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De Hepaticis III

A contribution to the study of the genus *Ceratolejeunea* (Spruce) Schiffner

by

C. E. B. BONNER

PART I

Many species of this genus were described by STEPHANI. His drawings are not available to other institutions, and, in many cases, the material is too scanty to be sent on loan. It was therefore considered useful to publish some of the former together with indications of the material incorporated in his collections. Bibliographical indications of recent species have also been added. A complete index of literature will be included in Pt. II.

Drawings have been classified as follows: *A.* — stem, *B.* — leaf, *C.* — detail of lobule, *D.* — inflorescence, *E.* — perianth, *F.* — under-leaf. Magnification 33 diameters. The drawings of lobule details etc. are at a magnification of 165 diameters.

* * *

1. *Ceratolejeunea aberrans* Steph. *Sp. Hep.* 6 : 399. 1923 ; *Bot. Centralbl. Beih.* 49 : 612. 1932 ; *Annales Bryol.* 6 : 112. 1933 ; *Bull. Jard. Bot. Etat Bruxelles* 21 : 63. 1951.

TYPE : EAST AFRICA, s.l., 1911, *Braun s.n.* ex hb. Munich.

Other specimens : None.

Drawings : Based on the type. (Fig. 3).

ZWICKEL (1933) makes this species the type of a new genus, *Cladolejeunea*.

2. **C. aliena** Herzog, *Trans. Brit. Bryol. Soc.* **2** : 71. 1952.

TYPE : BORNEO, Near Long Kapa, Mount Dulit, 15 Nov. 1932, *Richards 2597*. Not in hb. G.

3. **C. amazonica** Steph. *Sp. Hep.* **5** : 395. 1913 ; *Hedwigia* **29** : 91. 1890 ; *Annales Bryol.* **5** : 154. 1932 ; *Bot. Centralbl. Beih.* **49** : 602. 1932.

TYPE : DUTCH GUIANA, Paramaribo, s.d., *Kegel 530* (hb. Lindenberg 6773).

Other specimens : DUTCH GUIANA, Paramaribo, s.d., *Kegel 530 b* (hb. Lindenb. 6773). — BRAZIL, Ostia, flum. Amaz., s.d., *Poeppig s.n.*

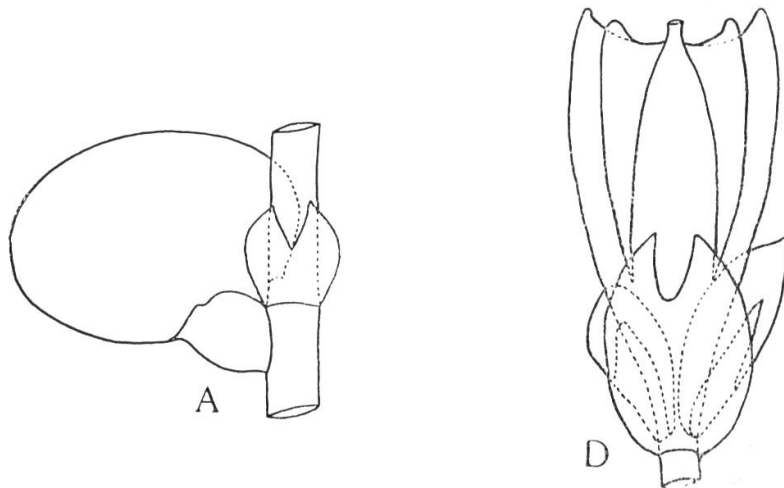


FIG. 3. — *Ceratolejeunea aberrans*

(hb. Lindenb. 6786). — PERU, Rio Huallaga, Im Walde des Escaler, 1200 m, Jan. 1903, *Ule 602*. — DOMINICA, s.l., s.d., *Elliot 1156* (ex hb. BM).

Stephani's drawings are based on the following specimens : A : — *Poeppig s.n.* (hb. Lindenbg. 6786) ; B-D : — *Ule 602* (Fig. 4).

4. **C. andicola** Steph. *Sp. Hep.* **5** : 395. 1913 ; *Hedwigia* **34** : 234. 1895 ; *Annales Bryol.* **5** : 154. 1932 ; *Bot. Centralbl. Beih.* **49** : 602. 1932.

TYPE : ECUADOR, Manabi, s.d., *Wallis s.n.*

Other specimens : None.

Drawings from the type. (Fig. 5).

