Souvenir brochure, Army Medical Corps reunion, Lucknow, March 1959.

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SOUVENIR BROCHURE

ARMY MEDICAL CORPS

सर्वे सन्तु निरामयाः

ARMY MEDICAL CORPS REUNION

LUCKNOW

March 1959

FIRST REUNION

ARMY MEDICAL CORPS

MARCH 1959

FIRST REUNION

सर्वे सन्तु निरामयाः

ARMY MEDICAL CORPS

MARCH 1959

Facings :—Dull Cherry. *Uniform* :—Dark Blue.

Army Medical Corps.

Within a Lotus wreath surmounted by the STATE EMBLEM, the rod of Aesculapius with a serpent intertwined the whole surmounting a scroll containing the words " ARMY MEDICAL CORPS ".

The Bengal, Madras and Bombay Medical Services (IMS) were constituted in 1764 to include all the surgeons employed by the East India Company. For the short periods in 1766 and 1796, the Civil and Military Branches were organised into separate services, but on each occasion were speedily reunited. The presidency establishments were amalgamated as the Indian Medical Services on 6th March 1896.

The Indian Army Medical Corps was formed on 3rd April 1943 by the amalgamation of the I M S; I M D; and I H C in accordance with AI 114 of 1943. As from 26th January 1950 the Prefix "Indian" was discontinued, *vide* AO 6/S/50 and the Corps redesignated " ARMY MEDICAL CORPS ".

Colonels Commandant :— Lt-Gen B Chaudhuri
Maj-Gen B M Rao

न त्वहं कामये राज्यं न स्वर्गं नापुनर्भवम्।
कामये दुःखतप्तानाम् प्राणीनामार्त्तिनाशनम्।
सर्वेऽत्र सुखिनः सन्तु सर्वे सन्तु निरामयाः॥

HONOURS AND AWARDS

MAHA VIR CHAKRA	...	3	
VIR CHAKRA	...	...	10
VICTORIA CROSS		...	5
KCB	...	...	1
KCIE	...	...	6
CB	...	...	20
CSI	...	...	6
CMG	...	...	18
CIE	...	...	159
CBE	...	...	15
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MBE	...	...	89
DSO	...	...	63
IOM	...	...	27
MC	...	...	138
OBI	...	...	129
DCM	...	...	6
IDSM	...	...	63
MM	...	...	27
BEM	...	...	3
KC St J	...	...	1
C St J	...	...	2

MAHA VIR CHAKRA

Major A K BARAT, AMC

Major N B BANERJEE, AMC

Lt Col A G RANGARAJ

VIR CHAKRA

Capt A BANERJEE, AMC

Major N C DASS, AMC

Major KARTAR SINGH, AMC

Major K C MUKHERJEE, AMC

Major T K MOITRA, AMC

Major V RANGASWAMY, AMC

Nk JAI DATT JOSHI, AMC

Hav RATTAN SINGH, AMC

Hav NAG SEN SINGH, AMC

BAR TO VIR CHAKRA

Major V RANGASWAMY Vr C, AMC

Victoria Cross

Hospital Apprentice ARTHUR FITZGIBBON of Bengal Sub Med Department	Capture of North Taken Forts CHINA
Surg/Capt H E WHITCHURCH, IMS	Fort Chitral - March 1895
Surgeon JOHN CRIMMIN, IMS	Burmese War 1899
Capt J A SINTON, IMS	Battle of Sheik Saad, Messopotamia Jan—1916
Capt H J ANDREWS, IMS	Khajuri Post - Waziristan— 22 Oct 1919

KNIGHT COMMANDER OF THE BATH

Maj Gen C C MANIFOLD IMS

KNIGHTS COMMANDER OF THE INDIAN EMPIRE

Maj Gen E A WALKER, IMS

Maj Gen E W C BRADFIELD, IMS

Lt Gen G G JOLLY, IMS

Maj Gen H J M CURSETJEE, IMS/IAMC

Lt Col W S BUCHMAN

Maj Gen W R EDWARD

DISTINGUISHED SERVICE ORDER

Lt Col E E DOYLE, IMS

Lt Col G S N HUGHES, IMS/IAMC

Lt Col NAWABZADA ALI MOHD KHAN, IMS/IAMC

Lt Col H F T MACFETRIDGE, IMS/IAMC

Lt Col W J YOUNG, IMS/IAMC

Capt DOUHGHERTY, IMS

EDITORIAL NOTE

I consider myself greatly privileged to compile and edit this Souvenir Brochure of the First Reunion of the Army Medical Corps. I am grateful to all the retired officers of the I M S and to the serving officers who have contributed articles for this publication.

This brochure will give you an idea about what it was in the past and what you find today with the Army Medical Corps. I had several more articles but unfortunately due to lack of funds, inability to procure sufficient paper in the open market and shortage of time I could not include all of them. For this omission I apologise.

There will be distinguished guests (old retired IMS officers and officers who retired since 1947) present on this occasion. Some of our senior retired JCOs and OR from all over India will also be coming. I hope this will be regarded as a reunion of the 'Old guard' with the 'New' and constructive ideas and criticisms from the former will help us to forge our way in the right direction in our country's advancement. Probably this will be the last occasion for me to address you, but I would appeal to all serving members of our Corps that they must try to uphold the glorious old traditions of the past which have been handed over to us and this can only be achieved if we can stick together and fight our own battles to settle problems that may face us in future.

A M CHAUDHURI
Major General.

CONTENTS

ARMY MEDICAL CORPS.

LIEUT–COLONEL B. L. RAINA A. M. C.

Every successful Commander seemed to have paid great attention to the medical care of his soldiers. He appreciated that his success depended on the fitness of his men and their morale. He tried to ensure that the medical care and the assurance in the minds of his men that they would receive immediate and adequate attention if sick or wounded was vital to his success. This basic principle is as old as human history. Doctors are reported to have marched with the forces of Pandavas (C 1400 B. C. *Udvogiparva* 151). Surgeons used to tend the wounds of gallant Knights (*Bhismaparva* 120, 55). Bhisma in *Santiparva* recommends that "a King must have in a fort four kinds of physicians including one who had specialized in the extraction of arrow–heads". Doctors seemed to have been given an honoured place and a distinctive flag as far back as 800 B. C. Susruta (C. 800 B. C.) observes that the doctor's camp in the field should be next to the King's camp and he should fly a flag, so that all those afflicted with poison, wounds and diseases can readily come to him (*Sutrasthanum*). Kautilya (C. 300 B. C.) in *Arthasatra* urges that physicians with surgical instruments, remedial oils and cloth in their hands and women (presumably nurses) with prepared food and beverages should stand behind uttering encouraging words to fighting men."

Military medicine is a part of the historical development of human society and is conditioned by the development of medical and warfare concepts of the time. Army Medical Corps today is inevitably a product of such a development. Its simple beginning in its different components (Indian Medical Service, Indian Medical Department and Indian Hospital Corps) and their work when woven together reveals an interesting story of remarkable achievements.

For appreciating fully the development of Army Medical Corps, the organisation of Medical Service in India which from the middle of 18th Century grew steadily in size and complexity may be briefly recalled.

Indian Hospital Corps.

Little is known about the medical organisation that served the Indian sepoys, even in the later part of the nineteenth century. In the days of East India Company, each unit had its own little dispensary with few drugs and dressings. Gradually these dispensaries developed into tiny regimental hospitals. These 'Line Hospitals' were non–dieted and ill equipped and whatever was needed came as a gift from the quartermaster as they were not authorised any bedding or linen. In 1881 station hospitals for British troops were started by the Bengal Army. The original staff was mainly recruited from the personnel of the disbanded regimental Hospitals. Thus Army Hospital Native

Corps (A. H. N. C.) was formed consisting of compounders, dressers, barbers, ward and shop servants, cooks, bhistees and sweepers. They were classified as hospital attendants with pay varing from Rs 4 to Rs 9 per month according to calling and the grade. Rations were free only when they were employed on field service.

In 1895 the Presidency Armies were abolished and the same system of administration was enforced for whole of India. In 1898 A. H. N. C. was reorganised as Army Hospital Corps (A. H. C.) with ten companies, each under a Divisional Principal Medical Officer. The Commissariat (Supply and Transport Corps) recruited *Dooly* bearers to carry casualties. The Frontier Force Regiments were authorised *Kahars* locally engaged through the regimental *bania*. In 1901 the Army Bearer Corps (A. B. C.) with 32 companies was formed and the *Dooly* bearers and *Kahars* were enlisted in it. Each company had sirdars, mates and bearers under the command of a assistant surgeon. In October, 1903 the A. B. C. was reorganised to form ten Divisional Companies including 15 sirdars, 9 bearer clerks, 45 mates and 1431 bearers. Two pay NCOS (a havildar and a naik) were provided for each company from a local regiment. The duties of these divisional companies in war were to carry stretchers and *doolies;* in peace they were employed on general duties in hospital and divisional headquarters. At the out-break of World War I the rank of havildar, lance havildars, naik, lance naik and bearer were introduced. Their pay was also increased to Rs 18, 14, 12, 11 and 9 per month respectively. They were entitled to good conduct pay, followers scale of clothing and after 1917 free rations at the followers scale.

In October 1918 station hospitals for Indian Troops were authorised. The ward orderlies and followers were then locally employed by medical authorities. Even then there was no provision for clerks or store-keepers for the Indian hospitals.

The organisation for providing personnel for Indian and British hospitals was complex. Both were provided with bearers by the A. B C. and the followers for the British Hospital by A. H. C., and the Hospital storekeepers and their assistants by the Supply and Transport Corps. Hospital writers, clerks, store keepers were all civilians. This multiplicity in the agencies of recruitment was not conducive to efficiency. On 1 June 1920 the Army Hospital Corps, the Army Bearer Corps and the subordinate personnel of the Indian Station Hospital were combined and Indian Hospital Corps (I. H. C.) was formed consisting of 10 Divisional companies corresponding to military divisions in India and Burma, one each at Peshawar, Rawalpindi, Lahore, Quetta, Mhow, Poona, Meerut, Lucknow, Secunderabad and Rangoon. In May 1929 IHC was reorganised in five companies on command basis located at Rawalpindi, Lucknow, Secunderabad (later Poona) Quetta and Rangoon.

The IHC reserve of 1400 men was formed in 1925. The Corps included clerical, store, Nursing, Ambulance and General Sections. To centralise records IHC Depot

was formed at Kirkee on 3 September, 1935. On 20 January 1937 IHC Depot Poona and Kirkee were formed with Hq Records and accounts Section, Training Wing and recruits and reinforcement and Training Companies at Rawalpindi and Lucknow were formed. On 1 April 1943 the strength of IHC was 86,268 (an increase of 74,202 since its formation in 1920).

Indian Medical Department.

Early in the nineteenth century a scheme for training boys from the upper and lower orphan schools and from the free schools as compounders and dressers and ultimately as sub-assistant surgeon was started in Bengal. Similar schemes were organised in Madras and Bombay. In 1827 there were two departments apothecaries and dressers. In 1827, dressers were designated as hospital assistants. On 12 March, 1894 the title apothecary was changed to assistant surgeon. This branch consisted of Europeans and Anglo Indians.

In 1868 Indian hospital assistants were employed. They were originally educated at government expense and were taken from all classes of Indians between the ages of 16—20 years. (In 1932 the training at Government expense was discontinued.) In 1900 the senior hospital assistants were granted Viceroys Commissioned ranks of subedars and Jemadars. In April 1910 hospital assistants were redesignated as sub-assistant surgeons.

Indian Medical Service.

The Bengal Medical Service was formed on 1 January 1764. The Madras and Bombay Medical Services were constituted in 1767 and 1779 respectively. In 1864 officers of the I.M.S. also received Royal Commission. In April 1896 the three Presidency medical services were combined into one Indian Medical Service. But it was not till 1906 that officers of the three Presidency cadres were entered in one list according to seniority. The I.M.S. was primarily a military service and its officers were responsible for the medical care of the Indian Army. The Members of the service seem to have been eligible for all posts for which any kind of scientific knowledge was required. Medical Officers were regularly posted to appointment of Assay Department and in Botanical Garden and frequently went still further outside the ordinary line of their profession among those extra professionaly employed, the commission of 1865 on the IMS recorded a post master, a cotton agent, a superintendent of school of arts, a naturalist, a political agent, a commissioner, and a conservator of forest. The officers seconded to civil services staffed the whole of the superior civil medical appointment. The service provided medical aid through out the country, the direction of public health and administration of jails. Thus inspite of its essentially military nature I. M. S. was in fact predominantly civilian in character. The secondment to the civil service took place after the officers had learnt their military duties and only if there was an excess over the peace time requirements of

the Army. Officers thus seconded to the civil organisation were liable to recall to military service on the out break of war Military medicine involves no new basic concepts but the rapid development of the organisation and technique, the speed with which the preventive and curative measure have to be taken demands flexibility of plans, improvisation, vigilant outlook and urgency not met with in civil life. Thus to the civil they brought experience of organization and administration learnt through rigid discipline and skill to deal with problems expeditiously, and on return to the Army varied experience gained in different parts of the country during their civil career.

The service virtually laid the foundation of secular-scientific medicine, public health services and research in the country. In the field of research, many of their efforts benefited people far beyond the borders of India. No medical service can possibly claim to have made such outstanding contribution to their country as I. M. S.

Indian Medical Service was required to be large enough to permit the efficient discharge of all peace time duties and to posses a reserve including the civil to meet small emergencies without dislocation of normal military and civil work. An over inflated cadre in military employee was considered not only detrimental to the interest of the service but also a cause of increased expenditure. It was considered essential to provide terms and conditions of service to attract capable young men. The reorganisation of the I.M.S., its civil and military cadres, its Indian and British components and terms of service were frequently discussed, e. g. the Commission of 1879, the Crawford Cunningham Scheme 1881, Lord Morly's proposals of 1907 Virney Lovet Committee 1919, Burtcheall Scheme, Lee Commission 1924, Indian Round Table Conference/1931, the Warren Fisher Report 1933 and Ogilve Report 1933.

Indian Army Medical Corps.

World War II created a difficult situation for Army medical authorities in India. They were ill equipped to meet the requirements of army whose size and rate of expansion had not been clearly envisaged. Despite the most unfavourable circumstances a very efficient organisation was built up. It was, however felt that the shortage of doctors and nurses and training of the personnel of I. H. C. may lead to a serious situation. In 1943 the Medical Personnel (Army in India) Mission recommended that a homogenous Indian Army Medical Corps should be formed and early in 1943 the Forbes Committee also drew up a comprehensive scheme for the formation of the Corps. Finally Government orders to form the Indian Army Medical Corps I.A.M.C. with effect from 3 April, 1943 were issued. Thus the different elements of the medical services (I. M. S., I. M. D., and I H. C.) were combined in a single Corps with its own officers and men and grew rapidly as a well knit and well trained Corps.

After Independence I.A.M.C. was redesignated as Army Medical Corps (A.M.C.). It may be recalled that during two World Wars, despite the shortage of almost

everything required for success their final triumph has been a major factor in the success of Allied arms. India maintained a relatively large military medical service in India and wherever Indian troops were engaged. During World War I (August 1914 to October 1918) 53,270 hospital beds were provided in India and 34,603 persons served in the medical services including 1,069 I. M. S., 2,142 I.M.D. (1200 nursing sisters) 2,674 I. 0. Rs. and 26,179 followers. Of the 249 field medical units raised, 201 were despatched overseas and served in Aden, Africa, Black sea region, China, Egypt, France and Flanders, Gallipoli, Mesopotamia Persia, Palestine and Solonika. An Officer of the I. M. S. Captain John Alexandar Sinton received the award of Victoria Cross.

The first lady was commissioned in I. M. S. (EC) in April 1942 and ladies have been in the Service since then. History was made on 1 Nov. 1958 when 3 ladies were given Permanent Regular Commission for the first time in the Army Medical Corps.

During World War II over 1000 field medical units were raised. By the end of 1945 the strength of the I.A.M.C., I.M.N.S., A.N.S. (I) and I.A.D.C. was about 1,74,740 (including 7,513 officers), 654, 1677 and 131 respectively. Besides 759 civil medical practitioners were also employed in the Army. To accommodate the casualties 1,72,000 beds were provided in hospitals and convalescent depots. This is a notable figure as the total number of beds in civil hospitals in India at the time was estimated to be 75,000 only. Various research teams carried out investigations which had far reaching results.

The medical units operated wherever the Indian soldier went whether it was in the rocky mountains of Cassino, burning desert of Africa, or steamy tropical jungle of Burma and South East Asia. The menace of Malaria was so serious at one time that admission to hospitals in the Fourteenth Army corresponded to about one Division per month. In 1942 the troops in Burma and Eastern Army suffered 1850 sickness casualties per 1000 i. e. virtually every soldier was more than once in hospital. The results of preventive measures especially against malaria are reflected in the reduction of ratio of battle and non-battle casualties in Burma and SEAC from 1:204 in 1942 to 1:13 in 1945. Admission into hospitals (rate per 1000) of malaria, dysentry and diarrhoea during 1942—1945 dropped from 418.33 to 45.63, 49.42 to 12.35 and 25.27 to 12.16 respectively. The aid given by them to the civilians in Bengal during the famine is too well known. The recent advances in medical organisation and medical science, especially the employment of surgical, neurosurgical and transfusion units in the forward areas and the air evacuation of casulties were harnessed and the care of the Indian soldier was revolutionised.

The medical services won laurels afresh during the operations in Kashmir, where the fight against the elements was collosal. Troops were kept in fighting fit condition despite heavy odds. Expert surgical and medical attention was provided right

in the front line. Medical research teams worked hard unravelling obscure problems. The medical services wherever they were, did their utmost to render medical aid to civilians during emergencies.

In response to the call of the United Nations, India sent personnel of A. M. C. to Korea, Indo-China and Suez and now to Lebanon. Their work has been universally praised.

Army medical services have always meritoriously fulfilled their obligation to their comrades in the Army and the country in peace and war. There is no doubt they will continue to serve meritoriously and have the necessary experience and potential to meet any emergency whenever the call is made on them. Their life is epitomised by the motto सर्वे सन्तु निरामया.

BRIEF HISTORY OF THE ARMY MEDICAL CORPS TRAINING CENTRES

1 Jun 1920 Formation of the Indian Hospital Corps from the erstwhile Army Bearer Corps. Army Hospital Corps and personnel of Station Hospitals into ten companies at PESHAWAR, RAWALPINDI, LAHORE, QUETTA, MHOW, POONA, MEERUT, LUCKNOW, SECUNDRABAD and RANGOON in that numerical order.

1929–1932 Reorganisation of the Companies into five at RAWALPINDI, LUCKNOW, POONA, QUETTA, and RANGOON in that order, as under :—

(a) No. 5 Coy at MHOW was disbanded in 1929.

(b) No. 4 Coy at QUETTA, was reorganised in 1930.

(c) No. 7 and 8 Companies at MEERUT and LUCKNOW were amalgamated as No. 2 Coy at LUCKNOW in Feb 1932.

(d) No. 6 and 9 companies at POONA and SECUNDERABAD were amalgamated as No. 3 Coy at POONA in Feb 1932.

(e) No. 1, 2 and 3 Coys at PESHAWAR, RAWALPINDI, and LAHORE were amalgamated as No. 1 Coy at RAWALPINDI in March 1932.

(f) No. 10 Coy at RANGOON was reorganised as No. 5 Coy in the same station.

1935 No. 5 Coy at RANGOON became the BURMA HOSPITAL CORPS, on the separation of BURMA from INDIA.

1935 I H C Record Office was formed at KIRKEE.

1939	Merger of I H C Records with No. 3 Coy POONA and formation of Training Wing there.
1940	Expansion of Training Wing at No. 3 Coy POONA and No. 1 and 2 Coys at RAWALPINDI and LUCKNOW.
May 1941	Formation of IHC HQ at POONA. Reorganisation of the four IHC Coys at RAWALPINDI, LUCKNOW, POONA and QUETTA as No. 1, 2, 3 and 4 Training and Depot Centres.
Dec 1941	Formation of IHC VCOs and NCOs School at POONA, which became a wing of the Army Medical Training Centre GANESHKHIND inJan 1942.
Feb 1942	Reorganisation of IHC Bns into Bn HQ Training Wings and Depot Wings and subsequently in Oct 1942 as Training and Depot Centres IHC with Centre HQ Trg Bn and Depot Bn.
3 Apr 1943	Formation of Indian Army Medical Corps as homogenous Corps of Officers and men by the merger of the erstwhile IMS, IMD, and IHC. Also the formation of the Indian Army Dental Corps from the erstwhile IMS (Dental).
May 1943	Redesignation of IHC HQ at POONA into administrative HQ IAMC to include IAMC Records KIRKEE. No. 4 T & D Centre IAMC QUETTA was disbanded.
Dec 1943	No. 3 Centre POONA shifted to DEOLALI to make room for Adm HQ of the IAMC, IAMC Records KIRKEE and expansion of the IAMC Depot. IAMC Records shifted from KIRKEE to HQ IAMC POONA.
Sep 1944	No. 1 T & D Centre RAWALPINDI was disbanded.
Feb 1947	Reorganisation of Adm HQ IAMC POONA into IAMC Centre (South) with a Training Battalion, Demobilisation and Depot Group and a Duty Company. No. 2 T & D Centre IAMC LUCKNOW reorganised into IAMC Centre (North) with a Training Battalion and a duty Coy.
May 1947	No. 3 T & D Centre DEOLALI was disbanded.
26 Jan 1950	The IAMC became AMC. IAMC Centre (South) & (North) became AMC Centre (South) & (North).
1 Nov 1957	Formation of the Army Medical Corps Centre LUCKNOW with the move of AMC Centre (South) from POONA and amalgamation of the two centres into one at LUCKNOW with a Centre HQ and a Officers' Training Wing, & Training Battalion and a Depot Battalion, and duty Coy and a Cadre Wing.
25 Feb 1958	Move of AMC Records from POONA to AMC Centre LUCKNOW.

ARMED FORCES MEDICAL COLLEGE AND THE RESEARCH ORGANISATION IN THE ARMED FORCES

MAJ-GEN S. NARAIN

Historical

The military medical service and evolution of medical training dates back to the days of the East India Company. In April 1896 the three Presidency Medical Services of the Company were integrated into one Indian Medical Service–I.M.S., which was primarily a military service whose officers were responsible for the medical care of army. Members of the IMS were also made available for all civil posts in which any kind of scientific knowledge was required. A considerable proportion of IMS officers was seconded to the civil to staff me lical appointments as medical organisation grew up in the country. In addition to providing medical aid to civil population they were also responsible for medical education and research, public health and administration of jails. In the days of East India Company, there was no regular nursing service and the nursing care of the Indian troops was left to semi-trained nursing sepoys. There was no organisation of technically trained ancillary personnel to assist the medical officers or for duty in field medical units.

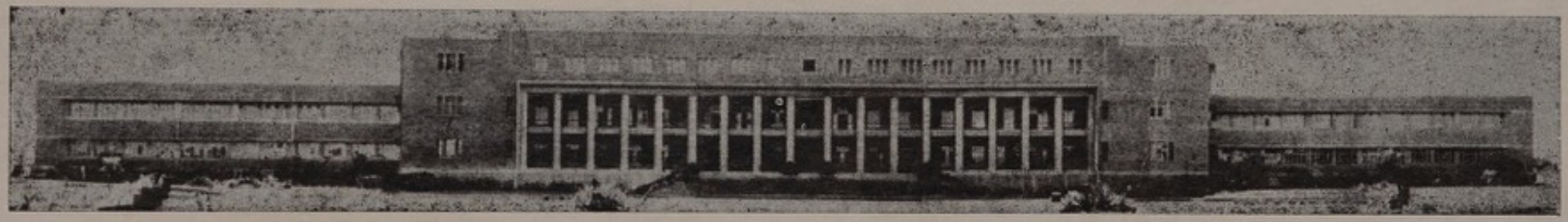
On 1 Jun 1920, the Indian Hospital Corps – I.H.C., came into being by amalgamation of Army Hospital Corps and Army Bearer Corps. This was the beginning for systematic technical training of ancillary personnel.

Army Medical Corps – A.M.C.

On the outbreak of the Second World War, it was realised that the medical services of the army were not organised for expansion to a size commensurate with the requirements of a major war. The Indian Army Medical Corps – I.A.M.C. came into being on 3 Apr 1943 by the amalgamation of various elements of the medical services into one homogenous corps. The word 'Indian" was discarded after Independence.

Training before and during the World War II

Before the World War II, IMS officers recruited in India were attached to military hospitals where headquarters of Indian Hospital Corps companies were located. They received professional training at the hospital and military training at the IHC company. Officers recruited in the U K after initial military training attended a Junior Officers' course at the Royal Army Medical College Milbank London. Officers with 5 to 7 years service were deputed to the UK where after a short optional course of military



Armed Forces Medical College Poona

training, they attended a Senior Officers' Course which also included clinical training in civil medical institutions. Selected officers after completion of the course were permitted to study special subjects such as pathology, hygiene, medicine and surgery at the Royal Army Medical College. Officers, if desirous, could take study leave for obtaining postgraduate qualifications-from various civil medical colleges & institutions in U. K.

In India, medical officers were sent to selected civil and military hospitals and institutions for specialist training in various clinical and laboratory subjects. They could also attend courses at the School of Tropical Medicine, Calcutta and All India Institute of Hygiene and Public Health, Calcutta.

During the period 1939–42, medical officers after initial military training for 2 weeks at the IHC companies, were deputed by selection for further training in field medical units or for specialist appointments. This scheme imparted a very minimum of specialist training required to meet the immediate man-power commitments. The need for expansion of training facilities was felt and a medical wing was started at the Officers Training School - O.T.S., MHOW in April in 1941. This wing was organised to train 100 medical officers at a time. The traininig was mainly confined to military subjects such as organisation of the army and tactical handling of medical units. In Dec 1940, a Training Field Hygiene Section was raised in BABINA, for training of medical officers and other ranks. A Viceroys Commissioned Officers' and Non-Commissioned Officers' School was sanctioned and located at POONA from 15 Dec 1941, for training of a large number of personnel for duty with field medical units. In 1942 it was realised that the medical wing at O.T.S. MHOW did not fulfil the training needs of the military medical service. It was then decided to establish an Army Medical Training Centre A.M.T.C. for the coordination and centralisation of Post-graduate medical education and training. In Dec 1942 the AMTC came into being by the amalgamation of medical wing of the OTS MHOW, the Field Ambulance Training Centre, the VCO and NCO School and ultimately the Army School of Hygiene, BABINA. The course for officers was of 3 months' duration and included military training, clinical medicine, and clinical surgery with special emphasis on the medical problems in the field. The officers wing of the AMTC was originally designed for training of 150 officers at a time. After the formation of IAMC in Apr 1943, it became necessary to reorganise the AMTC. The intake of trainees was raised from 150 to 450. The syllabus of the training was also revised to bring as far as possible the licentiates who were being commissioned into the IAMC, to the same level of efficiency as medical graduates. The training of ancillary personnel such as Laboratory Assistants, and technicians, dispensers, X-Ray assistants, and radiographers, blood transfusion assistants, sanitary assistants, dental technicians and dental hygienists before the World War II was not organised centrally and cadres as such did not exist. Most of these duties were performed by members of the Indian Medical Department-I. M. D.. and other ranks of the Royal Army Medical Corps. During the war an attempt was made to organise a systematised method of training of these technical medical personnel.

In Mar 1947, the Defence Department, now the Ministry of Defence appointed a committee—"Armed Forces Medical Services and Research Integration Committee" under the Chairmanship of Dr B C ROY. The Roy Committee's recommendations on formation of the Armed Forces Medical College, which were accepted by the Government, were :—

(a) "That the medical officer recruited to the Indian Armed Forces should have training at a central institution where he would receive training in various subjects concerning the three services.

(b) "That medical officers will attend refresher courses in a common college where they will be associated with civilian medical personnel."

(c) "That the Central Research Department will be located in an area where research atmosphere prevails and that this research should be also linked with studies in physics, chemistry and biology. Again, this research department should be located near civilian research institutes so that there is liaison between the two."

(d) "That the research workers, consultants and specialists shall have a Director to control and coordinate their work."

Armed Forces Medical College.

On 1 May 1948, the Armed Forces Medical College—AFMC, was formed by the amalgamation of the Army Medical Training Centre, the Medical Research Organisation, the Central Military Pathology Laboratory, the Army Transfusion Centre and the Central Army School of Radiology.

The administrative control of the institution was placed under the Director General, Armed Forces Medical Services, who has an Academic Council to advise him on educational matters.

The first home of AFMC was in Eve's Estate. This location, although ideal for training, was inconvenient for the trainees as it was two miles away from the military hospital and the blood transfusion and pathology departments of the college. The college was moved to Cannaught Barracks near the existing military hospital and adjacent to the proposed site of the new buildings. The new building has been so designed that in addition to the administrative section, it provided accommodation, facilities and services for the training of medical officers, specialists, and other rank technicians, for routine diagnostic and consultative service, research work and for the production of medical and biological reagents. The building with the college estate and residential accommodation is located on a high ground with an aggregate area of 148 acres on the Sholapur Road. It is a three storeyed stone building and its architectural designs are in harmony with the surroundings. There are 245 rooms in the building and the design allows for a further vertical expansion. There are spacious lawns and sports grounds and adequate domestic accommodation.

AFMC is fundamentally a post-graduate institution that encompasses a number of special activities. It is responsible for the training of medical officers and other ranks of the Army, Navy and Air Force, with special emphasis upon certain phases and branches of medicine which are important and incidental to the Armed Forces in peace and war.

Organisation.

The college has been divided into departments of Preventive Medicine, Surgery, Medicine, Pathology, Blood Transfusion, Radiology and Dental Surgery. All the departments are under the general administrative and technical control of a Commandant, who maintains close liaison with the office of the DG AFMS, local medical institutions, training centres, civil medical colleges, research centres and national laboratories.

The college staff consists of 34 specialist medical officers, 5 civilian gazetted officers, 92 technicians supported by 170 non-technical enrolled personnel and 128 civilians.

TRAINING

Junior Officer's Course.

A Junior Officers' Course is held for regular commissioned officers on first appointment. A similar course, but of a shorter duration, is also held for the short service regular commissioned officers. Newly commissioned officers whose training in civil medical institutions has been mostly confined to curative medicine on an individual basis, have to be indoctrinated into the practice of preventive medicine on a community basis.

Senior Officers' Course.

Officers with 5 to 7 years of service attend a 20 weeks course of professional training at AFMC and 6 weeks' military training at the Army Medical Corps training Centre. The object of this course is to give post-graduate education in the basic subjects of military medicine and to keep them abreast of the latest developments in military medical science.

Other Courses

Short courses in blood transfusion and resuscitation and advanced course in hygiene are held for officers periodically. The aim of these courses is to train general duty medical officers to render specialist medical aid in stations where specialists are not available.

Specialist courses for officers

The policy regarding the training of specialists in various subjects has been re-orientated and all the specialists trainees have to undergo a course in general

surgery or general medicine. This basic training is compulsory before the advanced training in a speciality. Specialists, after training at AFMC are attached to hospitals and laboratories for practical work. On completion of this, they undergo further traninig at AFMC and have to qualify in an examination at the end of the course. A Lady Medical Officers' Course for 5 weeks has been introduced recently.

Dental Officers' Course

At the Department of Dental Surgery of the college, courses for senior and junior dental officers are held. Refresher courses in maxillo-facial surgery and denture prosthesis are also conducted for selected officers.

Nursing officers' courses

A course of 12 weeks' duration is held for training senior sisters of the Military Nursing Service. The aim of the course is to equip them in the administration of the Military Nursing Service. The syllabus includes introduction in environmental sanitation, control of communicable diseases and principle of dietetics and dietotherapy.

Training courses for other ranks

Training of other ranks as dispensers, laboratory technicians, radiographers, blood transfusion assistants, sanitary assistants, dental operating room assistants dental technicians and dental hygienists, is one of the most important responsibilities of the College. These personnel form the backbone of the medical organisation of the Armed Forces. This training is phased into various classes so that their education is one continuous process throughout their service.

Research.

Prior to the outbreak of World War II, there was no separate military medical research organisation in the country. Some medical officers of the IMS and RAMC, however, prosecuted clinical and pathological research in addition to their ordinary duties. Medical research in India was mostly carried out by officers of the IMS seconded to the Medical Research Department of Government of India and to medical colleges. The results of their work have made a great contribution towards the knowledge of tropical diseases, their control and treatment.

The most important functions of the medical services of the Armed Forces is to prevent disease and promote health. However, to carry out these duties efficiently, medical research now-a-days is also the accepted responsibility of the military medical services. Medical research in the Armed Forces is mainly of an applied nature, but a certain amount of fundamental work has also to be undertaken for solution of important problems peculiar to the fighting services. The medical research organisation during the last war was based on these principles. Enquiries were instituted for these diseases and disorders which produced a high morbidity, mortality or invalidation amongst the Forces. The important need of the time was to find a quick

solution for the conservation of manpower. As a result of these enquiries, major diseases were brought under control. From the time of the formation of the College, it was realised that a spirit of critical appraisal of scientific phenomena had to be inculcated in the trainees and that the tenets of research made to permeate at all levels of educational and training programmes and that the practice of preventive and curative medicine has to be vitalised by scientific investigations.

The authorised staff is inadequate for formation of a separate "Research Department" as recommended by the Roy Committee but the professers and instructors at the college conduct research enquiries in addition to their routine duties. Under the present arrangement there is a Director in charge of Research and Health in the office of DG AFMS who plans and coordinates research work as in the Armed Forces central planning and direction is essential for solution of immediate problems. However, no attempt is made to curb individual initiative and enterprise. Every encouragement is given to officers to sponsor research enquiries on subjects in which they are specially interested.

There is a Research Advisory Committee under the Chairmanship of the DG AFMS who scrutinises annually research proposals sponsored by officers, allots priorities and nominates staff and institutions where the research work is to be carried out.

Post Graduate Hospitals

The location and working arrangements between the College and the military hospitals in POONA, KIRKEE and AUNDH are such that, for all practical purposes, these hospitals are providing the facilities of post-graduate hospitals as visualised in the Roy Committee Report. The Military Hospitals POONA, LUCKNOW and DELHI have been recognised for post-graduate studies by the POONA University and the Royal College of Surgeons, ENGLAND.

Future of the College

Ten years is a short time in the life of a post-graduate medical institution like the AFMC. Further development and expansion of activities is being carefully planned keeping in view the limitations of our resources and peculiar responsibilities especially in the field of post-graduate training and medical research. AFMC has been recog nised for obtaining degrees and diplomas from the Poona University. The educational and training programmes are constantly revised in the light of the experience gained and in accordance with the latest advances in the science of medicine and the special requirements of Poona University. In modern medicine, there is a continuous reappraisal in terms of the basic sciences of physics, chemistry and biology. Therefore, biophysics and radio isotope laboratory are in the process of expansion of formation. The institution looks forward to ever expanding horizons in fundamental biology and medicine by application of newer knowledge concerning the natural forces that control and govern the human organism.

