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EXPERIENCES IN MILITARY DERMATOLOGY*

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So far as I have been able to ascertain, the best starting-point for this essay is July 23, 1903, for on that date the Advisory Board for Army Medical Services appointed a subcommittee of eminent men "to consider the question of the treatment of venereal diseases in the Army, and to inquire into the question of the treatment of itch." The chairman and the secretary of the subcommittee widened its terms of reference very considerably, and included in its purview "the arrangement and equipment of wards and hospitals for the treatment of certain" (unspecified) "skin diseases"; they summoned to its conferences most of the eminent British dermatologists of the day (including Radcliffe Crocker, Malcolm Morris, Jonathan Hutchinson, T. Colcott Fox, and Arthur Whitfield) and sent a representative to the leading civilian and military hospitals in France, Germany, Austria-Hungary, Italy, Russia, Sweden, Denmark, and Belgium. Eventually four large reports were published by His Majesty's Stationery Office,¹ and in the last of these, among many other recommendations, the subcommittee advised the segregation of skin cases in special sections of military hospitals, recommended that in these hospitals "in charge of sections for the treatment of venereal and skin diseases should be placed officers who have qualified as 'Specialists in Dermatology, including Venereal Diseases,'" and stated that it would be "of advantage to the service that junior officers intending to present themselves for examination in the subject of dermatology and venereal diseases when qualifying for promotion to major should be appointed to stations where wards for the treatment of these diseases exist under the charge of an officer with the 'Specialist' qualification."

It would have been reasonable to assume that with the backing of the subcommittee's findings and the blessing of the Advisory Board military dermatology would have forged ahead. But venereal maladies are a greater hazard than cutaneous diseases to a peacetime army of selected men, and the medical officer who desired to specialize in the latter found that, although nominally he was a dermatologist, the larger part of his clinical duties was the treatment of venereal disease.

In the South African War (1899-1902) skin diseases had been found to be one of the principal causes of inefficiency in the Army²; during this campaign the average annual incidence of skin diseases per thousand troops was 23.71—i.e., approximately half the battle casualties. In the war of 1914-18 skin diseases again became notorious because of the inefficiency they caused. In 1915, in the United Kingdom, 40.88 men in every thousand were admitted to hospital because of diseases of the skin and areolar tissue³; in France and Flanders in the same year the ratio was 126.13 in every thousand.⁴ But despite the high incidence of skin diseases the dermatologists were singularly unsuccessful in leaving a permanent impression upon military administration. In the years of comparative

tranquillity between 1918 and 1939, for the reason given previously, dermatology in the Army again became a specialty in which venereology was predominant.

The Early Days of the War

Of the first nine months of the present war I shall say little. The dermatological work which was carried out during this period in the B.E.F. in France (1939-40) has been recorded by Colonel J. T. Ingram.⁵ For those of us who were on service in the United Kingdom it was probably the hardest and most difficult period to date. We who were working in England naturally and rightly did not have our indents for drugs and stores fulfilled until the B.E.F. were supplied. Not only were the shortages of drugs, syringes, etc., a matter of concern, but also we had many difficulties with personnel; for much of our time was spent in training men, many of whom had but little vocation for nursing, without assistance from sisters or from nursing orderlies. In the hospitals at home, no sooner had we trained a batch of men than they were swept away to other units, and the training of the next batch of raw recruits and inexperienced medical officers began. This difficulty with personnel has given us considerable trouble throughout the war. Much (but by no means all) of the work of a dermatologist in the Army must be done in military or general hospitals. It is the duty of the staffs of the former, and to a less degree of the staffs of the latter, to train personnel, and the shortage of man-power is such that it is very difficult to arrange for a cadre of N.C.O.s, trained nursing orderlies, or special treatment orderlies to remain in each hospital as a nucleus to assist in the training of each batch of newly enlisted men.