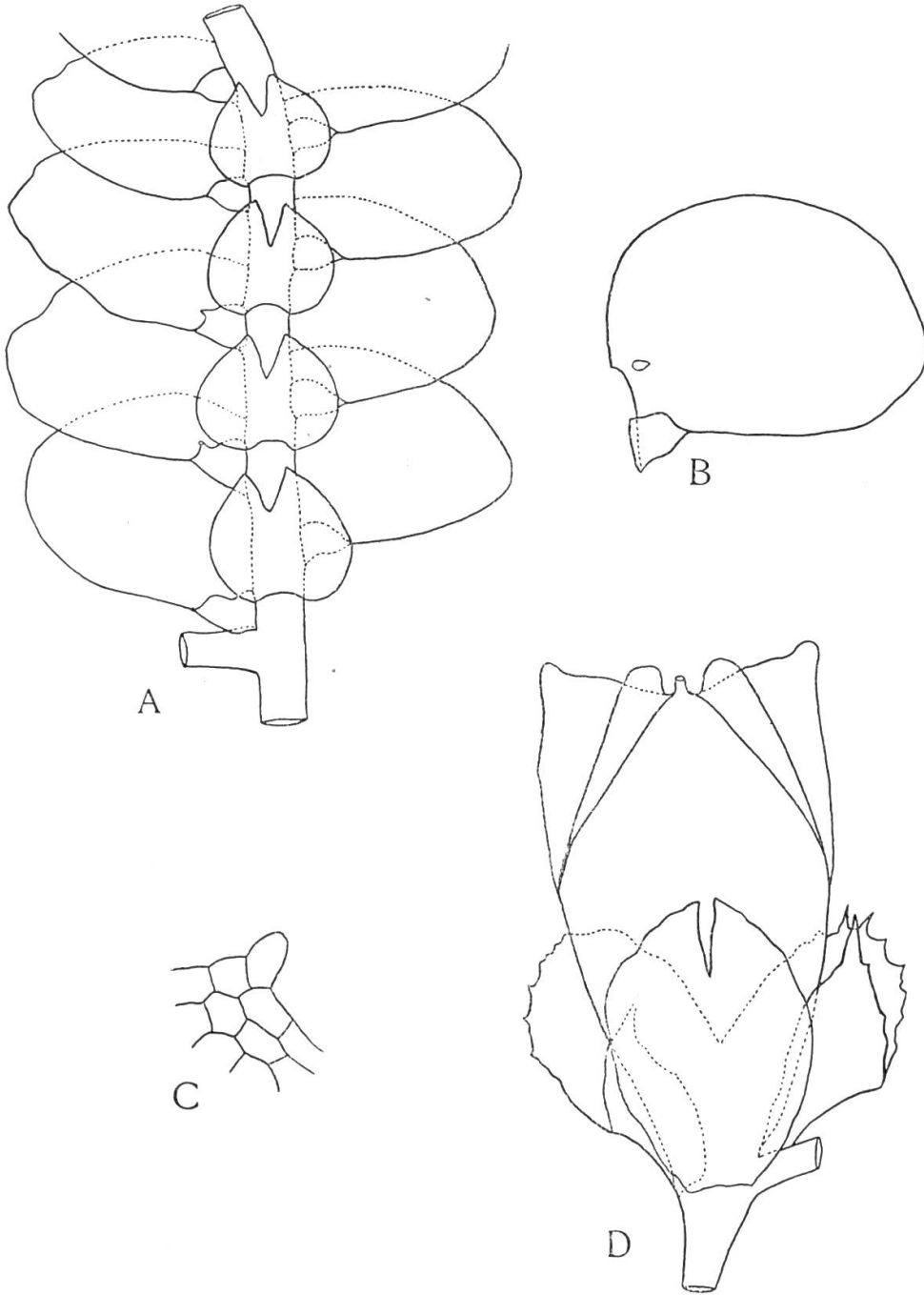


FIG. 4. — *Ceratolejeunea amazonica*

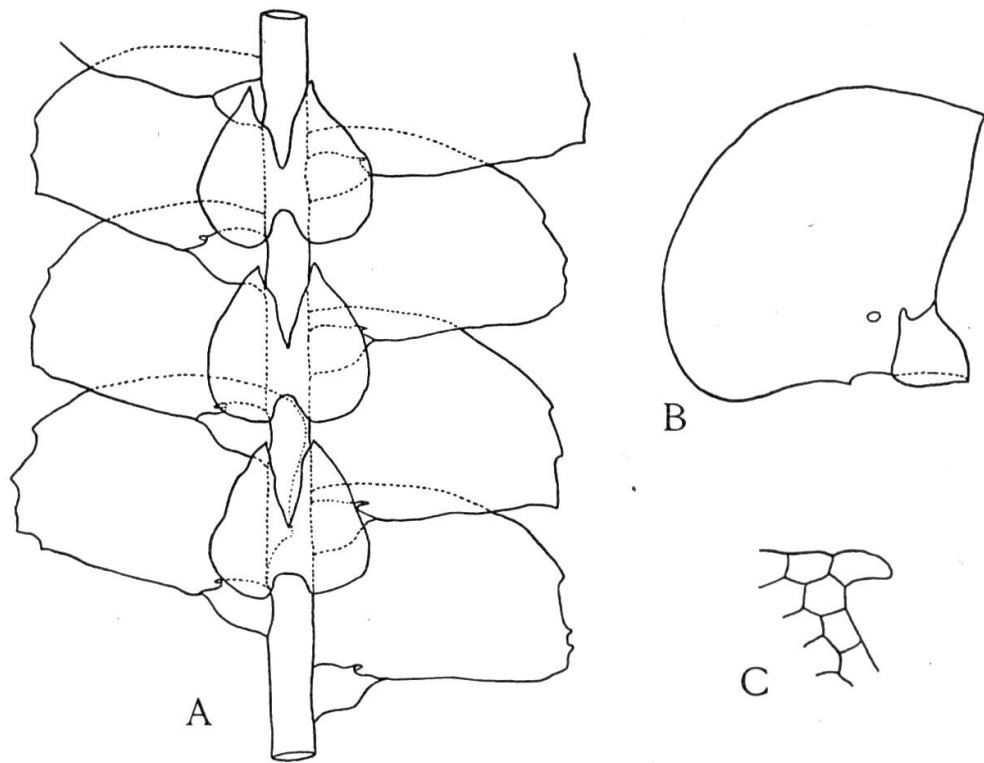


FIG. 5. — *Ceratolejeunea andicola*

5. **C. anomala** (Lindenb. & Gottsche) Steph. *Sp. Hep.* 5 : 396. 1913 = *Lejeunea anomala* Lindenb. & Gottsche, *Linnaea* 24 : 636. 1851 = *Euosmolejeunea anomala* (Lindenb. & Gottsche) Zwickel, *Annales Bryol.* 6 : 112. 1933 ; *Bot. Centralbl. Beih.* 49 : 602. 1932 ; *Brittonia* 5 : 402. 1945.

