amide group causes so much scarring and deposit of fibrous tissue that it hinders efficient drainage. This may be said to be a sweeping statement when founded on two cases, but a similar condition can be seen in cases of mastoid abscess that have had large doses of these drugs. Therefore in future cases of deep neck infection I should operate first and then use the sulphonamide group in large doses by mouth, parenterally, or by packing the wound, with the proviso that my operative drainage should be extensive and that it entirely covered any region likely to be infected.

5. The direction of spread of the infection and places that should be inspected for possible infection need not be gone into here. Mosher (1929) has described these matters in detail. It is as well to complete the drainage of the neck region in the one operation, as a second attack may have to be done with landmarks lost in fibrous tissue and difficult to find.

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ECONOMY IN THE TREATMENT OF IMPETIGO AND SCABIES

BY

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The experience of twenty months of wartime dermatology has shown that impetigo and scabies are by far the commonest and most troublesome of skin conditions occurring in the Navy. It has also been observed that before admission cases have been subjected to various forms of treatment. This, it is felt, lengthens the duration of these conditions and is uneconomical. Rapidity of cure and economy in drugs are essential in wartime practice.

The Therapeutic Requirements Committee of the Medical Research Council (1940) classified the drugs employed in dermatological practice and stated:

1. For many of the purposes for which ointments are often prescribed pastes and creams are more satisfactory and require only about half the amount of fatty basis.

2. The amount of mercury used could be greatly reduced, and it need only be available for trial in cases in which alternative antiseptics have not proved satisfactory.

3. A large number of chemical substances will destroy the acarus, and all local treatments depend largely on the efficiency of application. Sulphur ointment still remains one of the most efficacious remedies, and the frequency of sulphur dermatitis has been overstated. If supplies of benzyl benzoate are short this substance would be best reserved for treatment of children.

In view of the above findings, and in the hope that a greater uniformity in the methods of treating impetigo and scabies would result both in a quicker turnover of cases and in economy, the following suggestions are given. More uniformity of treatment would be of value in the Services, where one medical officer so rarely sees a case from onset to complete cure.

Impetigo

Opinions differ as to the most satisfactory treatment of impetigo. Andrews (1938) advises 5% ammoniated mer-

cury ointment, and this would appear to be the treatment most commonly used. Forman (1938) advocates a lotion with copper and zinc sulphate (eau d'Alibour). Roxburgh (1941) prefers a paste or cream with 2% ammoniated mercury incorporated, and also mentions the occlusive treatment with elastoplast. He states that powdered sulphanilamide has been used, but that no figures are as yet forthcoming. Many other antiseptics have also been used, generally in aqueous solutions.

As a result of the study of 74 cases of impetigo contagiosa in hospital during 1940 and the early part of 1941, a technique was devised which on the whole gave satisfaction. The procedure was softening of the crusts with a sulphanilamide ointment (see 1 below), which took approximately forty-eight hours. The areas were then found to be clean and to be oozing serum. A paste consisting of 2% ammoniated mercury in zinc paste was next applied twice a day with only superficial cleaning before reapplication. No attempt was made to remove the adherent paste over the denuded areas. After the paste had been in use for five days it was removed completely with olive oil and the lesions were examined. Any areas still showing evidence of irritation or a tendency to exude serum then received paste for a further seven days. When all lesions were dry and healing eau d'Alibour was applied to the area night and morning for one to two weeks.

Recently it was decided to replace the mercury in the paste by one of the aniline dyes. By this means it was hoped to bring about an improvement in treatment and to save mercury. Brilliant green was chosen as the dyestuff for two reasons. In the first place, brilliant green is bactericidal to *Staph. aureus* in a dilution of 1 in 4,000,000. Secondly, the stearate of brilliant green is fat-soluble and can be incorporated in a paste. Brilliant-green stearate was therefore made up in zinc paste in a strength of 1% (see 2 below). A small number of cases have now been treated with brilliant-green stearate paste, and the results so far achieved have been highly satisfactory.

TABLE I.—Brilliant-green Stearate Paste in Impetigo

Case No.	Organism	Days on			Days Ill
		Sulphanilamide Ointment	Brilliant-green Paste	Eau d'Alibour	
1	<i>Staph. aureus</i>	2	5	—	7
2	Not cultured	4	10	—	14
3	<i>Staph. aureus</i>	2	7	—	9
4	" "	2	5	7	14
5	" "	2	5	7	14
6	" "	2	12	7	21
7	" "	2	12	7	21
8	" "	2	12	7	21
9	" "	2	12	7	21

1. The sulphanilamide ointment is prepared as follows: Sulphanilamide, 5 parts, and glycerin, 30 parts, are dissolved with the aid of gentle heat. *Adeps lanae anhyd.*, 32.5 parts, and *paraff. molle flav.*, 32.5 parts, are then heated gently to melt and incorporated with the sulphanilamide solution. The preparation is stirred until cold.

2. Brilliant-green stearate may be prepared by adding excess potassium hydroxide to a solution of brilliant green B.P.C. (sulphate) in water. The resultant precipitate is collected, washed, and heated with an equal weight of stearic acid. The paste is prepared as follows: Brilliant-green stearate, 1 part, and ung. simplex, 50 parts, are heated to liquefy, and are incorporated with zinc oxide, 25 parts, and amylum pulv., 25 parts, the whole being stirred until cold.

