

***Makrokylindrus* (*Makrokylindrus*) *hystrix* sp. nov. and
Leptostylis quadridentata sp. nov., Two New
Abyssal Cumaceans from the Japan
Trench (Crustacea)**

by

Sigeo GAMÔ

(Received April 30, 1985)

Résumé. Deux nouvelles espèces de Diastylidae (Cumacés), *Makrokylindrus* (*Makrokylindrus*) *hystrix* sp. nov. et *Leptostylis quadridentata* sp. nov., provenant de la fosse du Japon, au large du Tôhoku, le Nord-Est du Japon, sont décrites et illustrées.

While working on the abyssal crustaceans collected by the marine biological researches of the Japan Trench and its vicinity, far off the Tohoku District, the north-eastern part of Japan, which were carried out by the research vessel, *Hakuho-maru* of the Ocean Research Institute, University of Tokyo, during 6 June – 4 August 1981 of the cruise KH-81-4. Two new species of abyssal cumaceans, *Makrokylindrus* (*Makrokylindrus*) *hystrix* sp. nov. and *Leptostylis quadridentata* sp. nov. (Diastylidae) were found in the collection. The former new species is very like *M. (M.) tubulicauda* (Calman, 1905) from the North Atlantic (Scott, 1912; Stebbing, 1913; Fage, 1929, 1951) and *M. (M.) hadalis* Jones, 1969 from the Java Trench. The latter new species is well characterized by having four large dorsal teeth on the fifth abdominal segment.

The holotype specimens are deposited in the collections of the Ocean Research Institute, University of Tokyo.

The author is greatly indebted to Dr. Masuoki Horikoshi, former Professor of the Ocean Research Institute, University of Tokyo, and Director of the cruise, for providing the facilitates for the study during the cruise. And his thanks also due to the staff members of the research vessel for their general assistance and to the members of the institute who gave him their kind help in many ways.

* Department of Biology, Faculty of Education, Yokohama National University, Tokiwadai, Hodogaya-ku, Yokohama 240, Japan.

Makrokylindrus (Makrokylindrus) hystrix sp. nov.

(Figs. 1, 2)

Material. Female holotype, body length about 17.3 mm (including telson); St. 12-Bt (KH-81-4), 38°33.3'N, 144°19.4'E—38°30.3'N, 144°20.3'E, far off Kinkazan, depth 6380—6450 m, 31 July, 1981. Gear: beam-trawl of 4 m span.

Description. The carapace (Fig. 1, A, B) is somewhat depressed dorso-ventrally, pear-like outline in dorsal aspect, and a little elevated towards the rear as seen from the side. It is about $1/2$ as long as deep, $3/4$ as long as broad, and much shorter than $1/3$ of the total body length (including the telson). The surface of the carapace is covered with small spines and sparse long hairs. The antero-lateral or lower margin is furnished with spines which are similar to those on the carapace surface. The frontal lobe is large, rounded and a little raised dorsally. The pseudorostral lobes are prominent, horizontal, and meet in front of the ocular lobe for a distance about $1/5$ as long as the carapace length. The antennal notch is shallowly concave.

The combined length of all the free thoracic segments (Fig. 1, A, B) is about $1/2$ as long as the carapace. Each of the thoracic segments is provided with small spines and sparse long hairs. The first segment is slightly narrower and deeper than the second, and raised dorsally. The posterior four segments are successively decreased in breadth and depth. The third segment is not fused with the fourth one. The fourth and fifth segments are provided with round postero-lateral corners.

The abdomen (Fig. 1, A, B) is rather slender, nearly as long as the cephalothoracic region, and provided with small spines and sparse hairs. The first segment is a little longer than each of the succeeding subequal three segments. The fifth segment is about $1\frac{1}{2}$ times as long as the fourth, and about $2\frac{1}{2}$ times as long as the sixth segment.

The telson (Fig. 1, C, D) is long, cylindrical and about as long as the fourth and fifth abdominal segments combined; its surface is entirely covered with spinules. The post-anal portion is about $1/6$ as long as the pre-anal portion. The apical and lateral spines are missing.