A New Establishment and a Policy

In Nov., 1941, largely as the result of the representations that were made by the Director of Hygiene (Major-Gen. D. T. Richardson) and Lieut.-Col. (now Brigadier) T. E. Osmond, R.A.M.C., and with the valuable support of members of the Consultants Committee, a new establishment was created in the Army Medical Department: Brigadier Osmond continued to be Adviser in Venereology, and I was appointed Adviser in Dermatology. It must be understood that the dermatologist who is War Office Adviser has not *carte blanche* to organize dermatology in the Army in accordance with his own fancies or the beliefs of his officers. It is his duty to weigh the merits of the policies he conceives or the proposals he receives, and then, if they involve major questions, so to marshal the facts and figures concerning these matters that he can present to higher authority a watertight and convincing case for their acceptance and adoption. Having received an acceptance in principle, he must then take the necessary steps to have the scheme implemented.

In Nov., 1941, my first duty was to formulate a comprehensive policy for dermatology in the Army. The following is an outline of this policy, so far as the work in the United Kingdom was concerned.

1. In each Command† there should be a Command Specialist in Dermatology: he should have the professional status of

† As[†] is well known, for the purposes of military administration the United Kingdom is divided into several large Commands. For medical purposes the Command is the major administrative unit.

* A paper read before the British Association of Dermatology and Syphilology on July 2, 1943.

a consultant and should hold a higher diploma in medicine or surgery, but in a few cases in which ability in organization or in dermatology was recognized this academic standard might be waived.

2. So far as possible, military dermatology should be centralized in military hospitals.

3. Officers in medical charge of units should be instructed to send all difficult cases (without delay) to hospitals where dermatologists were available rather than to admit these cases to subsidiary medical centres where, because of lack of specialized knowledge or advice, the course of the disease might be prolonged.

(This item of policy, simple though it appears to be, was not put forward without much consideration; for it was a matter which affected the interests of many keen medical officers who would have preferred to keep these cases under their own care. But our criterion of therapy is that it must be carried out with the maximum speed compatible with efficiency, and it was obvious that the detailed knowledge of the specialist was more likely to ensure rapidity and efficiency than the efforts of a medical officer, however keen, who had no special knowledge of cutaneous diseases.)

4. Military dermatological centres should not be isolated units, but should be part of or attached to military or general hospitals.

5. The equipment—surgical, electrical, and pharmaceutical—should be of a standard comparable to that of the dermatological department of the average teaching hospital. In one centre in each command x-ray therapy should be available.

6. A scabies officer—a graded dermatologist—should be appointed in each Command.

A Memorandum embodying this policy was drafted; it contained, *inter alia*, reference to the dermatological education of medical officers, and reference to preventive dermatology and rehabilitation.

The justification for the policy submitted was that, if carried out, there would be a reduction in the loss of time and the wastage of man-power due to skin diseases, and certain economies in finance and material would be effected. All the proposals, except that for scabies officers—which was refused on the grounds of shortage of medical officers—were accepted in principle.

There followed visits to most military hospitals and many camp reception stations from the Moray Firth to Cornwall and from Londonderry to Canterbury. New establishments for a certain number of dermatologists had to be obtained; dermatologists had to be enlisted, passed through the depots, and posted to Commands. Additional bed accommodation had to be found. The details of the policy had to be explained in the Headquarters of Commands. Many E.M.S. hospitals were visited, and it is a pleasure to acknowledge my indebtedness to the executive and clinical officers of the E.M.S., who have always cordially smoothed my path.

In May, 1942, the Director-General E.M.S., having considered our plea for centralization of treatment, issued an Instruction directing that if a Service patient had been admitted to an E.M.S. hospital, and if cure had not resulted within three weeks from the date of admission, that patient should be transferred to one of the hospitals having special facilities for treating skin cases listed in Section XII of E.M.S. Instructions, Part I.⁶

Besides these administrative matters, items of clinical interest were dealt with. Two pamphlets—"Notes on the Prevention and Treatment of Scabies, 1942," and "Memorandum on Cutaneous Diseases, 1942"—were written, and published by command of the Army Council.

Implementing the Policy

In July, 1942, an order was promulgated implementing the first item of the policy outlined above: Command Specialists in Dermatology were nominated for all Commands in the United Kingdom, and their duties and responsibilities were defined as follows:

1. The Command Dermatologist is the adviser of the Deputy-Director of Medical Services of the Command in all matters concerning the prevention and treatment of skin diseases.

