

in the late 17th-early 18th centuries gold was dug from the Salida mine under the supervision of German engineers. These jugs were doubtlessly imported full of German beer and discarded after being emptied — like beer bottles of today.

The main import of European ceramics to Sarawak falls in the latter half of the 19th century and there were no Dutch or German communities here like there were in Java and Sumatra. To our knowledge the first Europeans appeared at Mukah in the last century and it is very unlikely that they would have brought an antique piece of this kind with them. The jug was probably found in the river — hence its origin story. But how did it get into the Mukah river? Was it flung into the sea by a drunken sailor on a passing merchant ship? Or was it brought by an adventurous Melanau from Java or Sumatra or did it travel through devious overland routes from South Borneo?

This interesting piece has now been declared an antiquity which, should the owners ever wish to sell it, can only be sold to the Museum. This is to prevent it from getting into trader's hands.

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Niah Cave Animal Bone. VIII — Rhinoceros in late Quaternary Borneo

by

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The presence of rhinoceros among the animal remains from the Sarawak Museum excavation in the West Mouth of Niah cave (see Harrison, 1964, and also previous issues of the *S.M.J.* for background information), has already been demonstrated by the identification of fragmentary molar teeth (Medway, 1958), several phalanges and a radius (Medway, 1959). Since the publication of these reports, the collection of mammalian bone from the excavation has been examined in further detail, and additional material has been identified.

MATERIAL FROM NIAH

All stratified material from the West Mouth site is listed in Table I. It can be seen that rhinoceros remains occur at all levels from subsurface to a depth of 72 inches. In the central area of the excavation the 72 inch level is associated with a palaeolithic culture, and charcoal samples have yielded a C14 date of $30,673 \pm 700$ B.C. (Harrison, 1959).

In historic times, the only rhinoceros recorded from Borneo is the Sumatran or Asiatic Two-horned Rhinoceros, *Didermoceros sumatrensis* (Fischer) (Chasen, 1940; Ellerman & Morrison-Scott, 1955). The Bornean population is separable on skull characters from animals of Sumatra, and has recently been recognised as a distinct subspecies (Groves, 1965). In addition, the Javan or Lesser One-horned Rhinoceros, *Rhinoceros sondaicus* Desmarest, also occurred within the region in historic times, on Java, Sumatra and the Malay Peninsula. Material from the Niah excavation has already shown that one large ungulate, the tapir, nowadays restricted to Sumatra and parts of continental Asia, extended to Borneo during the late Upper Pleistocene and early Holocene (Medway, 1960). It is therefore not impossible that the range of the Javan Rhinoceros formerly included Borneo, and the specific identification of the remains from Niah is accordingly of interest.

In general, the existing Javan Rhinoceros is a larger animal than the Sumatran, and many elements of the postcranial skeleton of recent specimens can be separated by size. But evidence from excavations in Sumatra has indicated that it is not possible to identify prehistoric material solely by comparison with the measurements of recent specimens. Hooijer (1946) has noted that subfossil teeth of *D. sumatrensis* from Sumatran cave deposits tend to be larger than comparative material of recent specimens from that island. He also recorded a humerus of *sumatrensis* that was 17 percent longer than the largest humerus of recent specimens in the collections of the Leiden museum, exceeding also the length of the humeri of four specimens of recent *sondaicus*. Evidently in this rhinoceros, as among other mammals of the region (Hooijer, 1949), evolution from the end of the Pleistocene has been towards a progressive reduction in body size.