The peduncle of the antennule (Fig. 2, A) consists of three segments; each segment bears spines and hairs. The first segment is a little longer than the distal two segments combined. The second segment is about $1/4$ as long as the third. The main flagellum is a little more than $1/2$ as long as the peduncle, and consists of three cylindrical and one minute segments; the second segment is a little longer than the first or the third segment, which has an aesthetasc. The distal minute segment bears two aesthases and short bristles. The accessory flagellum also has three segments; the first segment is $1/3$ as long as the second; the third segment

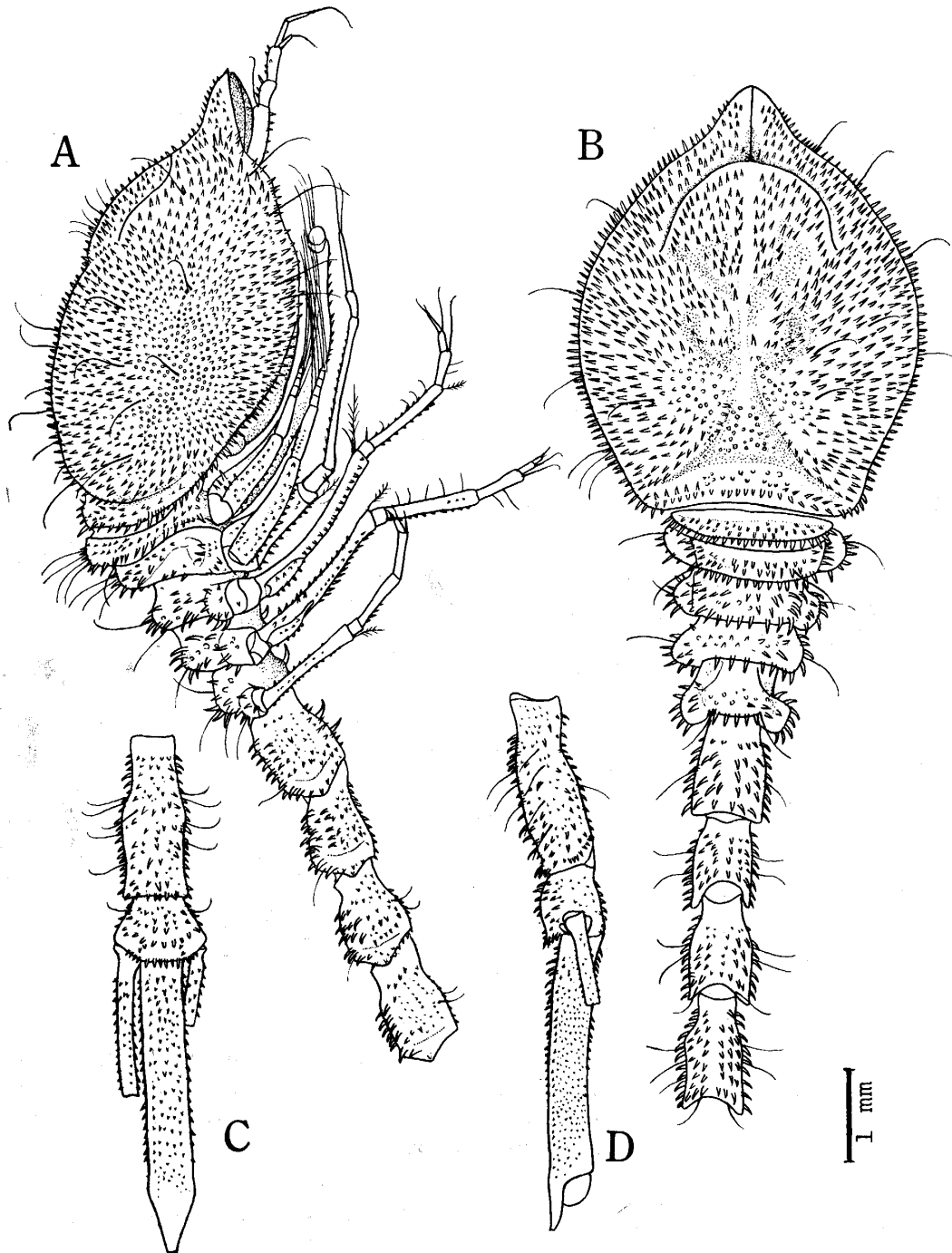


Fig. 1. *Makrokylindrus* (*Makrokylindrus*) *hystrix* sp. nov., holotype female, length about 17.3 mm (including telson). A: anterior portion of body, lateral view. B: idem, dorsal view. C: fifth and sixth abdominal segments with telson and basal portion of uropod, dorsal view. D: idem, lateral view.