2. He is responsible for the treatment of skin diseases in the hospital to which he has been posted.

3. He is to visit, periodically, all military stations in the Command where skin diseases are treated and to report to the D.D.M.S. concerning the efficiency of these stations. (When properly carried out these visits are among the most valuable services which he renders.)

4. He is to advise and train medical officers in the principles of diagnosis and treatment of skin diseases. (In many skin centres teaching rounds are undertaken in the wards.) He is responsible for the training of orderlies and V.A.D.s.

5. He is to maintain cordial liaison with those E.M.S. hospitals where military dermatologists attend in a consultative capacity.

6. He has authority to delegate certain of his duties.

It will be seen from this schedule that the Command Specialist has heavy responsibilities. He is both the pivot and the mainspring of the system in the Commands. Once in every three or four months there is a Conference of Command Specialists in Dermatology at the War Office.

Grading

Thus far reference has been made to Advisers and Command Dermatologists without describing the hierarchy of dermatology in the Army; this omission must now be rectified. Besides Command Specialists and Advisers there are Specialists and Graded Specialists in Dermatology; also we have a few carefully chosen officers who are being trained in the specialty.

It may be of interest to specify the standards required of those who wish to be posted as "Graded Dermatologists" and "Specialists in Dermatology." A "Graded Specialist" should be in possession of higher medical qualifications. He should have been qualified in medicine for three years and employed in his specialty for at least one year. A "Specialist" must have the same qualifications as the "Graded Specialist," but with at least three more years' experience in his specialty; his age should be 32 years or over. Because of the pressure of the years we have had to reduce our standards, but the reduction has only been slight.

There is a general belief that military dermatology is a simple business. Certainly dermatology in the Army is simplified by two factors: first, we deal with persons of a selected age group; and, secondly, we deal with men and women who have been passed for service after a medical examination. But as the age limits widen and as, under the exigencies of war, the standards of physical fitness are relaxed, the scope of dermatology (as of other branches of medicine) widens proportionately, and we see a number of cases of unusual interest and difficulty.

Nursing

There is one important matter to which reference must be made, and that is to the assistance which the Matron-in-Chief, Q.A.I.M.N.S., Dame Katharine Jones, has readily given us on every occasion when we have sought her help. She, who once worked with Dr. H. G. Adamson, is anxious that every facility should be given for skin cases. On April 29, 1942, she signed a Memorandum on behalf of the Director-General, Army Medical Services, stating that matrons and sisters in charge should particularly interest themselves in skin wards, and whenever possible a sister should be posted to supervise the treatment of skin cases, "which should be regarded as an important branch of nursing duties." Since the issue of that Memorandum developments have occurred, and it is hoped that soon new establishments will be promulgated whereby sisters will be available to supervise nursing in the skin wards of all military hospitals. Dame Katharine is anxious that one of the good results of this war will be that in future the British soldier when suffering from skin diseases will be nursed in wards supervised by sisters.

Thus, briefly, are summarized the most salient advances in military dermatology which have occurred at home in recent months. There has been much else. We have recently launched a scheme on a small scale for the rehabilitation of men who have suffered from certain cutaneous diseases. This scheme, though no longer in embryo, is still in swaddling-clothes, and therefore will be mentioned without comment.

With regard to the Forces abroad, an adviser in Dermatology has been posted to the Persia-Iraq Force and another is serving in the Middle East. I have no intention of widening the scope of my remarks by reviewing the work of dermatologists in India, Persia, and Iraq, in Palestine, in Egypt and Libya, in North Africa, and in more remote parts of the globe: our colleagues will tell their own histories when they return, and theirs will be records of high endeavour and

success. It has been interesting to see how each dermatologist who has been commissioned has seized upon one particular facet of dermatology as being particularly his, and by disseminating his special learning has contributed greatly to our common knowledge.

