

- 25(11). Lateral spines present on carapace 26
 Lateral spines absent on carapace 28
- 26(25). Lateral hooks present on somite 5, and longer than those on
 anterior somites Menippe mercenaria
 Lateral hooks absent on somite 5 27
- 27(26). Rostral spine curves. Dorsal spine smooth. Abdomen not expanded
 laterally Heterocrypta granulata
 Rostral spine straight. Dorsal spine armed with granular spinules.
 Abdominal somites 4 and 5 expanded laterally . . . Ocypode quadrata
- 28(25). Longest apical spine on antennal exopod is somewhat longer than
 the rest of exopod 29
 Longest apical spine on antennal exopod is distinctly shorter than
 the rest of exopod Uca minax
- 29(28). Antennal exopod (less apical spines) is somewhat longer than
 protopod Uca pugnax
 Antennal exopod (less apical spines) is somewhat shorter than
 protopod Uca pugilator

KEY TO THE BRACHYURAN MEGALOPA DESCRIBED

IN THIS REPORT

1. Uropods large, biramous. Carapace and abdomen covered with numerous spines and stiff setae Dromidia antileensis
 Uropod very small, uniramous. Carapace and abdomen not covered with numerous spines and stiff setae 2
- 2(1). A pair of large sternal spines present at base of leg 4. Rostrum one-spined, not depressed Callinectes sapidus
 Large sternal spines absent. Rostrum more or less depressed in the center 3
- 3(2). Rostral central tooth bifid at tip 4
 Rostral central tooth not bifid 10
- 4(3). Angles of rostrum on each side ends in a horn-like tooth. Ischial spine on leg 1 large and hooked. Uropod with 7 or more setae on exopod. Leg 5 with feelers. 5
 Angles of rostrum rounded. Ischial spine on leg 1 small and not hooked, or absent. Uropod with 6 or less setae on exopod. Leg 5 without feelers. 9
- 5(4). Ischium of maxilliped 3 without spines on inner edge. . . Eurytium limosum
 Ischium of maxilliped 3 with 1 or more spines 6
- 6(5). Coxal spine present on legs 2 - 4 7
 Coxal spine absent on legs 2 - 4 8
- 7(6). Ischial spine present on legs 2 - 4 Panopeus sp.
 Ischial spine absent on legs 2 - 4 Panopeus herbstii
- 8(6). Teeth at angles of rostrum short and blunt. Ischium of maxilliped 3 with 5-6 teeth. Uropod with 7 setae on exopod. Leg 5 with 1 feeler. Neopanope texana savi

- Teeth at angles of rostrum moderately long and pointed. Ischium of maxilliped 3 with 1 tooth. Uropod with 8 setae on exopod. Leg 5 with 3 feelers Panopeus occidentalis
- 9(4). Ischial spine present on leg 1. Uropod with 3 or 4 setae on exopod. Rhithropanopeus harrisi
 Ischial spine absent on leg 1. Uropod with 5 or 6 setae on exopod. Eurypanopeus depressus
- 10(3). Carapace without conspicuous dorsal prominences. Leg 5 with feelers. Antennal flagellum of 6 or more segments. Uropod with 6 or more setae on exopod. 11
 Carapace with more or less conspicuous dorsal prominences. Leg 5 without feelers. Antennal flagellum of 4 segments. Uropod with 4 or less setae on exopod 14
- 11(10). Small spines present on ischium and merus of leg 1 12
 Spines absent on ischium and merus of leg 1 13
- 12(11). Carapace somewhat pentagonal in dorsal view. Ischial spines present on legs 2 and 3. Uropod with 11-12 setae on exopod . . . Menippe mercenaria
 Carapace squarish in dorsal view. Ischial spines absent on leg 2 and 3. Uropod with 6 setae on exopod Pilumnus savi
- 13(11). Rostral central tooth hardly seen from above. No coxal spines on legs. Uropod with 6 or 7 setae on exopod. Dactylus of leg 4 shorter than propodus Sesarma cinereum
 Rostral central tooth well exposed in dorsal view. A small spine present on coxa of leg 4. Dactylus of leg 4 longer than propodus. Uca pugnax
- 14(10). Carapace with a large dorsal spine behind. Abdominal somite 6 very short. Uropod with 2 setae. Chela and legs 2-5 slender and very long. Stenorynchus seticornis

Carapace without dorsal spine. Abdominal somite 6 of moderate size.

Uropod with 4 or 5 setae. Chela and legs 2-5 of normal length . . . 15

15(14). Coxal spine present on leg 3 Libinea dubia

Coxal spine absent on leg 3 Mithrax pleuracanthus

REFERENCES

BIRGE, E. A.

1883. Notes on the development of Panopeus sayi Smith. Stud. Biol. Lab., Johns Hopkins Univ., 2: 411-426.

BOURDILLON-CASANOVA, L.

1960. Le meroplankton du Golfe, de Marseille. Le larves de Crustaces Decapodes. Rec. Trav. mar. Endoume, 30, 18: 1-286.

BROAD, A. C.

1957a. Larval development of Palaemonetes pugio Holthuis. Biol. Bull., 112 (2): 144-161.

1957b. Larval development of the crustacean Thor floridanus Kingsley. Jour. Elisha Mitchell Sci. Soc., 73 (2): 317-328.

CHAMBERLAIN, N. A.

1961. Studies on the larval development of Neopanope texana sayi (Smith) and other crabs of the family Xanthidae (Brachyura). Chesapeake Bay Inst., Johns Hopkins Univ., Tech. Rept., 22: 1-35.

1962. Ecological studies on the larval development of Rhithropanopeus harrisii (Xanthidae, Brachyura). Chesapeake Bay Inst., Johns Hopkins Univ., Tech. Rept., 28: 1-47.

CHURCHILL, E. P.

1942. The zoeal stages of the blue crab, Callinectes sapidus Rathbun. Chesapeake Biol. Lab., Publ. No. 49: 1-26.

CONNOLLY, C. J.

1925. The larval stages and megalops of Rhithropanopeus harrisii (Gould). Contrib. Canad. Biol., Toronto, n.s. 2(15): 327-333.

COOK, H. L.

1966. A generic key to the protozoan, mysis, and post-larval stages of the littoral Penaeidae of the Northwestern Gulf of Mexico. U. S. Fish Wild.

Serv., Fish. Bull., 65: 437-447.

COSTLOW, J. D., JR. AND C. G. BOOKHOUT.

1959. The larval development of Callinectes sapidus Rathbun. reared in the laboratory. Biol. Bull., 116 (3): 373-396.
1960. The complete larval development of Sesarma cinerium (Bosc) reared in the laboratory. Biol. Bull., 118 (2): 203-214.
- 1961a. The larval stages of Panopeus herbstii Milne-Edwards reared in the laboratory. Jour. Elisha Mitchell Sci. Soc., 77(1):33-42.
- 1961b. The larval development of Eurypanopeus depressus (Smith) under laboratory conditions. Crustaceana, 2 (1): 6-15.
- 1962a. The larval development of Sesarma reticulatum Say reared in the laboratory. Crustaceana, 4 (4): 281-294.
- 1962b. The larval development of Hepatus epheliticus (L.) under laboratory conditions. Jour. Elisha Mitchell Sci. Soc., 78(2): 113-125.
- 1966a. Larval development of the crab, Hexapanopeus angustifrons. Chesapeake Sci., 7 (3): 148-156.
- 1966b. Larval stages of the crab, Pinnotheres maculatus, under laboratory conditions. Chesapeake Sci., 7 (3): 157-163.
- 1966c. The larval development of Ovalipes ocellatus (Herbst) under laboratory conditions. Jour. Elisha Mitchell Sci. Soc., 82 (2): 160-171.
1967. The larval stages of the crab, Neopanope packardii (Kingsley) in the laboratory. Bull. mar. Sci., 17 (1): 52-63.
- 1968a. Larval development of the crab, Leptodius agassizii A. Milne-Edwards in the laboratory (Brachyura, Xanthidae). Crustaceana, Suppl. 2: 203-213.
- 1968b. The complete larval development of the land-crab, Cardisoma guanhumi Latereille in the laboratory (Brachyura, Gecarcinidae). Crustaceana, Suppl. 2: 259-270.

COSTLOW, J. D., JR. AND E. FACETTI.

1967. The larval development of the crab, Cyclograpsus cinereum Dana under laboratory conditions. Pacific Sci., 21(2): 166-177.

DOBKIN, S.

1961. Early developmental stages of pink shrimp, Penaeus duorarum, from Florida waters. U. S. Fish Wildl. Serv., Fish. Bull., 190, vol. 61:321-349.

1968. The larval development of a species of Thor (Caridea, Hippolytidae) from South Florida, U.S.A. Crustaceana, Suppl. 2: 1-18.

FARFANTE, I. P.

1969. Western Atlantic shrimps of the genus Penaeus. U. S. Fish. Wildl. Serv., Fish. Bull., 67(3):461-591.

GURNEY, R.

1942. Larvae of decaopod Crustacea. Ray Society, London.

HOPKINS, S. H.

1943. The external morphology of the first and second zoeal stages of the blue crab, Callinectes sapidus Rathbun. Trans. Amer. Micro. Sci., 62: 85-90.

1944. The external morphology of the third and fourth zoeal stages of the crab, Callinectes sapidus Rathbun. Biol. Bull., 87: 145-152.

HYMAN, O. W.

1920. The development of Gelasimus after hatching. Jour. Morph. 33(2): 485-501.

1924a. Studies on larvae of crabs of the family Pinnotheridae. Proc. U. S. Nat. Mus., 64(7); No. 2497: 1-7.

1924b. Studies on larvae of the crabs of the family Grapsidae. Proc. U. S. Nat. Mus., 65(10). No. 2532: 1-8.

1925. Studies on the larvae of the crabs of the family Xanthidae. Proc. U. S. Nat. Mus., 67(3), No. 2575L 1-22.

KURATA, H.

1969. Larvae of Decapoda Brachyura of Arasski, Sagami Bay. IV. Majidae. Bull. Tokai Reg. Fish. Res. Lab., 57: 81-127.

LEBOUR, M. V.

1928. The larval stages of the Plymouth Brachyura. Proc. Zool. Soc. London, 1928: 473-560.

PEARSON, J. C.

1939. The early life histories of some American Penaeidae, chiefly the commercial shrimp, Penaeus setiferus (Linn.). U. S. Bur. Fish., Bull. 30, vol. 49: 1-73.

PIKE R. B. AND D. I. WILLIAMSON.

1960. Larvae of decapod Crustacea of the family Diogenidae and Paguridae from the Bay of Naples. Publ. Staz. Zool. Napoli, 31: 493-552.

PORTER, H. J.

1960. Zoeal stages of the stone crab, Menippe mercenaria Say. Chesapeake Sci., 1(3-4): 168-177.

PROVENZANO, A. J.

- 1962a. The larval development of Calcinus tibicen (Herbst) (Crustacea, Anomura) in the laboratory. Biol. Bull., 123(1): 179-202.
- 1962b. The larval development of the tropical land hermit Coenobita clypeatus (Herbst) in the laboratory. Crustaceana, 4(3): 207-228.
- 1963a. The glaucothoe stage of Dardanus venosus (H. Milne Edwards) (Decapoda, Anomura). Bull. mar. Sci. Gulf & Carib., 13(1): 11-22.
- 1963b. The glaucothoe of Petrochirus diogenes (L.) and two species of Dardanus (Decapoda: Diogenidae). Bull. mar. Sci. Gulf & Carib., 13(2): 242-261.
1967. The larval stages and glaucothoe of the tropical eastern Pacific hermit crab, Trizopagurus magnificus (Bouvier, 1898) (Decapoda: Diogenidae). reared in the laboratory. Pacific Sci., 21(4): 457-473.
- 1968a. The complete larval development of the west Indian hermit crab Petrochirus diogenes (L.) (Decapoda, Diogenidae) reared in the laboratory. Bull. mar. Sci., 18(1): 143-181.
- 1968b. Lithopagurus yucatanicus, a new genus and species of hermit crab with a distinctive larva. Bull. mar. Sci., 18(3): 628-644.

RATHBUN, M. V.

1914. Stalk-eyed crustaceans collected at the Monte Bello Islands.

Proc. Zool. Soc. London, 1914: 653-664.

REES, G. H.

1959. Larval development of the sand crab *Emerita talpoida* (Say) in the laboratory. Biol. Bull., 117(2): 356-370.

RENFRO, W. C. AND H. L. COOK.

1963. Early larval stages of the sesbob, *Xiphopeneus kroeyeri* (Heller).

U. S. Fish Wildl. Serv., Fish. Bull., 63(1): 165-177.

RICE, A. L. AND A. J. PROVENZANO.

1965. The zoeal stages and the glaucothoe of *Paguristes sericeus* A. Milne Edwards (Anomura, Diogenidae). Crustaceana, 8(3): 239-254.

ROBERTSON, P. B.

1968. A giant scyllarid phyllosoma larva from the Caribbean Sea, with notes on smaller specimens (Palinuridae). Crustaceana, Suppl. 2: 83-97.

WILLIAMS, A. B.

1965. Marine decapod crustaceans of the Carolinas. U. S. Fish Wildl. Serv. Fish. Bull. 65 (1): 1-298.

WILLIAMS, A. B., L. R. MCCLOWSKIFY AND I. E. GRAY.

1968. New records of brachyuran decapod crustaceans from the continental shelf off North Carolina, U.S.A. Crustaceana, 15: 41-66.

YANG, W. T.

1967. A study of zoeal, megalopal, and early crab stages of some oxyrhynchus crabs (Crustacea: Decapoda). Doctoral Dissertation, Univ. of Miami.

1968. The zoeae, megalopa, and first crab of *Epialtus dilatatus* (Brachyura, Majidae) reared in the laboratory. Crustaceana, Suppl. 2: 181-202.

EXPLANATION OF PLATES

- Plate 1. Penaeus duorarum; Nauplius stage 1: A, ventral; B, lateral. 0.1 mm. indicated.
- Plate 2. Penaeus duorarum, Zoea stage 1: A, dorsal; B, antennule; C, antenna. 0.1 mm., indicated.
- Plate 3. Penaeus duorarum, Later zoea and megalopa: A, zoea stage ? 6, lateral; B, megalopa, lateral; C, D, telson, dorsal; C, zoea stage ? 6; D, megalopa; E, F, antenna, ventral; E, zoea stage ? 6; F, megalopa. 0.1 mm. indicated.
- Plate 4. Xiphopeneus kroyeri, Embryo: A, 8 cell stage, 1 hr. after spawning; B, early gastrula stage, 2 1/2 hr.; C, later gastrula stage showing the separation of embryonic membrane, 3 hr.; D, antennal stage, 4 hr.; E, cephalic lobe stage, 4 1/2 hr.; F, mandible stage, 5 hr.; G, Antennule stage, early egg nauplius, 7 hr.; H, later egg nauplius, 11 hr. 0.1 mm. indicated.
- Plate 5. Xiphopeneus kroyeri, Nauplius stages 1 and 2: A, stage 1, ventral; B, the same, lateral; C, stage 2, ventral;. 0.1 mm. indicated.
- Plate 6. Xiphopeneus kroyeri, nauplius stages 1-6: A-D, posterior part of body, ventral; A, stage 3; B, stage 4; C, stage 5; D, stage 6; E-K, antenna, ventral; E, stage 1; F, stage 2; G, stage 3; H, stage 4; I, stage 5; J, stage 6; K, stage 7. 0.1 mm. indicated.
- Plate 7. Xiphopeneus kroyeri, nauplius stage 7: ventral. 0.1 mm. indicated.
- Plate 8. Xiphopeneus kroyeri, Zoea, stage 1, ventral. 0.2 mm. indicated.
- Plate 9. Xiphopeneus kroyeri, Zoea stages 1 and 2: A, stage 1, lateral; B, early stage 2, lateral; C, later stage 2, posterior part of body, lateral. 0.2 mm. indicated.
- Plate 10. Xiphopeneus kroyeri, zoea stage 3: A, dorsal; B, lateral. 0.5 mm. indicated.

- Plate 11. Xiphopeneus kroyeri, zoea stages 1-3: A-E, stage 1; A, antennule; B, antenna; C, maxilliped 1; D, maxilliped 2; E, maxilliped 3: F, G, maxilliped 3; F, stage 2; G, stage 3: H-J, stage 1; H, mandible; I, maxillule; J, maxilla.
- Plate 12. Xiphopeneus kroyeri, zoea stages 4-6: A, stage 4, lateral; B, stage 5, lateral; C, stage 6, lateral: D-F, antenna, ventral, D, stage 4; E, stage 5; F, stage 6: G-I, telson, dorsal; G, stage 4; H, stage 5; I, stage 6. 0.2 mm. indicated.
- Plate 13. Xiphopeneus kroyeri, zoea stages 7-9: A, stage 7, lateral; B, stage 8, lateral; C, stage 9, lateral: D-F, telson, dorsal; D, stage 7; E, stage 8; F, stage 9.
- Plate 14. Xiphopeneus kroyeri, mouth parts: Z, zoea stage 9; M, megalopa; Y, young stage 1: A, maxillule; B, maxilla; C, maxilliped 1; D, maxilliped 2. 0.2 mm. indicated.
- Plate 15. Xiphopeneus kroyeri, megalopa and young: A, megalopa, lateral; B, young stage 1, lateral; C, the same, leg 1; D, young stage 2, anterior part of body, lateral: E-G, telson, dorsal; E, megalopa: F, young stage 1; G, young stage 2.
- Plate 16. Trachypeneus constrictus, egg and nauplius: A, egg; B, nauplius stage 1, ventral; C, the same, lateral; D, nauplius stage 4, ventral: E, F, antenna, ventral; E, stage 1; F, stage 4. 0.1 mm. indicated.
- Plate 17. Trachypeneus constrictus, zoea stages 1-3: A, stage 1, dorsal; B, stage 2, dorsal; C, stage 3, dorsal; D, antenna, stage 1. 0.1 mm. indicated.
- Plate 18. Trachypeneus constrictus, zoea stages 4 and 5: A, stage 4, lateral; B, stage 5, lateral: C, D, telson, dorsal; C, stage 4; D, stage 5: E, F, antenna, ventral; E, stage 4; F, stage 5. 0.1 mm. indicated.
- Plate 19. Trachypeneus constrictus, zoea stages 6-8 and megalopa: A, stage 6, lateral; B, stage 7, lateral; C, stage 8, lateral; D, megalopa, lateral: E-H, telson, dorsal; E, stage 6; F, stage 7; G, stage 8; H, megalopa: I, antennal scale, megalopa. 0.5 mm. indicated.

- Plate 20. Sicyonia brevirostris, egg and nauplius: A, egg; B, nauplius stage 2, ventral; C, the same, lateral; D, the same, antenna; E, stage 5, antenna. 0.1 mm indicated.
- Plate 21. Sicyonia brevirostris, zoea stages 1-3: A, stage 1, dorsal; B, stage 2, dorsal; C, stage 3, dorsal; D, antenna, stage 1, ventral. 0.2 mm. indicated.
- Plate 22. Sicyonia brevirostris, zoea stages 4 and 5: A, stage 4, lateral; B, stage 5, lateral; C, D, telson, dorsal; C, stage 4; D, stage 5; E, F, antenna, ventral; E, stage 4; F, stage 5. 0.1 mm. indicated.
- Plate 23. Sicyonia brevirostris, zoea 6 and young: A, stage 6, lateral; B, young ? stage 1, lateral; C, antenna, zoea stage 6, ventral; D, antennal scale, young; E, F, telson, dorsal, E, zoea stage 6; F, young stage 1. 0.2 mm. indicated.
- Plate 24. Acetes americanus carolinae, zoea stages 1 and 2: A, stage 1, dorsal; B, stage 2, dorsal; C, intermediate zoea between stages 2 and 3, carapace dorsal, D, antenna, stage 1, ventral. 0.1 mm. indicated.
- Plate 25. Acetes americanus carolinae, zoea stages 3-5: A, stage 3, lateral; B, stage 4, lateral; C, stage 5, lateral; D-F, telson and uropods, dorsal; D, stage 3; E, stage 4; F, stage 5; G, H, antenna, ventral; G, stage 4; H, stage 5; I-L, stages 5; I, mandible; maxillule; K, maxilla; L, maxilliped 1. 0.1 mm. indicated.
- Plate 26. Acetes americanus carolinae, young and subadult: A-L, young; A, stage 1 lateral; B, stage 2; abdomen, lateral; C, stage 3, abdomen, lateral; D, stage 4, abdomen, lateral; E, stage 5, anterior part of body, lateral; F, the same, abdomen, lateral; G, stage 6, anterior part of body, lateral; H, the same, abdomen, lateral; I, stage 1 antennal scale; J-L, telson, dorsal; J, stage 1; K, stage 4; L, stage 6; M, N, subadult (T.L.: 11.0 mm); M, anterior part of carapace, lateral; N, telson, dorsal.

- Plate 27. Leptochela serratorbita, zoea and megalopa: A, stage 1, lateral; B, stage 2, lateral; C, stage 3, lateral; D, the same, anterior part of body, dorsal; E, stage 4, lateral; F, stage 5, lateral; G, megalopa, lateral: H-M, telson and uropods, dorsal; H, stage 1; I, stage 2; K, stage 4; L, stage 5; M, megalopa: N, O, antenna, ventral; N, stage 1; O, stage 5; P, antennal scale, megalopa. 0.1 mm. indicated.
- Plate 28. Periclimenes americanus, zoea stages 1 and 2. A, stage 1, lateral; B, stage 2, lateral: C, D, telson, dorsal; C, stage 1; D, stage 2; E-I stage 1; E, stage 1; F, stage 2; G, stage 3; H, stage 4: I-L, antenna, ventral; I, stage 1; J, stage 2, K, stage 3; L, stage 4. 0.5 mm indicated.
- Plate 29. Palaemon floridanus, zoea stages 1-4: A, stage 1, lateral; B, stage 2, lateral; C, stage 3, lateral; D, stage 4, lateral: E-H, telson and uropod dorsal; E, stage 1; F, stage 2; G, stage 3; H, stage 4: I-L, antenna, ventral; I, stage 1; J, stage 2; K, stage 3; L, stage 4. 0.5mm indicated
- Plate 30. Palaemonetes vulgaris, zoea stages 1-4: A, stage 1, lateral; B, stage 2, lateral; C, stage 3, lateral; D, stage 4, lateral: E-H, telson and uropods, dorsal; E, stage 1; F, stage 2; G, stage 3; H, stage 4. 0.5 mm. indicated.
- Plate 31. Palaemonetes vulgaris, zoea stages 5-7: A, stage 5, lateral; B, stage 6, lateral; C, stage 7, lateral: D-F, telson and uropods, dorsal; D, stage 5; E, stage 6; F, stage 7. 0.5 mm. indicated.
- Plate 32. Palaemonetes vulgaris, zoea stages 1-8 and megalopa: A-I, antenna, ventr A, stage 1; B, stage 2; C, stage 3; D, stage 4; E, stage 5; F, stage 6; G, stage 7, H, stage 8; I, megalopa: J-M, stage 1; J, maxilliped 1; K, mandible; L, maxillule; M, maxilla. 0.1 mm. indicated.
- Plate 33. Palaemonetes vulgaris, zoea stage 8 and megalopa: A, zoea stage 8, later B, the same, telson and uropod, dorsal; C, megalopa, carapace, lateral; D the same, telson, dorsal. 0.5 mm. indicated.

- Plate 34. Alpheus normanni, zoea stages 2 and 4: A, stage 2, lateral; B, stage 4, lateral; C, D, telson and uropods, dorsal; C, stage 2; D, stage 4; E, antenna, ventral; E, stage 2; F, stage 4; G, H, stage 2; G, maxillule; H, maxilla. 0.1 mm. indicated except for A and B.
- Plate 35. Alpheus sp., zoea stages 2-4: A, stage 2, lateral; B, stage 3, lateral; C, stage 4, lateral; D-F, telson and uropods, dorsal; D, stage 2; E, stage 3; F, stage 4; G-I, antenna, ventral; C, stage 2; H, stage 3; I, stage 4.
- Plate 36. Lysmata wurdemanni, zoea stages 1 - 6, lateral: A, stage 1; B, stage 2; C, stage 3; D, stage 4; E, stage 5; E, stage 6. 0.5 mm. indicated.
- Plate 37. Lysmata wurdemanni, zoea stages 1-11: A-K, antenna, ventral; A, stage 1; B, stage 2; C, stage 3; D, stage 4; E, stage 5; F, stage 6; G, stage 7; H, stage 8; I, stage 9; J, stage 10; K, stage 11: L-O, stage 1; L, maxilliped 1; M, mandible; N, maxillule; O, maxilla.
- Plate 38. Lysmata wurdemanni, zoea stages 7 and 8, lateral: A, stage 7; B, stage 8. 0.5 mm. indicated.
- Plate 39. Lysmata wurdemanni, zoea stages 9 and 10, lateral: A, stage 9; B, stage 10. 0.5 mm. indicated.
- Plate 40. Lysmata wurdemanni, zoea stage 11, lateral. 0.5 mm. indicated.
- Plate 41. Lysmata wurdemanni, zoea stages 1-11, telson, dorsal: A, stage 1; B, stage 2; C, stage 3; D, stage 4; E, stage 5; F, stage 6; G, stage 7; H, stage 8; I, stage 9; J, stage 10; K, stage 11. 0.5 mm. indicated.
- Plate 42. Lysmata wurdemanni, megalopa: A, carapace, lateral; B, telson, dorsal; C, antennal scale. 0.5 mm. indicated.
- Plate 43. Thor floridanus, zoea stages 1-4: A, stage 1, lateral; B, stage 2 lateral; C, stage 3, lateral; D, stage 4, lateral; E-H, telson and uropods dorsal; E, stage 1; F, stage 2; G, stage 3; H, stage 4; I, J, antenna ventral; I, stage 1; J, stage 4. 0.1 mm. indicated.

Plate 44. Thor sp., zoea stage 1: A, lateral; B, telson, dorsal; C, antenna, ventral. 0.2 mm. indicated.

Plate 45. Callianassa sp., prezoa and zoea stages 1 - 4: A, prezoa, telson, ventral; B-L, zoea; B, stage 1, lateral; C, stage 2, lateral; D, stage 3, lateral; E, stage 4, lateral; F, rostrum, stage 2, dorsal; G-J, telson and uropods, dorsal; G, stage 1; H, stage 2; I, stage 3; J, stage 4; K, L, antenna, ventral; K, stage 1; L, stage 4. 0.1 mm. indicated except for B-J.

Plate 46. Callianassa major, prezoa: A, lateral; B, telson, ventral; C, antennule; D, antenna. 0.2 mm. indicated.

Plate 47. Upogebia affinis, zoea stages 1- 4: A, stage 1, lateral; B, stage 2, lateral; C, stage 3, lateral; D-G, telson and uropods, dorsal; D, stage 1; E, stage 2; F, stage 3, G, stage 4. 0.5 mm. indicated.

Plate 48. Upogebia affinis, zoea stages 1-4: A, stage 4, lateral; B-E, antenna, ventral; B, stage 1; C, stage 2; D, stage 3; E, stage 4; F, G, stage 1; F, maxillule; G, maxilla. 0.1 mm. indicated.

Plate 49. Clibanarius vittatus, zoea stages 1-4: A, stage 1, lateral; B, the same, dorsal; C, stage 4, lateral; D-F, telson and uropods, dorsal; D, stage 2; E, stage 3; F, stage 4. 0.5 mm. indicated.

Plate 50. Clibanarius vittatus, zoea stages 1-4: A-D, antenna, ventral; A, stage 1; B, stage 2; C, stage 3; D, stage 4; E-G, stage 4: E, mandible; F, maxillule; G, maxilla. 0.1mm. indicated.

Plate 51. Clibanarius vittatus, megalopa, dorsal. 0.5 mm. indicated.

Plate 52. Albunea paretii, zoea stages 1 - 6: A, stage 1, lateral; B, the same, dorsal; C, stage 3, lateral; D-H, telson and uropods, ventral; D, stage 2; E, stage 3; F, stage 4; G, stage 5; H, stage 6; I, Abdominal somites 2 and 3 and their pleopods, stage 6, lateral. 0.5 mm. indicated.

Plate 53. Albunea paretii, Zoea stages 1-6: A-F, antenna, ventral; A, stage 1; B, stage 2; C, stage 3; D, stage 4; E, stage 5; F, stage 6; G-I, stage 1; G, mandible; H, maxillule; I, maxilla. 0.1mm. indicated.

- Plate 54. Albunea gibbesii, zoea stage 4: A, lateral; B, telson and uropods, ventral; C, antenna, ventral; D, mandible; E, maxillule; F, maxilla. 0.1 mm. indicated.
- Plate 55. Lepidopa websteri, zoea stages 1,2,4 and ?6: A-E, stage 1; A, dorsal; B, lateral; C, mandible; D, maxillule; E, maxilla: F-I, antenna, ventral; F, stage 1; G, stage 2; H, stage 4; I, stage 6. 0.1 mm. indicated, except for A, B.
- Plate 56. Lepidopa websteri, zoea and megalopa: A-D, zoea; A, Maxilliped 1, stage 1; B, maxilliped 2, stage 1; C, telson and uropod, ventral, stage 4; D, telson and uropods, ventral, stage ?6; E, megalopa, dorsal. 0.3 mm. indicated.
- Plate 57. Emerita talpoida, zoea stage 4: A, lateral; B, anterior part of body, ventral; C, abdomen, ventral; D, antenna, ventral; E, mandible; F, maxillule; G, maxilla. 0.2 mm. indicated.
- Plate 58. Ranilia muricata, zoea stages 1 and 2: A, stages 1, lateral: B,C, abdomen, dorsal; B, stage 1; C, stage 2: D, E, antenna, ventral; D, stage 1; E, stage 2: F-H, stage 1; F, endopod of maxilliped 2; G, maxillule; H, maxilla. 0.1 mm. indicated except for A-C.
- Plate 59. Dromidia antilensis, zoea stages 1-6: A, stages 1, lateral; B, the same, abdomen, dorsal: C-G, telson and uropods, dorsal; C, stage 2; D, stage, 3; E, stage 4; F, stage 5; G, stage 6. 0.1 mm. indicated.
- Plate 60. Dromidia antilensis, zoea stage 6: A, lateral; B, carapace, dorsal, showing the fine longitudinal ridges. 0.5 mm. indicated.
- Plate 61. Dromidia antilensis, zoea stages 1 - 6: A-F, antenna, ventral; A, stage 1; B, stage 2; C, stage 3; D, stage 4; E, stage 5; F, stage 6: G, H, stage 1; G, maxillule; H, maxilla. 0.1 mm. indicated.
- Plate 62. Dromidia antilensis, megalopa: A, dorsal; B, antenna, ventral; C, chela; D, tip of leg 5; E, pleopod. 0.5 mm. indicated.
- Plate 63. Percephona punctata aquilonaris, zoea stage 1: A, lateral; B, Anterior part of body showing the reduced antenna (ant-II), lateral; C, abdomen,

dorsal; D, maxillule; E, maxilla. 0.1 mm. indicated.

Plate 64. Hepatus epheliticus, zoea stage L; A, latera; B, abdomen, dorsal; C, antenna, ventral. 0.1 mm. indicated.

Plate 65. Callinectes sapidus, zoea stages 1-7: A, stage 1., lateral; B, the same, abdomen, dorsal; C-H, telson, dorsal; C, stage 2; D, stage 3; E, stage 4, F, stage 5; G, stage 6; H, stage 7; I, antenna, stage 1. 0.1 mm. indicated.

Plate 66. Callinectes sapidus, zoea stage 7: A, lateral, B, antenna, ventral; C, mandible; D, maxillule; E, maxilla, 0.1 mm. indicated.

Plate 67. Callinectes sapidus, megalopa and young: A-D, megalopa; A, dorsal; B, thoracic sternum showing the arrangement of spines; C, chela; D, distal segments of leg 5; E, F, young, carapace, dorsal; E, stage 1; F, stage 2. 0.5 mm. indicated.

Plate 68. Portunus gebbesii, zoea stages 1-3: A, stage 1, lateral; B, the same, antenna, ventral; C, the same, abdomen, dorsal; D, E, telson, dorsal; D, stage 2; E, stage 3. 0.1 mm. indicated.

Plate 69. Portunus sayi, zoea stage 1: A, lateral; B, antenna, ventral; C, abdomen, dorsal. 0.1 mm. indicated.

Plate 70. Pilumnus sayi, zoea stages 1-4: A, stage 1, latera; B, stage 4, lateral; C-F, abdomen and telson, dorsal; C, stage 1; D, stage 2; E, stage 3; F, stage 4; G-J antenna, ventral; G, stage 1; H, stage 2; I, stage 3; J, stage 4; K-M, stage 4; K, maxillule; L, maxilla; M, endopod of maxillipe 2. 0.1 mm. indicated.

Plate 71. Pilumnus sayi, megalopa and young: A-D, megalopa; A, carapace, dorsal; B, rostrum, lateral; C, chela; D, distal segments of leg 5; E, young, stage 1, dorsal. 0.2 mm. indicated.

Plate 72. Pilumnus sp., zoea stage 1: A, lateral; B, antenna, ventral; C, abdomen, dorsal. 0.1 mm. indicated.

Plate 73. Menippe mercenaria, zoea stages 1-5: A, stage 1, lateral; B, stage 5, lateral; C, stage 1, abdomen, dorsal; D-G, telson, dorsal; D, stage 2; E, stage 3; F, stage 4; G, stage 5; H-J, stage 1; H, antenna, ventral; I,

endopod of maxillule; J, endopod of maxilla. 0.1 mm. indicated.