TYPE : SURINAM, in Gayersvlyt apud Paramaribo, s.d., *Kegel* 993. A fragment only in hb. Steph. (G.).

Other specimens : SURINAM, s.l., s.d., *Kegel* 169. — GUADELOUPE, s.l., 1010 m., s.d., *Duss* 178. — BRAZIL, Rio Janeiro, s.d., *Mosén* 266.

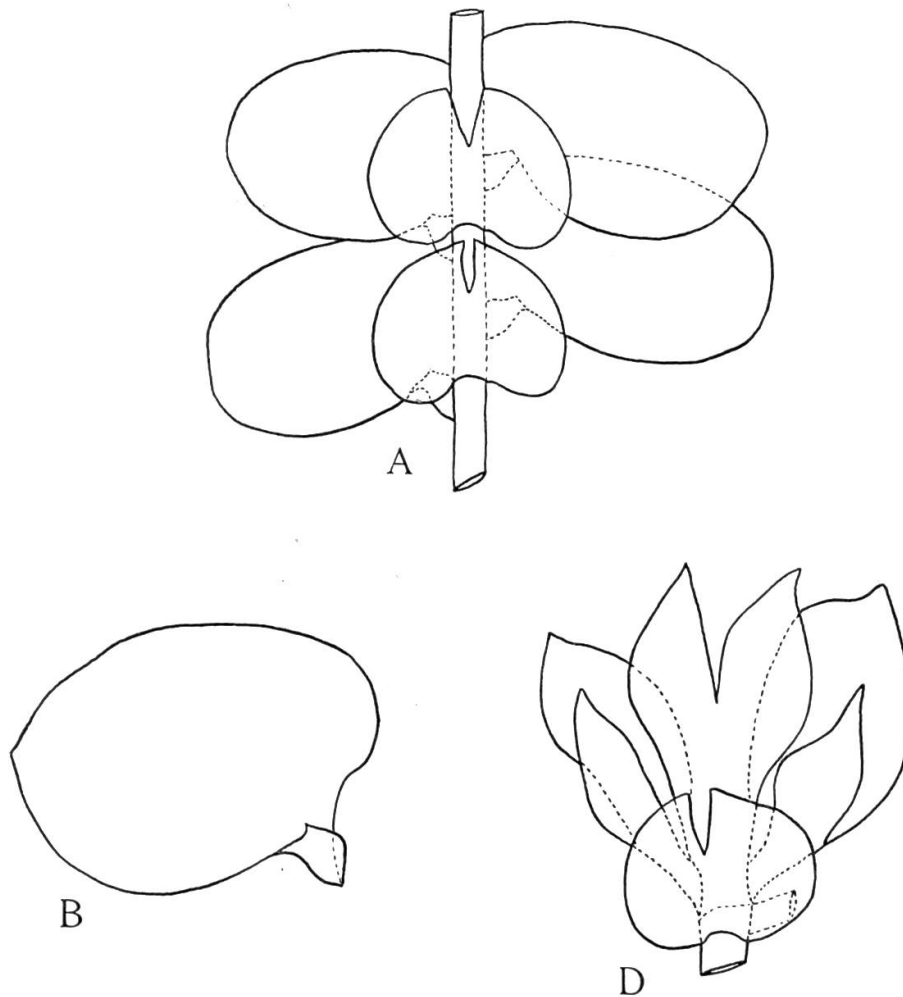
Drawings : Inscribed "Surinam, *Kegel*" — Probably the type specimen. (Fig. 6).