Some Contributions of Note

Many clinical investigations and field trials have been undertaken; some contributions of value have been published in the medical press. Our observations have ranged from the bullous striate dermatitis which occasionally develops on those who lie down in green pastures, to methods of using "plastics" in the service of dermatology. Reference to the work (published or unpublished) of individual officers would be invidious, but as Major G. A. Hodgson's observations⁷ on the incidence of scabies and its apparent dependence upon the incidence of subnormal intelligence have been criticized, I wish to make the following comment. From my own observations I believed that Major Hodgson was correct in his general view that the incidence of scabies was greater in troops of low mentality than in individuals more favoured mentally; but because of Hodgson's use of norms derived from R.A.M.C. recruits, it is possible that the figures obtained in this group were too high and consequently the number of cases which appeared to fall in the lowest intelligence group were exaggerated. The figures (see Table) supplied by Lieut.-Col. G. R. Hargreaves,

Table showing Proportion of Scabietic Recruits of Different Intelligence Levels

Intelligence Grading	Scabietic Recruits	Strength of Intakes by S.G.s	Ratio
S.G. 1	21	3,945	0.5%
S.G. 2	65	6,983	0.9%
S.G. 3+	109	9,389	1.2%
S.G. 3-	89	8,346	1.1%
S.G. 4	123	6,565	1.9%
S.G. 5	46	2,102	2.2%
	453	37,330	1.1%

R.A.M.C., after an investigation of the incidence of scabies in approximately 40,000 recruits suggest that while Hodgson's figures are an over-estimate of the relation between scabies and low intelligence, nevertheless a positive significant relationship does exist, particularly in the very lowest intelligence group.

But, besides this flight into the *terra incognita* of psychosomatic tendencies, we have done much work on scabies, and we are proud of the enormous saving in transport, material, and finance which has resulted from the introduction of the treatment of scabies in units without segregation of the patients. From the administrative point of view it was a bold step for the Director of Hygiene to sanction this innovation, for had it not been successful the incidence of skin diseases would have soared; but, thanks to the careful work of unit medical officers, hygiene officers, and dermatologists, this innovation has been a success, and not only has there been a great saving in the material matters just mentioned, but there has also been much economy in that even more valuable factor, time.

All too often it has happened that the experiences gained in war have been forgotten in peace, and, before I conclude, there are some matters to which I must refer.

General Standard of Dermatology

In the Army not only is there a cross-section of the population—there is also a very fair sample of the graduates who have emerged from all the medical schools in the United Kingdom during the last 20 years; one is thus afforded a unique opportunity of assessing the general standard of medical knowledge attained by these men and women. In the Official History of the last war⁸ it was stated that:

"The outstanding feature of this statistical review of diseases of the war . . . is the large number of men rendered ineffective by the simple ailments of everyday life, such as diseases of the respiratory and digestive systems, rheumatic fever and its allied conditions, local and general injuries, skin diseases, minor septic infections, and influenza. These disabilities . . . form the bulk of the illnesses suffered by the seven million insured people who apply for medical treatment every year. . . . The medical services both of the Army

and of the civil population have here a common enemy and a common objective. Herein lies scope for research, rich in opportunity during peace, full of possibility for the future, and well worth constant investigation if preventive medicine is to reduce the admission rate to hospital at home and abroad, in peace and in war."

Without presuming to comment on the standards of medical education in any subject but that of our specialty, I feel it my duty to state that, in my opinion, the standard of dermatological knowledge of recently qualified medical men is not proportionate, as it should be, to the incidence of cutaneous diseases in both civil and military practice. It is not only the recently qualified medical men whose knowledge of cutaneous diseases could be improved with benefit to the community. The standard of many of their senior colleagues also leaves much to be desired. One can substantiate these statements in many ways: for example, Major K. Mellanby, R.A.M.C., has reported that in a sample of 1,000 successive cases sent for treatment to a scabies clinic 280 were not suffering from scabies. I do not accept this figure as having a general application throughout the Army, but I do agree with the implication of the statement—viz., that the error in the diagnosis of cutaneous diseases in general and of scabies in particular is much higher than it should be.