- Plate 74. Menippe mercenaria, megalopa and young: A-E, megalopa; A, carapace, dorsal; B, rostrum, lateral; C, Thoracic sternum and bases of legs; D, chela; E, dactylus of leg 5; F, G, young, carapace, dorsal; F, stage 1; G, stage 2. 0.5 mm. indicated.
- Plate 75. Rhithropanopeus harrisii, zoea stages 1-4: A, stage 1, lateral; B-E, abdomen and telson, dorsal; B, stage 1; C, stage 2; D, stage 3; E, stage 4; F, G, antenna, ventral; F, stage 1; G, stage 4; H, I, stage 4; H, endopod of maxillule; I, endopod of maxilla. 0.1 mm. indicated.
- Plate 76. Rhithropanopeus harrisii, megalopa and young: A-C, megalopa; A, carapace, dorsal; B, chela, C, distal segments of leg 5; D, E, young, carapace, dorsal; D, stage 1; E, stage 2. 0.5 mm. indicated.
- Plate 77. Neopanope texana sayi, zoea stages 1-4: A, stage 1, lateral; B, the same, abdomen, lateral; C-E, telson, dorsal; C, stage 2; D, stage 3; E, stage 4; F, stage 4, lateral; G-I, stage 1; G, antenna, H, endopod of maxillule, I, endopod of maxilla. 0.1 mm. indicated except for F.
- Plate 78. Neopanope texana sayi, megalopa and young: A-C, megalopa; A, carapace, dorsal; B, chela; C, distal segments of leg 5; D, young, stage 1, carapace, dorsal. 0.5 mm. indicated.
- Plate 79. Eurypanopeus depressus, zoea stages 1 - 4: A, stage 1, lateral; B, stage 4, lateral; C-F, abdomen and telson, dorsal; C, stage 1; D, stage 2; E, stage 3; F, stage 4; G, H, antenna, ventral; G, stage 1; H, stage 4; I, J, stage 1; I, endopod of maxillule; J, endopod of maxilla. 0.1 mm. indicated.
- Plate 80. Eurypanopeus depressus, megalopa: A, dorsal; B, chela; C, distal segments of leg 5. 0.5 mm. indicated.
- Plate 81. Leptodius floridanus, zoea stage 1: A, lateral; B, abdomen, dorsal; C, antenna, ventral; D, endopod of maxillule; E, endopod of maxilla. 0.1 mm. indicated.

- Plate 82. Panopeus herbsii, zoea stages 1-4: A, stage 1, lateral: B-E, abdomen and telson, dorsal; B, stage 1; C, stage 2; D, stage 3; E, stage 4: F, stage 4, lateral: G, H, antenna; G, stage 1; H, stage 4: I-K, stage 4; I, mandible; J, endopod of maxillule; K, endopod of maxilla. 0.1 mm. indicated except for G-K.
- Plate 83. Panopeus herbsii, megalopa and young, carapace, dorsal: A, megalopa; B, young stage 1. 0.5 mm. indicated.
- Plate 84. Panopeus occidentalis, zoea stages 1-4: A, stage 1, lateral; B, the same abdomen, dorsal: C-E, telson, dorsal; C, stage 2; D, stage 3; E, stage 4: F, stage 4, lateral: G-I, stage 1; G, antenna; H, endopod of maxillule; I, endopod of maxilla. 0.5 mm. indicated except for G-I.
- Plate 85. Panopeus occidentalis, megalopa and young: A-C, megalopa; A, carapace, dorsal; B, chela; C, distal segments of leg 5: D, young stage 1, carapace, dorsal. 0.5 mm. indicated.
- Plate 86. Panopeus sp., zoea stages 1-4: A, stage 1, lateral; B, stage 4, lateral: C-F, abdomen and telson, dorsal; C, stage 1; D, stage 2; E, stage 3; F, stage 4: G, H, antenna, ventral; G, stage 1; H, stage 4: I, J, stage 4; I, endopod of maxillule; J, endopod of maxilla. 0.1 mm. indicated.
- Plate 87. Panopeus sp., megalopa: A, dorsal; B, chela; C, distal segments of leg 5. 0.5 mm. indicated.
- Plate 88. Eurytium limosum, zoea stages 1-4: A, stage 1, lateral: B-E, telson, dorsal; B, stage 1; C, stage 2; D, stage 3; E, stage 4: F, G, antenna, ventral; F, stage 1; G, stage 4. 0.1 mm. indicated.
- Plate 89. Eurytium limosum, megalopa and young, carapace, dorsal: A, megalopa; B, young stage 1. 0.1 mm. indicated.
- Plate 90. Pinnotheres sp., young stage 1: A, dorsal; B, abdomen, dorsal. 0.1 mm. indicated.
- Plate 91. Pachygrapsus transversus, zoea stage 1: A, lateral; B, abdomen, dorsal; C, antenna, ventral; D, maxillule; E, maxilla. 0.1 mm. indicated.

- Plate 92. Sesarma cinerium, zoea stages 1-4: A, stage 1, lateral; B-E, abdomen and telson, dorsal; B, stage 1; C, stage 2; D, stage 3; E, stage 4; F, stage 4, lateral; G, H, antenna, ventral; G, stage 1; H, stage 4; I-L, stage 4, endopods; I, maxillule; J, maxilla; K, maxilliped 1; L, maxilliped 2. 0.1 mm. indicated.
- Plate 93. Sesarma cinerium, megalopa: A, dorsal, B, thoracic sternum; C, chela; D, dactylus of leg 5. 0.2 mm. indicated.
- Plate 94. Ocyroide quadrata, zoea stage 1: A, lateral; B, abdomen, dorsal; C, antenna, ventral; D, maxillule; E, maxilla. 0.1 mm. indicated.
- Plate 95. Uca pugnax, zoea stages 1-5: A, stage 1, lateral; B-F, abdomen and telson, dorsal; B, stage 1; C, stage 2; D, stage 3; E, stage 4; F, stage 5; G, stage 5, lateral; H, I, antenna, ventral; H, stage 1; I, stage 5; J, K, stage 5 endopod; J, maxillule, K, maxilla. 0.1 mm. indicated.
- Plate 96. Uca pugnax, megalopa and young: A-C, megalopa; A, dorsal; B, chela; C, distal segments of leg 5; D, young stage 1, dorsal. 0.5 mm. indicated.
- Plate 97. Uca pugilator and U. minax: A-C, U. pugilator, zoea stage 1; A, lateral; B, abdomen, dorsal; C, antenna, ventral; D-F, U. minax, zoea stage 1; D, lateral; E, abdomen, dorsal; F, antenna, ventral. 0.1 mm. indicated except for C and F.
- Plate 98. Libinia dubia, zoea stages 1 and 2: A, stage 1, lateral; B, the same, abdomen, dorsal; C, stage 2, telson, dorsal; D, antenna, stage 1. 0.1 mm. indicated.
- Plate 99. Libinia dubia, megalopa and young, carapace, dorsal: A, megalopa; B, young stage 1. 0.2 mm. indicated.

- Plate 100. Mithrax pleuracanthus, zoea and megalopa: A-C, zoea stage 1; A, lateral; B, abdomen, dorsal; C, antenna, ventral: D-F, zoea stage 2; D, lateral; E, telson, dorsal; F, antenna, ventral: G, megalopa, carapace, dorsal. 0.2 mm. indicated.
- Plate 101. Macrocoeloma trispinosum, zoea stage 1: A, lateral; B, telson, dorsal; C, antenna, ventral. 0.1 mm. indicated.
- Plate 102. Stenorynchus seticornis, zoea stage 1 and 2: A, stage 1, lateral; B, the same, abdomen, dorsal; C, the same, antenna; D, stage 2, telson, dorsal. 0.1 mm. indicated.
- Plate 103. Stenorynchus seticornis, megalopa, dorsal. 0.5 mm. indicated.
- Plate 104. Podochela riisei, zoea stage 1: A, lateral; B, telson, dorsal; C, antenna. 0.1 mm. indicated.
- Plate 105. Heterocrypta granulata, zoea stage 1: A, lateral; B, abdomen, dorsal; C, antenna, ventral. 0.1 mm. indicated.

PLATE I

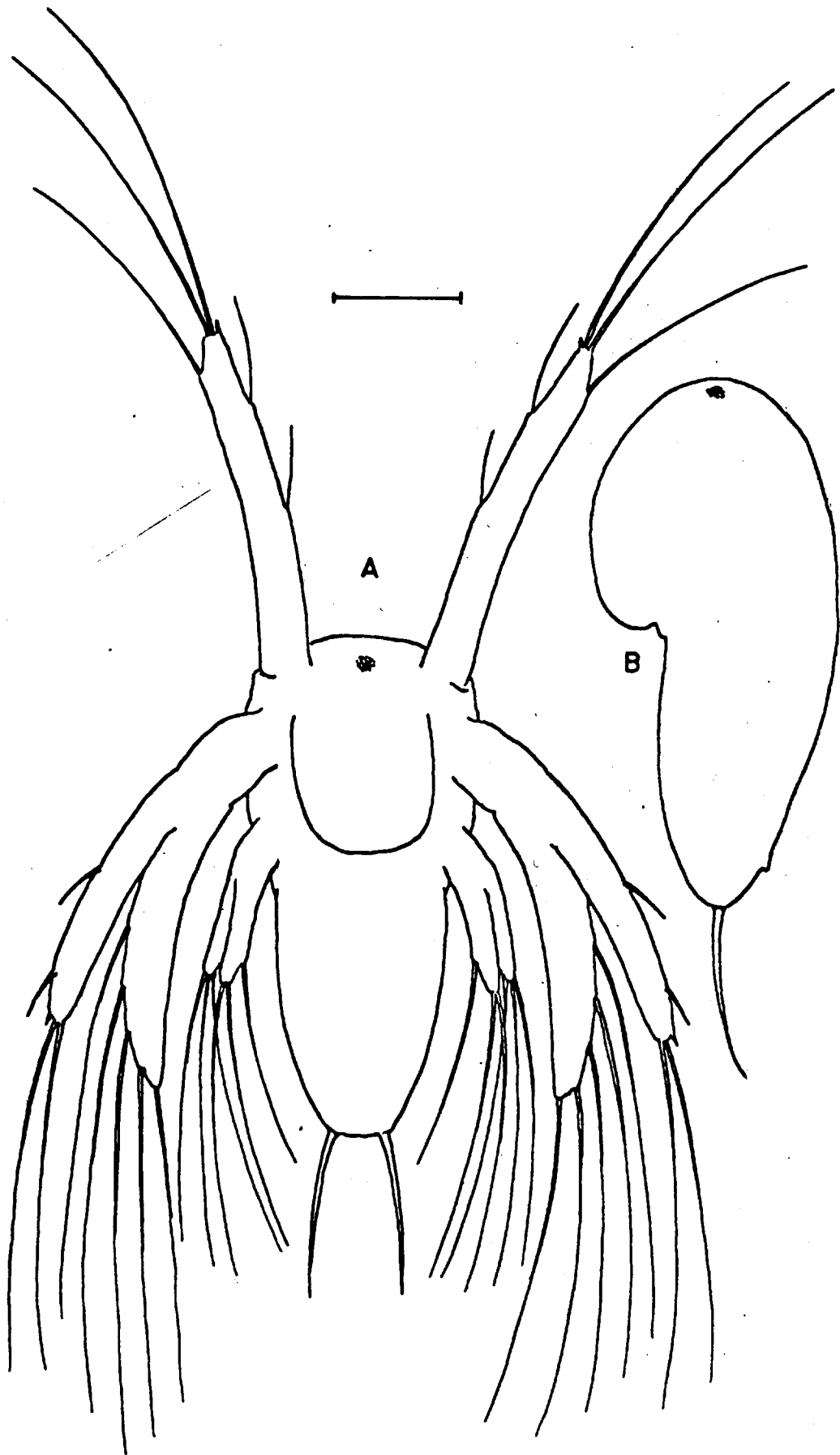


PLATE 2

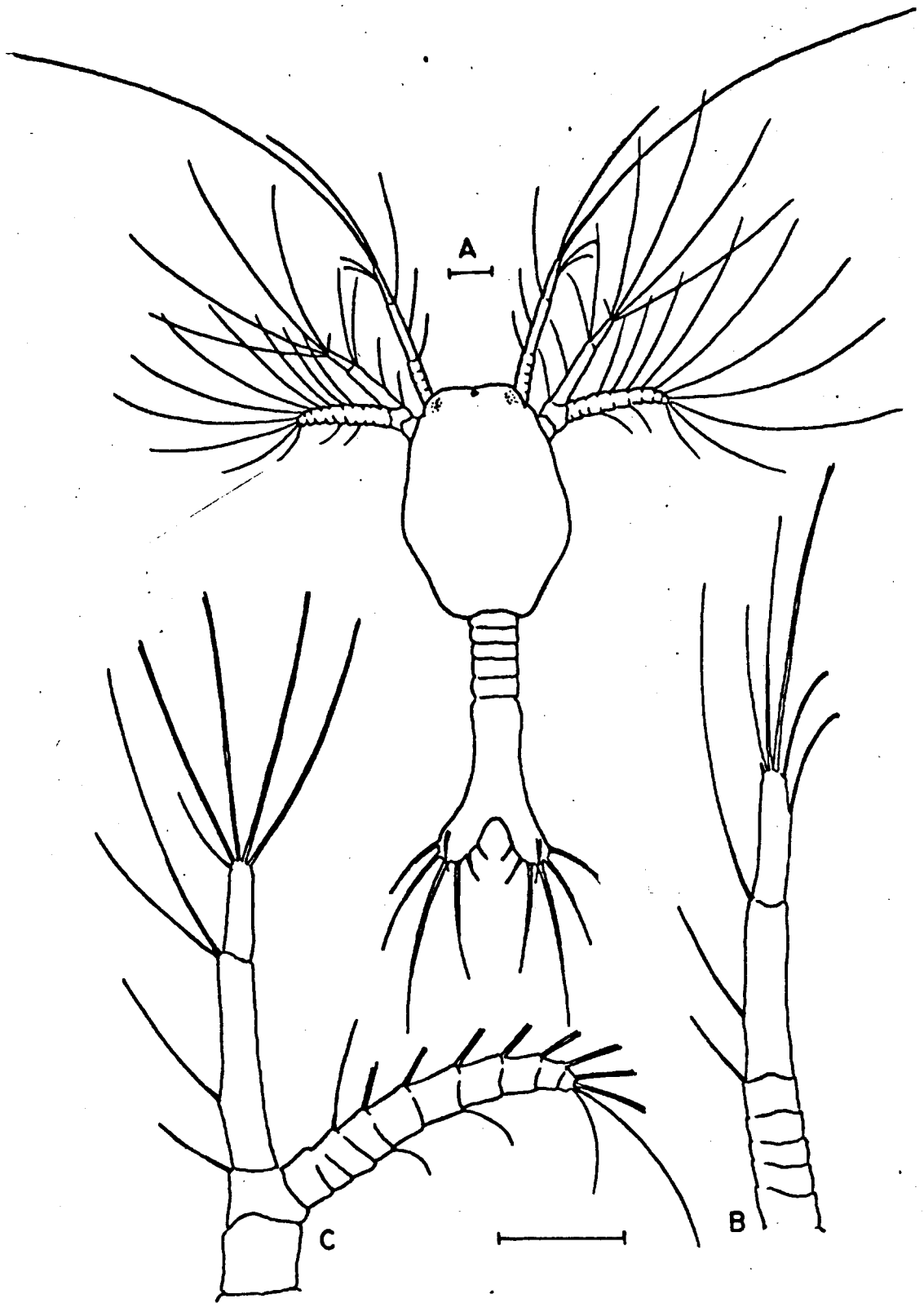


PLATE 3

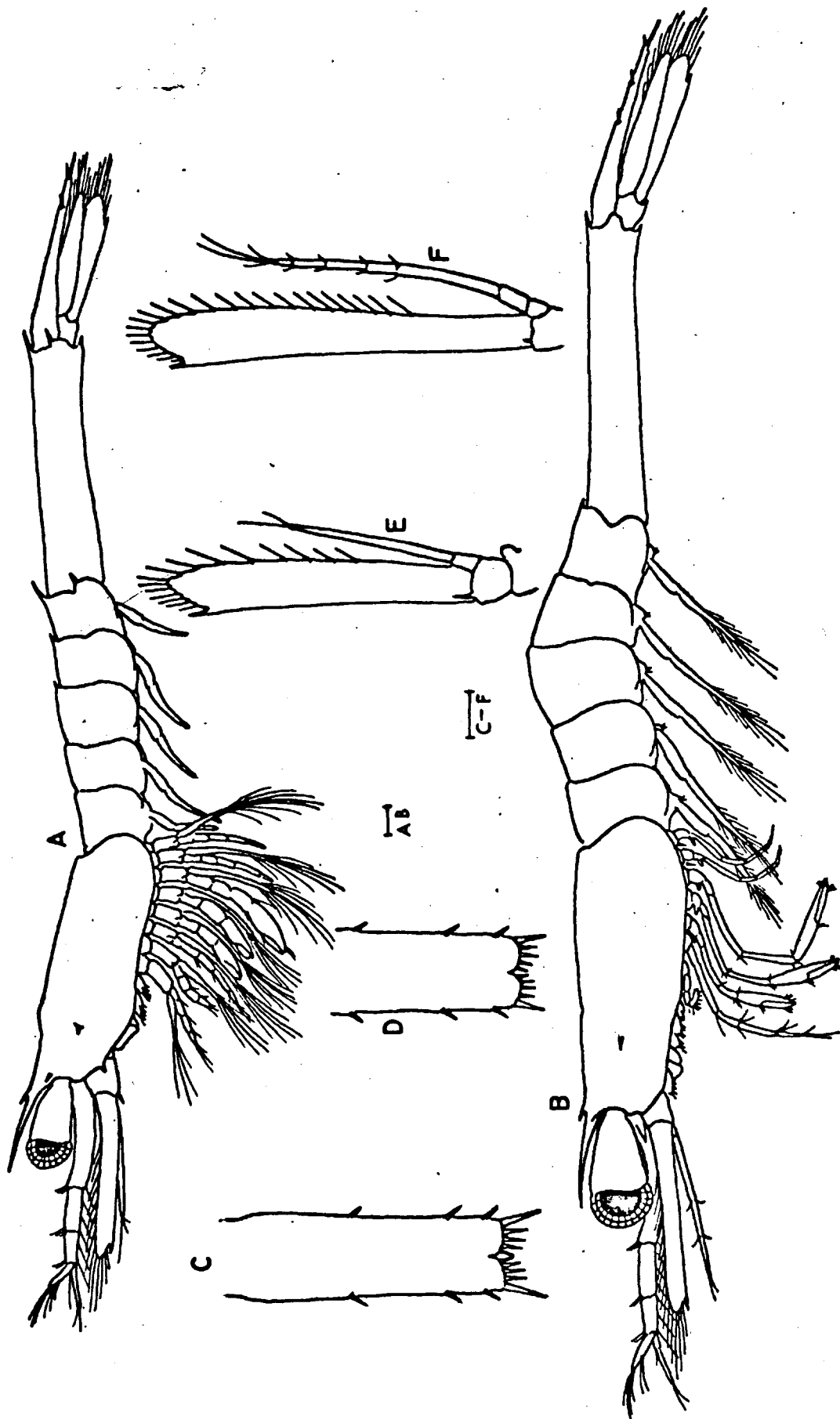


PLATE 4

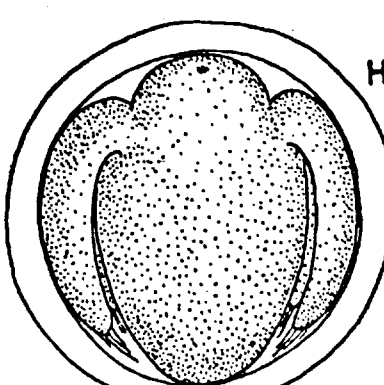
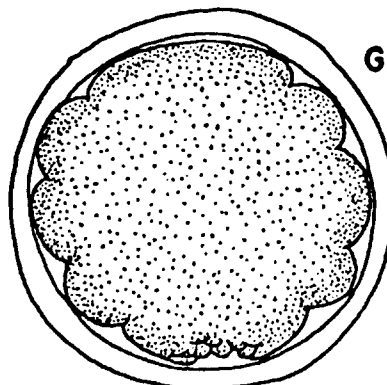
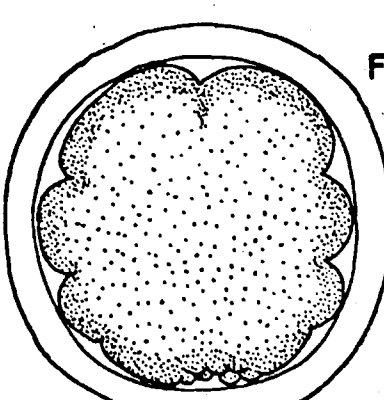
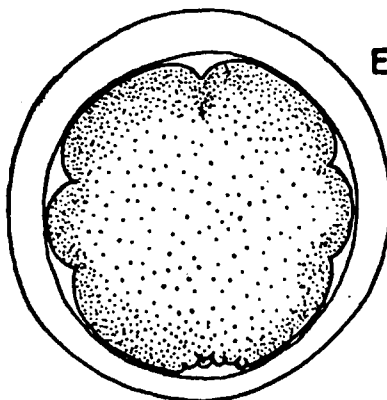
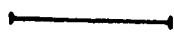
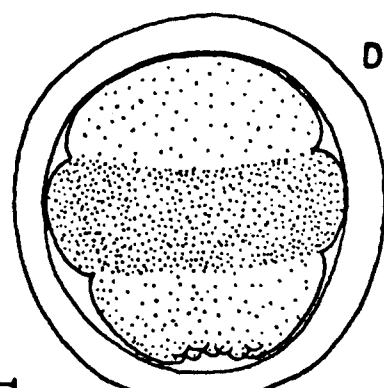
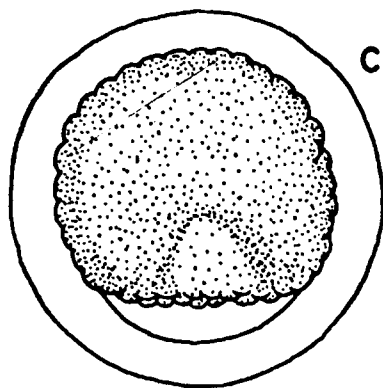
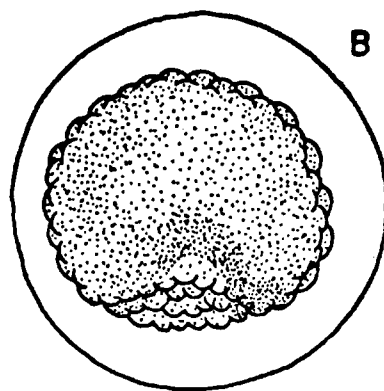
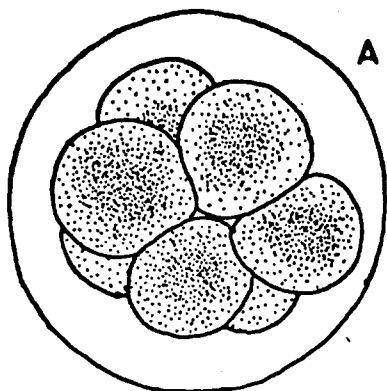


