

**STUDIES ON THE FAMILY PERIDINIDAE
AN UNFINISHED MONOGRAPH OF THE
ARMOURED DINOFLAGELLATA**

BY

THE LATE TOHRU H. ABÉ, D.SC.

FEBRUARY 1981

ISSN 0389-6609

KYOTO UNIVERSITY
PUBLICATIONS OF THE
SETO MARINE BIOLOGICAL LABORATORY
SPECIAL PUBLICATION SERIES
VOLUME VI

**STUDIES ON THE FAMILY PERIDINIDAE
AN UNFINISHED MONOGRAPH OF THE
ARMOURED DINOFLAGELLATA**

BY
THE LATE TOHRU H. ABÉ, D.SC.

Prepared for Publication by
MINORU SAITO
Yokohama National University
and
Edited by
THE SETO MARINE BIOLOGICAL LABORATORY

FEBRUARY 1981

The *Publications of the Seto Marine Biological Laboratory, Special Publication Series*, is the new name for the *Special Publications from the Seto Marine Biological Laboratory. Special Publication Series*, being the *Special Publications*, was intended to publish the results of research and investigation on a specific subject in each series, and has published the taxonomic monographs as a separate series as well. It is issued at irregular intervals in a volume, divided into parts if necessary, and the former series should be regarded as the preceding volumes.

The *Special Publication Series* so far issued are as follows:

Volume I (as Series I). Biological Results of the Japanese Antarctic Research Expedition 1-17. 1959-1962. Completed.

Volume II (as Series II). Ecology and Biological Production of Lake Nakami and Adjacent Regions, Part I-Part II, No. 1-No. 5. 1964-1968. Uncompleted.

Volume III (as Series III). Taxonomic Studies of Caprellids (Crustacea, Amphipoda, Caprellidae) found in the Japanese and Adjacent Waters. 1976. Completed.

Volume IV (as Series IV). Studies on Philippine Marine Red Algae. 1977. Completed.

Volume V (as Series V). Haplostominae (Copepoda, Cyclopoida) associated with Compound Ascidiens from the San Juan Archipelago and Vicinity. 1977. Completed.

**STUDIES ON THE FAMILY PERIDINIDAE
AN UNFINISHED MONOGRAPH OF THE
ARMOURED DINOFLAGELLATA**

BY

THE LATE TOHRU H. ABÉ, D.SC.

PREPARED FOR PUBLICATION BY
MINORU SAITO
YOKOHAMA NATIONAL UNIVERSITY

AND

EDITED BY
THE SETO MARINE BIOLOGICAL LABORATORY

FEBRUARY 1981

The present paper has appeared in the *Publications of the Seto Marine Biological Laboratory, Special Publication Series*, formerly the *Special Publications from the Seto Marine Biological Laboratory*, Volume VI, issued on February 25th, 1981, and should be referred to this publication to avoid unnecessary confusion, when cited.

Edited by

Takashi Tokioka, D. Sc.

The former Director of the Seto Marine Biological Laboratory
and Professor Emeritus of Kyoto University
and

Eiji Harada, D. Sc.

