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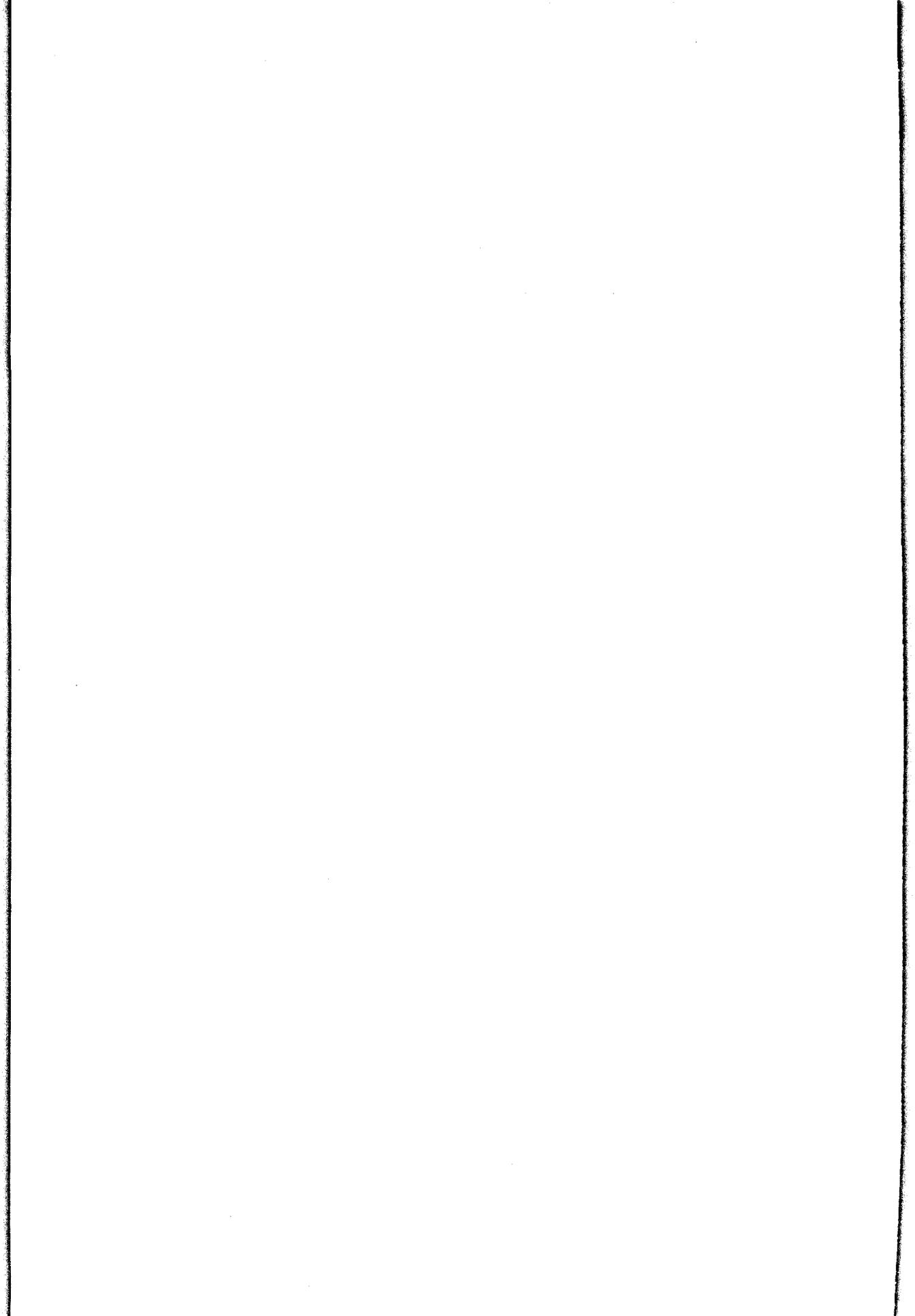
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from the Philippines

by John S. GARTH

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Demania toxica, a New Species of Poisonous Crab from the Philippines¹