PLATE 5

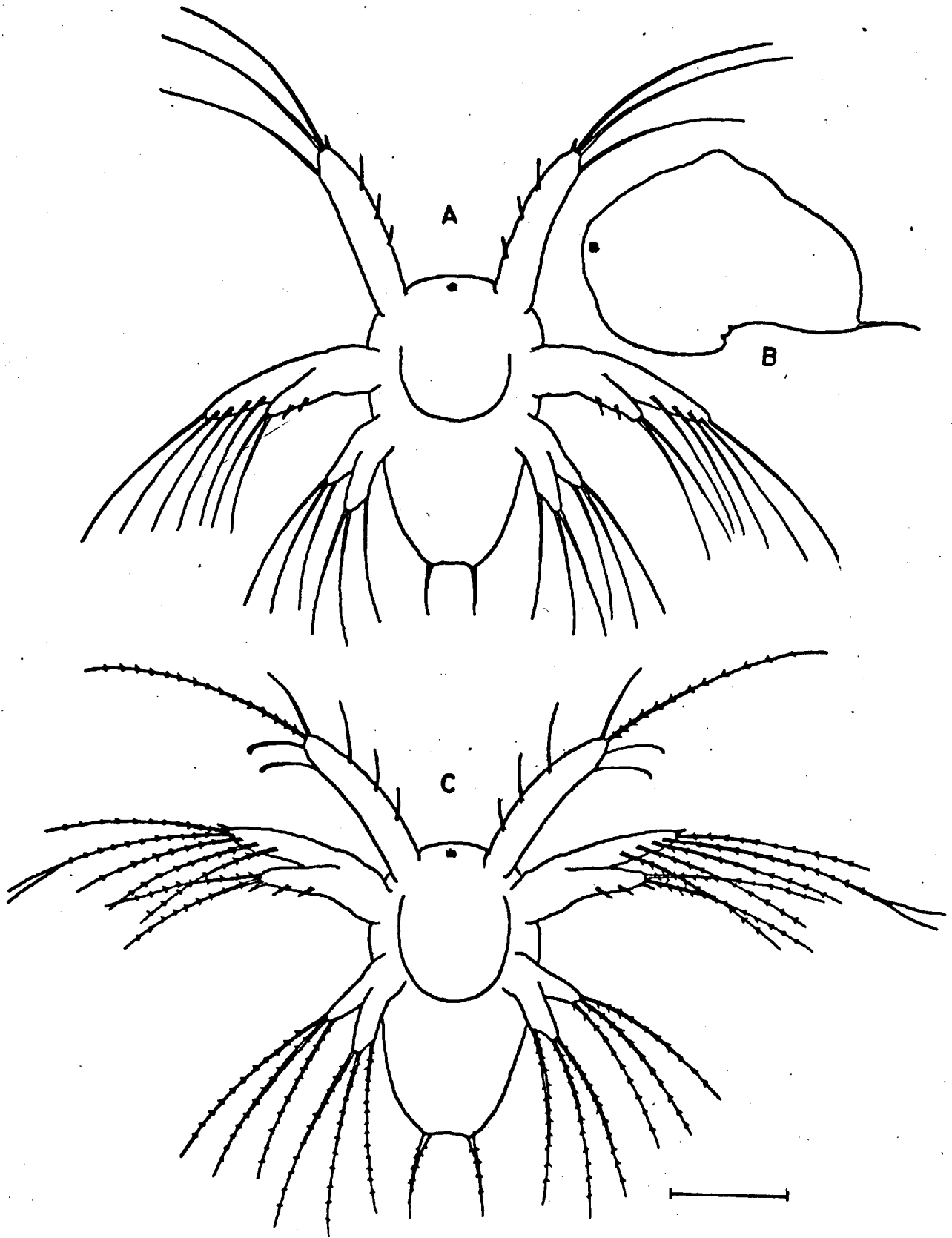


PLATE 6

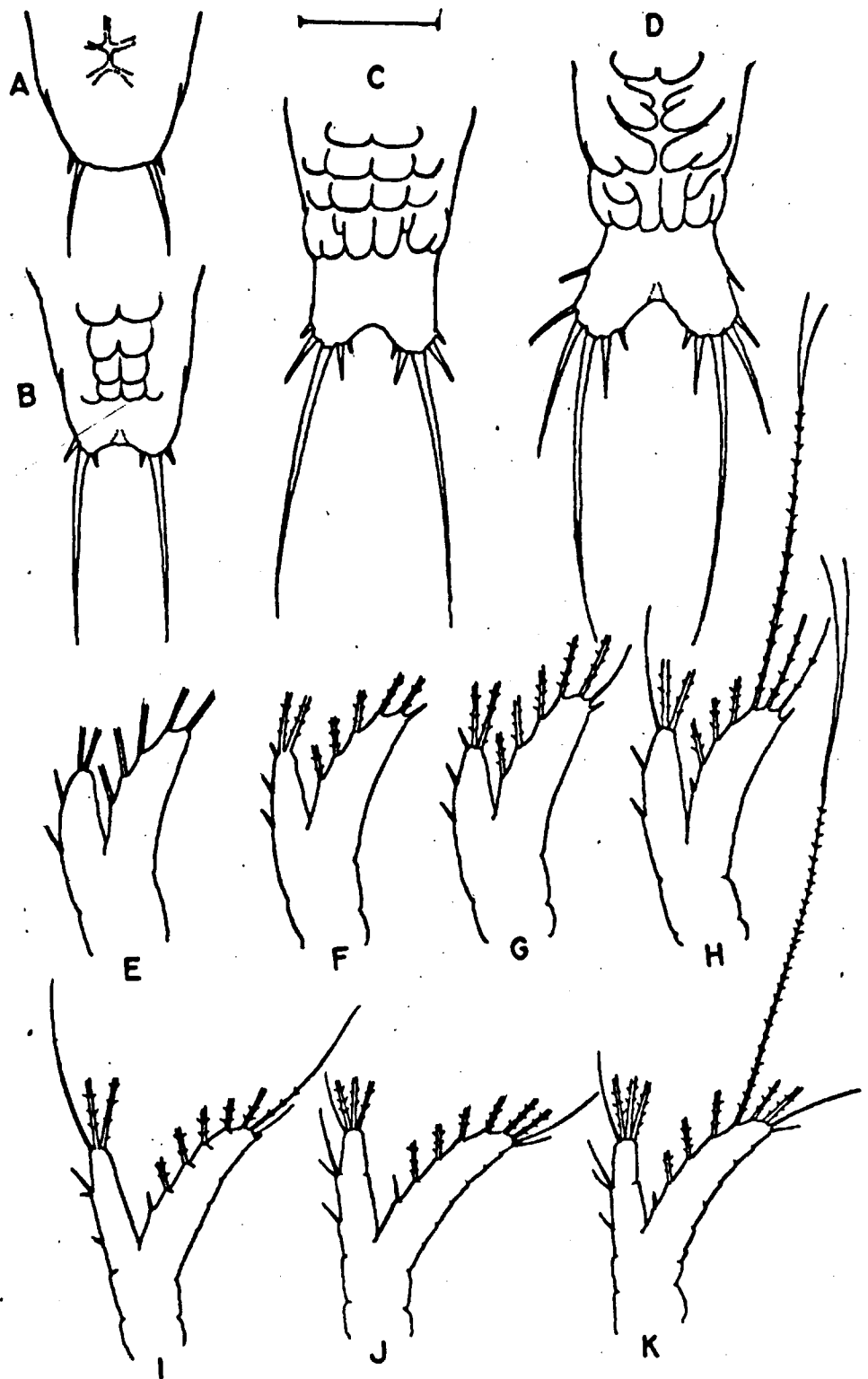


PLATE 7

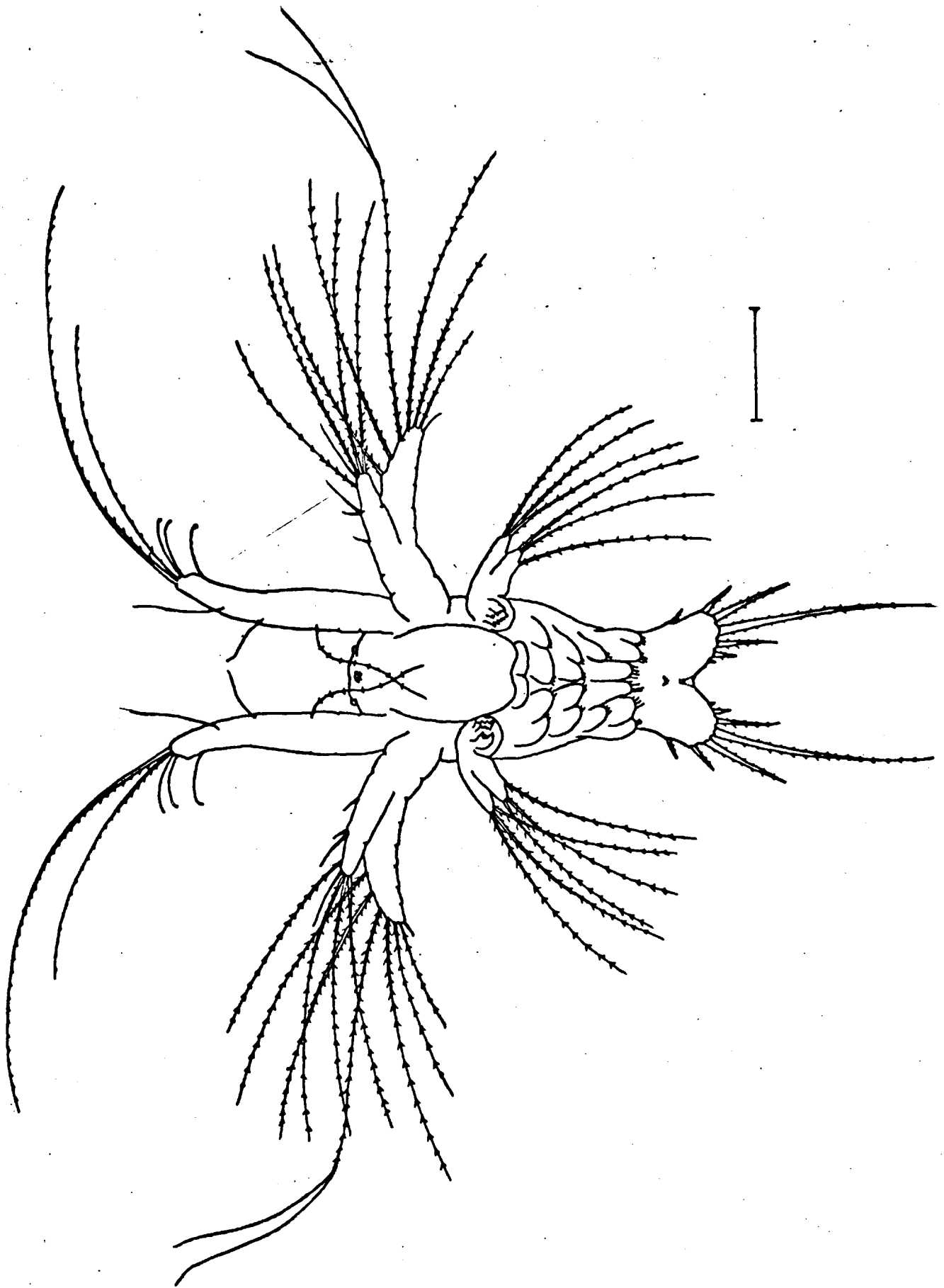


PLATE 8

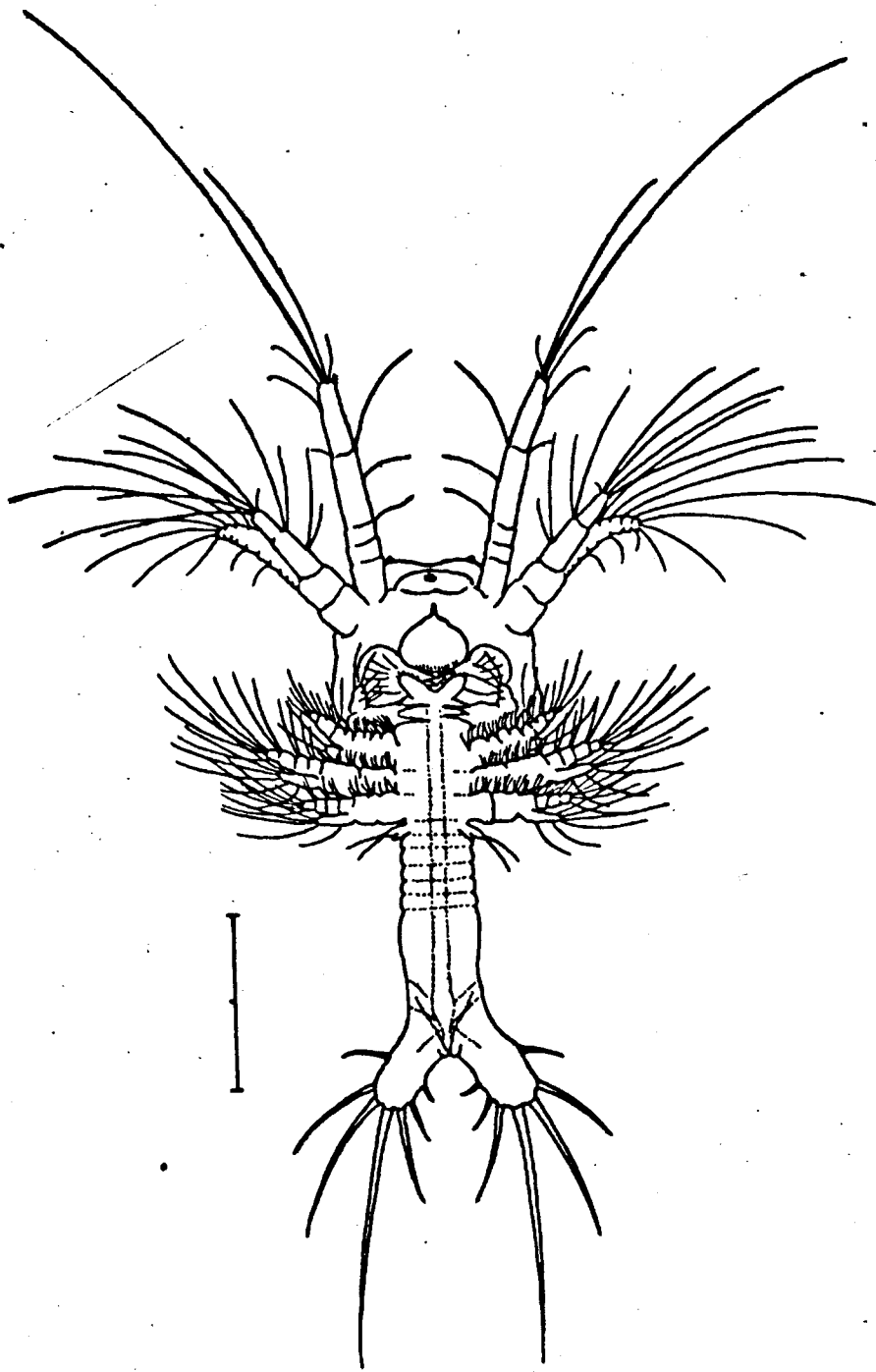


PLATE 9

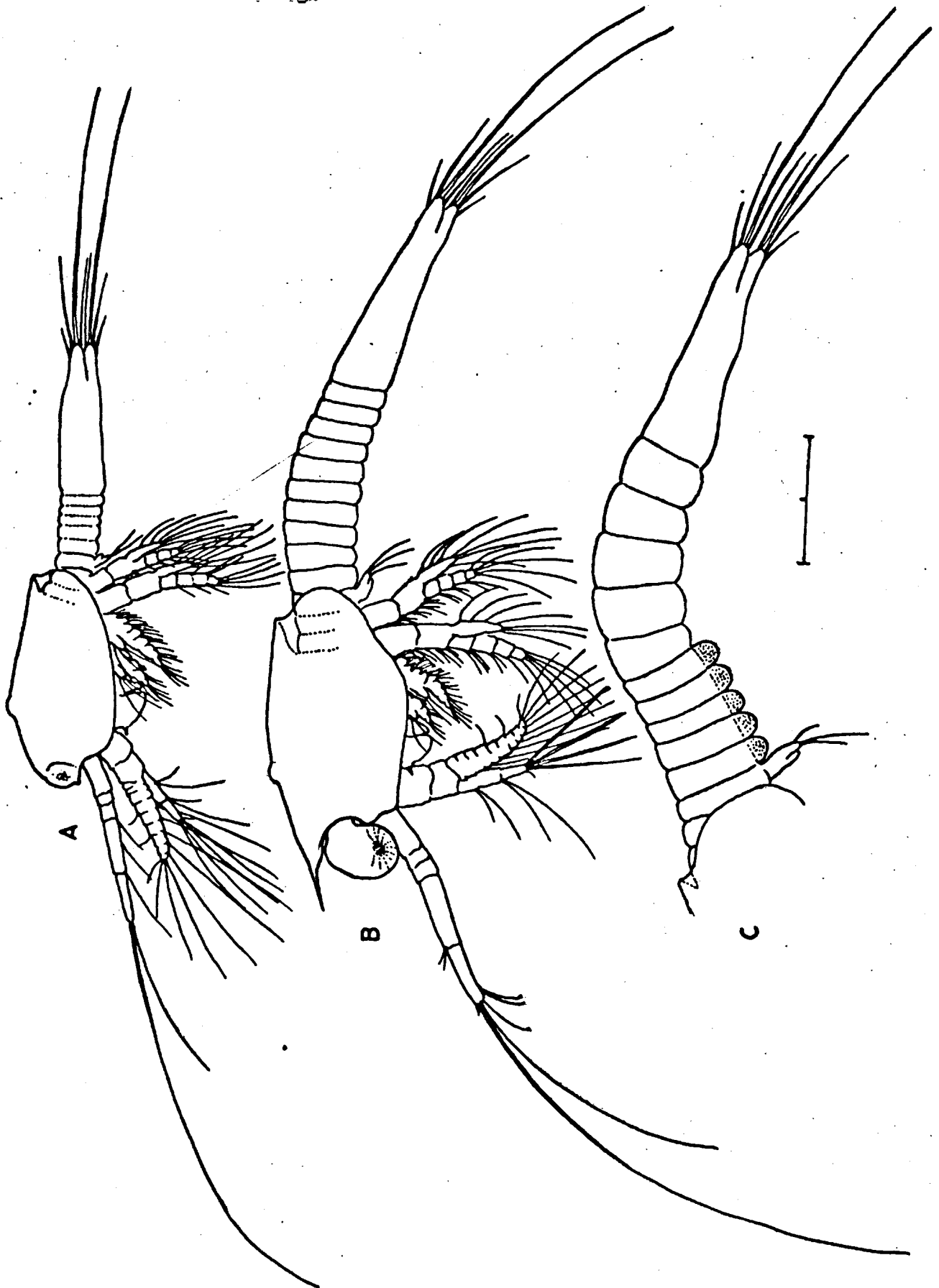


PLATE 10

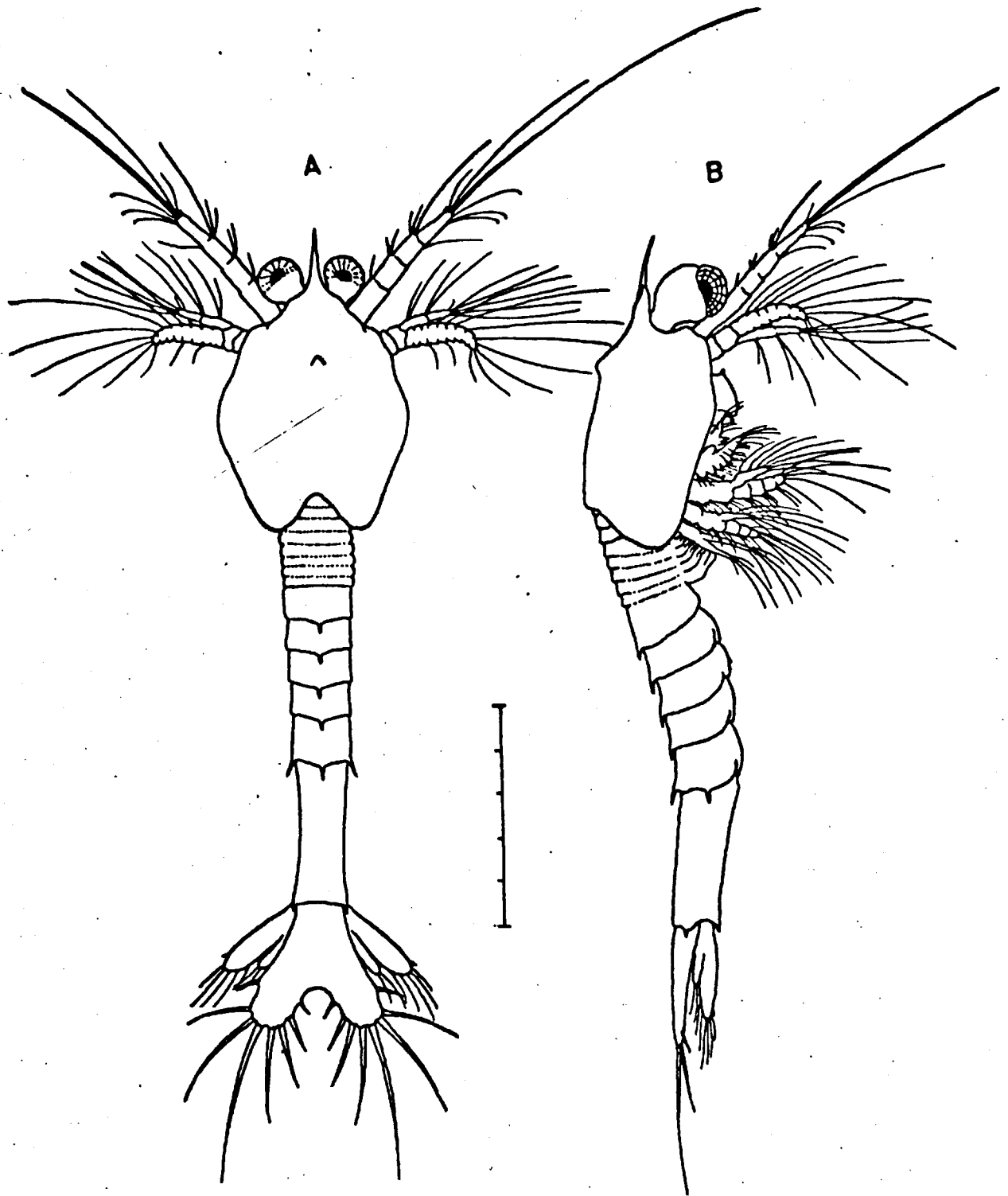


PLATE II

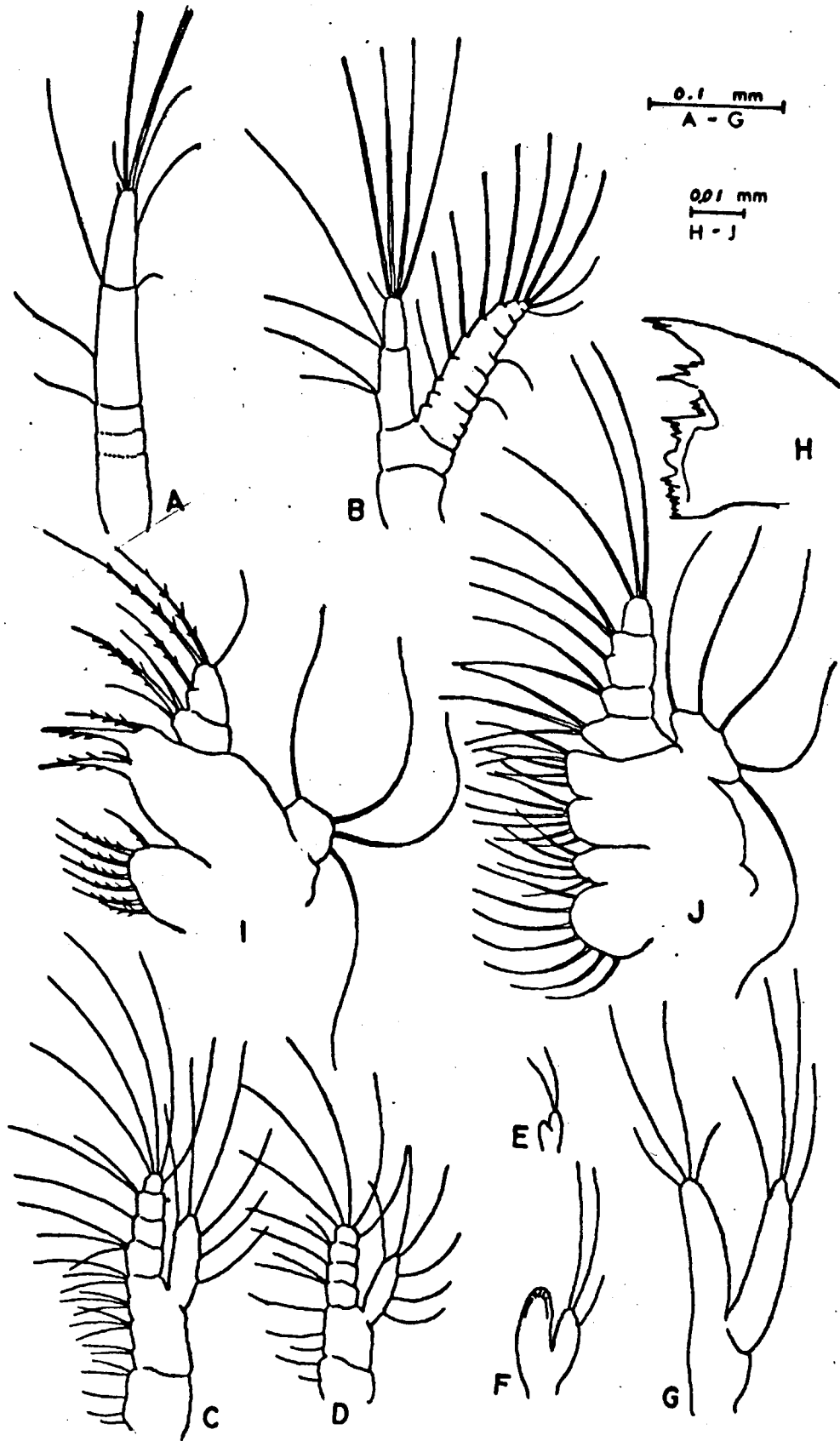
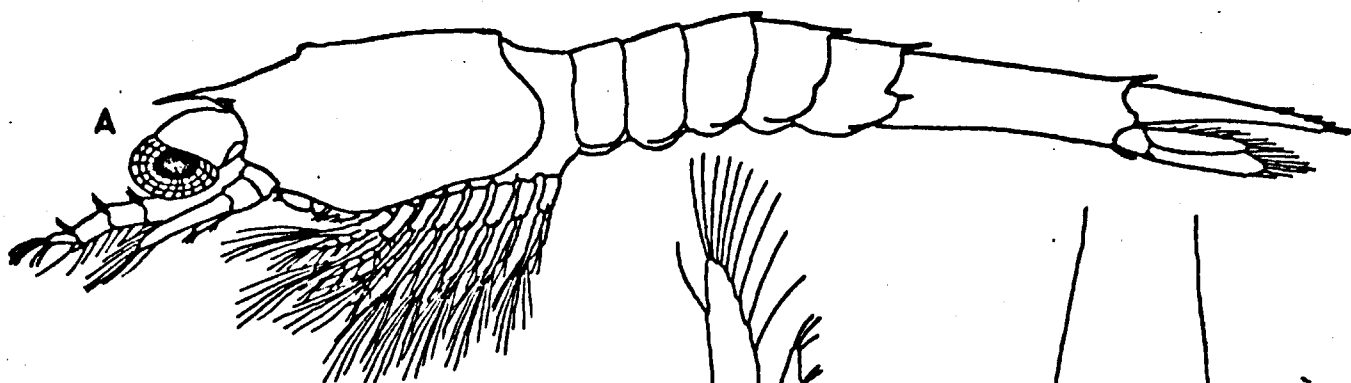
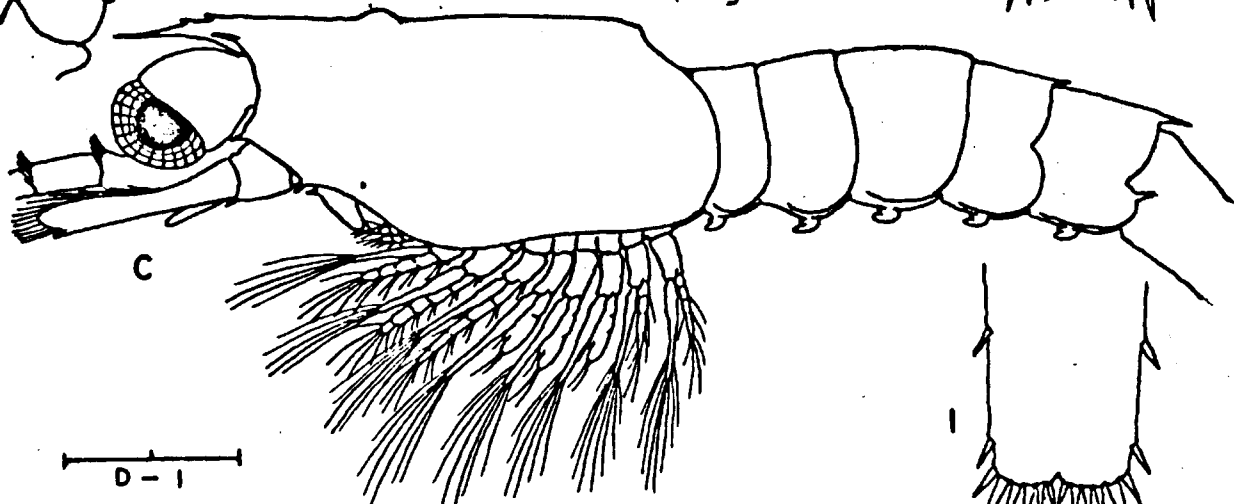
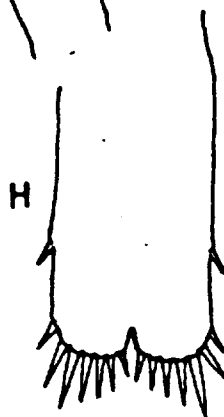
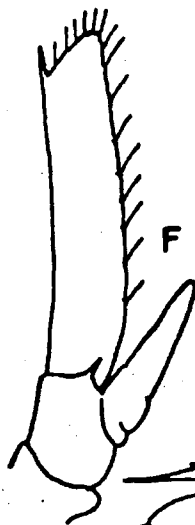
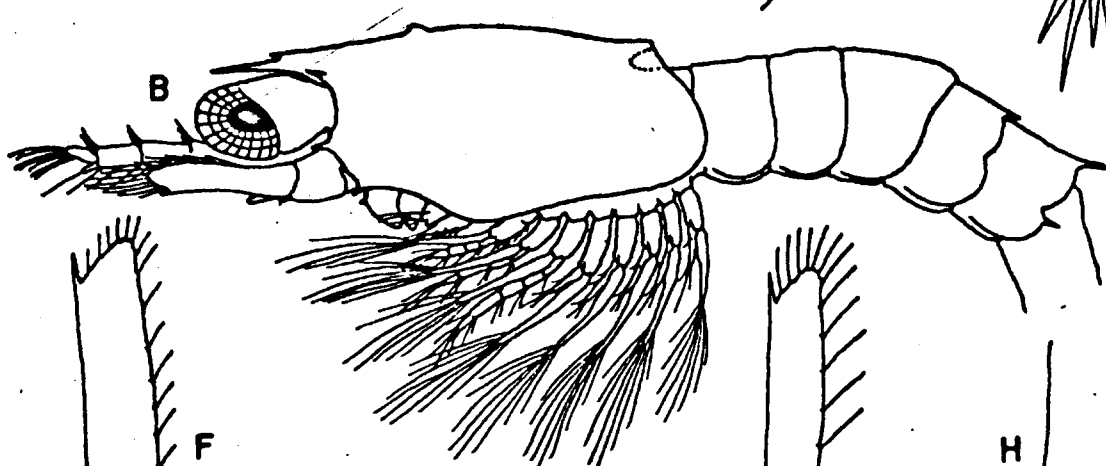
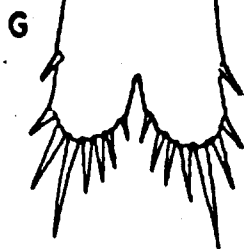
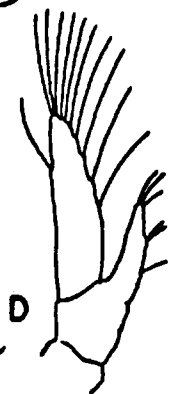


PLATE 12



A-C



D-I

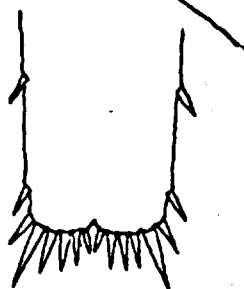
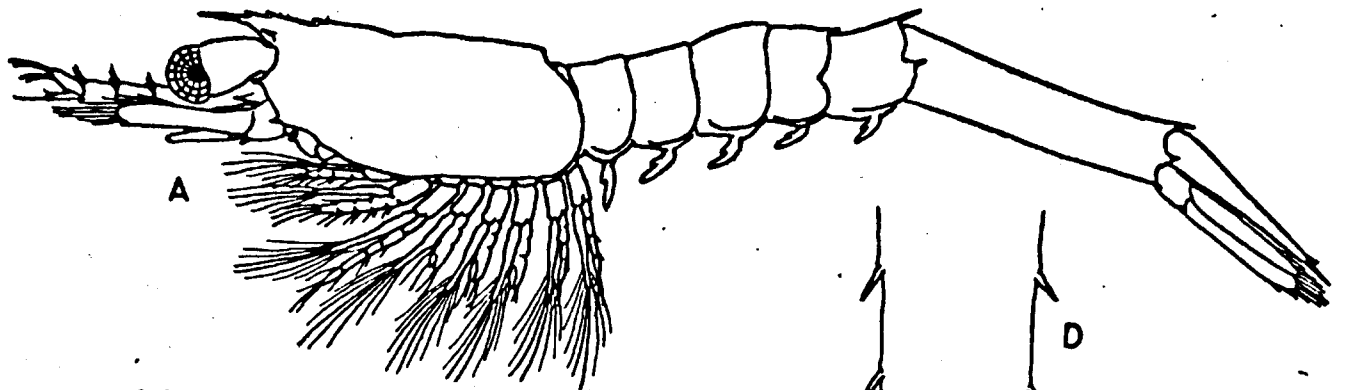
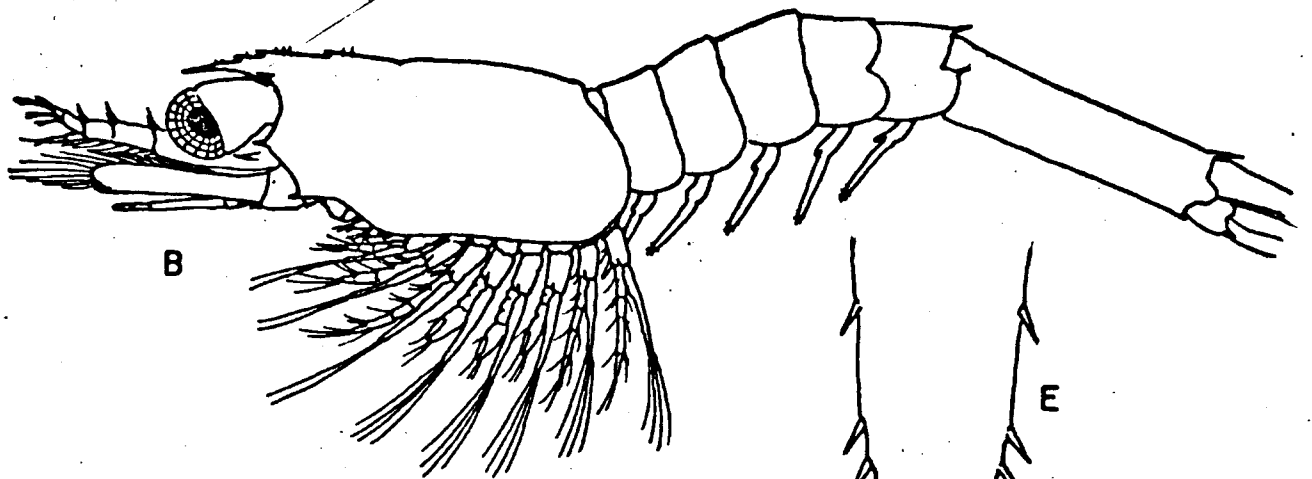
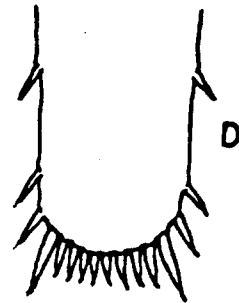


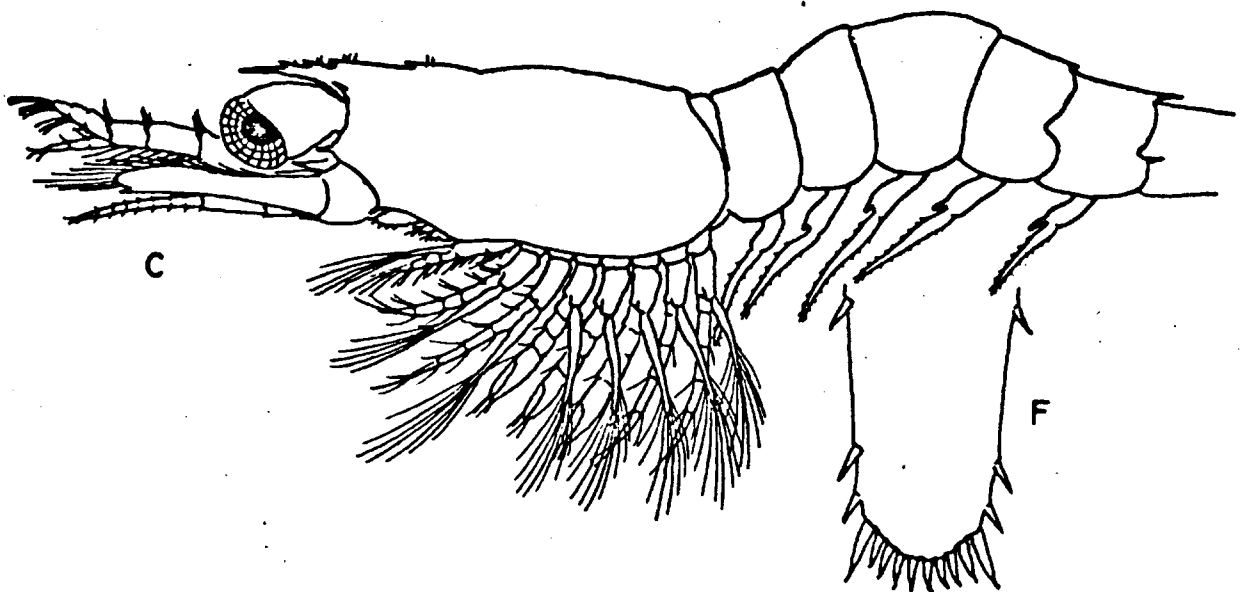
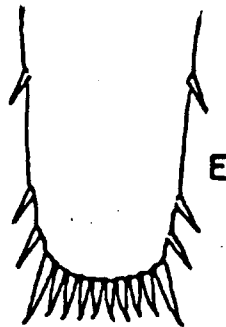
PLATE 13



