical School and distinguished members of the profession from London teaching hospitals, were invited to view the examination procedure, to inspect the various departments of the School, and to offer criticism and advice. In 1928 the final examinations of the first batch of students who completed their studies were supervised by two assessors: Dr. Dolbey, M.S., F.R.C.S., F.A.C.S., Professor of Surgery, Kasr El Aini Hospital Cairo and Major Biggam, M.R.C.P., Professor of Medicine at Kasr ELAini, Hospital Cairo. Seven candidates successfully passed the examinations and were employed by the Sudan Medical Service as house officers at an annual pay of LS. 168 in group VI. After one year of housemanship in the big hospitals, they became medical officers. In 1938 the Committee of Management of the Conjoint Board of the Royal Colleges of England appointed Sir Alfred Webb-Johnson (later Lord Webb-Johnson), President of the Royal College of Surgeons, to act as Visitor to the School. The School was approved by the Conjoint Board for the period of one year (this approval being subject to review each year), and its graduates were declared eligible to take the examinations for the several diplomas granted jointly by the Royal Colleges. After that date, Visitors were appointed annually by the Committee of Management. Many of the graduates of the School have since obtained memberships or fellowships in these Colleges; others have obtained post-graduate diplomas granted by the University of London.

In 1960 the Royal College of Surgeons of England

recognized Khartoum as an examination centre for the primary examination for membership in the Royal College of Surgeons. Since that time, many candidates have passed their primary examinations in Khartoum and later taken the final examination in England.

In October 1964 the Council of the Royal College of Obstetricians and Gynecologists of England recognized appointments at Khartoum Civil Hospital, the major teaching hospital of the Faculty of Medicine, as fulfilling one year's training requirement for membership in the College. Since that date, three of the graduates of the Khartoum Faculty of Medicine have obtained their M.R.C.O.G. degree.

The School has strong connections with various educational and research centers in Europe and Africa, for example, the Orthopedic Center at Oxford, and the London School of Hygiene and Tropical Medicine. The School is a member of the Association of Medical Schools in Africa, which was established in 1965; the Secretary of the Association since 1965 has been a staff member of the Khartoum Faculty of Medicine.

In 1968 the W.H.O. regional office for the East Mediterranean Region held a meeting on Medical Education in Khartoum, in which the association for Medical Schools in the Middle East was established. The Dean of the Khartoum Medical School was elected to the membership of the executive committee.

FACULTY OF MEDICINE

At the time the School of Medicine was incorporated into the University College of Khartoum in 1951, it was decided to establish full-time chairs in the preclinical departments and in medicine, surgery, gynaecology, pathology and public health. This decision was implemented in 1952.

In 1956 the Sudan became an independent republic and the University of Khartoum was established

with eight faculties under a vice-chancellor. In 1959 the combined degree of bachelor in Medicine and surgery (M.B., B.S.) was conferred for the first time instead of the diploma of the Kitchener School of Medicine (D.K.S.M.). Also in 1959, new facilities were opened at the Khartoum Civil Hospital. The additions to the old hospital increased its capacity by 700 beds, making a total of 1,000 beds, most of which

are available for teaching. Two other hospitals, the Omdurman and Khartoum North Hospitals, are also used for teaching, but not to the same extent as the Khartoum Civil Hospital.

The full-time staff is augmented from the Ministry of Health by part-time teachers and full-time technicians. The name of the Registrars and Deans of the school is shown in Table II.

TABLE II
REGISTRARS AND DEANS OF KHARTOUM MEDICAL SCHOOL (1924-1973)

(1) Dr Norman F. Smith	Registrar	April 1924 -	December 1925
(2) Dr E.A.H. Grylls	Registrar	December 1925 -	December 1929
(3) Dr F.E. Anderson	Registrar	December 1928 -	November 1931
(4) Dr D.R. Macdonald	Registrar	November 1931 -	November 1938
(5) Dr J.S. Aldridge	Registrar	November 1938 -	November 1944
(6) Dr J.S. Aldridge	Dean	November 1944 -	November 1946
(7) Dr R.N. Buchanan	Dean	November 1946 -	October 1948
(8) Dr R.B.U. Somers	Dean	October 1948 -	August 1953
(9) Prof. Dean A. Smith	Dean	August 1953 -	October 1954
(10) Prof. R. Kirk	Dean	October 1954 -	March 1955
(11) Prof. H.V. Morgan	Dean	March 1955 -	March 1958
(12) Prof. Dean A. Smith	Dean	March 1958 -	July 1960
(13) Prof. H. Butler	Dean	July 1960 -	September 1963
(14) Prof. Mansour Ali Haseeb	Dean	September 1963 -	September 1969
(15) Prof. A.M. El Hassan	Dean	September 1969 -	August 1971
(16) Prof. Ali Khogali	Dean	August 1971 -	-----

COURSE OF STUDY

The curriculum is patterned after the curriculum of the British schools of medicine with some bias towards tropical medicine and hygiene. Special attention is also given to social and preventive medicine.