John S. GARTH²

Only a few species of crabs are known to be poisonous to man (cf. Holthuis, 1968). These are for the most part brightly colored reef dwellers belonging to the brachyuran family Xanthidae, which has as its center of distribution the tropical Indo-Pacific Ocean. The writer was much surprised, therefore, when a crab sent to him for identification by Bruce W. Halstead, M.D., director of World Life Research Institute of Colton, California, and world authority on poisonous and venomous marine animals (see Halstead and Courville, 1965), proved to be none of the previously known poisonous species, but a hitherto unknown species of the genus *Demania* (Laurie, 1906). According to Professor Angel C. Alcala, acting Dean of Silliman University, Dumaguete City, Philippine Islands, a crab of this species had been responsible locally for a human death in June of 1969. An account of the clinical aspects of the crab poisoning is in preparation by Dr. Halstead and will in due time appear in one of the toxicological journals. Meanwhile, Professor Alcala has generously provided the first complete specimen of the crab, which becomes the type of the proposed new species.

Demania toxica, new species

Plate I, Figs. 1-6

Type. Holotype male, A.H.F. No. 702, from Inalad Barrio within the town of Siaton in Negros Oriental, Philippine Islands; January, 1970; taken by gill net in 15 fathoms of water; Mr. Braulio Gargar, collector; Dr. A. C. Alcala, donor.

Measurements. Male holotype, length of carapace 43.1 mm, width of carapace 51.9 mm, of front 12.9 mm, of fronto-orbit 24.1 mm, length of right chela 30.7 mm, of dactyl 15.6 mm, height of palm 17.1 mm, length of left chela 30.6 mm, of dactyl 15.5 mm, height of palm 17.4 mm.

Diagnosis. Front produced, median notch narrow, frontal lobes concave. Carapace and chelipeds with squamose tubercles fringed with setae. Walking legs sculptured, cristate above and below. Male first pleopod with a row of 24-25 longer setae along convex margin.

Description. Carapace pentagonal, front produced, anterolateral margins broadly arcuate, posterolateral margins straight or slightly concave. Surface very convex anteroposteriorly, less so from side to side. Regions well defined by

¹ Allan Hancock Foundation Contribution No. 341.

² Allan Hancock Foundation, University of Southern California, Los Angeles, California.

smooth, nonpubescent grooves, areoles covered with numerous squamiform tubercles most apparent on the anterior or lateral portions of each, least apparent on the posterior or medial portions, there coalescing into a smooth and glistening surface. Posterior two-fifths of carapace roughened with larger tubercles becoming sharper laterally, as also the tubercles of the anterolateral margins. Front strongly produced medially, divided by a narrow V-shaped notch into two slightly concave and obliquely sloping lobes, no tooth at outer angle. Orbital border roughened, inner margin tumid, two superior notches, an inferior notch at outer and a blunt tooth at inner angle. Anterolateral margins rounded, edge thickened and divided by grooves into four lobes exclusive of the minute exorbital lobule, of which the third and fourth are most distinct, the second scarcely delimited from the first, the fourth smallest, slightly acuminate, but not dentate nor projecting beyond arc of anterolateral margin.

External maxilliped finely tuberculate, ischium grooved, merus subquadrate, slightly produced at outer angle, a notch on anterior margin, two superficial depressions. Sternum roughly tuberculate.

Chelipeds equal, upper, outer, and lower surfaces of merus, carpus, and manus roughened by setose-margined, squamate tubercles interspersed with longer setae. Merus with crested superior margin interrupted by a deep sulcus marking inner end of a subterminal groove and separating two strong marginal teeth. Carpus rounded, a faint superior groove, a sharp spine on internal margin and a much smaller spine or tubercle beneath. Manus with about five strong superior marginal teeth of which the median is the largest; squamae arranged more or less in longitudinal rows of which one extends onto the deflexed pollex. Dactylus compressed, ridged, grooved, basally tuberculate, meeting pollex without gap; pollex with five strong teeth, last tooth terminal, upcurving.

Walking legs laterally compressed, meri, carpi, and propodi sharply crested above; meri doubly crested beneath, surface nearly smooth; carpi and propodi sculptured, propodus of fourth walking leg expanded, leaflike. Dactyli long, slightly incurving, and, like posterodistal margin of propodi, setose.

Male abdomen with segment 3 but slightly wider than segment 2, segments 3-5 fused, all segments but first and last with two transverse median bars, last segment triangular, longer than broad, sides slightly concave, tip rounded.