MEDICAL HISTORY OF THE NAVY

SURG-CAPT B L TANEJA

India, with a coastline of over 2500 miles, is essentially a maritime nation. Ancient literature and relics of the past civilisation in the country and in South East Asia, give ample evidence of the sea-faring nature of our ancestors. Indians were among the first people along with the Arabs and the Chinese to venture on the high seas in sailing ships. There is evidence of the existence of trade relations with Rome, Assyrians and the Red Sea Nations of YORE. As in the case of other Nations, this may, in fact, be considered the beginning of the Indian Navy, as all the Navies develop essentially from Merchant Navies. So, our Navy's birth dates back to a very ancient past

With the advent of the Mohguls, the Army came into the fore front as the Moghul Emperors needed land armies for the conquest and subjugation of this vast continent. The result was decline in the importance of our sea power. Later, however, with the commencement of pilgrimages to Mecca by sea, they did establish a Navy of sorts with the aid of the British in Surat.

The commencement of the 17th Century marks the beginning of the invasion of India by the Europeans, i. e. the Portuguese, Dutch, French and the English. The formation of a fighting squadron by the East India Company under Captain Thomas Best to wage war against the Portuguese has been taken as the birthday of the Indian Navy. This date was 5th September, 1612. The defeat of the Portuguese in Surat in 1614 was the first major engagement fought by the Indian Navy.

The gift of the island of Bombay in 1662 to King Charles II of England by the Portugese as part of the dowry of Infanta Catherine of Braganza was responsible for the shift of the East Indian Navy to Bombay and the formation of the Bombay Marines.

Metamorphosis of Indian Navy.

Before emerging as the Indian Navy of today the Service went through a series of changes in name and often of role since its formation in 1612:—

1612—1666 The Hon East India Co's Marine
1666—1830 The Bombay Marine
1830—1863 The Indian Marine

1863—1887 The Bombay Marine
1887—1892 Her Majesty's Indian Marine
1892—1934 The Royal Indian Marine
1934—1950 The Royal Indian Navy
26th January 1950—The Indian Navy.

From the above, it will be evident that the history of the Medical Services of the Navy dates back to the days of the East India Company. The doctors were carried in ships but they had no ranks – they were first known as "Ships Surgeons"or "Barber Surgeons" of old days. In 1863 the Indian Navy of the East India Co was reformed as the Bombay Marine and in 1877 in recognition of its services, it became Her Majesty's Indian Marine. At that time, Admiral Bythesea V C reorganised the Navy by dividing it into Eastern and western commands with Dockyards in Bombay and Calcutta. The First World War saw a great expansion in the R I N The ships already in commission were hastily equipped with the implements of war and armaments, and the vessels dispersed to the various theatre of operations. It was this war that finally made the Navy into a full time fighting arm. The Rawlinson Committee set up after the Armistice put up proposals to this end with the passing of the Indian Discipline Act in 1934 the Royal Indian Navy-fighting service-was finally established on a permanent footing, The Commander of the RIN was designated as Flag Officer Commanding (F O C) R I N and had his Headquarters in BOMBAY. The medical element then comprised of Assitant Surgeons of the I M D, who were seconded for a tour of duty with the Navy. Apart from routine medical work, some of them carried out the duties of a "Naturalist" and were known as "Surgeon Naturalist"

The Navy had no full time Commissioned Medical Officer till 1941. The administrative head was an I M S Officer and was called the Marine Surgeon or P M O, R I N. He perf ormed these duties as part time Embarkation Officer as well. The I M S and the I M D Officers seconded to the Navy continued to wear Army uniforms. It was in Feburary 1941 that the appointment of P M O R I N was sanctioned in the rank of Surg Cdr. It was in the year 1944 that a distinct Naval Medical Branch was formed consisting of the I M S Officers seconded to the Navy with temporary Naval Commissions. With the exception of P M O and later the MO i/c R I N Hospital and S M Os. West and East all, the Medical Officers of the Navy held Emergency Commissions. Before the end of the Second World War, the Naval Medical Branch had expanded to about 100 Medical Officers with one Surgeon Captain and three Surgeon Commanders from 1 Major and 100 Assitant Surgeons and 19 SRAs at the beginning of it. The Medical Services of the Navy saw action in all the theatres of war extending from Atlantic in the West to the Pacific in the East. They served in ships afloat, in sick bays ashore and took part in the combined operations in the landing craft wing in all major sea borne operations in Burma.

Along with expansion in ships, there was considerable expansion in shore establishments. Huge establishments like AKBAR, MACHLIMAR were built.

In 1943 Naval Headquarters had moved to New Delhi. At that time the P M O's rank was upgraded from Surgeon Cdr to Surg Capt. Later, he was given two Staff Medical Officers (West and East) for local administration of Naval Medical Service in Bombay and Calcutta on the two coasts of India. The post of S M O (E) ended with the cessation of hostilities, the appointment of SMO (West) still continues.

In 1944 a Naval Health Officer was sanctioned on the staff in Bombay and later this was upgraded to the post of Staff Officer (Hygiene) at Naval Headquarters. It may be of interest to note that in 1944 the first Lady Doctor was commissioned as Surg Lt for service with the Wing of Women Royal Indian Naval Service.

In the same year, a Medical Branch of R I N Volunteer Reserve (R I N V R) was formed consisting of Officers of the I A M C who had been seconded to the R I N.

Sick Berth Branch

Although the Medical officers for the Navy were seconded from the Army, the ratings (technical) always came from amongst men of the Navy herself. Originally, the Ships Surgeon had a general duty rating attached to him and he was called the "surgeon's mate". He was usually a rating who was detailed for this work, because he was considered unsuitable for any other job in the ship on account of old age or non-debilitating chronic disease or for poor intelligence etc. Consequently, he did some odd job in and around the sick bay, but was of little help to the Doctor, who had to carry out all the duties including clinical work, dispensing and first aid etc himself. In 1937, a Sick Berth Branch with a nucleus of 10 men was formed from amongst the volunteers from seamen and stokers. They were trained for 12 months in MH POONA in nursing and first aid duties and then posted to sick-bays afloat and ashore. At the same time, a further step in the formation of this branch was taken when men were enrolled directly to this branch. The pressure of expansion during the Second World War necessitated the establishment of a Sick Berth School in Bombay with its own full time training staff. The branch expanded to over 600 men with 2 Branch Officers at the end of the war. Specialist SBAs were also trained at this School. After 3 months' training, the SBAs were appointed to Sick Bay ashore where after a period of 6 months practical work, they were appointed to ships afloat. Like all other training during emergencies, this training was perforce for a short period, nevertheless it met the requirements of the Service very well.

Medical establishments.

Provision of adequate medical attention to all ships and establishments was essential and this was done by having sick bays in each ship and

establishment. Bombay was the main base of the Navy. The first MI Room was established there in 1932 in the Dockyard and was staffed by a Commissioned Officer of the I M S and 2 Asstt Surgeons (British Cadre). Cases requiring hospitalisation were sent to St George's Hospital (for officers) and Military Hospital Colaba Bombay (for other ranks). At the outbreak of war, a Sick Bay was opened in the Depot Ship H M I S DALHOUSIE–known as Depot Sick Quarters. Subsequently, the two sick bays were amalgamated and housed in a new and large premises containing 50 beds. It became full dieted in 1946. At the same time sick bays were opened in Clive, Lawrence, Investigator, Hindustan and Indus. These medical arrangements resulted in wide dispersal of patients, in the St George's Hospital, Military Hospital, Depot Sick Quarters and other Civil Hospitals. It was therefore, decided to take over the building of Ramesh Prem Chand Sanatorium in Sewri, which was converted into a Naval Hospital with 250 beds and the first patient was admitted in April 1943. It was a self contained hospital with its own nursing staff and Specialist Departments including Radiology and Clinical Pathology Sections. One of the peculiar and interesting features was the appointment of a number of Honorary Consultants as Specialists from amongst the renowned practitioners of Bombay, who volunteered their services for the Navy. They were given honorary naval ranks which some of them cherish proudly till today. In 1946, this hospital was closed and Naval wing of 120 beds was opened in the Military Hospital Colaba. This again was closed in September, 1947 owing to marked reduction in the strength of the Navy.

Post 1947 Navy.

The dawn of Independence and partition of the country brought its own problems, in its wake. The RIN was split into RIN and RPN. The Indian Navy was left as a mere skeleton with the loss not only of some ships, but the only permanent establishment viz. Boys Training Establishment and the Gunnery School at Karachi. Almost all the senior ratings particularly of the Seamen Gunnery Branch opted for Pakistan as most of them came from Chittagong – now East Pakistan. The Service was thus reduced to a handful of 300 – 400 officers (32 Medicals) and 400 ratings (130 SBAs) without any training school. During the past 12 years, rapid progress has been made by the establishment of Training Schools all over India. A number of ships i.e. Cruisers, Destroyers, and Frigates have been acquired as also a small air arm of the Navy – the "Fleet Requirement Unit" has been established in the Garuda. On our attainig the status of the "Republic" on 26th January 1950, the Indian Navy ceased its connection with the Royal Navy and became the INDIAN NAVY with the presentation of the Colours to the Service on 27th May 1951 by the President.

In 1949, the Medical Services of the Armed Forces were integrated–a unique step taken by the Government of India at the recommendation of the Roy Committee. The object was to strengthen medical research and to improve the quality of professional work. This was sought to be obtained by the creation of the appointment of DG

AFMS in the rank of Lt General along with the ancillary staff particularly the Director of Research and Health. The Armed Forces Medical College was established in Poona for the training of Medical Officers and ORs in military medicine and for advanced training in the various branches of Medicine. A number of senior and junior officers including specialists were seconded from the Army to the Navy and Air Force to strengthen and improve the cadre of the two younger Services.

In order to meet the growing demand of the Navy to have its own hospital in Bombay, which is its main base, the Military Hospital Colaba was transferred to the Navy and the hospital was commissioned as an independent ship named ASVINI (INHS ASVINI) in September 1951.

It was soon found that the standard of work of the S.B.As in the hospitals/sick bays ashore and afloat was not of a uniformly high standard. In order to place their training on a sound basis. a Sick Berth School was established in ASVINI in 1953. Courses are arranged to enable the SBAs to qualify for high rates (Leading PO & CPOs) and to specialise in trades like laboratory technician etc.

Though the first Hygiene Officer in the Navy was appointed in 1944 (HINS DALHOUSIE), who was subsequently transferred to Nayal Headquarters in Delhi, the real advance in Preventive Medicine and Hygiene took place in 1955 when the Navy introduced its own Hygiene Organisations in the shore establishments similar to the Station Hygiene Organisation of the Army. The next logical step is the provision of positive "health care" in addition to the medical care of the Naval personnel and their families.

An important milestone in the medical history of the Navy was covered in March 1958. when the Naval Hospital in Cochin was commissioned as an independent ship and named as INHS SANJIVANI.

From a handful of officers and ratings the Medical Branch has kept pace with the expansion of the Navy and its record of work has been such as to inspire the present and future generation of Naval Medical Officers and men to emulate the achievements of the last decade with determination to excel the record of the past. Let us dedicate ourselves to the alleviation of sickness and suffering and to uphold the good tradition of the Service.

DEVELOPMENT OF ARMY DENTAL CORPS

LT COL WARDEV SINGH, A D CORPS

History of the Corps

Indian Army did not have a separate dental service before the last war and during its early stages. Dental treatment required by the personnel of the Indian Army was administered by Medical officers who had no specialised qualifications. Cases requiring specialised dental treatment or those whose dental disabilities occured during field service were referred to Army Dental Centres for British Troops. In fact adequate arrangements did not exist for dental education or treatment of Indian troops. This resulted in considerable wastage of man power during peace and more so under active service conditions

The necessity to rectify this unsatisfactory state of affairs became too obvious during the early years of the last war and it was decided to have a proper dental service for the Indian Troops. In February 1941 a dental branch of IMS Emergency Cadre, was formed vide IAO 155/41 and initially 8 dental surgeons were commissioned. After 4 weeks' basic military training at various IHC Depot Battallions and initial professional training at Army Dental Centres (B T), they were posted to raise Army Dental Centres for Indian troops at various military stations.

The work done by this nucleus organisation was so much appreciated that this strength was raised by the end of 1942. Nearly all the big garrisons had an Army Dental Centre (India Troops) to cater for their troops. In addition to dental centres many field dental units were raised to cater for troops in field areas. By the end of 1942 many field dental units came into existence and operated in different war theatres of Middle East, Burma and Ceylon.

In April 1943 Indian Army Dental Corps was formed and all officers of IMS (D) were transferred to it. The number of IADC Officers increased gradually and by the close of 1943 the Corps had over hundred dental officers.

On the cessation of hostilities the necessity for the retention of this Corps in the post war army was accepted (AI 317/47). Consequently a register was created (AI 916/47) from which candidates were to be selected for grant of Regular Commission in this Corps. Names of 31 officers were placed in this register and to start with 26 were granted regular commissions in 1948.

To cater for the growing need of the Armed Forces a cadre of SSRC officers was formed in 1948. Terms and conditions of service for these officers were formulated and issued in AI 256/48 and those for PRC officers in AI 20/50. The strength of A D Corps which was meagre at the end of 1948 has gradually been doubled. This is composed of PRC, SSRC and EC officers. The AD Corps has been catering for all the three services. During the war some of the officers were seconded to Navy and Air Force to look after the personnel of these services. After the war dental cover to Air Force personnel was provided by officers of Army Dental Corps whereas the Navy continued to have Dental Corps Officers in Naval uniform to cater for their needs in shore and sea establishments. A few dental officers were seconded to the Navy. As the strength of Indian Air Force personnel increased, necessity to have some Indian Air Force Dental Centres was again felt and in 1954 some dental centres were catering for the needs of the Air force.

Dental Treatment.

On the formation of IMS (D) in 1941, the Indian Soldiers were entitled to receive dental treatment but not the supply of artificial dentures.

In 1943 in order to conserve manpower, sanction was given to provide artificial dentures, only to those OR whose loss of teeth was attributable to military service and thereby to prevent their invalidment from service.

In 1948 as a further concession all Indian other ranks became entitled to artificial dentures provided that the soldier's services were being retained for a minimum period of two years and that the dentures were required for proper mastication and the efficiency of service.

Since 1948 annual inspections and routine dental treament became a permanent feature.

Families of Indian other ranks were sanctioned free dental treatment on an experimental basis from 1948 and it was only in 1956 that this commitment was accepted as a permanent measure.

Administration

Till March 1947 the Corps functioned with a DDMS (Col) of the Royal Army Dental Corps at Army Headquarters and three ADsMS (Lt Col) (RADC Officers) at Command Headquarters. Due to the run down of the Army and shortage of experienced officers appointment of ADDS was abolished and one Dental Centre in each Command was reorganised as Command Military Dental Centre. The OC of this centre in addition to his other duties was appointed Adviser to DDMS Command to carry out the technical administration within the Command.

In Sep 1947, the charge of the Corps was taken over from the outgoing British DDDS at Army HQ by an Officer of IADC, in the capacity of DADDS (Maj). The

appointments of OsC Command Dental Centres were also downgraded to that of Majors. Another Command Military Dental Centre for Western Command was raised in April 1948. The appointments of DADDS at Army HQ and OC Command MDC were upgraded in December 1949. The appointment of ADDS (Lt Col) was further raised to that of DDDS (Col) in Sep 1956.

Training

Due to repatriation of British other ranks, the Corps greatly felt the absence of Dental Technicians as there was not a single Indian Dental Technician in the Army. Except for a few nursing sepoys of the AMC who had worked in Dental Centres there was a complete dearth of properly trained DORAs. Suitable OR were selected and trained as Dental Technicians and DORAs in the Command Military Dental Centres POONA and RANCHI and later on in DELHI. Personnel belonging to these categories were all transferred to the AD Corps and received higher trade qualifications and promotions in their own trade. The growing need of the A D Corps has been met by gradually training more men in these trades. The clerical staff however continues to belong to AMC and is available for duty for 8 years with Dental Centres after which they are posted back to hospitals and other medical units.

Establishment of Dental Training Wing (DTW)

The Corps had no central training establishment. To provide adequate arrangements for training of officers and advanced technical training of OR a Dental Training Wing was established in AFMC POONA in 1953. In addition to this the dental Wing also took over the training of Dental Hygienists introduced in Army Dental Corps in 1954 (AI 226/54). Dental Training Wing of the AFMC thus became the first institution in India which started training Dental Hygienists.

Specialists

With the progress of the A D Corps the necessity for specialised treatment and training in specialist subjects was greatly felt and for this purpose cadre of 6 specialists was sanctioned in Dec 1952.

Establishment

There has been a considerable amount of reorganisation of Dental Centres to meet the varying demands. To-day we have the Command Dental Centres, 2 chaired dental centres and single dental chair Centre scattered all over the country and in addition to this we have field dental units to cater for the troops in field formations and dental centre for the Air Force and the Naval medical wings.

Change of Corps Crest and Shoulder Titles

1941–IMS (D)
1943–IADC
1948–ADC
1951–A D Corps

HISTORY OF THE MILITARY NURSING SERVICE IN INDIA

COL (MISS) W E GARDINER, MNS

The Military Nursing Service was started in 1888, when the first batch of British trained Army nurses arrived in India in March for service in station hospitals for British troops. The Nursing Service was gradually increased and in 1896 it was designated "the Indian Army Nursing Service (IANS)" and its establishment had reached the number of fifty two.

In 1902, Queen Alexandra became the first President of the British Army Nursing Service in the United Kingdom, and a year later in 1903, the IANS was converted into the Queen Alexandra's Military Nursing Service for India Q.A.M.N.S.(I).

Under the regimental hospital system for Indian troops, nursing was left to ward orderlies who had no specialised training in nursing the sick. The outbreak of World War I in 1914 stimulated interest in the nursing care of the Indian soldiers and a Temporary Indian Nursing Service (TINS) was started. An appeal was made for trained nurses in India in August and September of 1915, but the response was poor and only sixty temporary nurses were appointed. The General Secretary, St John Ambulance Association was approached, and the total number of temporary and St John nurses appointed in World War I was 473. These nurses served in Indian and British troops hospitals in India, Aden, Mesopotamia, and Egypt and on hospital ships.

After the Armistice of 1918, the temporary nurses who had a lien on their civil appointments and those who did not belong to recognised training institutions were released, and the remainder were posted to Indian station hospitals in certain cantonments. Great improvements were noticed in the hospitals where the nurses served, patients were better cared for and wards were efficiently run. In May 1924 fifty five nurses were sanctioned for the Indian station hospitals as an interim establishment.

On 1 October 1926 it was decided to have a permanent nursing service in the Indian Army and the nursing service for Indian troops hospitals came into being with a total number of 55 nurses, 12 matrons, 18 sisters and 25 staff nurses. The service was limited to nurses recruited within Indian limits, and they were to do the actual nursing, and the supervision and training of the nursing section

of the IHC. In 1927 the designation of the service was changed to Indian Military Nursing Service, and the strength of this service continued to be 55.

With the outbreak of World War II in 1939, 313 nurses were sanctioned for the nursing service for the Army in India, including the 55 sisters of the Indian Military Nursing Service for 6077 beds for Indian troops, and 215 sisters of the QAIMNS for 5044 beds for British troops, and 43 matrons for families hospitals. In addition there was provision for the employment of 350 members of the Indian Voluntary Aid Service (IVAS) (250 for Indian troops and 100 for British troops).

The scope for expansion of the IMNS was limited due to the appalling shortage of trained nurses in India, and the actual number was 177 in 1940. With the progress of the War and to meet the Military requirements, steps were taken to stop recruitment to the permanent cadre of the IMNS and a new service IMNS (Temporary) was started. In order to increase the flow of recruits, the terms and conditions of the Nursing service were revised from time to time and more concessions were made. In 1942 it was decided by the War Office to make members of the IMNS eligible for higher administrative posts e g. Principal Matron.

By an Ordinance No xxx issued on 15 September 1943, the IMNS became a part of the Indian Army and the members of the service became commissioned officers and were referred to as Nursing Officers. In September 1945 the relative ranks of the nursing officers vis-a-vis the officers of the Indian Army were regulated as follows :—

Principal Matron	—	Lieut Colonel
Matron	—	Major
Senior Sister or Sister with ten years service	—	Captain
Sister	—	Lieutenant

Simultaneously with the start of recruitment to the IMNS (T), the AINSR was formed for maintaining a reserve of nurses to supplement the existing strength and the first batch of AINSR joined in September 1940.

Auxiliary Nursing Service (India)

Sanction of the Government of India was given in August 1941 and the service was inaugurated on 24 September 1941. The members of the service were recruited in two classes, local and general. The general service members were required to serve in Indian or British hospitals in India, and were also allowed to volunteer for service overseas. The local service members were available for duty within a specified area only. Recruitment to the local service was also kept open for fully trained certificated nurses and partially trained nurses who had passed the state preliminary examination in general nursing or state examination in midwifery. A total of 2,787

joined the ANS (I) for service with the Army, and on 1 August 1945 the actual number of ANS (I) cadets serving was 1,709. They have practically all been released.

Training.

Candidates for training were sent to selected civil hospitals in Oct. 1941. The minimum period of training was three months. In August 1942 the minimum training period of three months was extended to nine months.

Grading and Status in the ANS (I)

In December 1943 a system of grading the ANS (I) nurses was introduced. There were three grades. All were initially placed in Grade I. Grade 2 was given after eighteen months service. Grade 3 was reserved for registered nurses and registered midwives. The designation of the ANS (I) nurse was also changed from 'Nursing Auxiliary' to 'Nursing Cadet'.

The shortage of trained nurses in Indian Military Hospitals continued to cause grave anxiety, In 1944 voluntary paid and unpaid workers were employed, members of the Lady Minto's Indian Nursing Association when not required for association work accepted employment in local military hospitals, and British Voluntary Aid Detachment (VAD) nurses joined for duty in hospitals with Indian troops. In 1945 British nurses from the United Kingdom and the Dominions were also employed.

Throughout the war, the military nursing services were deficient by approximately 50 per cent even though all possible avenues to improve the situation were explored.

With the cessation of the war (V/E Day 8·5·45) and (V/J Day 15.8.45) the need for a large number of nurses was practically over and before the end of 1946 the nurses from abroad were all withdrawn.

On 15 August 1947 India was declared independent. The pre-war nurses of the QAIMNS serving in the country were withdrawn and for the first time an Indian nursing officer was appointed Chief Principal Matron (Colonel) Military Nursing Service on 12. 9. 47. The need for nurses for the post war Armed Forces still existed and in spite of the best efforts recruitment to the MNS (T) was still disappointing and in order to boost up recruitment and to build up the nursing service, the terms and conditions of service were improved and Probationer Nurses Schools were started at POONA and DELHI on 15. 6. 50 and at LUCKNOW on 7. 9. 51. With the opening of these schools the situation improved considerably. To accelerate the output and obtain the required number of nurses, the Local MNS (T) came into existence in January 1958.

The persistent shortage of Nursing Officers in the MNS and MNS(T) is primarily due to the shortage of nurses in the country. Nevertheless much valuable work is being done by them and they are to be admired for their devotion to duty and selflessness.

The Nursing Officers really did a glorious and memorable piece of work in India and abroad. Two of the senior officers got the covetted "Florence Nightingale Medal" and many others were awarded MBE, RRC and ARRC.

NEUROSURGERY IN THE ARMY

LT-COL A.C RAY, AMC

The development of neurosurgery during the first quarter of the present century has been one of the most striking features in the progress of modern Surgery. Its development is connected intimately with the progress in Neuro-anatomy, Neuro-physiology, Neuro-pathology and neuro-radiology. Developments in anaesthesia and blood transfusion, and modern devices like electric suction apparatus and electro-surgical coagulation units have made possible a great many surgical feats on the brain-and the Spinal Cord.

Development of Neurosurgery in the British Army.

During the World War I the British Army had no designated Head Centre. As the war continued the necessity of separating head wounds for specialised treatment in the hands of Neuro-surgeons was thought of, but was not practicable, except on a limited scale towards the end, due to insufficiency of Neuro-surgeons. The deficiency was realised and between the two wars the British Army planned for the future by appointing a consultant Neuro-surgeon to Queen Alexandria's Military Hospital, Milbank. With some subsequent modification,the general scheme answered the demand of the second World War. At Oxford, the Military Hospital for Head injuries, with 300 beds, treated 13,000 cases between February 1940 and September 1945, and provided training for Neuro-surgeons, Neurologists, Nurses and Orderlies. Besides the consultant Neuro-surgeon, whose headquarters was at Oxford, the overseas theatre had a few Neuro-surgical Advisers. With the armies in the field there were mobile Neuro-surgical units (MNSU) and a few static Head Centres, all of which were equipped and their personnel trained at the parent hospital at Oxford.

Development of Neurosurgery in the Indian Army.

Prior to the World War II Neuro-surgery was unknown in India. During the war, Neuro-surgical cases of the Indian Army were treated by the British and allied Neuro-surgeons.

Today, while writing about the development of Neuro-surgery in the Indian Army, the name of one British Surgical Consultant is remembered with gratitude. His wisdom

made it possible for the Army to have the honour of establishing the Premier Neuro-Surgical Centre in the country. It was Colonel Collins, the then Surgical Consultant, who realised this deficiency in the Indian Army and in January 1947 coaxed young Indian Surgeons to be trained in Neuro-surgery under the last remaining British Neuro-surgeon. With a dubious heart, I accepted his offer.

Earlier, as a young surgeon, I was fascinated by Neuro-surgery, from a respectable distance. Knowing her exacting nature I was not tempted by her and my lady of choice was 'Thoracic Surgery', in whose favour I was being considered. An attack of Infective Hepatitis, however, decided my future. Back to duty after three months, I found no immediate vacancy in Thoracic Surgery and when Col Collins coaxed me to take up Neuro-surgery I accepted with mixed feelings. Undoubtedly it gave me a thrill and sense of importance of being the first and the only one of its kind in the country, but I was doubtful of my capabilities, especially of my stamina for long operating sessions. I started my training at MH Secunderabad with Capt Potter, the last British Neuro-surgeon in India. He was also to go back after a few months. During this period a great change occurred. We became independent. Overnight a new spirit entered every body and I was no exception. I felt myself the custodian of a great national asset and fancied myself the little hero championing the cause of Neuro-surgery, a harbinger of a new era in the history of the medical science of the country.

I was so sure of success in my mission, that its failure could have given me disappointment. Without a parallel in the pre-war peace time Army, the value of Neuro-surgery in the post-war Army was doubted. The plea of planning for future emergency had no effect either. I was detached from Neuro-surgery and the department was closed. It was my intuition of future change which prompted me to take steps against losing the precious instruments, the only set of equipment that a British MNSU left in India. Opportunities arrived soon. Hostilities had already started in Kashmir and the number of cases of head wounds collected at MH Delhi provided strong grounds for the revival of Neuro-surgery. If the Kashmir operation was the primary necessity for the establishment of a Neuro-surgical Centre, Lt Col (Now Brigadier) B L Kapur, the then Adviser-in-Surgery, Western Command, (now Deputy D G A F M S), was instrumental in bringing it into being. Thus, the premier Neuro-surgical Centre in the country was established at MH Poona in April 1948.

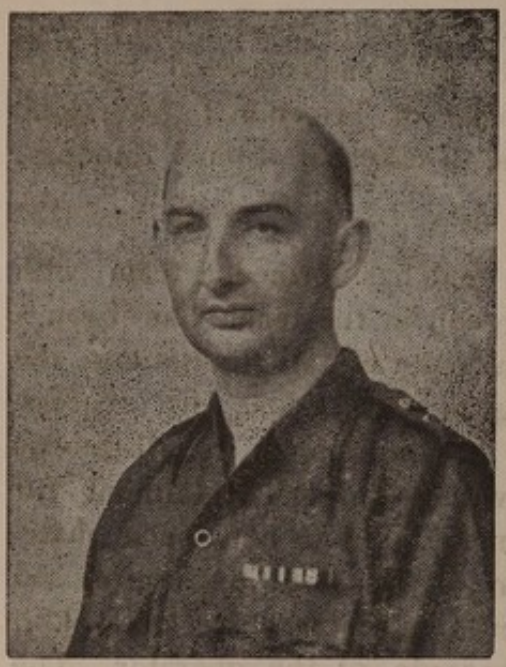
Created under the stress of emergency, the Centre suffered many limitations as regards men and materials. For a considerable period, the Centre comprised the Neuro-surgeon and a set of instruments. Difficulties were innumerable. The subject, being new, its difficulties were appreciated by but few and shared by none. Ingenuity and improvisation were the sheet-anchors of survival in unknown waters. Whilst the necessity of Neuro-surgery for head wounds during the war was easily recognised, doubt existed in many minds about its usefulness in peace-time, as the numbers of

cold Neuro-surgical cases were not expected to be many. Contrary to this belief, a visit to the Centre will show that besides other Neuro-surgical conditions, even tumours of the brain and spine are not rare. The traditional legends that the diagnosis of Neurosurgical disorders is insurmountably difficult, that the prognosis is hopeless and that the treatment is futile are losing ground gradually. Today the medical profession is Neuro-surgical conscious and more and more cases are diagnosed and sent for treatment. During the last two years, the Neurosurgical Centre with 25 beds, have treated 326 cases. They include, 72 cases of Craniocerebral injuries, 37 cases of Intracranial Space-occupying lesions, 12 cases of Trigeminal Neuralgia, 4 cases of Hydrocephalus, 15 cases of Spinal injuries, 5 cases of Spinal tumours, 55 cases of Peripheral Nerve lesions.

Gradually the Centre has collected more equipment and has formed a team with Nursing Sisters and ORAs. Absence of a second surgeon in the team has been a great handicap. This is going to be remedied soon. In spite of all limitations the Centre has undertaken all types of major Neuro-surgical operations with success. Absence of E E G Machine is often felt very acutely. In addition to its diagnostic aid it will increase the scope of Neuro-surgery by providing surgical treatment for many epileptics. Although the results of Cerebral Angiography, Pneumoencephalography, Ventriculography and Myelography of this Centre, carried out by improvised apparatus can be compared well with those of any other Centre, provision of a skull table will remove the long endured hardships and hazards of the operator. The Centre has stood the test of time and justified its existence. Uptil now the Neuro-surgical Centre has worked practically with one specialist e. g. the Neuro-surgeon. The drawbacks and limitations of one man team are obvious. Today it is gratifying to find a few Army Medical Officers showing interest in the subject and trained in the allied subjects of Neurology, Neuro-radiology and Neuropathology. If the services of these specialists are made available the foundation of the Army Neurosurgical Centre will be on a firmer ground and its achievements will be enhanced.

ARMY BLOOD TRANSFUSION SERVICE IN INDIA

MAJOR G W G BIRD, AMC



When I joined the army, late in 1940, a blood transfusion in a Military Hospital was an unfamiliar and rather alarming procedure. The donor was bled in the operating theatre by the Surgeon himself, using an incredibly antiquated needle; the blood was collected in an open conical flask, which contained some sodium citrate solution, prepared in the dispensary and sterilised by boiling. About 250 ml of blood was collected from the donor and given to the recipient through a funnel, rubber tubing and needle. Several attempts were required to enter a vein; much blood was spilt and an ineffective 100 ml or so entered the recipient, who subsequently developed a febrile reaction. The Cross matching test was done by the OC District Laboratory with the aid of a hand lens and an out-of-date text book issued to the laboratory by the Medical Stores Depot.

At about this time it was decided that all military personnel should be blood grouped, and the group of each soldier was to be stamped on his identity disc. As I was the most junior on the hospital staff I was detailed for this duty and given thirty minutes training by the OC District Laboratory, assisted by his text book. For many months I spent each afternoon grouping every soldier in the station. Years later, when I became Adviser in Blood Transfusion and Resuscitation, I was instrumental in having this dangerous practice stopped, because the percentage of error in blood group determinations carried out under these conditions is considerable.

The need for an organised transfusion service soon became apparent. Major J M Macfie of the RAMC, a physician, repeatedly suggested to GHQ that it would be advisable to raise a Blood Transfusion Unit for the Army in India; eventually No. 1 Indian Base Transfusion Unit was raised in 1942, under the command of Major Macfie. Paradoxically, as soon as the unit was raised, it was sent to the Middle East, and India remained without a Blood Transfusion unit till two British units (No. 2 and No. 3 Base Transfusion Units) were sent from England.

No. 1 Indian Base Transfusion Unit functioned at Baghdad, and supplied transfusion and infusion fluids and apparatus to what later became the Persia and Iraq Force. It returned to India in 1944 and joined No. 3 Base Transfusion Unit.

I have given an account in our official medical history of the second World War, of the magnificient work done in India by No. 2 and 3 Base Transfusion Units, and in India, Burma and South East Asia by various Advance Base Transfusion Units and Field Transfusion Units.

After the Second World War an Army Transfusion Centre was formed at Poona. This Centre soon established an efficient service catering for military medical units throughout India. It later became the Blood Transfusion Department of the Armed Forces Medical College. This Department maintains a Blood Bank for Military Hospitals in Poona and nearby stations, and prepares dried plasma and crystalloid solutions for Military Hospitals throughout India. It also assembles and supplies transfusion apparatus and prepares and issues blood grouping reagents. It is responsible for the training of Medical Officers and Blood Transfusion Assistants. It has been, for some years, carrying out research studies of human erythrocyte variation and on blood group agglutinins, and has made contributions to these subjects which have been recognised abroad.

Field Transfusion Teams have been raised from time to time in India to meet emergency operational requirements. These units no longer exist. There is an Advance Base Transfusion Unit which acts as a distributing centre for the Blood Transfusion Department of the Armed Forces Medical College, and also maintains a small blood bank; it is at present attempting crystalloid production. Most Military Hospitals have their own blood banks.

Today, a blood transfusion in a Military Hospital is a simple procedure. Compatible blood is supplied by the various blood banks at the request of clinicians. Sterilised apparatus is available, and transfusions are skilfully performed without delay. There is ready availability of blood within the units of the station. Blood transfusion is not free from danger and it is wrong to prescribe blood when it is not needed. For example, a major surgical operation is not necessarily an indication for blood transfusion. Yet now-a-days few such operations are attempted without simultaneous blood transfusion.

The study of blood groups, blood transfusion and resuscitation is by no means a small subject as those unfamiliar with its implications are apt to think. It is now recognised in Europe and the United States as being a subject in its own right, the general clinician or clinical pathologist is not fully competent to run a large modern blood transfusion service.

Highly specialised knowledge and years of experience are necessary for the maintenance of a high technical standard.

The Transfusion Service in India has always endeavoured to keep abreast of modern developments in the subject; there is every reason to believe that the Service will go from strength to strength in the years to come.

MILITARY OPHTHALMOLOGY

LT COLONEL S. PRAKASH, AMC.

The progress of Ophthalmology in our Armed Forces was slow and sporadic in the past in keeping with the other branches of specialised medical knowledge. It is a truism that War often acts as a stimulus to scientific knowledge and it is a bad testimony that man should have needed two major wars within the space of twenty-five years to amaze the world with wonderful scientific and medical discoveries. What a price to pay !

The history of Ophthalmology dates from almost the Ist January 1764 when the foundations of our Predecessor, the I M S were laid on the amalgamation of the Bengal, Madras and Bombay Medical Services of the East India Company. It had a long infancy and not till World War I do we find Ophthalmology organised in a sound or practical way.

Our counterpart, the civilian side of the I M S has illustrious names like Herbert, Wright, Elliot, Kirwan and many others who shone brilliantly in the firmament of medicine in India. They could do so because of the variety and numbers of eye cases seen and treated by them while our own uniformed forebears, of silent repute were trying not to see beyond the inflammation of the areolar tissue and N Y D fever ! We do not, however, wish to belittle the great contribution and the legacy of some eminent Military Ophthalmologists after the first World War.

