with 0·1 per cent $FeCl_3.6H_2O$ in 80 per cent alcohol, dried in air at room temperature and then sprayed with 1 per cent salicylsulphonic acid in 80 per cent alcohol. Upon drying, the phosphates appear as white spots on a pale mauve background, *ortho*-phosphate having a band of deeper mauve surrounding it. The colour formation occurs only when the *p*H of the residual moisture in the paper is about 1·5–2·5. This can be checked conveniently with thymol blue, since the colour formation occurs most satisfactorily when the paper just turns this indicator red. Further indications of unsatisfactory *p*H are that below this range no colour is formed, whereas above the range the colour is orange-yellow and definition of the spots is very poor.

When the chromatogram is heavily buffered, modifications to the above reagents are necessary. For example, when there is strong buffering on the alkaline side, it may be necessary to increase the concentration of salicylsulphonic acid to about 10 per cent; when buffering occurs at a low *p*H, the sodium salt may be used.

Other spot indicators of ferric ions have also given good results; but they were either nitrogenous compounds that would interfere with nitrogen determinations or gave colours that faded in light.

Before elution of the chromatogram spots a permanent record of the chromatogram can be made by taking a contact print on a document printing paper such as Ilford No. 50. The colour lends itself well to this, and prints can be obtained that give even better definition of the spots than the original chromatogram.

If a sufficient quantity of ester is present, it can be located on the paper before spraying with salicylsulphonic acid by observing the paper in transmitted daylight or ultra-violet light from a low-pressure mercury lamp incorporating a Wood's filter.

The technique described permits the detection of 1–2 μgm. phosphorus, as phosphate ester, distributed over an area of about 1 sq. cm. The treatment is sufficiently mild not to cause any significant breakdown of adenosine triphosphate providing elution is carried out on the same day as the spraying.

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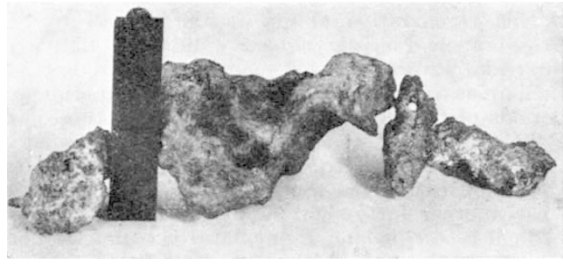
Vesicular Laterite

The suggestion has been made that the vesicular form of lateritic ironstone owes its characteristic sponge-like structure to termite action, presumably to burrowing by these insects before the material hardened[1].

It is possible that termite action may be responsible in some instances for the perforations; but evidence from the Aripo Savannah in Trinidad (which botanically interesting area receives special mention in Charles Kingsley's "At Last") indicates that vesicles may be a normal morphological feature. The soil profile on this savanna consists of a grey sandy upper layer of about a foot to eighteen inches depth, grading into a material with the consistency of 'Plasticine' with pronounced reddish-yellow mottling. During the wet season, May–December, the water-table lies at or near the surface of the ground, while during the dry season, January–April, it may recede six or more feet. The site is a level one and conditions are correct for the development of a 'ground-water laterite'.

By a fortunate chance during the Second World War, roads were made through this area for military purposes. The area is unfit for agriculture, and had it not been for this chance the present observations might not have been so readily made.

Making of the roads, or more correctly the making of drains at the road-sides, has resulted in the exposure of the mottled horizon. The result, which could scarcely have been predicted by mere inspection of the undisturbed profile, is that 'ironstone' fragments, ranging through all degrees of hardness to completely indurated, have been isolated and stand out on short columns of softer material. They range in size from grain size to more than six inches in length. The larger fragments have the grotesque shapes characteristic of the 'fossil' laterite of Uganda and elsewhere, and which in this case are determined by the irregular shapes of the mottles from which they have been formed. Some of the fragments show smooth-sided perforations, the contents of which have been washed out by rain. The accompanying photograph illustrates one such fragment.



It is suggested that the undisturbed profile represents a stage preceding that which, by progressive enlargement and ultimate contact and fusion of the mottles, would furnish on induration and removal of the softer enclosed material a more or less continuous pavement of vesicular ironstone.

A mound-building termite does occur in the area (*Nasutitermes ephratæ*)[2]; but its mounds are infrequent in occurrence and small in size (less than 2 ft. high with a base of about 1½ ft.) There was no sign of termite burrows in the pits examined, and termite action may be excluded in this case as in any way contributing to the whorls and perforations of the indurated material.

The profile will now be studied critically, with the view of tracing the stages of induration, etc., and the findings will be published in due course.

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Sept. 15.

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