6. **C. auriculata** Schiffner *Sp. Hep.* 5 : 394. 1913 ; *Forschungsreise S.M.S. Gazelle* Pt. 4. Bot. (Lebermoose) : 30. 1889 ; *Annales Bryol.* 5 : 148. 1932.

TYPE : INS. NEW HANOVER, West Coast on trees, 20.VII.1875, *Naumann s.n.* ded. Schiffner.

Other specimens : None.

Drawings from the type. (Fig. 7).

FIG. 6. — *Ceratolejeunea anomala*

7. **C. belangeriana** (Gottsche) Steph. *Sp. Hep.* 5: 396. 1913; *Bot. Centralbl. Beih.* 49: 612. 1932; *Bull. Jard. Bot. Etat Bruxelles* 21: 78. 1951 = *Lejeunea belangeriana* Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.*: 398. 1845.

TYPE: ILE DE FRANCE [Ile Maurice], *Bélanger s.n.* (hb. Lehmann). A fragment only in hb. Steph., ex hb. Lehmann.

Other specimens: ILE DE FRANCE, s.d., *Bélanger s.n.*, Gottsche dedit 1888; s.l., s.d. *Montagne s.n.* (142). — JAVA, "in Herpetio", ex hb. Nees; s.l., s.d., *Paterson s.n.* — RÉUNION, s.l., s.d., s.col., s.n. — INSULA BANCA, s.l., 1882, *Luerssen s.n.*

All the drawings were from the type. (Fig. 8).

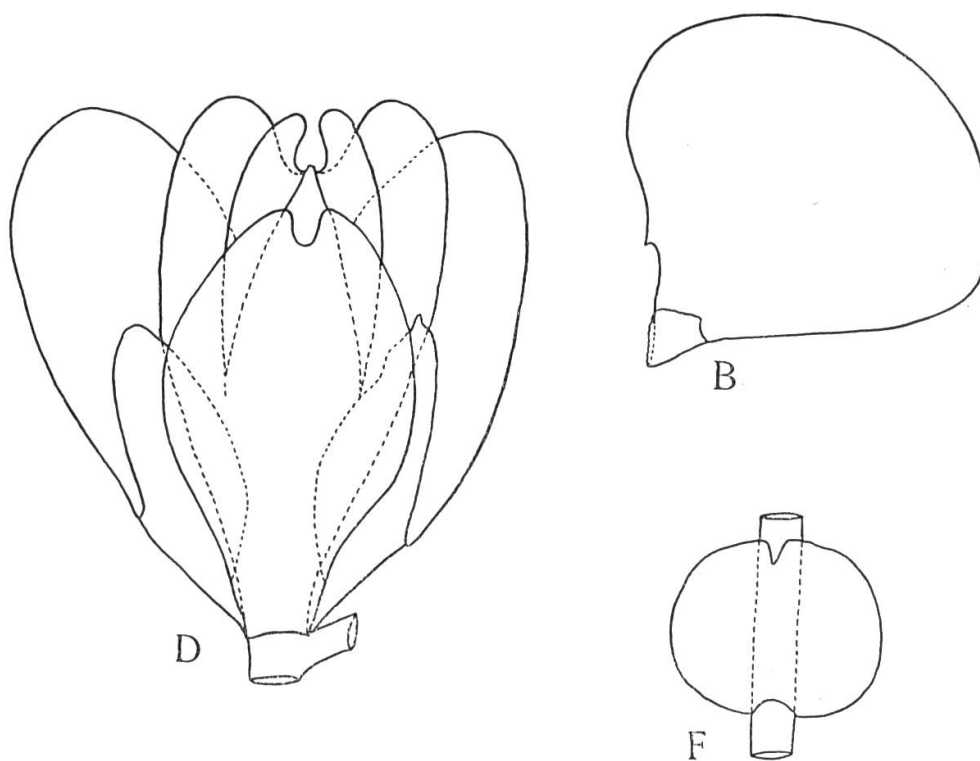


FIG. 7. — *Ceratolejeunea auriculata*

8. **C. beninensis** Jones & Vanden Berghen, *Bull. Jard. Bot. Etat Bruxelles* 21 : 63. 1951.

TYPE : NIGERIA, Benin, Okomu forest preserve, 10 Dec. 1947, Jones 51.

9. **C. boschiana** Steph. *Sp. Hep.* 5 : 397. 1913 ; *Bot. Centralbl. Beih.* 49 : 612. 1932.

LECTOTYPE : MADAGASCAR, inter *Mastigolej.*, s.d., s.col., (57) ex hb. van den Bosch.

Other specimens : MADAGASCAR s.d., s.col., s.n. (142) ex hb. Montgn. determined by Gottsche as *Lejeunea cornuta*.