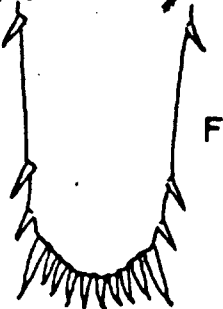
0.5 mm
A-C



0.2 mm
D-F



C



F

PLATE 14

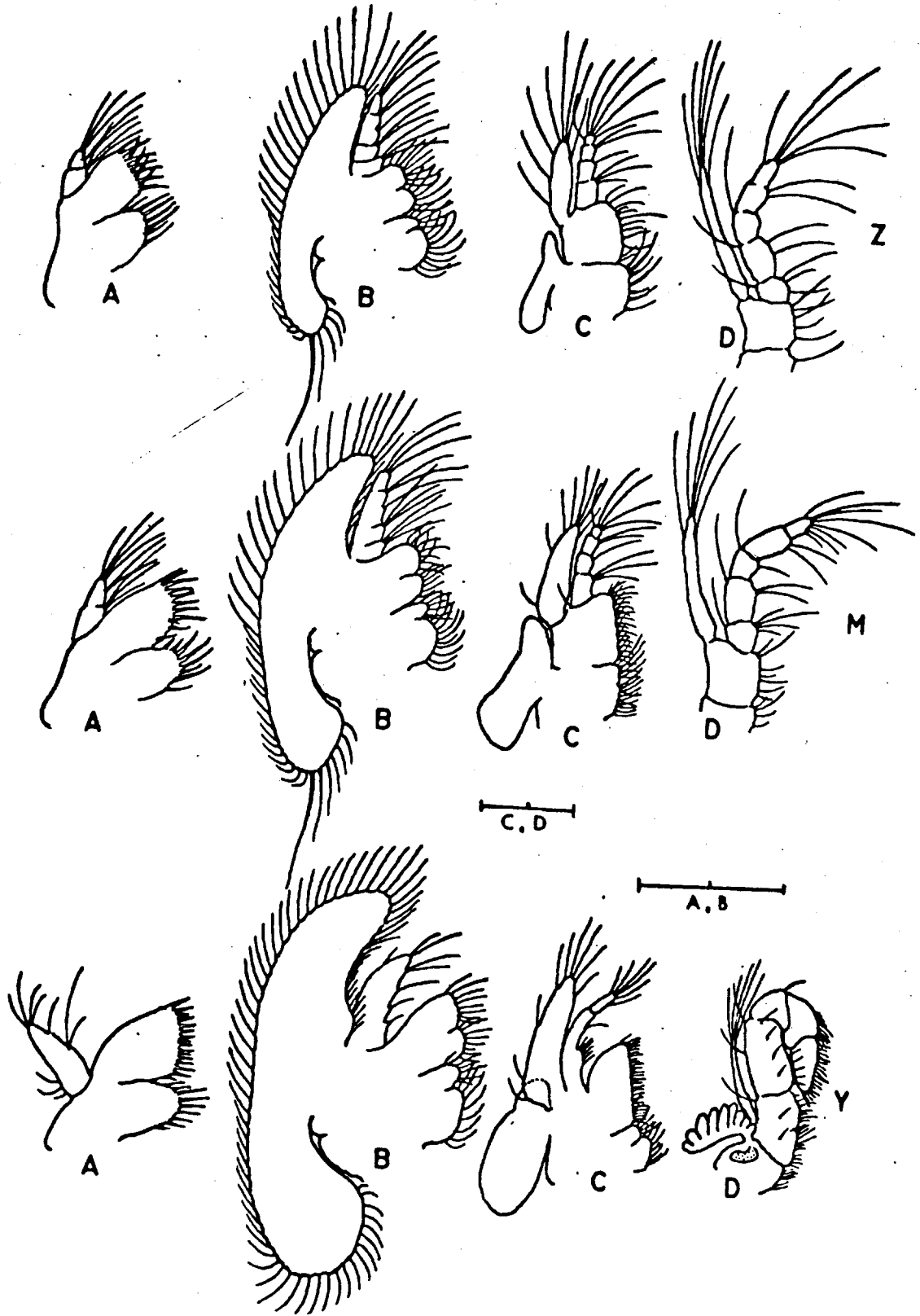


PLATE 15

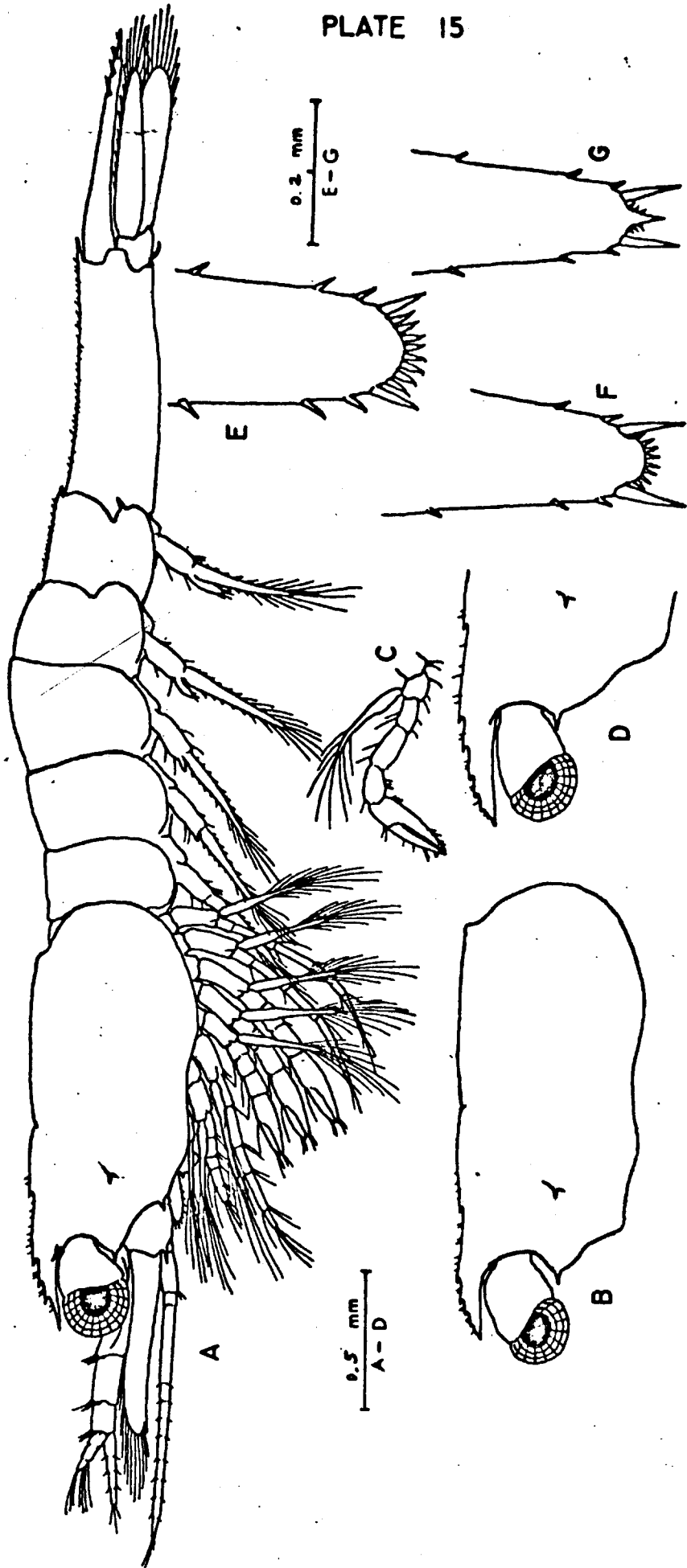
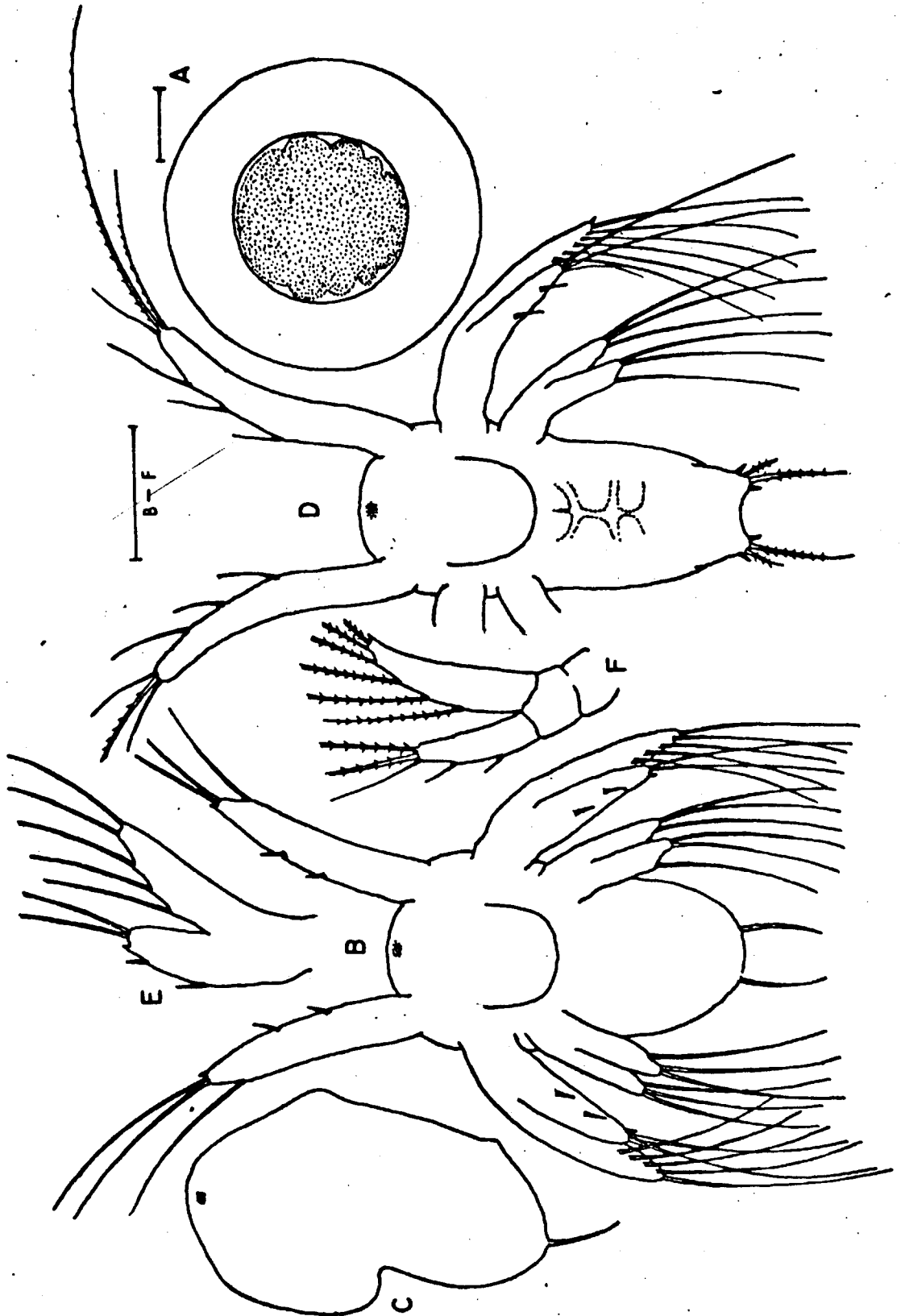
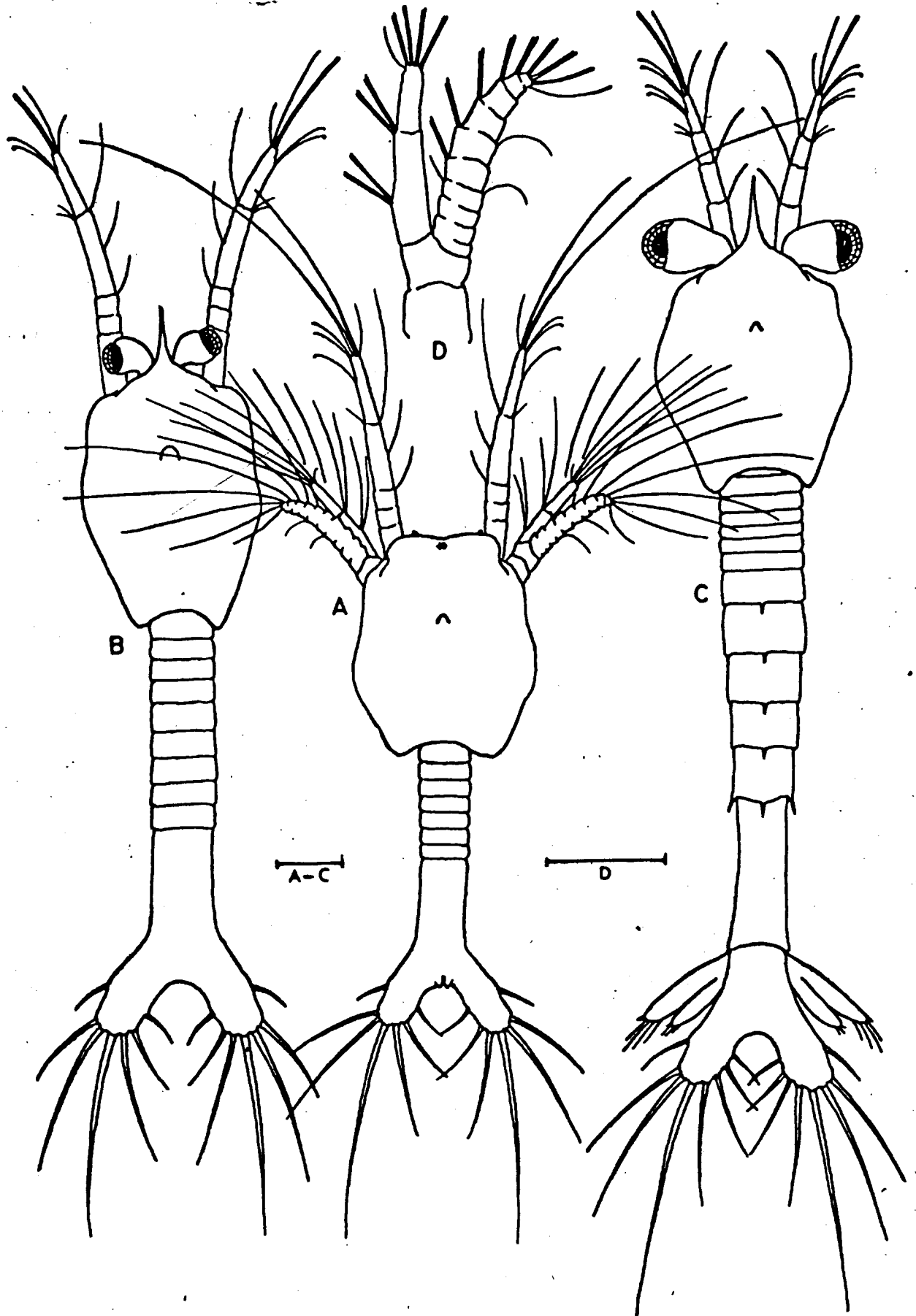
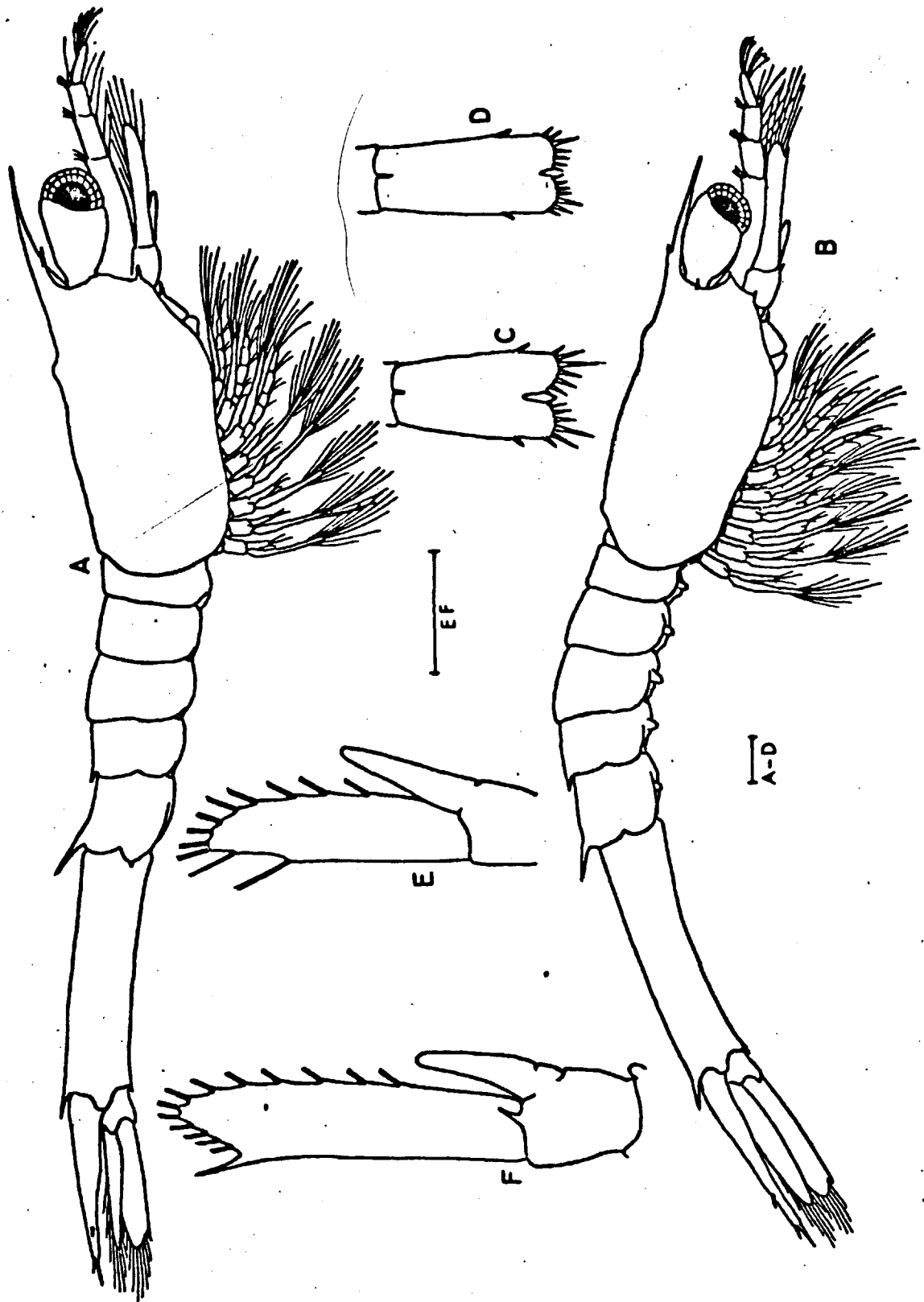