Male first pleopod slender, cylindrical, gradually tapering, and curving toward tip; convex margin with a row of short setae proximally and a row of 24-25 long, feathered setae distally; concave margin with two rows of short setae, one extending to base of recurved and hollowed-out tip.

Remarks. According to Dr. R. Serène, UNESCO Marine Science Regional Expert for South East Asia, who examined photographs of the proposed new species, *Demania toxica* is closer to the type species, *D. splendida* Laurie, 1906, than to any other species, but differs by the ornamentation of the carapace, chelipeds, and ambulatory legs. Certainly, it belongs to the typical section of the genus in which the frontal border is prominent and deeply sulcate medially, the anterolateral teeth are well marked and appear as rounded lobes, and the carapace and chelipeds

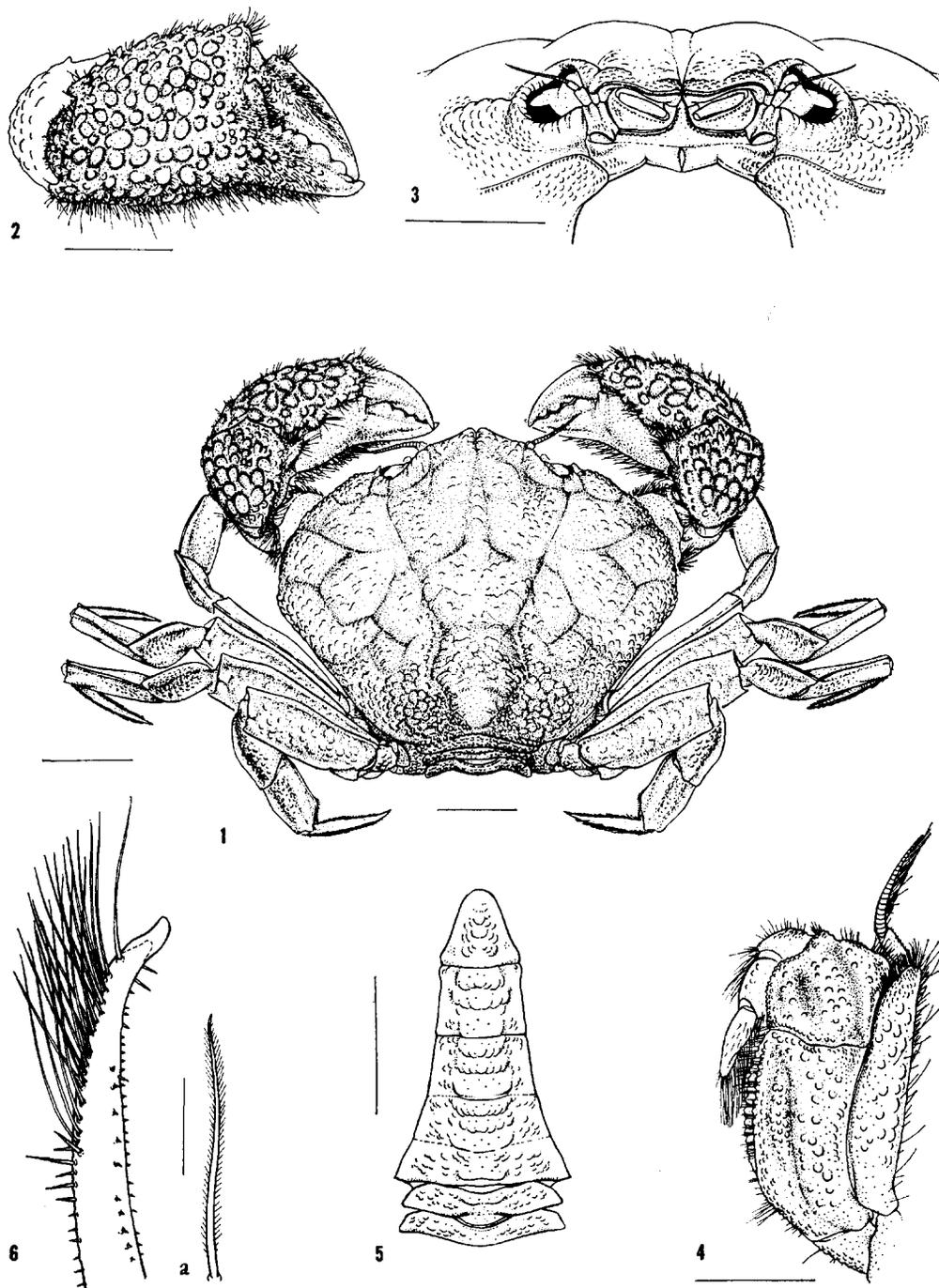


Plate I. *Demania toxica*, new species. Male holotype: 1. Dorsal view; 2. Right chela; 3. Frontal view; 4. Left outer maxilliped; 5. Abdomen; 6. Male first pleopod. (Scale for figs. 1, 2, 3, and 5=10 mm; for fig. 4=5 mm; for fig. 6=0.5 mm; for fig. 6a=0.3 mm).

bear flattened squamae, in contrast to a number of species, with one exception (*intermedia* Guinot, 1969) formerly in *Xantho* Leach, 1815, but recently transferred to *Demania* (Guinot, 1967, 1969), in which the frontal border is not medially deeply sulcate nor remarkably prominent (*rotundata* Serène, 1969; *intermedia* Guinot, 1969), the anterolateral teeth appear as triangular lobes (*reynaudii* Milne Edwards, 1834; *scaberrimus* Walker, 1887), and the carapace and chelipeds are either covered with acute granules (*reynaudii*, *scaberrimus*), or partly smooth (*cultripes* Alcock, 1898; *baccalipes* Alcock, 1898).

Through the kindness of Dr. T. Sakai of Kamakura, Japan, it has been possible to examine a specimen from Japan earlier referred to "*Xantho reynaudii cultripes*" (Sakai, 1939, p. 461), but now identified by Dr. Sakai as *Demania cultripes*, and, through the kindness of Mr. Henry B. Roberts of Washington, D.C., a specimen from the Philippines (U.S.N.M. No. 91629) identified by the late Miss A. M. Buitendijk as "*Lophoxanthus reynaudii* var. *cultripes*," but brought by Guinot (1969, p. 235, footnote) to *Demania rotundata*. Indeed, the latter name (in the combination ?