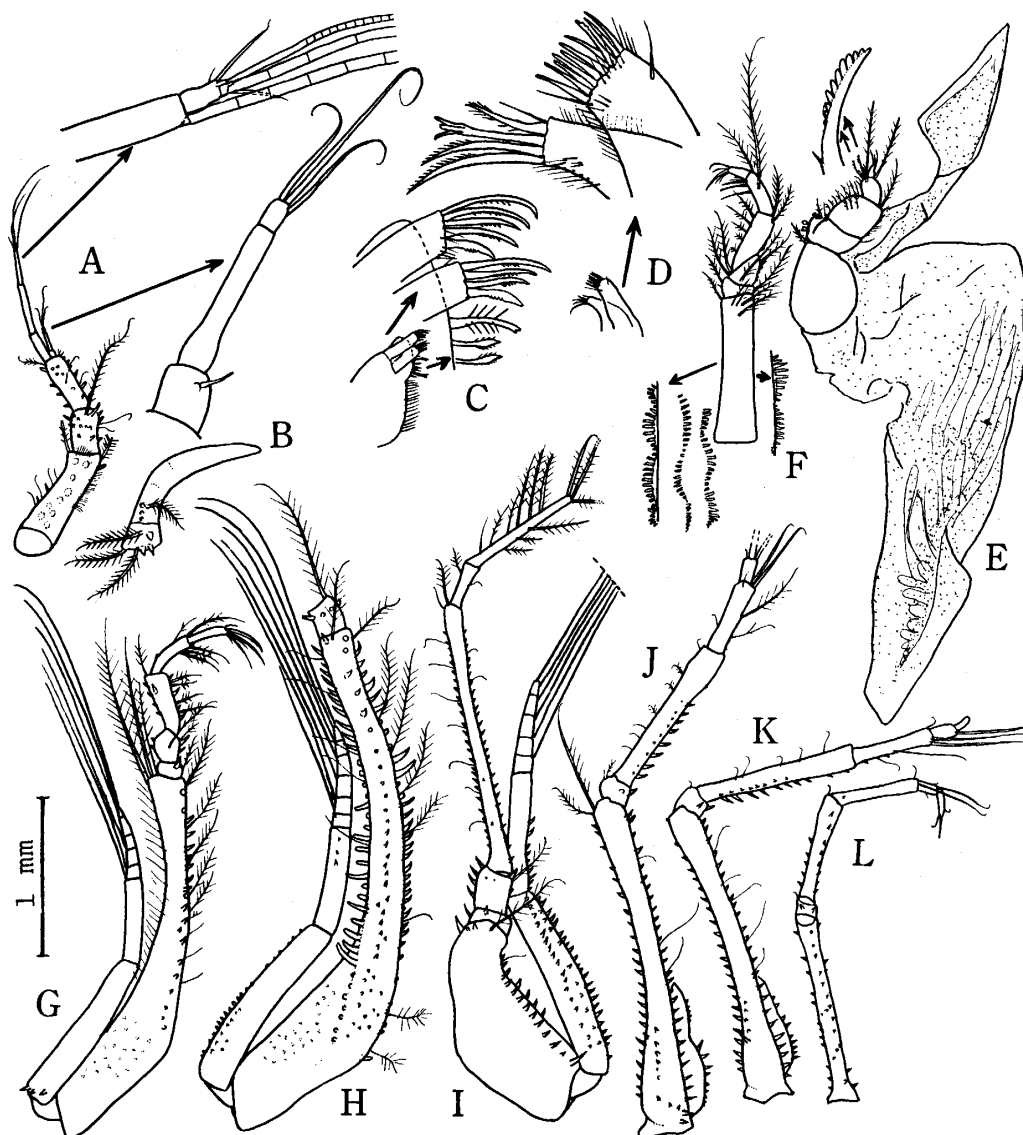


Fig. 2. *Makrokylindrus (Makrokylindrus) hystrix* sp. nov., holotype female. A: antennule. B: antenna. C: maxilla. D: maxillule. E: first maxilliped. F: second maxilliped. G: third maxilliped. H: first peraeopod. I: second peraeopod. J-L: third (J)-fifth (L) peraeopods.

is about $1/5$ as long as the second and furnished with three long setae.