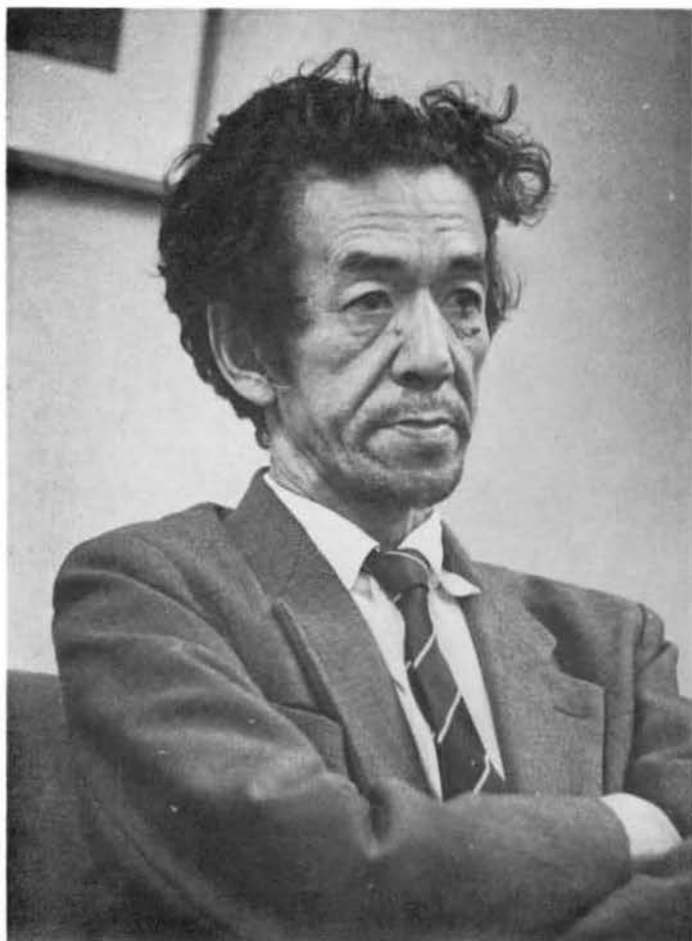
The Chief of the Editorial Board at the Seto Marine Biological Laboratory

Issued on February 25th, 1981

Printed in Japan
by the Nippon Printing & Publishing Co., Ltd.
Osaka, Japan

TO TOHRU

HIDEKO



DR. TOHRU H. ABÉ
1899-1971

PROFESSOR TOHRU H. ABÉ was born in Imabari, Ehime Prefecture, on August 1, 1899. He was educated at the Zoological Institute, College of Science, Tokyo Imperial University after his graduation successively from the Imabari Middle School and then the Matsumoto High School. His interest in protozoology was born while he was in the course of the middle school, evidently under the influence of his teacher in biology, Professor Y. Ozaki of the Hiroshima University, who was then teaching at that middle school. After graduation from the Zoological Institute of Tokyo Imperial University in 1925, he continued his study in protozoology at the same institute for about fifteen years, then taught as a professor at the Nihon Medical College, Tokyo, for five years, moved to the Hosei University, Tokyo, and retired from lectureship at this university in 1965. Though his interest was wide, his main interests and biological activities were seemingly concentrated in the systematic study of armoured dinoflagellates. Especially, the first four parts of his life work, the Monograph of the Armoured Dinoflagellata, appeared in the Publications of the Seto Marine Biological Laboratory, attracted the attention of those who were concerned with this group of organisms occurring in plankton. The publication of the succeeding parts, particularly the largest one dealing with the group of *Peridinium*, was looked for expectantly. Unfortunately, however, this could not be done. He was poisoned by carbon monoxide on an accident in his room in 1969. For sometime, he looked recovered, but he could not escape from the after-effect of poisoning finally. He passed away on February 25, 1971. He contributed to the establishment of the Japan Society of Protozoology and was an honorary member of the Plankton Society of Japan. (T.T.)

Ref: Bulletin of Plankton Society of Japan, Vol. 18, No. 1, 1971, pp. 1-2.

List of Publications by Professor T. H. Abé

- Abé, T. H., 1927. Report of the biological survey of Mutsu Bay. 3. Notes on the protozoan fauna of Mutsu Bay. I. Peridiniales. Sci. Rep. Tohoku Imp. Univ., Ser. 4, **2** (4): 383-438.
- 1927. Classification of *Balantidium* (preliminary report). Zool. Mag., **39**: 191-196. (In Japanese with English notes).
- 1927. On the ameboid movement. Zool. Mag., **39**: 100-104. (In Japanese with English notes).
- 1936. Report of the biological survey of Mutsu Bay. 29. Notes on the protozoan fauna of Mutsu Bay II. Genus *Peridinium*; subgenus *Archaeoperidinium*. Sci. Rep. Tohoku Imp. Univ., Ser. 4, **10** (4): 639-686.
- 1936. Report of the Biological Survey of Mutsu Bay. 30. Notes on the Protozoan Fauna of Mutsu Bay III. Subgenus *Protoperidinium*: Genus *Peridinium*. Sci. Rep. Tohoku Imp. Univ., Ser. 4, **11** (1): 19-48.
- 1936. *Diplopsalis* and its allied species. Zool. Mag., **48**: 747-752. (In Japanese with English notes).
- 1940. Studies on the protozoan fauna of Shimoda Bay. Genus *Peridi-*