Before the 1914-18 War we should remember that the visual acuity of the soldier was 'the limit of the effective use of his rifle'. During peace time, Military Ophthalmic Surgery was confined to the treatment of conjunctivitis, corneal ulcers, lid conditions and iritis. Ocular operations were rare because healthy young men were recruited in whom cataract (except traumatic) glaucoma and squint did not usually occur. It was, therefore, not till World War I that Ophthalmologists got sufficient scope and variety of and the foundations of our modern ophthalmic cover were laid.

In between the Wars the quality of work fell for no fault of the Ophthalmologists because there was not the right type of material. No wonder Ophthalmic Specialists were magnetised by the Cantonment General Hospitals in big places like Poona and Rawalpindi and kept their 'hands in' by operative work.

It was realised long ago that the Ophthalmic Specialists in charge of Ophthalmological Departments should be highly experienced and skilled for on their judgement depended the saving and removal of eyes and the question of whether an eye was 'safe' or not from the point of view of Sympathetic Ophthalmia. They had to perform

the highly specialised intra-ocular operations and removal of IOFB with minimum of trauma with large and small magnets and prolapse of uvea.

Organisation.

During World War I, Ophthalmic Services were organised thus:

(a) First at the bases and later in each Army separate department for examining ophthalmic outpatients.

(b) Severe eye cases needing inpatient treatment were concentrated in special Ophthalmic Wards.

(c) Minor eye cases were treated at convalescent depots in association with General Hospitals in the base.

(d) Consultant Ophthalmologist kept a vigil by frequent visits on what was happening to the 'Eyes'.

It was not till November 1914 that tents or portions of existing buildings were set aside for Ophthalmic OPD. Tents were abondoned because they were neither light enough for external observation nor dark enough for retinoscopy and funduscopy. During the last War, however, we used tents effectively in the Forward Areas where obviously improvisation has to be the rule.

To facilitate easy recognition and concentration of ophthalmic cases, red labels were attached to the men at CS. These were easily picked up at the base when an ambulance train brought them there.

This pattern of dark rooms of World War I existed up to the end of World War II—small cubicles suffocating the Surgeon and the patient alike! Very unsuitable for tropical countries. These cubicles were darkened by drawing a curtain, and opposite them on the other side of the room was the box test type at a distance of 20′. In the corner of the room was a table and chair for minor treatment and the reception desk.

Spectacles for fighting soldiers are a neceasary evil and were not allowed for a long time but standards are often relaxed depending upon the question of supply and demand in an emergency. They are an incumberance in rain and fog and an easy method of escape by the weak minded. The wearer has just got to knock his glasses down and immediately become an 'ophthalmic casualty'!

Under the stress of War, recruiting was done on such a large scale that little attention was paid to visual acuity. Our illiterate *Jawans* were shown 'Dot' Charts; first line troops were expected to count the dots at 10′ 'and others at 5′. A number of recruits slipped past the Recruiting Medical Officers and were discharged from service within three months.

There is no doubt that a properly run Refraction Department is a great asset in in the efficient functioning of troops who wear glasses. Till the Spectacles Centres were created in about 1943–44, patients waited indefinitely for their glasses. Prior to this there was the long drawn out process of civilian opticians dispensing spectacles.

In a general way the types of ophthalmic injuries sustained in World War I were similar to those in World War II but two important features were the gas casualties and epidemic conjunctivitis in 1914–18, particularly amongst Turkish Prisoners of war.

World War II

The outbreak of World War II found the Army Medical Services without a comprehensive organisation capable of dealing effectively with the ophthalmic problems of suddenly inflated Forces. During the first World War an efficient Ophthalmic Service had slowly evolved but this disintegrated and by late 1919 all that remained of it were a few reasonably well equipped Ophthalmic Departments in the main Military Hospitals of India with only eight Specialists.

During the interwar years no serious consideration was given to future problems in armed global conflict and so there was no policy for the creation of an adequate Ophthalmic Service. This was the main reason for the delay in appreciating variety and magnitude of ophthalmic problems. It was not till 1942 when the Adviser in ophthalmology, Southern Command, and in 1943 Consultant Ophthalmologist India Command, were appointed to fashion the Ophthalmic Services. The outcome was:—

(a) To have a sufficiency of Specialists and Graded Specialists to examine large numbers of cases without delay.

(b) Army Spectacle Centres to fit glasses within a matter of hours. Civilian Opticians were flooded with so many prescriptions that patients waited for their spectacles for months in many cases.

(c) With the increase in personnel, Main Eye Centres and Subsidiary Eye Centres were formed all over India and a large number of Ophthalmological Units were raised. Sir Clutha Mackenzie visited India in 1942 and that rejuvenated St. Dunstan's in Dehra Dun to rehabilitate blinded soldiers.

Main Ophthalmic Centres

The main Ophthalmic Centres were very well equipped by about 1944. Due to the initiative of an Ophthalmic Surgeon the Haab Giant Magnet at Poona was mounted on a portable X–Ray stand, the carbon arc of the slit lamp gave place to an electric bulb and the "Edridge" green lantern which had a bicycle kerosene lamp got the electric connection! Night Vision apparatus and Diathermy sets arrived and more space provided, set the pace for major ophthalmic work. The small dingy dark rooms gave place to large consultation rooms, ophthalmic operation theatres and good staff. Some

eye centres were given Special Wards of 30–50 beds. This was the general pattern but Poona for obvious reasons attracted most attention. There were three Ophthalmologists covering Poona/Kirkee Medical Area at one stage.

This Centre also trained Ophthalmic Sergeants who were given four weeks training as Ophthalmic Orderlies. They were an asset in the Ophthalmological Units in the Field.

Subsidiary Ophthalmic Centres

The Subsidiary Ophthalmic Centres were reasonably equipped and, depending on the Ophthalmologist I/C, managed to get additional equipment on loan. These Centres were organised to act as a cushion in peace areas between the Main Centres and Ophthalmological Units.

Ophthalmological Units

The Ophthalmological Units were raised for Field Service on the 1914–18 Model. One of these functioned in the IV Corps and reached the ideal in 1945 when it had a Spectacle Unit attached to it. The full staff consisted of an Ophthalmic Specialist and two Sergeants, Ophthalmic-trained Sister and Trainee Ophthalmologist, one Nursing Orderly and three Ambulance Orderlies. Some units managed to get a 15 cwt (weapon carrier) truck with an ASC driver attached to them. This made it possible to deal with major ophthalmic work and gave mobility, though primarily its main military role was treatment and retention in Forward Area cases of refractive errors and minor ophthalmic lesions. Drugs, dressings and instruments were obtained through the usual medical channels of supply.

In the later stages of the war, one Ophthalmological Unit was allotted per Corps. They were usually brigaded at CCSs together with the Advanced Sections of Neuro-Surgical and Maxillo-Facial Units and thus formed the "Trinity"; 12–17% of wounded who had head and neck injuries came here.

The chain of evacuation was from the RAP, where the First Field Dressing was applied, to the Ophthalmic Unit at the CCS and it took 3 to 12 hours to get there depending upon the terrain and the mode of transport. Eye cases were evacuated by L 5s Auster Aircraft where possible. Morbidity rate of eye cases amongst Indian Troops was 5.6%.

From the Ophthalmological Units, cases were evacuated by Dakotas to the Advance Base Hospitals and thence to some of our major centres like Poona and Secunderabad. (Indian Base General Hospitals).

Optical Appliances

We depended entirely on the UK for our optical requirements who catered for :—

(a) Optical Lenses, Spectacle Frames and all other sundries.

(b) Optical Instruments, Ophthalmic Instruments and Equipment.

PROBLEMS OF OPHTHALMOLOGY IN WAR

It is not intended to go into the many problems of Ophthalmology in War but some salient features need enumeration :—

Refractive Errors

It is felt that relaxation in the standards of vision should be allowed only on general mobilisation and if the standards are well planned it would help to retain trained personnel in other jobs where poor visual acuity is no disadvantage. If the visual standards are lowered it is a natural corollary that there should be an adequate supply of Spectacles easily available and promptly fitted.

Colour Vision

The increased use by the Army of Pyrotechnics in inter communication and of coloured paints to recognise objects, necessitated colour vision testing.

Night Blindness

This has been known as a cause of malingering since the days of the Crusades. There is no objective test to verify defective night vision and patients hardly ever presented any pathological lesion to support their complaint. The best way to nip the epidemic of night blindness in the bud was an order that the Army did not recognise night blindness and this term was not to be used in any documents. It is interesting to recall that night blindness without demonstrable lesion was never a problem in POW Camps in German or Japanese hands and, therefore, our presumption was proved correct.

Artifacts

The trickery of 1914–18 was carried into 1939–45 and it was not uncommon to meet cases of Conjunctivitis Artifacts. Any irritant in the lower fornix and rubbed, produced the typical inflammation. Eye Specialists were often called in as witnesses in cases of summary trials and Courts Martial.

Concussion Injuries

Due to the use of more powerful weapons in the 1939–45 war, it showed that 40% of the whole number of injuries occurred, compared to 6% of 1914–18 War.

Intro-Ocular Foreign Bodies

Localisation by Limbal ring was found to be the speediest and most consistently efficient method. Diathermy coagulation helped to employ posterior route extractions and prevented the complication of retinal detachment.

Sepsis

Minimal surgical intervention till the patient got to the Specialist, and early institution of Sulphonamide therapy and later Penicillin prevented sepsis.

Retinal Detachment

80% of the cases were due to the normal civilian hazards.

Nutritional Diseases

These occurred in an epidemic form in the POWs held by the Japanese. There were two ophthalmic forms – granular or exfoliative keratitis responding to Marmite. The second was neurological form demonstrating paracentral or central bilateral scotoma with pallor of the optic discs.

Trachoma

There was no epidemic in spite of the fact that many recruits were enlisted who had trachoma.

Reparative Surgery and Artificial Eyes

Eye Surgeons were averse to the sockets falling a prey to the Plastic Surgeon and, therefore, carried out plastic operations for contracted sockets and disfigured lids. Much assistance was received from our Dental colleagues for making appliances for keeping the grafts in the sockets. All the artificial eyes were concentrated in Poona and outpatients from all over India were referred there, and due to the shortage of glass eyes, plastic eyes from acrylan were obtained.

During the course of the War, several unusual but interesting cases occurred. Amblyopia due to quinine in the beginning of the War was met with, Eclipse Blindness or Macular Burn, was noticed in some men serving in the western Desert. There was an epidemic of Kerato-conjunctivitis and the dendritic form of keratitis in the Eastern Theatre as well as Nutritional Amblyopia.

Conclusion

The motto of Ophthalmologists should always be, "BE PREPARED". In order to achieve the objective, a comprehensive programme is essential to plan for the future:–

(a) Specialists – It is right that postgraduate qualification should be insisted upon but an attachment to a Senior Specialist and report on military ophthalmological knowledge is important. Because of scanty material in Service hospitals in peace time, the training of an ophthalmologist must include an attachment at a Civil MedicalCollege Hospital. Techniques cannot be learnt from books alone and a good deal of skill and confidence is required before the delicate eye can be handled with care and respect.

(b) In order to have a common clinical policy and to have knowledge of the capabilities of such ophthalmic Specialist, it is necessary for the Senior Specialist to have personal knowledge of all of them. Advice and guidance, and opportunities for civilian attachments would keep the Specialists in good trim.

(c) Training of Staff. A nucleus of Ophthalmic trained Sisters and Nursing Orderlies should be available so that in an emergency we could ourselves, turn out trained staff. A trade like ORA (Ophthalmic) would go a long way to bridge the gap.

(d) The scope of Spectacle Centres and the Optical industry in India must enlarge quickly to be able to fit glasses without delay as the wearing of spectacles is permissible in our Armed Forces.

(e) The question of prototype Mobile Ophthalmological Unit on its own vehicles shonld be considered and it should be made to take part in Medical Exercises thus giving valuable experience to our post war recruited Ophthalmologists.

(f) Development of plastic goggles to protect eyes of people employed in hazardous work like mine detection and welding and of suitable tinted goggles for desert and snow is a necessity.

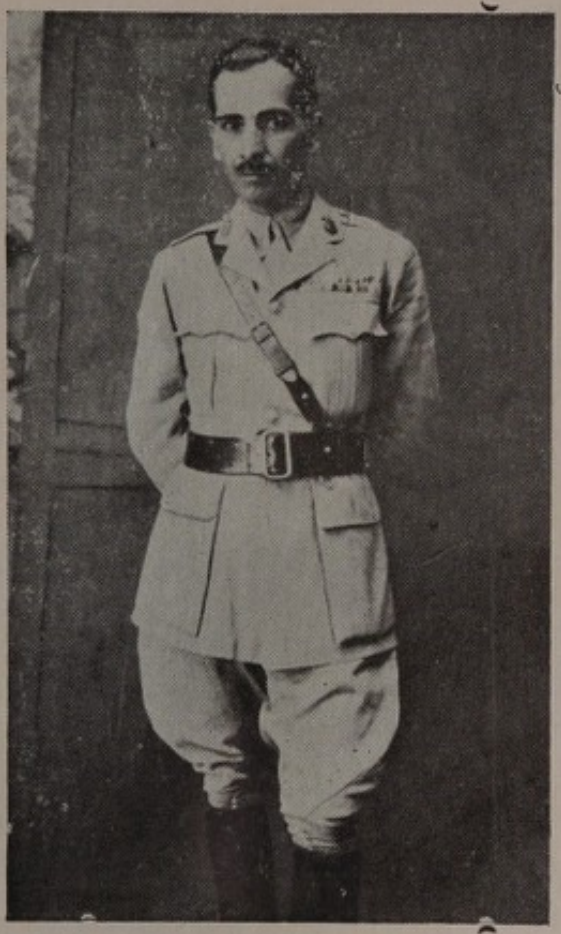
ACCOUNT OF AN OLD IMS OFFICER'S LIFE

MAJ GEN SIR HJM CURSETJEE KCIE, CSI, DSO, IMS (RETD)

Having qualified as MBB Ch. Cantab I passed into the Indian Medical Service in January 1912. I completed my preliminary training at Milbank and Aldershot and later, I arrived in India, at the British Station Hospital Rawalpindi. There were no Indian Station or Military Hospitals those days but only Regimental Hospitals.

My first experience of a Field Medical Unit was at the end of Rawalpindi Course early 1913, when Medical Manoeuvres were held in Hasan Abdal Sang Jani area. I was detailed to an Indian Field Ambulance. Medical Units for two complete Divisions were mobilised by drawing on the whole RAMC and IMS capacity of India and two skeleton Divisions of Troops by splitting each battalion into two. Ordnance equipment was drawn from the R'pindi Arsenal, Assembling bits of rope, tarpaulins and bomboos into twenty *dhoolies* with the aid of knowledgable Ast. and Sub Assistant Surgeons and a skeleton staff of ABC was a jig saw puzzle as far as I was concerned.

TYPES OF 7 COY IHC 1924-28

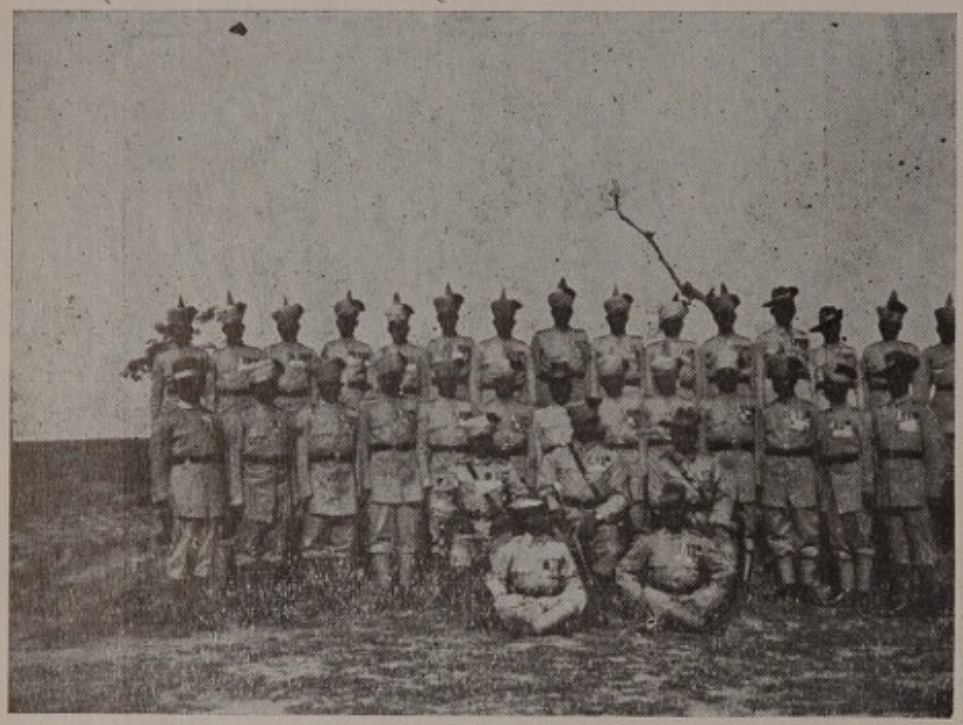


Maj Gen Sir HJM Cursettjee
KCIE, CSI, DSO, IMS (Retd)

Hav Maj Pitam IHC, IDSM 1926

Kit Inspection 1926

TYPES OF 7 COY IHC 1924–28



Group of 1914–15 Star

Hill Man — U P Hindu

Drill Order — Walking Out dress — Walking Out dress — Marc Order

Subedar, Jemadar. Hav Major. Havildars 1925

The ABC existed as a cadre only, actual bearers six per *'dhooli'*, were obtained by the IASC from the local country side: their outfit consisted of the clothes they stood in and an IASC issue blanket and I think a *thali* and *lota* wrapped in it tied with a piece of string and worn over one shoulder *'a la'* bandolier.

My section was detailed to open an Advanced Dressing Station for which we were allowed one 80 lb. tent, Medical panniers etc. The day was quite pleasant and passed off successfully. Night ops were not considered gentlemanly to indulge in. My CO ADS elected to appropriate the tent to sleep in and I had a *dhooli*. It came on to rain heavily; the tent was water logged and kept upright by its occupant supporting one pole; the *dhooli* was completely water proof and weather proof. The exercise was cancelled after the second day and all the troops marched back independently to their stations. The only words of command I heard given to the bearers were *"challo bhai age bharo* or *wapas"*. The collection of bearers and their blankets was an IASC responsibility. believe several deserted.

My next Field Ambulence work was when I marched from Peshawar with IMD; ABC; AHC and Nursing Orderlies and NCOs from different Indian regiments of a complete unit the remaining CO and Medical Officers joining at Nowshera for the Chitral Reliefs. In my excess of zeal I had attended and passed an Army Transport Course at Peshawar during the summer. I had the painful duty of supervising the load of some 50 camels with Field Ambulance equipment every morning till Chakdara where half of the unit was left with Brigade Camp and the rest went on to Kila Drosh on pack mules, the loading of which was not such a night mare.

An Indian Field Ambulance then was organised in four sections. A being British and B,C,D sections Indian. As all detachments had both British and Indian personnel no section was self contained for detached duty without borrowing feeding and cooking utensils; clothing and personnel from the British section to deal with casualties which may occur.

After the Rawalpindi Course and the Medical manoeuvres it was my good fortune to be posted as Regimental MO to the 14th KGO Sikhs one of the best of the old Indian Army. I was with them from 1913 to December 1918, except for a period June 28th 1916 to August 1916 when I was in hospital for a severe wound at Gallipolli in Malta and England and working my way back to the regiment which I joined in Mesopotamnia where they had arrived after the evacuation. My life in the 14th was very pleasant indeed. My subordinate in the Regimental Hospital was SAS Bhagwan Singh IMD (Amritsar trained); he had been with the unit 17 years; by December 1918 he was Subedar MC; IOM. My first few months with the Regiment after I rejoined had an amusing incident. We were then being re-made up at Bushir. At a morning sick parade a man reported that he could not march–a most unusual occurence in that particular unit. Bhagwan Singh could not give me any

clue; he certainly had one calf smaller by half an inch I marked him 'C' and ordered some *"malish"*. For the next day he said he was no better; he was a recent reinforcement with thc last draft. I happened to be playing hockey in a company game that evening when walking back in conversation with a Subedar who had also returned to the Regiment from the Depot in Multan I asked if he knew any thing of Sundar Singh who was reporting sick because he could not march. He asked *kera* Sunder Singh is he the man with one leg thinner than the other? I said yes. He said he is all right. Next morning at the sick parade there was Sunder Singh who said he was no better. I said there is no doubt your leg is a bit *"kamzore"*, while I am seeing the rest of the sick you will "Hips Firm", "Heels Raise", "Knees Bend" under the orders of the Havildar. While these orders were being carried out the rest of the sick were nearly bursting with laughter. I marked him "C" again. Next morning he said he was much better and he would carry out the exercise himself. One advantage of being a permanent Regtl MO.

I had arrived at Basra April 1916 with Medical Reinforcements for an Indian General Hospital, the subordinate personnel had been recruited in the Poona Bazar. Arrangements were mildly chaotic. There were no landing piers. Ships anchored in mid stream in the Shatl Haij. All personnel and equipment were loaded on barges and towed to rest camps some three miles up stream. On reaching the bank and reporting to the Military Landing Officer and applying for some transport to convey the kit to the Rest Camp, I was informed none was available. Luckily enough I saw a string of AT Carts going off duty I commandiered ten carts loaded up and got to the Rest Camp where we had to draw tents and rations and bed down for the night.

The Indian General Hospital at Amara reached about four days sail up the Tigris was tented. Conditions were no better–the Hospital opened after borrowing half the equipment of its neighbouring Indian General Hospital. Water was stored in dugouts lined with ordnance tarpaulins pegged down at ground level; no pumps were available all *bhistiese* were mustered with two kerosine tins each, punted out into mid stream of the Tigris in bellums and went back and forth till the tanks on the bank were filled; water was chlorinated by hand *andasa se*. Luckily I went on to rejoin my battalion within a month and I was once more at home.

By contrast arrangements for the Indian Brigade at Cape Helles were good. The Indian Field Ambulance was commanded and run most efficiently by Major Battyei. FRCS, MD, IMS. It was dug down in a cove on the beach while the troops held the line on the left flank on the cliffs in trenches. A hospital ship was in the offing. As casualties accummulated a naval picket boat was signalled to arrive towing a barge and conveyed the cases to the hospital ship. I was on board the ship within three hours of being wounded and so were others that day.

Towards the end of the summer 1916 the War Office took over the Mesopotamia campaign and the whole organisation assumed a different complexion. British

and Indian General Hospitals with Nursing Sisters and equipment were in local buildings or hutted in Basra and Amara and in Baghdad by 1917. Surgical, Medical and other Specialists were available chiefly RAMC (TA) with Colonel's rank as consultants at each of these places. Ford Ambulance Cars and Paddle Hospital Ships were available for evacuation of patients down the river.

In December 1918 I left my Regiment at Tekrit to join 36 Combined Field Ambulance and commanded it from about January 1919 till July 1920. This unit was organised as Head Quarter with complete RAMC Clerical, Quarter Master and Transport Staff and three sections each self contained with RAMC, IMS, IMD, AHC, ABC, personnel and capable of independant function when on detachment. The unit was first at Ramadi and later moved to South Kurdistan with HQ at Kirkuk.

As SEMO Kirkuk Area I had a large Y shaped area to look after, Kifri Kinkiban Rail head, Kirkuk at the centre, Erbil as one limb and Sulimania as the other. At Kirkuk we had a Combined General Hospital 50 British and 150 Indian Beds housed in a very suitable local school building also a small Family Hospital in a detached building with two QA Nurses as by then British families had come out to the country. I was very lucky in my staff of very efficient RAMC and IMS Officers all keen to make a good show. Among the officers we had an Irish and an English Hockey International and another who had played for Cambridge with two Ast and two Sub Ast surgeons and a few ranks we had a real star hockey team capable of taking on any regimental side.

We had an old British Infantry Sergeant as Pack Store Sergt. He was a most efficient foot and stretcher drill instructor and all fresh reinforcements were put through him on the barrack square till efficient. He knew every man by his name but had no Hindoostani beyond *teek hai* "look at me" and he would go through the motion.

By now organisation was efficient, piped water automatically chlorinated, operating theatre properly equipped with trained Theatre Orderly etc.

Kirkuk was fairly healthy as regards climate but anti-malaria precautions had to be strictly carried out especially on detachments on the L of C where malignant malaria prevailed. These were days of Quinine HCl injections. Two Labour Corps had been sent up chiefly for road construction; having the backing of Colonel James Graham IMS (later Maj-Gen Sir) then Director of Hygiene HQ Baghdad I managed to get the Area Commander to turn these on to drain and tidy up all streams and irrigation channels in the neighbourhood of all camps and L of C Posts to be in future kept in order by the troops themselves. Anti-larval measures were confined to floating sacking and rags soaked in crude oil and keeping streams without over-hanging foliage. No Paris Green, DDT or sprayers were available. I left this command with many regrets to return to India and take over command of an old time Indian Field Ambulance at Razmak an anti-climax from the one I cammanded last in Iraq.

My next Command was 7 Coy. IHC Meerut from 1924 to 1928. Then we were just "no body's darlings" not even of Medical Directorate. Indian Ranks were housed in dilapidated war time huts near the RA Lines; the Orderly Room and Offices in a barrack of the Medical Mob Store near the Cantonment Railway Station some three miles away. The Subedar was an aged Rajput of 38 years service who could only keep his cash account in Hindi and a nominal roll of ranks by memory. The Assistant Surgeon who may have been considered my second-in-command was horrified to find me already on parade on the first morning when he turned up in a pony trap and walked on in a "coat warm British" with the collar turned up and his little son holding dady's little finger while walking beside him. The men only did one parade per day under the Jemedar also an old caster from a Rajput Regiment slightly younger and a little more active than the Subedar. Each man cooked for himself or with his "*handwal joridar*" so he had no time to do more training. The Subedar's Treasure Chest - a barrack box - contained some Rs. 30000, Undispersed Field Accounts, under a kukri Guard on the out-skirts of the Cantonment. The previous CO had handed over temporarily and proceeded on leave ex-India, he had not counted the cash neither did I. The Subedar, his treasure chest and kukri guard were placed in a bazar *tum tum* and sent to the Imperial Bank where the money less some for current account was placed at fixed deposit on interest–the foundation of 7 Coy IHC Fund, later transfered to Lucknow when 7 Coy and 8 Coy amalgamated.

Luckily the Station and District Commanders having met me on the polo ground began to take an interest in my unit. During the summer while the DADMS Mob was at Ranikhet or on leave and I was officiating in his place I had the old Elephant Battery Stables on The Mall allotted to the Mob Store and moved there complete. The whole of 7 Coy IHC were accommodated in the barracks vacated by the Mob Store equipment.

With the help of the Station Commander but not the Medical Directorate, in time 7 Coy. were given vacancies for PT Education School Belgaum, British Cookery School Poona etc but TA for these was not sanctioned by CMA and had to be met from Company Funds.

The two Rajput Officers were sent on well earned pensions. Four senior Havildars Ambulance and Nursing were attached for training to the local Infantry Training Centre and later two were selected for commissions by a Board composed of the Brigade Major, Adjutant British Infantry and BO Indian Infantry.

By 1928 when I left to become DADMS Mob Meerut District all NCOs Ambulance Section had an education certificate in Roman Urdu and were capable of instructing in squad and stretcher drill and every man of the Ambulance Section was able to put on a Thomas's splint for fracture leg.

I had no ambition to be a physician, surgeon or specialist in any branch of the profession. I had the good fortune to get a good regiment and later the appointments which suited my tastes and inclinations on active service and in the best stations of old India. I had my share of accidents but never an illness to require admission into hospital.

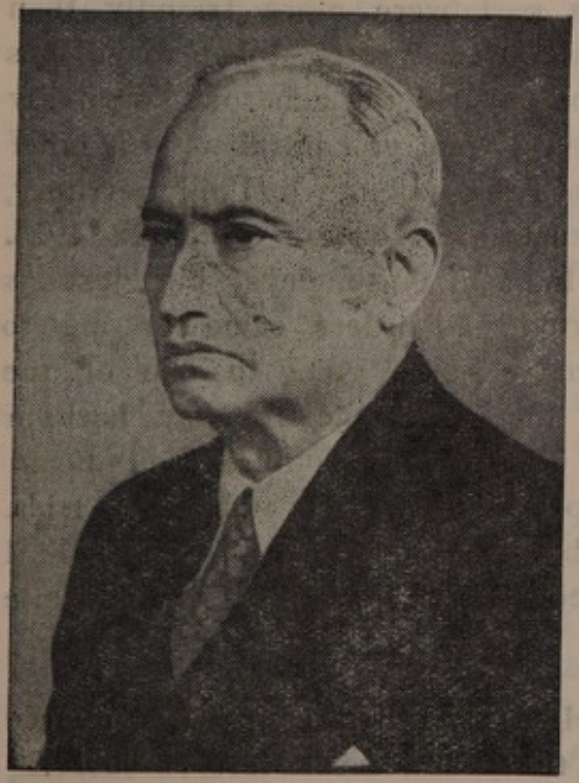
After leaving Meerut I Commanded successively IMH Poona, Kohat, Peshawar, Quetta and was officiating ADMS at these stations on various occasions thanks to a Brevet between 1931 and 1939. Later as DDMS 1941 to 1945 I have had luck all the way. I served on the junior staff of two Meerut District Commanders Devril and Ironside both of whom later became CIGSs and Field Marshals, and later on that of Auchinleck who also became Field Marshal and C in C India.

"Not Heaven itself over the past has power and what has been has been, and I have had my hour."

"Kor tha"

REMINISCENCES OF AN OLD I M S OFFICER

COL SIR R N CHOPRA, KT; C I E; M A, M D, SC D (Cantab)
F R C P (LOND), F N I, F R A S B, I M S (Retired)



A few months ago a former colleague in the service sent me a cutting from the 'Hindu' Madras; in the column 'FIFTY YEARS AGO' I found the following ;

"A Successful Indian IMS"

Dr Ramnath, a descendant of Dewan Sawan Mal, Governor of Multan in the Sikh reign, has besides creditably passing several other medical examinations in England, stood third in the last Indian Medical Service test."

I do not know who sent this news item; he had not given even my full name correctly, but it took my mind back to the days half a century ago when I entered the I M S after rather a stiff competitive examination. Soon, the successful candidates were sent to Aldershot for military training and I can still remember drilling on the square there under a peppery old RAMC Major who shouted orders often in harsh

language. This period was soon over and it was a great relief to go to the Royal Army Medical College Millbank, London where eminent men like Sir William Leishman delivered a course of lectures bearing on the work which awaited us in India. This was followed by a month's holiday which I spent touring on the continent of Europe in the good old days when there were no pass-ports and no visas. I can still remember the imperial splendour of Vienna in the days when the old Emperor Franz Joseph reigned and of Berlin and Germany where the mighty War Lord Kaiser Wilhelm II was on the throne.

Our batch of officers then embarked on a troopship and arrived in Karachi sometime in March 1909. Our first station in India was Rawalpindi where we remained attached to the British Station Hospital to learn the working of military hospitals in India. After a month or so I was posted as medical officer incharge of a Cavalry regiment at Bannu. Life in a Frontier station was by no means a bed of roses in those days. The Cantonment was guarded by armed soldiers all round and officers had to go about with loaded revolvers even in the Cantonment as a Qazi had recently murdered an officer. The journey from Kohat, which was the rail-head to Bannu, at that time was exciting and full of hazards. In hot weather it had to to be performed, on account of heat of the day, by night in a horse–tonga and it was not unusual for travellers to be carried away by hostile tribesmen into the independent tribal territory and held for ransom. Inspite of all this the life was interesting enough.

From Bannu to Dera Ismail Khan and from Dera to Malakand and Chakdara in Swat valley in the north was the next move. Here we had to live inside Forts as it was not safe to live outside. The tribesmen of this part were more friendly than the Waziris and Mahsuds who were positively hostile. I was often taken to villages in the interior to see patients and on those occasions enjoyed the generous hospitality of the people in the true Pathan fashion. From here I went to Chitral with a relief column, through about a hundred miles of delightful independent tribal hilly territory, for change of garrison there. My regiment was then transferred to Quetta in 1914. This was one of the best military Cantonments in India in those days, but just as we were settling down, the First World War started and orders came for me to proceed to Bombay to join the Indian Expeditionary Force going to one of the Theatres of War abroad. I can still remember the scene the Bombay harbour presented from the balcony of Tajmahal Hotel. There were hundreds of boats large and small, waiting to take troops to Europe, Middle East and East Africa. Without having the opportunity of wishing good-bye to my family in Kashmir, I proceeded to British East Africa with the Expeditionary Force for an indefinite period.

We landed in Mombasa and from there travelled by rail a couple of hundred miles north to a small settlement on the border of the Great Masai Reserve covering an area of many hundreds of square miles. The climate was good as here we were

on a plateau at an altitude of over 4,000 ft. The country side abounded with game of all descriptions. Elephants, giraffes, zebras, lions, wild buffaloes, ostriches and many species of antelopes were roaming about in close proximity to our camp as if it were a zoo. In this area was also situated the Magadi Soda Lake the basin of which was filled with a thick deposits of bicorbonate of soda of more than 90% purity. I still remember vividly the unsuccessful expedition to dislodge the German Force from a strong position it held in the hills bordering on German East Africa. I can never forget the two nights of terror our small column experienced going through unknown thick bush in a waterless country infested with lions and other ferocious animals and worst of all the enemy patrols. We then fought through the thick forests of Tsavo River to the German Settlement of Moshi on the eastern slopes of snow topped Mount Kilimonjaro 17,000 ft. high. The country was beautiful with thick primeval forests. From here right down to the sea, a distance of a couple of hundred miles runs a range of hills with a maximum altitude of 4,000 to 5,000 ft. and with a railway line running along the base. The hills were covered with coffee plantations with palatial residential mansions of German colonists. In the middle of this area on the slope of a hill stood the beautiful though deserted town of Wilhelmstal.

From Tanga, a sea-side town, we were shipped to the beautiful island of Zanzibar with its fragrent clove plantations and from there to Daralsalam the capital of German East Africa en route to the border of Portugese East Africa where a German force under the famous Von Lettow had retired and was fighting valiantly. In this part of the country severe types of blackwater fever and dysentery were rampant and hundreds of Indian soldiers perished from these diseases.

The strain of wanderings through the waterless African Jungles full of dangerous animals and under war conditions and not even a horse to ride, as all we took died of disease, was too much for me and in March 1917 I was invalided by a Medical Board and sent to a Hospital in Bombay. After a month's stay there I was sent on three months sick leave to my home in Kashmir to recoupe. After a period of 1½ years spent in various Cantonments in North India I was offered the post of Professor of Pharmacology in the Calcutta School of Tropical Medicine which was being organised, under the guidance of Sir Leonard Rogers, by my friend Major Knowles, who was with me in the Downing College Cambridge. It was a rare opportunity for an Indian Officer in those days. I presume I was selected on the strength of my research work for my MD degree of Cambridge University with the eminent pharmacologist Prof W E Dixon, FRS. I accepted the offer and reported myself in August 1921 to Col. JWD Megaw IMS later Major General Sir John Megaw, who was the first Director of the School. The other professorships were also filled by officers of the IMS because it was the main source available in the country at that time–Major HW Acton, Pathology & Bacteriology; Major R. Knowles Protozeology; Lt-Col. Fry, Hygiene; Major Stewart, Public Health Laboratory

Practice; later Captain Pasricha also joined. Most of us retired from the School with an excellent record of research work, which gave us an international standing as medical scientists and after completing terms as Director of the Institution.