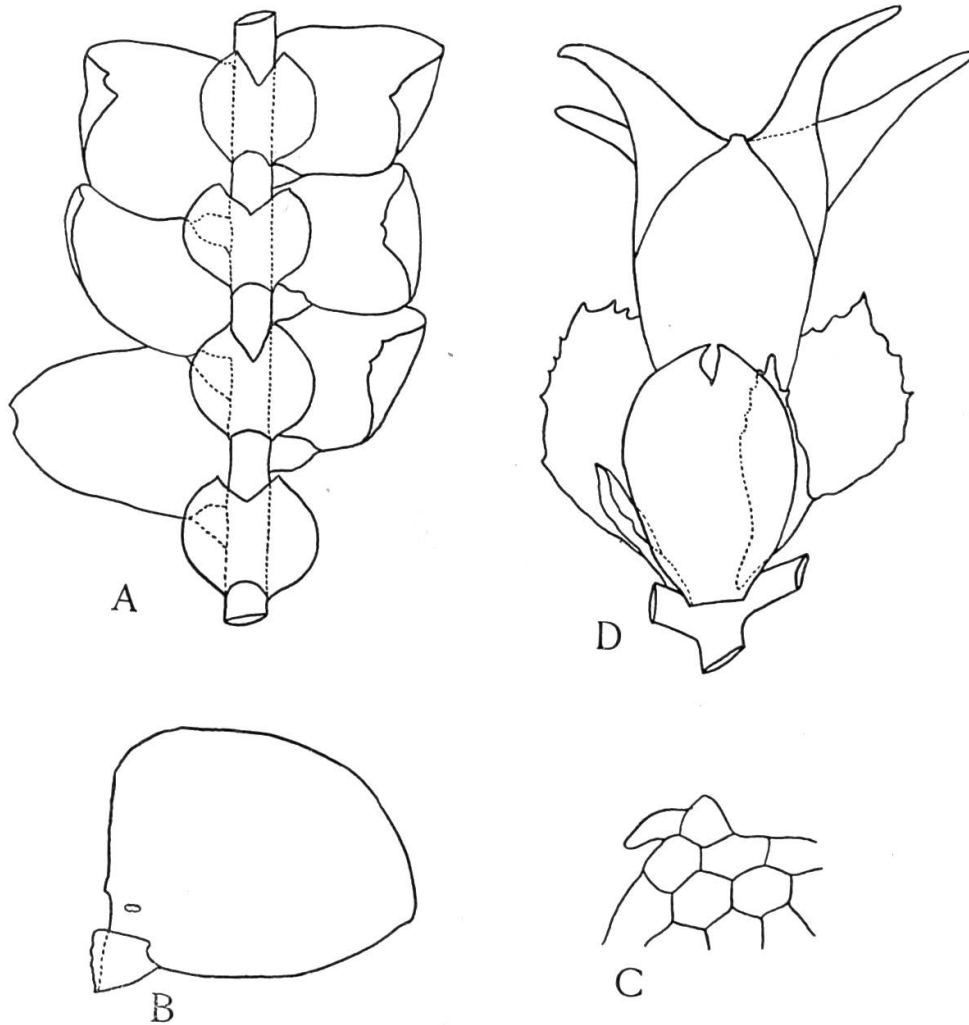
All the drawings were from the lectotype. (Fig. 9).

10. **C. brevicornuta** Steph. *Sp. Hep.* 5 : 398. 1913 ; *Annales Bryol.* 5 : 154. 1932 ; *Bot. Centralbl. Beih.* 49 : 603. 1932.

TYPE : PERU, St. Gavan, s.d., *Lechler s.n.*

Other specimens : None.

All drawings from the type. (Fig. 10).

FIG. 8. — *Ceratolejeunea belangeriana*

II. **C. brevinervis** (Spruce) Evans in Steph. *Sp. Hep.* 5: 399. 1913; *Bul. Torrey Bot. Cl.* 32: 282. 1905; *Brittonia* 5: 373. 1945; *Bot. Centralbl. Beih.* 49: 603. 1932; *Annales Bryol.* 5: 152. 1932 = *Lejeunea brevinervis* Spruce, *Journ. Linn. Soc. London* 30: 342. 1895.

TYPE: GUADELOUPE, ad arbores, *Lejeuneae filiformi* consociata, *L'Herminier*. Not in hb. G.

Other specimens: DOMINICA, s.l., s.d., *Elliott* 1638, 1757, 1788 & 2169.

Drawings based on *Elliott* 1943 p.p. (not in hb. G.). (Fig. 11).

12. **C. bullatiloba** Steph. *Sp. Hep.* 5 : 399. 1913 ; *Bot. Centralbl. Beih.* 49 : 603. 1932 ; *Annales Bryol.* 5 : 154. 1932.

TYPE : PERU, s.l., s.d., s.col. ex hb. Meissner.

Other specimens : None.

Drawings based on the type. (Fig. 12).

13. **C. caducifolia** (Spruce) Steph. *Sp. Hep.* 5 : 400. 1913 ; *Brittonia* 5 : 382. 1945 ; *Bot. Centralbl. Beih.* 49 : 603. 1932 ; *Annales Bryol.* 5 : 157. 1932 = *Lejeunea caducifolia* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 : 205. 1884.