- nium*; Group Globula. Sci. Rep. Tokyo Bunrika Daigaku, Sec. B, **92**: 27-38.
- 1941. Studies on the protozoan fauna of Shimoda Bay. I. The Diplo-salis group. Records of Oceanogr. Works in Japan, **12** (2): 121-144.
- 1957. Ameboid movement and protoplasmic structure. Kagaku (Iwa-nami), **27** (7): 357-364. (in Japanese)
- 1961. Morpho-physiological study of ameboid movement I. Dynamic organization of striata amebae. Cytologia, **26**: 378-407.
- 1962. Morpho-physiological study of ameboid movement II. Ameboid movement and the organization pattern in striata ameba. Cytologia, **27**: 111-139.
- 1963. Morpho-physiological study of ameboid movement III. Invisible gel structure in the endoplasm of an ameba of the verrucosa type. J. Protozool., **10** (1): 94-101.
- 1964. Mechanisms of ameboid movement based on dynamic organiza-tion: Morphophysiological study of ameboid movement, IV. Primitive Motile Systems in Cell Biology, ed. by Allen and Kamiya, Academic Press, 221-236.
- 1965. Red water and dinoflagellates as primary sources of petroleum. 2nd International Conference of Protozoology in Excerpta Medica International Congress, Ser. 91, 10.
- 1966. The armoured Dinoflagellata: I. Podolampidae. Publ. Seto Mar. Biol. Lab., **14** (2): 129-154.
- 1967. The armoured Dinoflagellata: II. Prorocentridae and Dinophysidae (A). Publ. Seto Mar. Biol. Lab., **14** (5): 369-389.
- 1967. The armoured Dinoflagellata: II. Prorocentridae and Dinophysidae (B)—*Dinophysis* and its allied genera. Publ. Seto Mar. Biol. Lab., **15** (1): 37-78.
- 1967. The armoured Dinoflagellata: II. Prorocentridae and Dino-physidae (C)—*Ornithocercus*, *Histioneis*, *Amphisolenia* and others. Publ. Seto Mar. Biol. Lab., **15** (2): 79-116.

