MOLLUSCA FROM BORING "ALLIANCE-28" IN SURINAM (DUTCH GUIANA)

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ABSTRACT

Molluscan remains have been studied from depths of 12.25, 15.00 and 16.25 m and from sixteen levels from depths between 258.85 and 311.00 m.

The fauna of the first series of samples agrees with the Recent fauna of the Surinam coast and seems to have lived at moderate depth, say about ten fathoms, off the coast in and on a muddy clay bottom with occasional sand bars, but without hard rock.

The fauna of the second series is supposed to be of Palaeocene age on the base of the associated Foraminifera. The molluscan remains consist mainly of fragments and young specimens, for the greater part of oysters. These remains are too poor for specific identification. About ten families or genera can be recognised, among which *Vulsella* is remarkable. This genus, which is rare in the Tertiaries of the New World, is represented by several hinge fragments.

INTRODUCTION

The deep well boring known as "Alliance-28", which was carried out at Alliance, Commewijne District, Surinam, pierced marine layers yielding remains of Mollusca at depths from 7 to 24 m and from 258 to 312 m. These two series of marine deposits were dated as Holocene and Palaeocene respectively, on the base of their Foraminifera. The study of the molluscan shells confirms the Holocene age of the former and does not contradict the Palaeocene age of the latter.

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HOLOCENE MOLLUSCA

More or less recognizable molluscan remains have been studied from depths of 12.25, 15.00, and 16.25 m. The largest specimen is a valve of *Anomia simplex* d'Orb., maximum diameter 19 mm, but most specimens measure about 10 mm or less, and none of the gastropod remains has a maximum diameter of more than 5 mm.

Just as in the Recent fauna of the Surinam coast the number of species and specimens of bivalves is greater than that of gastropods. All the identifiable species belong to the Recent fauna of the Surinam coast. There is evidence that several of them live quite near the coast, while most species have been dredged (either alive or as empty shells or odd valves) at depths from 10 to 20 fathoms, a few even to 30 fathoms. To appreciate these facts it is necessary to know that I dispose of hardly any data on the fauna from 0-10 fathoms, and of no data at all from deeper than 30 fathoms. Species limited to, or especially abundant in the intertidal zone, like *Crassostrea rhizophorae* (Guild.), *Mytella charruana* (d'Orb.), some Littorinidae, *Thais* spp., and Ellobiidae are absent. In all three samples *Chione subrostrata* (Lam.) is the dominating species.

Considering all these facts it seems most likely that this Holocene fauna lived off the coast at a moderate depth (e.g., about 10 fathoms) in and on a muddy clay bottom with occasional sand bars but without any hard rock.

During my stay in Paramaribo in 1963 the authorities of the Surinam Geological Survey kindly permitted me to collect molluscan shells from the core samples of a well boring carried out in Coronie District and known as boring "Coronie-35". Here a similar Holocene fauna was found between 6.30 and

TABLE 1

1 species	2 12.25m	3 15.00m	4 16.25m	5 Coronie-35	6 Ridges	7 Coast	8 Dredged
BIVALVIA							
Nucula spec.	-	-	½	-	-	-	20
Nuculana (Sacella) concentrica (Say)	fr	fr	frs	12.75-18.70	u	u	11-14
Yoldia (Adrana) scaphoides (Rehder)	-	fr	-	-	-	r!	-
Anadara (Cunearca) chemnitzi (Philippi)	-	-	j	-	c	c!	11-28
Noetia (Eontia) centrota (Guppy)	-	js	js	12.75-18.70	c	c!	18-30
Pectinidae, gen. spec.	-	frs	fr	?	?	?	?
Anomia simplex d'Orbigny	-	½ + frs	½ + frs	15.75-21.70	vc	vc	26
Ostreidae, gen. spec.	-	-	fr	?	?	?	?
Pholas (Thovanna) campechiensis Gmelin	-	-	fr	-	u	u	-
Corbula cf. *caribaea* d'Orbigny	-	-	frs	15.75-21.70	c	c	11-20
Chione (Chione) subrostrata (Lamarck)	frs	js + frs	js + frs	12.75-21.70	vc	vc!	15-24
Lucina (Lucinisca) muricata (Spengler)	-	j	-	-	u	u	11-14
Abra aequalis (Say)	fr	-	-	-	u	u	11
Macoma (Psammocoma) tageliformis Dall	-	-	fr	-	r	r	(10-18)
Macoma (Temnoconcha) brasiliana (Dall)	-	-	frs	-	u	u	-
Mulinia cleryana (d'Orbigny)	-	frs	frs	6.30-9.60	vc	vc!	11
Mactra (Micromactra) spec.	-	-	fr	-	u	u	15
Trachycardium (Dallocardia) muricatum (Linnaeus)	-	frs	fr	15.75-18.70	c	c	11-20
GASTROPODA							
Vitrinellidae, gen. spec.	-	-	frs	-	?	-	?
Caecum spec.	-	-	frs	-	-	-	?
Epitoniidae, gen. spec.	-	fr	fr	-	?	?	-
Niso interrupta (Sowerby)	-	-	? fr	-	u	u	-
Naticidae, gen. spec.	-	2	4 + fr	12.75-18.70	r	-	20
Mitrella spec.	-	? fr	-	-	-	r	-
Anachis cf. *floridana* Rehder	-	-	frs	-	u	u	-
Anachis obesa (C.B. Adams)	-	frs	1 + frs	-	c	c!	-
Anachis spec.	-	fr	frs	-	c	c	17
Olivella spec.	-	frs	fr	-	?	?	?
Chrysallida (Chrysallida) jadisi (Olsson & McGinty)	-	frs	-	-	u	u	-
Chrysallida (? Partulida) spec.	-	12	1	-	u	r	-
Miralda spec.	-	-	fr	-	r	-	-
Turbonilla spec.	-	-	1	-	r	u	-

