Summary

Hop dermatitis in Herefordshire was studied during the 1952 picking season, which was regarded as a light season for dermatitis.

Accurate estimation of the incidence of dermatitis was impossible, but it was thought that most of the severe cases were seen. The incidence of this type of case in Herefordshire in 1952 was found to be about 1 case in 3,000 pickers.

Daily observations of 450 pickers showed a much higher incidence of mild dermatitis: approximately 1 in 30 of these pickers developed some type of dermatitis.

It therefore seems probable that, while severe cases are rare, mild cases may be fairly common.

Hop dermatitis in some cases tested seemed to be due to a sensitivity to fresh hop-oil, of which myrcene may be the active ingredient. In three cases sensitivity to hop resins was also present. No satisfactory explanation of this is forthcoming at present.

It is suggested that the rarity of hop dermatitis among workers in dried hops is due to the fact that the sensitizing agent is driven off in the drying process. It is concluded that this is just as well, in order that the use of hops may continue. Harrison's words in his *Description of England* in 1577 are still true in 1952: "For if your Ale may endure a fortnight your Beere through the benefice of the hop shall continue a month, and what grace it yieldeth to the taste all men may judge that have sense in them."

We thank the medical practitioners and district nurses of Herefordshire who sent us the patients, and particularly the patients themselves, who were most helpful about patch testing. We also thank Dr. A. H. Burgess, head of hop research, Wye College; Mr. R. Webb, of Cheltenham and Hereford Brewery; Mr. Milner, of Messrs. Bencard; Dr. Bernard Tate; and the Davies family, of Claston, Herefordshire, for much help.

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The joint committee set up in 1946 by the National Institute for the Blind and the London County Council to advise on the use of optical aids for the partially sighted has now published its report (*N.I.B. Bulletin No. 19*). The search for a good magnifying lens capable of covering an entire printed page has resulted in the production of special binoculars which fit over the nose. Various types of desk lenses are also described and illustrated. Another method advocated is the projection on to a screen of micro-filmed books, newspapers, etc.; the advantage of books on micro-film over other aids is that greater magnification can be obtained without loss of contrast and with no distortion. Suitable projectors cost about £20. Tests on partially sighted children show that in some cases the use of contrasting colours, such as blue chalk on yellow board, improved the visual impact of reading and writing. At one school a preference for black crayon on white paper was expressed. The report may be obtained from the National Institute for the Blind, 224, Great Portland Street, London, W.1.

RAPID METHOD FOR DETECTION OF BARBITURATES IN URINE AND STOMACH CONTENTS

BY

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Treatment of barbiturate poisoning by analeptics is not without danger, and a rapid method for the detection of barbiturates in urine and stomach contents is of value in doubtful cases. Several "rapid" methods (Griffon and Le Breton, 1938; Denis and Lambrechts, 1940; Merley, 1948; Goldbach and Opfer-Schaum, 1949; Selwyn and Dark, 1950) have been described for detecting barbiturates in urine, but the procedures take from one to three hours.

A micromethod for the detection of barbiturates in urine, cerebrospinal fluid, and blood has been described by Kresbach and Gomahr (1951), and a modification of this method, making it less sensitive but more rapid, has been used for the detection of barbiturates in urine and stomach contents.

Principle of the Method

The acidified urine or stomach washings are extracted with chloroform. This is carried out in one stage, and the volume of chloroform is kept small so that the time required for evaporation is not excessive. Chloroform is used in preference to ether because of the inflammatory nature of the latter. The chloroform extract is dried and decolorized. Activated charcoal is used for decolorization because, although it absorbs some of the barbiturate, it is more effective than any other agent and the loss of some of the barbiturates is not serious. The chloroform extract is evaporated to dryness and the presence of barbiturate in the residue is tested for by its reaction with cobalt nitrate and ammonia vapour.

Reagents Required.—Chloroform; dilute sulphuric acid (approximately 10% w/w); sodium sulphate (anhydrous); a mixture of activated charcoal 3 parts and magnesium oxide 1 part; cobalt nitrate 1% w/v in absolute methyl alcohol; and ammonia solution (S.G. 880).

Procedure

About 50 ml. of urine or stomach contents are acidified with 4 ml. of dilute sulphuric acid and shaken with 20 ml. of chloroform in a separating funnel for one minute. Stomach contents should be strained to remove solid material, although any portions of tablets or capsules which are present should be included in the sample.

After allowing the chloroform emulsion to settle out, the chloroform layer is run off into a 250-ml. conical flask. Enough anhydrous sodium sulphate (5–10 g.) is added to dry the chloroform emulsion, so that, after shaking, the sodium sulphate separates out from the clear or slightly opalescent chloroform. About 0.5 g. of the activated charcoal mixture is added, the resultant mixture being shaken and filtered through a No. 43 Whatman paper into a 100-ml. beaker. The filtrate should be crystal clear. The filtrate is then evaporated to dryness on a boiling water-bath. Towards the end of the process the beaker is tilted so that the final residue is confined to a small area of the beaker.

The residue is rubbed off the bottom of the beaker, using a small piece of filter paper fastened over the rounded end of a glass rod so that most of the residue, which is of a pale yellow colour, is concentrated on an area about 2 mm. in diameter in the centre of the paper. The paper is then removed from the glass rod, flattened out, and a drop of

the 1% cobalt nitrate solution is added to the residue. This is dried by warming over a flame and then the paper is exposed to ammonia fumes by holding it over the mouth of a bottle containing strong ammonia solution. A positive reaction is shown by the development of a reddish-violet colour in the region of the residue. The colour is best seen by transmitted light.