TYPE : BRAZIL, Manaos, supra fluminis Negro, in cortice. Not in hb. G.

Other specimens : BRAZIL, Manaos, in trunco putrescente, s.d., Spruce s.n.

Drawings : None.

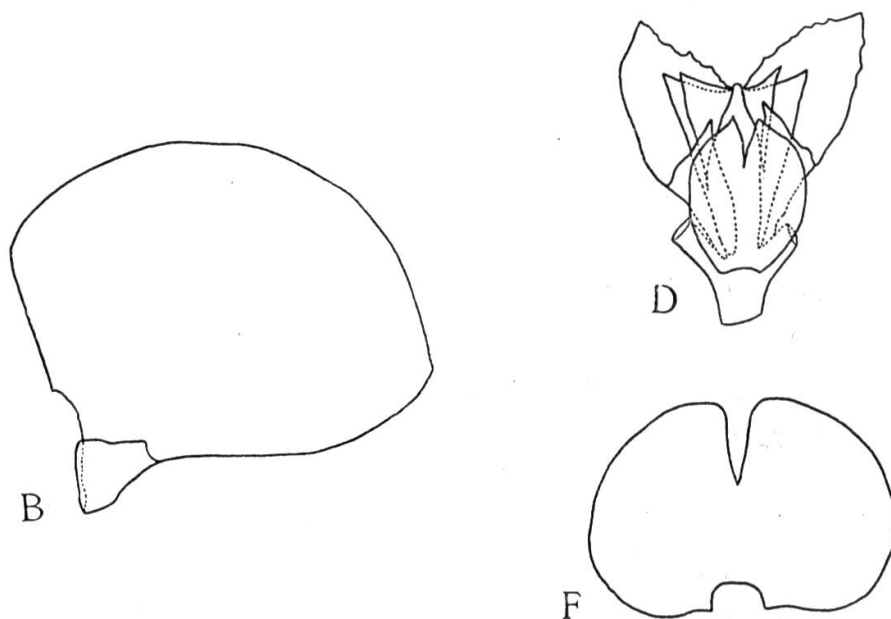


FIG. 9. — *Ceratolejeunea boschiana*

14. **C. calabariensis** Steph. *Sp. Hep.* 5 : 400. 1913 ; *Hedwigia* 34 : 234. 1895 ; *Bull. Jard. Bot. État Bruxelles* 21 : 71. 1951 ; *Bot. Centralbl. Beih.* 49 : 612. 1932.

TYPE : TROPICAL WEST AFRICA, New Calabar, on tree trunks, 8 oct. 1884, *Monkemeyer* 5, sub *Lejeunea variabilis*.

Other specimens : CAMEROONS, Bipinde, Urwaldgebiet, *Zenker* 1843 & 2371 ; Lolodorf, *Staudt* 307 p.p., 695 a, 1062. — FRENCH CONGO, s.l., s.d., *Leconte* s.n.