It will be observed that for most of the senior professorial appointments well qualified and suitable officers could be found from among the Cadre of the IMS. This was due to the fact that IMS was a combined Civil and Millitary Service on all India basis. The officers had great opportunities & they, therefore, on their own attained proficiency in various branches of medical science so as to be able to qualify themselves for professorship in Medical Colleges as well as other specialist appointments such as heads of research laboratories, serologists, chemical examiners, etc. To my mind it was a very great pity that following the example of RAMC the new IAMC was made a purely military service. This prevents many able and ambitious young men from joining this service, as the scope for advanced professional work in the service is limited. It goes very greatly to the credit of the new Corps that it has produced very able surgeons, physicians, gyneacologists, pathologists, etc. who have made the military hospitals the most efficient of medical units in the country. I personally know a good deal of medical and surgical practice in some of the well established medical colleges and other civil medical Institutions and I feel that if necessity arose for me to go to a hospital for treatment, I would seek admission in one of the Military Hospitals. I would have perfect confidence in the skill of the specialists in the Corps and the close collaboration which is ensured in these Institutions among various specialists is a very great asset.

The work done by the Calcutta School of Tropical Medicine is well known. It was mainly through the labour of the officers of the IMS that within the short period of a decade or so the School became one of the foremost Institutions in the world in medical research. The old Indian Medical Service can justly claim credit for the work it has done in the service of India.

After retiring from the Calcutta School of Tropical Medicine in November, 1942, I came to settle down in my own home in Jammu and Kashmir State. Here also fortune favoured me and I was asked by Sir Gopalaswamy Iyengar, the then Prime Minister, to reorganise the Medical Department of the State as its Director of Health Services. I was also asked to organise an instituton for research on medical plants, 'The Drug Research Laboratory', with a view to laying the foundation of a drug industry in the State. My own work here has centred chiefly round the study of Indian medicinal plants.

I finally retired form Kashmir State Service in July 1957 after 49 years of active service without a break, on my nomination to the Upper House of the Jammu and Kashmir State Legislature as a Scientist Member. I am however, still carrying on work though with a much less tempo. The Drug Research Laboratory has been taken over by the Council of Scientific & Industrial Research, Government of India and is now named 'Regional Research Laboratory'. The facilities for work have therefore considerably increased.

I have written the above in the hope that it will give an idea to the colleagues in the AMC the varied experiences in the service of the members of old IMS and the great opportunities that were open to them. The scope of medical work in 'all its various branches is vast in our country and I am sure that the officers of AMC are contributing handsomely towards the welfare of the great masses of people of our motherland.

IN RETROSPECT

LIEUT-GEN D R THAPAR IMS (RETD)

World War I—Predecessors of our Corps.

The historic 'Pavilion and Dome' in Brighton had been the abode of Kings and Queens of England in ages past, but had been turned into a military hospital for Indian soldiers wounded in France. There was a crowd near the main gate admiring the 'Indian heroes' who had creditably filled the British gaps created by the German guns. Pushing through this assembly one saw about a dozen Indians clad in khaki clothes of different styles, shades and texture surmounted by Balaclava caps and mufflers, squating on their haunches and basking in the sun smoking their *hukkahs*.

These were the Cooks, Bhistees and Sweepers of the Indian Hospital Native Corps, enjoying their leisure when off duty. They had been uprooted and shunted off to France with the British Expeditionary Force at very short notice and therefore without adequate clothing and had to be draped in any thing available. Inspite of it all they were a happy bunch. Men were shaking their hands and offering them cigarettes whilst the fair ones were busy with their cameras and bribing them with chocolates to look towards them. Whenever one of them winked at a pretty girl the crowd guffawed and more sweets were offered. This was a daily occurence and they were having a time of their life whilst their families were subsisting on Rs 4 a month which was their Repatriation Allowance.

I was a Sergeant Dresser in the Indian Volunteers Ambulance Corps which had been started by the then Mr MK Gandhi in London and to which about 200 Indian

students from various universities in UK had volunteered. We were paid 10 shillings a day without rations or accommodation and permitted to wear cadet's uniform. Many of us wore a raincoat even on bright warm days to cover our shoulders in order to look like officers as all our British fellow students had been commissioned from the OTC. After a couple of months basic military training we were drafted to hospital ships and hospitals both in England and abroad. This auxilliary corps remained in force for about 18 months and was disbanded when suitable Indian personnel were despatched from India.

The hospital buildings were most decorative with gilded ceilings, moulded arches mosaic floors and large chandeliers, where the royalty held their courts and receptions. The senior staff was dug out mostly from the retired officers of the IMS whose ideas of drugs and treatment were not what was being taught in the medical schools. Their favourite antiseptic was Iodoform but Tincture Iodine could be dabbed with special care. When the younger element introduced Eusol the seniors condescended to its use provided it was boiled and used hot to avoid any infection. Yet most of our patients survived and many returned to duty.

Nursing duties were carried out by personnel of the RAMC and Dressers of the IVAC. Important dressings and treatment was prescribed by the youg Indian medical graduates who had not been commissioned so far because they were still formulating the Terms and Conditions of Service for Temporary Commissions which had not been done in the IMS previously. After July 1915 the competitive examinations were abolished. The British were given permanent commissions but the 'Indian subjects' were offered only Temporary ones though they all were interviewed at the same time. To allay this irritation the TC officers were paid Rs 50 p m more than the Regular ones.

There was a sprinkling of ward Sisters who beloged to many non-descript organisations. In other hospitals at Netley Mrs: Kasturba Gandhi, Mrs: Sarojini Naidu and Mrs: Bhola Nath had volunteered for welfare work amongst the patients. The feeding was excellent as expense was not of much consequence and the Hygienists in those days believed in almost overfeeding the patients and calories were not counted. The cooks worked under the supervision of Indian students who insisted on festive menus of *Pallau, Parathas, Purees* and chicken curries daily as this also obviated the vexed question of *Halal* and *Jhatka.* We all tasted the food as a safeguard for patients' welfare and it was exported from the hospital to high class hotels where our seniors entertained their *'koi hai'* friends.

Inspite of the good fellow-feeling in the camp the old Colonels were very strict in certain aspects of discipline. For instance I once saw a group of patients partaking of their mid-day meal on the lawn. As the group consisted of Pathans, Sikhs and Dogras I took a snapshot to show that petty religious and sectarian prejudices had

gone overboard when they sailed from their homes. I showed this to my CO. He was infuriated and demanded the surrender of all the prints and the negative, with a caution. "Beware, you young fool, there may be riots in India and the Field if such things got known. It must be discouraged and stopped." Actually an order was circulated that patients must stick to their communal kitchens and invariably feed in their respective dining halls.

The Rules in force did not allow an Indian subject to get a King's Commission unless he be a medical graduate and selected in the IMS. Many of us being final year students could not be kept on as Dressers indefinitely. Some of us, especially selected for their loyalty and integrity were offered Viceroy's Commissions in the Indian Subordinate Medical Department, but when we declined this honour we were given the option to resign and resume our studies. Although we had lost one full year of our curriculum I must confess, however, that on returning to the University my uniform did help in giving me a smoother passage through the examinations.

On joining the IMS I was posted to France. When I reported for duty a Major jumped up and saluted me, but on seeing my only two pips he scowled and ordered me to tear off those gorget patches. The tailor, by mistake, had put on golden braid instead of the silk cord on the black velvet patches; in other words I was masquarading under false pretences. As I came out of the room, thoroughly humiliated, I suddenly came upon a Brigadier General, but in my excitement forgot to salute him. When to his querry regarding length of my service I replied "One day, Sir" he had a hearty laugh and took me by the arm and gave a glass of beer in the canteen. Till the end of 1918 when our proper IMS badges were brought into use we were often mistaken for Padries and sometimes for RTOs.

At the CCS I came across the *Dooly* Bearers of the Army Bearer Corps. They were mostly *Kahars* from the UP with a sprinkling of non-martial classes from other parts of India. In the early days of the war many of them had lost their feet and even legs from frost bite as they were too ill clad and waded through the melting snow in primitive footwear. These were the men who, though invariably overworked and generally neglected, seemed always on duty and had brought many a wounded to safety through the mud and slush of Flanders. They had built up a fine reputation and endeared themselves with the Allied soldiers. They also acted as our batmen and my precious Pandoo was a perfect valet. He rebuked me whenever he suspected I was not on the right path. I met him again in India and persuaded him to come in my employ. His reply was "No Sahib, you do not need me now; you have a wife to keep you out of mischief," Priceless, I thought.

In the IGHs in France most of the nursing was done by Regimental Orderlies mostly from Cavalry regiments, under the supervision of 'Corporal Sahibs' of the RAMC. My orderly, Sowar Sher Singh, had worked in the venereal wards for the

last four years. When he was given the option of repatriation to India he refused to go but cried like a child. He later confided in me that having seen so much of this disease he was afraid to return to his wife though he did want to see his kith and kin badly. Some of them, though illiterate, had a fair smattering of English but quite fluent in French. As technicians in the X-Ray Dept: or Operation Theatre they were all that could be desired under the circumstances.

Specialists were in great demand and one could have a job merely for his pretences. I became a venereologist simply because the other MOs did not like to risk giving intravenous injections or try intra-thecal anaesthesia. On one occasion I had to officiate as a Pathologist for a month. Most of the respectable organisms were known to me but Amoebic cysts and Malarial parasites rather worried me. When it came to distinguishing BT from MT or chromosomes in a cyst I had to give up the sponge, but my laboratory sweeper could rise to any occasion and never hesitated in spot diagnosis. I eventually became Surgical Specialist to 16 IGH at Rouen. I suppose it was somewhat similar to a Civil IMS officer changing from professorship of Pharmacology to that of Surgery or from Physiology to Gynaecology.

About the end of 1918 the only Indian Troops left in France were the Drivers of the Ammunition Columns. They too were browned off and home sick. This started an epidemic which our Senior Medical Specialist termed Suppurative Tropical Mumps' and which later on was accepted by the Consulting Surgeon as 'Acute Tubercular Cervical Adenitis'. Every one was puzzled at the frequency of these cases unitl a young lad developed fulminating cellulitis of the neck and blurted out that a Barber in the Rest Camp was injecting them with *Ratti* (small red berries) paste smeared on a common needle and thread and passing it through the folds of the skin for a mere sum of ten francs. The number of such patients that had been invalided to India for TB was no ones business. For a free trip to Paris one had only to pretend an assault by a supposed rabid dog, as all such cases were sent there.

On returning to India in 1920 we heard that these two fine batches of men, the AHNC and the ABC had been amalgamated to form the Indian Hospital Corps. We had by then an experienced lot of men who had tasted the battle horrors and stood its acid test. No wonder they acquitted themselves so creditably in the Second World War that brought such distinction to our present Corps.

World War II – Ourselves.

A gap of twenty years between the two World Wars should have been long enough for the IHC to flourish, but 1939 found the personnel still called Orderlies, Bearers and Followers. Their pay, pension, rations, clothing and equipment were far below those of men of other Arms of Service. The Followers were not entitled to rations but received in lieu a miserable Line Allowance; they were entitled to mosquito nets but not charpoys. Indian personnel could not make use of electricity even if the

barracks happened to be wired and the men willing to pay for the current. But inspite of all these injustices and irritations the men were well trained and experienced in their duties.

I was in command of the Rawalpindi Company when at midnight on 2nd Sept 1939 an urgent telegram from Simla addressed to INDHOSCOR said ' India declared war on Germany". One felt very important but quite at a loss to know what precise action to take. Even the Brigadier, next morning, could not explain why we had been singled out for this distinction. Within a week or so of this large demands were placed on our meagre holdings which resulted in many of the hard-core sent abroad immediately. Even clothing was in short supply and to equip these men local contractors had to be employed to clothe them in any khaki material that was available. That month I wrote my first cheque of six figures and felt like a financier. Soon the recruits started pouring in hundreds, but we had hardly any clothing to issue them or instrustors to train them. They could have only the barest of basic military training and some of them were drafted overseas before they had learnt to form-fours or had memorised their Regimental Number. A few of the Stretcher Bearers returned to to India, wounded in battle, within six months or so of their enrolment.

We were forced to call up the Reservists numbering about 5000. It required seeing to believe what a motley crowd they were. Well above forty percent were declared unfit for any service and this resulted in numerous Invaliding Boards and settlement of their accounts. With the exception of about twenty percent that had been sent on the Reserve recently the others could only be used for mild fatigues and counted merely as so many heads. There was a great shortage of sweepers and several non-descript types from the South were recruited in this category. They all refused to attend to the latrines or touch wet refuse. There was almost a riot in the lines and a large number had to be discharged under 'fraudulant enrolment' and others induced to work as 'dry-sweepers'. Only the Recruiting Officers knew the meaning of this technical term.

A CO of a Field Ambulance recieving these reinforcements reported "Draft arrived with several men wearing their left boot on their right foot and unable to march". Another report stated – "It is plainly obvious that the reinforcements are thoroughly useless, untrained and incompetent. Disciplinary action taken against seven of them within an hour of their arrival." This was the general trend of opinion and there were hardly any compliments paid to us.

Conferences were held at General Headquarters and Command levels, each resulting in augmenting the training staff but reducing the training period owing to an ever increasing demand for new units being raised. Such was our preparedness for War. As recruitment became slow more and more tempting terms were introduced in the Corps. The Followers were given the combatant scale of rations as they were

now termed 'General Section.' The Companies were renamed as Battalions. A year later they were turned into Training Centres with Depot and Training Wings. The Corps strength within a couple of years had increased from 8645 to 64,000, and each Centre was holding something like 4000 men.

Against this rosy picture was the trying time the Corps was passing through to keep its integrity and maintain its reputation. All prewar men had by now become NCOs. Recruits in hundreds were entrusted to these raw NCOs and young VCOs. This necessitated 'milking' of Field units to find instructors for the Training Wings. When well known classes were exhausted persons of obscure origin were also recruited and Instructors were hard pressed to detect a lingo in which they could impart their instructions. An OC of a Field Unit wrote in his War Diary.— "The men speak no known language"; and my Army Commander wrote in my ACR "He successfully manages to command the most hetrogenous crowd of human beings that could ever be seen together." For this peculiar faculty I was awarded the insignia of OBE.

They say every cloud has a silver lining. The acute shortage of medical personnel brought the medical services to the forefront and we were visited by no less a person than the Viceroy of India, in October 1942, to ginger up our morale. It was soon realised, however, that morale alone will not help in mobilising the ever increasing number of medical units. To give some shape to our officers an Army Medical Training Centre (now AFMC) was started in January 1943 and to produce NCOs and instructors a VCOs and NCOs school was added to it. The tragic experience of a Field Ambulance in the 'box' at Kohima, where the Japanese respected neither the sickness nor the Red Cross, necessitated arms training for our men as a measure of self protection.

When this was the state of affairs in respect of men, it was far worse regarding medical officers. All that the civil could spare had been roped in. To have a sprinkling of senior officers every available IMS civil surgeon was now in uniform and called upon to command a large unit and feeling completely fish out of water. Most of the young graduates had joined. Out of a total of 14000 graduates of all ages and physique more than 4000 had volunteered for service without any compulsion which is a great memorial for the nobility of our independent medical profession. Medical tests went by the board and any one with knock-knees, squint or grey hair was welcomed as he helped to relieve fitter men from hospitals in India for field units abroad. Their training period was a fortnight to equipt them and then with the mobilising unit.

At this stage I was transferred to Poona to take over the Record Office, where records and accounts of about 75,000 personnel were housed in one large barrack and looked after by 2 Officers, 3 VCOs and about a hundred clerks. It was considered a *cushy* job as one did not have to sign more than half a dozen returns and could not

create work for more than four to five hours a day. The GHQ., on the other hand, was recieving hundreds of complaints from men serving abroad. Within a few months of this well earned rest, the GHQ appointed a committee of experts to go round the various Record Offices to see how they functioned. Luckily, as a force of habit, I had invited the Committee to an excellent lunch the day before our inspection. An hour after their arrival at my office they came to me and said "This is not a Record Office but a storage dump. Most of the IRLAs either do not exist or are hopelessly incomplete. We can not trace anything at all." When I presented a pathetic picture and admitted ignorance, they took a sporting view and pacified me by suggesting that a team of Instructors will be sent to look into it, but advised me to take the initiative of reporting inadequacy of staff to the GHQ.

By this precaution I had saved myself by the skin of my teeth as the volcano burst when the team started their investigations. Most of our men were shown in bebt as their pay was not being regularly credited to them; their rolls lying packed in gunny bags as received from overseas. Some families were recieving no remittance whilst others were getting a double payment–thus balancing the accounts. Many of the men alive were not being paid and several of the dead ones were still on our pay rolls. In fact it was a real chaos. Why the authorities did not throw me out I can not explain to this day. All of a sudden our WE was revised and I was given 8 officers, 24 VCOs and about 400 clerks. Our office was shifted and given accommodation large enough to house a battalion. It may not rain but it pours.

It was now being realised that the Indian Army had taken over a major role in the fighting in the East and that the medical cover for the ever increasing Force which had been poor all along had now reached a breaking point. UK could not spare any more doctors. This resulted in the Soutter Commission who after studying the conditions and arrangements in India were aghast at the poor quality of personnel. They could not understand why an Asst: Surgeon IMD, though fully trained, could not function as a medical officer. They were appalled to note that the personnel of the IHC were the poorest paid individuals and recruited mostly from illiterate and indifferent classes not required by any other Arm of the Service.

This was a rude awakening for the authorities in India and they were forced to accept the recommendations of the Soutter Commission ! About the middle of March 1943 a conference of Centre Commanders was suddenly summoned at Delhi to adjust the new proposals in the framework of the Corps. We were given a most pleasant task to review the WEs with a view to fit in an enormous number of VCOs and NCOs that had been sanctioned to bring the prospects in this Corps some what similar to other Arms. We dished out Jemadars in handfuls with a good splash of Subedars to all major units. In the end this pleasant task became difficult as so many VCOs had to be adjusted without overloading the units. Inspite of all our efforts we had some Subedar Majors spare and had to attach an SM of each section to the Headquarters as advisers to the Comdt: This was the birth of a new Corps—the. IAMC.

In this gold rush several hundred Havildars were promoted to Jemadars; every Jemadar became a Subedar and some jumped to Subedar Major. New classifications were introduced in the Nursing section to attract educated persons. The Centre Commanders were raised to the rank of full Colonels and the Officer in charge of Records was designated Commandant Admin: Headquarters IAMC and was placed directly under the GHQ and answerable to the DMS. On my first inspection tour of the Centres the four Subedar Majors accompanied me and I felt more important in that role than I did later on as DG AFMS, but as it looked more like a travelling circus this practice was given up and better use made of these senior persons at the Corps Headquarters at Poona

Besides these boons there was a general improvement in the status and prospects in the Corps and the personnel responded with great enthusiasm. It offered every man a chance for the highest promotion in his own sphere of activity. It abolished the irksome differences between the British and Indian cadres of the IMD. Out of 2434 serving Asstt: Surgeons 1434 were commissioned within a few months; others who were POWs etc followed suit at a later date. Jemadar Digbir of the ABC retired as Hon: Captain with OBI and IDSM; Jemadars Shiv Narain, Ghulam Farid, Kartar Singh and a few others attained the rank of Major in the Corps. Several VCOs of the Clerical section were commissioned as Record Officers and served in the Corps and at other Centres. The officer strength rose from 419 to 6991 and the other ranks numbered over 162,000.

During this war 208 officers laid down their lives including 39 killed in action. Amongst the VCOs 14 were killed and 32 died from other causes. The number of dead amongst the Other Ranks was 1,791 including 245 killed in action. The Corps recieved 963 Gallantry awards including 8 DSOs, 80 MCs, 38 MMs and 814 were Mentioned in the Despatches. In addition 432 members of the Corps received other decorations including 1 Knighthood, 14 Companionships, 130 in the Order of the British Empire and 277 in the Order of the British India and 21 received Indian Distinguished Service Medals.

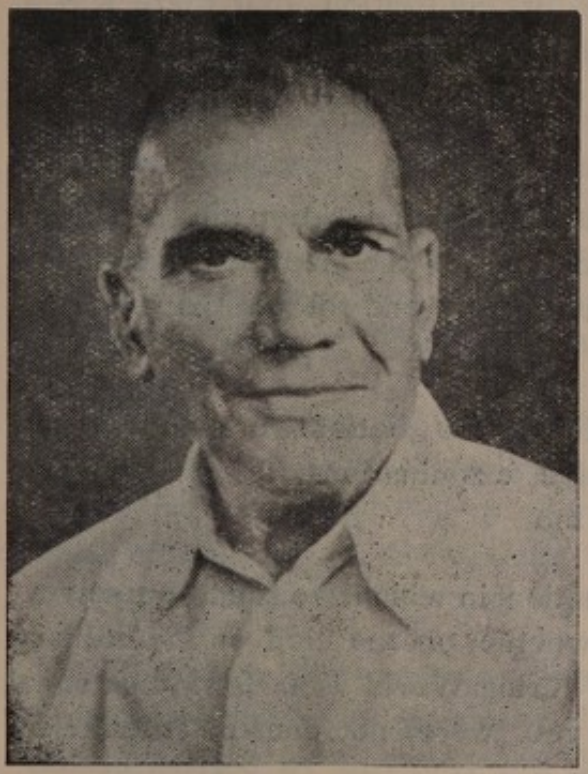
To mark the end of the war, when demobilization was in full swing we had the biggest Anniversary Parade at the Race Course at Poona, when nearly 3000 men took part. Pipe Bands of all the three Centres were massed and 24 Buglers played the General Salute. As a compliment to the Corps Headquarters the Commandant was posted as the first Indian DDMS, at the GHQ and awarded a CIE.

The reader must forgive the recurrent use of first person singular in this narrative. Major General Chaudhuri had asked me definitely to write my personal reminiscences and not a history of the events. When doing so a certain amount of self praise becomes obligatory and difficult to avoid. I have worn the military medical uniform for 40 years, from 1914 to 1954. I wish I had the literary ability to describe the progressive achievements in the Corps in a more balanced manner before my memory fails.

A SURGEON LOOKS BACK

COL V R MIRAJKAR, F R C S

"When to the sessions of sweet, silent thought
I summon up remembrance of things past....."



It is an experience of rare delight to sit still for a while and cast a look back. Men and women long forgotten, small advances in the field of science that at one time seemed to be of tremendous importance and the great achievements of pioneers—all crowd out from the darkness of oblivion and present themselves in a new light.

In such a mood, when I compare surgery today with the conditions that obtained at the beginning of the century, I feel as if we are now in a new medical world. I am reminded of my early days in the Grant Medical College, Bombay, in 1908, and of Lt Col Ashton Street, FRCS, I M S, who was our Professor of Surgery.

Known as the "Lightning Operator", his manner was brusque and taciturn. He spoke little. But when he did, with coarse, sardonic humour, he made nurses blush and students feel delighted.

I have yet to see another surgeon who is as quick an operator as was my old teacher. He could, for example, complete Hysterectomy in under ten minutes. One had to be quick in those days as general Anaesthesia was mainly Chloroform an an improvement on it was ACE mixture in the proportion of 1: 2: 3, by Junkers apparatus. It was natural, therefore, in those days that physicians should hold the sway and surgeons be looked upon with dread.

The lessons learnt from the South African War and, later, the two World Wars revolutionised the whole gambit of surgery. Besides the opportunity to devise new methods offered by the tragedies of the wars, antiseptics, beginning with the crudeness of the carbolic spray and followed by the rituals of asepsis, made the going easy for surgeons—and safer for their patients.

In the days of antiseptics, the chief armaments were Hydrarg Perchlor 1 in 2000 or 1 in 20 carbolic. Rubber gloves were not in vogue. High pressure sterlisation

was just being introduced. Pre-operative treatment meant starvation and dehydration by strong purges. With all that, the training given to us was supposed to be on the lines of the medical schools and hospitals of England !

One reason for the comparatively poor training given to students in India at the time, according to the dogma then being preached, was the view that the British civilisation, with its accessories, was not exportable to non-British peoples. It was after many years, when people clamoured for more of civilisation that there was a change in this policy. Or was it that our rulers, finding that the Ship of the British Empire was sinking in India, acted in the spirit of the proverb that if you are facing total loss and ruin, be wise and give up half ?

Anyway, it was after this change in policy that medical education in India was given some importance Otherwise till then, the backbone of the medical organisation was formed of only sub assistant surgeons for Indian Army and for the British army, the military assistant surgeons.

In course of time, Indian students got qualified for better work and started competing with English boys in all higher competitive examinations. And slowly, in very small numbers, they got into higher services too.

But even then it was a very uncomfortable situation in which we found ourselves. You knew all the time that you were not wanted, whether on the civil or the military side. Every Indian officer felt it acutely, especially during World War I. My personal impression, recalling various incidents, was that you were not one of the select company.

Early in 1912 I started surgical training at St. Bartholomews, London. The standard of teaching and the ability of the students there was so high that, in the very first tutorial class my tutor remarked that my knowledge was not at all anywhere near the standard of the Primary Fellowship. I felt down-hearted and thought of returning to India. Comparatively speaking, Indian students paid little attention to the practical side and that was our chief drawback. Luckily, my two years' training helped me to catch up with the others and to get through the Fellowship.

At the begining of World War I, Sir Anthony Bowlby was the Senior Surgeon at Bart's. Later, during the war he became the Chief Consultant to the British Expeditionary Force in France. He was responsible for combining the surgical methods of the civil side with the stereotyped military surgery that was in vogue at the time. For this work, he drew widely from the experience he had gained during the Boer War.

When the call came, he gave up the practical and the more remunerative side of surgery and devoted himself exclusively to its development to meet the needs of

the war. With the experience he got by visiting the front-line, sometimes in the thick of the battle, often making notes on the spot, he helped greatly in reforming the medical aspect of the Army.

He posted female nurses in hospitals located in the war zone and formed new medical units. He got together able surgeons, grouped them into various teams and pressed them near the front line to treat the wounded at the earliest opportunity. He impressed upon the surgeons at the front to realise that their task was to undertake the primary stage of the definative work, which would be completed at the base.

It would be interesting to know that Sir Anthony's method of surgical cover has now become a routine practice in all the enlightened armies. The cardinal principle of military surgery today is never to undertake the primary suture of a wound received in battle. Delayed primary suture with or without antibiotics is the rule. Consultants sent to various other theatres of war also evolved new methods to improve surgery. One of them was Surgeon TP Legg, who was sent to Mesopotamia.

While dwelling on this point, I would suggest, as a lesson to remember, that anatomical approach, clean cutting, careful haemostatics, gentle traction, appropriate reconstruction at the end of an operation of each plane, with obliteration of every dead space, use of fine calibre suture material compatible with strength ensures healing by symptomless first intention.

The basis of present-day surgery is asepsis. In 1874, Ignaz Semmelweis, a young Hungarian physician, conceived the idea that sepsis occurred because of the deadly poison carried by surgeons and their assistants on their fingers, as the doctors often conducted the postmortem of septic cases with bare hands. He preached and practised asepsis, which then consisted of only washing one's hands. That was the time when its scientific basis had still to be found. Twenty-five years had to elapse before his ideas won world-wide acceptance. It required the work of giants like Pasteur and Robert Koch and a personality like Lord Lister to make the world understand what Semmelweis had grasped long back.

But micro-organisms still broke through the barrier of asepsis and disinfectants. In 1935 a new powerful weapon was found in sulpha drugs and the first of them was Prontosil. Since then Chemotherapy was introduced in fighting the sceptic organisms.

In 1928, Alexander Fleming, Bacteriologist to St Mary's Hospital, London, accidentally found a mould belonging to the family penicillium. With the assistance of Professor Florey of Australia and Chain, a brilliant chemist, they isolated mould Penicillium Notatum, which produced Penicillin.

Another very important aspect of medicine, plastic surgery, developed by leaps and bounds during the two World Wars. In World War II people suffered from

severe burns by phosphores, in addition the destructive lesions by bombs. Every one knows of Sir Harold Gillis the pioneer in this type of work. He trained a team of workers in this special branch of surgery and the results were marvellous.

To enumerate some of the developments brought about during the course of the two wars, we have :

Blood transfusion and substitutes for whole blood. The present advanced surgery is hardly possible without blood transfusions. The chief difficulty our forefathers had in the application of blood transfusion treatment was to overcome the physiological property of blood, i e, coagulation.

It was not until 1916 that the first anti-coagulant was discovered and that too during research by Jay Maclean, a second year medical student of John Hopkins University, who was investigating the clotting powers of certain Phosphatids when he accidentally discovered one that prevented the coagulation of blood.

Further studies revealed that this substance could be found in reasonable quantities in the dog's liver. And in this way Heparin became available for the first time. This was followed by the discovery of citrate solution as an anti-coagulant. It is much used these days but it has some disadvantages too. When large quantities of blood are to be given at a rapid rate, there is danger of citrate poisoning taking place.

Another wonderful discovery of late is the heart-lung machine, the popular one being Lilleihei-De-Wall Oxygenator, with a blood pump. With this machine, extra corporeal circulation can be kept up, when a dry field is required, in closing an Interventricular defect, at the same time it is essential to keep up the arterial blood supply to the brain. This is made possible by hypothermia and the extra corporeal circulation.

Discovery of sulpha drugs.

The great discovery in 1928 of Penicillin by Professor Fleming.

Diathermy in Neuro-Surgery.

Although not directly connected with surgery, the importance of helicopters in bringing succour to the sick and wounded can hardly be minimised. In future wars helicopters will be used more and more as a mode of transport for the wounded. They have already made their importance felt during the Suez campaign, two years ago.

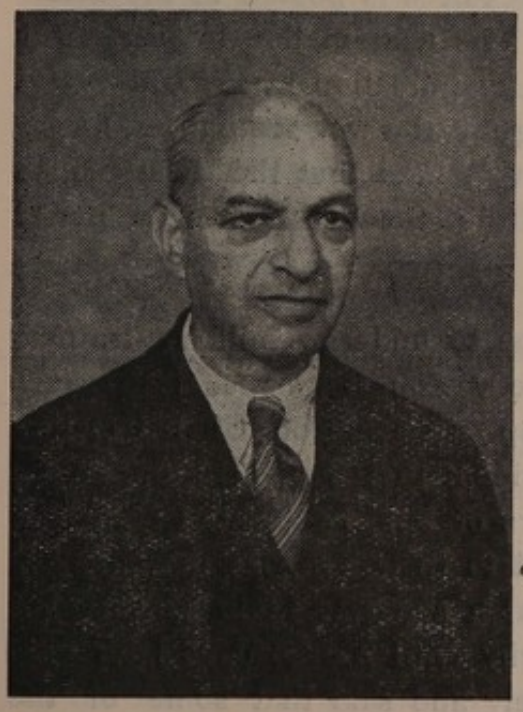
There is no doubt that our surgeons are capable of performing advanced surgery but our country is lacking in one thing and it is very essential for the advancement of surgery to have a place and a laboratory where students can conduct experiments and crystalise their ideas.

I have in mind something on the lines of the Buckston Brown Research Farm in England. We need a similar research station in our country. It must be on an all-India basis and well equipped and well provided for; otherwise the present state of affairs will continue for ever.

One word of advice to young men and women in the profession. With a large number of active surgeons in our country the dictum is: operate and tackle any Pathology, wherever it is found and whatever its nature. I have known of cases where young surgeons try to remove the ductless glands like Adrenals and even Pituitary to control Metastatic Cancer or Pancreas and surrounding portions of the digestive tract to eradicate the Carcinoma of the head of the Pancreas, even when the condition of the patient is not satisfactory. After all, there are incurable diseases in medicine, incorrigible vices in the clergy and insoluble cases in law. Why not, therefore, consider that there are inoperables in surgery too? Leave such patients alone, let them die a natural death—and in peace.

REMINISCENCES OF A RETIRED MEMBER OF THE INDIAN MEDICAL SERVICE.

LT–COL AMIR CHAND, M B, B S, F R C P E, I M S (RETD)



I am grateful to Maj Gen A M Chaudhuri for asking me to contribute to this booklet, which is being brought out on the occasion of the celebration of the First Reunion of the Army Medical Corps. It is an honour which I greatly appreciate. The idea is to give the past and present of the Corps and its predecessors.

At my age, one is privileged to slip back into a reminiscent mood and Gen. Chaudhuri has permitted me to do that. He has even left the choice of the subject to me. While the young have eyes only for the road ahead, they as they grow older, begin to glance back and finally they stop to study quite openly the way they have come. This is the true luxury of age and this is what I propose doing on this occasion.

I am one of the remnants of the I M S, which has had a glorious record and which, in my opinion, was the finest service in the British Empire and perhaps in the world.

It made the medical profession in India what it was right upto the dawn of Independence, and it was the medical machinery of the Government. It made its beginnings in the humble barber surgeon, who cut the hair and pulled out the teeth of John Company's employees on board the Company's troopships. Ultimately, under the Crown, the medical relief of the sick was entrusted to the care of the Army Surgeon, as a collateral charge in addition to his military duties.

Thus, while the I M S was inherently and from its conception a military organisation in actual practice it had a civil wing also. It was this civil wing which attracted me to it and I joined it in 1914 just before the First World War. Entrance to it at that time was through a competitive examination, which used to be held in London. It was one of the stiffest examinations one had to go through. The subjects for it were Anatomy, Physiology, Materia-medica, Pathology and Bacteriology, Medicine, Surgery and Midwifery & Gynaecology. In each subject, there was a written paper, with no optional questions, practicals and a viva-voce. In Pathology, there was a long practical test including Parasitology, Morbid Histology and Bacteriology. Much importance was attached to this test. Naked eye specimens were taken up in the viva-voce. In Medicine & Surgery, there was a searching clinical examination and there was a practical test in Operative Surgery on the cadaver. Viva-voce, which came last of all, was most bewildering. Ten minutes were allotted to each subject. All exminers were seated in one hall. A bell rang every 10 minutes, and the candidates moved on from one table to another in a circle to face a new examiner in a new subject each time. In one hour, it was all over and one came out of the hall with his head revolving. The examination was finished by lunch time and the result was posted in the afternoon. The physical test preceded this examination. The examination in July, 1914, was really the last of this kind. There was one more examination in 1915, but, If I may say so, it was of a different standard, what one might call a war standard. Those who got 33% marks were taken in. It may be mentioned that the best British candidates preferred the I M S to the R A M C because the former offered a better professional and more lucrative career.

The usual practice for the fresh entrants used to be to undergo military training at Aldershot and Netley for 6 months, but because of the war our batch was despatched straightaway to India without this training. The ship we came on, carried civil & military personnel only. I should like to recall one incident that happened on board the ship. We sailed at lunch time and all the members of our batch sat at one table for lunch, but at dinner time the Indian members found to their surprise that all their British colleagues had left them and taken their seats at a separate table with British personnel. We could guess, but did not quite know why until 2 or 3 days later One of the British colleagues came to us apologised profusely and said that some of the senior British officers had told them; "This is not done in India", and had virtually ordered them not to sit with us at the same table. This was the first instance of racial discrimination of which we saw quite a lot right upto the end of British regime

and which was the worst possible blot on the service, but, perhaps, it was the question of "the top-dog and the under-dog".

The 1914-18 war revealed the serious defects of the combined civil and military medical organisation. So far as the Indian Army was concerned, the medical organisation was found to be completely out of date, inefficient and unsuitable, both in peace and war.

