

A NOTE ON THE OIL FROM THE FRUIT OF *BALANITES ROXBURGHII*

Balanites Roxburghii (N.O. Simarubæ) is a small thorny tree whose seeds, bark and leaves are used as indigenous drugs [vide (i) *The India Materia Medica*, by K. M. Nadkarni, p. 97; (ii) *Nighantu Adarsha*, by Vaidya Bapalal Garbaddas Shah, p. 225; (iii) *Dictionary of the Economic Products of India*, by Watts, Vol. I, p. 363].

The fruit of this tree is oval, of a yellowish colour (when ripened), composed of a sweet but disagreeable pulp surrounding the stone. The pericarp content of the fruits is about 30 per cent. The remaining stone consists of seed kernel and a stout shell which is largely employed in the preparation of indigenous fireworks. The kernels of the seeds on extraction with petroleum ether yield about 43 per cent. oil of an almost yellowish colour. The oil has a faint odour and shows the following characteristics.

Refractive Index at 40° C. = 1.4623, Saponification value = 195.20, Acid value = 0.575, Acetyl value = 31.75, Iodine value (Wiji's method) = 88.30, Unsaponifiable matter = 2.92.

The examination of the component fatty acids of the oil is in progress.

The pericarp of the fruit which is used as a detergent to clean silk and cotton textiles yields profuse lather and is under investigation.

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CHEMICAL INVESTIGATION OF HAIRS FROM THE MEDICO-LEGAL STANDPOINT

THE examination of hairs and fibres upon weapons, in blood or other stains, upon the clothing or person of the victim or assailant or at the scene of a crime is of great medico-legal importance, for by such investigations significant clues may be discovered and definite links in a chain of evidence may be established. The first point which an expert has to decide is whether the particular hair is human hair or that of a particular animal. At present, opinion on the point is given only on the basis of microscopical examination. One has to rely mainly on the anatomical characters of the various parts of hairs, i.e., on the size and appearance of the medulla, cortex and cuticle. It was, therefore, thought desirable to discover some independent method for distinguishing between hairs of different animals. Exploratory experiments with about thirty different reagents were tried and it was found that the action of (1) chlorosulphonic acid, (2) nitric acid, (3) 5 per cent. solution of potassium dichromate and (4) caustic alkalis, is of diagnostic value.

Before microscopical examination, hairs must be cleansed. Hairs smeared with blood, etc., are best cleansed by treating them first with 5 per cent. potassium cyanide solution, follow-

ed by water and alcohol-ether mixture. The structures of thick or dark hairs are best brought out by the action of 5 per cent. potassium dichromate solution (in acid medium) or strong nitric acid. Nitric acid is quicker in action and generally clarifies the structure in about five minutes, but it has also a dissolving action. Five per cent. dichromate solution, although slower in action, is of greater diagnostic value—the hairs of different animals requiring different times for decolourisation, the time taken depending upon the colour and thickness of the hair. Details of these experiments will be published elsewhere.

The above two reagents were found to be much superior clearing agents than hydrogen peroxide, which is usually used for this purpose.

Attempts were made to discover (1) such reagents as would dissolve some animal hairs, but not others, (2) reagents which would take different times in dissolving hairs of different animals, (3) reagents which would gelatinise or disintegrate different hairs in different times. *Chlorosulphonic acid* disintegrates the hairs, the action starting first with the cuticular scales. These scales swell up, the cuticular and medullary pigment getting decolourised. Prolonged treatment completely disintegrates the hairs into cuticular and medullary fragments. It was found that the hairs of the horses, goats and pigs require longer time for complete disintegration than the hairs of other common animals. *Caustic alkalis* gelatinise the hairs and dissolve them in a short time. They soften the hairs even in the cold and hence a preliminary treatment with 10 per cent. caustic soda solution in the cold for about ten minutes is very helpful in taking cross-sections of the hairs. With 20 per cent. caustic potash solution, the time taken for complete gelatinisation of the hairs varied from half minute to three minutes and the time taken for complete dissolution varied from four to ten minutes.

A detailed account of the action of the various reagents on hairs of different animals and an account of the investigations on the effect of age on hair is reserved for a future communication.

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REVERSED POLARITY IN THE EMBRYO-SAC OF *HEPTAPLEURUM* *VENULOSUM* SEEM

CASES of reversed polarity in the embryo-sacs are rare. Schnarf¹ (1931) refers to only four cases, (1) *Rhopalocnemis phalloides* (Lotsy, 1901), (2) *Lindelofia longiflora* (Svensson, 1925), (3) *Fuchsia marinka* (Tackholm, 1915) and (4) *Atamasco texana* (Pace, 1913). Three more cases have recently been added from India to the list of such forms. Dutt and Subba Rao² (1933) recorded a probable case of embryo-sac reversal in *Saccharum*. Joshi and Venkateswaralu³ (1935) noticed a single case of embryo-sac reversal in *Woodfordia*