Both in war and in peace the loss of man-power days and working hours, the wastage (by misapplication) of drugs, and the amount of human misery caused by "trial and error" therapy based on uncertain diagnosis, are matters which should give the greatest concern to those responsible for planning medical education. These matters are not new; in 1904 Malcolm Morris⁹ made the same plea for accuracy in elementary dermatological diagnosis. He referred particularly to the cases of dermatitis herpetiformis which he had seen and which previously had been repeatedly diagnosed and treated as scabies. That pitfall is still a successful trap to most medical officers to-day, and I submit that there is something fundamentally wrong in a system of education against which an indictment couched 40 years ago can justly be made.

It is worth considering whether or not the teaching of the acute infectious fevers should be linked more closely with the teaching of dermatology, for in many of these fevers the diagnosis is primarily made on the appearance of an eruption, and the clinician makes his diagnosis by paths of thought and trends of observation which are particularly dermatological. I do not advocate that we should incorporate in our specialty the treatment of infectious diseases. All I suggest is that, in teaching, there should be a closer liaison than at present exists between the expert in fevers and the expert in skin diseases. By this means the standards in both these specialties would be raised.

The quotation⁸ given earlier from the Official History of the last war concerning the relevant incidence of diseases both in war and in peace confirms, to some degree, my disbelief in the story that skin diseases are statistically predominant only in war. I doubt very much if the proportional incidence of, for example, respiratory and cutaneous diseases differs greatly in war and in peace. My contention is that skin diseases are statistically and economically of great importance in peace; but the facilities for their treatment are relatively limited even in many of our larger cities, and the public rely to such a degree on patent medicines, preparations obtained from quacks, or self-prescribed remedies purchased from chemists that an enormous number of cases of skin disease are never seen by the medical profession. It may be said that this does not matter—that the majority of people are eventually cured by these methods. Even if this very debatable statement is accepted as true, it does matter, because we are squandering our pharmaceutical resources in making tons of remedies each year, many hundredweights of which are misapplied or wastefully used; further, by faulty treatment the period of cure is prolonged, working hours are lost, and diseases are disseminated.

The traditional system of treating the majority of skin patients as out-patients can be, and often is, incredibly wasteful in drugs and dressings; it can also be inefficient and time-consuming. I believe that a statistical survey would indicate that at least 5% of the available hospital beds in the country should be earmarked in peace for dermatology, and it may well be that a higher percentage than this is really necessary.

The Advancement of Dermatology

With regard to the specialty itself, and to those who practise it, the lack of a Diploma in Dermatology is a serious handicap to the advancement of the subject. Holders of special diplomas are essentially men whose competence has been assessed by others than their own teachers. Even allowing for the faults inherent in an examination system, one usually finds that the majority of men who have achieved a difficult diploma are men of worth. In these highly competitive days when most specialties in medicine and surgery have their diplomas, there is considerable danger lest the poorer quality of man is attracted to a specialty which demands no particular hall-mark of intensive effort. The establishment of a diploma would not benefit only the diplomates—it would tend to standardize, and thus to improve, the nomenclature of our subject, to crystallize our views on therapy, and very materially to increase the standards of teaching of dermatology.

It is desirable that we should develop much greater facilities than at present exist for research. At the present time, when the methods of research are becoming more and more specialized and the technicalities of mathematical assessment are becoming increasingly important, there is danger lest we be outstripped in research in our own specialty by scientists who have had little or no dermatological training. There are problems of preventive dermatology which must be solved—problems in rehabilitation which must be met. In these fields we can make rapid progress, particularly if we collaborate with our colleagues in physical medicine, pharmacology, chemistry, and psychology.

Points Relevant to the Army

Finally there are three points relevant to the Army to which I must refer. When the time comes for us to shed the bright panoply of war the measure of our success—or failure—in our present effort will be the effect which our work has had in influencing the military medical strategy of the future. Very sincerely do we hope that we will have succeeded in ensuring three matters:

1. That in times of peace dermatology is not swamped by venereology, and that a permanent cadre, small though it will be, of medical officers will keep alight the torch of dermatology.
2. That from the outset of any future campaign it will be remembered that skin diseases are a vital cause of inefficiency and that full provision will be made both at home and abroad for dermatological services, proportionate in size and efficiency to the problems which will assuredly arise.
3. That, with the help of the Matron-in-Chief, the British soldier suffering from a cutaneous disease receives treatment in wards in which the nursing is supervised by sisters.

