Army patients (most of whom are under 30), rather than indulge in prolonged chemotherapy. Patients, after uncomplicated resections, get up shortly after operation, are discharged thirteen to fourteen weeks later and return to light duty at twenty-one weeks after operation.

Retention in the Army of some affected Regular personnel after cure is now possible. The surgical trend has been away from thoracoplasties, which are now done in few cases. Rib resection and the drainage of empyemata, once a common operation, is also now a rarity.

Conclusion

Some recent trends in Army surgical practice have been reviewed. The rapid technical progress of the last ten years has given us a better understanding of surgical shock, a growing knowledge of body fluid and electrolyte disturbances, outstanding advances in anaesthesia, a more discriminating use of antibiotics and chemotherapeutic agents, improved methods of preserving blood and other living tissues in vitro, better methods of securing haemostasis and bone fixation, all of which have made the surgeon's task easier and safer with better end results: but there is still much to learn.

What wound did ever heal but by degrees? (Othello, Act II, Scene iii).

THE ARMY HEALTH ORGANISATION, 1948-1958

BY


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A REVIEW of military hygiene in the British Army during the first fifty years of the Royal Army Medical Corps appeared in the Golden Jubilee number of this Journal (Richmond, 1948). It is the object of this article to continue the chronicle by presenting a survey of the ten years immediately preceding the Diamond Jubilee.

A task which faces all Service branches during post-war years is the study of lessons learned during war. The standard of hygiene in the British Army has greatly improved during, or as a result of, every past war. This has been due partly to the discovery and application of new techniques; in World War II, residual insecticides, new insect repellents, miticides, the chemoprophylaxis of malaria and the sulphonamide drugs revolutionised many aspects of disease prevention. Important though these new discoveries were, there was another factor of even greater importance and that was the replacement of the apathy of regimental and staff officers by enthusiasm for hygiene. This was the main hygiene lesson of World War II, just as it was the main hygiene lesson of World War I, the South African War and the Crimean War. That this lesson is easily and quickly forgotten is amply proved by history.

New discoveries of potential benefit to the soldier's health are of little value unless they can be translated into effective action. Almost without exception,
such action must be taken by regimental, as opposed to medical, personnel; therefore health education is of fundamental importance.

During the last ten years considerable efforts have been made regarding health education in the Army. In 1948, hygiene subjects were introduced into the entrance examination for the Royal Military Academy Sandhurst, and into exercises at the Staff College, Camberley. In 1950, the Director-General, Army Medical Services stressed the importance of health education by delivering a lecture on "health discipline" at the Staff College; he also contributed to the literature on the subject (Cantlie, 1950).

Organising health education is now one of the primary tasks of specialists in Army Health. To aid them in this task, new films dealing with personal and communal hygiene were released in 1950, film strips were produced at the Army School of Health, and Mobile Health Training Teams were devised. A great deal of thought has been given to the various educational techniques involved (Sloane, 1951). New pamphlets have been produced, "Your Health and You" (War Office, 1950), to help the individual soldier, and for his family, "Health in the Tropics—Notes for Families" (War Office, 1957). The lessons of World War II have been incorporated in the Handbook of Army Health and in the Manual of Army Health (War Office, 1950 and 1954).

In 1948, courses were commenced at the Army School of Health to train as health educators regimental officers and N.C.Os. of Army Basic Training Units (A.B.T.Us.). Continuation of health training, commenced at A.B.T.Us., was given prominence in an Army Council Instruction issued in 1953, and courses are now held at the Army School of Health to train unit officers and N.C.Os. to take part in this continuation training. Prominence has also been given to the need for the health education of troops proceeding on overseas service; since 1948, lecturing on health to troops during voyages has been an official duty of the senior medical officers of troopships (Sloane, 1950).

The results of health education are not easy to judge in peace time when the majority of troops occupy permanent barracks with a well-controlled environment. However, during the last ten years, the campaigns in Korea, Malaya, East Africa, Suez and Oman have provided scope for testing the health knowledge of regimental personnel and their ability to apply it in field conditions.