Weak reactions may sometimes be intensified by adding another drop of cobalt nitrate solution. The colour given by a strong positive reaction is fairly stable, but a weak positive reaction tends to fade after a few minutes.

The time required for carrying out this procedure is less than 15 minutes.

Results

Tests were carried out on solutions of the common barbiturate derivatives in urine. The solutions were made up from powder or from the commercial tablets; the derivatives used, together with the results obtained, are shown in the Table.

Results of Tests

Barbiturate Derivative	Concentration per 100 ml. of Urine		
	2 mg.	1 mg.	0.5 mg.
Soluble barbitone	++	—	—
.. .. phenobarbitone	++	++	—
Amylobarbitone sodium	++	++	+
Quinalbarbitone	++	+	—
Butobarbitone	++	++	+
Pentobarbitone	++	+	—
"Allonal"	++	++	+

++ = Positive. + = Weak positive.

The use of a larger volume of urine made weak positive reactions rather stronger, but strong positive reactions were not appreciably affected. The urine of patients having therapeutic doses of barbiturate derivatives were also tested. The urine of patients having barbitone or soluble barbitone (0.3–0.6 g. daily) gave a positive reaction in every case, the urine of patients having phenobarbitone (0.03 g. thrice daily) gave a weak positive reaction in four specimens out of ten tested. The shorter acting barbiturates could not be detected in the urine of patients receiving therapeutic doses. In none of the barbiturate-free urines tested was a false positive reaction obtained.

Comment

From the point of view of detection the barbiturate derivatives can be divided into two main groups. First, the "long-acting" barbiturates such as barbitone and phenobarbitone, which are excreted in the urine in considerable quantities and can be easily detected even after therapeutic doses; and, secondly, the "short-acting" barbiturates, which are for the most part metabolized and are excreted in the urine in small quantities only.

If poisoning is due to one of the longer-acting barbiturates it should be easily detectable in the urine. The shorter-acting barbiturates, even though producing coma, will probably not be excreted in the urine in sufficient quantities to give a positive reaction with a rapid method of detection such as is described here, and in these cases the barbiturate is more likely to be detected in stomach washings.

The first 500–1,000 ml. of stomach washings should be saved separately for detection of barbiturates. If these first washings are diluted with the rest of the water required for complete stomach washout, then the subsequent detection of barbiturate is more difficult.

Summary

In cases of suspected barbiturate poisoning it is of value to confirm the presence of barbiturates in urine or stomach contents before treatment is begun.

A method is described whereby barbiturates can be detected in concentrations of the order of 1–2 mg. per 100 ml. of urine. The time required for performing the test is less than 15 minutes.

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Medical Memorandum

Peripheral Neuritis Following Tetraethylthiuram Disulphide Treatment

Tetraethylthiuram disulphide ("antabuse") has been in use since 1948 for the treatment of alcoholism. No case of peripheral neuritis has been fully reported, although three cases were mentioned as occurring among 120 alcoholics treated with the drug (Child *et al.*, 1951).

CASE REPORT

A man aged 40 had been drinking since the age of 16. His job as a waiter gave him ample opportunity to indulge, and so by 1948 he was consuming two bottles of gin a day. This state of affairs continued until his admission in July, 1952. The medical history was negative apart from gonorrhoea at the age of 21. Examination showed him to be a small man with an aggressive, mildly hostile, and suspicious manner. No physical abnormality was detected: the blood pressure was 146/94. His intelligence was a good average, there being no sign of intellectual impairment. The blood Wassermann reaction was negative and the sedimentation rate normal. Van den Bergh and thymol turbidity tests were negative. Plasma proteins were normal.

On August 8 he was given 1.5 g. of tetraethylthiuram disulphide; this was followed by 0.5 g. daily. An alcohol/tetraethylthiuram-disulphide test reaction was carried out six days later without any untoward effect, and the patient left hospital on October 15, continuing to take the drug and remaining abstinent. At the end of November he noticed tingling sensations in his toes, with numbness, which progressed to involve the anterior third of the feet. Examination revealed a loss of sensation to light touch, pin-prick, and vibration over the anterior third of both feet, together with some diminution in the ankle-jerks. He had to give up his work because of the symptoms. On December 18 he stopped taking the drug because he felt it might have been responsible for his symptoms, since when there has been a gradual improvement in his condition.

COMMENT

Although the development of peripheral neuritis in alcoholics is to be expected, the development of the condition in this case seems to have followed 16 weeks' treatment with tetraethylthiuram disulphide while the patient was abstinent. During his stay in hospital his nutritional intake was good and he gained 10 lb. (4.5 kg.) in weight.

Tetraethylthiuram disulphide can lead to a variety of toxic symptoms, chiefly tiredness, headache, and mild ataxia. Electroencephalographic changes have been reported (Guild and Epstein, 1951). Several authors describe toxic confusional states following its use (Bennett *et al.*, 1951; Guild and Epstein, 1951; Martensen-Larsen, 1951). Such reports would indicate that considerable caution should be exercised in giving tetraethylthiuram disulphide over long periods of time, for it seems possible that the nutritional deficiencies occurring in alcoholics may increase the susceptibility of these patients to the toxic effects of the drug.

My thanks are due to Dr. D. L. Davies, physician, Bethlem Royal and Maudsley Hospitals, for permission to publish this case.

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