The antenna (Fig. 2, B) is small, rudimentary and furnished with spinules and four plumose hairs on the basal portion.

The mandible is typical for the genus. There are about 17 setae on the cutting lobe on the right mandible.

The maxillule and maxilla are as shown in Fig. 2, D and C.

The first maxilliped (Fig. 2, E) bears about 20 branchial lobules on the branchial

part.

The second maxilliped is as shown in Fig. 2, F.

The third maxilliped (Fig. 2, G) has a well-developed exopod. The basis is slender, moderately curved, a little expanded distally, rather robust at the base, and slightly less than twice as long as the remaining distal segments together. It has a row of spinules and plumose hairs on the inner, fine hairs on the outer border, and three long plumose hairs on the outer distal angle. The ischium has a plumose hair and a spinule on the inner border, and about $1/2$ as long as the merus, which bears two spinules and two plumose hairs on the inner and two spinules on the outer border. The carpus bears four spinules and plumose hairs on the inner border, four spinules on the outer border, spinules and a plumose hair at the apex, and about $1/3$ as long as the ischium and merus combined. The propodus is about $3/4$ as long as the carpus. The dactylus is shorter than the propodus.

Distal four segments of the first peraeopod (Fig. 2, H) are missing. The basis has a well-developed exopod, and the distal portion is narrowed soon after the base. It has a row of slender long spines, and plumose or bare hairs on each lateral border, and a longitudinal row of spinules in the middle on the ventral surface. The ischium is provided with a transverse row of spinules near the distal end, and a plumose hair on the inner distal angle.

The second peraeopod (Fig. 2, I) has a well-developed exopod, and about $1\frac{1}{4}$ times as long as the basis of the first peraeopod. The basis is short, rather robust at base, much less than $1/2$ as long as the remaining distal segments together, and furnished with two rows of spinules on the outer border and three spinules and a plumose hair at its apex. The ischium is very short, and provided with two spinules on the inner border and a plumose hair on the outer distal angle. The carpus is slender, cylindrical in shape, and a little shorter than the propodus and dactylus combined; the lateral borders bear spinules and sparse fine hairs. The dactylus is slender, cylindrical in shape, and about 3 times as long as the propodus; there are several plumose hairs on the lateral borders and three plumose setae at the apex.

The third and fourth peraeopods (Fig. 2, J, K) have rudimentary exopods. The exopod is rather large, about $1/3$ as long as the basis, and furnished with spinules on the lateral borders. The third peraeopod is a little shorter than the second, and slightly longer than the fourth. In the third and fourth peraeopods, the basis is a little robust at base, and almost as long as the remaining distal segments together; the ischium is very short; the merus is nearly $1/2$ as long as the basis; the carpus is about $1/2$ as long as the merus, and nearly twice as long as the short propodus and dactylus combined.

The fifth peraeopod (Fig. 2, L) is slightly more than $2/3$ as long as the fourth

peraeopod. The basis is much shorter than the remaining distal segments together.

The uropod (Fig. 1, C, D) are missing, except for the proximal portion of the peduncle which bears spinules on its surface.

Remarks. *M. (M.) hystrix* sp. nov. belongs to the subgenus *Makrokyllindrus* Băcescu, 1962 by that the free thoracic segments are all articulated to one another, the insertion of the fifth peraeopod is situated on the latero-ventral portion of the fifth thoracic segment, and the apex of the telson much exceeds the anal valves. The new species is very allied to *M. (M.) tubulicauda* (Calman, 1905) from the North Atlantic, 700—1100 m deep, and *M. (M.) hadalis* Jones, 1969 from the Java Trench, 7160 m deep, in general appearance, but it is distinguished from *M. (M.) tubulicauda* by that the basis of the third maxilliped is more slender, and from *M. (M.) hadalis* and *tubulicauda* in that the spines on the antero-lateral portion of the carapace are not longer than those of the other portion of the body surface.

Leptostylis quadridentata sp. nov.