We, the dermatologists in the Army, owe much to many officers of high and low rank who have helped to smooth our way; it would be an impossible task to name them all, as one would like to do; but to three officers of the higher executive we are greatly indebted—first, to the Director-General, Army Medical Services (Lieut.-Gen. Sir Alexander Hood), who has always appreciated the significance of our work, and done much both at home and abroad to ensure that our contribution to the war effort was utilized to the full; secondly, to the Director of Hygiene, Major-Gen. D. T. Richardson, who has given daily attention to our problems, and on whose staff I had the honour to serve; and, thirdly, to the Consultant in Venereology (Brigadier T. E. Osmond), who, with General Richardson, was largely responsible for ensuring that dermatology and venereology went their separate but harmonious ways, and that we too had the full recognition of War Office representation.

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PEPSIN INACTIVATION IN ULCER THERAPY

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The treatment of peptic ulcer is largely based on methods designed to neutralize the free HCl of gastric juice, so it is important to understand, first, what degree of neutralization is required, and, secondly, how successful modern treatment is in achieving this end. Neutralization is commonly thought to mean complete neutralization to pH 7, but in practice this is very difficult to produce, and dangerous owing to the considerable risk of alkalosis.

In order to understand the purpose of neutralization of gastric free acid it must be realized that its chief function is to create the required medium for the action of the proteolytic enzyme pepsin, which initiates digestion of proteins. The activity of pepsin is greatest at pH 1-2—the value in pure gastric juice—and this activity is abolished probably at pH 3.5 and certainly at pH 5 (Hollander, 1939). Now the normal gastric mucosa is resistant to digestion by its own gastric juice, but an ulcerated gastric mucosa, and probably also the intact mucosa of the small intestine, are susceptible to peptic digestion when the required pH is present, as has often been demonstrated in experimental work on ulcer production. This has recently been well shown by Schiffrin and Warren (1942), who perfused loops of cat's small intestine (including duodenum) for 12 hours with N/10 HCl, which damaged the mucosa very little, but when pepsin was added to the perfusing fluid extensive ulceration, bleeding, and perforations of the gut were seen. It was further shown that at pH 2.24 pepsin had no such effects and that the maximum destruction occurred at pH 1.10. Similar effects on the gastric mucosa were obtained in chronic experiments when the stomach was perfused through a fistula. From these experiments in cats it is seen that even N/10 HCl has little harmful action *per se*, and that relatively slight neutralization is necessary to reduce peptic activity. There is certainly no evidence to show that a pH of 3-4 is by itself capable of damaging an intact or ulcerated mucosa in animals or man, and pH values of over 4 would appear to be unnecessary in counteracting the activity of pepsin.

The common method of measuring the acidity of gastric juice is to determine the volume of N/10 NaOH required to neutralize 100 c.cm. of gastric contents, using Toepfer's reagent, which changes colour at pH 3-4, to measure "free acid," and phenolphthalein, which becomes coloured at pH 8-10, to measure "total acid"; other indicators are occasionally employed. Toepfer's reagent is not very accurate with opaque fluids, but it does indicate a pH change at about the desired value, and the pH of the sample can be roughly estimated from the amount of N/10 NaOH required to change the colour. If the sample does not give a red colour to Toepfer's reagent it may be assumed that peptic activity is negligible. Total acid values give no useful information.

pH values of gastric contents have also been studied by electrometric determinations on samples aspirated from the stomach—a much more accurate technique than the indicator methods; and recently the preparation of electrodes suitable for direct insertion into the stomach has provided a method for continuous recording of pH *in situ*.

Our purpose in this paper is to emphasize that inactivation of pepsin is the aim of peptic ulcer therapy and that this is obtained by neutralization to pH 3.5-4, and we shall consider how effective the usual method of treatment by milk and antacids is in fulfilling this aim.

Effects of Milk on Free HCl in Gastric Juice

Milk is the basis of the dietetic treatment of peptic ulcer, so its actions are very important. Freezer, Gibson, and Matthews (1928) showed that milk can neutralize an equal