amounts up to the order of 1·4 mgm. (equivalent to 2·0 mgm. Fe_2O_3) may be extracted. The final computation of results therefore requires (i) photometric evaluation of the sample spectrum for log I_T/I_S, (ii) analysis of the concentrate for C_S, (iii) correction of log I_T/I_S for the C_S value of the sample, (iv) determination of C_T for the corrected log I_T/I_S value via the standard working curve, and (v) evaluation of the concentration in the original material on dividing C_T by the appropriate factor.

A modification of the above procedure involves adding to the residue, after weighing (w_1 mgm.) but prior to mixing, 30 mgm. purified Fe_2O_3. The whole is then mixed in an agate mortar and proceeded with in the usual manner. The percentage internal standard may be estimated directly as $100 \times \left[\frac{32}{w_1 + 30}\right]$, that is, $100 \times 32/w$, where w is weight of final concentrate. The error contained in this assumption may be computed as ['residual' soil Fe_2O_3 (say, 2·0 mgm.) + error in concentrating and analysing[4] 4·0 mgm. Fe_2O_3]. Since the error of a normal iron determination has been found to be 6·5 per cent ($P = 0·95$), the above error at the most is [2·0 + 0·26 ($P = 0·95$)] mgm. = 2·26 mgm. Fe_2O_3, which reckoned on 32 mgm. is of the order of 7 per cent. This figure compares favourably with the normal analytical error, and small differences can be ignored when field-sampling errors are taken into account[5]. Further, from the nature of the calibration curves[1,6], we may write for values of $C_T \leqslant 1{,}000$ p.p.m.:

$$\log C_T = \log(C_t/C_S)_M + \log C_S + \log I_T/I_S$$

where C_t is the value of C_T when $\log I_T/I_S = 0$. If for log C_S we substitute $\log[100 \times 32/w]$ and subtract from it the log concentration factor = $\log[2 \times 10^4/w]$ (for 20-gm. aliquots of soil), we derive an expression for the C_T value in the soil, namely:

$$\log C_{T(\text{soil})} = \log (C_t/C_S)_M + \log \frac{32 \times 10^2/w}{2 \times 10^4/w} + \log I_T/I_S = \log 0·16(C_t/C_S)_M + \log I_T/I_S$$

or

$$\log C_{T(\text{soil})} = \log k + \log I_T/I_S$$

where k is a constant determined by the calibration and experimental arrangement.

Regarding the proposed modification: (i) it neither interferes with the method of analysis nor does it introduce extra work, apart from the addition of Fe_2O_3; (ii) it renders unnecessary the analysis of internal standard content; since these analyses are usually performed in batches of six, each batch requiring about 2 hr. for complete assay, there is a substantial saving in operational time; (iii) it does not increase unduly the final weight of concentrate which is normally about 40–60 mgm.; and (iv) it avoids graphical calculation, thereby permitting concentrations for acetic acid-soluble cobalt to be computed directly from the photometric evaluation in the ranges 0·04–3·50 p.p.m. ('normal' 40 mgm. concentrate) and 0·03–3·00 p.p.m. ('normal' 60 mgm. concentrate). Since most extractable cobalt contents fall well within the above limits, the scheme may be applied with advantage in the routine analysis of available cobalt in soils: its general application would depend on (*a*) the amounts of acetic acid-soluble iron in the run of samples being analysed, and (*b*) the magnitude of w_1 and the subsequent dilution with Fe_2O_3 to within the limits imposed by the straight-line portion of the correction graph[1].

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ARCHÆOLOGY

An Extinct Giant Pangolin and Associated Mammals from Niah Cave, Sarawak

Examination of the mammalian remains excavated from the west mouth of Niah Cave, Sarawak[1], in 1954–58 down to a depth of 72 in., which corresponds to a carbon-14 date of about 32,000 years B.P. (ref. 2), established a fauna containing only the lowland evergreen rain forest species of modern south-east Asia[3]; of those identified, only the Malay tapir[4] and the tiger (an unerupted canine from Neolithic levels ($E/G1$, 6–12 in.)) are to-day unknown from the wild in Borneo.

Extension of the dig to lower levels has now produced three bones attributable to *Manis palaeojavanica* Dubois—an extinct giant pangolin formerly known only from Middle Pleistocene deposits in Java—from depths at Niah ($H/17$, 104–110 in.) corresponding to carbon-14 dates of about 42–47,000 years B.P. (ref. 5). Besides man (represented by skeletal remains as well as artefacts of stone and bone) the associated mammalian fauna includes only extant species. Represented are: pig (*Sus* cf. *barbatus*), orang utan (*Pongo pygmaeus*), monkeys (certainly *Presbytis* species, others indeterminate), a wild cat (*Felis* cf. *bengalensis*), a large bovine (*Bubalus* c.q. *Bibos* species), the larger mouse-deer (*Tragulus napu*), a number of rats (including *Rattus* cf. *sabanus*, cf. *mulleri* and cf. *rattus*), a shrew (*Crocidura* species), and several bats (identified by the Earl of Cranbrook) (including *Rousettus* cf. *amplexicaudatus*, *Hipposideros* cf. *diadema*[6], cf. *galeritus*[6], and two indeterminate species of intermediate size, *Chaerephon* species, *Cheiromeles* cf. *torquatus*[6] and *Myotiss* pecies[6]), as well as the common recent Malaysian pangolin (*Manis javanica*); the last has never before been found in the fossil or sub-fossil state. The Niah finds prove the co-existence of the two species of *Manis* in the Upper Pleistocene of Borneo.

Fuller reports will be published in forthcoming issues of the *Sarawak Museum Journal*.

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[1] See Harrisson, T., *Man*, **59**, 1 (1959), and *Sarawak Mus. J.*, Nos. 12–14 (New Series), for earlier progress reports of this excavation.
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[5] By extrapolation from figures given by Harrisson, *l.c.*, ref. (2).
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