Index to the species

<p><i>Apsteinia</i> n. nom. 49</p> <p><i>Chalubinskia</i> WOLOSZ. 49</p> <p style="padding-left: 20px;"><i>tatica</i> WOLOSZ. 49</p> <p><i>Dinosphaera</i> KOF. et MICH. 9</p> <p style="padding-left: 20px;"><i>palustris</i> (LEMM.) KOF. et MICH. 9</p> <p><i>Diplopsalis</i> BERGH 24</p> <p style="padding-left: 20px;"><i>brevis</i> n. sp. 31</p> <p style="padding-left: 20px;"><i>lebourae</i> n. sp. 28</p> <p style="padding-left: 20px;"><i>lenticula</i> BERGH 26</p> <p style="padding-left: 20px;"><i>minuta</i> (ABÉ) 31</p> <p style="padding-left: 20px;"><i>parvum</i> (ABÉ) 32</p> <p style="padding-left: 20px;"><i>torta</i> ABÉ 30</p> <p><i>Diplopsalopsis</i> MEUN. 36</p> <p style="padding-left: 20px;"><i>asymmetrica</i> (MANGIN) 44</p> <p style="padding-left: 20px;"><i>globula</i> ABÉ 44</p> <p style="padding-left: 20px;"><i>minor</i> (PAULS.) 38</p> <p style="padding-left: 20px;"><i>orbicularis</i> (PAULS.) 44</p> <p style="padding-left: 20px;">var. <i>orbicularis</i> n. nom. 45</p> <p style="padding-left: 20px;">var. <i>ovata</i> ABÉ 47</p> <p style="padding-left: 20px;"><i>steinii</i> ABÉ 44</p> <p><i>Glenodiniopsis</i> WOLOSZ. 8</p> <p style="padding-left: 20px;"><i>steinii</i> WOLOSZ. 8</p> <p><i>Gotoius</i> n. gen. 32</p> <p style="padding-left: 20px;"><i>mutsuensis</i> n. gen. n. sp. 33</p> <p><i>Minuscula</i> (PAULS.) LEBOUR 49</p> <p><i>Peridinium</i> EHR. 50</p> <p style="padding-left: 20px;"><i>achromaticum</i> LEVAND. 302</p> <p style="padding-left: 20px;"><i>aequilimbus</i> n. nom. 302</p> <p style="padding-left: 20px;"><i>acutum</i> FAURÉ-FR. 220</p> <p style="padding-left: 20px;"><i>angusticollis</i> n. sp. 204</p> <p style="padding-left: 20px;"><i>angustum</i> DANG. 265</p> <p style="padding-left: 20px;"><i>asymmetricum</i> (ABÉ) 306</p> <p style="padding-left: 20px;"><i>avellanum</i> MEUN. 281</p> <p style="padding-left: 20px;"><i>bidentatum</i> n. sp. 392</p> <p style="padding-left: 20px;"><i>bipes</i> STEIN 292</p> <p style="padding-left: 20px;"><i>brachybus</i> n. sp. 224</p> <p style="padding-left: 20px;"><i>brevipes</i> PAULS. 179</p> <p style="padding-left: 20px;"><i>carus</i> n. sp. 326</p> <p style="padding-left: 20px;"><i>cerassiformis</i> n. sp. 240</p> <p style="padding-left: 20px;"><i>cinctum</i> (MÜLL.) EHR. 290</p> <p style="padding-left: 20px;"><i>claudicans</i> PAULS. 323</p> <p style="padding-left: 20px;"><i>clavus</i> ABÉ 302</p> <p style="padding-left: 20px;"><i>complanatum</i> KARST. 319</p> <p style="padding-left: 20px;"><i>compressum</i> ABÉ 308</p> <p style="padding-left: 20px;"><i>conicoides</i> PAULS. 355</p>	<p style="padding-left: 20px;"><i>conicum</i> GRAN 371</p> <p style="padding-left: 20px;"><i>consimilis</i> n. sp. 316</p> <p style="padding-left: 20px;"><i>crassipes</i> KOF. 268</p> <p style="padding-left: 20px;"><i>decipiens</i> JÖRG. 176</p> <p style="padding-left: 20px;"><i>deficiens</i> MEUN. 374</p> <p style="padding-left: 20px;"><i>depressum</i> BAILY 321</p> <p style="padding-left: 20px;"><i>elegans</i> CLEVE 276</p> <p style="padding-left: 20px;"><i>excentricum</i> PAULS. 311</p> <p style="padding-left: 20px;"><i>expansum</i> n. sp. 394</p> <p style="padding-left: 20px;"><i>furcatum</i> n. sp. 363</p> <p style="padding-left: 20px;"><i>fusiformis</i> n. sp. 305</p> <p style="padding-left: 20px;"><i>gibberum</i> n. nom. 254</p> <p style="padding-left: 20px;"><i>globifera</i> n. nom. 195</p> <p style="padding-left: 20px;"><i>globosum</i> (GOURR.) 