*Xantho rotundatus* Serène, in Guinot, 1969), originally proposed for specimens from Taiwan, was considered by Serène to include Japanese specimens formerly referred to *cultripes*, an Indian Ocean species. On the evidence of these two specimens it can be stated that Japanese and Philippine *rotundata* (formerly *cultripes*) are essentially in agreement, and that the proposed new species differs from both in having squamate, rather than tuberculate chelipeds, sculptured, rather than smooth walking legs with pilose, rather than smooth-margined propodi, a more prominent and medially advanced front, the fourth anterolateral tooth rounded, rather than pointed, the propodus of the last leg broadened, the tip of the male abdomen elongated, and 24–25, rather than 14–15 long, feathered setae on the male first pleopod.

Again, according to Dr. Serène, the size of the new species is not surprising, two specimens of *Demania cultripes* in the Singapore Museum having recorded measurements of 60×80 and 46×59 mm (Balss, 1938), both larger than the 43×52 mm holotype of *D. toxica*. Nor is the toxicity of the new species totally unexpected, the poisonous nature of *D. reynaudii* in the Gulf of Tonkin being well known (André, 1931, p. 649; Holthuis, 1968, p. 219). Unfortunately, the color in life of the new species was not recorded; in alcohol after transfer from formalin preservation it is a faint pinkish or purplish orange.

The writer acknowledges his indebtedness to Dr. T. Sakai of Kamakura, Japan, and Mr. Henry B. Roberts, National Museum of Natural History, Washington, D.C., for comparative specimen material and to Dr. R. Serène of Singapore for use of a manuscript key to the known species of *Demania*. This study was aided in part by a contract to the World Life Research Institute by the Office of Naval Research, Department of the Navy, Contract No. N00014-67-C-0379 on toxic marine animals, and in part by a Biomedical Sciences Support Grant to the University of Southern California, Grant RR-07012-04, from the General Research Support Branch, Division of Research Resources, Bureau of Health Professions

Education and Manpower Training, National Institutes of Health. The illustrations are the work of Mr. Jerry J. Battagliotti.