The operations in Malaya provided confirmation of the importance of health discipline, and the health record of the Brigade of Guards in that theatre was impressive (Scott & Stalbow, 1950). Experience in jungle warfare had already been acquired in World War II, and many hygiene lessons had been noted (O'Dwyer, 1949). Malaria has now ceased to be a serious cause of loss of military manpower, but it must be noted that practically all the relevant preventive measures rely upon the actions of regimental personnel (D'Arcy, 1948). Scrub typhus, a comparatively new disease of armies, was conquered by prevention and therapy soon after its recognition, so that our troops in Malaya were well protected (Audy, 1949).

In Korea the problem of preventing injuries due to cold were successfully solved, mainly by a scale of efficient clothing coupled with good individual
discipline; casualties from frost-bite and trench foot were negligible (Watts, 1952; Bretland, 1954). The record in regard to less novel hygiene matters was not so satisfactory; basic principles of hygiene and sanitation had to be re-learned by bitter experience, and paludrine discipline was often disappointing.

From the hygiene viewpoint, the campaign against Mau-Mau in East Africa resembled the operations in Malaya. The tactical situation demanded action by small parties of troops operating in an environment which could not be controlled; because of this, hygiene depended largely upon individual self-control, or, in other words, upon personal health discipline. There was malaria and schistosomiasis to be prevented, and an epidemic of plague in the indigenous population was a hazard. The Army Health Organisation co-operated with the civil health authorities in defeating the threat of plague by spraying villages with residual insecticides; trailers equipped with spraying apparatus were used for this work. Some of the rather unusual hazards included tick-typhus, to which troops on cattle protection duties were exposed, altitude sickness when on operations at heights of 10,000 feet or more, and attacks by elephant and rhinoceros.

The “Suez crisis” provided evidence that the standard of health knowledge of regimental personnel, both rank and file and their leaders, had declined since the end of World War II; already the lessons learned in war were being forgotten in peace. The shortcomings noted were all concerned with the basic principles of hygiene: the prevention of ingestion diseases, personal hygiene, especially care of the skin, and the avoidance of heat effects. In addition it was demonstrated that hygiene personnel and units, with adequate equipment and supplies, are a vital need in areas wherein public health and associated services have ceased to function (Archer, 1958 b).

In the Oman campaign there was evidence of a high standard of hygiene in relation to food, messing and waste disposal. There was not a single case of dysentery throughout this campaign; only one case of diarrhoea occurred, and that was considered a relapse from a previous infection. This excellent record appears all the more remarkable having due regard for the fact that houseflies abounded and, due to constant movement, “cat sanitation” only was possible. This was one aspect of hygiene the troops seemed to understand and most forcibly illustrated the value of training and hygiene discipline. However, there were lessons to be re-learned in regard to other matters, notably water discipline, the avoidance of heat effects, the need for scrupulous personal cleanliness in the prevention of skin infections, and the fact that both internal and external otitis are exacerbated by desert conditions (Binns, 1957).

In 1948, the Military Personnel Research Committee was restored, and in 1950 it was reorganised. Its subcommittees deal with clothing and personal equipment, environmental physiology and information and ascertainment of problems. R.A.M.C. officers have carried out investigations under its ægis, into the physiology under stress in cold conditions in Canada, in the front line in Korea, in the Falkland Islands and in Antarctica. Investigations have also been carried out regarding the physiological problems of hot climates, par-
particularly in collaboration with the Royal Navy at Singapore. Research in relation to clothing and equipment has involved trials of load carrying and new ranges of clothing for combat, jungle and winter warfare (Lippold & Naylor, 1951; Renbourne, 1954). The routine use of air transport for the speedy conveyance of troops over long distances and between countries with extreme climatic differences raises problems involving the physiology of air travel and acclimatisation to hot climates. Special studies are therefore being made of all the factors which affect the health, efficiency, comfort and morale of troops transported by air. In particular it is essential to ensure that such troops arrive "fighting fit" at their destinations. The factors involved include the effects of diminished oxygen tension, atmospheric pressure changes, motion sickness, postural œdema, temperature and humidity changes, noise and vibration, upsets in diurnal rhythm and air-travel fatigue generally; associated with these factors are such matters as the design and spacing of seating, facilities for the stowage of personal equipment, toilet facilities, supplies of food and water, additional oxygen supplies, health education, indoctrination, and the international control of disease. In addition, the basic principles of hygiene during travel must be stressed; it is not unknown for troops to be rendered non-effective after arrival on account of food-borne infection acquired en route. Much knowledge and experience have already been acquired regarding acclimatisation to hot climates. Attention is now focused on questions as to whether the acclimatisation process can be accelerated, and whether artificial acclimatisation can be usefully and permanently achieved before leaving a temperate climate. Although there is laboratory evidence that the required physiological changes can be artificially induced, the practical application of this evidence has yet to be fully investigated.