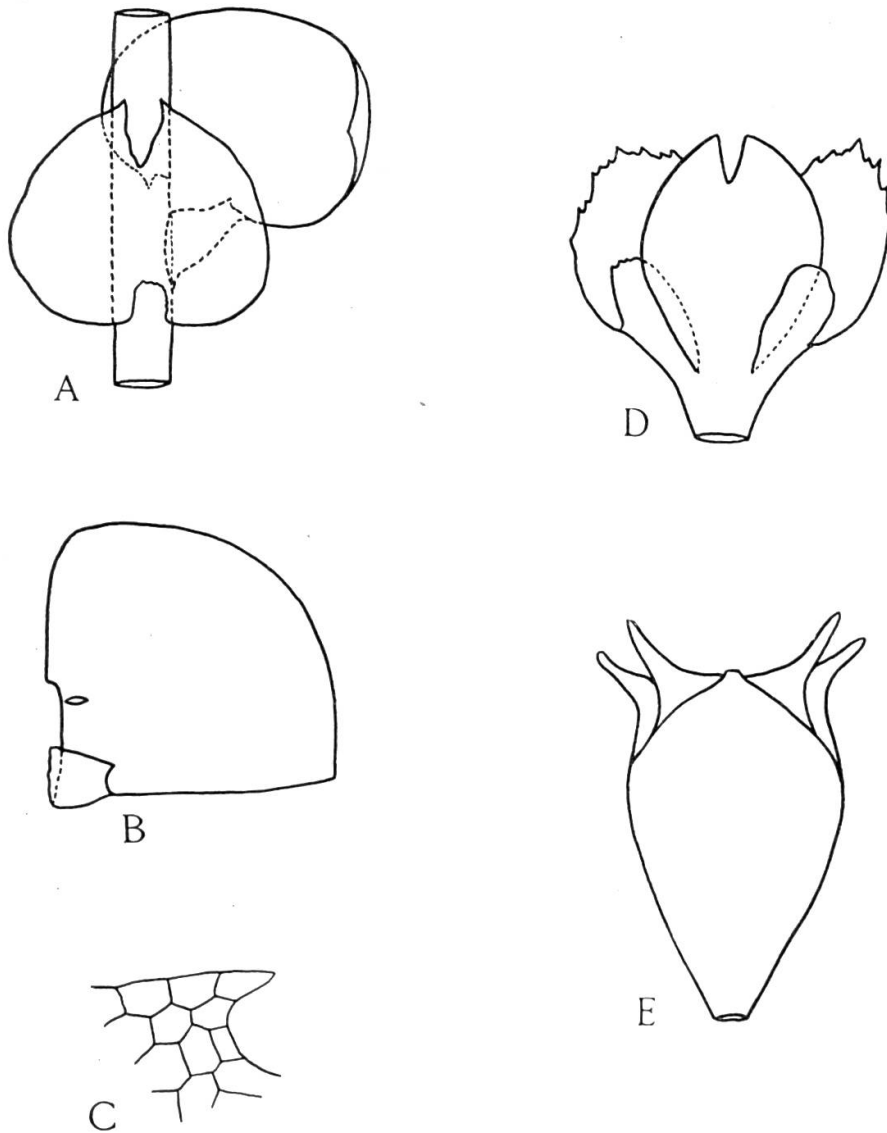


FIG. 10. — *Ceratolejeunea brevicornuta*

Drawings based on *Monkemeyer* 5. (Fig. 13).

No doubt it is because of the supposed loss of the type that *Vanden Berghen* (1951) chose *Zenker 2371* as a substitute.

15. **C. ceratantha** (Nees & Montagn.) Steph. *Sp. Hep.* 5: 140. 1913; *Brittonia* 5: 390. 1945; *Bot. Centralbl. Beih.* 49: 603. 1932; *Annales Bryol.* 5: 154. 1932; *Hedwigia* 23: 283. 1888; = *Lejeunea ceratantha* Nees & Montagne, *Linnaea* 25: 356. 1852; Gottsche,

