SHORT SCIENTIFIC NOTES

Geochemical Reconnaissance with Human Hair

It has been found that the concentrations of trace elements in samples of human blood taken from the residents of a region resembles the concentrations of these elements in the rocks of the region[1]. It is also known that the human hair concentrates many trace elements from the blood. For instance mercury content of human hair is about 200 to 300 times that of the blood. This property of concentration of trace elements by human hair has already been used in medical, forensic and environmental pollution studies[2]. The use of trace elements in human hair for understanding certain problems in archaeology has been discussed by the author[3].

This note points out yet another interesting application for which the human hair can be utilised. Since as mentioned human above, blood reflects the minor elements of the rocks of the region and that they are further concentrated in the hair, a sample of hair of local inhabitants may be expected to reflect in an amplified way the rocks of the region. A survey of human hair from regions which are known to be enriched in certain ores may be made to see whether it does in fact reflect in an appreciable way the ore content of the soil. It is already known that the soil, vegetation and ground water in an area reflects the nature of ores in a region. It seems likely that human hair is not very different from the vegetation of the area in this respect and one can make what is called a "geochemical reconnaissance" of a large area for possible ores using human hair. The proposed method is essentially similar to the use of certain botanical species (which concentrate typical elements) such as *Digitalis purpurea*[4]. In the case of human hair, the advantage is that it concentrates a large number of elements and neutron activation (and/or spark source mass spectrometry) techniques will be able to give information on a variety of possible ores in a single analysis.

Winchester[5] has discussed the subject of activation analysis for geophysical prospecting by conventional methods (such as analysis of the soil) and he concludes that whereas the activation analysis may lead to the direct detection of high concentrations of valuable metals, it seems more likely that the technique will prove useful in revealing indicative patterns of grouping of trace elements which together with geological field relations may lead to the location of valuable mineral deposits. In human hair such patterns of grouping can be advantageously studied.

The sample needed will be just a few hairs of local residents. However, for statistical purposes one may have to study the hairs of a number of residents from the same place.

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On the Occurrence of *Otozamites* Sp. in the Athgarh Sandstones, at Naraj. District Cuttack, Orissa

This material was collected in 1971 from a thin band of ferruginous shale belonging to the Athgarh sandstones (Upper Gondwana) near Naraj, (20° 28′ : 85° 46′) in the Cuttack District, Orissa. It is a fragmentary Pinna preserved as impression in a very bad condition. So, specific identification is not possible.

Description.—Frond Pinnate, pinnules alternate, separate, broadly oval in shape, attached acutely by a broad auricular base, apex bluntly rounded, a few spreading veins are faintly marked. Length of pinna 11 mm, breadth at the widest portion 4 mm. 4 pinnules are seen on each side of pinna rachis, size of pinnule $2{\cdot}5 \times 1{\cdot}5$ mm.

The above characters suggest to put it under the genus *Otozamites*. However, it shows some resemblance to *Otozamites beani* (Lindley and Hutton)[1] in some gross features. Specimen No. N. 292.

Otozamites occurs along with *Zamites*, *Zamiophyllum*, *Pilophyllum* and *Nilssonia* in the Wealden (Lower Cretaceous) flora[2]. The author[3] has

described the last two of the above along with *Onychiopsis*, a characteristic Wealden fern, from the same horizon whence *Otozamites* is being reported now. Hence this evidence supports the Jabalpur age (Lower cretaceous) of the Athgarh sandstones as already suggested by author, discarding the Rajmahal age as postulated earlier[4].

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Utkal University,
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New Plant Records from Goa

As far as is gathered the following three plants collected from the Union Territory of Goa are either new records for Western India or are rare plants collected after a long time. The specimens are deposited in the herbarium of the Botanical Survey of India, Western Circle, Poona (*BSI*).

1. ***Melothria leucocarpa*** (Blume) Cogn. (CUCURBITACEAE)

Chakravarty (1959) in his monograph on Indian Cucurbitaceae mentions the distribution of this species in India as Assam, Bengal, Eastern and N.W. Himalayas. The present specimen was collected from Satrem in Goa and is thus interesting from its distribution point of .view.

Satrem (Goa), about 450 m, *Singh* 124571 (25–9–1970).

2. ***Ipomoea barlerioides*** Benth. & Hook. f. (CONVOLVULACEAE)

This species was recorded from Western India by Cooke (1905) only, wherein the localities mentioned are : Konkan, S. M. Country : Parvaghat, Kanara and Sirsi, but it is mentioned therein to be "not common". Its rediscovery in the current century from Surla in Goa makes it noteworthy to mention it here. Vartak (1966) has, however, mentioned it on the basis of Cooke (*l.c.*).

Surla (Goa), about 900 m, *Singh* 124725 (27–9–1970).

3. ***Scleria africana*** Benth. (CYPERACEAE)

Jain and Raghavan (1967) published *Scleria africana* Benth. as a new record from India, the locality of its collection being Shimoga in the Mysore State. The present specimen has been collected from Bati in Goa, thus extending its distribution northwards in the Western Ghats.

Bati (Goa), about 150 m, *Singh* 125213 (9–10–1970).

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Botanical Survey of India, N. P. SINGH.
Western Circle, B. G. KULKARNI.
Poona-1, *June* 1, 1973. S. MOORTHY.

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On the Occurrence of *Hypericum japonicum* Thunb. ex Murr. in the Upper Gangetic Plain

While working on the flora of Corbett National Park, Uttar Pradesh, the authors came across a few plants of this species collected from Dhikala. The plant has so far been reported from the temperate and sub-tropical Himalaya from Sikkim to Garhwal, Khasia Mountains, Assam, Sylhet and Eastern and Western peninsula. The present report from Dhikala is its first record from the Upper Gangetic Plain and thus forms also an addition to Duthie's *Flora of the Upper Gangetic Plain*.

The nomenclature of the plant is as follows :

Hypericum japonicum Thunb. ex Murr. *Syst. Veg. ed.* 14 : 702, 1784 ; Royle, *Ill. Bot. Himal.* 131, t. 24, f. 2, 1834 ; Thiselton Dyer in *Fl. Brit. Ind.* 1 : 256, 1874.

An elegant annual herb with yellow flowers seen in moist open situations in the vicinity of the stream near Dhikala forest rest house. The plant is scarce in the area.

Herbarium specimen examined.—UTTAR PRADESH : Dhikala, Corbett National Park, alt. 385 m, 26th April 1971, *P. C. Pant* 43704 (BSD).

Botanical Survey of India, K. P. JANARDHANAN.
Northern Circle, Dehra Dun, B. P. UNIYAL.
April 3, 1973.