21.70 m.

In table 1 the results of my study of the Holocene Mollusca from boring "Alliance-28" are specified (column 1-4) and compared with the Holocene Mollusca from boring "Coronie-35" (column 5, depth in metres), the fauna of the (Holocene) shell ridges of the Surinam coastal region (column 6), the shells washed ashore on the Surinam coast (column 7), and the results of dredgings off the Surinam coast (column 8, depth in fathoms; when the exact depth is unknown the limits between which it must lie have been given in brackets).

The material on which this table is based has been incorporated in the collection of Mollusca of the Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands.

TABLE 2

Family or genus	258.85	259.60	261.20	265.80	267.70	269.25	271.15	275.50	284.50	287.20	288.10	298.80	300.80	304.65	305.80	311.00
Nuculidae	-	-	-	-	-	-	-	-	-	-	frs	-	-	-	-	-
Nuculana sp.	c	cs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vulsella sp.	? fr	? j	-	-	frs	frs	-	-	fr	-	-	-	-	fr	-	? fr
Pectinidae	-	-	-	-	-	-	-	-	-	-	fr	-	-	-	-	-
Ostreidae	js+frs	-	frs	frs	j+frs	js+frs	js-frs	j+frs	j+frs	j+fr	frs	j+frs	js+frs	js+frs	js+frs	$\frac{1}{2}$+js+frs
Mytilidae	-	-	-	-	-	-	-	-	-	-	? fr	-	-	-	-	-
Corbula sp.	-	-	-	-	-	-	-	-	-	-	fr	-	-	-	-	-
Bivalvia inc. sed.	-	-	-	-	-	-	-	-	-	-	$\frac{1}{2}$	-	-	-	-	-
Turritellidae	-	?cs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Architectonicidae	?c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
bore-holes in oyster valves	-	-	+	+	-	-	-	-	-	-	+	+	?	+	+	-

PALAEOCENE MOLLUSCA

Sixteen samples of molluscan remains from depths of 258.85 to 311.00 m were examined. The largest specimen is the lower valve of an oyster, maximum diameter 42 mm; the other specimens are, however, much smaller, most of them about 15 mm or less. Apart from a few casts they are all juvenile valves and fragments of bivalves, for the greater part of Ostreidae. The gastropods are represented by three fragmentary casts only. Bore-holes in some oyster valves testify to the presence of carnivorous gastropods in this fauna.

I have not been able to identify any specimen more exactly than to the family or genus. This may be due partly to the fact that I had to base my identifications wholly on the literature, because I could not compare the specimens with collections of shells from the Palaeogene of the New World. Such comparison would perhaps have permitted me to class some of the Ostreidae more exactly, although the fact that they are almost exclusively fragments and young valves, considerably adds to the difficulty of their identification.

The presence in this fauna of *Vulsella* spec. is remarkable, as this genus is rare in the Palaeogene of the New World. In the samples examined it is represented by a number of hinge fragments which just permit one to recognize the genus with certainty. The specimen listed as "Bivalvia inc. sedis" is a small valve with a worn hinge and concentric sculpture which could be an astartid, lucinid or venerid.

It is difficult to make a guess about the depth at which these molluscs lived. The material appears to consist mainly of remains of an oysterbank, but these are not necessarely embedded at the, probably moderate, depth at which the oysters lived.

My identifications are specified in table 2.

The material on which this table is based has been deposited in the Rijksmuseum van Geologie en Mineralogie, Leiden, Netherlands.

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Abbreviations used in TABLE 1

c	:	common
fr(s)	:	fragment(s)
j(s)	:	juvenile(s) or juvenile valve(s)
!	:	there is evidence that the species lives near the coast
r	:	rare
u	:	uncommon
vc	:	very common
$\frac{1}{2}$	:	one valve

Abbreviations used in TABLE 2

c(s)	:	cast(s)
fr(s)	:	fragment(s)
j(s)	:	juvenile(s) or juvenile valve(s)
+	:	present
$\frac{1}{2}$	:	one valve