Before the introduction of the Station Hospital system towards the close of the First World War, patients of the Indian Army used to be treated in regimental hospital, planned to be anything but hospitals, equipped badly as First Aid posts, and each manned by a Regimental Medical Officer, a Sub-Assistant Surgeon and a Nursing Orderly without any training in or experience of nursing. The medical relief given could well be summed up in Florence Nightingale's words- "The patient died of neglect and want of proper attendance but by regulations should not have died therefore the allegation that he is dead is disposed of".

On the civil side also, the combination of the civil & military functions proved to be fundamentally wrong.

After the war, genuine efforts were made to bring about the desired reform, but the reactionary proved too strong. He exploited the military by saying that the I M S reserve on the civil side was a military necessity. The argument that this military reserve had proved an utter failure on more than one occasion, that no army in the world maintained a military reserve of this nature, and that nowhere in the world were the civil and military functions of a medical service so combined went unheeded. In 1923, the Secretary of State in Council in order to check the further encroachment in the civil department by the military officers fixed their number to 268 appointments A further step was taken in 1928, but this proved to be deceptive and detrimental to Indian Interests.

Briefly, this step stipulated that "the I M S will be retained *primarily* to meet the needs of the Indian Army" and that "on as precise a basis as possible, the number of war reserve officers is 200 of which 134 will be British & 66 Indian officers". Giving details of the civil requirements it divided the officers into two categories :—

(a) officers required for medical attendance on superior officers and their families.

(b) officers required for civil administration.

In the same breath, it created a novel category of "residuary officers" who will be "permanently retained in civil employment whether for purpose of treatment or of administration and who cannot therefore be treated as part of war reserve" and their number was 102.

Thus, 302 officers (200 as 'war reserve' and 102 as 'residuary') were to be employed in the civil. The posts to be held by these officers were specified, leaving no choice to the civil authorities. While out of 200 war reserve officers only 66 were to be Indians the 'residuary' posts were so arranged that not one of them was reserved for an Indian. Racial discrimination was introduced by enactment in what was an Imperial Service. When during the Second World War mobilisation was ordered on a large scale, all the Indian portion of the Army Reserve was recalled to military duty while the British Officers holding residuary posts remained behind to enjoy the comforts and monetary gains of these posts.

On 15th August, 1947, when India won freedom, while all the other All-India Services were allowed to continue until they liquidated themselves in due course of time the I M S and the W M S were abolished. It is not understood why such discrimination was made. In the I M S our grievances were against the British members of the service who, on racial grounds, had monopolised almost all the key and prize posts for themselves. While they went away with full pensions and gratuities, the Indian members were further subjected discriminatory treatment by their own national Government.

This was the end of the service which began in 1615. Thousands had the honour to belong to it during the period of its existence extending to more than three centuries. Most of them are gone and forgotton; only a few are left to be "gathered to their fathers". As time rolls on, the service, and those who constituted it, will be forgotton but the few of them who have benefited mankind and made history; their names will continue to live and keep the name of the service alive. All glory to them.

THE MEDICAL OFFICER AND THE GENEVA CONVENTIONS

MAJOR–GENERAL B M RAO

Every medical officer is required, in his own interest to be familiar with provisions of the Geneva Conventions of 1949. An attempt is made in this paper to define his principal duties and privileges under the Conventions.

There are four Geneva Conventions of 1949, namely:–

(1) First Convention for the Amelioration of the Conditions of the Wounded and Sick in Armed Forces in the Field.

(2) Second Convention for the Amelioration of the Conditions of Wounded, Sick and Ship-wrecked members of Armed Forces at Sea.

(3) Third Convention relative to the Treatment of Prisoners of War.

(4) Fourth Convention relative to the Protection of Civilian Persons in times of war.

These Conventions were ratified by the Government of India, and became effective from 9th May 1951 in all conflicts in which India may become involved.

The guiding principles of the Geneva Conventions are :—

(a) Any individual who does not take part in a conflict or is no longer able to do so, for any reason whatsoever, is entitled to respect for his personality.

(b) The medical officer is required to treat anyone, without distinction, who is in need of his attention.

(c) Medical personnel are entitled to respect and protection under all circumstances.

(d) Reprisals against wounded, sick, medical personnel and buildings and equipment used by them are prohibited.

(e) No individual protected under the Conventions can surrender his privileges willingly or unwillingly.

(f) In addition to all the privileges already enjoyed, belligerents may conclude special agreements for additional privileges for the wounded, sick and shipwrecked as well as the personnel of the Medical Services.

Based on these principles, the duties of medical personnel involve the following:—

(a) When a Commander is compelled to abandon wounded and sick to the enemy, a proportionate number of medical personnel may be left in medical charge together with equipment, even at the risk of capture.

(b) A medical officer can request the Commander to ask for a temporary cease fire when heavy fire renders impossible the collection of wounded in the field. Similarly, he can ask for a cease fire for the evacuation of the wounded, and passage of medical equipment to and from a besieged locality.

(c) All presumed dead will be examined by a medical officer, to exclude cases of shock simulating death.

(d) A medical officer will treat wounded and sick of the ememy as well as his own, without any distinction.

(e) Priority in medical attention, care and evacuation will be strictly in accordance with the physical condition of the patient, regardless of his nationality, rank or status.

(f) Captured medical personnel or unit will continue to function as before and will demand medical equipment from the captors as required.

(g) Medical personnel, on capture, will not become prisoners of war but treated as retained personnel to look after the wounded and sick among Prisoners of War. They are however entitled also to all the privileges enjoyed by Prisoners of War. The number of such personnel to be retained will be arranged by mutual arrangement between the belligerents. Personnel surplus to requirements will be returned.

(h) Captured medical officers retained by the enemy will have the following duties :

(i) Sanitary inspections of PW Camps.

(ii) Medical charge of camp hospitals and dispensaries.

(iii) Monthly medical check up of all prisoners.

(iv) Transfer of cases of serious illness to proper hospitals.

(v) Prepare cases for repatriation for the mixed medical Commission.

They have the right to correspond directly with the enemy medical authorities or, through the camp spokesman, to the Red Cross Society for help. They will receive pay on the same scale as corresponding ranks of the Detaining Power.

In order to claim the privileges under the Conventions, medical personnel are at all times required to be in possession of an armlet showing the Red Cross Emblem and a special identity card of water resistant mate ial, both stamped by the proper authorities. Medical personnel are also entitled to carry firearms which they may use in self defence or in defence of the patients under their care.

A mixed Medical Commission consists of 3 doctors, one of whom is a neutral and is the chairman of the Commission.

The members are, one from the detaining power, and the other from the retained personnel. One of the members should be a surgeon and the other a physician, if available.

The Commission is required to visit all Prisoners of War and Internment Camps periodically and examine all cases put up before it.

The Commission makes one of the following recommendations :—

(1) defer decision till the next visit;

(2) transfer to a neutral country;

(3) repatriation.

Transfer to a neutral country and repatriation are arranged through a neutral intermediary, principally the International Committee of the Red Cross.

THE SPECIALIST CADRE IN THE ARMY MEDICAL CORPS

LIEUT GEN B CHAUDHURI

Specialisation has become the order of the day and with advance of science, this is inevitable; but before one embarks on specialising, one should plan well ahead to equip himself for it from a very sound foundation. One cannot hope to reach the top safely by avoiding the bottom steps.

Specialists in the various branches of Medicine in the Armed Forces Medical Services have been present from time immemorial. The late Indian Medical Service, of which we are the successors, has always had a good complement of specialists in the various fields of the profession. A glance through the back issues of the Regulations of the Medical Services will give ample testimony to their continuous existence from the historic past.

However until 1957, specialists formed an integral part of the Service and they had neither a different status nor were they treated as of an altogether different category.

The specialist today has come to be considered as a distinct entity in comparison with the general duty medical officer of the Corps. This differentiation first started

during World War II when direct recruitment of specialists as such was introduced to meet the wide gaps in the medical manpower. Specialists recruited directly were given the rank of Major. There were also as many as a dozen consultants at the late GHQ, almost all of them in the rank of Brigadier, guiding and directing the specialists apread all over. This situation, however, did not last beyond the end of World War II.

At the time of Independence of our country and the consequent reconstitution of the military medical services there was an extreme shortage of specialists, and of necessity, intensive efforts were made to make up the deficiencies by training programmes and study leave. Although specialist manpower situation continued to improve yet as a result of the expanding need of officers for the senior appointments a considerable number of highly qualified and experienced specialists had to be posted away to administrative appointments. To stop this drain and yet not deny the legitimate prospects of promotion new ideas began to take shape. It was in 1950 that a scheme for the creation of a specialist cadre was first mooted, but as the time was then considered inopportune it was not progressed to its logical conclusion.

Finally, in 1954 when the substantive promotion rules for the Regular officers of the Corps were reviewed by a high-power Committee, the question of providing exclusive and adequate avenues of promotion to the specialist officers in the ranks of Colonel and above was examined in detail and eventually led to the creation of the Specialist Cadre in December 1956. Similarly in the Reserve Cadre of the Army Medical Corps there exists the specialist branch.

At present the specialist cadre consists of Brigadiers/Colonels for the following appointments :—

Director of Research and Health

Professor of Medicine, Surgery and Pathology

Deputy Director of Hygiene and Pathology

Senior Command Advisers in Medicine and Surgery, and Senior Specialists in specialities other than Medicine, Surgery and Pathology.

All officers with specialist qualifications irrespective of the subject of speciality may elect to apply during the 15th year of their service for inclusion of their names in the special list called "Selected Specialist List", for ultimate consideration for promotion to the ranks of Colonel and above in the Specialist Cadre. Officers who are thus selected are not permitted to re-elect to revert to the administrative cadre on their own.

Adequate number of specialists in various subjects for inclusion in the selected special list is selected from amongst officers who have specialist qualification or experience.

The decision regarding selection or rejection of an officer for inclusion in the Selected Specialist List is intimated to him. An officer who is not selected for inclusion in the List may appeal through the normal channels once only for reconsideration within six months of the date of his rejection.

A non inclusion of a name of an applicant does not necessarily mean that he is not good enough but that he could not be fitted in the list in the interest of the overall planning of medical manpower.

All officers borne on the Selected Specialist List are considered for promotion in that cadre to the rank of Colonel/Brigadier or equivalent ranks in the Navy/Air Force by the appropriate Selection Board before completion of 20 years of reckonable service. The Selection Board grades officers for their fitness or otherwise for promotion to the appropriate rank in the Specialist Cadre only. The actual appointment will be made on the concurrence of a vacancy in the cadre.

One of the important factors is that the specialist officers should possess not only the necessary experience but also should possess a recognised post-grduate qualification. Those of the officers who do not have a post-graduate qualification at the time of selection are normally allowed a period of four years to acquire such a qualification. This is only an interim measure.

The appointment of Commandant Armed Forces Medical College which is in the rank of Major General is tenable by officers of the Specialist Cadre unless it is considered necessary in the public interest to appoint an administrative officer with specialist qualification.

The specialist officers can also aspire and hold the highest rank (Lt.-General) in the Corps as Director General Armed Forces Medical Services.

The above beginning has been made to improve the career prospects of specialists. But like all newly created schemes this has many problems of its own. It is not the intention to go into the details of these but in my mind there is no doubt that it is only an interim measure. In a highly technical corps where every member whether he/she is on the specialist list or not, cannot divest himself/herself of their innate duty to be adequately technically efficient in General Medicine and Surgery and allied subjects. If and when the next below rule can be introduced such rigid compartments, will auto natically disappear and such of the officers who have aptitutde and capacity for both administration and highly technical work would do well to come off his speciality for some time to do administrative work. In general, and particularly in the tropics, without good administration of a medical establishment full benefit of specialists' recommendation cannot be expected. In this connection I would like to stress that in the Armed Forces to be a really successful specialist one should go through the mill and he must know and acquire experience regarding the

environments and circumstances under which a soldier/sailor/airman lives and passes his days from the field or operational areas and in the peace stations. Then only one can really study not only the ailments of the patient but advise and recommend his other relevant needs. This is the reason that one is not included in the Selected Specialist List before he/she has completed 15 years' service. Too early specialisation without good general knowledge and experience of all the branches of medicine is not unmixed with danger of insulated views, which indirectly will dwarf full realization of high achievements in any speciality. For the same reason all medical officers must develop hobbies to break the insulating effect of narrow boundaries of a speciality and take interest in general education of oneself.

Second aspect of specialisation is that we should have many more specialists than are actually required for day to day duties so that, as mentioned above, specialists can come out of their shell for some time and give other specialists a chance and thus we can create an effective reserve of specialists for an emergency. There are other ways of having this looked into and is receiving earnest consideration.

My advice to all officers of the Corps is to constantly improve and keep abreast with the modern progress in the Art of Healing and also prove themselves to be a gallant soldier/sailor/airman. A medical officer of the Armed Forces has a dual role, that of being an expert in his own technicality as well as being a good officer. Then only can he have the confidence of those placed under his care.

Lastly, my advice to all aspiring younger specialists is to aim at the highest and not crave for cheap diplomas and certificates. Unless a specialist has a wide vision he cannot be the best specialist in his own speciality. Always aim for Master's or Doctorate degrees or Fellowships and Memberships, of high order and then after a few years' experience specialise in any one special branch. We have to constantly work hard and keep pace with the advancing science. It is thus that our Corps could really be justly proud of our achievements and prepare ourselves for our primary duty to the Armed Forces and the country at large and for the progress of the science of medicine which is advancing at a supersonic speed. Every specialist must take periodical stock of his contribution to the cause of our Science.

I hope, therefore, that one day my dream will come true when only the best candidates could get entry into the Armed Forces Medical Services.

I A F MEDICAL SERVICES

AIR VICE MARSHAL S P BHATIA

Historical Background

It is difficult and perhaps futile to attempt to trace the history of the IAF Medical Services before the Independence. Due to the dependence of the IAF upon the RAF with which it was functionally and administratively integrated, the medical branch of the IAF could hardly be described as a separate entity during the early days of the IAF. When the IAF had come into existence on 1st April, 1933, by the formation of No. 1 Squadron with a nucleus of five pilots, one equipment officer and eleven airmen technicians, it was understood that the medical cover to the Squadron would be provided by the RAF. For considerable time, the IAF continued to be served mostly by the RAF medical personnel. However, the IAF Medical Service gradually came into prominence, and there are a few memorable events during the pre-Independence days which deserve mention. In January, 1941 two medical officers of the Indian Army were seconded to the IAF. It was hardly realised that this step had laid the foundation stone of a branch which was to play an important role in the IAF. In 1943, the Medical Training Centre was established for training of IAF Nusing Orderlies, now called the Medical Assistants. In the same year a medical officer of the IAF was for the first time appointed on the staff of the Air Headquarters. A few IAF medical officers were also given an opportunity to serve in active units in Burma front during last World War. In 1944, the Govt of India decided to train a few selected medical officers as pilots in order to give them first hand knowledge of flying conditions. In 1947, the first doctor was awarded the flying badge. When the IAF had expanded to a force of ten squadrons in 1946, the IAF medical service had increased to about 45 officers and over 200 Medical Assistants.

IAF Medical Organisation

After Independence, the rapid growth of the IAF was accompanied by a steady expansion of the IAF Medical Services. The administrative set up now reveals self-sufficiency of the Medical Services. However, for in-door treatment, training of medical personnel and provision of medical stores, it is partly dependent upon the Army. Just as the core of the Army Medical Service is the regimental medical officer, the Air Force Medical Service is built round the squadron medical officer. The squadron medical officer has a vital role to play both in peace and war.

The Distinctive functions of an Air Force Medical Officer

It is often asked as to what is the precise nature of the duties of the IAF Medical officers. Those who are not in uniform and as such have little contact with the Air Force sometimes wonder as to what keeps these doctors busy, and what is in the IAF that fascinates them, particularly when the Air Force has no large hospitals to satisfy their urge for professional work. What interest do the squadron medical officers have in the Air Force, since being members of the ground staff, they do not have the privilege to fly as pilots, and as such are denied the joy and thrill of operating a machine in the air?

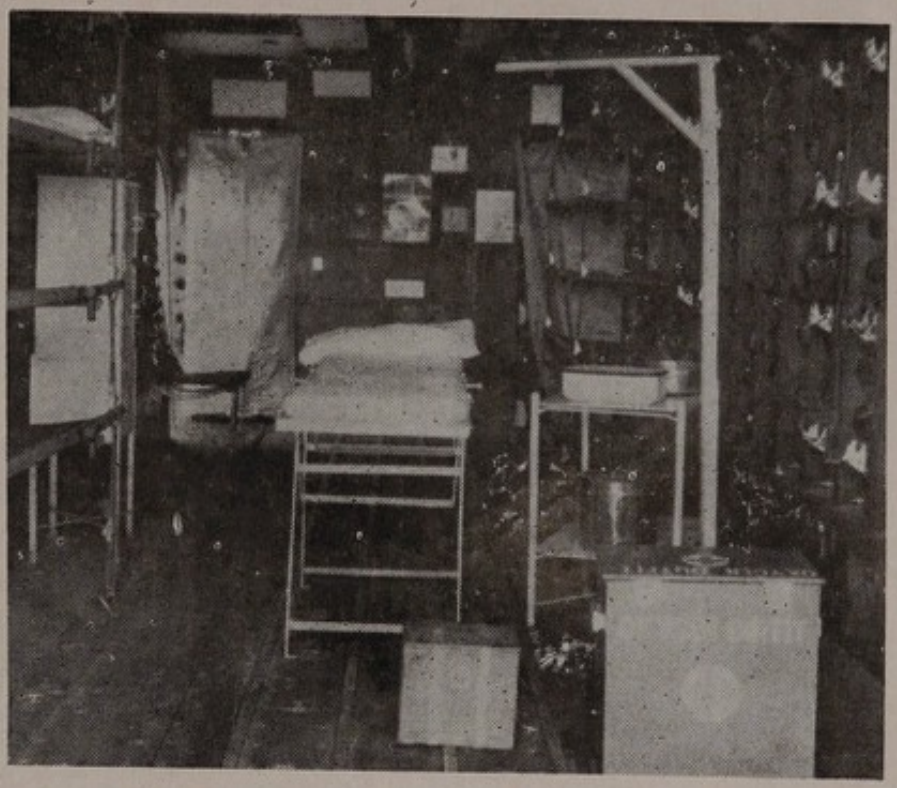
A statement to the effect that they are concerned chiefly with the 'care' of the flyers brings forth a volley of questions. Being a human being, does the aircrew not already posses a mechanism which is perfect in all respects, unlike that of the machine he flies. Men carry out their own refuelling in the form of food and water they consume; their bodily activities need no guidance for their performance; they can perceive, think and respond to situations without the aid of other human beings. Having undergone rigorous medical tests before joining the Air Force, the aircrew could not be suffering from any ailments requiring medical attention. What is then the nature of this 'care' for which doctors are required? In order to understand this let us trace the history of the development of aero-medical science in the western countries.

Origin and Development of Aero-Medical Science

(a) *The appeal to Doctors*:—For some years after the First World War, when it was recognised that aviation had importance in warfare, and when aviation had begun to progress by leaps and bounds in the Western countries, the role of the Air Force doctor in aeronautical development was considered to be insignificant, and he was consulted by his colleagues only when they fell ill or sustained injuries But the modest doctors absorbed in thoughts about the future aviation activities and their possible effects on the human body planned ahead of schedule and initiated simple experiments to study the effects on the aircrew of the environments encountered in flight. As aircraft designers gained experience, and achievements in aviation were continuing, a day came when it was discovered that a serious impediment lay in the path of the further growth of aviation. This was in the form of the human element with its limits of endurance to stresses associated with flying. At that time a voice was heard for the first time. "Doctor no further progress is possible without your help".

(b) *Contribution of Physiologists and Psychologists*:—The Air Force doctors assisted by civilian physiologists and psychologists conducted painstaking research to study the medical aspects of flying. These studies revealed numerous physiological and psychological factors associated with flying, and as military aviation grew, more and more facts were brought to light. It is

A Pilot Wearing his Routine Flying Kit



Inside of a Packet Aircraft modified for carrying casualties and for providing Medical and Surgical Aid in Flight

A Pilot undergoing ejection in an ejection seat test Rig.

Aircrew being tested for altitude endurance inside a Decompression Chamber

impossible even to enlist in this article the various items that formed the subject matter of these investigations. In the physiological field a large literature has appeared on subjects like hypoxia; decompression sickness; boiling of body fluids; neurocirculatory collapse; otitic barotrauma; sinus barotrauma; effects of linear, centrifugal and radial accelerations; labyrinthine reactions to light, visual aspects of aviation; effects of noise, vibration and noxious gases etc.

In the psychological field, there is hardly any aspect of human psychology which has not been studied in relation to aviation. Subjects such as visual perceptions, emotional reactions to flight, psychological disorders in combat aircrew, human element in flying accidents, and temperamental requirements for various crew jobs have received maximum attention. The results of all these physio-psychological investigations had there application in the selection of candidates for flying duties, in defining the limits of the stresses to which the aircrew could be exposed without danger and in under-standing the causes of flying accidents.

(c) *Crossing the barrier due to the human element*:—But how did all this work on the understanding of the responses of the body to flight situations help the doctors to break the barrier due to human element, which threatened to bring the progress of the aircraft to a standstill? For the solution of this problem they adopted a new approach. They ceased to look upon the aircrew, handicapped as they are due to their physiological limitations, as individuals responsible for operating the aircraft, but, instead, considered them as mere components of a machine-aircrew-protective equipment complex which enabled the execution of intended flight missions, whether for military or other purposes. The success of this approach is fully evidenced in the present day flights on military aircraft. The man in flight in the modern types of aircraft does not resemble morphologically and functionally the man on the ground. The safety equipment worn by the aircrew is part and parcel of his anatomy, and without it flying is no more possible than it is for an aircraft to remain in flight without its wings. His oxygen mask is part of his mechanism which enables diffusion of gases to take place in the lungs. His pressure jerkin is part of the physiological mechanism which determines the moves ments of his chest in respiration. His Anti-G suit is part of his elastic vascular bed which helps in the venous return and maintenance of blood pressure. His air ventilated suit is part of his heat regulating mechanism. His emergency ration is part of his depot fat which helps him to sustain existence during starvation in emergencies. The various visual and auditory aids are part of his senses which help him in maintenance of equilibrium, posture and orientation. Hence flights in modern types of aircraft have only been made possible by having men in the cockpits, who have, in a sense, been

modified anatomically and physiologically by the efforts of doctors in collaboration with other scientists. These complex and delicate bodies which fly aircraft are thus a combination of the animate and in-animate elements and hence the everyday "care" of the aircrew by the doctors includes the "care" of his inanimate component with all its imperfections. To compensate for the physical and psychological limitations of men, a new science viz., Human Engineering has been developed which aims at adapting, the aircraft design to the requirements and capacities of the aircrew.

The machine-aircrew-protective equipment complex is only a part of a larger "whole" which includes men belonging to different professions e.g. Medical, Engineering, Air Traffic Control, Meteorology etc. In the absence of any one of these professional aids, it is not possible to maintain flight missions whatever may be their role-transport of passengers and freight, military operations, training flights, rescue operations, transport of casualties or aerial survey.

Introductions of Aero Medical Science in the IAF

Some ten years back the IAF Medical Officers were called upon to assume their new role in respect of the "care" of the flyers and to advise on the various Aero Medical problems with which the IAF was suddenly confronted. The IAF Medical Service readily accepted this new responsibility, though it had neither the training and experience nor the equipment necessary for the discharge of these duties at that time. A few medical officers who have had the opportunity to visit the Aero Medical Institutes in UK or USA, came forward with their suggestions for the planning of research and training in aviation medicine.

Aviation Medicine Training and Research

In the absence of an established School of Aviation Medicine, short courses were organised from time to time at the Operational Command. To indoctrinate the aircrew in the effects of exposure to high altitudes and in the correct use of oxygen equipment, No. 1 Aero Medical Unit equipped with a Decompression Chamber was established at Palam. Later, this Unit was moved to the Defence Science Laboratory, for conducting Aero Medical Research in conjunction with the Physiology Wing of the Laboratory. An Aviation Medicine Research Centre was established at Bangalore, and a Medical Officer was attached to the Defence Science Laboratory for research in Aviation Physiology.

The Aero Medical Research and training was put on a more solid foundation last year with the establishment of the Air Force School of Aviation Medicine at Bangalore. The School runs elementary, primary, advanced and refresher courses in aviation medicine for the medical officers and the initial and refresher courses in aviation medicine for the GD officers. In addition it trains the Medical Assistants in certain aspects of aviation medicine. The recognition, last year, of aviation medicine as a specialised branch of medicine in the Indian Air Force has given a new impetus to

the medical officers who are keenly interested in the health and safety of the aircrew. The specialists in aviation medicine are employed either for duties pertaining to expert aero-medical advice or for conducting research in various fields of aviation medicine.

Role of General Duties Medical Officers.

It must not be thought that the introduction of aviation medicine as a speciality has relieved the other doctors of their responsibilities. Our general duties medical officers may not have received any specialised training in one of the recognised branches of medicine, but their Aero Medical contributions are in no way less than those of the specialists. Ignorance has sometimes led some individuals to look upon the general duties medical officers as mere healers of common cold. Common cold and many other disorders of a temporary nature may be minor illnesses but as far as the aircrew are concerned these are of considerable significance. Even slight infections of the upper respiratory passages may threaten an attack of otitic or sinus barotrauma due to flying. An epidemic of common cold or pharyngitis has been known to paralyse a Squadron. Minor gastro-intestinal disturbances such as constipation, diarrhoea or dyspepsia can produce at altitude marked distension, discomfort, and antonomic disturbances. Minor injuries, furunculosis, simple conjunctivitis, skin infections, allergic manifestations. fibrositis, dental caries etc. can greatly interfere with the flying training schedule of a Squadron. Our medical officers at the Stations are therefore required to have a sound clinical knowledge particularly in respect of those ailments which commonly affect the aircrew. In addition to providing expert medical aid to the aircrew and their families, the doctors have other important duties. The Squadron Medical Officers are closely associated with the flying sorties. They watch the reactions of each aircrew and inform the Squadron Commanders of any abnormal responses observed by them. They frequently inspect the protective equipment of aircrew for their serviceability, advise them on the correct use of these and if necessary, make recommendations for modifications. Whenever necessary they supervise the trials of new protective equipment introduced in the IAF. Their observations and reports on the various medical aspects of flying often form the basis of research projects undertaken by the Aero Medical research establishments.

One of the difficult tasks of the Air Force doctor is to assess the fitness of the aircrew for flying duties. There are many instances in which the medical condition of an aircrew has caused a dilemma in the mind of the examining officer who is required to pronounce a judgement on his fitness for flying duties. On the one hand the rejection of an enthusiastic and experienced flyer may mean the end of his flying career in addition to the loss to the State and on the other hand his acceptance for flying duties may be associated with the risk of aggravation of his medical condition due to the stresses and strains of flying, and to even the graver risk of sudden incapacity in the air resulting in a disaster.

Central Medical Establishment.

For many years before the Independence, the Central Medical Board had been carrying out the task of medical assessment of new entrants to the IAF and recategorisation of serving officers. With the much increased demand on the physio-psychological mechanisms of the aircrew due to the complexity of the present day aircrew task, a correct assessment in many border line cases is only possible with the help of medical officers who have sound clinical knowledge and adequate experience. For this reason medical officers specialised in various fields of medicine have, in recent years been posted to the CMB. Some time back an audiometry room, an optical section and a clinical laboratory were added to the CMB and were equipped with the latest types of examining devices. The new equipment not only permits a more precise and standardised method of conducting medical examinations, but it could also be used for conducting research on problems relating to aviation otology and ophthalmology. The wider scope and increased commitments of the Board have recently resulted in its redesignation as the Central Medical Establisment.

Aero Medical Society of India.

About six years back the Aero Medical Society took its birth supported by funds contributed by the medical officers of the Indian Air Force on a voluntary basis. The formation of the Society which aimed at dissemmination of aero medical knowledge through mutual discussions was a clear evidence of the Air Force doctors interest in the new enterprise. Ever since its inception, its scope and activity have rapidly grown. It also publishes a Journal.

Casualty Air Evacuation Unit.

In addition to the specialisation in aviation Medicine and other branches of medicine, there are some other interesting fields open for the IAF medical officer. One of these is the air evacuation of casualties. Impressed with the importance of speedy evacuation of the diseased and injured from the front line to the casualty clearing stations and finally to the base hospitals, the medical administrators proposed sometime back that a team of medical officers and medical assistants be trained to under take the task of evacuation of casualties, whenever required to do so, whether in peace time or in war. This proposal took a practical shape with the recent formation of a Casualty Air Evacuation Unit at Agra. The members of the team are well versed with the skill and knowledge required in the determination of suitability of casualties for air evacuation, in the pre-flight, in-flight and post-flight care of the casualties, and in rescue and survival in all types of terrain.

Medical Paratroopers Flight

Another interesting and important field of work for a medical officer is that offered by a medical paratroopers flight. Medical officers and medical assistants trained in the art of parachute jumping are members of the medical paratroopers

flights located in suitable places in the country. The para-medical team can be dropped for carrying out rescue operations and for providing medical facilities to survivals of crashed aircraft or to Armed Forces personnel in distress in inaccessible locations such as the deserts, jungles or hills. Nothing is more effective in raising the morale of aircrew and other military personnel than the assurance that medical aid can reach them, in an emergency, in any part of the country. These flights have carried out excellent work on many occasions.

Medical paratroopers flights also play an important part in national disasters. They have helped in providing prompt medical aid to victims of floods and famines in places like East Punjab, West Bengal, and Bihar. The good job carried out by them during the floods in Ceylon towards the end of 1957 is too well known to need mention.

Aero Medical Responsibility—Civil Aviation.

The Director of Medical Services (Air) is also responsible for the Medical examination and medical fitness of civilian aircrew. He advises the DGCA in all aero medical problems pertaining to the civilian aircrew and passengers. The magnitude of this task has recently led to the suggestion for the establishment of a cell under the DMS (Air) for such duties as laying down policy with regard to medical examinations, revision of medical standards from time to time provision of specialised equipment to units conducting civilian medical boards, special instructions for conducting medical examinations approval of medical boards findings, and advice on various medical problems confronting the civilian aircrew.

Conclusion.

All that has been mentioned in the above paragraphs by no means covers the whole field of activities of the medical services, but nevertheless, it shows the role played by IAF medical officers in aviation. What attracts the doctors to the Air Force? It is the desire to be members of that large "whole" which enables adventures in the sky, and in this the doctors experience no less thrill and pride than that enjoyed by those who are actually in the sky.

60 PARA FIELD AMBULANCE

LT COL N B BANERJEE, MVC, AMC

60 para Field Ambulance was raised on 10 Aug 42 as Infantry Div Fd Amb in Secunderabad. In Oct 42 the unit was sent on active service in Burma front starting from Arakan. In that theatre, it served till 43 under command of Lt Col Bisdee. On its return to India, the unit was attached to 44 Ind Air Borne Div and was reorganised as Para Fd Amb. The unit became a trained para unit in 1945 under command of Lt Col F G Foster MBE. In Aug 46, the unit took part in a Para Operation when two officers and eighteen OR under Capt (now Lt Col) N B Banerjee, jumped on Hatia Island in the Bay of Bengal.

In 1947, commanded by Lt Col A G Rangaraj, MVC, the unit moved into J & K. It took part in Kashmir operation with 77 Para Bde and moved into the Uri Sector. The unit worked under repeated enemy mortar fire and suffered three fatal casualties. In this Sector, the unit received the first Vir Chakra awarded to Maj V Rangaswamy. It was after shelling, from the enemy medium guns that the famous underground, "Cariappa Hospital" was built to be equipped and manned by 60 Para Fd Amb. The unit also gave medical cover during capture of notorious features of Pandu and Salonabad. Lt Col H P B Neku, MC took over the command during the later part of 1949 and the unit returned to peace station the same year for rest.

In Mar 1950 the unit rejoined 50 Indep Para Bde at Ramgarh under Command of Lt Col Rangaraj. By June the unit was earmarked for Korea and was redesignated as "60 Indian Fd Amb" for ground role. Unit sailed for Korea on 8 Nov 50 with 17 officers, 10 JCOs and 304 OR. The unit disembarked at Pusan on 20 Nov 50 and reached Taegue on the same day by train. It was a bitter winter. Troops suffered hardship ungrudgingly though our winter clothes were unsuitable. After a few days reorganisation at Taegu, the unit reached Pyongyang on 29 Nov 50. On 1 Dec situation became unten able on UN front and general withdrawal began in complete chaos. On 4 Dec, unit received order to withdraw immediately to Seoul on its own. There was no regular train service and no additional transport available to move the unit back. On the evening of 4 Dec, 24 hours before the Chinese and North Koreans occupied Pyongyang, 60 in desperation had to commandeer a train, find water and coal for the engine to get out of Pyongyang. Thus the unit escaped being POW. The unit reached Seoul on 6 Dec with all its equipments, stores and vehicles intact. Here the unit was regrouped into

"Forward element" consisting of one Surgical Team, two Sections and one Lt MDS completely mobile on own transport. It was attached to 27 British Bde at Ujangbu. The other was Adm element and was sent to Taegu with reserve personnel, heavy stores and equipments.

By now enemy pressure increased. On 1 Jan 51 order for further retreat was received. 27 British Bde was assigned to rear guard action and was to provide cover for the withdrawal of XI Corps. One Section formed ADS near Bde HQ while the remainder of forward element moved six miles South of Seoul. The Bde was also to occupy and hold parts of Seoul city in two places and cover the bridgehead across the Han River. To conform to this plan between 1 Jan to 3 Jan, Section ADS had to open and close three times at three different places. The withdrawal entailed fair number of cas. Evacuation to the rear was impossible. The casualties had to be treated, held and carried with the ADS. In the early hours of 4 Jan ADS closed down and moved with casualties to Suwon where cas were transferred to US Army Clearing Station. Lt Col A G Rangaraj was awarded MVC in this withdrawal.

About this time, Adm element at Taegu at the request of "UNCACK" rendered surgical and medical help to the ROK Army and Korean Civilian cas in Korean Hospital. Eversince, this help was continued till the arrival of Custodian Force.

On 15 Feb 51 US troops at Chongon-ni were cut off. 27 British Bde was ordered to rescue. ADS moved upto Yoju for medical cover. On 16 Feb MDS moved up amidst severe snow storm to join ADS. On 21 Feb rendered medical cover in "OP KILIER". The casualties from forward areas were evacuated by stretcher beares from 60 wading through knee-deep icy water. The Han River was frozen. The casualties from MDS were evacuated on ferry only after the sappers blew off the icy river bed. On 25 Feb, Gen M B Ridgeway, Commander 8th Army, visited MDS and commended men and officers.