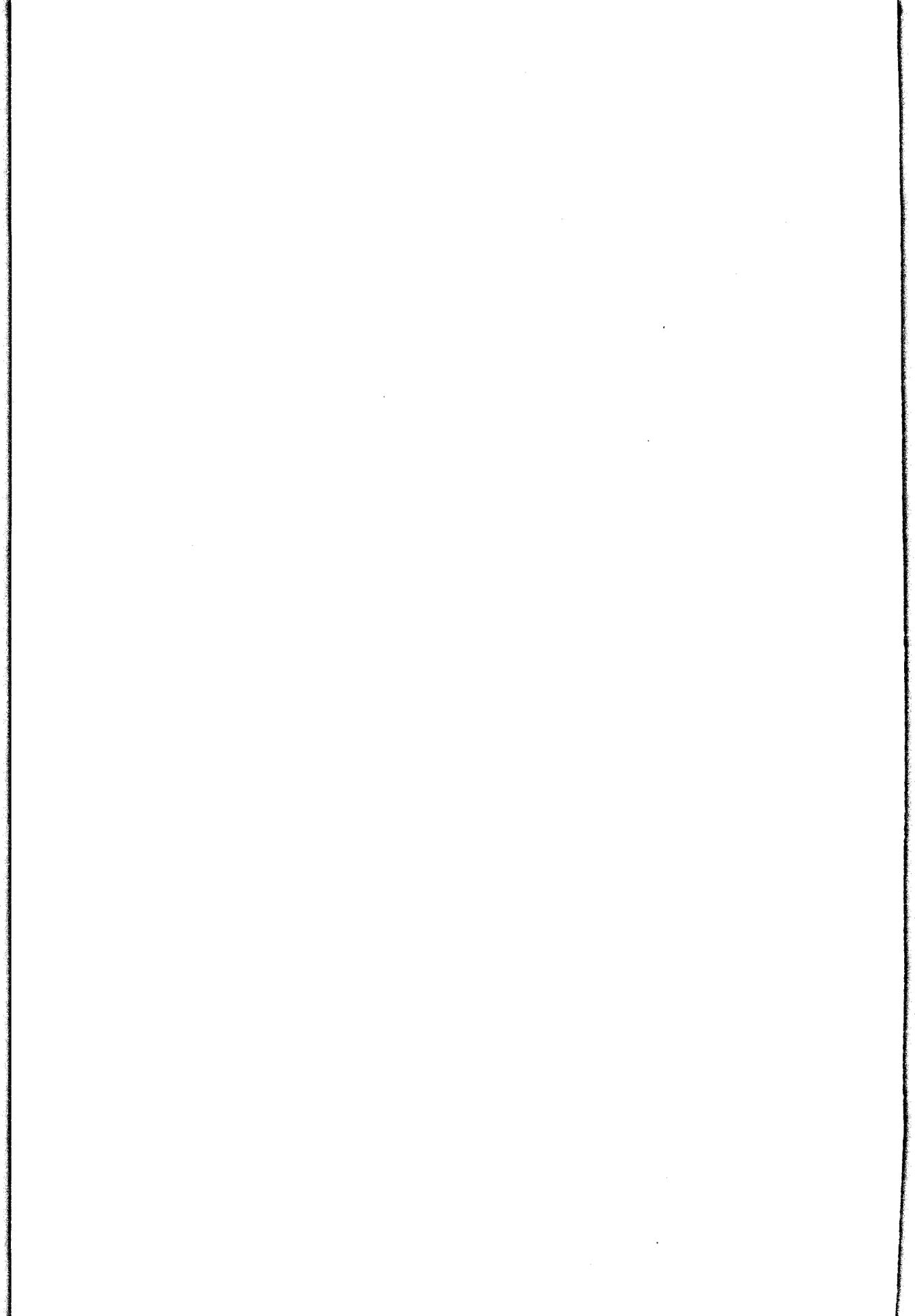
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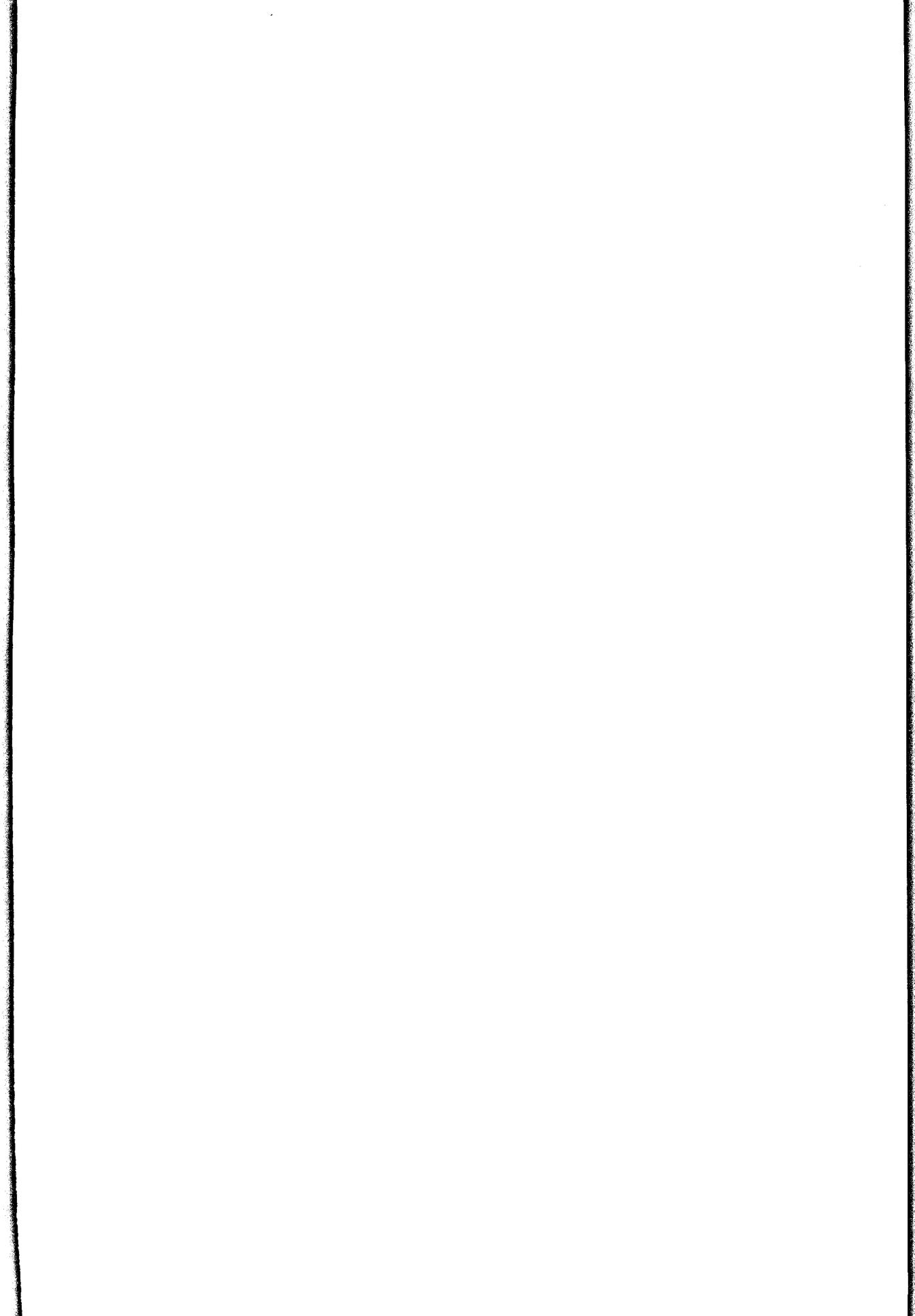
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NOTE ADDED IN PROOF

Since the above was written, the account of the clinical aspects of the crab poisoning mentioned in the first paragraph (Alcala and Halstead, 1970) has come to my attention. In it the fatalities, which included those of a dog and cat as well as of a human, were attributed, on the strength of a crab claw submitted to Dr. Serène for identification, to *Demania* sp., near *D. splendida* Laurie. A second specimen of the new species, a 75×94 mm male without accompanying data, has been received from Professor Alcala.

Alcala, A. C. and B. W. Halstead. 1970. Fatality to ingestion of the crab *Demania* sp. in the Philippines. Clin. Toxicol. 3(4): 609-611.





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