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

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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.

resulted in negligible extraction of ascorbic acid—about 0.02 mg. per c.cm. (cf. Dr. K. E. Barlow, *Journal*, 1941, 1, 797). On physico-chemical grounds we had regarded as suspect the apparently almost miraculous properties attributed to sucrose as an extractant of ascorbic acid.

Secondly, the grated vegetables were simply squeezed through muslin; juices containing 0.30 mg. and 0.32 mg. of ascorbic acid per c.cm. were thus obtained from swedes and turnips respectively. It might, however, be thought by some that such expressed juices would be unfit for infant feeding unless sterilized by boiling; moreover, the effect on the ascorbic acid content of any ascorbic oxidase present might be significant if the expressed juices were allowed to stand. Boiling would of course destroy any enzymes present. We therefore examined the effect of boiling on the squeezed-out juice. When boiled for periods up to fifteen minutes, and whether brought to the boil slowly or quickly, the juice showed no destruction of ascorbic acid. Prolonged boiling—for thirty minutes or more—sometimes produced slight losses. Exposure to the atmosphere in covered beakers without agitation produced no losses in three to six hours, and up to 25% loss in twenty-four hours; if, however, the juice was agitated (stirred) periodically the loss was more rapid and might amount to 75% in twenty-four hours. We conclude, therefore, that expressed juice can safely be boiled for a few moments and can be kept (whether unboiled or boiled) for several hours, provided it is covered and not vigorously stirred, without any serious loss of antiscorbutic activity.

Thirdly, the roots can be sliced and boiled with a little water, the cooked mass being then squeezed through muslin into the cooking water. The concentration of ascorbic acid in the resulting liquor will naturally depend on the amount of water used, among other things. Even when this was reduced to a minimum—just enough to cover the vegetables—the liquors were less good sources of ascorbic acid than the cold-pressed juices discussed above. Nevertheless both swede and turnip yielded liquors containing from 5 to 16 mg. of ascorbic acid per 100 c.cm. The comparison between the cold-pressed juices and the cooked liquors

Results

As a matter of interest we have summarized in the accompanying table the recent results obtained by Olliver and Chappell, as well as our own, along with some figures for orange juice and blackcurrants. All our determinations were made by titration with 2:6-dichlorophenol-indophenol in the presence of trichloroacetic acid.

Parsnips appear to be of no more use than carrots as sources of ascorbic acid. On the other hand, turnip juice or swede juice, cold-pressed, before or after boiling, or the liquors from squeezing the lightly boiled roots, should be of value, especially in infant feeding. Taking the daily requirements of an infant as 5 to 10 mg., then from 1 to 2 fl. oz. of turnip juice or 1/2 to 1 fl. oz. of swede juice each day would suffice. Either of these juices, since they are only slightly acid, can be used to replace the boiled water of a milk feed without causing any curdling, though it imparts to the product a distinct taste and odour of the vegetable, that from the swede also contributing a little colouring matter.

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Medical Memoranda

100 Cases of Scabies : A Comparison of Treatments

To investigate the relative efficiency, speed, cost, and convenience of the various treatments of scabies recently discussed in the *British Medical Journal* I have treated men suffering from this complaint by five different methods:

1. *Sulphur Ointment*.—Sulphur ointment 10% is applied after a hot bath and a scrub in the morning; another application of the ointment is made in the evening.

2. *Sulphur Ointment and Confection of Sulphur*.—The same as the above, except confectio sulphuris 1 drachm is given once daily (Berncastle, 1941).

3. *Benzyl Benzoate*.—Anoint the body with soft soap. Soak in a hot bath, rubbing the affected areas thoroughly. While the body is still wet apply a lotion consisting of equal parts of benzyl benzoate, industrial spirit, and soft soap (King, 1940) vigorously all over with a nail-brush for five minutes. Allow it to dry, then apply the lotion again for a further five minutes. Dry with a towel.

4. *Rotenone*.—A hot bath is taken and the patient is painted all over with 1% rotenone B.D.H. or 2% rotenone (sarevan) Evans in front of a fire (Callar, 1941).

5. *Derris Root*.—The patient is painted thrice daily with a solution consisting of 4 oz. of derris dusting powder, 18 drachms of soap flakes, and 1 gallon of cold water (Saunders, 1941).

There was no selection of cases apart from the exclusion of those in which the diagnosis was in doubt. Each case was treated by one method only until cured.

The diagnosis was founded on the association of itching when warm with the presence of burrows, which are most profuse in certain areas and there give rise to a red papular rash. A patient was considered cured when the itching had ceased, when there was no sign of activity of the rash (redness, swelling, etc., around the burrows), and when the rash had ceased to spread. It is probable that in this series about five days were wasted by hysterical or wilful "prolongation."

RESULTS AND COST

The time taken to cure 20 cases was: method 1, 46 days; method 2, 59 days; method 3, 30 days; method 4, 38 days; and method 5, 41 days. I account for the fact that the 20 cases

Source	Author and Reference	Raw (mg. per 100 gm.)	Cooked (mg. per 100 gm. orig. Raw Material)	Cold Pressed Juice (mg. per 100 c.cm.)	Cooked Liquor (mg. per 100 c.cm.)
Turnip	Present	14 to 16	10 to 17	19 to 32	5 to 16
"	Chappell (1940)	11 to 22	—	—	—
"	Olliver (1936)	17 to 36	—	—	—
"	" (1940)	—	11 to 17	—	—
Swede	Present	20 to 21	16 to 19	30 to 36	5 to 16
"	Chappell (1940)	21 to 37	—	—	—
"	Olliver (1941)	30 to 47	19 to 23	—	—
Parsnip	Present	4 to 8	2 to 8	—	—
"	Chappell (1940)	5 to 6	—	—	—
"	Olliver (1941)	5 to 9	2 to 4	—	—
Orange*	Bacharach et al. (1934)	—	—	36 to 89	—
"	Chappell (1940)	—	—	27 to 88	—
"	Olliver (1936)	—	—	33 to 77	—
Black-currants	" (1936)	172 to 220	141 to 183	—	96 to 122†
	" (1938)	108 to 344	—	—	—

* Excluding Seville or other bitter oranges.

† Syrup from cooking; about 50% added water, and fruits not expressed.

must not be carried too far; different samples of vegetables were used at different times in the year; and no properly controlled comparison was carried out in this purely preliminary investigation. Our results indicate, however, that cooking, because of the inevitable dilution of the juice and possibly also owing to some destruction, gives a solution of ascorbic acid somewhat less concentrated than the raw or cooked cold-pressed juice, but still a very useful antiscorbutic for use in infant feeding under present conditions.