(Fig. 3)

Material. Juvenile female holotype (manca larval stage?), body length about 12.3 mm (including telson); St. 11-Bt (KH-81-4), 38°33.9'N, 145°17.7'E—38°35.5'N, 145°15.1'E, far off Kinkazan, depth 5350—5370 m, 1 August, 1981. Gear: beam-trawl of 4 m span.

Description. The carapace (Fig. 3, A, B) is a little shorter than 1/4 of the total length of the animal (including the telson), and a little more than the breadth, which is much more than the depth. The integument is well calcified and furnished with fine sparse spinules on the surface. From the dorsal aspect the carapace is almost pear-like in shape, and as seen from the side its dorsal outline is moderately elevated towards the rear. The ocular lobe is narrow, rather small, and without visual elements. The pseudorostral lobes meet in front of the ocular lobe for a distance about 1/8 as long as the carapace length. The antennal notch is very prominent. The antero-lateral or lower margin bears small spines, which are much slender and longer on the antero-lateral corner.

The combined length of all the free thoracic segments (Fig. 3, A, B) is about 2/3 as long as the carapace. The first segment is the deepest and widest. The fifth segment has no peraeopod.

The abdomen (Fig. 3, A, B) is slender, nearly as long as the cephalothoracic region, and provided with sparse spinules. The first four segments are subequal in length. The fifth segment is about 1 1/2 times as long as the fourth, a little carinated dorsally, and furnished with four large teeth which are a little directed forwards (Fig. 3, B). The sixth segment (Fig. 3, A, C) is 3/4 as long as the fifth.