254</p> <p style="padding-left: 20px;"><i>globulus</i> STEIN 192</p> <p style="padding-left: 20px;"><i>grande</i> KOF. 271</p> <p style="padding-left: 20px;"><i>granii</i> OST. 182</p> <p style="padding-left: 20px;"><i>hemisphericum</i> ABÉ 303</p> <p style="padding-left: 20px;"><i>hirobis</i> ABÉ 224</p> <p style="padding-left: 20px;"><i>isthmus</i> n. sp. 250</p> <p style="padding-left: 20px;"><i>leonis</i> PAV. 384</p> <p style="padding-left: 20px;"><i>majus</i> DANG. 196</p> <p style="padding-left: 20px;"><i>marukawai</i> ABÉ 187</p> <p style="padding-left: 20px;"><i>monospinum</i> PAULS. 307</p> <p style="padding-left: 20px;"><i>monovelum</i> ABÉ 282, 307</p> <p style="padding-left: 20px;"><i>multistriatum</i> KOF. 347</p> <p style="padding-left: 20px;"><i>munobis</i> ABÉ. 347</p> <p style="padding-left: 20px;"><i>mutsuensis</i> ABÉ 307</p> <p style="padding-left: 20px;"><i>oblongum</i> (AURIV.) 327</p> <p style="padding-left: 20px;"><i>obtusum</i> (KARST.) FAURÉ-FR. ... 379</p> <p style="padding-left: 20px;"><i>oceanicum</i> VANHÖFF. 282, 324</p> <p style="padding-left: 20px;"><i>pallidum</i> OST. 229</p> <p style="padding-left: 20px;"><i>parvum</i> n. sp. 222</p> <p style="padding-left: 20px;"><i>paulseni</i> n. sp. 359</p> <p style="padding-left: 20px;"><i>pellucidum</i> (BERGH) SCHÜTT 226</p> <p style="padding-left: 20px;"><i>pentagonum</i> GRAN 386</p> <p style="padding-left: 20px;"><i>perrieri</i> FAURÉ-FR. 282</p> <p style="padding-left: 20px;"><i>petersi</i> n. sp. 361</p> <p style="padding-left: 20px;"><i>punctatum</i> (CLEVE) 303</p> <p style="padding-left: 20px;"><i>punctulatum</i> PAULS. 352</p> <p style="padding-left: 20px;"><i>pyriforme</i> PAULS. 202</p> <p style="padding-left: 20px;"><i>quarnerense</i> (SCHRÖD.) BROCH ... 196</p> <p style="padding-left: 20px;"><i>quincorne</i> ABÉ 294</p> <p style="padding-left: 20px;"><i>rectum</i> KOF. 203</p> <p style="padding-left: 20px;"><i>rhombiformis</i> n. sp. 354</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<i>rhomboidalis</i> n. sp.	235	<i>tabulatum</i> (EHR.) CLAP. et LACH.	281, 287
<i>roseum</i> PAULS.	184	<i>tatricum</i> WOLOSZ.	281, 287
<i>rotundatum</i> ABÉ	303	<i>thorianum</i> PAULS.	301
<i>schilleri</i> PAULS.	242	var. <i>planiceps</i> n. var.	302
f. <i>complexum</i> n. f.	244	<i>triquetra</i> (STEIN) LEBOUR	298
<i>sinuosum</i> (LEMM.) JÖRG.....	396	<i>truncus</i> ABÉ.....	204
<i>solitarium</i> ABÉ.....	186	<i>tumidum</i> OKAMURA.....	273
sp.	368	<i>valgus</i> n. sp.	318
<i>sphaericum</i> OKAMURA 238		<i>ventralis</i> ABÉ 188	
<i>sphaeroides</i> DANG. 195		<i>ventricum</i> ABÉ 304	
<i>spinulosum</i> SCHILL. 262		<i>volzii</i> LEMM. 293	
<i>subcurvipes</i> LEBOUR..... 178		<i>willei</i> HUITF.-KAAS 294	
<i>subinermis</i> PAULS..... 365		<i>yonedai</i> n. sp. 206	
<i>subpyriforme</i> DANG..... 204			

Information on the copies available from:
Kiyoji Nakai, Academia Scientific Book Inc.,
Daido-Bld., Hongo 2-39-6, Bunkyo-ku, Tokyo 113,
Japan.

非 売 品

昭和56年2月17日印刷

昭和56年2月25日発行

著 者 阿 部 徹 (遺 稿)
編 集 京都大学 瀬戸臨海実験所
理学部
649-22 和歌山県西牟婁郡白浜町
印 刷 日本印刷出版株式会社
553 大阪市福島区吉野1丁目2-7
発 行 阿 部 徹 遺 稿 出 版 会
113 東京都文京区本郷2-39-6
大同ビル
アカデミア洋書株式会社
中井喜代治
電 話 03-813-9805
振 替 東京2-94462
