who had not reacted well to treatment in the medical air-lock and further treatment consisted of laying them up in with plenty of hot water bottles and liberal injections of morphia repeated as often as necessary. This line of treatment never failed to be effective.

In very severe cases where apart from the "bends" the patient looked badly shocked, one had to enter the lock along with the patient and administer oxygen, which seemed to help a great deal.

In event, as sometimes happens, of the lock not being available through another patient occupying it, the administration of oxygen is helpful and should be carried on with until the morphia has acted or the lock has become available. I was always in the habit of giving the patient two 1/2 gr. morphia suppositories to take home with him after being in the medical air-lock, a precaution which probably saved me many night calls.

In a series of about a hundred cases of varying severity we had no casualties which proved fatal and no cases of permanent incapacity. Some men certainly refused to work in the compressed air again but that was simply a matter of taste—"once bitten twice shy."

I hope that this memo, sketchy as it may be, will prove of interest to some. If anyone would like fuller details on any points, I would be only too pleased to correspond, as, being interested in the condition, I would like to hear of the experiences of others. An exchange of views is, in my opinion, always helpful.

THE RECOGNITION OF SCABIES BY THE ARMY MEDICAL OFFICER.

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Scabies and associated skin diseases were responsible for a serious loss of military efficiency in the last war. MacKenna (1940) has observed that scabies and pyodermia have again become the most prevalent skin diseases of this war. Much effort has recently been expended in attempts to control the increasing incidence of scabies. Such effort has centred largely in the trial of different methods of treatment. It seems however that as methods are already available which cure the disease with low relapse rates more attention should first be paid to the problem of early and accurate diagnosis. Incidence figures, whether civil or military, record, strictly speaking, the number of cases diagnosed and it is now apparent that latent and atypical cases exist which may escape recognition for several weeks or months (Mellanby, 1941). Further advances in the understanding and control of the disease will only be made when it is diagnosed with greater accuracy and at an earlier date than at present.
Errors in Diagnosis.

The errors most frequently made by the author (and noted in cases sent for treatment from units in a Brigade Group) are a failure to recognize latent and atypical cases of scabies and confusion of other irritating skin diseases with scabies. These errors would not have been recognized or admitted if it had not been possible to observe the same men as their Regimental Medical Officer for eighteen months and latterly to control diagnosis by identification of the parasite whenever possible.

The typical case provides no difficulty of diagnosis but represents a failure to recognize the earlier stages. It does not seem to be generally realized that the presence of even one burrow containing an active parasite constitutes an early stage in the infestation although there may be little or none of the characteristic irritation and the rash may be insignificant or localized. These early lesions are either overlooked at routine skin inspections or, if observed, are dismissed after treatment with palliative skin applications, until the typical rash and irritation occurs and renders the diagnosis no longer in doubt.

Several other skin diseases have been found to simulate scabies and to cause errors in diagnosis. The vesicles of cheiropompholyx have been mistaken for burrows. The rash of seborrhoeic dermatitis, especially when profuse over the shoulders, has been found to cause lesions in the anterior axillary folds which are similar to the red and inflamed axillary burrows of scabies. When these and other non-specific skin lesions are scratched, a chain of minute scabs has sometimes appeared like a burrow until investigated by a needle and found to lie on the surface rather than within the outer horny layer of the skin. Severe irritation, often worse at night, has occurred in papular urticaria, eczema, and dermatitis due to sensitivity to wool. Pediculosis has had to be excluded in all doubtful cases. Penile lesions and excoriation of the buttocks, often stated to be almost pathognomonic of scabies, have been seen in cases with neurodermatitis, severe acne, furunculosis, and flea bites. All these diseases have been differentiated from scabies by the absence of burrows and by the features typical of the disease concerned.

Means of Ensuring Early and Accurate Diagnosis.

(i) Skin Inspections.—Routine skin inspections need to be planned so as to enable the Medical Officer to detect active burrows, if possible, before the onset of the characteristic irritation. This is only possible if the men strip completely. Burrows on the penis and axillae are usually shown up by the reddening and oedema of the surrounding skin. Burrows on the hand and feet are often only visible on close inspection. Excoriation of the elbows and buttocks suggests activity of the disease in these areas.