PLATE 16







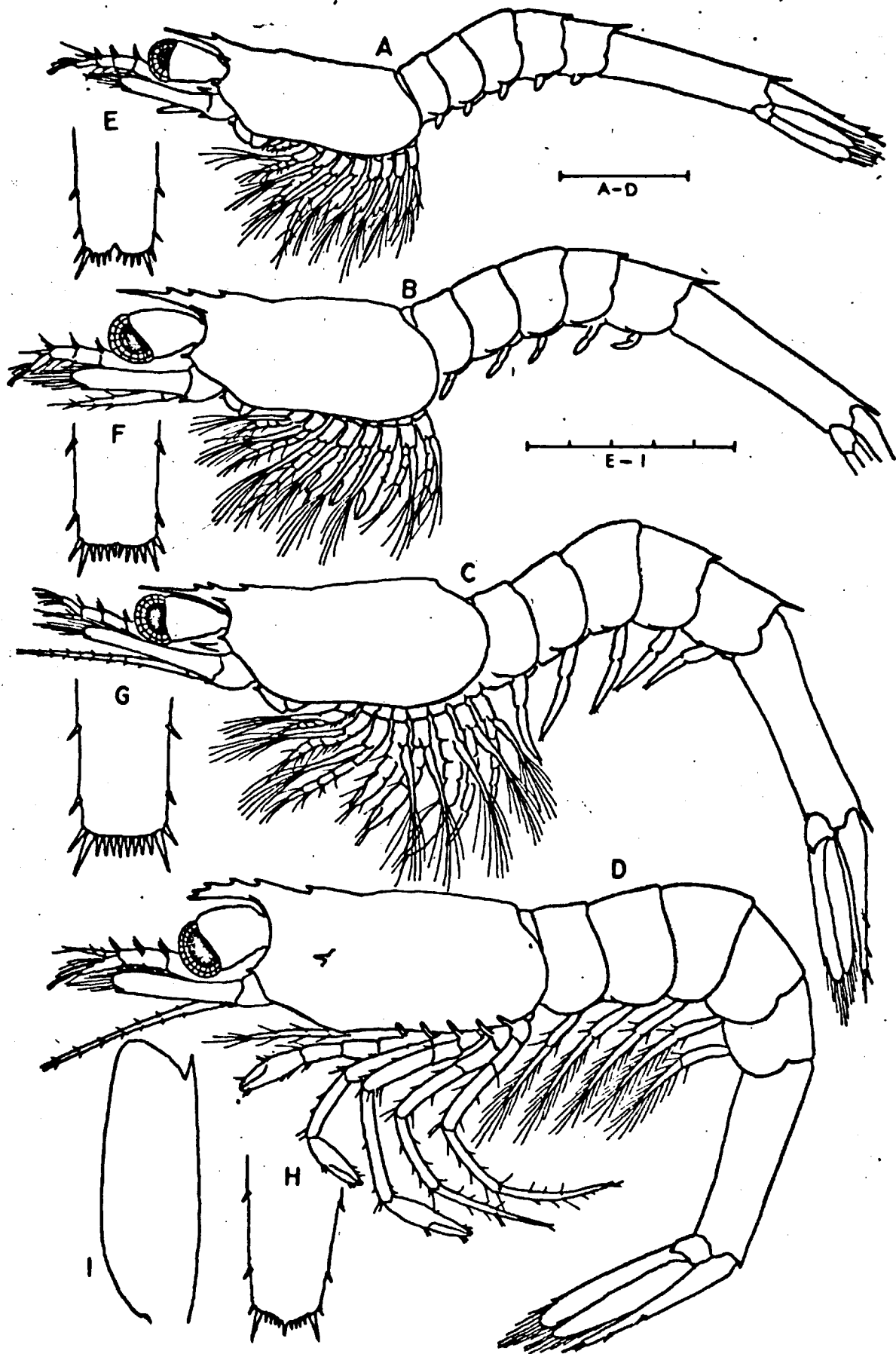


PLATE 20

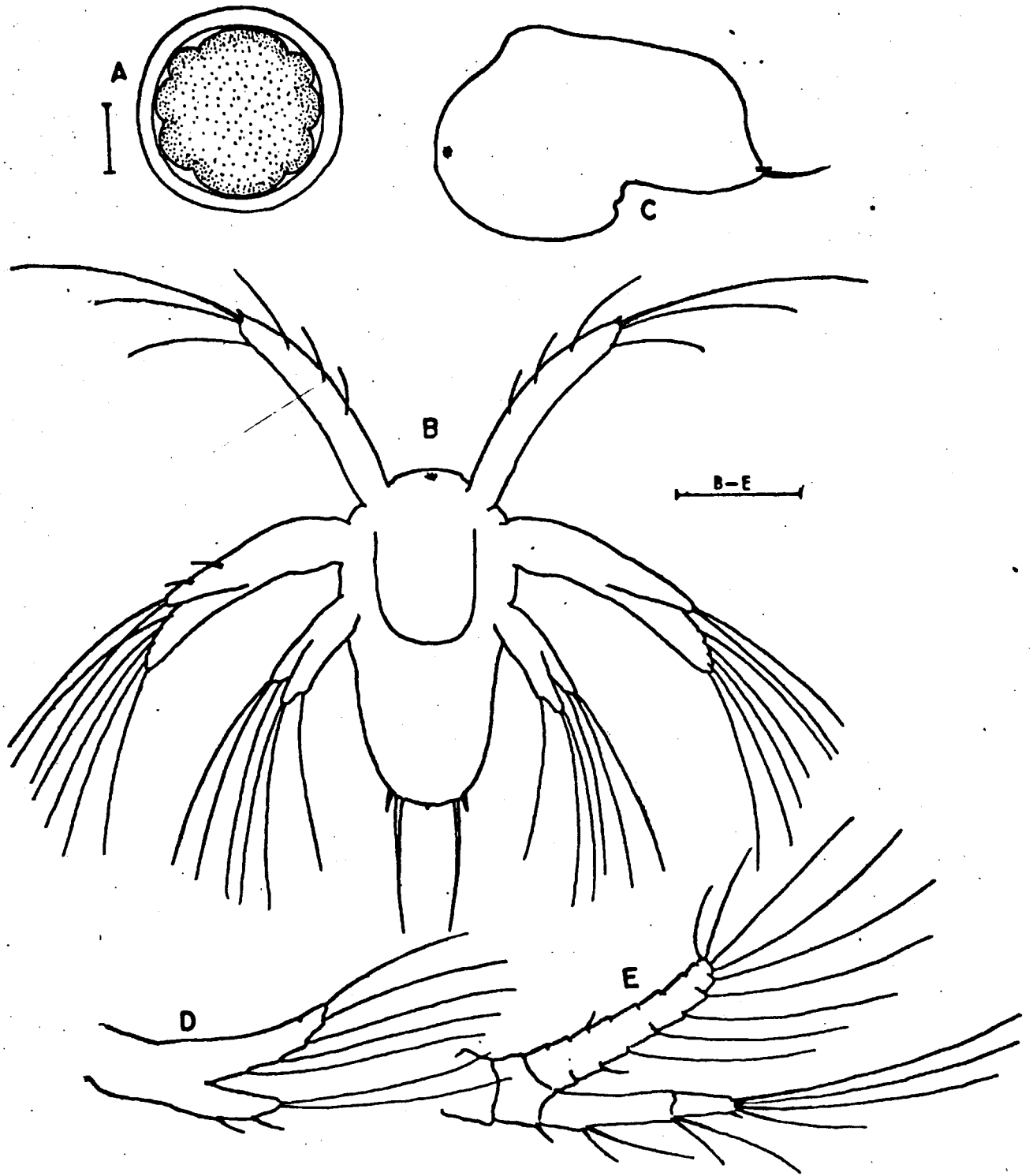


PLATE 21

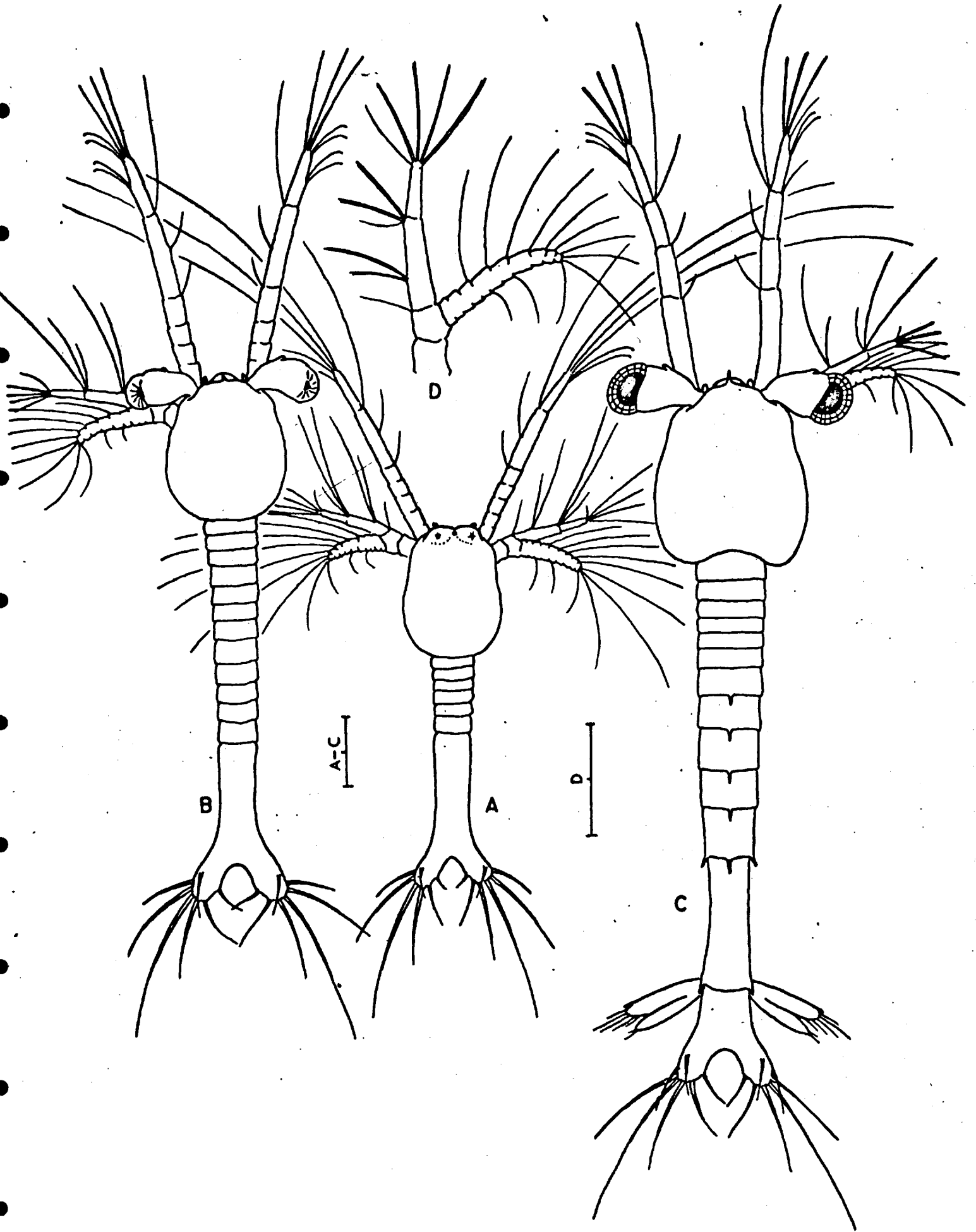


PLATE 22

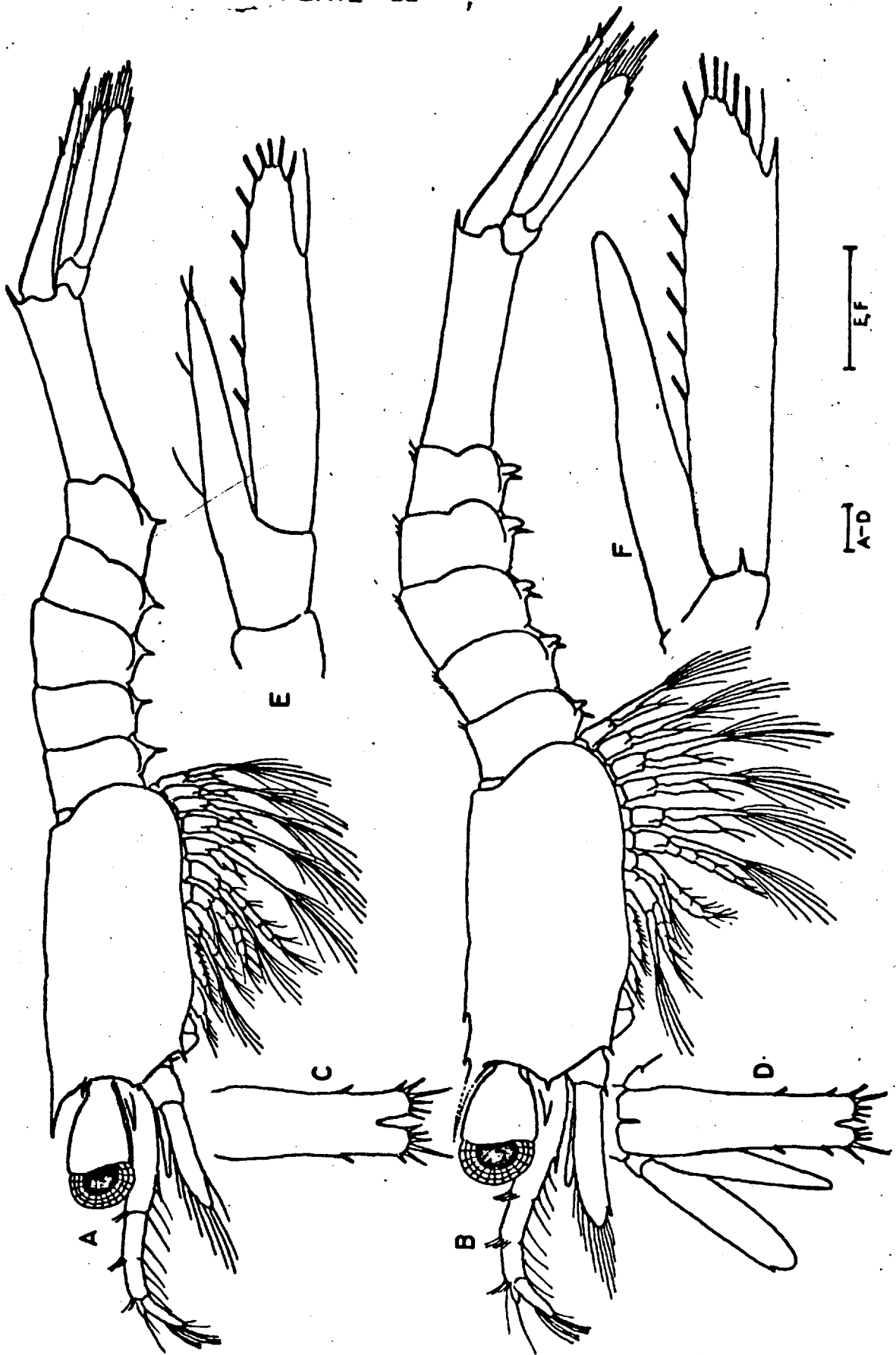


PLATE 23

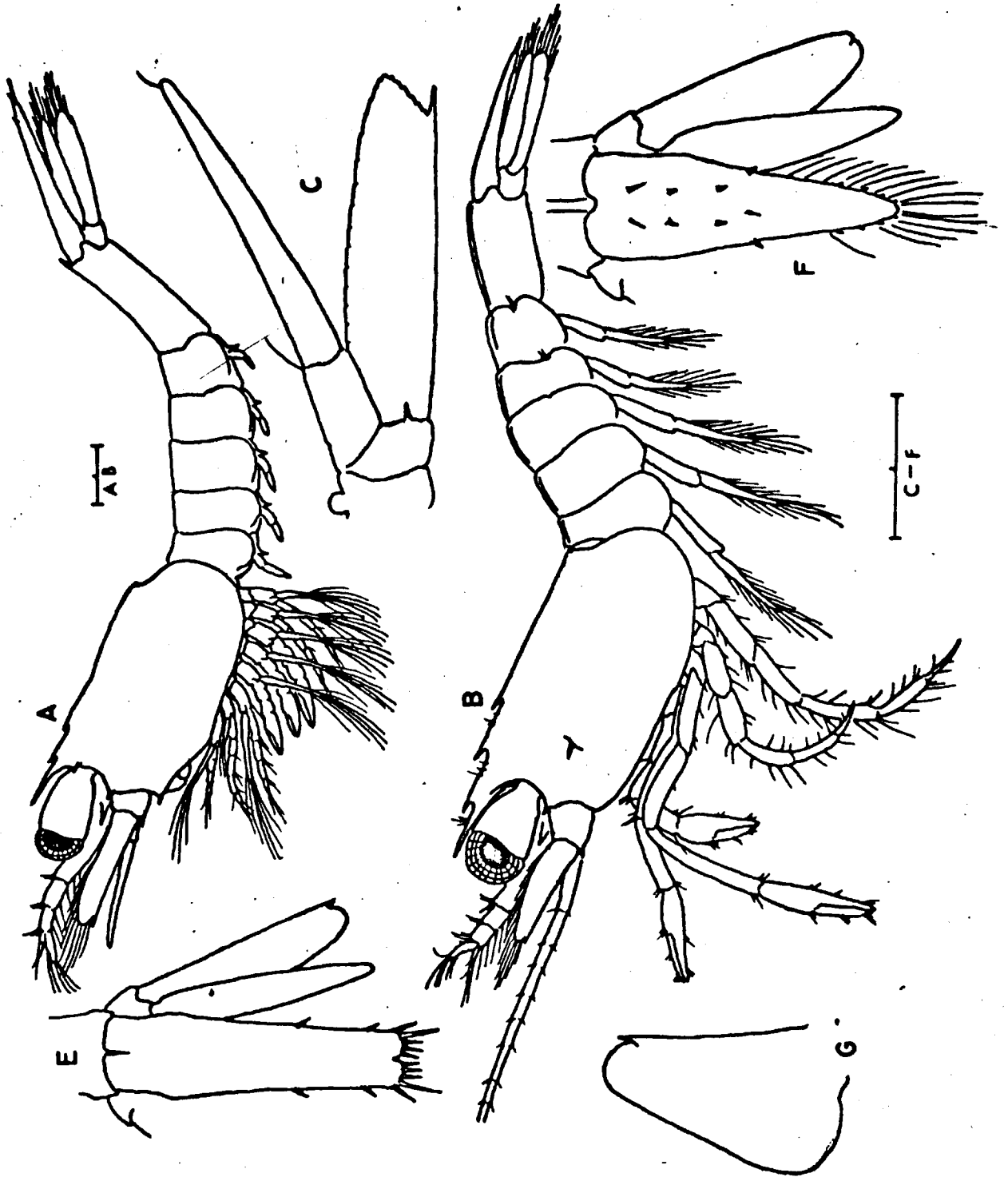


PLATE 24

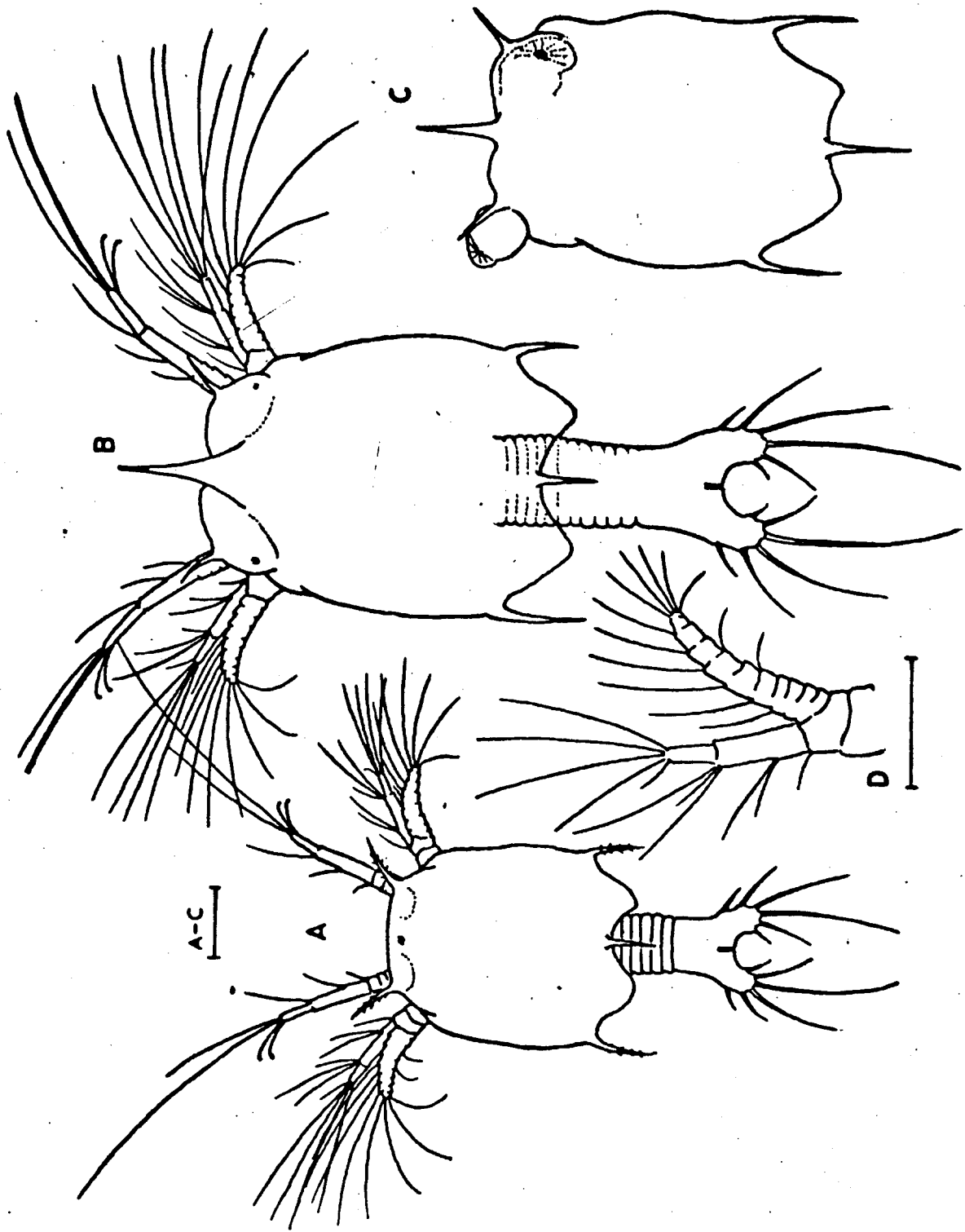


PLATE 25



PLATE 26

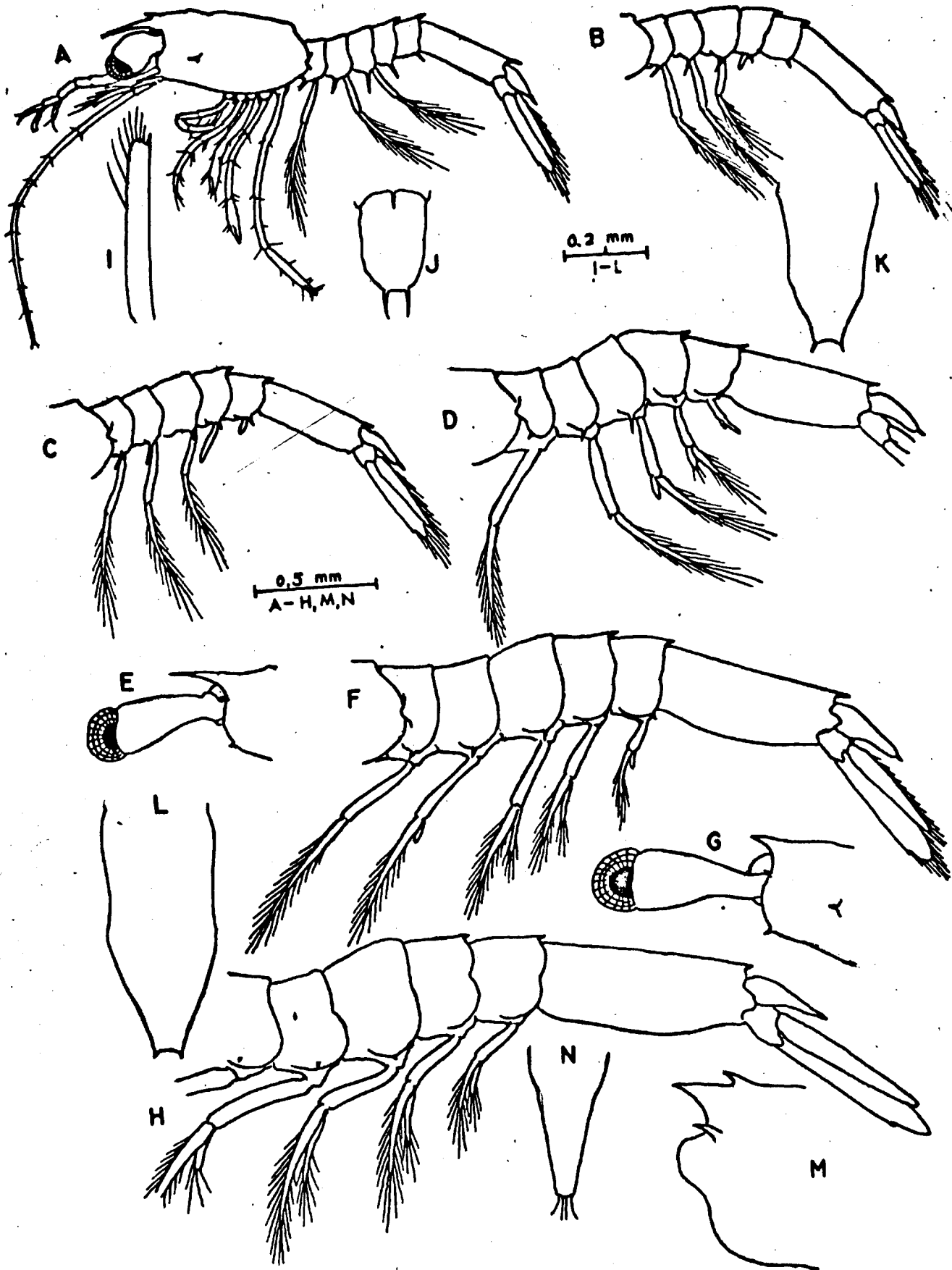


PLATE 27

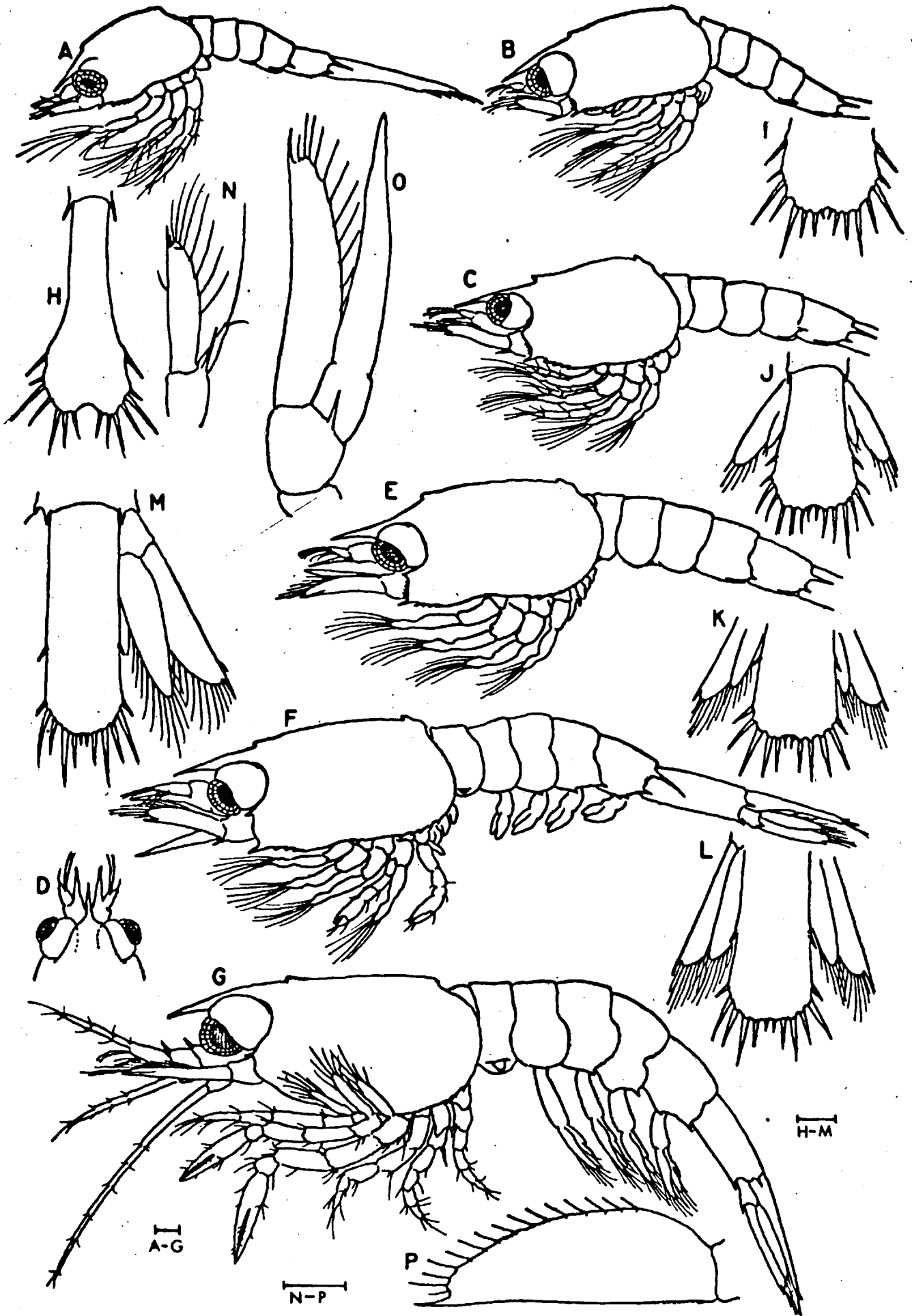


PLATE 28

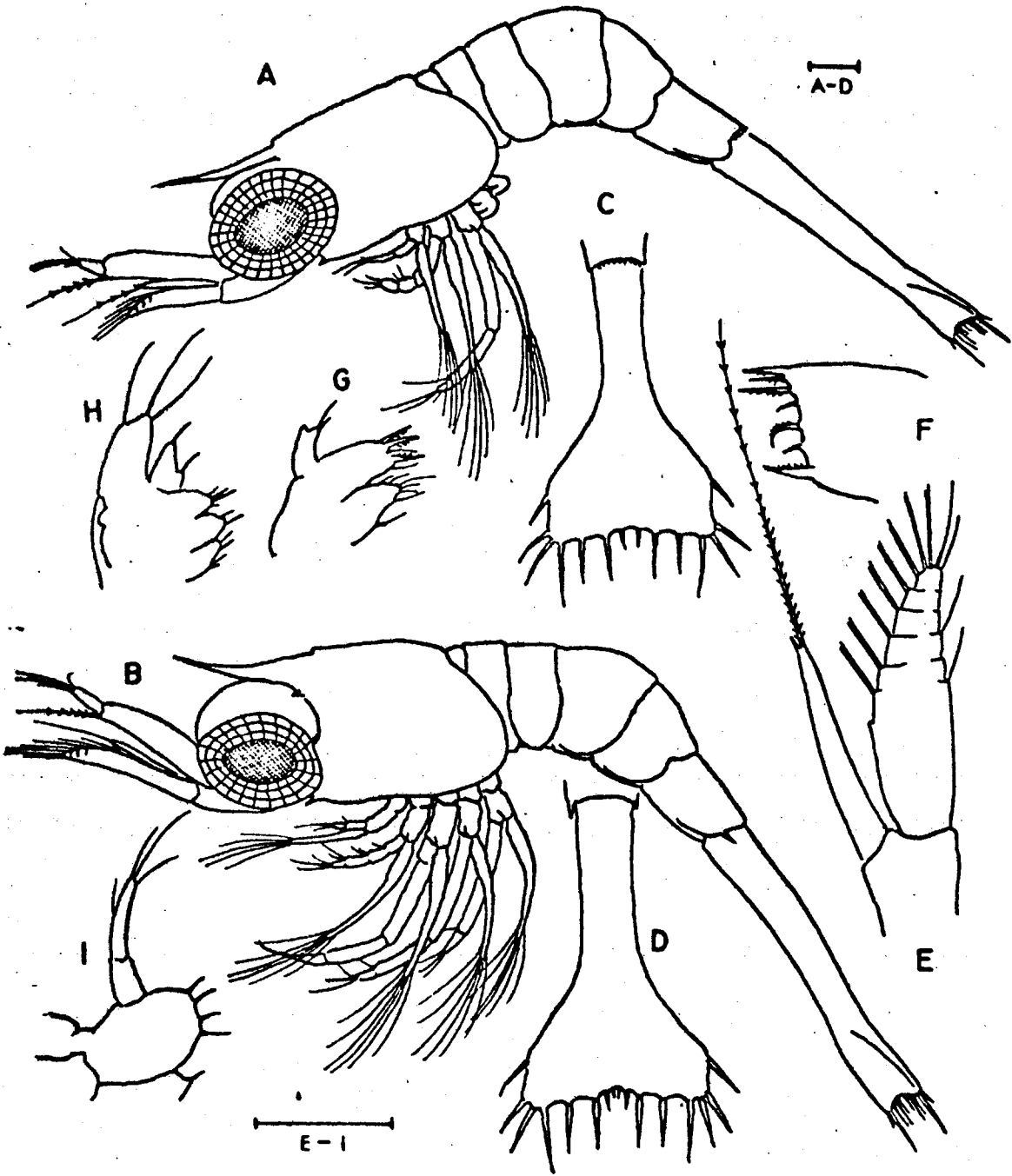


PLATE 29

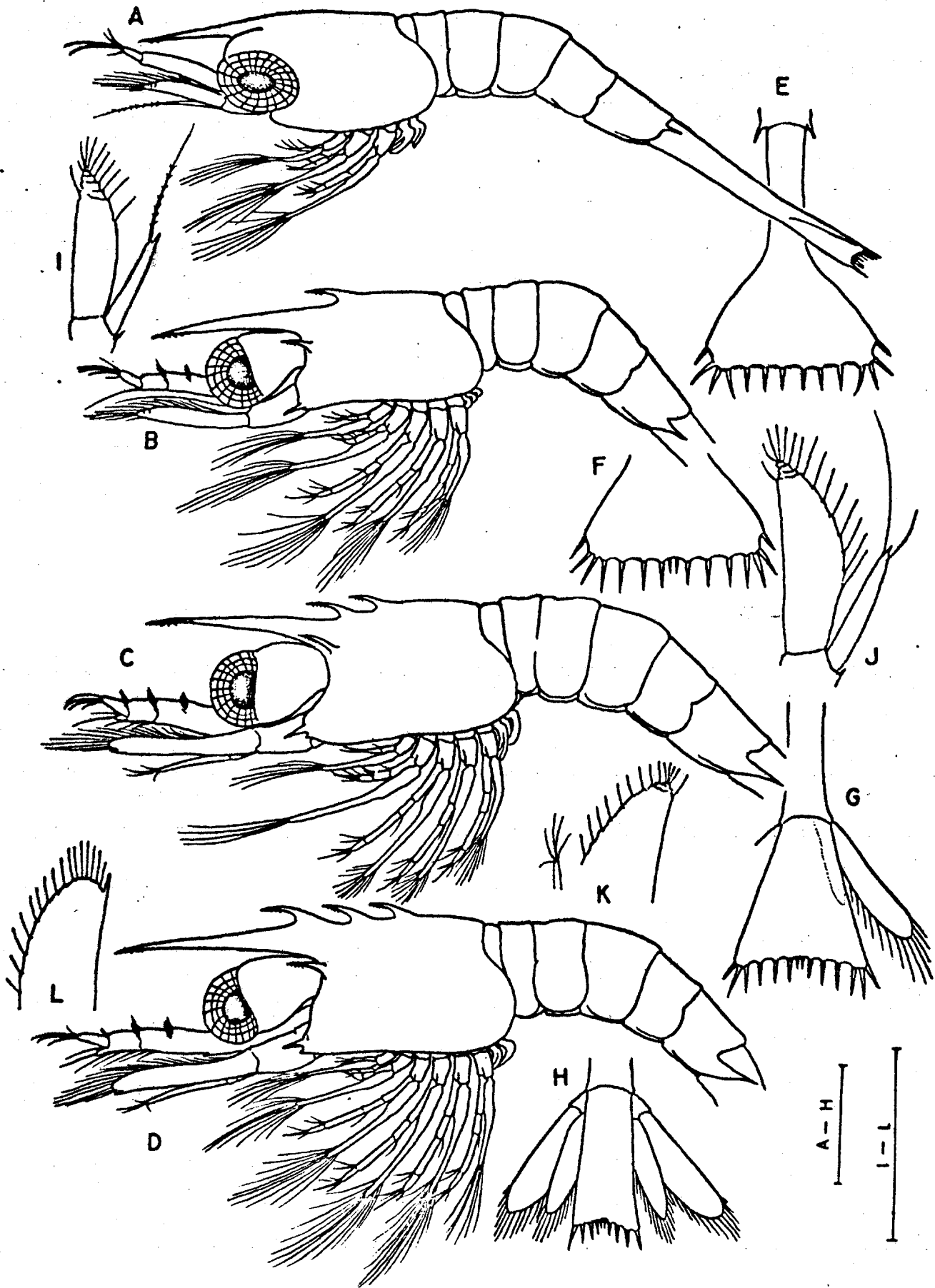
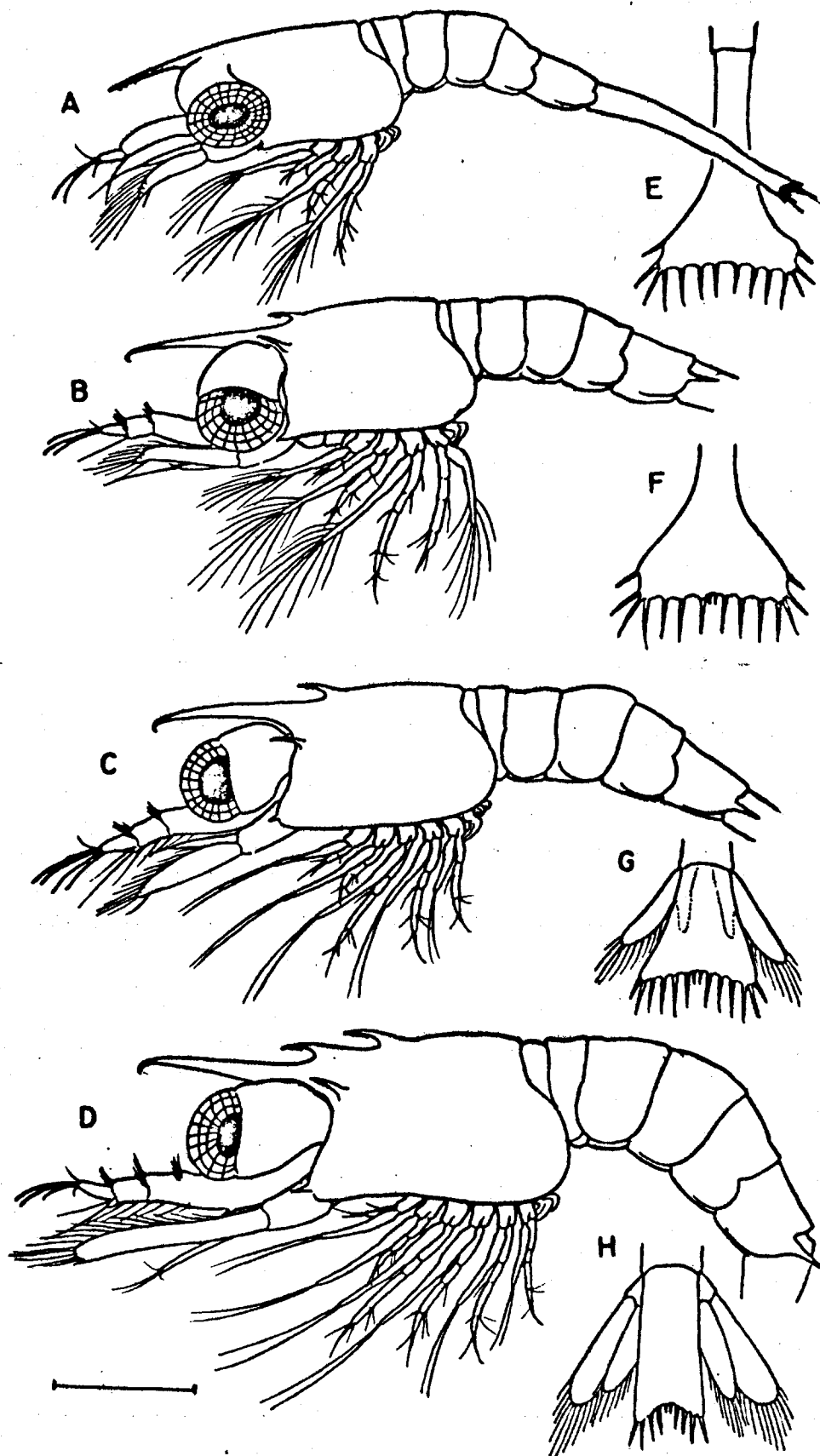


PLATE 30



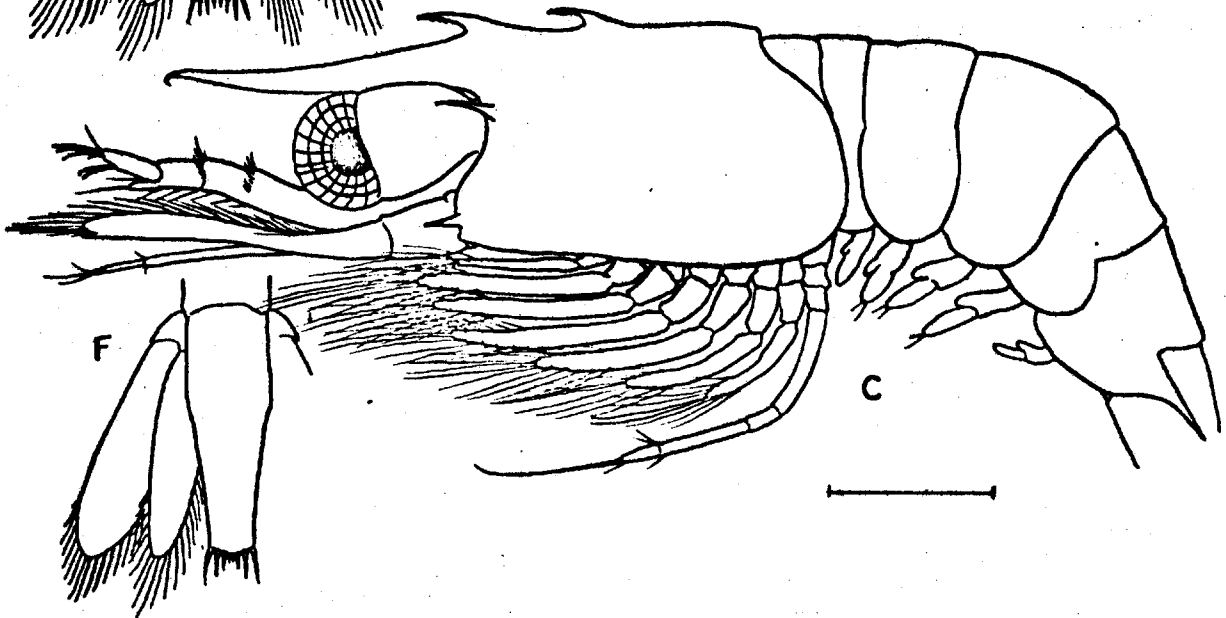
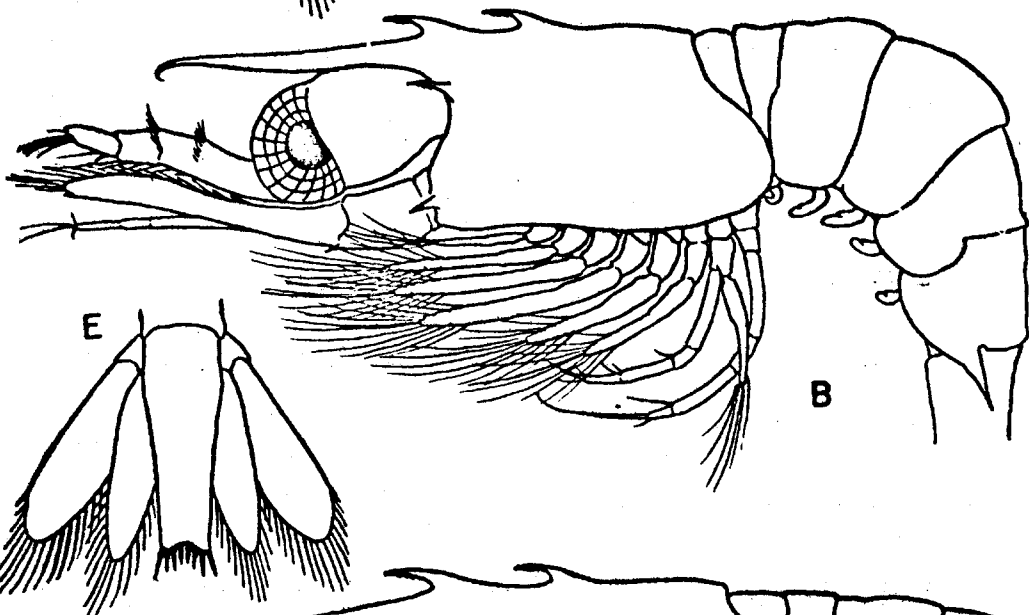
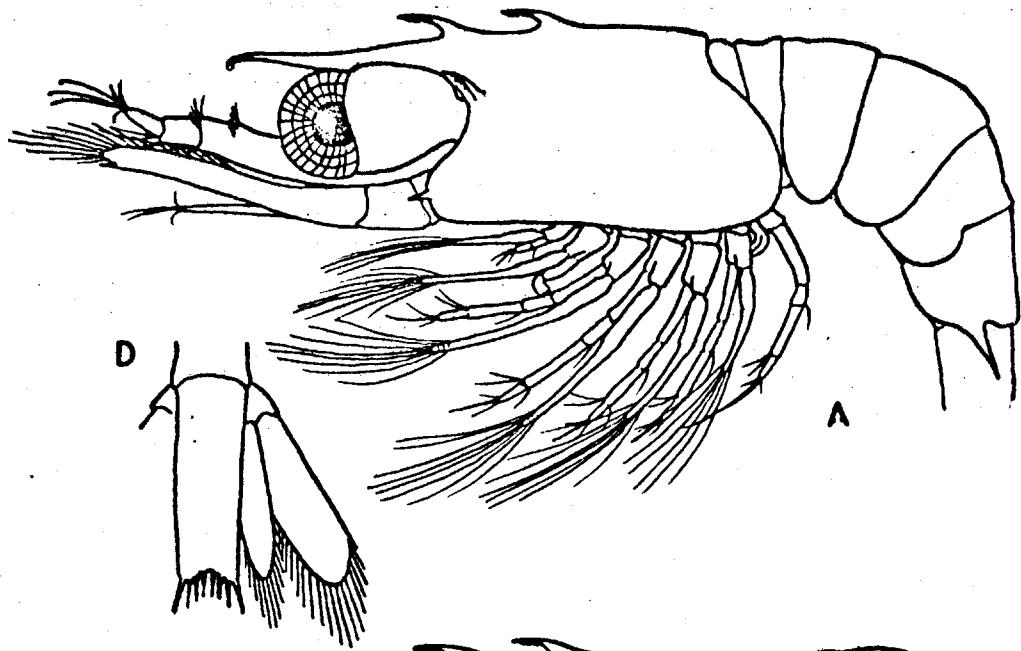
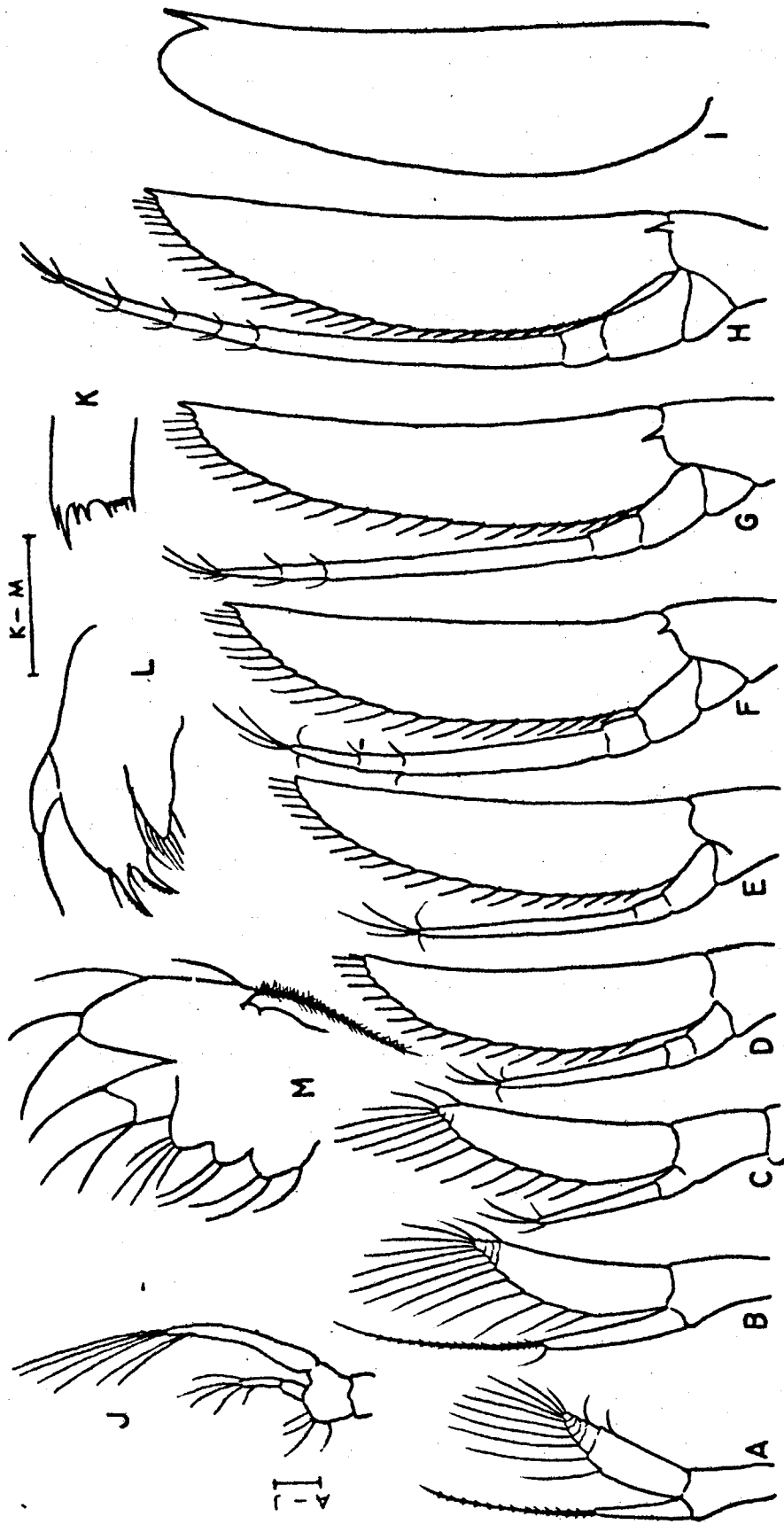