Students are selected from those who have completed one year of biology in the Faculty of Science. The students spend two preclinical years (the second and third years) studying anatomy (including embryology and histology), physiology and biochemistry. During

the second year, the students are assessed by class examinations and those who do not do well are not promoted to the next year. At the end of the third year, the students are examined and only those who pass the examination in all three subjects are permitted to proceed to the fourth year. Those who fail in one subject are usually allowed to take the examination again after three months. Those who fail in two or more subjects are required to repeat the entire year. No student may spend more than three years in the preclinical period. The second M.B. examination is given at the end of the preclinical period, and this is considered to be the appropriate time for eliminating those who are not likely to graduate successfully from medical school.

The clinical period consists of three years - the fourth, fifth and the sixth years: in the fourth year students study bacteriology, including parasitology, immunology, mycology and virology; pharmacology; dispensing; medical entomology and general pathology. In addition they spend the first term of the year (nine weeks) studying introductory medicine and surgery, the other two terms are spent clerking and dressing on the wards. In the fifth year they study special pathology, social and preventive medicine, forensic medicine, medicine, Surgery, pediatrics and obstetrics. In the final year they cover medicine, including psychiatry, dermatology and venereal diseases; surgery, including ophthalmology and orthopedics; and gynecology, including antenatal care and child health.

Teaching- methods consist of lectures, seminars, tutorial sessions, and laboratory instruction. Clinical instruction is carried on by means of ward rounds, clerking, dressing, and outpatients work.

From time to time experts are invited from abroad to spend a few weeks lecturing on their specialties. Medical students from schools outside the Sudan are welcome to spend their elective periods in Khartoum. In 1965, two students from the Middlesex Hospital

Medical -School in England spent two months at the Faculty of Medicine, living with the undergraduate students in the hostels and attending lectures, ward rounds, and other activities of the school.

Those who complete the course successfully and pass their final examinations in the three subjects - medicine, surgery and obstetrics and gynecology - graduate with M.B., B.S. degree from the University of Khartoum. The final examination is supervised by the Visitor appointed by the Committee of Management of the Examining Board of the Royal College of Physicians of London and the Royal College of Surgeons of England. The examination in each subject is conducted by an external examiner and examiners from the Faculty of Medicine.

Internship

After passing their final examination and obtaining their M.B., B.S., degree, the graduates are required to spend one year of internship in one of the three teaching hospitals. The period of internship was formerly two years; but because of the great need for doctors to work in the provinces, it was reduced to one year, which is spent as follows: three months in general medicine, three months in general surgery, three months in obstetrics and gynecology and the last three months in ophthalmology, psychiatry, chest diseases, E.N.T., pediatrics, or anesthesia.

During this period, the interns work in groups under the professors of the Faculty of Medicine or the consultants of the Ministry of Health. Their work is closely supervised, and they have the benefit of constant aid and advice from their senior colleagues. They also work in the outpatient and casualty departments and take night duties.

Postgraduate Training

As noted earlier, when the Kitchener School was established, one of the objectives was to provide postgraduate training and facilities for research for its

graduates. There is still much to be done in this area. At present only the following postgraduate facilities and programmes are in operation:

1. A course is offered for the Diploma of Gynecology and Obstetrics, Khartoum (D.G.O.K.). The standard of this three-year programme is comparable to that required for membership in the Royal College of Obstetricians and Gynecologists, England. A total of 14 graduates have obtained this diploma.
2. Instruction in anatomy, physiology and pathology is provided for graduates who wish to take the Primary F.R.C.S. Examination in Khartoum. The course extends over six months. As of 1966, 31 candidates had passed their Primary Examination in Khartoum. Of these, 12 have already received the final diploma in England. In addition to the Sudanese graduates, candidates also come from neighboring countries, such as Uganda, Kenya, Ethiopia and Aden, to take this examination.
3. Instruction is also provided to help graduates who wish to take the examination for membership in the Royal College of Physicians of London as well as for graduates working for the University of Khartoum postgraduate degree (M.D.) in internal medicine, pathology, obstetrics and gynecology, and public health, or Ph.D. degree in the basic sciences.