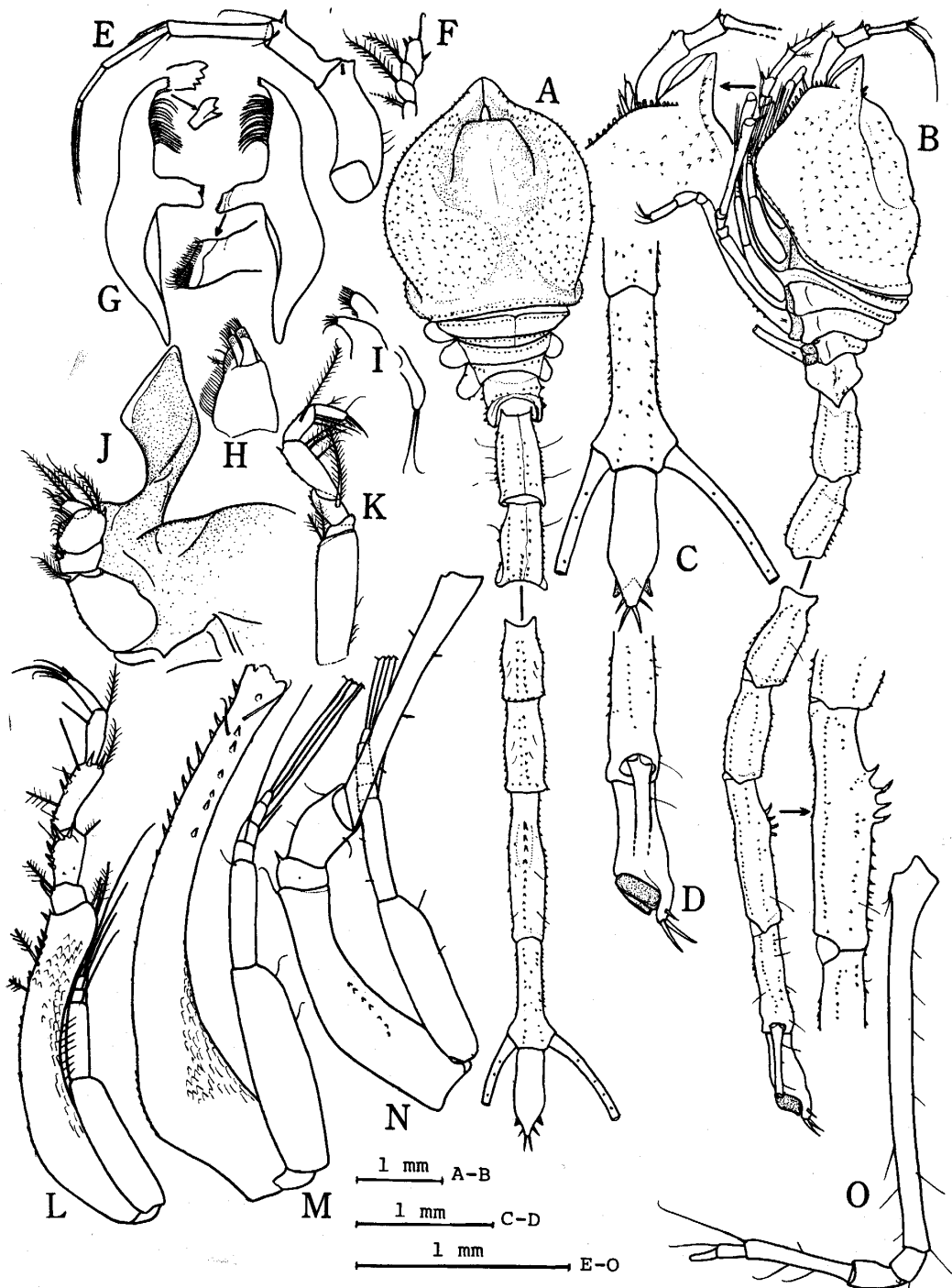


Fig. 3. *Leptostylis quadridentata* sp. nov., holotype juvenile female (manca?), length about 12.3 mm. A: dorsal view. B: lateral view. C: fifth and sixth abdominal segments with telson and basal portion of uropods, dorsal view. D: idem, lateral view. E: antennule. F: antenna. G: mandibles. H: maxilla. I: maxillule. J: first maxilliped. K: second maxilliped. L: third maxilliped. M: first pereopod. N: second pereopod. O: third pereopod.

The telson (Fig. 3, A, C and D) is slightly more than $3/4$ as long as the sixth abdominal segment, and provided with a pair of apical and lateral spines.

The peduncle of the antennule (Fig. 3, E) consists of three segments. The first segment is slightly less than twice as long as the second, and has a small tooth on the distal angle. The second segment has a spine and two hairs on the distal portion. The third segment is about $1\frac{1}{3}$ times as long as the second. The main flagellum is less than as long as the peduncle, and consists of two cylindrical and three minute segments; the first segment is a little longer than the second; the distal three minute segments have aesthetascs. The accessory flagellum is very short, about $1/2$ as long as the first segment of the main flagellum, and consists of three segments, of which distal two are very small.

The antenna (Fig. 3, F) is very small, and provided with a plumose hair on each of the basal segments, and a short bare seta and three spinules on the distal segment.

The mandibles (Fig. 3, G) are typical form of the genus. The right mandible has 14 setae and the left mandible has a lacinia mobilis and 14 setae on the cutting lobe.

The maxillule and maxilla are as shown in Fig. 3, I and H.

The first and second maxillipeds are shown in Fig. 3, J and K.

The third maxilliped (Fig. 3, L) has a well-developed exopod. The basis is rather stout, moderately curved, and a little more than $1\frac{1}{3}$ times as long as the distal segments together. There are several spinules on the inner distal border. The ischium is short, about $1/2$ as long as the merus, and provided with a spine and a plumose hair on the inner distal angle. The merus is a little shorter than the carpus, and bears three spinules on the inner border and two spinules near the distal end. The carpus has several hairs and two spinules on the inner border and two spinules and a plumose hair on the distal end. The propodus is a little shorter than the carpus, and provided with a bare hair on the inner border and a plumose hair on the outer distal angle. The dactylus is shorter than the propodus, and furnished with long terminal setae.

Five distal segments of the first peraeopod (Fig. 3, M) are missing. The basis is also incomplete; its distal portion is narrowed, moderately curved, and furnished with spines on the inner border and a longitudinal row of spines on the ventral surface.

Two distal segments of the second peraeopod (Fig. 3, N) are missing. The basis is more than $3/4$ as long as the distal three segments combined. The carpus is rather stout, and slightly longer than the basis.

The third peraeopod (Fig. 3, O) is long and slender. The basis is about $1\frac{1}{2}$ times as long as the basis of the second peraeopod, and much more than $1\frac{1}{2}$ times

as long as the remaining distal segments together.