On 20 Mar 51 Col Dobel DDMS, 8th Army visited Adm element at Taegu and appealed for surgical help in a para drop as 187 RCT (AUS Army Para Bde Group) did not have trained Para Surgical Team in establishment. The popularly called "OP TOMAHAWAK" launched on 23 Mar 51. The para Surgical Team of 60 was about 120 Miles forward of mounting airfield at Taegu. Equipment and stores had to be collected and packed for para drop. This was not an easy task within such short notice. There was a mad rush but by the evening of 22 Mar 51 every thing was shaped. The team comprised of Lt Col Rangaraj, Maj (now Lt Col Banerjee, Maj Rangaswamy (Surgeon) Capt (now Maj) N C Das (Anaesthetist) and seven OR including ORAs now teed up to cover the Air Borne Assault. The whole unit was kept in darkness till the morning of 23 Mar when the team moved to emplane. A total of 3500 troops took part in this assault. DZ was 35 miles behind the enemy line. The ground link up was expected within 48 to 72 hours of

landing. This top heavy team of '60' landed at 0930 hours on 23 Mar on the DZ. While on parachute flight, enemy rattled their machine guns and crashed 3" Mortars on the DZ. Immediately on landing first aid was rendered to 62 DZ casualties. Heavy medical equipments were dropped at P + 4 hours and Operation Theatre was opened within 20 minutes after the drop. The enemy was all round. Three major and half a dozen minor operations were performed on the same day. While Surgeon and Anaesthetists were engaged in operations, rest of the men and officers were frantically digging trenches for stretcher cases. Helicopters came by the same afternoon and casualties were evacuated. Whole blood, plasma and other supplies were obtained through returning Helicopters. On 23rd night was we moved lock, stock and barrel to Sinchon and Operation Theatre was established immediately. Stream of casualties started pouring in from the early hours of 24th morning and continued through out the day. Helicopters cleared casualties by the dusk. Night evacuation was not possible as the helicopters could not navigate. Casualties had to be operated, held and on move were carried by stretcher bearers provided by RCT. On 24th night we moved to Purun-ni where the enemy resistance increased. The groundlink up, to our dismay, did not occur on 25 Mar. Whole of 25th and 26th we stayed at Purun-ni. Enemy was holding on to the dominating features firmly. The enemy was over run only after 4.2" Mortars were airdropped for RCT. The team was busy day and night dealing with casualties and evacuating them by Helicopters. Unfortunately, heavy rain and mist delayed the Helicopter evacuation. There was no other alternative but to dig trenches for stretcher cases and parachutes were used for overhead cover and beds. We moved again on 27 night and reached Tokchon on 28th morning waiting desparately for ground link up which materialised the same evening.

In these 6 days of para operation none could rest except for a split second nap while standing and working; two of our boys, strict vegetarians, lived only on biscuits and tea as American Compo ration contained no purely vegetarian diets. Improvisation of Operation Theatre table and instrument trolly was possible by the ingenious effort of Capt (now Maj) A K Basu and the Anaesthetist. Along with the land tail of link up troops came the mobile kitchen and we had our first cooked food-fried eggs – a delicacy after 6 days. By 29 Mar we were back to Seoul, thus ended the "OP TOMAHAWK".

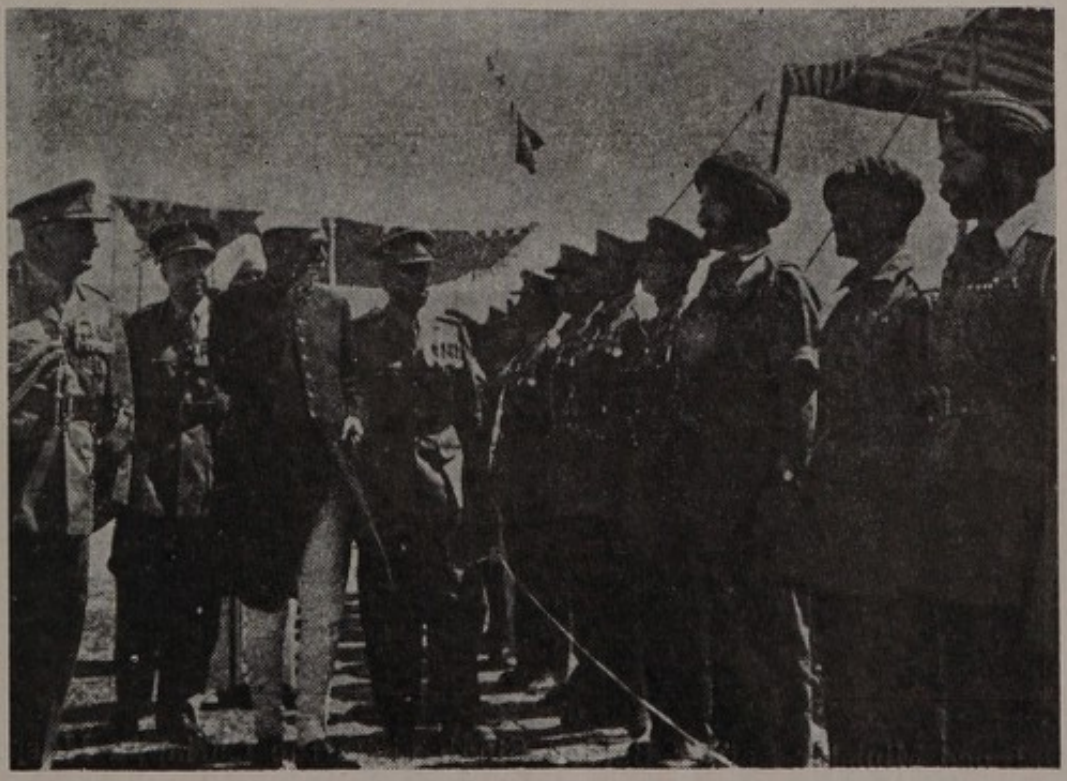
The following personnel received decorations in this Air Borne Assault :—

Lt Col N B BANERJEE	...	MVC
Major V RANGASWAMY	...	Vr C
Major N C DAS	...	Vr C
Hav/ORA RATAN SINGH	...	Vr C

On 31 Mar unit took part with 27 British Bde in securing Kansus Line, 12000 yards North of 38 Parallel Line. Unit had to deal with heavy casualties.

THE PRESIDENT WITH 60 PARA

The President Dr Rajendra Prasad Presenting Trophy—10 Mar 1955



The President with Officers of 60 Para old and new.

The famous underground shell proof "Cariappa Hospital"

The Defence Minister Sardar Baldev Singh visits the Cariappa Hospital. Gen. Sri Nagesh, Brig (now Maj-Gen) Handerson Brooks and Bakhshi Ghulam Mohammed accompanying.

Lt Col A G Ranga Raj AMC
with A DMS
Col (now Maj Gen) B M Rao

The Para Drop
in North Korea

L/Nk Ram Sureman AMC dispensing
to Civilians in KOREA

A Korean Scene 1951

On 22 Apr enemy launched a full scale offensive. Two Section ADSs were joined up to cope with an average of 115 casualties a day ; the casualties were evacuated by Helicopters. On 28 Apr MDS moved to Yong–pong.

UN troops resumed advance on 31 May at rapid pace. The unit covered as much as 80 miles at one stretch. As the roads were almost non-existent, MDS was sited within 4 miles of forward positions. Cas were evacuated by Helicopters to the rear.

About this time detachment at Taegu opened a dispensary attended daily by 200 to 300 civilian patients.

On 1 Jul 51 Commonwealth Div was formed and 28 British Bde with 60 came under its command. On 11 Aug the unit was cited for Meritorious Unit Commendation awarded by U S Army for a splendid work in Korea.

Towards the end of 51 the unit with 28 British Bde was engaged in series of operations. In 2nd week of September, Bde launched "OP COMMANDO" to establish James Town Line, North of Kansus Line. This operation lasted for six days. Unit treated and evacuated a total of 348 casualties in 2 days. Capt (Now Maj) Ashok Banerjee was awarded Vr C in this operation. His ADS was under repeated heavy mortar fire but treatment and evacuation of casualties were carried out with unceasing speed.

On 4 Nov the KOSB and KSLI were heavily attacked by a numerically superior enemy. Forward positions were overrun and dog fight ensued. One RAP had to be reinforced with one MO and stretcher bearer squad from 60. Casualties were evacuated from RAP to ADS under enemy shelling. The attack lasted till evening of 5 Nov. There were a total of 101 casualties. There was another mass attack by enemy on 17 Nov. Kosb suffered heavily MT/Sep Budh Singh and Nk/ORA Nag Sen Singh who were then working with Section ADS were awarded Vr.C. At the end of Dec 51, forward element of 60 withdrew to rest. But the detachment at Taegu continued untiringly to treat ROK Army and civilian casualties. On 17 Mar 52, Lady Mountbaten accompanied by Maj Gen Castle, DSO, the Div Commander visited MDS. She was impressed by the record of service of 60. This she conveyed to Prime Minister of India in a Cablegram.

The period from Jun to Sep 52 brought in difficult types of hazards. Unusual heavy rains, slowed down the tempo to set piece battle. The cas occurred all the same for enemy resorted to indiscriminate heavy shelling. ADS and MDS had also their share of shells. Fairly heavy shelling occurred on 13 Sep 52 and more than 70 shells landed on MDS. There were 6 casualties of our own unit personnel.

On 30 Oct 52 KOSB presented a Silver Salver to 60 in appreciation of the service to the Bn. In this month, unit relieved 29 British Fd Amb and moved

forward. There the L of C was so bad that ADS and MDS were compelled to hold casualties on several occasions.

MT/Nk Umrao Singh was awarded Vr C for his untiring devotion to duty risking his life on several occasions to evacuate casualties during the period of Dec 50—52.

On 23 Aug 53 commanded by Lt Col MBK Nair, MC, the unit joined the Custodian Force at the Demob Zone. 60 opened treatment centres in North and South Camps only to face new problems. Most of the POWs suffered psychologically due to indoctrination. Mass hysteria was rampant. Officers and men were also engaged in guard and escort duties in POW Camps. Located at 'Hind Nagar' by 1 Oct 53, the unit had established Mobile dispensaries and MI Rooms functioning smoothly. Officers and men infused cordial relation with various units of varied nations of UNO—a no mean achievement.

60 returned to India in Feb 54 after more than 3 years overseas Service in Korea. On returning to India, the unit rejoined 50 Indep Para Bde at Lucknow. Under Command of Lt Col Banerjee, unit moved to Agra with 60 Indep Para Bde and was busy in reorganising for para role as 3/4 of the unit personnel were neither para trained nor para volunteers.

On 10 Mar 55, Dr Rajendra Prasad, the President of India, personally presented a Silver trophy to the unit in recognition of the meritorious Service in India and overseas. The presentation ceremony was attended by COAS, DQFMS, DMS and all ranks who had served with this unit in J & K and Korea. It was a most happy re-union. The unit was busy throughout 1955 in reorganising and completing para training. A parachute exercise was held in Dec 56. The unit also conducted Annual Training Camp for 13 UP Med Coy NCC during the same year. A section ADS also took part in a Bn Group Air Borne Exercise. In Apr 57 on AMC Corps Day, a complete Surgical Team and equipments were para dropped at Lucknow.

On 25 Nov 57, 100 men and officers under command of Lt Col Banerjee, took part in exercise "VELL AR". The contingent was para dropped in the smallest possible DZ that was ever tried before by Indian Air Borne troops.

Following is the list of total decorations earned by the unit :—

(a) MVC ... 2
(b) Vr C with bar ... 1
(c) Vr C ... 6
(d) Mention in despatches ... 20

3 LIGHT FIELD AMBULANCE

LT COL R L PATHAK, AMC

Origin

This unit was raised in Sialkot in 1940 by Major S M Burrows, RAMC and was designated as 3 Indian Motor Brigade Field Ambulance.

World War II

The unit left the shores of India and accompanied 3 Motor Brigade to Egypt where it had the honour to join the Desert Army.

During the first withdrawal in the desert, the Brigade was cut off at Mechili and made its heroic break-out. During the engagement, half the strength of this unit was bagged as POWs. A reinforcement cadre was formed from 1st Indian Light Field Ambulance, then training in Sialkot, and sent to the Middle East under Lt Col B J Griffiths, IMS who took over the Command of the re-formed unit.

After a spell of service in Dierezzor (Syria), it accompanied the Brigade to the Western Desert where, it was out of luck again when the Germans attacked near Birhachim. After Birhachim the unit accompanied 3 Motor Bde to Persia and joined 31 Ind Armd Div.

The unit was next attached to newly formed 43 Ind Lor Inf Bde and went to Italy in Jul 44. On arrival in CMF the unit once again joined 1 Brit Armd Div.

In Italy, the unit had an entirely new role as the Field Ambulance in support of Inf Bde fighting in close country. The unit once again rose to the occasion and utilised all NCsE and extra drivers as stretcher bearers and earned a good name.

In early battles in Gothic Line in attack on San Savino Passano Ridge and the River Marano battles notable service was given by Jeep trains, which not only kept the RAPs empty but also scoured the battle field for patients. One driver of a Humber Ambulance actually had his Car overturned three times, but each time, it was successfully recovered inspite of the volley of fire. The daring act and steadiness of these men, veterans of the desert, were an inspiration to those who were undergoing their baptism of fire.

During the attack across the River Merrachia and on Castle of Sant Arcangelte on 22/23 September 44, unique problem confronted the field ambulance. The battalion got across 400 yds wide river, but during day, the river bed was under direct observation and heavy fire from the enemy. Evacuation of casualty was hazardous and well-nigh impossible. The Field Ambulance received two "Honey" tanks from 10th Hussars. These tanks with medical personnel made repeated journeys back and forward across the river, though continually shelled and mortared and succeeded in saving many lives of 8th and 10th G.R.

During the attacks on Monte Cadruzzo and Monte Chiceo, the brigade was operating well away from usable roads not bigger than mule tracks. The evacuation was entirely by mule tracks and hand carriage for a distance of seven miles. To make matters worse, the rains made hill side so slippery that the loaded mules were unable to climb them. The Field Ambulance stretcher bearers, however, made the grade, In the hills around Monte Cavallo a complete CCP had to be man-handled up the steep hill side. One MO had the original plan here of commandeering some local white bullocks to carry his CCP forward to Tesselle.

After VE day an interesting period was spent in Ronchi Deilegionary in the Trieste area until Jul 45 when the Bde sailed from Trieste to rejoin 31 Div in Syria. In Oct 45 Lt Col T R Bargotra assumed Command and brought the unit back home in Feb 46.

Post Independence Period.

During Aug 47, when stand still agreement was signed between the Govt of India and Hyderabad, the unit less detachment moved to Jhansi along with 1 Armoured Brigade.

In Oct 47 'B' Section was sent to Delhi during the Delhi disturbance. On 1 Nov 47 the unit received the orders to move to Delhi on operational role. Final distination was unknown.

The unit arrived in Delhi on 6th November and on 7th Nov 47 at 0730 hrs, the unit was flown to Srinagar aerodrome, in five Flights, without transport but with essential equipment. The unit joined 'B' Section at Srinagar which had already been flown with the first troops from Delhi to Srinagar.

This experience was unique in the annals of this unit. For the first time, it was thrown into Operation without transport, arms and ammunition. Immediately on arrival MDS was established and battle casualties were received and treated by the skilled surgeon who was attached to this unit.

During Kashmir operations, unit gave medical cover to an Inf Bde and in addition established Sections at Khannabal, Handwara, Sunawara and Bandipur.

Hyderabad Police Action.

The unit took part in Hyderabad police action and gave medical cover to South Eastern Force. With the successful termination of police action, the unit joined the 1 Armoured Division at Secunderabad and is at present with 1 Armd Div at Jhansi.

The unit has distinguished itslef on many a battle fields and its history testifies the high reputation for gallantry and efficiency. The unit is well aware of the fact that the heroic past requires us in the unit to live up to an even more hazardous and uncertain present and stirring future both in peace and in war.

MEDICAL AID TO CIVILIANS IN NAGA HILLS

LT COL K C MUKERJEE Vr C, AMC

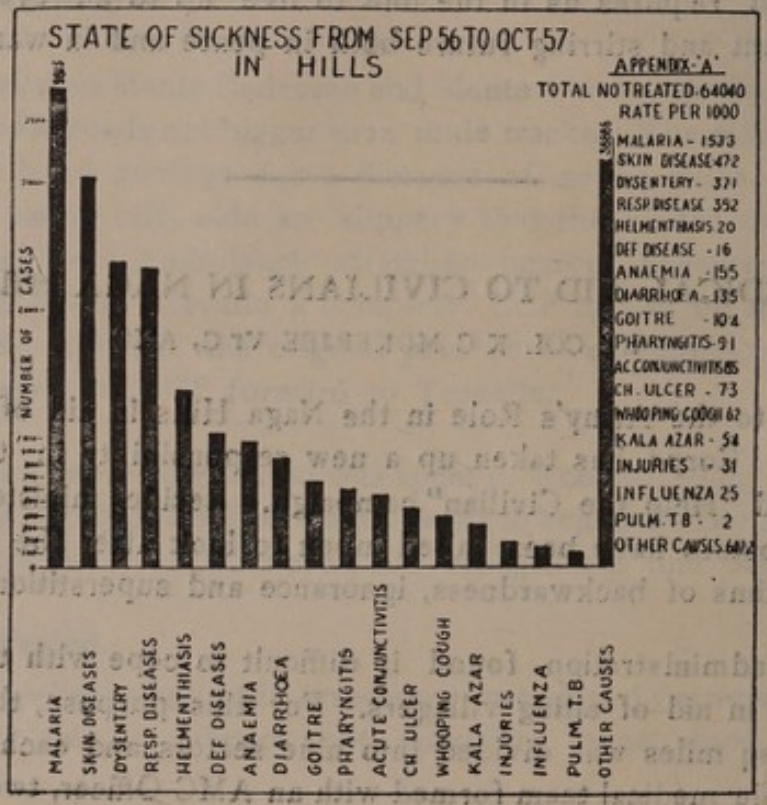
As a corollary to the Army's Role in the Naga Hills in aid of the civil power, the Army Medical Corps has taken up a new responsibility in this Area which, in short, may be called "Help the Civilian" campaign. Besides ministering to the military needs, the Army doctors have been called upon to look after the welfare of villages who have been victims of backwardness, ignorance and superstition for centuries.

As the Civil administration found it difficult to cope with the situation, Army doctors were called in aid of ailing villagers. For this purpose, the whole area comprising about 6000 sq miles was divided into nine sectors and each sector was placed in charge of a mobile medical team formed with an AMC Officer, two nursing assistants and necessary medical stores and equipment. These teams have been operating under the direction of the Asst. Director of Medical Services, HQ GOC Assam. The total population of this area which the former Naga Hills District of Assam and the Tuensang Frontier Division of the NEFA is a little over 3.5 lakhs.

Hazards and Handicaps

Soon after their formation, these teams started working in the villages in the interior where communications were almost non-existent and life was insecure. Treating patients steeped in ignorance and superstition calls for not only sound medical knowledge but a great deal of patience and tact also. How singular is the problem will be evident from a story narrated by a Surgeon who was in a dilema, as to whether or not to operate on a diphtheria patient who would otherwise die. The relatives of the patient strongly opposed any application of knife and even threatened the life of the Surgeon in case the patient died in his hand. Eventually, the Surgeon succeeded in operating cn the patient and curing him after guaranteeing his safety to his relations. On another occasion, the doctor, at the risk of his life, had to guarantee the

safety of the mother and the baby before he performed a Caesarean operation. However, inspite of many handicaps, the mobile teams of the Army Medical Corps have been rendering very useful service since the days of worst dtsturbances and have earned the confidence of the villagers. Besides these teams, the services of Regimental Medical Officers are being utilised to give medical aid to the civilians. They have already treated more than 64,000 cases in various sectors. Details are shown in the diagram below.

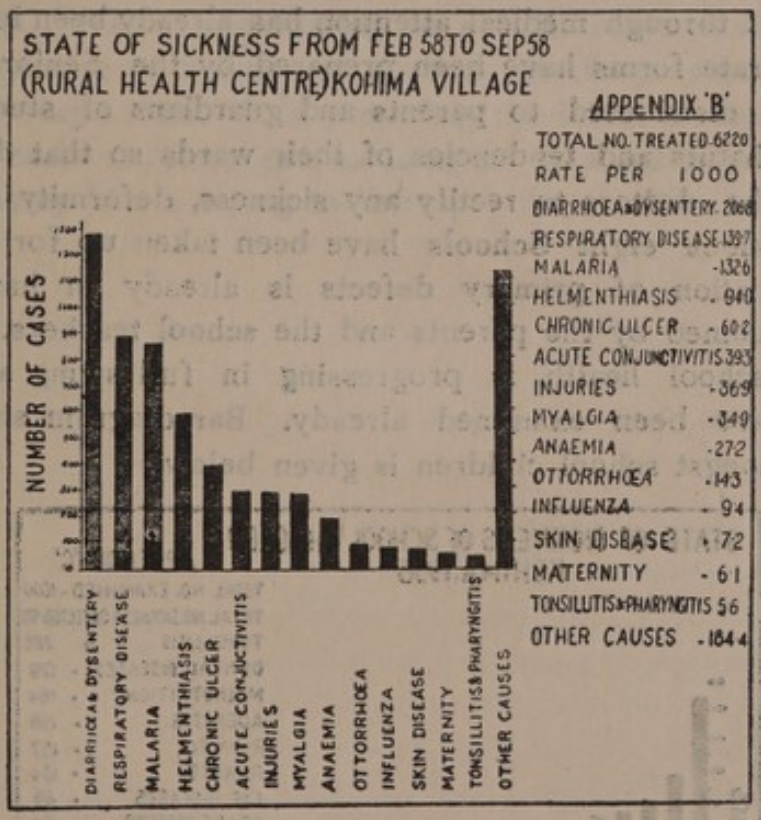


Five-Phase Health Programme.

In consideration of the unhygienic conditions in the villages, lack of trained personnel, malnutrition and lack of health consciousness of the people, I as Senior Executive Medical Officer have formulated with the co-operation of the civil administration a five-phase programme which envisages integration of the curative and preventive practices, training of technical personnel, school health work including health education and demonstration and setting up of rural health centres. Co-operation of the people and governmental and other agencies form the basis of the Scheme. All efforts have been made to develop the programme as a self contained entity, so that when initiators of the projects fulfil their mission, the villagers can take over the responsibility and carry on with the work unimpeded. The scheme is being implemented first in the Kohima village and will be extended to other areas.

(a) The first phase comprises establishing a health centre for providing out-patient treatment and domiciliary services to ailing people who are unable to

attend the health centre. A health centre has been started as a result of the joint efforts of the Army and Civil administration and the wholehearted co-operation of the people. This centre, which has a multipurpose role, was inaugurated on 26 January 1958, by Colonel P N Luthra IFAS, Commissioner Naga Hills and Tuensang Area. Besides providing out door medical aid to the sick, the centre concentrates on training of technical personnel and sending domiciliary and maternity teams at the very door of the community in the interior of the villages. Specialist cover such as Medical, Surgical, Hygiene and Dental, are provided from Army resources to the centre whenever necessary. A considerable quantity of multivitamin tablets powder milk and medicines was received from the Indian Red Cross Society for use in the villages. Since the opening of the Centre, an AMC doctor has been attending it daily and medical aid has been provided to more than 6000 people in the villages. Details of the diseases are shown in the chart below.

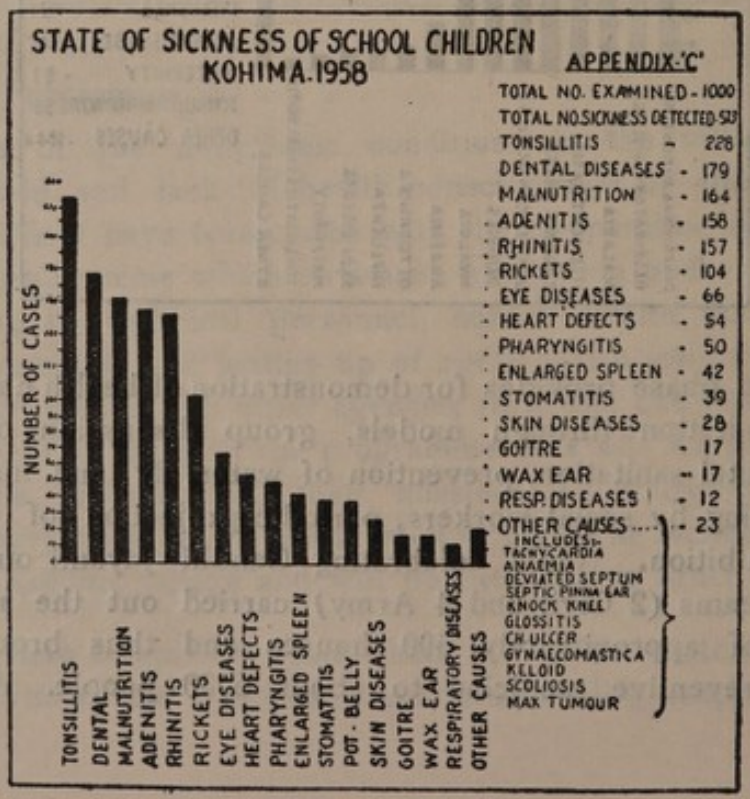


(b) The second phase provides for demonstration of health charts, DDT spraying, village sanitation through models, group discussion on positive health, environmental sanitation, prevention of water, fly and insect borne diseases, home visiting by social workers, periodic projection of educative films and health exhibition. While celebrating Gandhi Jayanti on 2 Oct 58 six DDT spraying teams (2 Civil and 4 Army) carried out the residual insecticidal spraying of approximately 500 houses and thus brought the benefits of modern preventive medicine to about 6000 people. Activities under this

phase have made good progress and health exhibition held in May 1958 was greatly appreciated by the villagers and Government Servants.

(c) Phase three includes training of probationers in nursing, of voluntary agencies in sanitation and DDT spraying, training of Village Guards in first aid and water discipline and formation of Village health committees. A village health committee has already been formed in the Kohima village under the guidance of the Senior Executive Medical Officer, and this committee will gradually take over the responsibility of anti-malaria, epidemiological, maternity and child-welfare statistical work.

(d) Phase four comprises School Health work, which lays the foundation of positive health for future generation. Demonstration of improved types of latrines and urinals in L P M E and High Schools and regular inspection of the health of the children are special features of this phase. A system of introducing cards and registers to record deficiencies in health and gradual improvement through medical attention has already been introduced. Besides these, elaborate forms have been prepared by the Senior Executive Medical Officer and distributed to parents and guardians of students to mention in details the habits and tendencies of their wards so that detailed care can be taken by the doctors to rectify any sickness, deformity or obnormality. In KOHIMA alone eight Schools have been taken up for inspection. School wise rectification of primary defects is already in hand, which has been warmly welcomed by the parents and the school teachers. Work in connection with school health is progressing in full swing and more than 1000 students have been examined already. Bar diagram showing incidence of diseases amongst school children is given below.



(e) Provisions for setting up rural health centres including ten beds for treatment of indoor cases have been made in phase five.

In pursuance of this project the civil authorities have already opened dispensaries and posted doctors in many interior villages and work has started in some areas for implementation of preventive practices and improving health consciousness amongst the people.

A Parents–Teachers Association has been formed at the village under the guidance of AMC doctors. The villagers showed enthusiasm at this project and in a meeting of the Association the parents and the villagers in general agreed to participate in cleaning up the surroundings of the living places, spraying DDT and co–operating with the authorities in checking up the health of students. Undernourished students in few schools are being supplied with milk and multi-vitamin tablets daily as a midday meal.

Thus, the AMC, besides shouldering its normal responsibilities, is endeavouring to lay a firm foundation of health and hygiene for the present as well as the future generations in the Naga Hills. It is providing the initial momentum that is necessary for developing a backward area and in doing so it is not only fulfilling the new role of the Indian Army but is trying to live upto the glorious traditions of the Medical Corps.

FROM THE AGE OF 'INFECTION' TO THE AGE OF 'STRESS' DISEASES

COLONEL TD CHABLANI.

Willian Farr, the great medical statistician, in his letter of 6th may 1839, to the Registrar General in England, said that "Diseases are more easily prevented than cured and the first step to their prevention is the discovery of the exciting causes. It may be affirmed without great risk of exaggeration that it is possible to reduce the annual deaths in England and to increase the vigour of the population in an equal proportion, for diseases are the iron index of misery which recede before strength, health and happiness as the mortality declines". These were indeed brave words and very true as will be substantiated by the study of morbidity rate and also the trend of sickness of our Army over a period of years. Such a study is of considerable value as it gives a retrospective picture of health and illness, indicates nature of morbidity, reflects how far progress has been made in the conquest over disease and how much more is required to be done towards further achievement.

This retrospective review must, however, be against the background peculiar to the Army and then alone our interpretations would be correct. It must be remembered that an Army population is a selected population, in that its members are chosen for their physical and mental fitness and living, as they do, under conditions of rigid sanitary control, morbidity except in war, would be low. But an Army population is a community whose whole existence is characterised by close association between members of the community, the individuals of which work as a group, eat as a group play as a group, sleep as a group and in the fight die as a group when necessary. There is thus a constant opportunity for infection to spread among individuals and groups in the community. There is also an opportunity for the development of herd immunity in the community, by overt or clinical attacks of disease. This immunity is normally high, but in time of war with increase in recruitment and the entry of susceptibles in large numbers, the ecological balance between the host and parasite is upset, and there occurs an increase in the infectious diseases. In war when troops move out in the field, they live often under primitive conditions in an uncontrolled environment, easily accessible to insect vectors of disease, upsetting still further the balance between the host and parasite, and increased morbidity is the result.

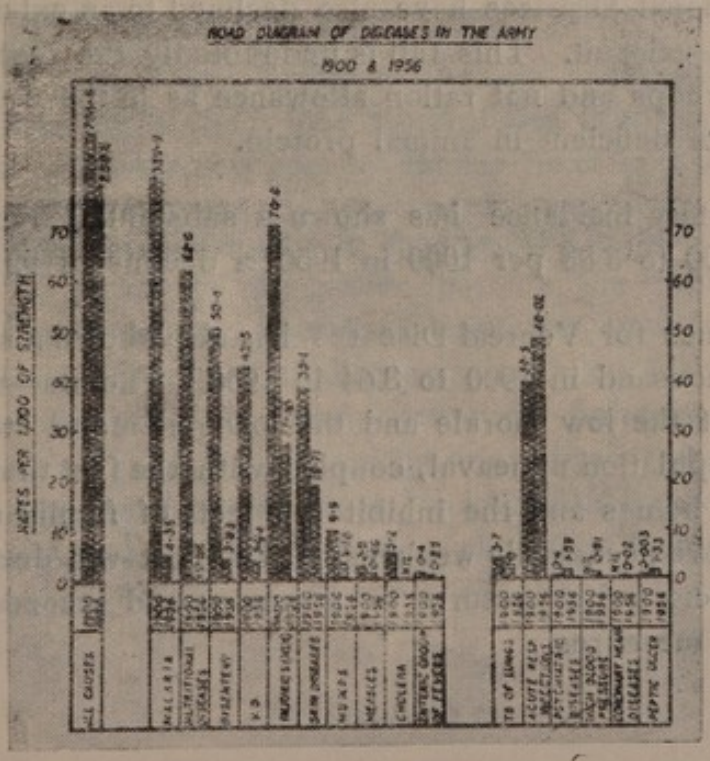
In the following road diagram a general review of health of the Army is depicted to show the major causes of morbidity in 1900 when compared to the major causes of sickness in 1956. The figures relate to JCOs & OR as their morbidity has been accurately recorded since the beginning of this Century. The incidence of sickness in the Army from important diseases, has been sub-divided under two sub-headings :—

(a) Diseases which have shown a substantial fall in numbers, eg :—

	1900	1956
Malaria	320.8	4.35
Nutritional Diseases	62.0	0.06
Dysentery	50.4	3.83
Venereal Diseases	42.5	3.64
Injuries (NEA)	70.8	27.45
Skin Diseases	38.1	18.71
Mumps	9.9	3.16
Measles	2.0	0.46
Cholera	5.2	0.00
Enteric Group of Fever	0.4	0.25

(b) Diseases which have increased in numbers or are new, eg :—

	1900	1956	
Pulmonary TB	3.7	1.09	(increase in married OR)
Acute Respiratory Diseases	39.5	48.02	
Psychiatric Diseases	0.4	1.59	
High Blood Pressure	Not mentioned	0.81	
Coronary Heart Disease	,, ,,	0.02	
Ulcers of stomach	0.003	1.33	



The Salient Features which emerge from the comparison illustrated in the road diagram, are :—

(a) There has been a considerable change in the pattern of disease since the beginning of this Century.

(b) The total morbidity in 1900 was 784.6 per thousand of strength and in 1955 it was 258.20, representing a fall of 68%. In other words, morbidity to-day is 1/3rd of what it was in the beginning of the Century. The downward progression was interrupted by peaks when the Army has been engaged in the two World Wars or other campaigns in the NW Frontier of India.

(c) Malaria has shown the most spectacular decline falling from 320.8 to 4.35 in 1756, a fall of 96 percent, In passing it may be mentioned that it was only in 1907 when malaria came to be established as a diagnosis. Malaria morbidity showed increases, peaks coinciding with operations in the NW Frontier of India and 1st World War (1914–18). During the Second World War (1939–45), the incidence of malaria was characterised by another peak as the warfare was conducted in some of the most malarious areas in the world. During this period, what is equally important is that the decline in the incidence commenced in 1943 and within a space of 7 years fell by 85%. This dramatic decline was mainly due to unit discipline, issue of suppressive mepacrine and the use of DDT as residual insecticide against the vector species. Government has now embarked upon a Malaria Eradication Programme throughout the length and breadth of the country. With its completion in 1964, malaria in India would be eradicated. More vigilance would then be required from the medical services so that fresh transmissions are qnickly and effectively detected and neutralised.

(d) The Nutritional Diseases have also declined to an extent that to-day they are almost non–existant. This fall is undoubtedly the result of a balanced ration scale for troops and not ration allowance as in the past. The diet, however, remains still deficient in animal protein.

(e) The Dysentery incidence has shown a substantial recession from 50.4 per 1000 in 1900 to 3.83 per 1000 in 1956, a decline of 92%.

(f) The incidence for Venreal Diseases has also shown a substantial decline from 42.5 per thousand in 1900 to 3.64 in 1956. The war–time rise is invariably an index of the low morale and the lowered moral standards that follow in a major population upheaval, coupled with the fact that the majority are away from their homes and the inhibitory effects of family and social conduct and behaviour are necessarily weakened. The post–war decline is to be attributed to two factors–first return to normalcy and second to the enforcement of preventive measures.

(g) In the past we were not greatly concerned with Injuries (NEA) because of our immense pre-occupation with infectious diseases. But now, with the control of infections, we are concerned more and more with non-infectious causes of morbidity of which Injuries (NEA) is the most important example. Enquiry into the epidemiology of this morbidity is in progress. Conclusions drawn from this analysis will reveal the causes and afford opportunities to reduce the incidence.

(h) Skin Diseases have always been responsible for large morbidity. The peak incidence coincided with the two World Wars of this Century, particularly in those theatres of war where personal hygiene could not be maintained owing to shortage of water or where climatic conditions were characterised by persistently high humidity and temperature. The incidence of fungal infections increased during the two wars. Scabies has exhibited a similar pattern to fungus diseases except that its morbidity is far in excess. The peak incidence coincided with the two World Wars of this Century. Pyogenic infections of skin are probably the most important skin infections in the Army. The high incidence in the early part of the Century remained unalterd throughout the major part of the period under review and reached a peak during the second World War. Thereafter there was a sharp decline.

(i) Mumps and Measles are two diseases which do not seem to have altered very much during the years. They come in cycles every two or three years. These diseases occur principally among recruits who, when they first enter the Army, are exposed to the disease and having no resistance, readily succumb to it.

(j) Cholera was never a disease which caused much trouble in the Army. The reason is that in the Army every care is taken to see that food is not contaminated and water is sterilised before drinking.

