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Some Paleogene Foraminifera from the Vicinity of Ariake-Bay, Kyushu

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The writers discovered the following new Paleogene species of Foraminifera from the core samples drilled by the Sumitomo Company, namely, *Ammodiscus ariakensis*, *Ammodiscoides hanzawai*, and *Vulvulina sumitomo*.

In Japan, the species of *Vulvulina* have been recorded from the Recent and Pliocene deposits of South Japan: namely *Vulvulina capreolus* d'Orbigny was discovered by H. Yabe and S. Hanzawa in the *Globigerina* Ooze, 1415 m. deep, off the south of the Ryukyu Islands, *Vulvulina pennulata* (Batsch) by S. Hanzawa from the Shimaziri formation (Pliocene) of the Ryukyu Islands, and *Vulvulina pacifica* Cushman by K. Asano from the Miyazaki group (Pliocene) of Miyazaki Prefecture, Kyushu.

In the circumpacific region, *Vulvulina pacifica* Cushman was discovered off Mindanao, Philippines, and the following Paleogene species have been recorded from Central America; *Vulvulina curta* Cushman and Siegfus (late Eocene), *V. colei* (middle Eocene), and *V. fortelabita* Islaelsky (early Eocene) from California; *Vulvulina advena* Cushman (late Eocene) from Alabama; *Vulvulina spinosa* (Cushman) (late Eocene) from Mexico and Venezuela; *Vulvulina chirana* Cushman and Stone from Peru and Ecuador.

It is very interesting that the geographical distribution of the species of *Vulvulina* are limited to the warm or tropical regions where they are accompanied with *Ammodiscus incertus* d'Orbigny in most cases.

Vulvulina sumitomo Murata and Sugahara, n. sp., from the Sumitomo Ariake well, Kyushu is closely related with *V. chirana* Cushman and Stone (late Eocene) from Peru and Ecuador, and *Ammodiscus ariakensis* Murata and Sugahara, n. sp., with *A. parri* Crespin (early Miocene-Oligocene) from Australia.

The genus *Ammodiscoides* is reported from Central America in the circumpacific region; *Ammodiscoides turbinatus* Cushman from the Gulf of Mexico, and *A. conica* Cushman and Waters from Texas. In Japan, *Ammodiscoides* sp. was recorded by Y. Tai from the upper middle Miocene sediments of Shimane, Okayama, and Wakayama Prefectures in West Honshu, Japan.

The Paleogene sediments in the vicinity of the Ariake Bay yielded the following species:

Bathysiphon eocenicus Cushman and Hanna
Plectina poronaiensis Asano

Haplophragmoides amakusaensis Asano and Murata
Trochammina enouraensis Asano
Cyclammina pacifica Beck
Cyclammina tani Ishizaki
Pseudoglandulina turbinata Delting
Bulimina schwageri Yokoyama
Bulimina sculptilis Cushman
Plectofrondicularia packardi Cushman and Schenck
Plectofrondicularia packardi multilineata Cushman and Simonson
Epistominella amakusaensis Asano and Murata
Eponides nagasakiensis Asano and Murata
Gyroidina sakasegawaensis Asano and Murata
Globigerina cf. dissimilis Cushman and Bermudez
Globigerina kyushuensis Asano and Murata
Globigerina cf. ouachitaensis senilis Bandy

These species are characteristic in the Eo-Oligocene sediments in Japan as already discussed by K. Asano and Murata (1958).

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DESCRIPTION OF SPECIES

Family Ammodiscidae

Genus *Ammodiscus* Reuss, 1861

Ammodiscus cf. incertus (d'Orbigny)

Pl. 32, fig. 4.

Commonly found in the Paleogene of Kyushu, but the specimens are usually distorted or broken. The form here figured is referred to d'Orbigny's species with some doubt.

Ammodiscus ariakensis Murata and Sugahara, n. sp.

Pl. 32, figs. 8, 9.

Test, free, comparatively large, consisting of a long undivided chamber composed of four regular convolutions; periphery rounded; sutures distinct, depressed; wall thick, arenaceous, smooth; aperture semicircular, depressed. Diameter about 2 mm.

Holotype (MKIT* coll. cat. no. 12) from the Paleogene sediments in Yamaguchi, Shimabara Peninsula, Nagasaki Prefecture, MKIT loc. No. SY-1014 (lat. 32°38'N., long.