If the men report at the inspection parade fully dressed there is much con-
Clinical and Other Notes

fusion and delay while they remove all their clothes. There is consequently a tendency for boots, trousers or shirts to be retained and for only a limited portion of chest, abdomen and thighs to be exposed to the Medical Officer. It has been found more satisfactory for the men to parade in P.T. kit which can be readily and completely discarded. After an inspection of the front of the body and hands each man turns about and kneels up on a box so that his buttocks, elbows and feet can be examined. In this way it has been possible to detect early cases of scabies with only one or two burrows, each containing an active mite, but with no associated rash or excoriation.

(ii) Identification of the Parasite.—Mellanby (1941) has emphasized that any research programme should include this means of confirming the diagnosis if the results are to be accepted as reliable. In addition, however, observation of an active Sarcoptes will make a definite diagnosis possible in a number of the atypical cases with no obvious burrows visible on clinical examination. The proper management of "relapse" cases is impossible unless a decision has been reached whether a return of dermatitis or infestation has taken place. Several cases have been seen where unnecessary repetition of anti-scabietic treatment has caused an intractable skin hypersensitivity. It is difficult to justify full treatment measures in an early or latent case if only one or two burrows are present, with no irritating rash, unless the living parasite is seen by the Medical Officer and all doubt is removed. The extraction of the mite from her burrow is simple to describe but difficult to execute until performed successfully several times. The procedure used in the cases covered by this survey was as follows:—

The patient is examined in a good light when his skin is warm. A burrow is chosen preferably at first on the hands or feet where the appearance is not distorted by the inflammatory reaction which usually surrounds burrows on the axillae, arms and penis. The entrance to the burrow is noted and is often marked by an underlying vesicle. At its blind or distal end there is a slight expansion containing the highly refractile and opalescent body of the parasite, visible to the naked eye as a white spot in a good light. Some specimens contain bronze pigment which shows through the roof of the burrow as a dark speck in the centre of the opalescent area. The thin cuticular roof of the burrow over the mite is carefully lifted with the point of a needle which is withdrawn and reinserted gently into the burrow until the mite sticks to the needle and can be transferred to a warm dry slide. It is unfortunate that tradition dictates the use of liquor potassæ because this solution prevents the observer watching her vigorous attempts to burrow through the slide or to travel across it when she is warmed. The Sarcoptes is examined under a low-power microscope if one is available but a pocket microscope, costing only a few shillings and magnifying about thirty diameters, suffices to demonstrate the characteristic shape and movements of the parasite. This latter instrument is easily portable under active service conditions.
Classification of Cases Diagnosed as Scabies.

An attempt has been made to classify correctly the cases sent to a Treatment Centre diagnosed by their respective Medical Officers as Scabies. The results have been as follows:

A. **Confirmed Scabies.**—Living parasite observed in all 46 cases.
   (i) **Typical.** Appearance of rash and history of irritation characteristic. One or more burrows, 35 cases.
   (ii) **Latent.** One or more burrows detected, but rash and irritation were either absent or atypical. Noted at routine skin inspections, 11 cases.

B. **Unconfirmed Scabies.**—Living parasite not found, 21 cases.
   (i) **Clinical.**—Characteristic rash, irritation and burrows but no acarus found either through inexperience or because all mature females had been removed from their burrows by scratching, 11 cases.
   (ii) **Atypical.**—Rash and irritation suggested scabies but no typical burrows were visible and no alternative diagnosis was possible. These cases were given anti-scabietic treatment as a precautionary measure, 10 cases.

C. **Not Scabies.**—Rash and irritation atypical and no burrows were visible. An alternative diagnosis was possible in each case. Patients responded to the particular treatment indicated. No anti-scabietic treatment was given, 5 cases.

Total number of cases included in the series, 72.

**SUMMARY AND CONCLUSIONS.**

(1) The need for early and accurate diagnosis is stressed.
(2) Some of the common errors in diagnosis are described and are found to be due to uncertainty in the recognition of active burrows.
(3) Means of ensuring early and accurate diagnosis are discussed and it is claimed that the identification of the Sarcoptes has greatly assisted the author in his attempts to achieve this end.
(4) A series of unselected cases diagnosed clinically as scabies has been classified as accurately as possible.
(5) It is claimed that the possibility of recognizing early and latent cases of scabies in the absence of the typical rash and irritation represents an advance in diagnosis which, if widely employed, will facilitate control and understanding of the disease.

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**REFERENCES**