The fifth pereopod is quite wanting (Fig. 3, B), and there is no trace of the appendage on the last thoracic segment. It may be a juvenile character.

Well-developed exopods are present on the first and second pereopods, and minute rudimentary exopods on the third and fourth pereopods.

The rami of the uropod (Fig. 3, A, C) are wanting in either side. The peduncle is also incomplete.

Remarks. *L. quadridentata* sp. nov. is easily distinguished from any known species in the genus by having four large dorsal teeth on the fifth abdominal segment. The specimen is rather large and the body is measured about 12.3 mm, but the absence of the fifth pereopods may be only an indication of immaturity in manca larval character. The other main features of the specimen may be retained in the adult.

Leptostyloides calcar Jones, 1969 from the Kermadec Trench, 4410 and 4540 m deep, is well distinguished from the present new species by that *L. calcar* has different shapes of the carapace and the dorsal projection on the fifth abdominal segment.

摘 要

1981年6月6日より8月4日まで、東京大学海洋研究所の白鳳丸によって、東北沖の日本海溝付近海域の海産生物を中心にした研究航海 (KH-81-4) が行なわれた。この航海でビーム・トロールによって採集された次に示すクマ類2種 (Diastylidae) は研究の結果、何れも新種として記載さるべきものであった。

Makrokylidrus (*Makrokylindrus*) *hystrix* sp. nov. は、金華山の遙か沖の St. 12-Bt (KH-81-4), 水深 6380-6450 m より得られ、体長約 17.3 mm を有する雌であった。*Makrokylindrus* 属は Băcescu (1962) によって、全自由胸節が自由関節している *Makrokylindrus* 亜属と、第3と第4自由胸節が互いに融合している *Coalescuma* 亜属とに分けられている。本新種はこのうちの前者に属する。本種に近似のものに、北大西洋の 700-1100 m 深より知られている *M. (M.) tubulicauda* (Calman, 1905) と、ジャワ海溝の 7160 m 深より記載された *M. (M.) hadalis* Jones, 1969 があるが、本新種の体表に生じている棘が、背甲前方、特に前側縁付近で長くなっていないこと、第3顎脚と第1歩脚の基節の形態などに相違がみられることなどによって、前述の2既知種から明らかに区別される。

Leptostylis quadridentata sp. nov. は、金華山の遙か沖の St. 11-Bt (KH-81-4), 水深 5350-5370 m から採集された。体長約 12.3 mm の幼雌の標本はクマ類中では可成り大きい方であるが、第5歩脚が全く現われておらず、未だ manca 幼生期にあるものと思われる。*Leptostylis* 属の既知の種には、第5腹節背面に4歯をもったものは知られていない。ケルマデック海溝の 4410 と 4450 m 深産の *Leptostyloides calcar* Jones, 1969 には、第5腹節背面に奇異な突起物をもつが、背甲とこの奇異な突起物との形態は、全く本新種と異なっている。

References

- Băcescu, M.C., 1962. Contribution à la connaissance du genre *Markrokylindrus* Stebbing (Crustacea Cumacea), espèces nouvelles recueillies au cours des campagnes du Lamont Geological Observatory de New York. Abyssal Crustacea, Vema Research Series. (1): 207-223. Colombia Univ. Press, New York and London.
- Calman, W.T., 1905. The marine fauna of the West Coast of Ireland, Part IV. Cumacea. Fish. Ireland, Sci. Invest., 1904. (1): 3-52, pls. 1-5.
- Fage, L., 1929. Cumacés et Leptostracés provenant des campagnes scientifiques du Prince Arbert I^{er} de Manaco. Résult. Camp. scient. Prince Arbert I. 77: 1-51, pls. 1-3.
- Fage, L., 1951. Cumacés. Faune de France. 54: 1-136. Paul Lechevalire, Paris.
- Jones, N.S., 1969. The systematics and distribution of Cumacea from depths exceeding 200 meters. Galathea Rep., 10: 99-180.
- Scott, T., 1912. Notes on small Crustacea from the "Goldseeker" collections. Sci. Invest. Fish. Board Scotland, 1911. (1): 1-7, pls. 1-2.
- Stebbing, T.R.R., 1913. Cumacea. Tierreich. 39: 1-210. Berlin.