PLATE 32



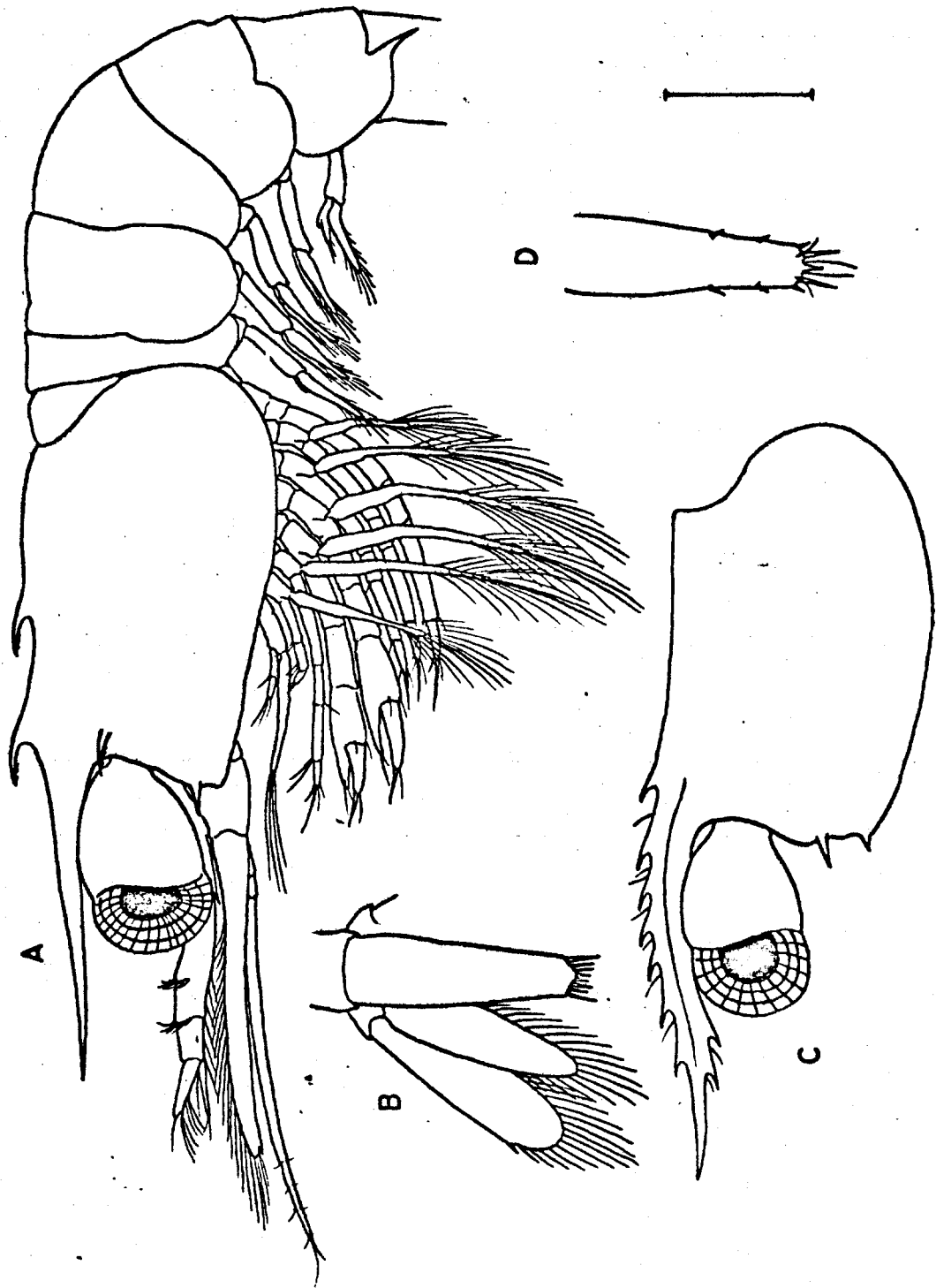


PLATE 34

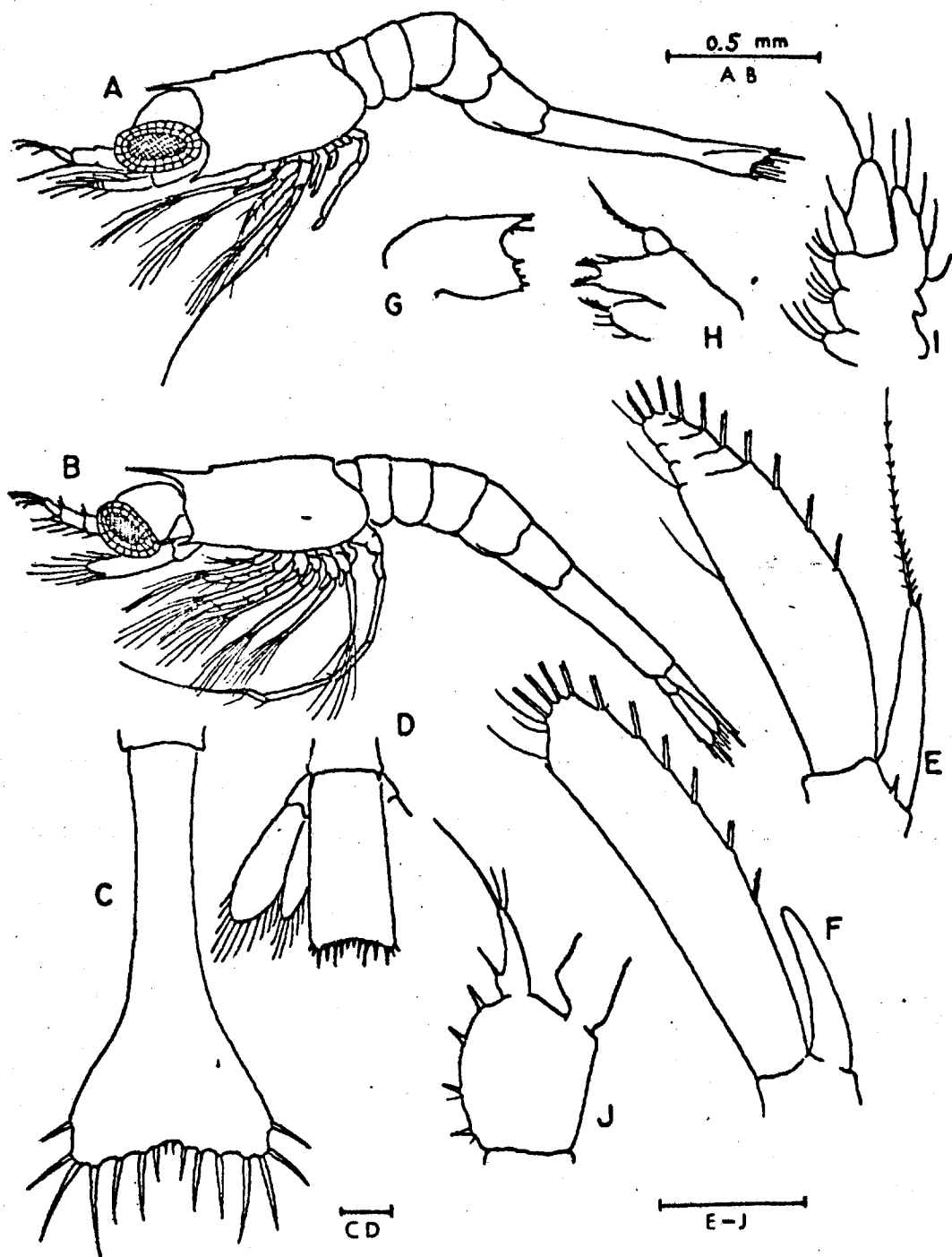


PLATE 35

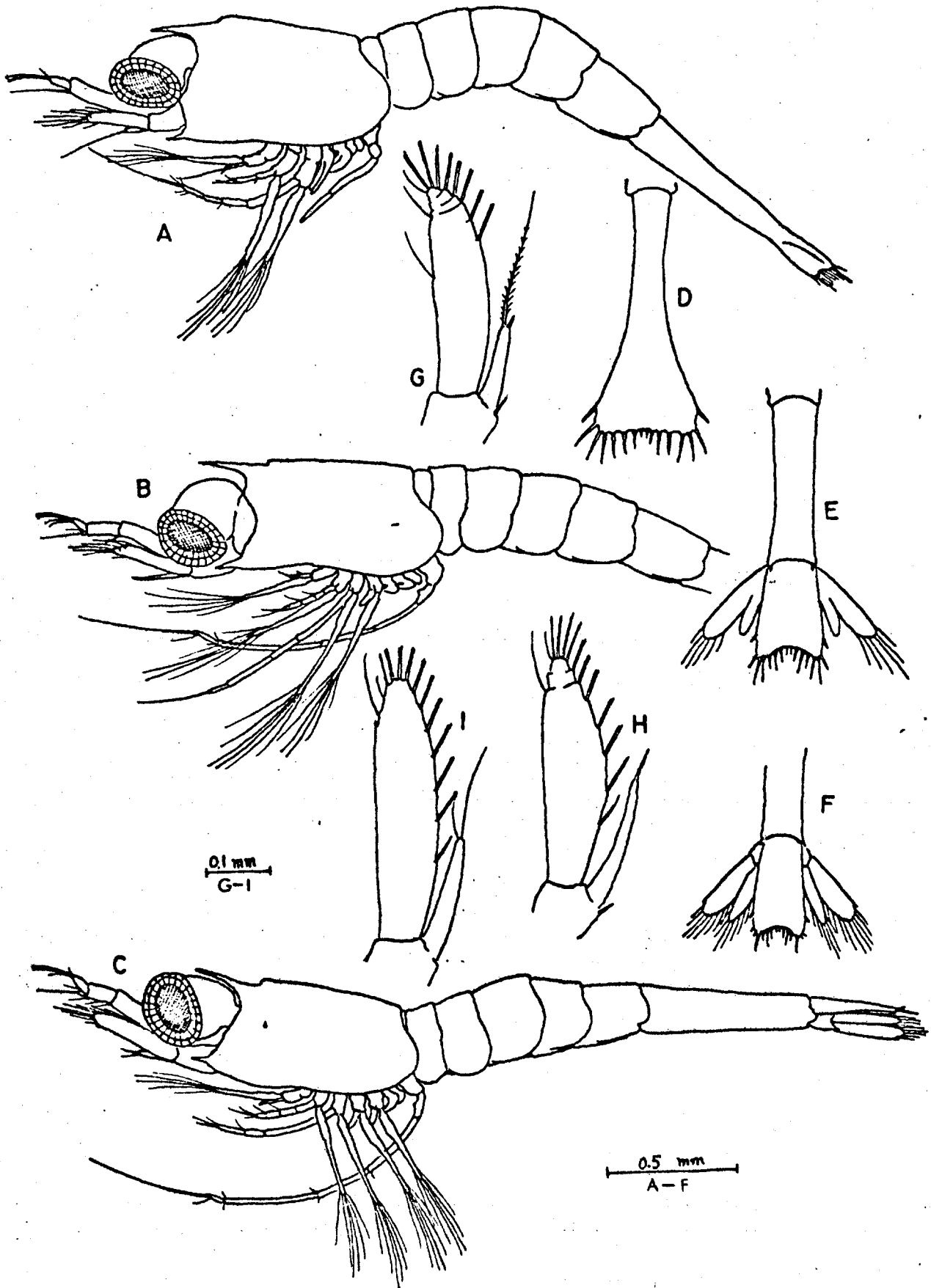


PLATE 36

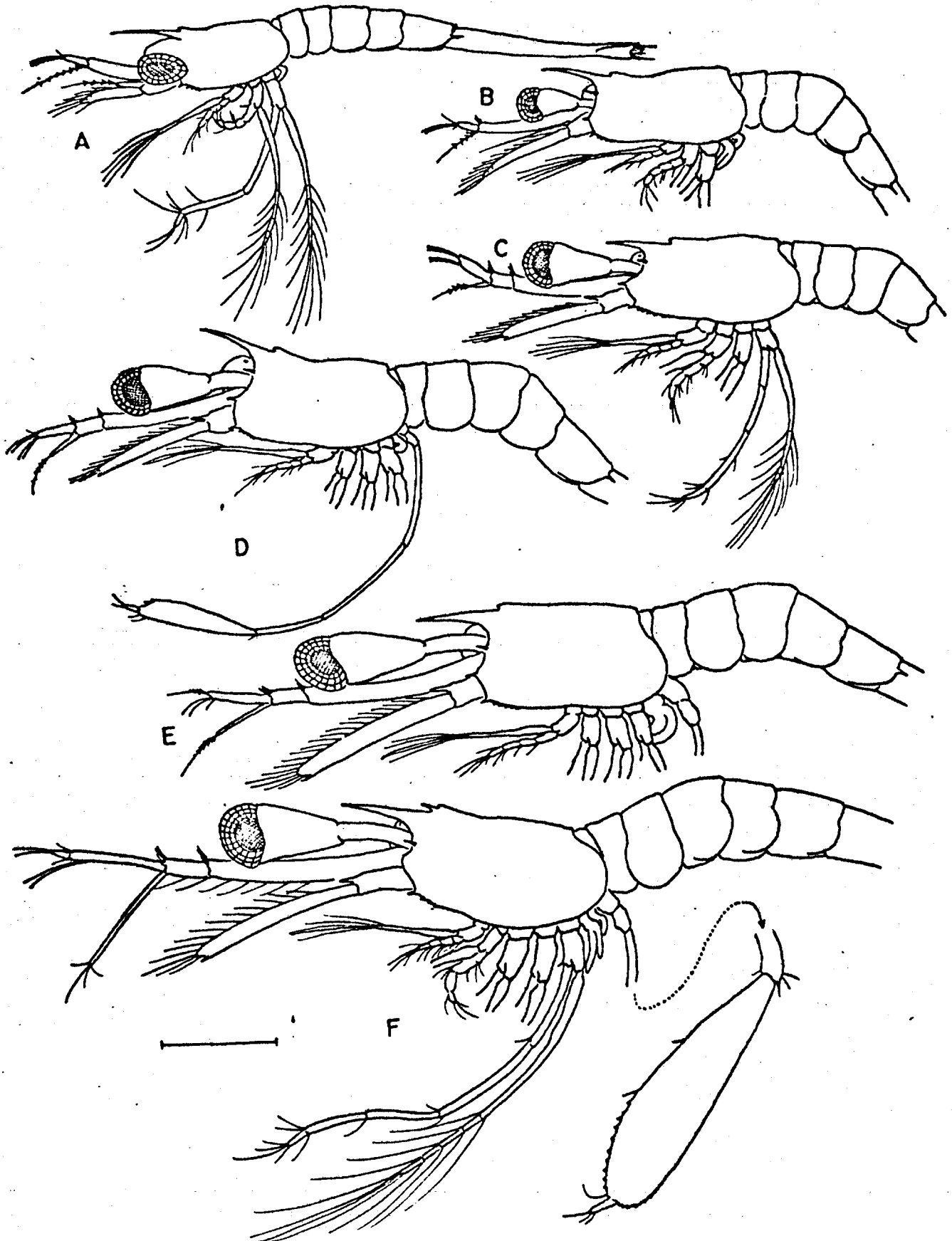
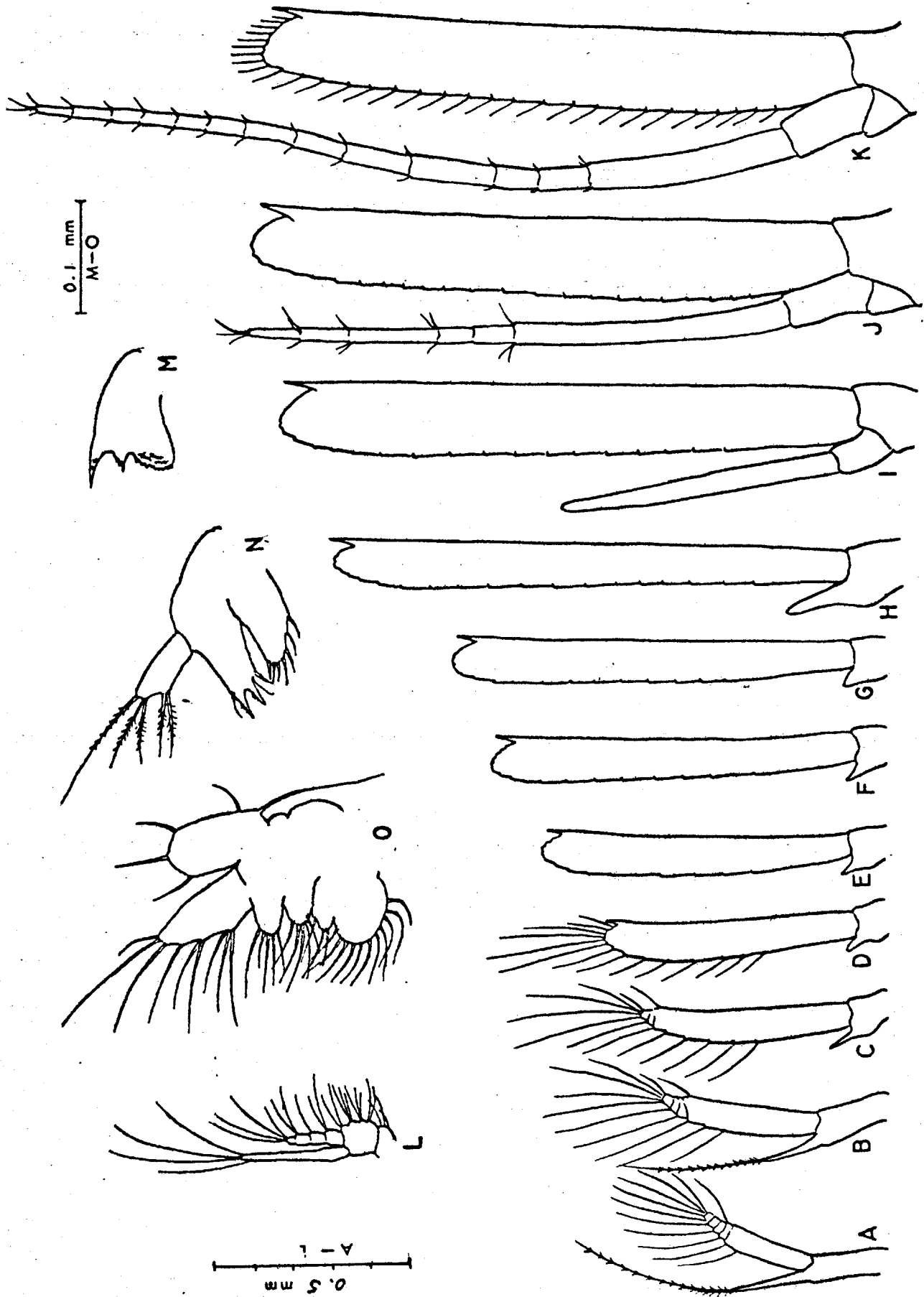
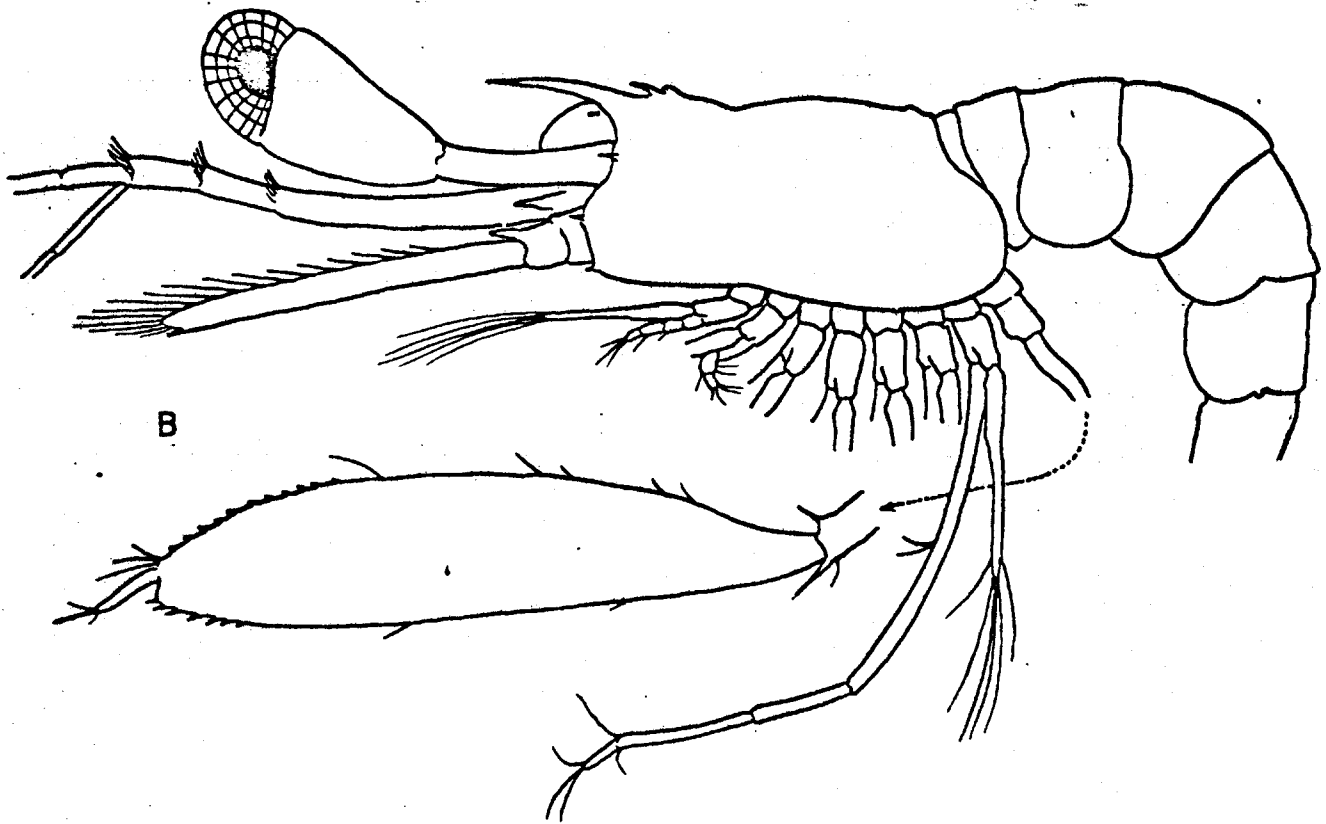
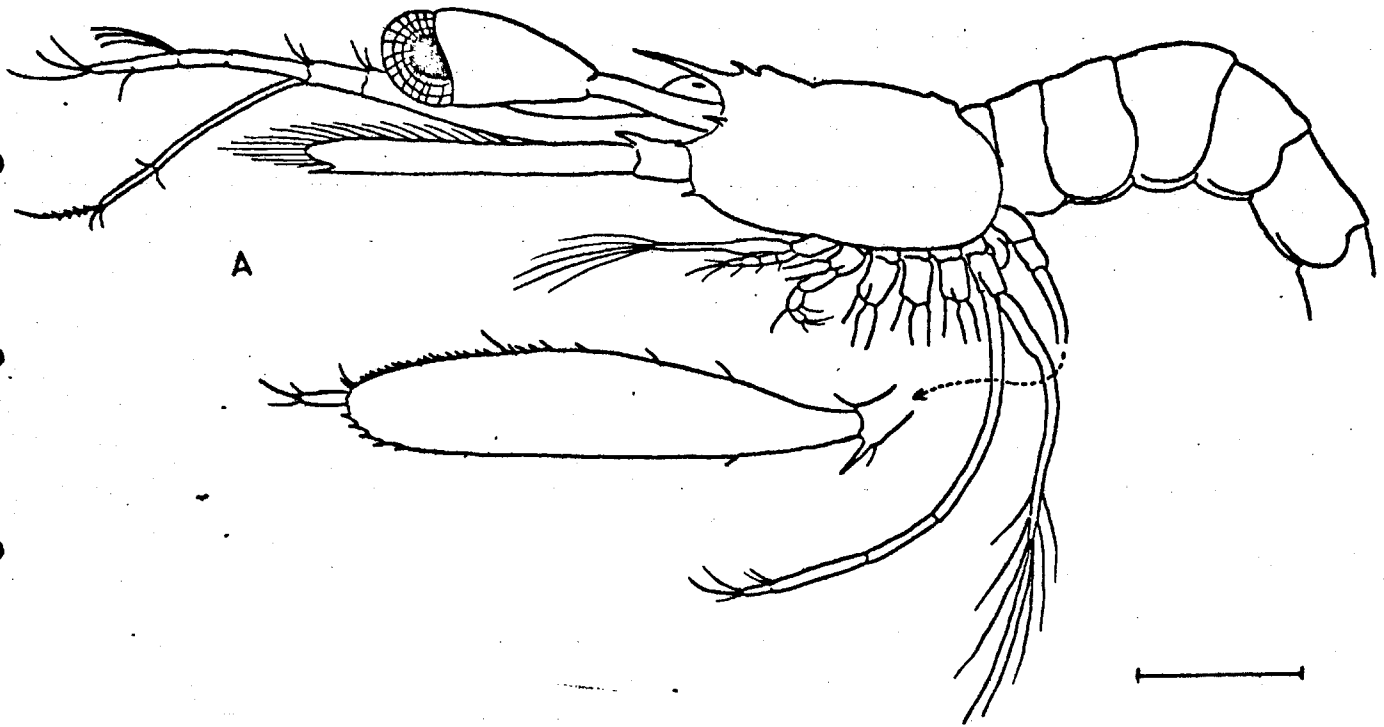