Scabies

Much has recently been written on the treatment of scabies and many remedies have been advocated. This, among other facts, adds to the difficulty of one who has to treat unsuccessful cases when notes on previous treatment are not forthcoming. Approximately 50% of the cases

receiving treatment in this hospital are secondarily infected, and the majority of those have received treatment with sulphur before admission.

The therapeutic agent now employed is an oil-in-water-type emulsion of benzyl benzoate prepared with triethanolamine from the following formula:

Benzyl benzoas	33.3
Ac. stearic	2.5
Triethanolamine	0.5
Aq. dest.	ad 100.0

Dissolve the stearic acid in the benzyl benzoate with the aid of gentle heat. Cool to 38° C. and add the triethanolamine dissolved in half of the water. Shake to emulsify and gradually add the remaining water, shaking after each addition.

It has been found that the temperature of preparation considerably affects the stability and viscosity of the emulsion. The product described here showed no separation when placed in a refrigerator for six hours at 0° C.; and when incubated for six days at 37° C. there was slight separation, but it immediately re-emulsified on shaking. Emulsions prepared at higher temperatures were not so stable. The routine of benzyl benzoate treatment as described by King (1940) was followed. It was hoped to confine the treatment to one application, but some cases have required two or more.

Results

The cases so far treated by this method number 39, and they must be divided into three groups:

- I. Primary non-infected scabies (23 cases).
- II. Secondarily infected scabies (5 cases).
- III. Secondarily infected scabies which have failed to respond to earlier treatment (11 cases).

All cases were examined daily for at least one week following completion of treatment. Owing to the degree of secondary infection many remained under observation for a much longer period.

The number of applications found necessary are shown in Table II.

TABLE II

Group	No. of Cases	No. of Applications						Results
		1	2	3	4	5	6	
I	23	18	2	3				No failures
II	5	3		1		1		" "
III	11	4	2	4			1	" "

78% of the primary non-infected type and 42% of the secondarily infected cases were cured with one application. There were no failures in the non-infected cases, but 25% of those secondarily infected did not respond to this treatment. The failures had all been previously treated unsuccessfully with sulphur ointment, but were ultimately cured by mitigal, or dimethyldiphenylene disulphide (I.C.I.).

Conclusions

We feel that the importance of using a paste in place of an ointment in the treatment of impetigo is not fully realized or sufficiently emphasized. It is also considered that the substitution of a fat-soluble aniline dye in place of the time-honoured ammoniated mercury is a step forward in treatment as well as a justifiable wartime economy.

The use of a stable emulsion we feel is of advantage in the treatment of scabies. The emulsion is easy of application; only one-third of the amount of benzyl benzoate is required for a treatment as compared with the commonly used mixture of soft soap, alcohol, and benzyl benzoate; and the danger of irritation and therefore of secondary infection is reduced to a minimum. Finally, the stability

of the emulsion is of undoubted value in the Services, where varying temperatures are encountered.

Summary

It is suggested that a fat-soluble form of brilliant green might replace mercury in the treatment of impetigo.

It is stressed that a paste might with advantage be used in place of ointment in the treatment of impetigo.

A stable emulsion of benzyl benzoate is advocated for the treatment of scabies, and it is noted that this would result in a saving of benzyl benzoate, as only one-third of the normal amount is required.

We are indebted to Surgeon Rear-Admiral Sankey for permission to publish this paper.

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ROOT VEGETABLES AS ANTISCORBUTICS IN INFANT FEEDING

BY

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Any shortage of citrus fruits presents a special problem in the feeding of infants and very young children, especially the former, who cannot obtain their supplies of ascorbic acid to any appreciable extent from potatoes or leaf vegetables. Published work, as summarized in the tables of Fixsen and Roscoe (1938, 1940), indicated that the turnip should be a useful source of ascorbic acid. It was decided to make a preliminary investigation of the root vegetables, turnip (*Brassica rapa*), swede (*Brassica campestris*), and parsnip (*Pastinaca sativa*)*. The samples were bought in the open market or picked from crops raised in private gardens from commercial seed in December, 1940, and January, 1941. After our completion of some exploratory work the extensive paper of Chappell (1940) appeared. Our results were in good accord with hers, which were themselves in agreement with those of Olliver (1936, 1940); moreover, the scope of the investigations made by these workers had exceeded ours, so that the separate publication of most of our figures might seem unnecessary. However, the relevant figures published by Olliver and Chappell were concerned with the whole raw vegetables or with the effect of domestic culinary procedure upon the amount of ascorbic acid derivable from them, whereas we were primarily concerned with preparing from the roots something that could be fed direct to the very young; it seems permissible, therefore, to summarize our results and conclusions.

Ways of using Root Vegetables

There are at least three possible ways of using these root vegetables in infant feeding: they will be considered in turn. First, it has occasionally been suggested that the chopped roots should be covered at night with fine sugar, and that any juice separated by next morning could be used as an antiscorbutic. We found that this procedure

* Dr. J. C. Drummond, scientific adviser to the Ministry of Food, expressed interest in the problem, and urged us to look into the matter; the analyses were all carried out by one of us (D. M. M.), with the permission of Mr. A. F. Lerrigo, head of the analytical department of Glaxo Laboratories, Ltd., to whom we wish to express our gratitude.