(k) In 1911, TAB vaccine was introduced against Enteric Group and by 1916, all the troops were inoculated. The result of this prophylactic inoculation is that to-day there is hardly any case of enteric fever in troops.

The Reasons for these achievements in the conquest of bacterial and communicable diseases are not far to seek. In the earlier part of the Century, achievements in bacteriology had dominated medical thought. One after another, the discovery of the causal organisms and insect vectors of diseases had been added to the list of those in which the causative organism was already identified. Subsequently epidemic diseases ceased to be a problem when supplemented by improvement in environmental hygiene and immunisation against communicable diseases. Eventually, with the opening of new avenues in the field medical science including clinical pathology and the advent of anti-biotics, the important infectious diseases of the past have very largely been neutralised.

We now come to another group of diseases where incidence is on the increase since 1900, or are new in the sense that they have not received our attention before.

(a) In respect of Pulmonary Tuberculosis, three observations have been made:—

(i) Peak incidences coinciding with the two major Wars, have been recorded.

(ii) Although the overall incidence has declined by 50%, but the rate of decline has been very slow.

(iii) definite upward trend has been observed in the married OR between the age group 25–35 yrs.

The present upward trend confined to married OR reflects on the housing condition of troops and the economic status. With regard to housing the next five years should see a considerable relief. As far as economic standard is concerned it is a matter which must wait upon the fruition of national policy. Emphasis must, however, remain on the following factors towards its prevention.

(1) Early detection of cases by MMR,

(2) Domiciliary treatment of families whose treatment has not been accepted by Govt,

(3) BCG vaccination,

(4) Better housing of married soldiers, and

(5) Raising of social standards.

(b) The next group comprises Acute Respiratory Diseases, responsible for a much larger number of admissions now than in the past. These diseases have definite seasonal peaks in the dry summer and larger peaks during the monsoon period. Pneumonia shows distinct winter peaks. This group of diseases is to-day an important cause of man-power wastage. The commonest of all is the Common Cold which occurs either in isolated cases or in epidemics. The immediate cause is an infected person and hot stuffy ill-ventilated rooms. In 1947, a Common Cold Research Unit set up at Salisbury, has contributed considerably to our knowledge The method of spread is by unprotected sneeze or cough projecting virus-infected droplets into the air. Hence the slogan that "Coughs and sneezes spread diseases".

Much can be done to limit the diseases and its associated effects by way of smothering coughs and sneezes, authorizing issue of handkerchieves to troops in their Clothing Scale and ensuring adequate ventilation.

Prevention of diseases of respiratory system is of utmost importance in any military community. It is true that there is an inherited 'diathesis' or predilection. But it is the environment which determines whether these latent defects shall become apparent. Close contact with an established case is required and even the most susceptible of persons cannot acquire respiratory infection without

exposure to infection. Changes in the environment such as exposure to damp cold, hard labour under adverse conditions and fatigue which play an important part, are the precipitating factors. Raising of the general standard of living, improvement in health, habits, and protection from exposure will ensure prevention of many of the respiratory diseases.

The other category of diseases known as 'Stress' Diseases are eg psychiatric diseases, high blood pressure, coronary diseases of the heart and ulcers of the stomach.

With the advance of civilization and the associated rise in stress and strain of modern life, the 'stress' diseases in which anxiety. worry and emotional strain are contributory/aggravating factors, demand our attention.

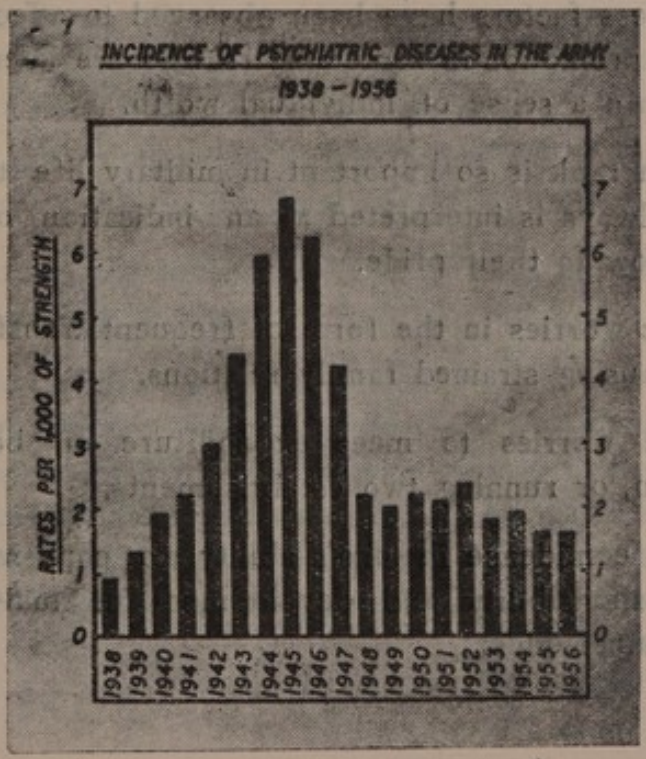
In medical reports of the early part of the Century, these diseases were hardly mentioned but today they are becoming increasingly common. It is obvious that we are passing gradually from an age of infection on to an age of 'stress' diseases.

(a) The observations made on the Psychiatric Group of Diseases, are summarised below :—

(i) Before World War II the incidence of Psychiatric diseases in the Army in 1938 was 0.9 per 1000. but it rose steadily and reached its peak viz 6.8 in 1945. Thereafter it declined and since 1948 it has remained at almost double the 1938 figure.

(ii) In military service, the factors responsible for mental illness are complex. Constitutional predisposition is present in most of the cases. An individual with a psychopathic constitution or a family history of mental disorders is more liable to breakdown than others.

(iii) Hysteria and Anxiety states account for the bulk of Psychiatric disorders amounting to nearly 70 percent of the total.



(iv) The educational and social back-ground of patients indicate interesting divergency in the type of disease. There are proportionately more cases of Anxiety neurosis amongst Officers than in OR in whom hysterical symptoms predominate.

(v) Apart from frank cases of mental diseases (both psychotic and psycho-neurotic types) organic diseases in which psychic factors play an important aetiological role, also show a corresponding increase (eg asthma, nervous dyspepsia, ulcerative colitis, psychogenic headaches).

(vi) The six important mental stresses which act as precipitating factors in OR have been observed to be:—

Personal problems concerned with domestic affairs–These problems may be social, familial or economic. A fair proportion of psychotic break-downs amongst OR occur while the soldier is on leave at home or soon after returning from leave.

Prolonged living in isolation in constricted areas on field service often under stress.

Continued monotony, separation from familiar surroundings and activities, and time for brooding affecting both morale and mental outlook.

Continued existance under extremes of climate which means submission to extremely severe physiological and consequently psychological stress. Unlimited tour of duty in operational areas.

Low grade infection and consequent rundown state of health resulting in mental instability.

(vii) Four stress factors have been observed to affect officers:—
Lack of promotion in some officers who are keen on their advancement to maintain a sense of individual worth.

For them rank is so important in military life that failure to attain it almost always is interpreted as an indication of being un-appreciated, and a blow to their pride.

Domestic worries in the form of frequent transfers and separation from family causing strained family relations.

Financial worries to meet expenditure on boarding of children for education, or running two establishments.

Lack of confidence in one's ability to cope with new assignment and extra responsibility and development of mal-adjustment after their strife against odds.

(viii) The four fundamental facts to appreciate in the psychiatric disorders, are that :—

Mind is the human function which comprehends and sums up all other functions of the organism and serves to relate the individual to his environment. It is the "Chief token that he is an individual and not a sample".

Inherited characters play an important part in the pattern of mental behaviour and therefore, the diversity of mental disease depends on the inherited strengths and weaknesses of the individual and the influence of his environment. The interplay between these forces means that there can be no hard and fast line between disease of the body and disease of the mind. The two run together. Mental disease follows a similar course to bodily disease. It may be acute in onset with quick recovery or run a chronic course with intermissions and relapses, both have roots in patient's environments at home or at work.

An inherited tendency to mental instability may remain latent until some violent emotional upset occurs eg the burden of domestic or financial cares or frustration of the failure of the ambitions of the life-time; or some toxic or infective disease process disturbs the balance.

(ix) With these basic fundaments indeed it is not too much to say that many mental diseases could be prevented from becoming major disasters if the home conditions, working conditions social conditions could be adjusted to the patient's needs. His needs are, by the way, not the same as his wishes. There are many kinds of mental abnormality but underlying them all is the basic personality of the patient and the effect of his environment upon him. Changes in that environment have many practical applications in the prevention of mental diseases. The six essential features in their Prevention, therefore, are :—

To adjust the relationship of the individual to the environment at home and at work which is the most important aspect.

Not to squeeze the individual into a rigid social pattern but adapting the social setting to him.

Appreciation of the fact that mental effects of failure, frustration or a sense of inadequacy has a bad effect on the efficiency of the individual. Those who deal with these subjects should themselves be well-balanced and contented. This applies equally to attendants upon the sick as to those who deal with the healthy. The tense emotional nurse and the irritable Paychiatrist are both capable of much harm.

Detection of organic cause in the known group of mental disorders or toxic agent acting upon the nervous system.

In the well recognised group of mental disorders for which no organic cause has yet been discovered, the intense emotional disturbances of the maniac depressive and the hysteric, the derangement of feeling and contact with the outside world of schizophrenic, the psychoneurotic in which the patient has 'insight' into his illness and recognises the need for help, behind all these groups is the personality of the patient with exaggeration of the normal emotional disturbances, in a violent manner or rhythm, which need adjustment.

(b) The aetiology of Essential Hypertension is complex and not well understood. The Observations have been that obesity is a pre-disposing factor and alcohol probably an additional aggravating factor. Mental stress and strain due to domestic affairs and/or military service coupled with strenuous exertion are the possible contributing factors.

In a small number of cases, Hypertension would appear to have originated following a period of acute anxiety in an operational area; in a few others demotion without sufficient justification and particularly retention in the same unit after demotion; in other cases patient's feelings of insecurity of service, being non-Regular Officers with 10 to 15 years of service; in a small minority, the death of a near relative or hearing bad news of illness of wife or son and their inability to avail of leave to proceed to their home from a field area; in a few isolated instances, Hypertension could have possibly set in due to acute anxiety following an alleged ill-treatment.

While consumption of rum and whisky is common in these subjects, heavy addiction to alcohol, has been observed, presumably as a solution to their difficulties. Smoking, on the other hand is less common. It is possible that these subjects could not adapt themselves to stress and strain, or rather felt the stress more readily and dealt with it less well than their comrades. Heredity as an aetiological factor, has been recognised but cannot be elucidated because a large number of patients in the Army do not give the requisite informa - ion presumably on account of personal reasons.

Prevention lies in the word of 'caution' to the hypertensive subject. The combination of heredity and wear and tear, with the many unknown factors present a difficult problem, but even then much can be done.

(i) Routine medical examination from the age of forty-five onwards, or may be earlier, would reveal departures from the normal. Then would be possible those alterations, in home circumstances, at work and general rythm of life, which are now usually put into practice too late to be of real value.

(ii) When the subject gets attack of anginal pain on exertion, he must slow down – he has no option in the matter. Inquiry will, however, often reveal that he has 'overdrawn' on his reserves in a way that no self-respecting bank would allow. It is fashionable to blame the stress of our modern social system for these conditions but since adequate education is provided for every one, it is upto these subjects not to ignore warning signals or forget that they are made of flesh and blood instead of wood and steel. The responsibility lies with the individual to use common sense. The State provides medical services but it cannot live the individual's life for him and if a subject chooses to go all out for success, he must be prepared to pay the price for it.

(c) While the aetiology of Coronary Disease is more complex than that of Hypertension and as yet not understood, certain Observations have been made.

The subjects are generally, Officers between the age group 45–55, mainly those in profession or administration. They attribute their heart attack to heavy mental stress and strain due to service conditions predominantly ;—

(i) On account of heavy work load and greater responsibility.

(ii) Worries due to delay in their advancement in rank, or insecurity in service for not being made permanent.

(iii) Financial strain is a significant factor in a relatively small number of cases.

(iv) Strained family relations and physical strain are insignificant factors in most of these cases.

(v) Heavy cigarette smoking is common in these subjects. Prevention does not seem to be readily possible. The alternative is to treat the condition after it has arisen, and this involves alteration in the paient's way of life temporarily or permanently. These observations, however, provide food for thought that :—

The existing conditions in professional and administrative careers impose strains which when endured too long, are beyond physiological tolerance and that the conditions thus call for amendment.

That members of predisposed families might be encouraged at an earlier stage and even in the face of activating conscience or ambition, to regulate their lives more rationally. That in the field of personal hygiene, the organisation of holidays, leisure, exercise and pleasurable relaxation is as sensible as attention to sanitary habits and balanced dietaries.

That the detection of hyperpiesia in the earlier phase by periodic health examinations could have value.

The fact, however, remains that mental activity unlike labour, cannot be readily limited by legislation or arrested by the clock. For sometime to come we are therefore, likely to witness a high toll of incapacitation until such time our social reorganisation is directed to the promotion of healthy living through a more precise physiological and psychological understanding of man and his capacities and an appreciation of his individual and social needs.

(d) The aetiology of Peptic Ulcer, the last in the series of 'stress' diseases is also not fully understood but the role of 'stress' factor in its epidemiology is being increasingly realised.

In the Armed Forces the Observations have been that there is :—

(i) A significant increase in the incidence in peptic ulceration in recent years.

(ii) The incidence is particularly greater in the Army than in the Navy or Air Force. The following table gives the annual morbidity rate among JCOs/OR in comparison with equivalent ranks in the Navy and Air Force.

	1949	1950	1951	1952	1953	1954	1955	1956
Army	.35	.37	.47	.59	.64	.81	.95	1.34
Navy	–	–	–	.2	.033	.31	–	.26
Air Force	–	.06	.23	.05	–	.09	–	.36

(iii) Married men show a greater incidence than single men.

(iv) The most important hereditary background has been recognised, as tendency to gastric or duodenal ulcer to run in families, is known.

(v) Emotional stress, fatigue and worry which tend to cause relapses is also known.

(vi) Haemorrhage or perforation from gastric or duodenal ulcer has been repeatedly observed to occur during periods of mental anxiety and stress.

These observations have been further substantiated by Weiner Tahler, Reiser and Mirsky (1957) who have conducted experiments to study the relationship between psychological factors and the rate of gastric secretion as measured by serum pepsinogen on 2072 entrants to the United States Army. They have succeeded in demonstrating that peptic ulcer subjects had evidence of major unresolved and persistent conflicts and

further, showed that a high rate of gastric secretion together with a specific psychosomatic consternation, favoured precipitation of peptic ulcer on exposure to social situations which mobilized conflicts and produced psychic tension. In a group of 45 men with radiologically verified peptic ulcer, the socio–psychological factors were studied by Planz Rosentein and Uexkull (1956). They found that voluntary exclusion or forced expulsion from a community family or group coincided with astonishing frequency with the onset or relapse of peptic ulcer.

Other factors of importance were loss of protection from superiors, feelings of hostility or estrangement and loss of position. The outlook for Prevention is good provided social aspects of peptic ulcer are borne in mind.

In the higher social strata these subjects usually fall into the category of hard–working, sensitive consciencious people, liable to increased nervous tension, and as they usually work near the limits of their reserve, anxiety and frustration occur more readily that in the placid unemotional persons.

Amongst the JCOs/OR subjects conditions at home and at work need to be investigated to ensure that these are not adding to their anxieties which must involve considerable adjustment both at home and at work. Prevention lies in the wider field of education in the art of living, in selection of 'job for the man' rather than 'the man for the job' and in general social measures. Of these perhaps housing is the most important for domestic stress is particularly frustrating to this type of patient and his treatment must include the mind and the body.

In conclusion, I have tried to give a picture of :—

(a) The changing pattern of disease from the age of infection to the age of 'stress' diseases.

(b) The changes have come about mainly because of the many discoveries in the methods of prevention and treatment of disease.

(c) That the greatest changes have occurred in common with the rest of the world and we are now on the throes of a social revolution in which the conquest of disease is changing to the wider ideals of health and welfare by emphasis on social aspects of disease.

(d) Although the application of the present day knowledge rests in large part with the medical profession, ancillary workers have an important role to play in the modico–social work.

(e) While the evolution of the human body, and the acquisition of natural resistance to disease have taken millions of years, we are only at the beginning of our efforts to build up a healthy military community.

EVACUATION OF CASUALTIES THROUGH AGES

COL S N CHATERJEE MC

The apparatus, vehicles and crafts employed in evacuation of casualties have undergone considerable changes of historical interest. The records of the last one century gives us an insight as to how efforts were being made time and again to improve on the modes of conveyance of casualties.

Kahars Pre 1881

Prior to 1881 there were no enrolled personnel in the Medical Corps. The sick and the wounded were carried by Kahars who were employed either through the commissarate department (now known as Army Service Corps) or through the Regimental Bania. They used to evacuate casualties in a *Doli*.

Army Hospital Native Corps 1881–1900

Army Hospital Native Corps was formed in 1881 by the Bengal Army to provide subordinate staff for British Station Hospitals. The subordinate staff for the newly raised hospitals was designated in general as hospital attendants and were classified as ward servants, cooks, water carriers and sweepers. Ward servants included Compounders and dressers.

Army Bearer Corps 1901–1920

The Army Bearer Corps was formed in 1901 by enrolling the Kahars. Frontier force battalions were authorised 34 bearers and a mate. Battalions in peace station were authorised six bearers. Personnel of the Army Bearer Corps were trained in stretcher drill, tent pitching, first aid and conveyance of sick and wounded. Stress was laid in loading and unloading of casualties and their correct handling. The bearers were required to carry casualties upto 15 miles. One of the method for evacuating casualties by them was in Hammock stretchers.

Standard Stretcher and Travois Litter.

In 1907 the standard stretcher was introduced. To begin with it was used with an improvised super structure to provide an overhead cover as in a *Doli*. Travois Litter was used during the first World War in Macedonia. During the battle of Machu Kovo 600 casualties were evacuated from the regimental base to the advance dressing station by 50 travois.

Roger's Trench Stretcher and Sledge

In March 1915 Major J A Roger, RAMC improvised a stretcher known as Roger's Trench Stretcher which was officially recognised and successfully used for removing the casualties from the trenches during the first World War.

When casualties had to be evacuated over a long distance on snow they were usually placed on a sledge which was pushed and/or pulled by the stretcher bearers.

Mule Cacolet *(Kajawa)*

During the First World War special mules were used for carrying 2 sitting casualties. Only limited use of double Cacolet was made. Due to the limited number of such mules and the special training required for these mules the above method of carrying 2 casualties was given up,

Litter

Where a Travois could not be used due to thick under-growth litter carrying one or two stretchers were brought into use. Travois however could be used with advantage on narrow mountain paths and guided round corner by using a drag rope whereas a litter had to be dismounted and lifted round corners. There was however less likelihood of the mules bolting away with the litter than with travois.

Pack Mule Transport

Stretchers were carried lengthwise or across a mule (the Arab method). For the latter, stretcher was placed across the mule on 2 based panniers weighted with some heavy material to keep them steady. There was little jolting but the ends of the stretcher projected and the use of the method as such was impracticable on narrow mountain paths and on crowded roads. Stretcher carried lengthwise caused lot of discomfort to the patient due to jolting. In both these methods the stretcher had to be held by an attendant.

Banaras Ambulance Tonga

20 such Banaras Ambulance Tongas were presented by the Maharaja of Banaras during the First World War and were used in Masopotemia for evacuating the lying casualties. Unfortunately the tongas were made of different materials and repeatedly broke down over rough tracks.

Camel Kajawah

Camel *Kajawahs* have been in use for a very long time both for sitting and lying cases and were of great help in evacuating the casualties over sandy tracks. They were also used with success on the Northwest frontier. Hamilton saddle and Camel *Kajauahs* were the consequent means of carrying casualties cross country during the period of Indian Hospital Corps and great stress was laid in training of the orderlies in the correct loading and unloading of casualties from a Hamilton Saddle and a *Kajawah.*

Hamilton Saddle

As a result of the extensive use of mules for carrying casualties during the first World War Hamilton Saddle was evolved for carrying one sitting casualty and this continued to be used extensively on the Northwest Frontier Province with slight modification. It has now been designated as the casualty saddle.

Rope Way

When an unfordable stream or a deep Nullah has to be crossed a simple rope-way bridge is improvised. Each stretcher bearer fastens his stretcher at either ends with slings attached to his belt leaving both hands free for support. 2 Stretcher bearers carry the casualties across the obstacle while the other 2 steady the ropeway.

Flying Fox

Casualties are also being evacuated over an obstacle by means of an improvised aerial ropeway known as "Flying Fox". The patient is secured to the stretcher by means of a strap.

Ambulance Car

The decision to replace horse drawn ambulance wagons by motor ambulance cars was taken on 6 Sep 1914 in France. Fittings were improvised during the last War so that transfusion of Plasma or blood could be carried out during transit.

Ambulance Jeep

Jeeps have been extensively used since 1942 for evacuating the casualties from the front line and are still in use mainly over rough and narrow tracks – where it cannot be negotiated by the ambulance car.

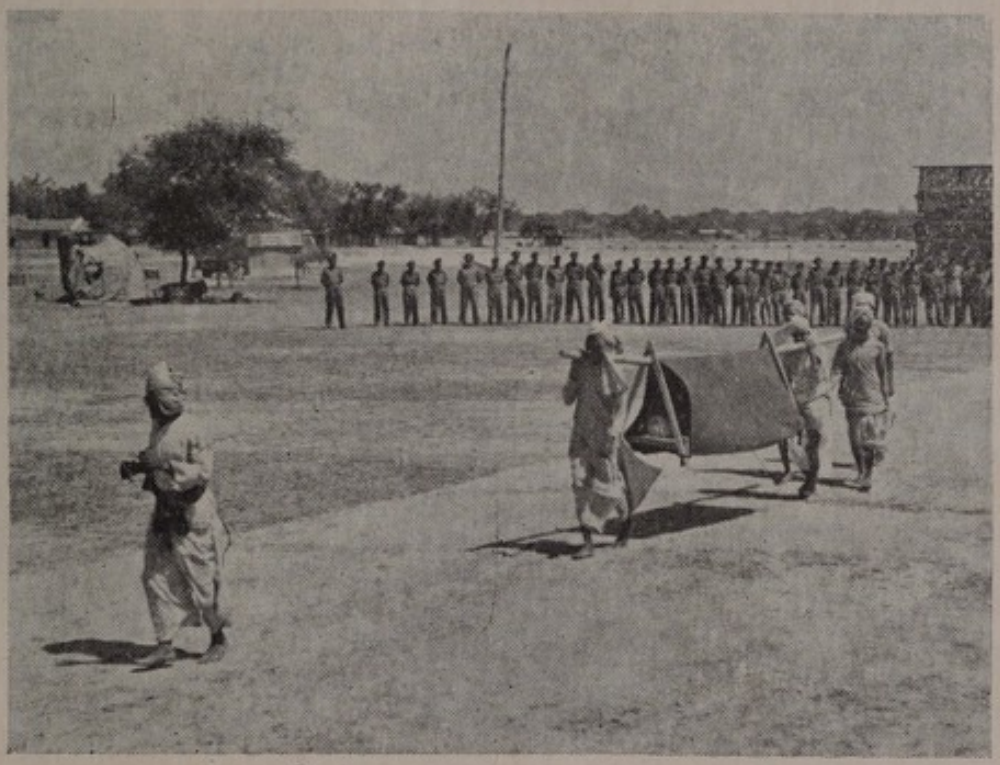
Dakota

Dakotas were used in large numbers during the last war for expeditiously evacuating casualties from forward airstrip to the Base Hospitals.

Helicopters

Helicopters are now the latest and most efficient means of evacuating the casualties from the forward areas. Depending on the model of the Helicopter used, upto 12 stretcher cases per trip can be evacuated.

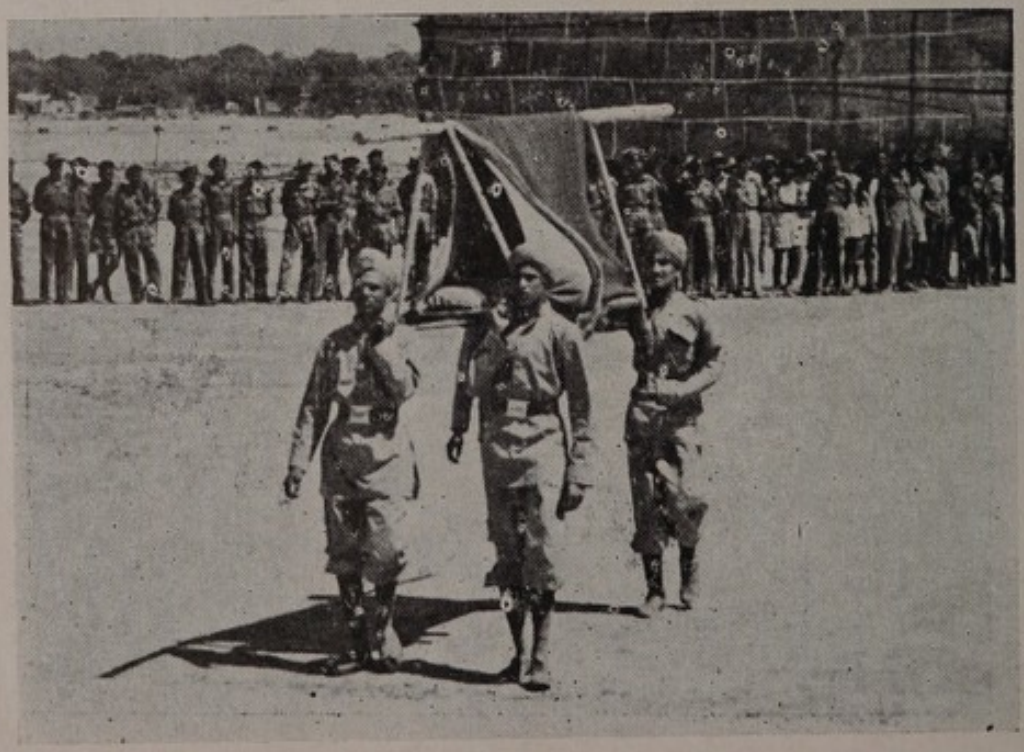
AMC THROUGH AGES



KAHARS—Pre 1881

Benaras Ambulance Car

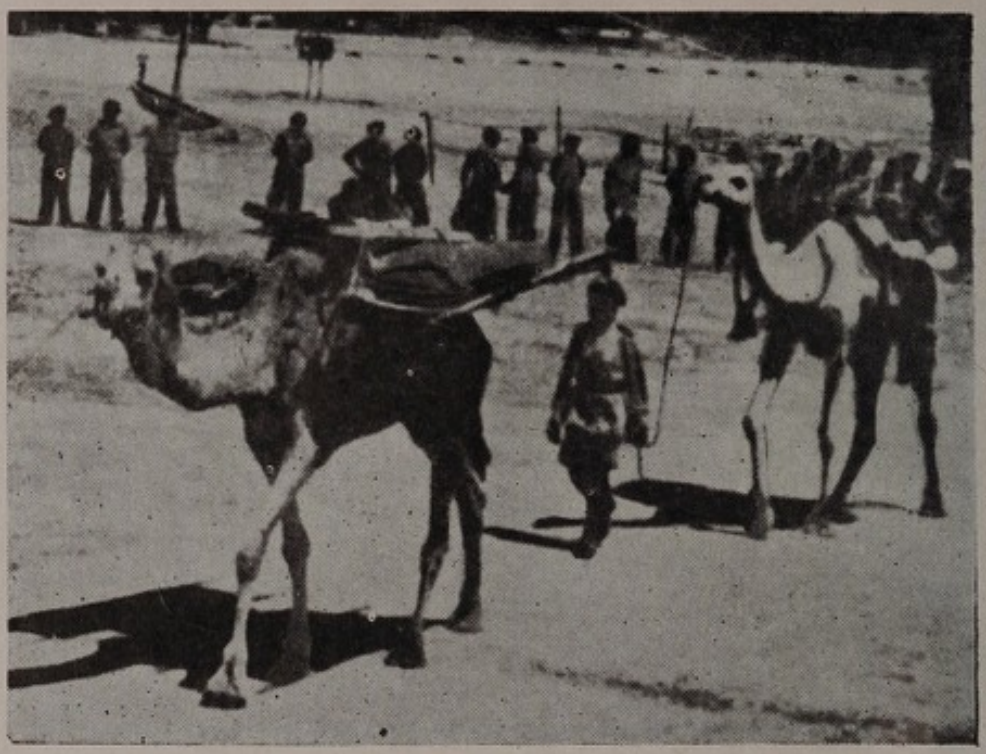
Army Hospital Native Corps 1881–1900



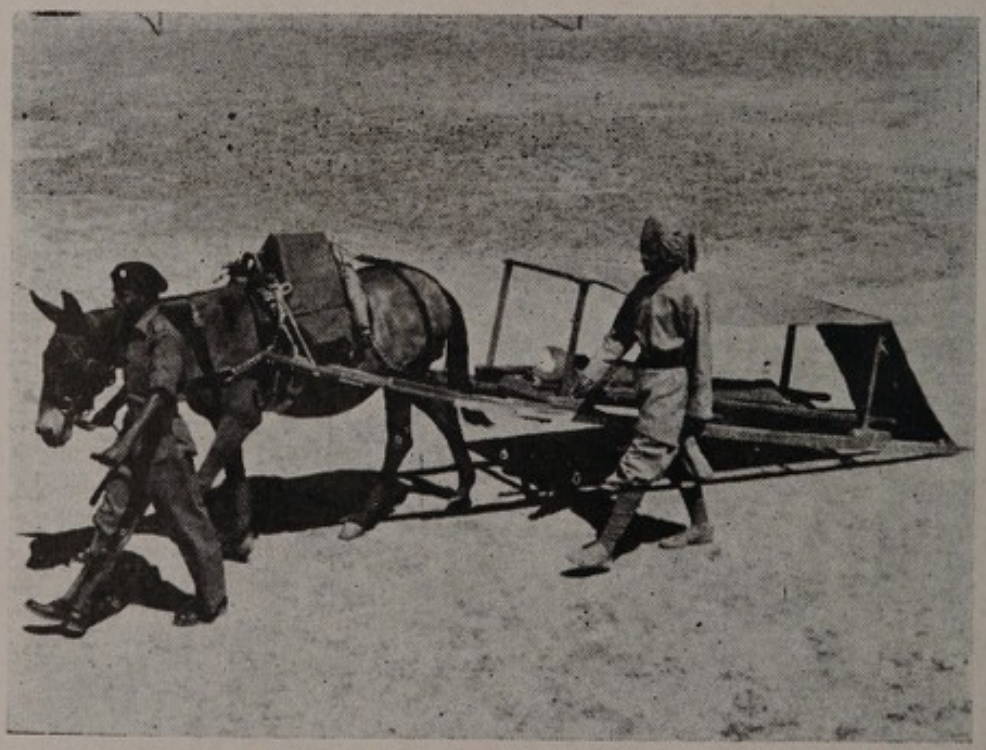
Standard Stretcher

Hammock Stretcher

Rogers' Trench Stretcher



Kajawah



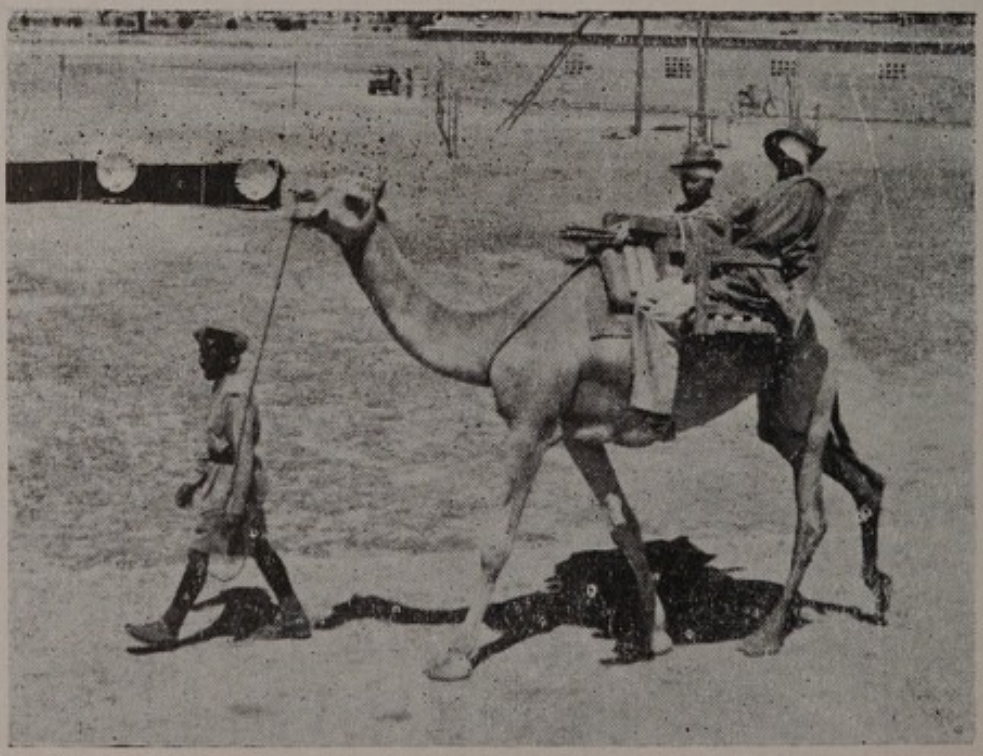
Travois Litter

Mule Cacolet (Kajawah)

Hamilton Saddle

A M C THROUGH AGES

Pack Mule Transport

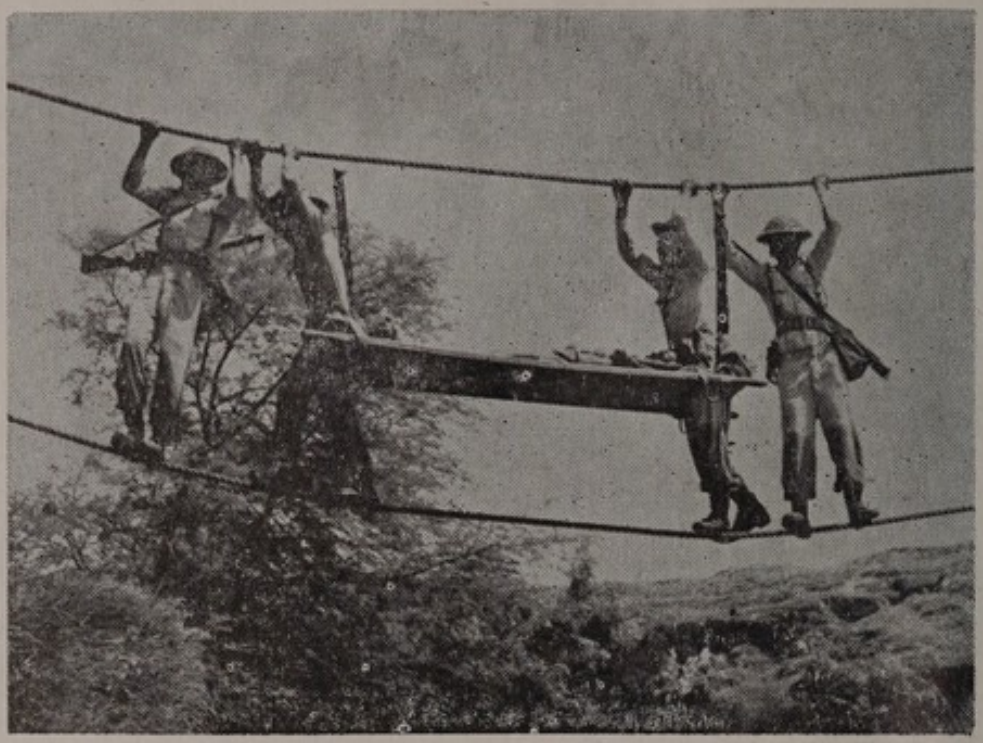


Kajawah

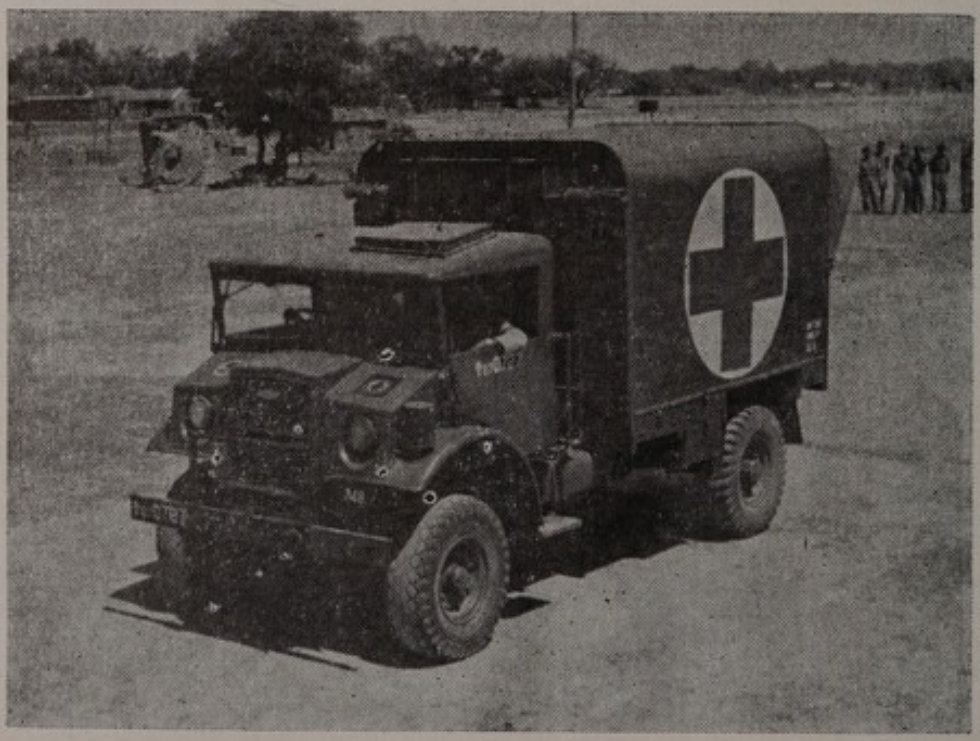
Litter

Flying Fox

A M C THROUGH AGES



Rope Way



Ambulance Car

AMC THROUGH AGES

Ambulance Jeep

Helicopter

THE TREND OF RESEARCH IN THE ARMED FORCES

BRIG C C KAPILA

With the dawn of independence medical research in India has been given increased opportunities to play its part for the promotion of health and the well-being of the nation.