The medical aspects of physical training were reviewed in 1950 by a special committee. Such training is an integral part of the work to promote the soldier's physical and mental health, and the results of physical efficiency tests provide a useful guide as to the fitness of troops for active service. Here it is relevant to pay tribute to the Physical Development Centre at Chester which closed in 1948; in the war years it made an important contribution to the efficiency of the Army, and a unit of this nature is acknowledged to be very necessary in war time.

Improvements have been made in our ability to measure physical and mental efficiency, and to state those measurements in a form easily utilised by all who have to select, lead and administer troops (Devlin, 1952). In 1948, the Inter-Departmental Committee on the Creation of a Uniform System of Medical Categorisation for the Fighting Services completed its work and was dissolved. The resulting change-over to the PULHEEMS system was speedily and smoothly accomplished in the same year.

The increasing complexity of military equipment has made it necessary for the Army Health Organisation to increase its activities in the field of industrial hygiene. The Joint Services and Factory Department Committee on Occupational Health continues to be a valuable medium for the pooling of relevant knowledge and experience. Protection against radiation hazards is receiving
special attention, and the Army film badge service has been officially recognised by the Chief Inspector of Factories. As a result, the Army film badge service is now a legally approved "laboratory" within the meaning of the Luminising Regulations; the only other legally recognised organisation in this context is the national Radiological Protection Service. The increasing use of radioactive substances in industry has made necessary new regulations under the Radioactive Substances Act; these apply to all sources of radioactivity and not only to luminising processes. The official recognition of the Army film badge service carries with it the obligation of compliance with these regulations.

In addition to the industrial aspects of radiological protection, the Army Health Organisation is concerned with the problems associated with radioactive contamination of food and water, with the disposal of radioactive wastes and with the storage of sources of radioactivity used for training purposes. There is considerable scope in the Army for statistical research on the subject with particular reference to "whole life" radiation dosage. The fact that the Army operates maternal and child welfare centres, a school health service, an industrial health service, a general medical service and a public health service would facilitate the collection of such statistics from a wide field, and in addition their relation to diseases such as cancer and leukaemia and to possible genetic effects.

In the immediate post-war years food rationing problems made it necessary to conduct investigations regarding the soldier's energy expenditure and calorie intake. The investigations carried out in the period 1948-1950 revealed that the soldier was purchasing 900 calories-worth of food daily out of his own pocket and that, in some instances, his ration scale was lower than that of a comparable civilian. Since those days considerable improvements in the ration scales have been effected, and similar investigations are continuing.

Our techniques for purifying drinking water in the field have been further developed. An important advance has been the adoption of fixed-dose chlorination combined with the neutral red test; this has involved replacement by the Elliott Case of the familiar Horrocks Box, which performed such sterling service for so many years. In 1948, the Inter-Service Advisory Panel on the Treatment of Water Supplies in the Field came into being, and has proved of great benefit to all concerned. In addition, new patterns of water vehicles, lightweight filters and new sterilising compounds have all contributed to making the soldier's drinking water safer than it has ever been (Elliott, 1949 and 1957; Anderson, 1949).

The advent of residual insecticides has revolutionised our ability to prevent insect-borne diseases. New insecticidal preparations and means for their application have been tested in the field and at the Army School of Health. Improved preparations of D.D.T., B.H.C., and dieldrin, together with new types of sprayers, aerosol dispensers and fogging apparatus, have greatly simplified the task of destroying the insect vectors of disease. Since 1948, the Director of Army Health has been a member of the Colonial Insecticides Committee which provides valuable opportunities for exchange of knowledge of the subject. These advances, together with better repellents and miticides and the replace-
ment of mepacrine by paludrine in the chemoprophylaxis of malaria, have reduced the hazard of insect-borne disease to a fraction of what it was before (Keatinge, 1949; Smart, 1952; and Dowling, 1955a, b).