* MKIT — Mining Department, Kyushu Institute of Technology.

130°11'E.)

This species differs from *Ammodiscus parri* Crespin (Oligocene-early Miocene) of Victoria, Australia in having only few coiled chambers.

Occurrence: Few, from the Paleogene sediments in the Shimabara Peninsula, Nagasaki Prefecture.

Genus *Ammodiscoides* Cushman, 1909

Ammodiscoides hanzawai Murata and Sugahara, n. sp.

Pl. 32, figs. 5, 6, 7.

Test free, early stage coils in conical spire, later spreading out and becoming nearly planispiral, periphery rounded; spiral sutures distinct; composed of three whorls with the tube very gradually increasing in size; wall smooth, very finely arenaceous, white except for dark spiral suture, often appearing translucent; aperture distinct, at end of tubular chamber. Diameter about 1.3 mm., thickness, 0.23 mm.

Holotype (MKIT coll. cat. no. 13) from the Sumitomo Ariake well, Ariake-Bay, Kumamoto Prefecture, MKIT loc. No. AS-1 (lat. 32°54' N., long. 130°28'E.)

Occurrence: Few; from a black shale facies of the Paleogene sediments in Shimajima, and Kami-shima, Amakusa, Kumamoto Prefecture and Shimabara Peninsula, Nagasaki Prefecture.

Family Textulariidae

Genus *Vulvulina* d'Orbigny, 1826

Vulvulina sumitomo Murata and Sugahara, n. sp.

Pl. 32, figs. 1, 2, 3.

Test small, thin, compressed, periphery acute, but not keeled, early stage biserial, later chambers (as many as four) uniserial: chambers rather high, sloping; sutures of biserial portion flush with surface, slightly depressed in later portion; wall smoothly finished; often with short spinose projections at peripheral margin of test; aperture elongate, terminal. Length 1.3-0.9 mm.

Holotype (MKIT coll. cat. no. 14) from the Sumitomo Ariake well, Ariake-Bay, Kumamoto Prefecture, MKIT loc. No. AS-2 (lat. 32°55' N., long. 130°28'E.)

This species is closely related with *V. chirana* Cushman and Stone (late Eocene) from Peru and Ecuador, but is distinct in showing smooth and fine texture.

Occurrence: Common, only found from the Sumitomo Ariake well, Ariake-Bay, Kumamoto Prefecture.

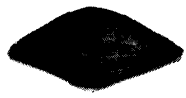
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EXPLANATION OF PLATE 32

- Figs. 1, 2, 3. *Vulvulina sumitomo* Murata and Sugahara n. sp. × 30
- Fig. 4. *Ammodiscus* cf. *incertus* (d'Orbigny) × 30
- Figs. 5, 6, 7. *Ammodiscoides hanzawai* Murata and Sugahara, n. sp. . . × 30
- Figs. 8, 9. *Ammodiscus ariakensis* Murata and Sugahara, n. sp. . . . × 30



1a



2a



3a



1b



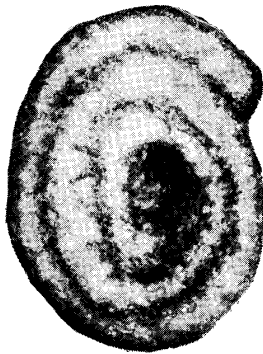
2b



3b



4



5a



5b



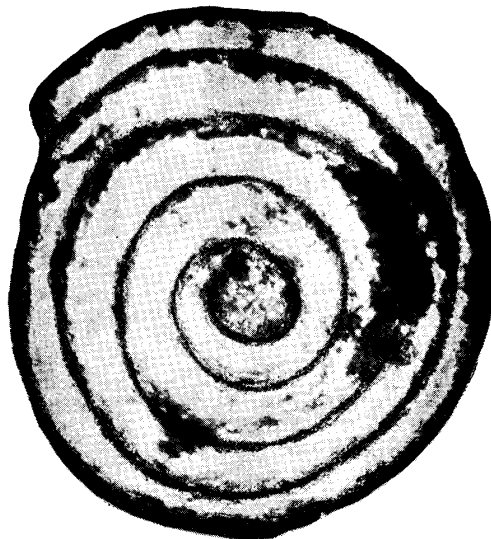
6



7



8a



8b



9