TABLE I

Stratified remains of rhinoceros from the West Mouth excavation, Niah

| Item | Trench | Depth (inches) |
|---|---------|----------------|
| 1. Fragmentary lateral proximal phalanx | E/C3 | 0-24 |
| 2.* Proximal part of right metacarpal IV (fossilised, presumably not <i>in situ</i>) | E/W9 | 6-12 |
| 3. Fragmentary cheek tooth, unerupted | E/G6 | 12-24 |
| 4. Fragmentary lower molar, worn | E/B3 | 24-36 |
| 5.* Juvenile left metatarsal II, without distal epiphysis | E/C2 | 24-48 |
| 6. Fragmentary cheek tooth, little worn | D/E2 | 24-48 |
| 7. Fragmentary lower molar, unerupted | E/W1 | 30-33 |
| 8. Fragmentary lower molar, little worn | E/G1 | 36-42 |
| 9. Fragmentary lower molar, unerupted | E/B5 | 42-48 |
| 10. Fragmentary cheek tooth | E/G1 | 48-60 |
| 11. Distal articulatory face of a lateral proximal phalanx | E/C2(C) | 48-60 |
| 12. Fragmentary central proximal phalanx | E/C2(C) | 48-60 |
| 13*. Fragmentary left ectocuneiform | Y/3 | 54-60 |
| 14. Central proximal phalanx, probably of left hind foot | E/C3(A) | 60-66 |
| 15. Fragmentary cheek tooth | E/B1 | 60-72 |

(*) Specimens kindly identified by D.A. Hooijer, Rijksmuseum van Natuurlijke Historie, Leiden.

It is therefore unfortunate that the Niah material includes no remains that can be assigned confidently to one or other of the two rhinoceros species on anatomical characters. Only one more or less complete long bone has been excavated at Niah. This was a radius, found in association with a burial (and hence unstratified) in which it served as a "pillow" (see illustration and discussion in Harrison, 1957, p.164). This bone has been partly crushed *in situ*, and no specifically diagnostic characters can be recognised. The total length (350 mm.; see Medway, 1959), is compatible with recent *D. sumatrensis*.

The stratified material from the West Mouth, listed at Table I (excluding items 1, 5 and 13, identified by Dr. D. A. Hooijer), together with a central subterminal phalanx from the Lobang Angus' mouth (trench US/22, at 18 — 24 inches), has been compared with skeletons of recent *D. sumatrensis* and *Rh. sondaicus* in the collection of the British Museum (Natural History). Post-cranial remains comprise a series of small bones of both fore and hind feet, many of them fragmentary. These cannot be ascribed to either species on anatomical characters, and such measurements as can be taken are either compatible with measurements of their homologues in the available skeletons of recent *D. sumatrensis*, or at the most slightly larger. As noted above, it is to be expected that the bones of prehistoric rhinoceroses from this region should be slightly larger than comparable recent material, and this alone cannot be accepted as indication of the presence of *Rh. sondaicus*.

In a study of dental material, Hooijer (1946) has noted several specifically distinct characters in the anatomy of the upper (= maxillary) first and second molars, premolars and posterior deciduous molars, which can be used to separate the two rhinoceroses. Unfortunately again, no complete teeth occur in the Niah remains. The only fragments on which representative measurements could possibly be taken are lower (= mandibular) molars, for which Hooijer found no specifically diagnostic characters.

MATERIAL FROM OTHER SITES

In addition to the material from Niah, fossil or subfossil rhinoceros remains have previously been recorded also from south-

western Sarawak. The first to come to light were two teeth sent to Sir Charles Lyell by Rajah James Brooke, and discussed by G. Busk (1869). These teeth were identified by Busk as right and left second upper molars, evidently belonging to the same individual, both consisting only of parts of unerupted crowns in what the author refers to as the "germ" state. Busk considered that they could be attributed to a very young *Rh. sondaicus*. However, Hooijer subsequently re-examined Busk's evidence and concluded, on the basis of his figures, that the molars were in fact those of *D. sumatrensis* (Hooijer, 1945).

The second previous collection of rhinoceros remains from Sarawak consists of a series of bones together with two upper molars, recovered from gold workings in an alluvial cave deposit in the upper Sarawak river, presumably at or near Bau. These were presented to the British Museum (Natural History) by Dr. P. Lutley Sclater. The two teeth were provisionally referred to *Rh. sondaicus* by Lydekker (1886, p.129), but were entered in the British Museum register for 1895 (reg. no. M1986) as *sumatrensis* (A. J. Sutcliffe, *in litt.*). Hooijer (1946) has pointed out that the associated post-cranial bones have consistently been referred to *sumatrensis*.