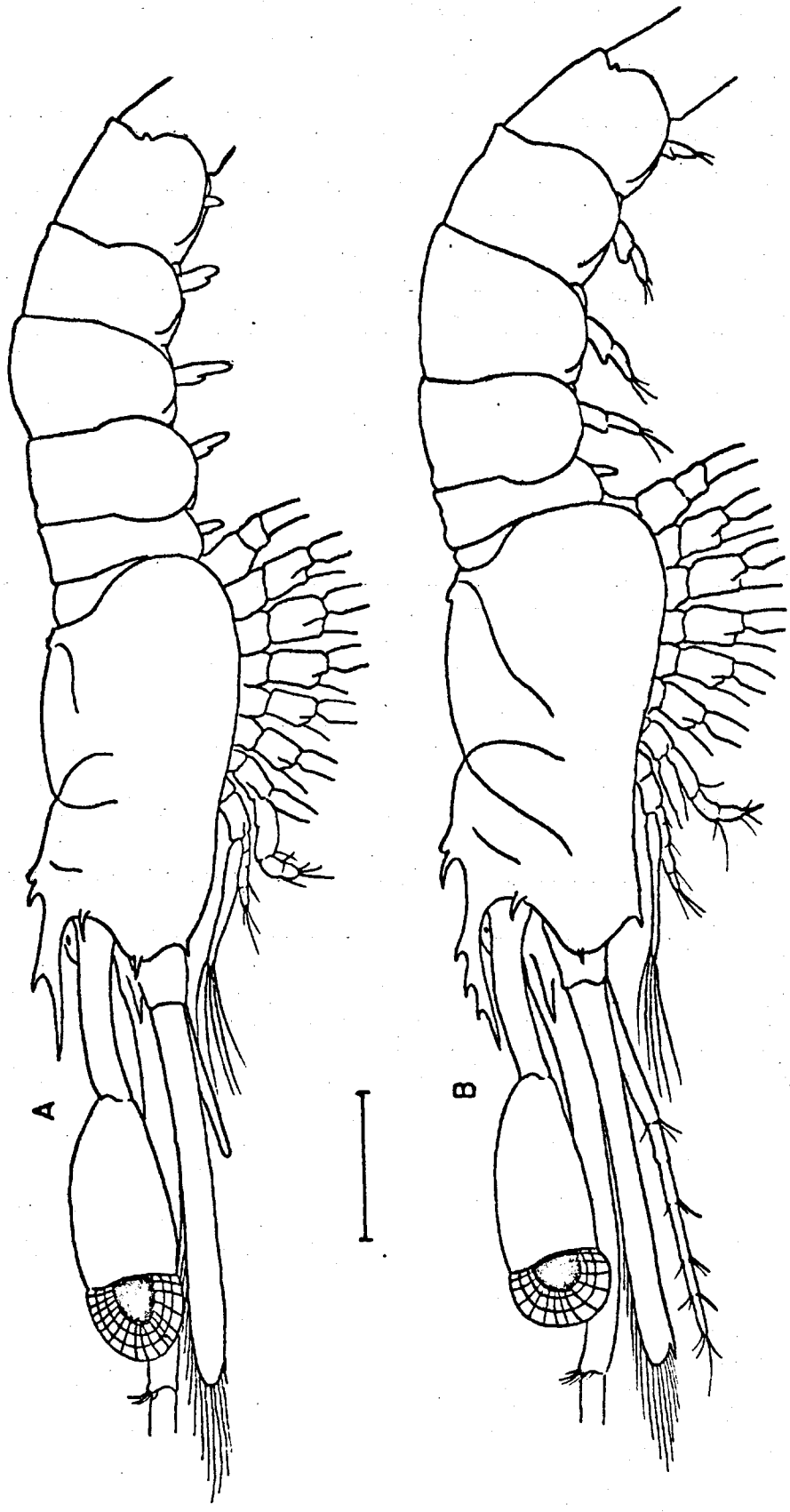
PLATE 37

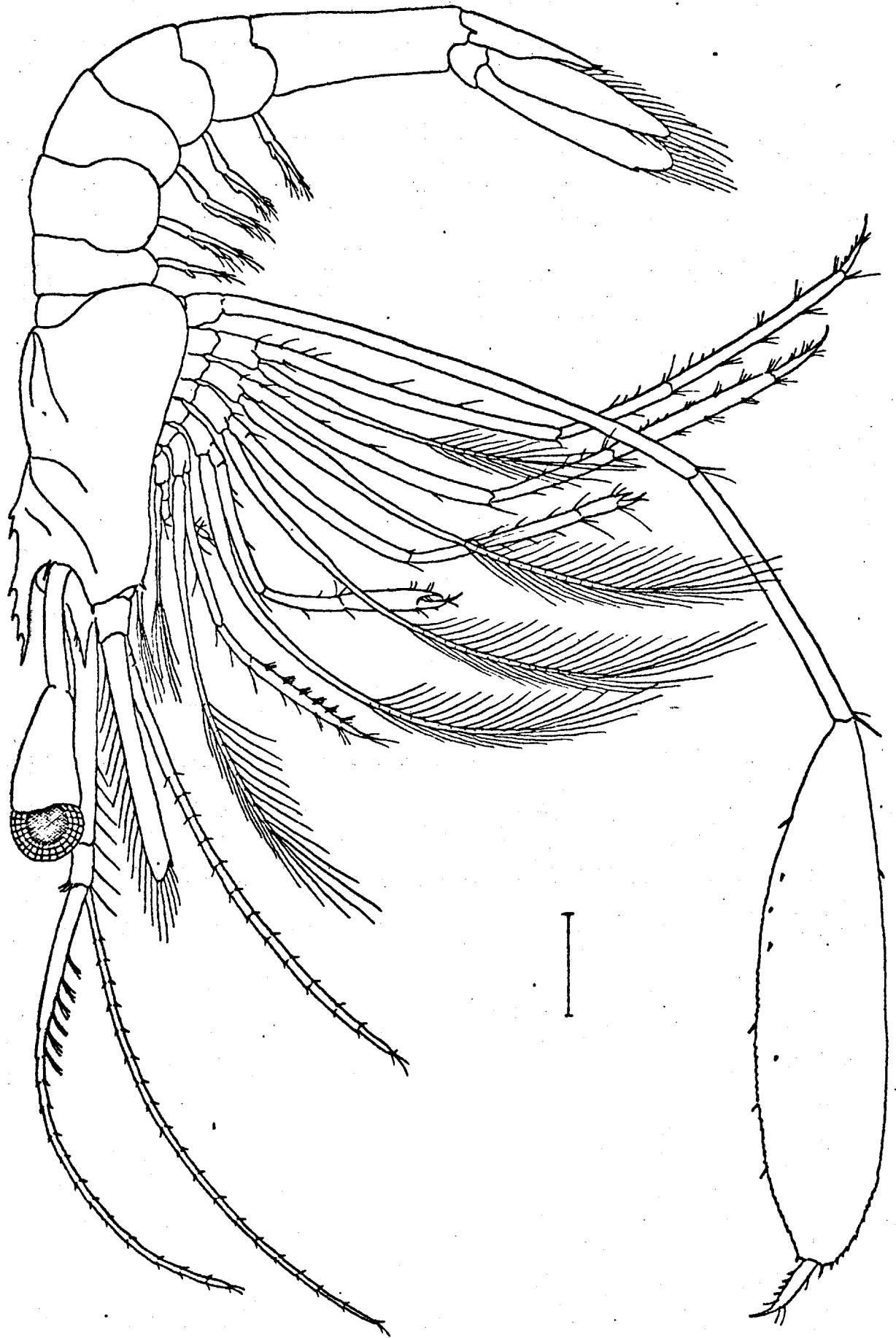


0.1 mm
M-O

0.5 mm
A-I







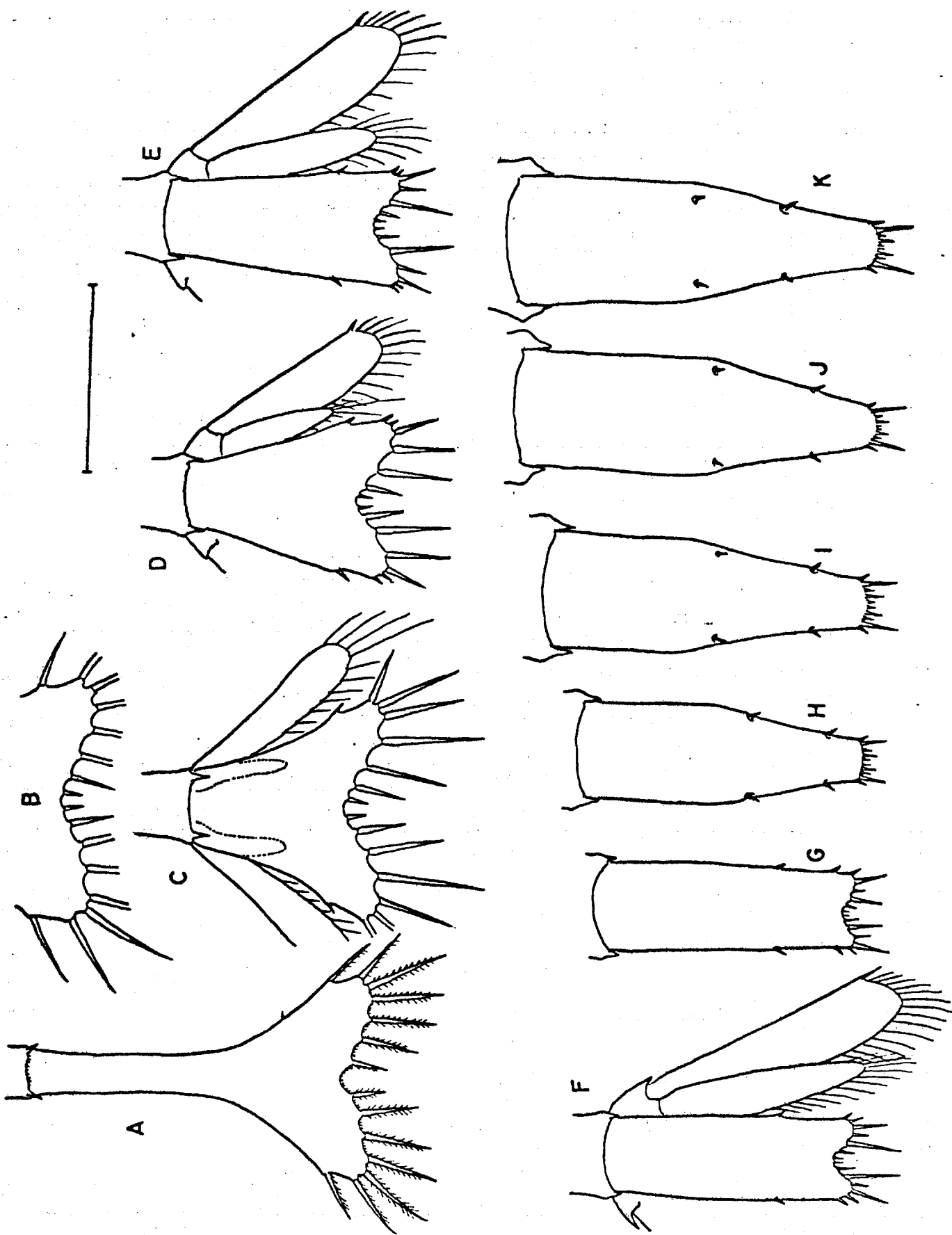
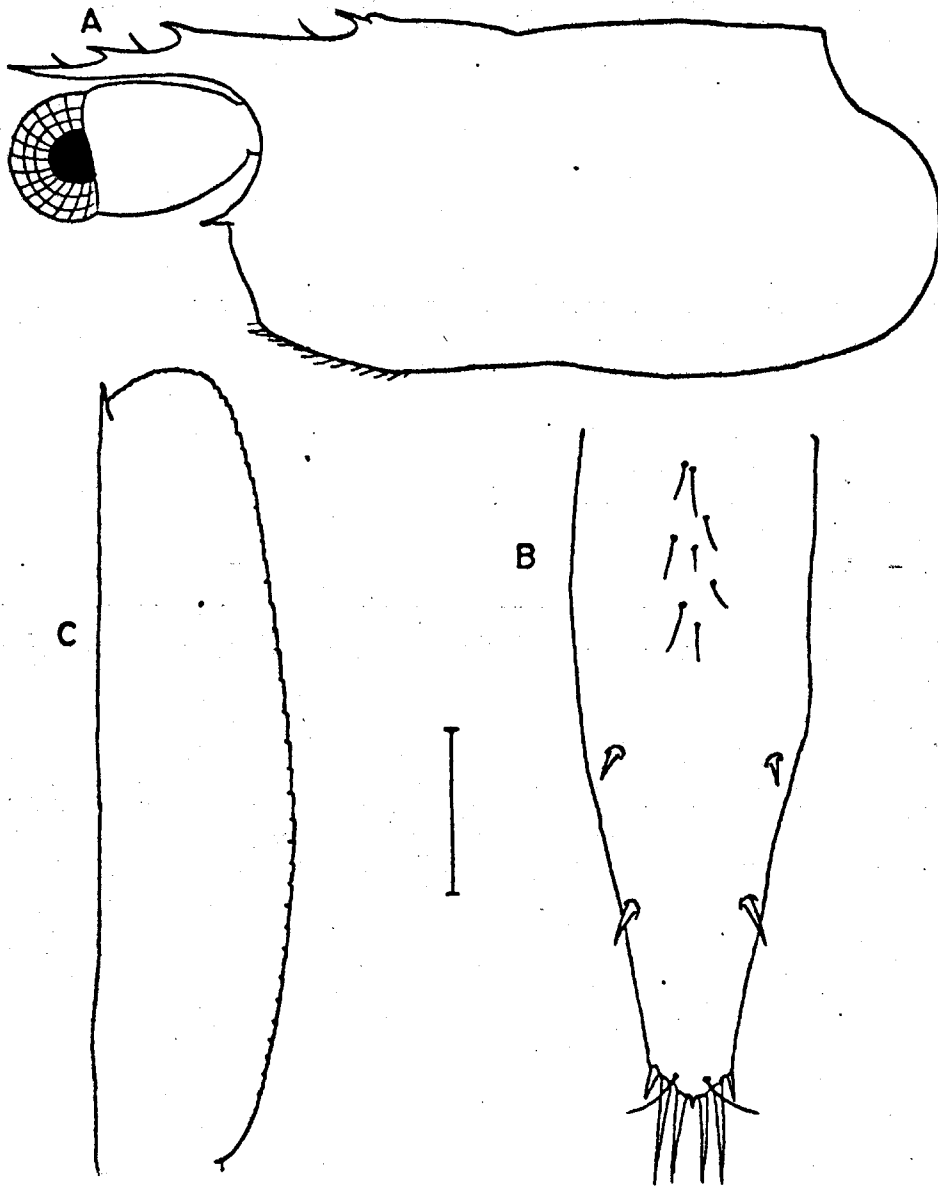
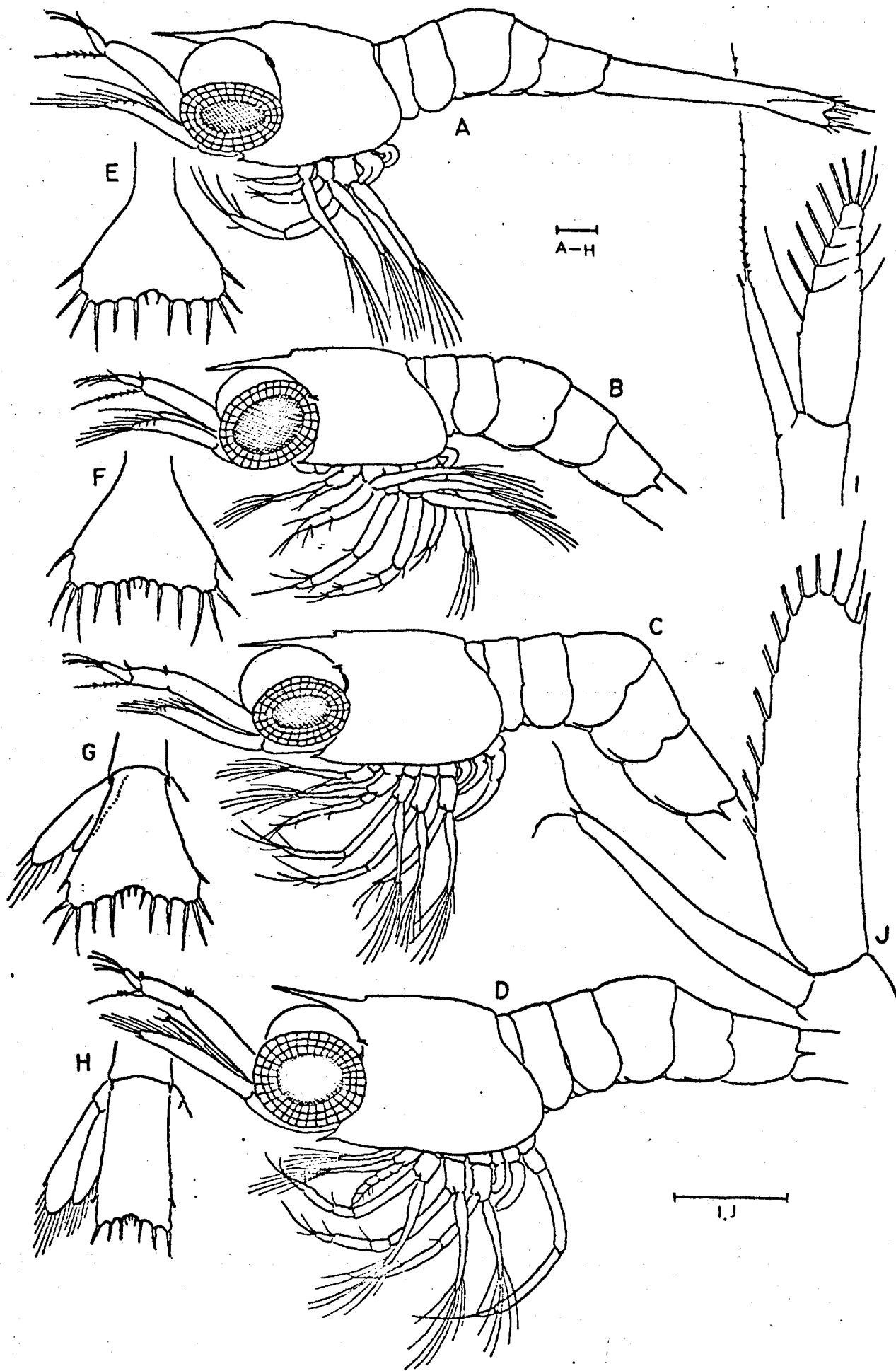
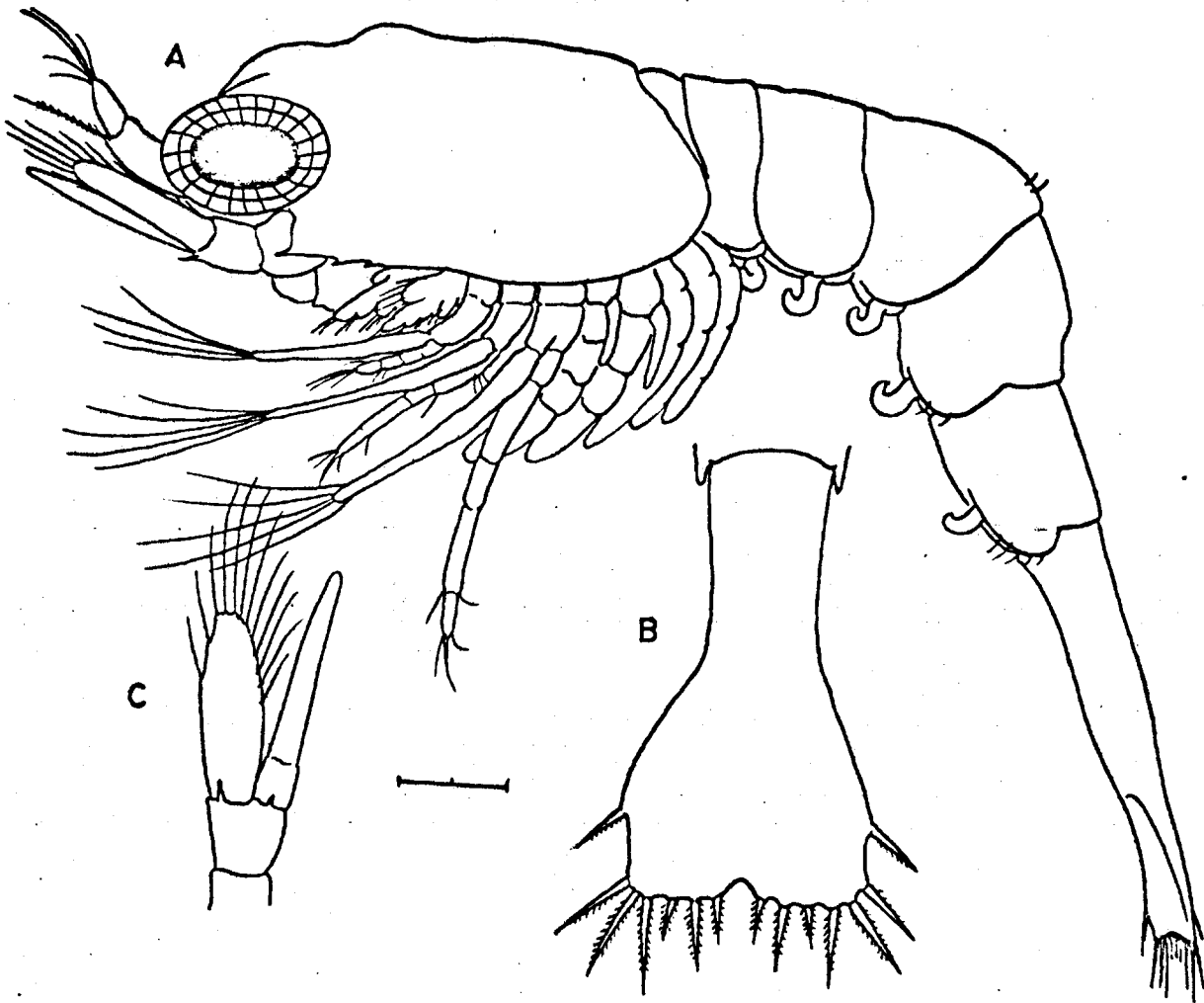


PLATE 42







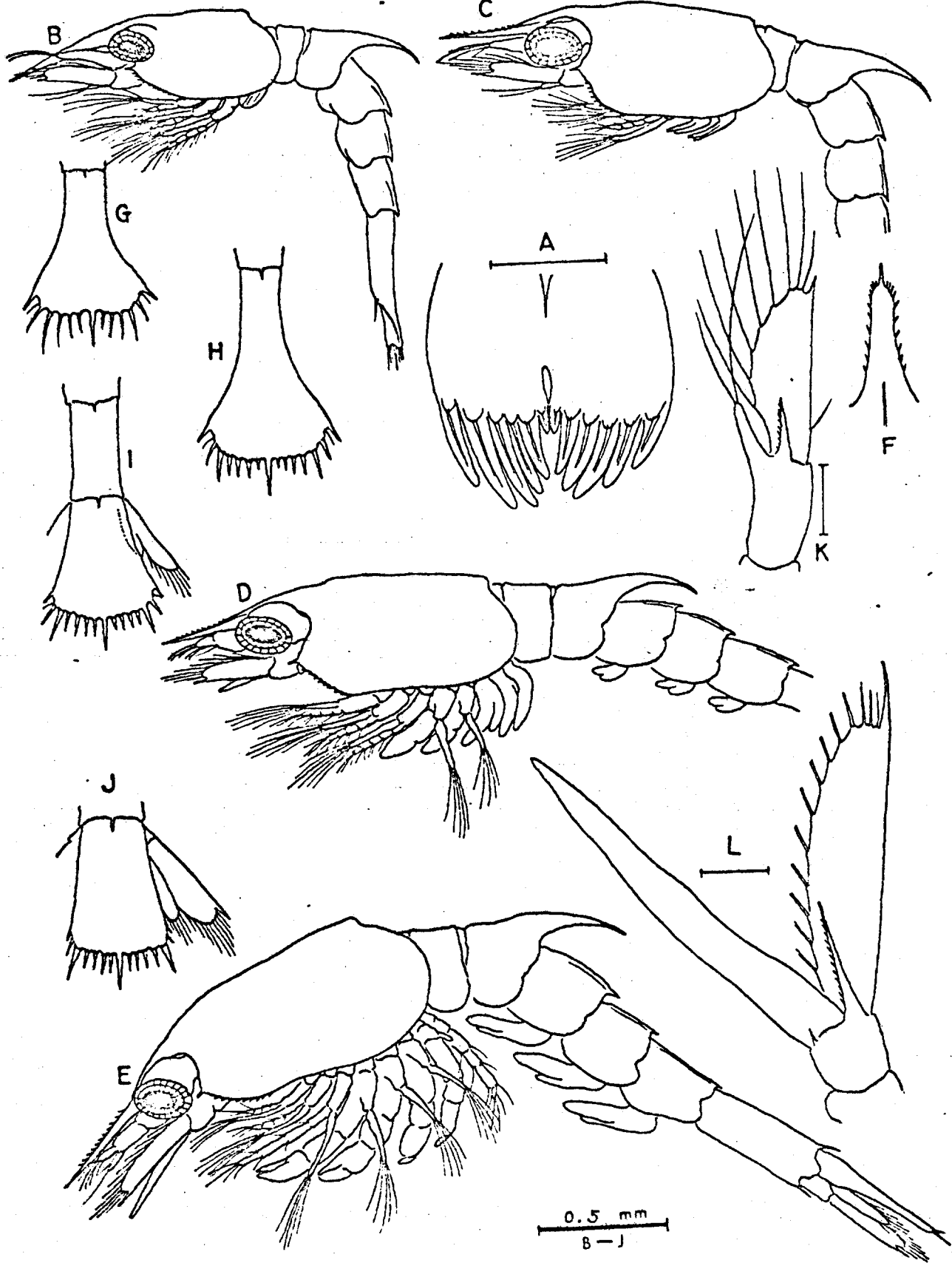


PLATE 46

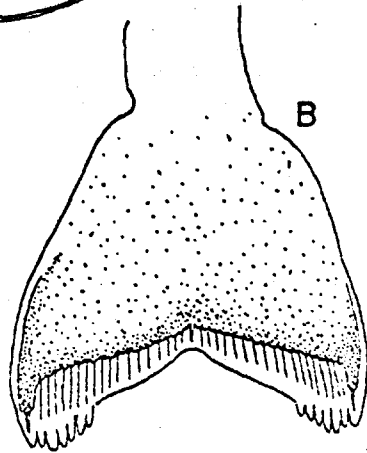
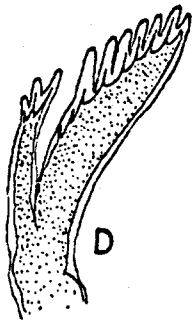
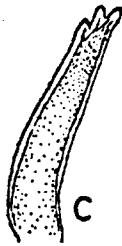
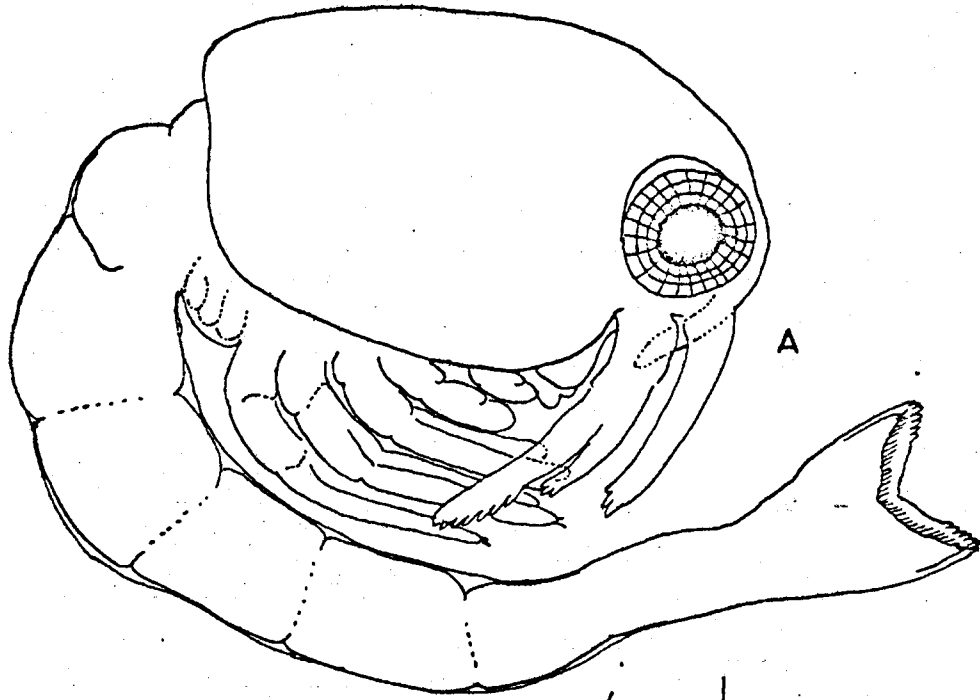
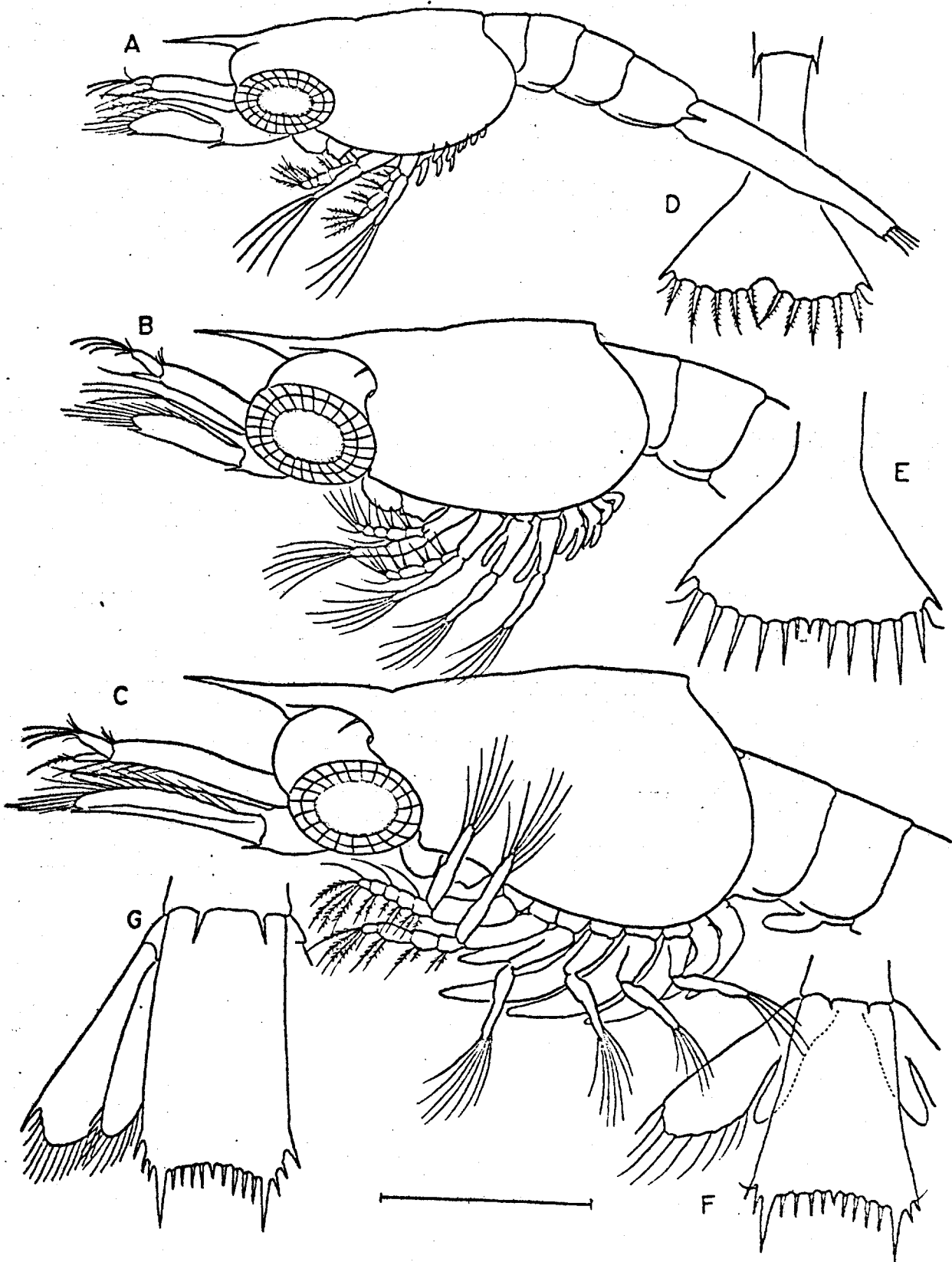
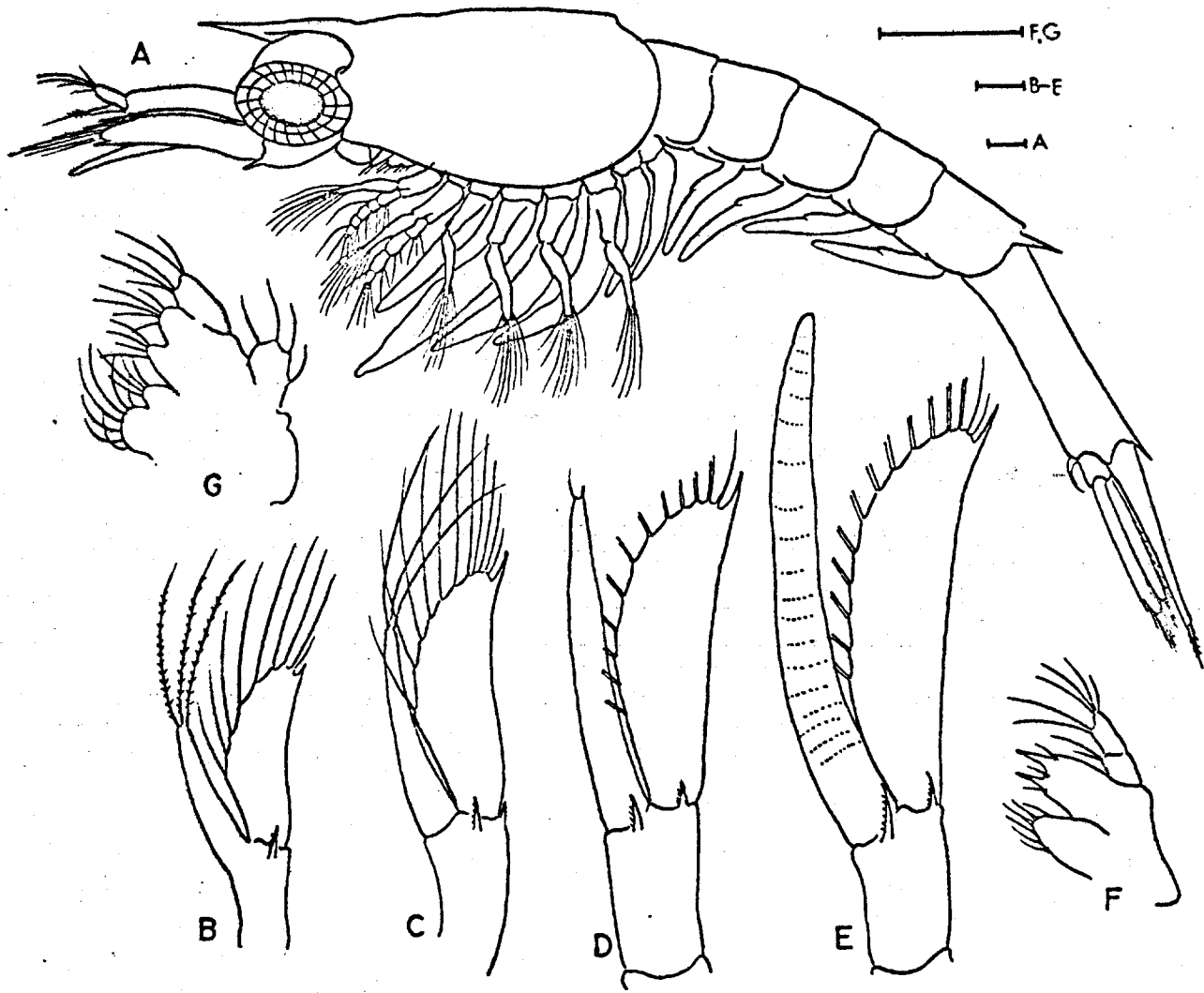


PLATE 47





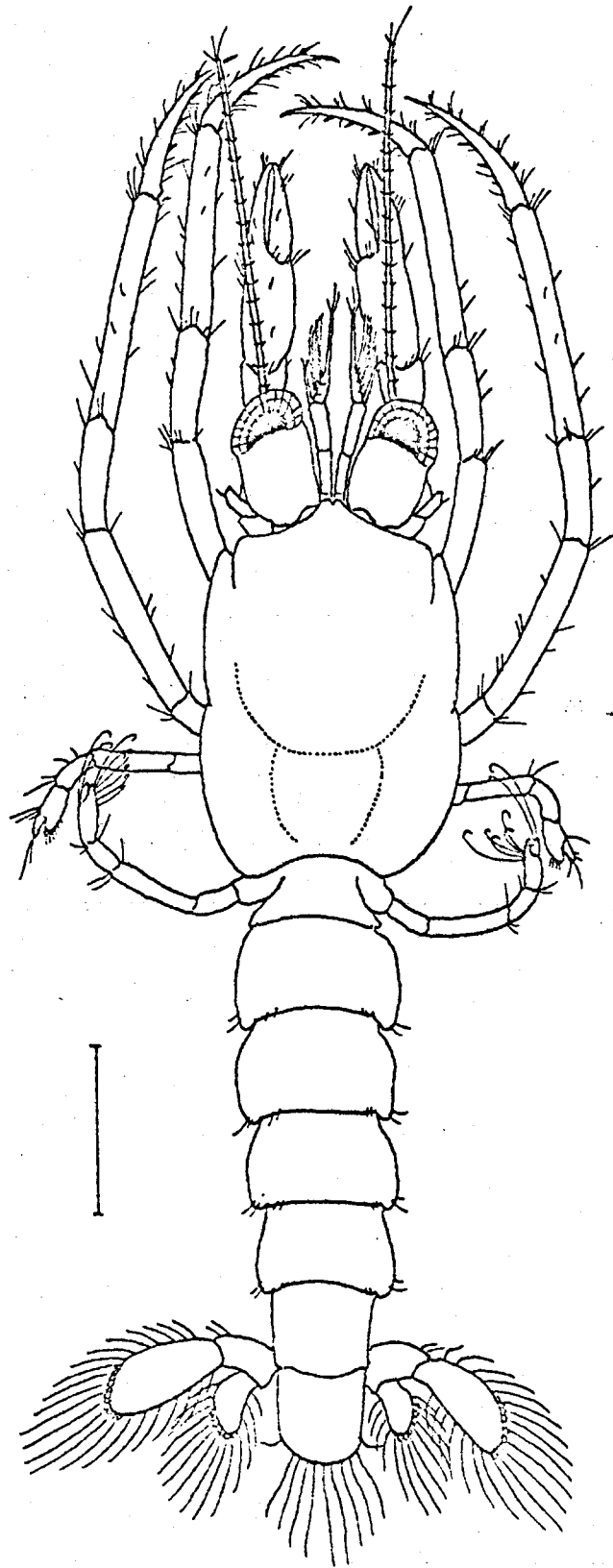


PLATE 52

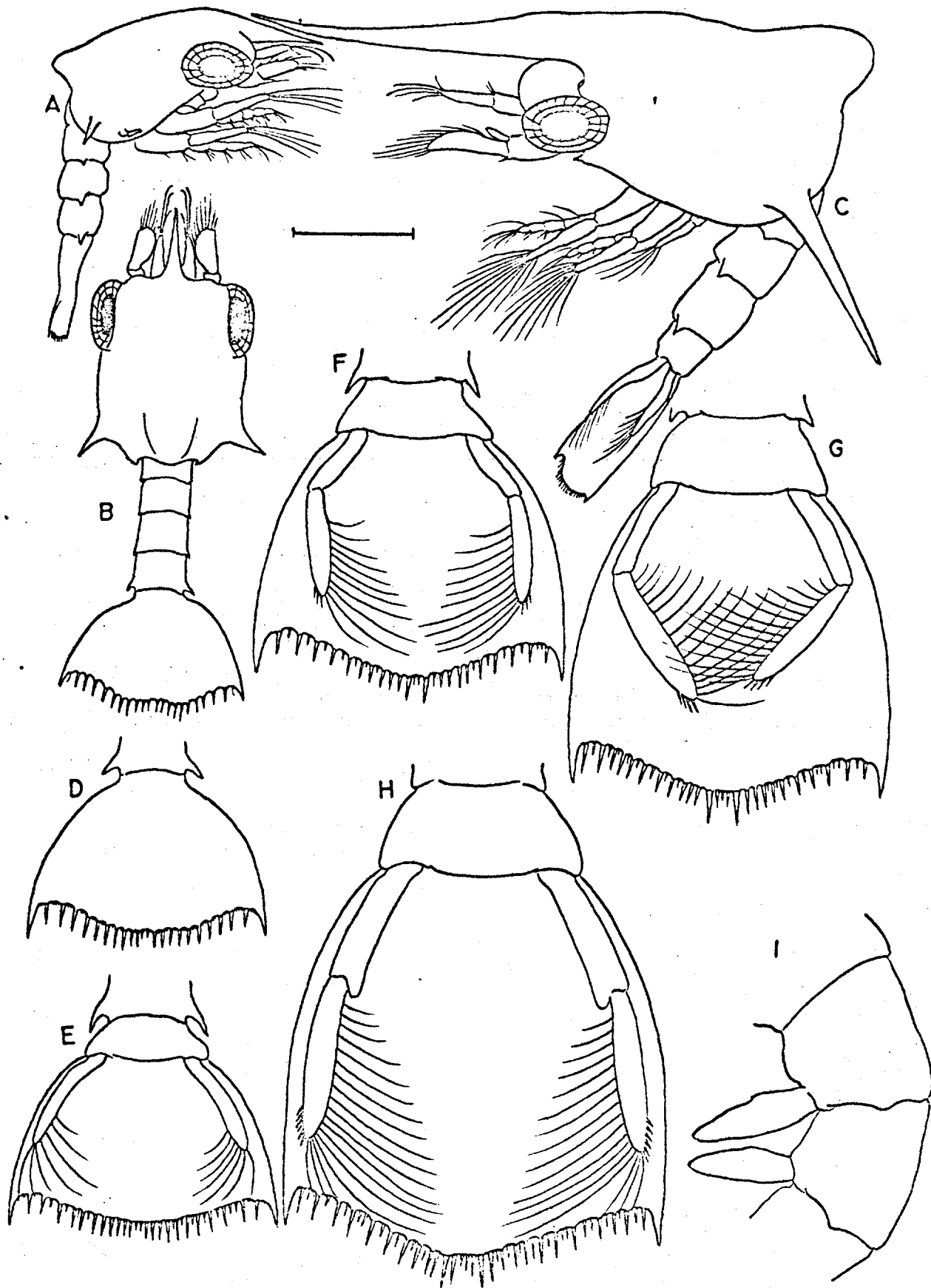
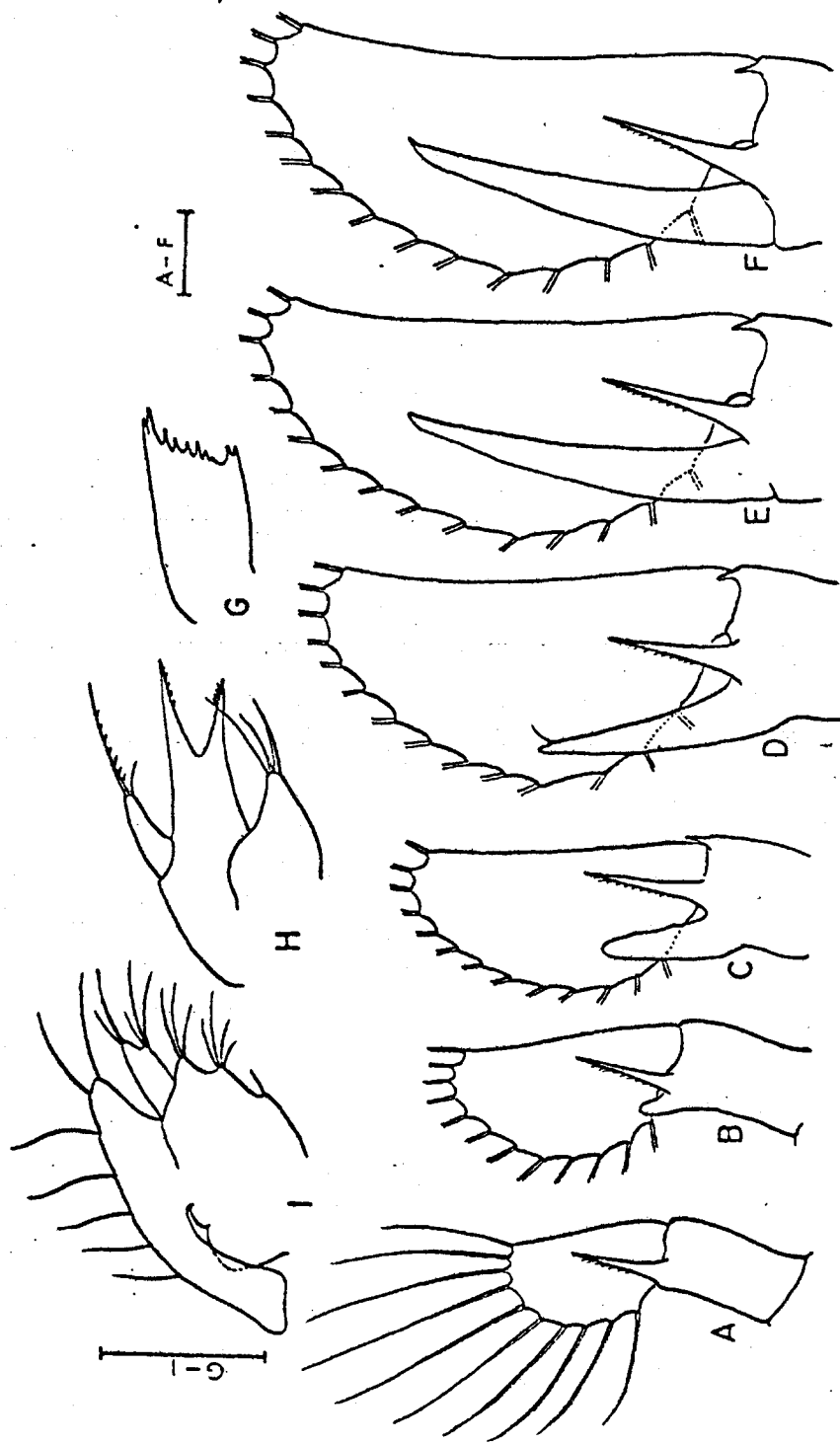


PLATE 53.