Increasing attention has been paid to the health of Army families and a considerable amount of the work of the specialist in Army health is now devoted to this subject (Maitland, 1950). The Education Act of 1944 and the National Health Service Act of 1946 resulted in Army families becoming entitled to medical care which formerly they received as a privilege. In 1948, Senior Medical Officers of the Ministry of Education toured B.A.O.R.; an extract from their report is as follows: "In our judgment the arrangements made or contemplated are such as ought to provide a really efficient school health service and they reflect great credit on the R.A.M.C. We were stimulated by the enthusiasm and ability and broad humanity of the officers of the R.A.M.C., and we were impressed by their keenness to set up a school health service that would compare favourably with that of the most progressive areas in the United Kingdom" (War Office, 1952). The work performed by nursing sisters of the Soldiers', Sailors' and Airmen's Families Association (S.S.A.F.A.) is worthy of special note. In the military community, S.S.A.F.A. sisters perform the work of domiciliary health visiting, domiciliary nursing and school health visiting. In addition, they operate maternal and child welfare clinics and carry out numerous other duties associated with the health and welfare of military families. In 1955, the military family community consisted of approximately 22,000 wives and 34,000 children, many being located overseas in environments having health problems unfamiliar to residents in the United Kingdom. In that year S.S.A.F.A. sisters made 71,603 domiciliary visits and received 75,000 clinic attendances. The services of S.S.A.F.A. sisters are not confined to U.K.-based families, but are extended to cater for the families of locally enlisted troops in Malaya and elsewhere. Domiciliary visits are also made by specialists in Army Health, pursuing epidemiological and environmental investigations; such visits are co-ordinated with those made by clinical specialists when occasion demands. The admission of service wives to hospital raises urgent domestic problems in relation to the care of their children, especially overseas when the husband, or other relative, is not at home to help. In some theatres this problem has been solved by the establishment of crèches, mainly through local initiative supported by S.S.A.F.A. sisters and Army Health specialists. Medical advice has been prominent in the recent efforts to improve living conditions for Army families, and their accommodation has been the subject of special study (Burbidge, 1954; Devlin, 1954).

Progress has been made in relation to barrack accommodation, and the Army Health Organisation has contributed to this. Because of financial limitation, progress has seemed slow but, in retrospect, it can be noted that much has been accomplished in the last ten years. Hospital and medical centre accommodation has been improved also. Army health specialists have made a special survey of the latter, and attention to the standard of service provided is now within their terms of reference. The modern medical centre is very different from the old-
style medical inspection room, the aim being to provide the highest standard of
general practitioner service (Youngson, 1956).

Now that most of the epidemic diseases of the past have been brought under
control, skin diseases have emerged as the most important single cause of hospital
admission. In all Commands except the Far East, the common skin condition
has been septic infection of minor skin injuries. In the Far East fungous infections
have been more common than septic infections (Davies, 1952). In 1948, a
dermatological team investigated fungous skin infections among troops in the
Far East, and revealed that the infecting fungus originated in the United King­
dom, accompanied the troops in their journey overseas, and multiplied rapidly
in the hot, humid climate. In 1952 dermatological research was conducted in
the Middle East. It was demonstrated that the common infecting organisms
were staphylococci and streptococci originating in the patient's own skin,
nose and throat. No specific measures are available for the prophylaxis of these
conditions. However, there is scope for improving prophylaxis based on general
measures and personal hygiene involving the use of soap, water and ventilation
of the skin; improvements in this respect might make specific measures
superfluous.