During the preparation of his paper on prehistoric and fossil rhinoceroses from the Sunda region, Dr. Hooijer was unable to examine these controversial molars (Hooijer, 1946, p.10). However, a photograph has now been made available through the kindness of Dr. A. J. Sutcliffe, Department of Palaeontology, and is published here (see Plate XXI).

The teeth are seen to be first upper molars, one from the right and one from the left jaw, exhibiting different degrees of wear and presumably from different animals. The dimensions, measured from the photograph, are small compared with the figures for recent *D. sumatrensis* given by Hooijer (1946), and would be exceptional for *Rh. sondaicus*. In addition, certain morphological features peculiar to *sumatrensis* are clearly visible in the photographs. Firstly, in the more worn tooth in particular a distinct bend in the enamel at the antero-lingual margin of the protoloph is seen, indicating the presence of the "protocone fold" of Hooijer (1946, p.11). On the less worn tooth the protocone



PLATE XXI. Above: Stratified rhinoceros remains from West mouth site, Niah Great Cave:— (left) and dorsal views of central proximal phalanx from 60-66 inches, (right) lateral proximal phalanx from 0-24 inches; natural size (scale in inches; see p. 78).
Below: Two molars of *D. sumatrensis*, reg. no. M/1968 in British Museum (Natural History); enlarged (scale in cm.; see p. 80).

fold is also present, although less clearly shown in the photograph. On the other hand, the relatively unworn condition of the latter tooth permits a second diagnostic character to be seen *viz.*, in the words of Hooijer (1946), that the crochet "springs off from the metaloph below the upper margin", rather than originating at the apex of the metaloph as in *sondaicus*. Together, these characters confirm the identification of the molars as *D. sumatrensis*.

CONCLUSION

In summary, there is thus from Niah evidence that a small rhinoceros of approximately the same size as, or fractionally larger than the existing Sumatran or Asiatic Two-horned Rhinoceros, *D. sumatrensis*, has been present in Borneo since at least the close of the Upper Pleistocene era. Subfossil molar teeth from southwestern Sarawak — which though undated can be accepted as more or less contemporaneous with the Niah material — confirm the presence of *D. sumatrensis*. None of the available material can be attributed to the larger Javan Rhinoceros, *Rhinoceros sondaicus*, and there is no present evidence that this species extended its range across the Sunda region to reach the Bornean landmass.

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*[Reprints of the above two papers from *Studies in Speleology*, bound together, are available on request from the Sarawak Museum—ED.]

Upiusing — a late burial cave at Niah

by

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I. SITUATION AND EXCAVATION

Upiusing* cave is situated on the south-eastern side of the Subis Mountain, $\frac{1}{2}$ mile away from the Iban long-house of Lasan, and about 5 miles from the West Mouth, Great Cave. The Sekolah river which passes Lasan flowing south-westerly, continues right up to the limestone cliffs near Upiusing and thence all along the Sekaloh side of the Subis formation until it reaches the Niah river above Batu Niah. Low-lying areas near the long-house and Upiusing cave are easily and frequently flooded.

Upiusing cave has four separate mouths, all facing east. The lowest, easily accessible over rubble and limestone blocks, is elevated c. 50 feet over river level. Three further mouths are sandwiched at successively higher levels, the highest c. 150 feet higher than the lowest. All are accessible from the lowest mouth, by climbing inside the formation. Climbs are steep but not difficult.

Surface remains were found in three openings — the lowest and the two highest — in 1964 detailed work here. Remains in the lowest mouth were ascertained by trial trenching and largely left *in situ*. Remains in the higher sections were removed from the surface and additional affected areas were excavated, because this cave is subject to frequent disturbance by visitors. There was acute danger that what was still left here might be lost presently as a consequence of increased human traffic following development of the Sekaloh area (quarrying, road building, timber extraction).

*"Upiusing" is a Punan word, of two component parts:
 "Upi" (or "Upe") = the name of a fruit tree; and
 "Using" = the mouth of a river.

An "Upi" tree used to grow to the side of the cave's main entrance — that side which points in the direction of the mouth of the Sekaloh River, an upper right tributary of the Niah River.