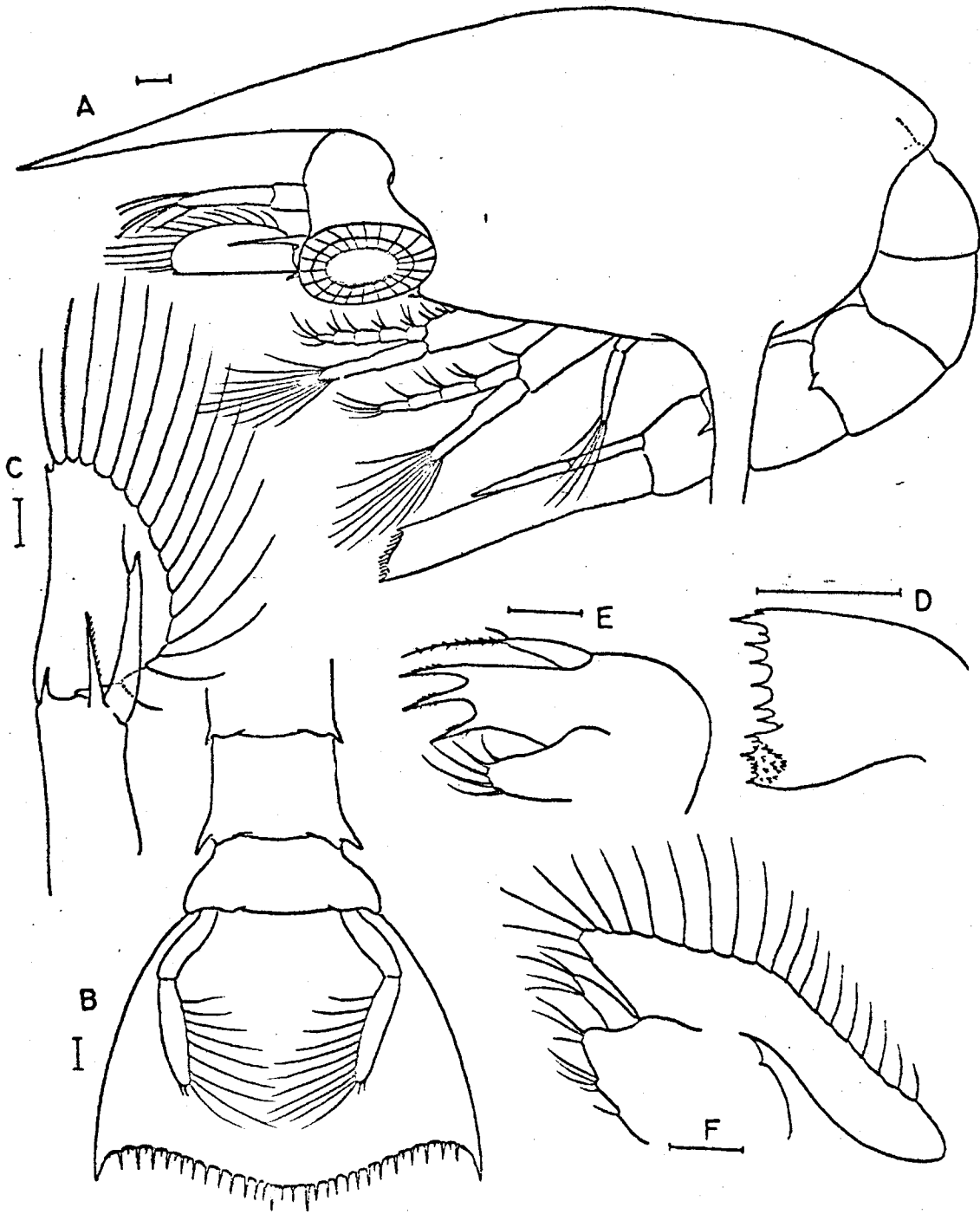
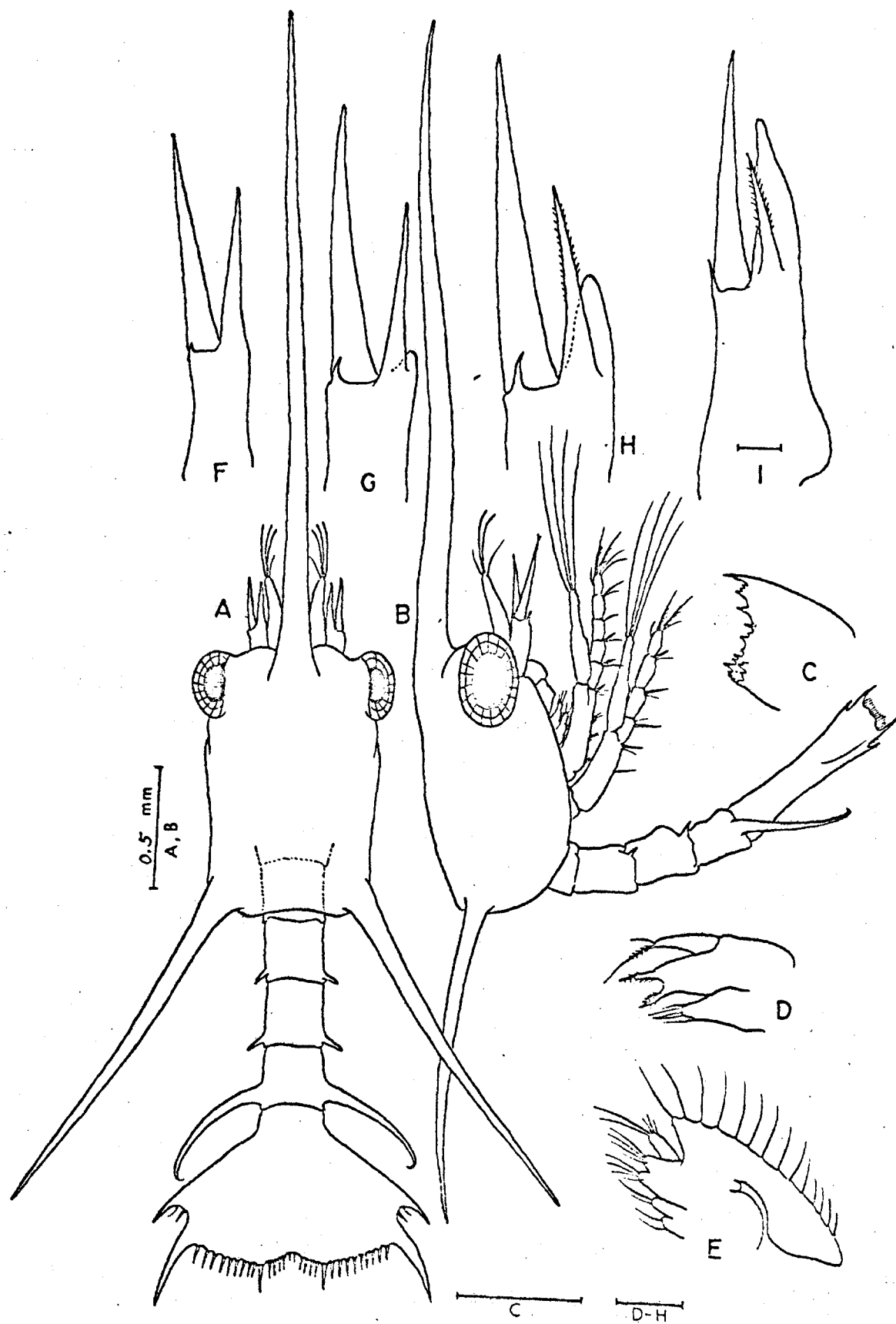
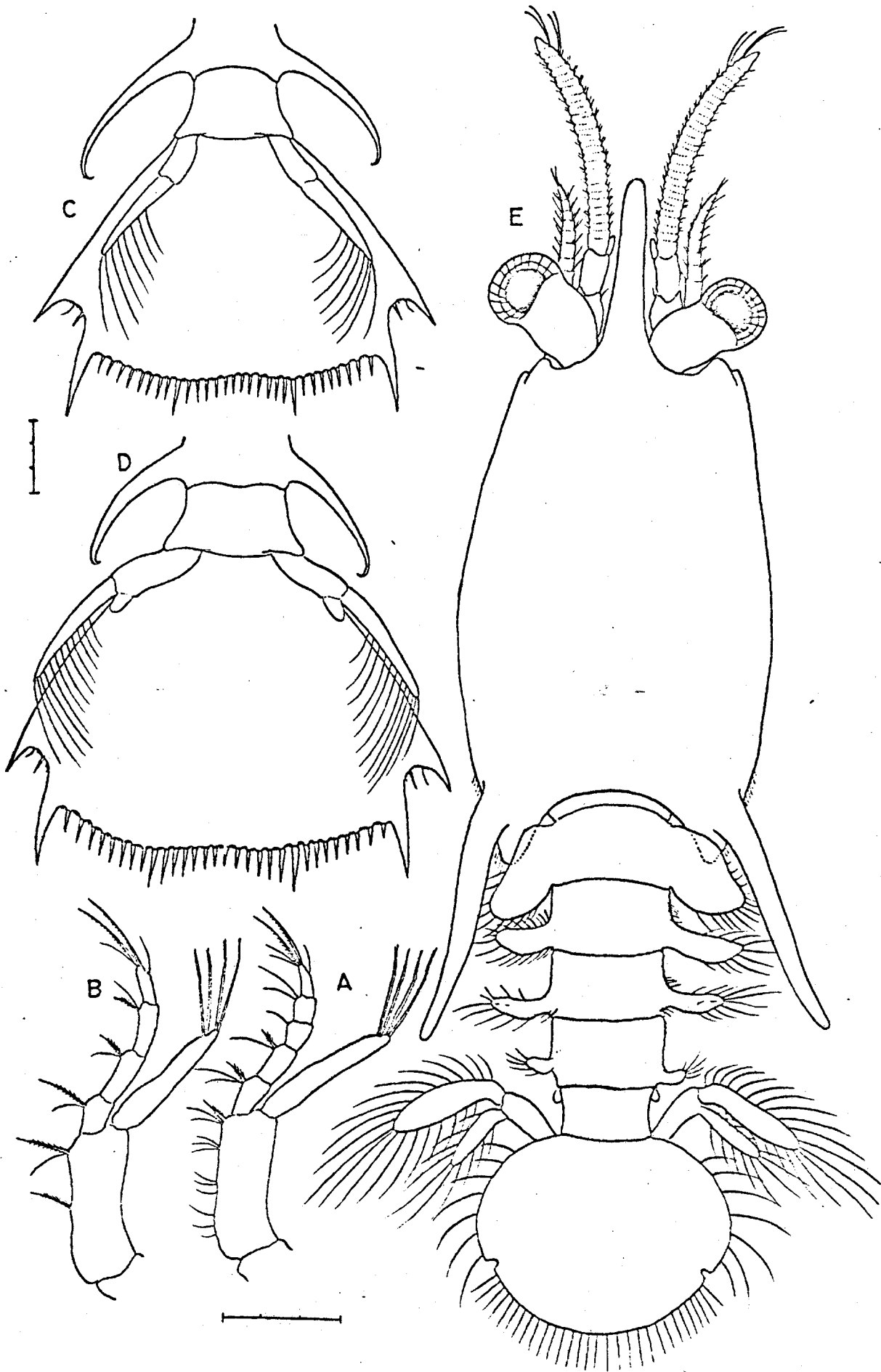


PLATE 55





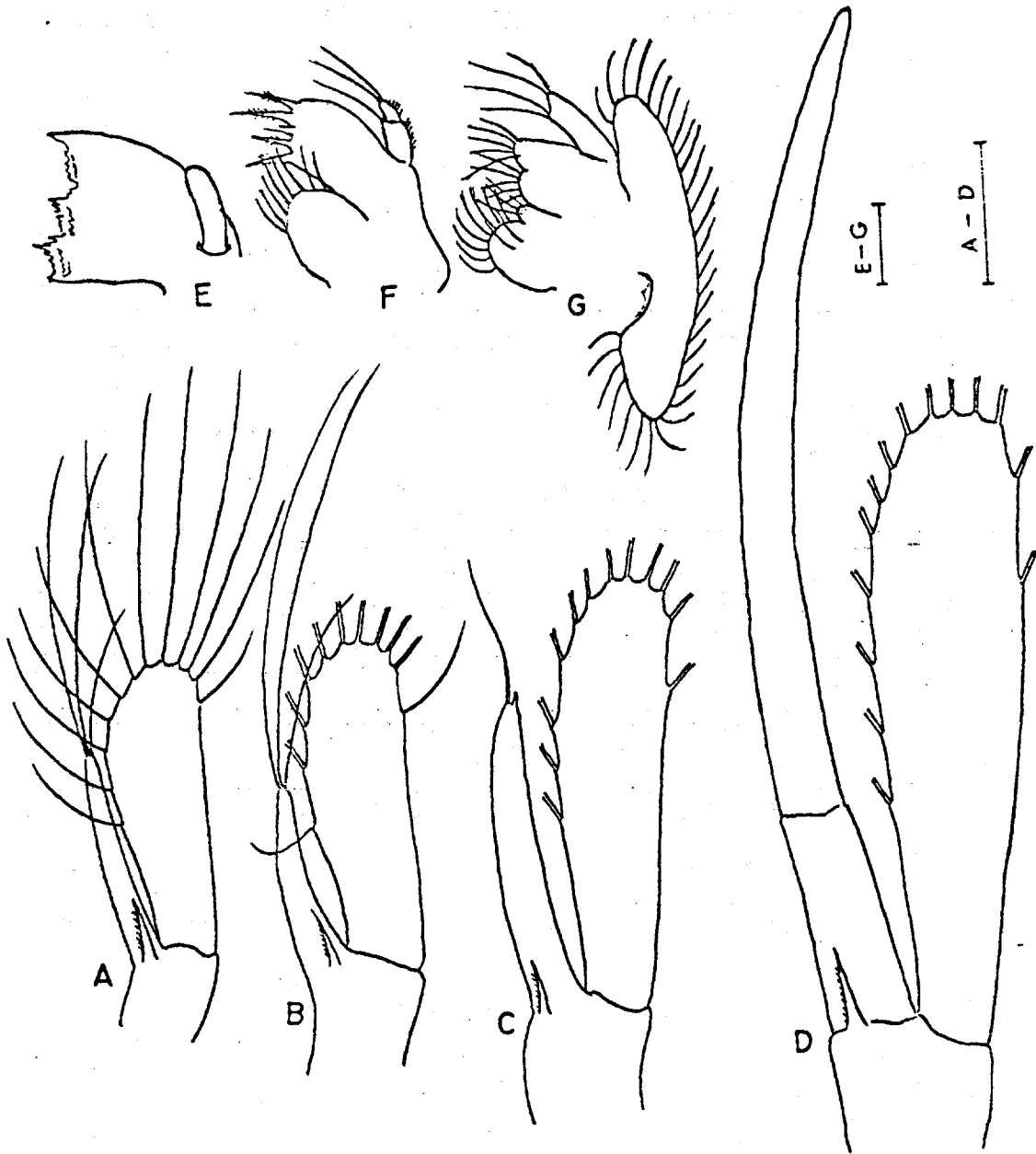


PLATE 57

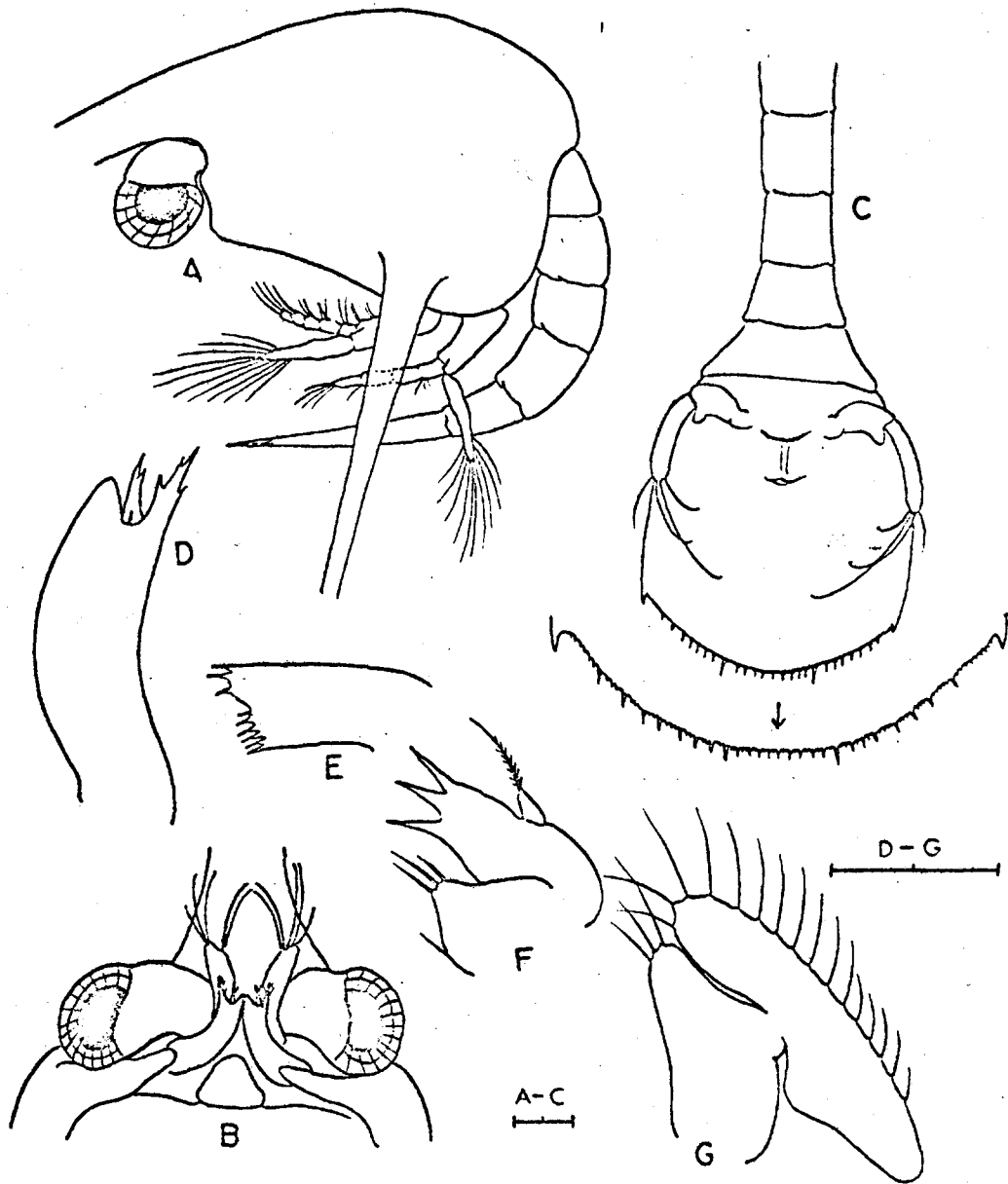
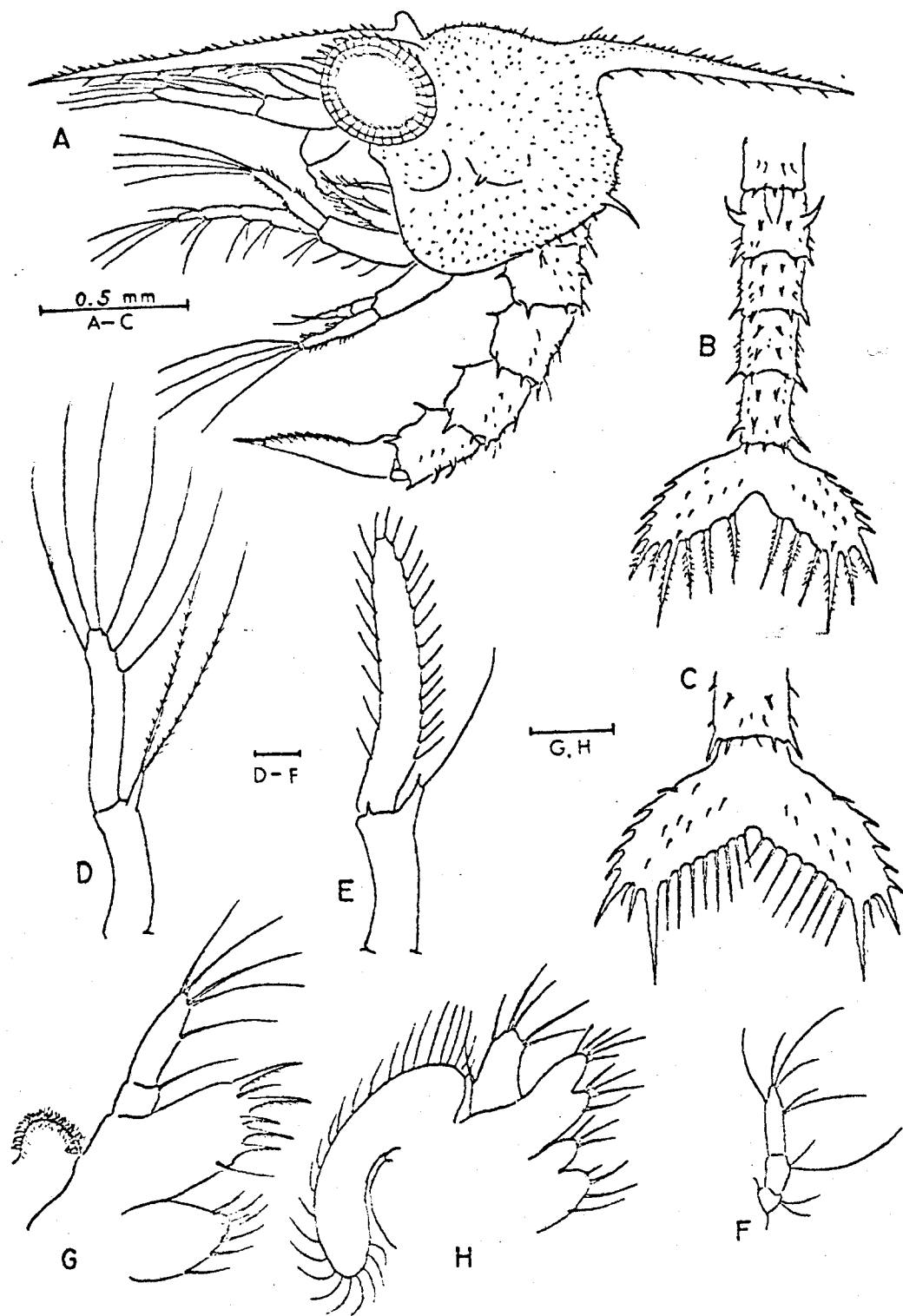
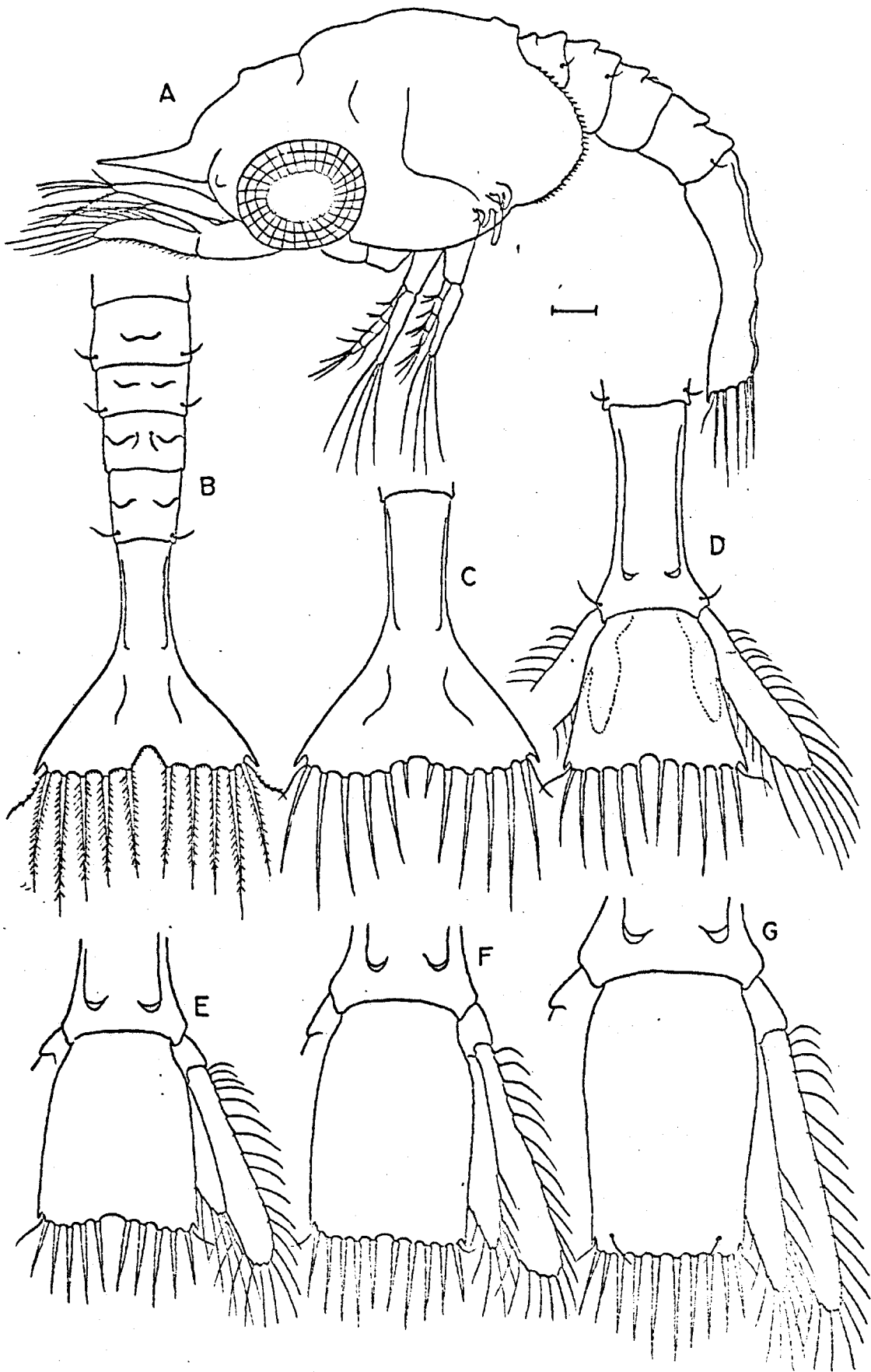


PLATE 58





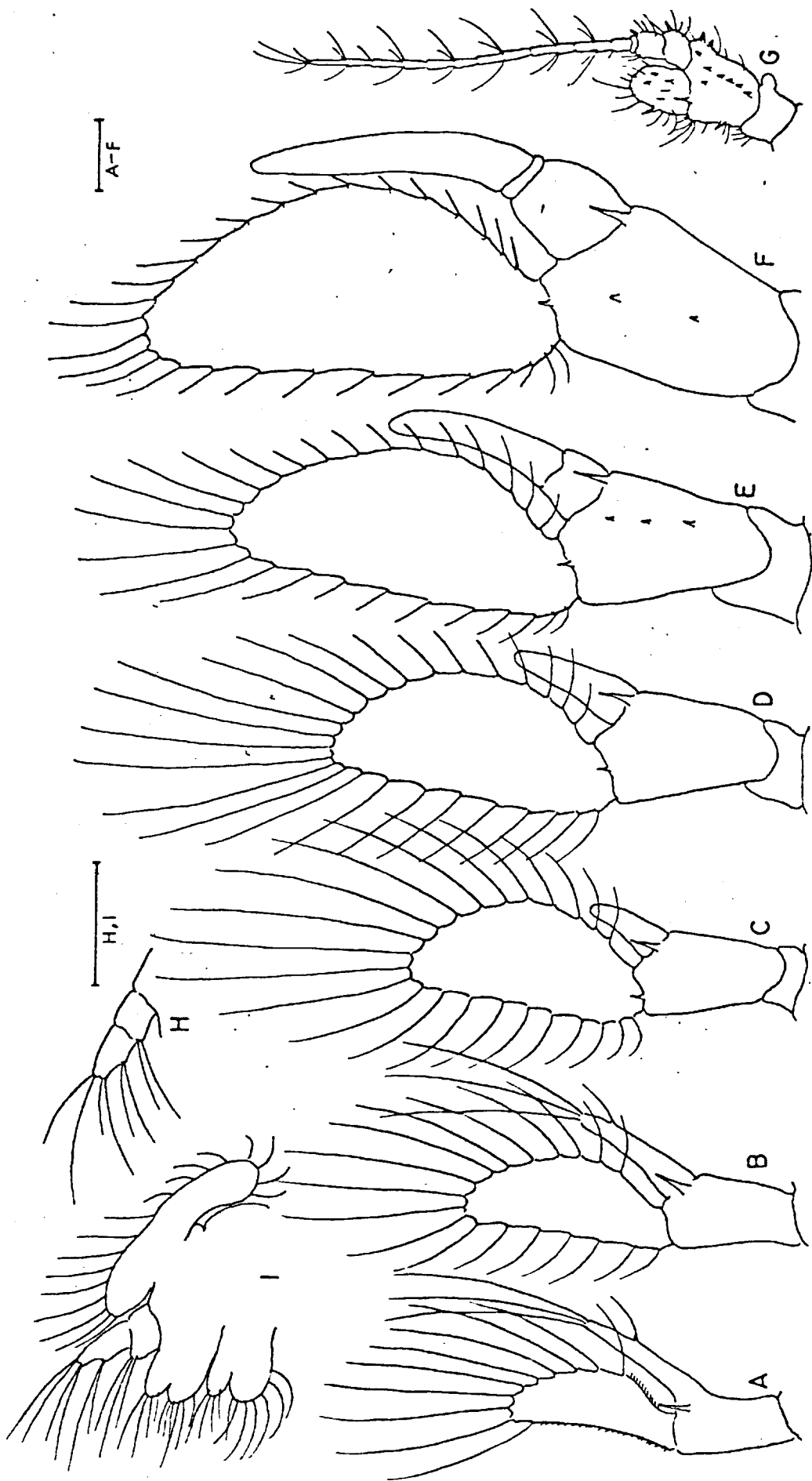
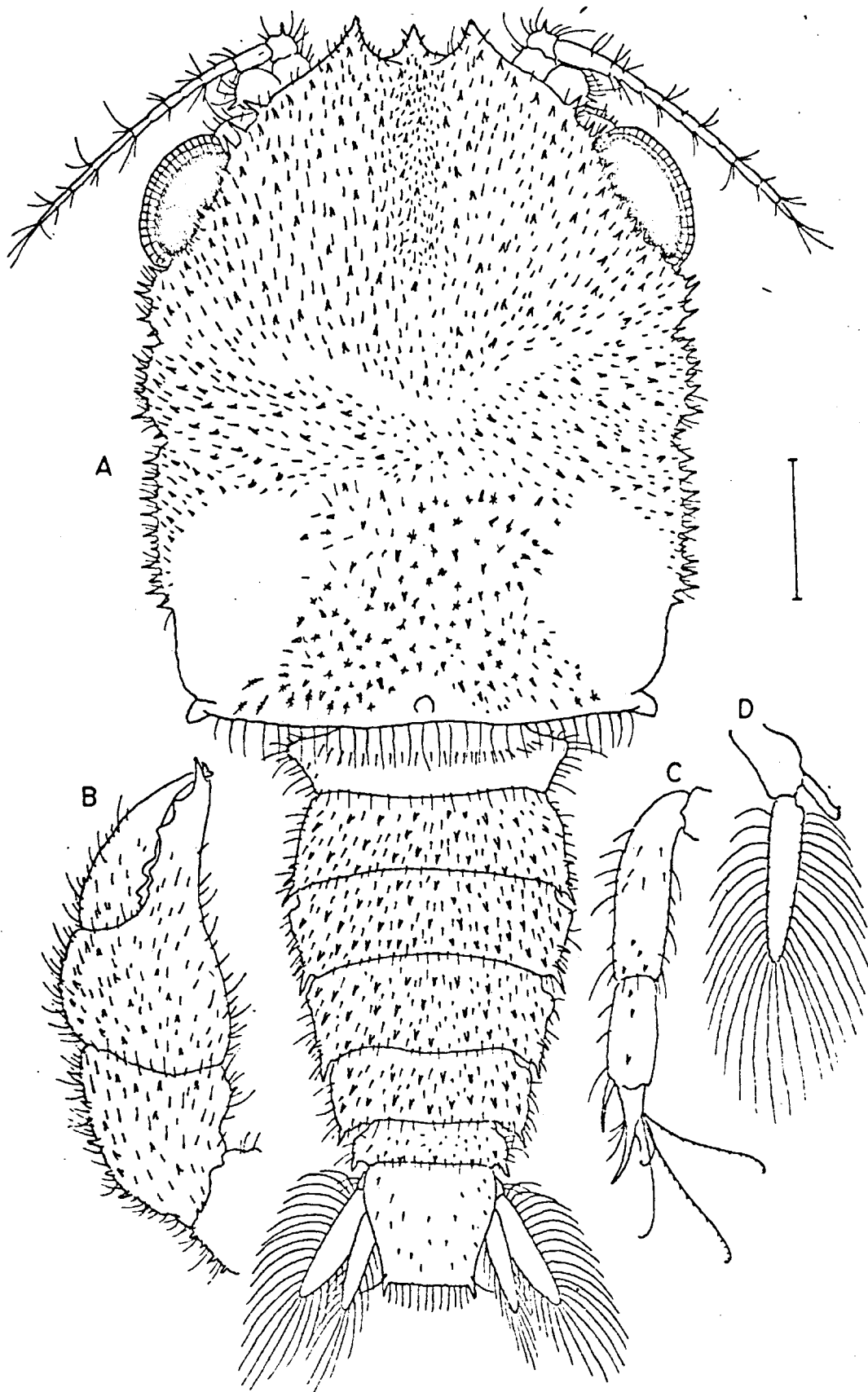


PLATE 62



LIBRARY
UNIVERSITY OF
CALIFORNIA
SPECIAL
LIBRARY
UNIVERSITY OF
CALIFORNIA
SPECIAL
LIBRARY

PLATE 63