Our arrangements for the control of tuberculosis have been improved,
particularly in regard to follow-up of contacts. The Army Health Organisation
has been co-operating with the Medical Research Council in a trial of B.C.G.
vaccine by the follow-up of subjects during their military service. A special
study has been made of the incidence of pulmonary tuberculosis in Gurkha
troops and their families, and, as a result, measures have been instituted to
hasten the elimination of this disease. During 1948 and 1949, details of this
important public health problem were accumulated, and in 1950, the examina­
tion of all Gurkha troops by mass miniature radiography (M.M.R.) was com­
menced. These M.M.R. examinations are applied to all personnel of the Gurkha
Brigade, and surveys of entire Gurkha units have been carried out. Gurkha
recruits are examined by full plate X-ray in India before acceptance, and this
has been extended to cover their families, teachers, priests and midwives. Heaf
testing, with B.C.G. vaccination of negative reactors, has been performed as
a routine since 1951. Eradication of sources of infection, by improved facilities
for the treatment of the disease among Gurkha troops, has been allotted priority
since 1952. Treatment includes, according to the needs of each particular
patient, at least two years' drug therapy at sanatoria specially established for
Gurkha troops, thoracic surgery at the Army Chest Centre in England, and up
to nine months at the Rehabilitation Centre in Malaya. Similar facilities are
afforded for the families of Gurkha troops.

Other specific diseases which have been the subject of special study include
acute hæmorrhagic fever in Korea, Weil's disease and Japanese B encephalitis
in Malaya, enteric fever in the Middle East and influenza of world-wide dis­
tribution. Also, infective hepatitis has continued to attract special attention
as it did during the war years (Richards, 1950; Archer, 1954).

The ten years under review have witnessed a decline in the overall incidence
of disease in the Army. The rate for malaria in the Middle and Far East is now approximately the same as that for psychiatric disorders (approximately 4 per 1,000 per annum). Even the old "camp disease," bacillary dysentery, now causes little concern except in the Middle East, where, although the incidence has been halved since 1948, it is still an important medical cause of manpower wastage.

The rate for venereal disease in B.A.O.R. is now one-tenth of what it was in 1948; only in the Far East has the reduction in the incidence of this disease been less dramatic. The trends in respect of respiratory and skin infections were not so well defined, there having been wide fluctuations between the experiences of the various years; however, these diseases also show a general but undramatic decline.

The Army Health Organisation is not preoccupied solely with the prevention of disease; continuous efforts are made to improve the quality of health itself. This "positive health" outlook has been given prominence in the post-war years (Burbridge, 1949). In addition, attention has been paid to problems of mental health and morale concerning which specialists in military psychiatry and specialists in Army health work in close collaboration. The Army Health Organisation now has a definite and official responsibility in this field (Lewis, 1951). The use of the word "hygiene," although etymologically by far the most appropriate, did not, in popular parlance, express the full scope of the specialty in the Army; hence, in 1949, the Army Hygiene Organisation was re-named the Army Health Organisation (Scott, 1951).

The Organisation provides services similar to those of a Local Health Authority, particularly overseas and with reference to families; also, it has some of the functions of a Regional Hospital Board and a Local Executive Council, besides operating School Health, Industrial Health and Port Health Services (Ingham, 1952).

In conclusion, the work of the Army Health Organisation in the years that lie ahead will be briefly summarised. The ascertainment of problems, and practical solutions to them, must continue, as must also the search for new facts upon which further improvements in the soldier's health and efficiency may be based. Army health specialists must continue to explore the health aspects of the diverse environments wherein the soldier may be employed; such explorations have been conducted recently in jungles (Archer, 1958 a) and in Antarctica. The exchange of Army health specialists with medical officers of other armies will extend the scope of our experience; arrangements are being made for an Army health specialist to be exchanged with a specialist of the Pakistan Army Medical Corps, and it is anticipated that similar exchanges will follow. More knowledge must be acquired regarding acclimatisation to hot environments, the physiology of air travel, the hazards of rockets, other new weapons and nuclear radiations. The fact that the Director of Army Health is Chairman of the Working Party on Radiological Protection will assist our progress in this latter field.

Although new developments and research are important, there is great scope for enhancing the health and efficiency of the Army by improving the practical application of the basic principles of hygiene; health education, in its widest sense, is our main instrument for achieving this. The organisation
for health education in the Army has great potentialities, and involves team­work in which all ranks, irrespective of trade, grade or mode of employment, have a part to play (Lewis, 1952). The main task of the Army in peace is to train for war; hygiene is an essential part of that training. Through health education, particularly of commanders and senior staff officers, it can be ensured that the health of the Army is in keeping with the state of medical and other scientific knowledge of the times; that is our main target for the future.

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