The Armed Forces Medical Service, has kept abreast of the latest advances in medicine and its application, for the welfare of the forces placed under its care.

Prior to the outbreak of World War II, there was no separate Armed Forces Research Organisation in India. Even in the whole of country there was no organised medical research prior to 1911. Before that date, medical research in the country was carried out by individual medical officers of the IMS and RAMC, often in face of great difficulties. In spite of these, some very notable successes were achieved in medical science, eg, the work of Ronald Ross in malaria and of Leishman in Kala-Azar. In 1911, the Indian Research Fund Association, the predecessor of the Indian Council of Medical Research, was established by the Government of India. The aim of this association was "to initiate, aid, develop and co-ordinate medical scientific research in India, to promote special enquiries and to assist institutions for the study of diseases, their prevention, causation and remedy".

Some of the medical officers of the IMS and RAMC were seconded to the Medical Research Department of the Government of India. This Department together with Indian Research Fund Association of India formed the main base for the organisation of medical research in the country. For over three decades since IRFA came into existence, a wide variety of research was carried out in the vast field of medicine and public health. Largely as a result of these researches India came into fore front of attack on some major health problems such as mal-nutrition, malaria, rabies, plague, cholera, leprosy and Kala-azar.

It has been said that research in the Armed Forces is often of an applied nature i. e. the application of scientific principles to the requirement of the forces. This principle is also applicable to Medical Research. But a certain amount of fundamental research has also to be carried out since both are interlinked. Medical Research

Organisation in the Armed Forces during the last war was based on this principle. Enquiries were instituted for those diseases and disorders which produced high morbidity or mortality and invalidation in the forces. The important need of the time was to find quick solution to conserve manpower. It was with this object in mind, therefore, that the main problems which were dealt with during last war were Mal-nutrition, dysentery, anaemia, typhus fever, infective hepatitis and use of antimalarials. As a result of these enquiries, major diseases were brought under control. The advances made in diagnosis and treatment reduced the period of hospitalisation. A fair amount of fundamental knowledge was also collected on the acology of bionomics of vectors of scrub typhus, its epidemiology, etiology and treatment for sprue and anaemia, as well as the role of various hemopoietic factors in anaemia. A number of teams were organised to carry on these researches. With the end of the war, these teams were disbanded or were absorbed into the Central Military Pathology Laboratory. This was later on amalgamated with other units to form the Armed Forces Medical College, which is now the main centre through which research in the Armed Forces Medical Service is conducted. Medical Research is nowadays a highly specialised subject and a whole time job. Research method has developed into a fine art. Training in the handling of Research equipment and research methodology is an important pre-requisite for undertaking fundamental and clinical research. Although this will require a special cadre of research workers, for the present the Professors and Instructors of the College conduct research enquiries in addition to routine duties.

Under the present arrangements a Research Advisory Committee exists under the Chairmanship of the DG AFMS with the DR & H as the Secretary. Its members include the Scientific Adviser to the Minister of Defence, Prominent civilian medical research workers and the senior staff of the Armed Forces Medical College. The functions of this Committee are :—

(a) Consider methods connected with the Medical research in the three Services.

(b) Initiate enquiries.

(c) Scrutinise proposals sponsored by officers and allot priorities.

(d) Nominate staff and institutions where such work would be carried out.

(e) Consider the work done and recommend further action to be taken in connection with the results obtained.

In the Armed forces Medical College, enquiries and research on various problems ranging from the use of various insecticides, synthesis of antimalarial and amoebicidal drugs surgical aspect of disease of blood vessels, the effects of various diets on the cholesterol level of the blood, the use of plasma substitutes, viruses and their prophylactic vaccines and certain fundamental problems in connection with reticulosis are under study. Research is no more as it used to be a one man's show, but is the effort of a team work. This does not mean that the individual initiative and enterprise is

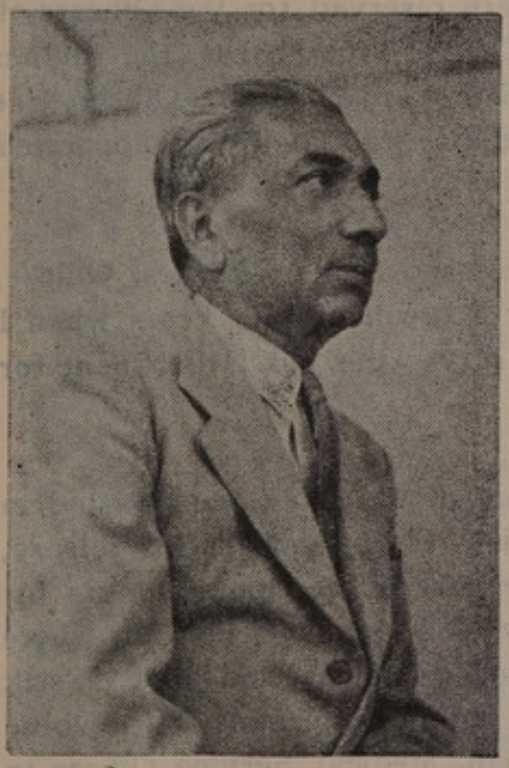
curbed. Every encouragement is given to officers to sponsor enquiries on subjects in which they are specially interested. The function of the Research Advisory Committee is to help and guide these officers.

The DG AFMS also maintains a close liaison with the Scientific Adviser to the Minister of Defence, and is the Chairman of the 'Personnel Research Panel' for the three Services. This Panel deals with the health and comfort of the personnel who use various weapons and equipments in the Armed Forces. This factor has assumed great importance because the use of modern weapons and equipments impose a great strain on the human organism. A number of problems in this connection relating to the three Services have been studied and implemented.

An important future programme must necessarily take into account the medical problems which have resulted from the use of new form of energy viz, the study of medical aspects of ionising radiation. This is receiving the close attention of the DG AFMS and the Research Advisory Committee.

PRISONS & THE INDIAN MEDICAL SERVICE

COLONEL G R OBERAI, I M S (RETD)



On a wintry afternoon on February 23, 1930 while I was posted in the North-Western Frontier Province, I received orders to report to the Jail Department, United Provinces. I knew little about jails. While in transit from Bannu to Allahabad, I made a study of the U P Jail Manual and the Prisons' Act. My first posting was at the Naini Central Prison, Allahabad. Naini Central is situated about 3 miles from Allahabad and derives its name from a small village located nearby. My first visit to the jail on the afternoon of February 28, 1930, was most disheartening. The Superintendent's bungalow was dark, dismal with no electricity and surrounded by acres of land, huge rooms and no neighbours, except the prison inmates and the prison staff.

While still engrossed in the study of jail rules, I was invited to the Collector's House for dinner. After dinner, the Collector took the opportunity of breathing into my ears that Pandit Jawaharlal Nehru now our Prime Minister would be arrested on a certain

day at the Cheoki Railway Station. I was also told that he would be brought to Naini Central Prison about 9.30 in the morning. This method was adopted in order to keep the information secret, direct from one to other and with no intermediaries. Panditji was brought in about the time indicated i e in March, 1930. The years 1930–31 witnessed one of the strongest struggles for freedom launched by the Congress. At the time there was no classification of Political or Superior Class Prisoners. My problem was, where to house Pandit Nehru. There was a separate enclosure containing four cells, each 10' x 8' and there was a wall 14 feet high around it. This enclosure was reserved for the confinement of Europeans punished for jail offences. There was no separate bathroom nor were there any sanitary arrangements. Panditji was sent to this "magnificient" building. The bathroom and sanitary arrangements were made in the following week. After a few weeks, Pandit Motilal Nehru was arrested and sent to the same place. Pandit Motilal Nehru preferred to stay in the open most of the time, for these cells had no verandah. A spacious verandah was constructed under the supervision of Pandit Motilal Nehru. Within a few weeks, Maulana Azad, Sri R S Pandit, Sardar Narbada Prasad Singh and Dr. Syed Mahmood were arrested and brought to the same enclosure.

During those days, there were so many, day-to-day problems that I had no time to think of or study Criminology or Penology.

In the United Provinces upto 1946 six appointments, one Inspector General of Prisons and five Superintendents of Central Prisons were reserved for the Officers of the Indian Medical Service and one Superintendent (Central Prison) for the Indian Medical Department. During the first Congress Ministry in 1938, an Officer, not belonging to any of these services, but who was a medical graduate, was appointed as Superintendent of a Central Prison.

In official circles, I was an Executive Superintendent and Senior Medical Officer, but to the general public, I was a Jailor. Except for a break of four years when I was recalled to Military duties during the last War, I served the Jail Department for twenty-three years

I have been frequently asked why a medical man should have been wasted in jail service. From the time a prisoner enters the jail to the time of his release, professionel knowledge is essential. For instance, the award of labour, fitness for jail punishments, combating loss of weight, sanitary condition of the jail, where hundreds of prisoners are confined in limited space, treatment and diet of sick prisoners, observance of mentally deranged prisoner or non-prisoners etc. all devolve on the Medical Superintendent. By appointing an Indian Medical Service Officer to Jail, the Government combined the duties of an experienced administrator and a medical man.

Although I had the proud privilege of presiding over the eighth All India Conference of Inspectors General of Prisons held in Bombay in 1952 and though I have visited jails in some of the other Provinces, I have been mostly connected with prisons in United Provinces and will therefore, briefly describe some of the important Penal Institutions in this State, which have gained all India fame, and with the establishment and progress of which I have been responsible in a modest way.

The Juvenile Jail

The scheme of correction and rehabilitation of adolescent delinquents was started in U P in 1939. Although the aim and underlying principles have remained the same, the practical working has undergone a vast change.

The basic principles governing this institution are :—

1 To give the inmates compassion and affectionate treatment and generally make them feel as if they were living in a well adjusted home.

2 To use no force and no compulsion in activities like games, scouting, work and studies, realising that the desire for such activities must come from within.

3 To fill in the boys' time and minds with varied activities so that they may have no time for idle failings or idle talk or be victims of mental conflict.

4 To extend confidence in them and to trust that they will not betray us. They are free to go to outside factories and outside schools and even to go home on leave unescorted.

5 To give them freedom in the management of their own affairs and to encourage them to take part in the administration of the institution. They elect the in-charges for the cook house, recreation and reading room. On May 31, 1948, the Superintendent withdrew all Warders from inside the jail and left the entire internal administration to the boys.

The inmates spend half the day in study and during the other period they are taught a trade. Vocational training is imparted in tailoring, lacquered toys' manufacture, leather goods manufacture, weaving, etc. The boys of this jail gave a dramatic performance in Rashtrapathi Bhavan this year in connection with the Prime Minister's birthday celebrations. The institution has its own band manned entirely by the inmates.

Model Prison

In 1949, the U P Government sanctioned the creation of a Model Prison on the lines of a self-sufficient colony with its environment and working similar to the outside world as far as possible. The inmates of the prison were to have perfect freedom to think and shape their lives as they liked, the fundamental idea being to make a

criminal inside the jail a socially useful citizen before his discharge by rousing his consciousness. The model prison lodges the well-behaved long term casual convicts. On arrival from a jail, a long-term casual convict is admitted to a Reception Centre. Here a trained staff scientifically studies a detailed case history giving the relevant details of his life, his family relationship, needs, stresses and strains with social, economical and physicolcgical background, his version of the circumstances leading upto the crime and his reactions towards the trial, for a period of six months At the end of six months, the Selection Board interviews every prisoner at the Reception Centre and those who show that they can be relied upon and who have developed a keen desire to stand on their own legs are selected for admission to the model prison. By opting to join a model prison, the inmate takes upon himself the responsibility of paying back the full cost of maintenance on him, which includes food, clothing, medicines, lodging etc. In this institution, there is no force, no compulsion. There is no forced labour whether in factories, kitchen, canteen, farms or essential service.

There is no free or unpaid labour. All labour is paid and the standard of wages is the same as outside. They earn the privilege of working, earning and living outside the jail walls, without any watch and ward by day or by night and are thus able to support their dependents, whilst undergoing their sentence. The inmates can supplement their food by purchases from a canteen, sweets, milk, butter, oil etc.

One of the main features of the programme in a model prison is to place confidence in the inmates and trust them to carry out responsible jobs under circumstances requiring personal control and honesty. Several batches of inmates have been allowed to visit places of interest in the city, like museum, zoological gardens etc. without any watch and ward.

In short, the model prison offers to its inmates an opportunity to restore their faith in themselves and to instil in them a sense of responsibility.

Open Camp Jails

In the year 1952, the U P Government evolved a scheme for the rehabilitation of prisoners, by employing them on projects of public utility. It was believed that such an employment would encourage them to have pride in honest labour and restore their self-respect. Besides, it gave them an opportunity of working in open conditions, which would encourage them to lead a normal life and make their rehabilitation and re-absorption in society easy. Thus 2000 prisoners were selected for the construction of a dam in Varanasi District. At present there are two such camps employing about 3000 prisoners. During the last six years, they have constructed 3 dams, one bridge and several canals. These prisoners are provided with amenities such as electricity, radio, musical instruments, games and sports etc. They receive wages on piece work basis on market rates. They pay back major portion of their cost of maintenance and

the balance is credited to their account, from which they can purchase toilet requirements, special articles of food, smokes, etc. from a canteen run by them.

The success of the scheme has been proved by the very few escapes, and almost negligible number of disciplinary infractions.

ARTIFICIAL LIMB CENTRE (INDIA)

MAJ GEN A M CHAUDHURI

Soon after World War I, it was realised that war amputees must be provided with artificial limbs and that these limbs must be kept in necessary repairs from time to time. There were very few manufacturing concerns in the country preparing artificial limbs, and the Government placed contracts with them to supply limbs at fixed rates. The limbs were prepared by them to fit the amputees and the payment was made on the authority of the officer commanding hospital stating that a fitting limb had been provided. The main centre was at Bombay and later on a Centre was started at Sialkot. These limbs, of necessity, had to be of varying standards and specifications. For repairs the patient had to be sent to the Company which originally manufactured the limb. In 1935, Captain (now Maj Gen) A M Chaudhuri, while on study leave in England, made special study of the subjects (measurement construction and fitting of limbs) at Rochampton, and on his return was appointed technical officer for supply of artificial limbs to the military hospital at Sialkot. In Sialkot, he provided accommodation to the contractor for a factory in the hospital. He directed the work of carpenters and mechanics working in the factory, suggested improvements in various mechanical arrangements to the contractor and later on provided even mechanics for quickening the pace of the work. The Punjab Red Cross and the Punjab Police Department gave ample monetary help in this matter.

Soon after the outbreak of World War II, it was felt that even with all this help the work was too much for the contractor and if the quality and quantity of work had to be maintained, the factory must be taken over and run by the State. With

this end in view, plans were made for starting an artificial limb centre. A site was selected in Poona in 1943, and with Lieut Colonel AM Chaudhuri as its first director, the factory started functioning towards the middle of 1944. Mechanics were mainly contractor's men then employed by the Government, some carpenters and leather workers were locally enlisted and trained. Organisation and guidance were mainly done by the Director with the help of a sergeant who had worked in one of the limb manufacturing concerns in the United Kingdom before he joined the army. This factory supplied almost all the cases of World War II and was functioning in Poona till January 1947. As the main components, wood and metallic, were readily available in the Punjab, it was decided to locate the centre at Lahore instead of Poona.

It had been decided that all the component parts of artificial limbs should be manufactured in India and need not be imported. To start with, parts like joints had to be imported. Manufacturing them on large scale, would have necessarily taken time. Leather which was used in artificial limbs was of indigenuous origin, wood used was Kashmir willow which was of a very good quality and most of the metallic components were prepared in a Command Workshop at Chaklala. This factory was not only supplying artificial limbs but also all other orthopaedic appliances such as surgical boots, boots for foot drop, knee cages and walking calipers and hernia trusses etc with major modifications suggested by Lt Col Chaudhuri.

With the meagre supplies of specialised equipment and machinery available in India, an artificial limb centre was set up again in Poona in February 1948. As most of the components of artificial limbs had to be imported this factory naturally took some time before it could start taking in cases. By August 1948, the factory could take in almost all types of amputees, and provide them with suitable artificial limbs. This credit goes to [redacted] Lt Col Kapur and Maj M S Vaidianathan.

Training

The limbs as stated above, were manufactured by various manufacturing concerns who had made some attempt to understand the mechanics of artificial limbs and trained some artisans in the manufacture. They did not usually employ any trained medical staff and therefore, no progress could be made. Lt Col Chaudhuri by bringing the factory inside the hospital got the mechanics interested by explaining how the limbs function. These mechanics formed the nucleus staff of the artificial limb centre. In 1944, when new carpenters, leather workers etc, were recruited, they were trained by these mechanics under the guidance of Lieut Colonel Chaudhuri. In 1945, when an IGH went to the United Kingdom, two medical officers from that hospital were detailed to Queen Mary's Hospital, Roehampton for training in artficial limb fitting and manufacture. In india, in 1944, it was realised that it may be difficult to run the army limb centre entirely with civilians. Twelve havil dars of the Indian Electrical and Mechanical Engineers (IEME) (Carpenters, joiners, fitters, and leather and fibre workers) were sent to the United Kingdom for training in manufacture of

Artificial limbs. They took long time in the working of limb making in the Artificial limb Centre (India). They returned to India during 1947 after completing their training. Three surgical specialists were selected in 1946 for training in artificial limbs. They received a month's training in Artificial Limb Centre, Kirkee and later received further training at Queen Mary's Hospital Roehampton. Attempts were also made to interest amputees in the production of artificial limbs.

Materials used in the Manufacture

Soon after the outbreak of World War II, it was realised that India can expect only a minor portion of the requirements of artificial limbs from the United Kingdom. It was, therefore, decided that indigenous products would be used and that India must be independent of the imports. Luckily Kashmir willow, which was available in sufficient quantity could replace it. As willow takes quite a long time for seasoning some English willow had to be imported for the time being. But in all long term planning no provision was made for import of this commodity. Suitable types of good leather were also available in India to prepare the necessary harness for artificial limbs. To start with, the contractors produced metallic parts, e g joints in local factories. But as the material used by them was not to the specifications required, the joints did not last long. It was, therefore, decided to get these parts manufactured in IEME Workshop, Chaklala. For arms cases all components for dress arms were manufactured at Chaklala, and by 1947, even a satisfactory mechanical elbow had been prepared by them. It will be seen that import of a very few items was required for the manufacture of artificial limbs.

In the later part of 1944, when the contractor failed to produce sufficient quantity of component parts required for making limbs, great help was received from Lady Mountbatten, then Superintendent of the British Red Cross Society. She visited the Artificial Limb Centre, Poona to get in touch with the amputees who lost their limbs on the Burma front. She appreciated the difficulty and approached the Secretary of State for India, the War Office and finally the Prime Minister of U K and succeeded in securing component parts of 1,000 assorted limbs.

The director of the limb centre had to devote a fair amount of time and energy in training young military surgeons for the right type of stumps required for fitting and for the proper site for various types of amputations that were essential for good fitting.

Below Knee Limbs

The limbs supplied were triple bearing wooden limb and compared very favourably with the limbs supplied to such amputees in other countries. Officers with these limbs from the centre have played tennis without anybody noticing that they had an artificial limb. The average weight of the limb is 4½ to 5 lbs. It may be added that

for tropical countries the wooden limb is preferable to metallic limb, though metal limb is slightly lighter. Uptil now, no perspiration-resisting paint has been evolved which will prevent corrosion of metal by perspiration.

Above Knee Limbs

The above knee limb is a tuber bearing pelvic suspension limb with slight modifications for shorter stumps. The leather socket was used in the beginning but later it was replaced by willow. A knee lock was considered essential. The central knee control was supplied in selected cases. Pelvic suspension was the standard mode of suspension. Suction sockets are now being tried for special cases. The limb centre also supplied complete aluminium limbs to indoor workers.

Through Hip Limbs

Only tilting table pegs were supplied as shaped limbs were heavy.

Arms Cases

All the upper limb cases were fitted with dress arms till 1946, when an effort was made to manufacture and supply mechanical arms to patients. Below elbow cases could be easily fixed with mechanical appliances and certain special mechanical appliances, e g, writing hand, typing finger, 'G' hook etc, were supplied. Mechanical elbow had been manufactured but not fitted till 1947. Since then mechanical elbow of British manufacture have been fitted to above elbow amputees.

Training in the use of Artificial Limb and Rehabilitation

This Centre has a well equipped walking, training and rehabilitation wing, where thorough training in the use of artificial limbs is given. An instructor from Army School of physical Training gives these patients regular exercises for toning up the muscles of their body with particular attention to the muscles of the stump. In addition, patients are taught how to cycle, to climb stairs and how to use arm appliances. Every patient is given individual attention and the fitting and alignment of his limb is thoroughly checked. It is as a result of this intensive rehabilitation that after fitting of Artificial Limbs, the amputees can walk freely, can run or cycle, drive cars, trucks or motor cycles. A good many of them are actually working as farmers, school teachers, tailors, carpenters, milk vendors, peons, clerks, chowkidars etc. Given the opportunity, all these amputees after successful fitting can lead absolutely normal lives and be useful citizens of the State. Some of them afterwards are taken in Queen Mary's Technical Institute for Disabled at Kirkee and there learn different trades.

Today it is the only instituton of its kind in the East and the 3rd largest limb centre in the world, For some years in the beginning we were catering for the needs of disabled soldiers only, but since 1951 we have been taking civilian patients as well. The number of civilian patients has been progressively increasing every year.

Also twenty patients are sent every year from Burma for fitting of artificial limbs on Government to Government payment basis.

(a) Number of Burma amputees fitted upto 28 Feb 57 136

(b) Number of civilian patients fitted upto 28 Feb 57 1369

Recently patients from other neighbouring countries like Ceylon, Iraq etc. have come to us for limb fitting.

Procedure for Civilians to Obtain Artificial Limb on Payment from this Centre

A civilian patient who wants to obtain artificial limbs or surgical appliances on payment from this Centre has to apply to :—

The Director General, Armed Forces Medical Services,
Ministry of Defence, DHQ PO, New Delhi–11
Telegram – Dgmedforces

On receipt of the sanction, he should contact :—

Commandant, Artificial Limb Centre,
Post Box No. 86, Poona–1
Telegraphic address – Limbindia, Poona,

for further particulars regarding whom to report, availability of accommodation in military hospital etc.

On an average, 4–8 weeks period is required for fitting the artificial limb and training the patient in its use. During this period a patient can attend this Centre as out patient, if he can make his own arrangements for stay in Poona. If a patient desires to get admitted in military Hospital Poona, admission into it will be allowed, if accommodation is available, at the discretion of the local military authorities. If admitted to MH Poona he has to pay Rs 3/– per day as hospital charges, if his income (or in the case of a dependent the income of his nearest relative) is less than Rs 200/– per month. If the income is more the charges increase proportionately. The exact rate in each case can be ascertained from the Military Hospital Poona. The cost of artificial limbs and common surgical appliances has been laid down by Govt of India. These rates are subject to alteration. The full cost of the limb has to be deposited in advance before manufacture of Artificial Limbs is started.

Change of Regulations.

Regulations made in 1921 authorised supply of artificial limbs to all amputees, whose amputation was attributable to service. During World War II, these regulations were further liberalised, ie in the case of soldiers (including VCOs and JCs (E)) the initial provision of the appliances in both attributable and non-attributable cases was undertaken by the Government and the cost met from public funds. In the case of officers requiring artificial limbs of surgical appliances, the cost of provision thereof was met from public funds only where the injury was regarded as attributable to or

aggravated by military service. Repair and maintenance of these limbs were also authorised to cases attributable to service. The same principle governed the supply of all other surgical appliances. The centre did not exist long enough to calculate the age of artificial limbs.

Change of Command.

As stated above, the Centre was started by medical services. After a few years it was felt that as most of the work was of a mechanical nature, a mechanical engineer would be better suited to administer the workshop of the Centre. An IEME Officer, who returned after training in the United Kingdom, was placed in charge of the Centre. Subsequently it became apparant that medical and mechanical aspects were both important, but the Commandant has to be a senior Medical Officer and he has to be thoroughly conversant with surgery of amputation and also with the making and fitting of limbs.

Legislation.

Provision of artificial limb is not all that an amputee expects from the State. He is not only to be provided with a limb but he has to be rehabilitated. Rehabilitation, technical and general, is given to all amputees while they are being fitted. But to find employment for these rehabilitated amputees is beyond the scope of the army. Legislation must sooner or later be introduced in this country, making it compulsory for factories to employ certain number of these amputees as in UK and Australia.

Conclusion.

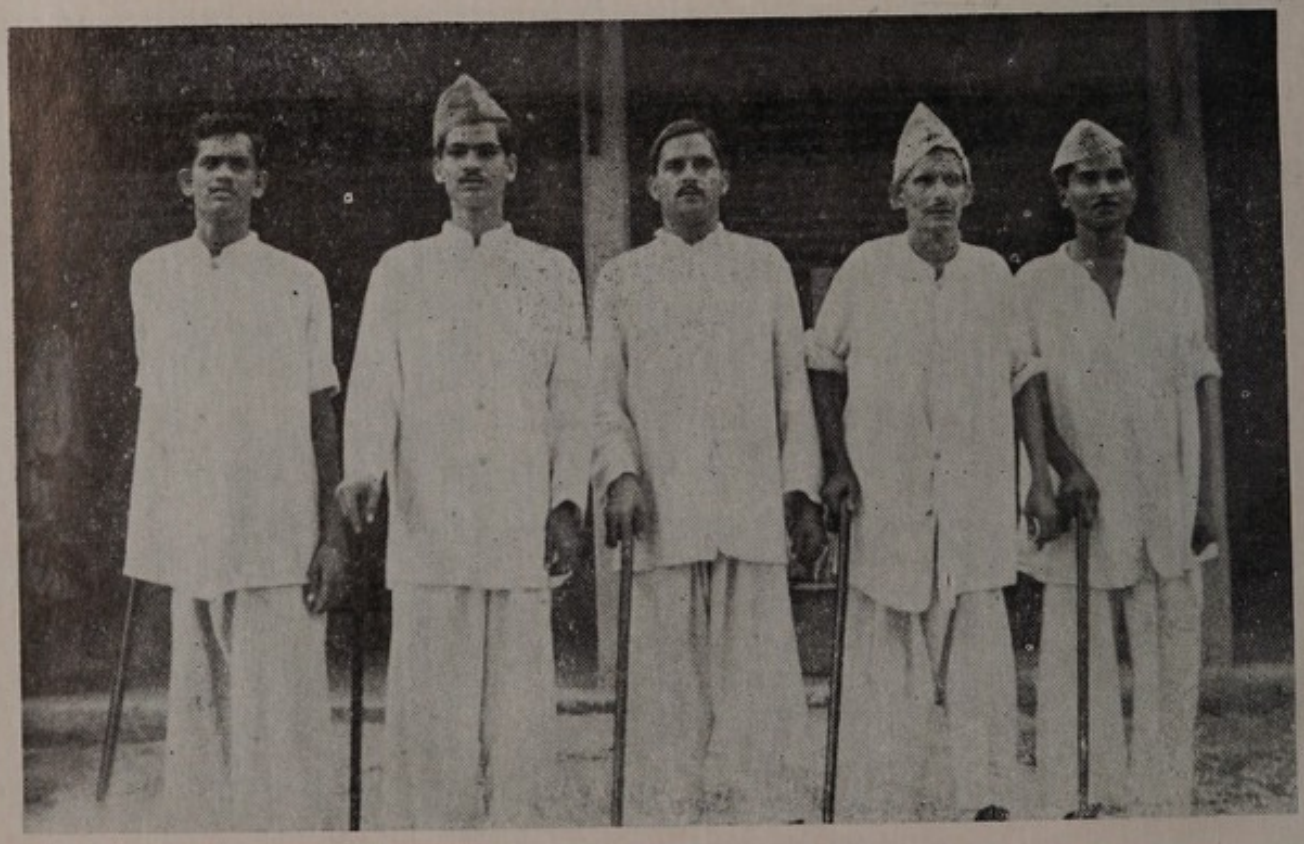
It is an admitted fact that all the glory and credit of starting and putting the Centre into service goes to the pioneer workers–Maj Gen A M Chaudhuri Brig B L Kapoor and Late Lt Col Vaidianathan and the faithful band of carpenters, leather workers and fitters, who still exist there today. They will expect the future generation of Commandants and Workers to improve on the past and ensure that there are more improvements made to make it presentable in a better way. The credit of rehabilitating these amputees goes entirely to Col B Basu, CBE, IMS–Ex-Superintendent Queen Mary's Technical School for Disabled Soldiers, Poona. We should ensure that the glory of the past is continued with renewed efforts by all.

As seen in the pictures all the five amputees who lost both their legs, majority of their limbs were produced by Lt Col A M Chaudhuri, Carpenter Kartar Singh and fitter Mohammed Khan. The day these amputees were fitted with the limbs, and could walk about with smile of happiness in their faces, the Director exclaimed "These are the best rewards that I could expect for my work in the Artificial Limb Centre." These amputees were fitted with limbs as early as in 1939; they were the first lot of casualties received from Egypt and Abyssinia. Every amputee was told about the motto of this Limb Centre–"You will walk, you have to walk and you must walk with the limbs that we have produced for you. You need not be disheartened at all. It is you who will be benefited ultimately with your sustained labour".

The Amputees

The 'LIMBS'

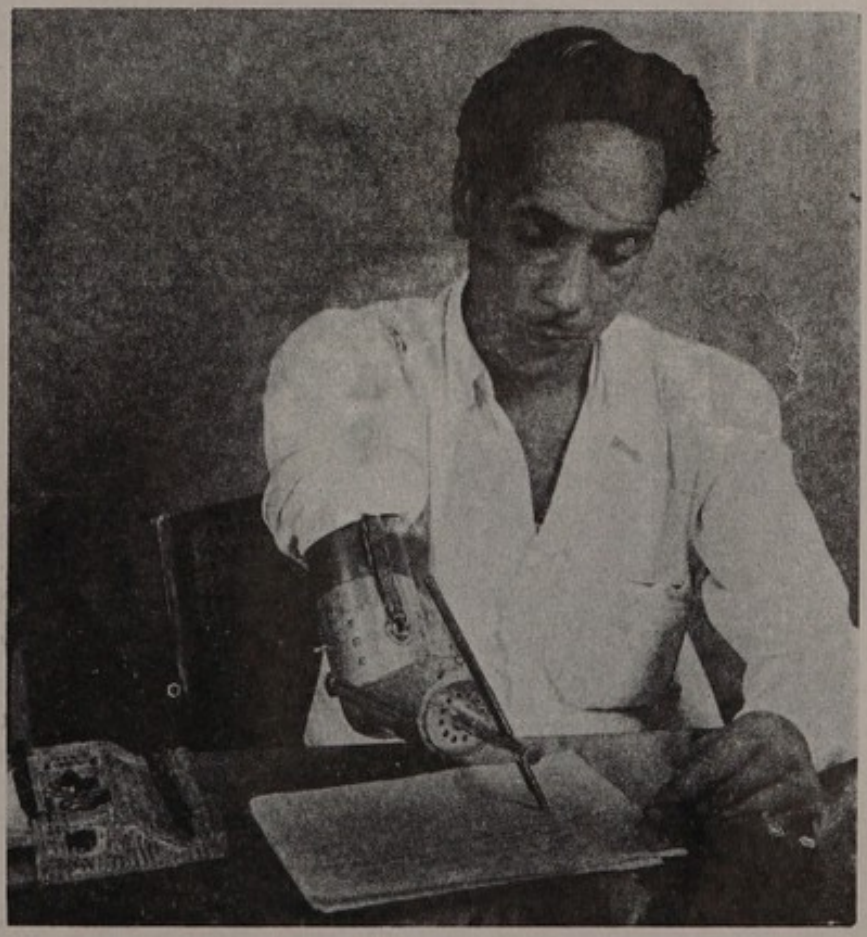
After fitting



Ready for a walk

Amputees walking away with new 'Limbs'

Child with Artificial Limb



Writing with Artificial Arm

Sawing with Artificial Arm

Driving Lorry with Artificial Leg

Printed at
Army Printing Press
Lucknow.