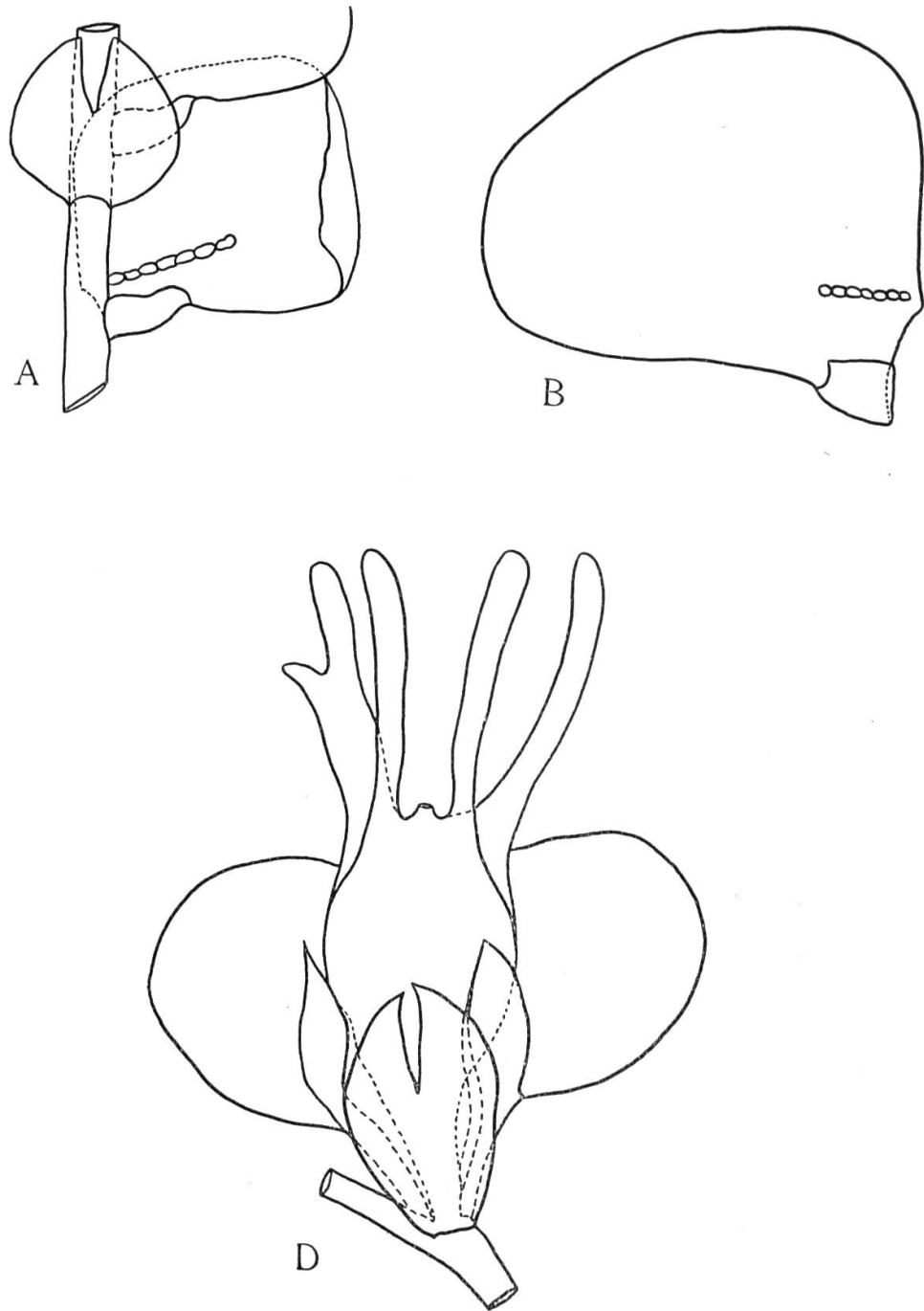


Fig. 11. — *Ceratolejeunea brevinervis*

Lindenb. & Nees, *Syn. Hep.*: 396. 1845; *Annales Sci. Nat., Bot.* ser. 2, **14**: 335. 1840.

TYPE: FRENCH GUIANA, Cayenne, in damp woods, Sept. 1837, *Leprieur 271*. (A fragment only, ex hb. Bescherelle, in hb. G.).

Other specimens: FRENCH GUIANA, s.l., s.d., *Leprieur s.n.* ex hb. Nees; Ins. Sabo, 1889, *Suringar 94*. — BRAZIL, S. Gabriel de Rio Negro, s.d., *Spruce s.n.*; Rio Madeira, Mar. 1902, *Ule 586*. — S. Do-

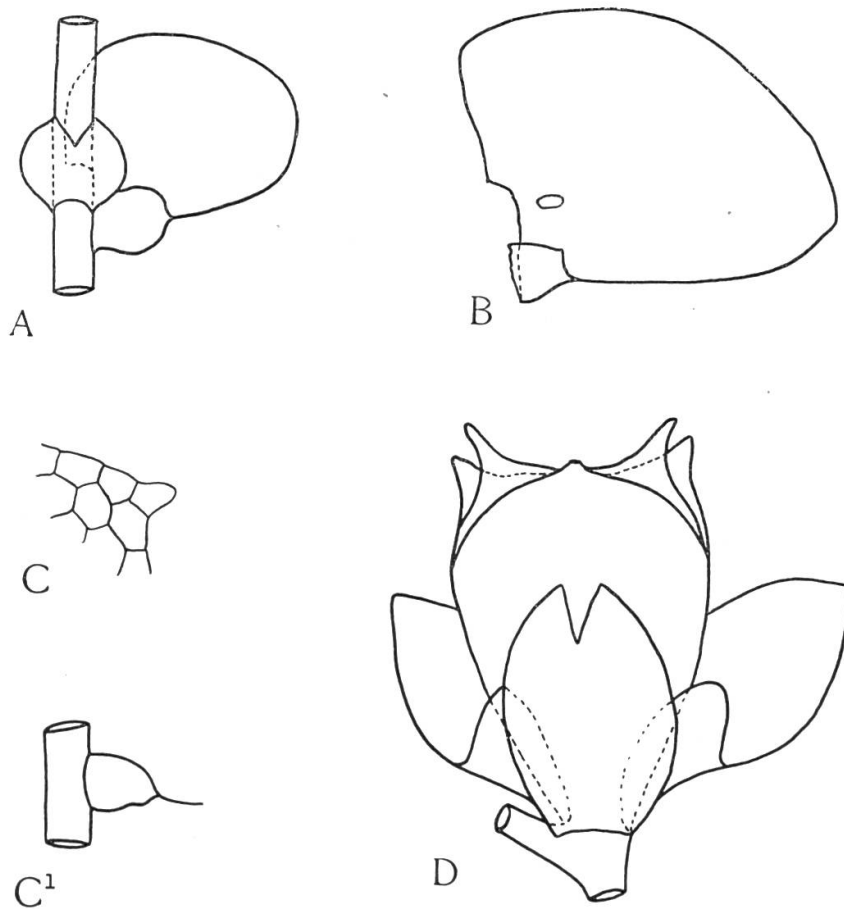


FIG. 12. — *Ceratolejeunea bullatiloba*

MINGO, Isabel de la Torre, 700 m., 17.IV.1887, *Eggers H.10*; Idem, 19.IV.1887, *Eggers H.18*; s.l., *Elliott 1742 p.p.*, 1812. — PORTO RICO, s.l., s.d., *Schwanecke 50*, ex hb. Karl Müller. — MARTINIQUE, Mont. Pelée, mai 1902, *Moller 304*.

Drawings based on *Leprieur 271*. (Fig. 14).

This species is now a synonym of *C. cornuta* (Lindenb.) Steph. (FULFORD 1945).

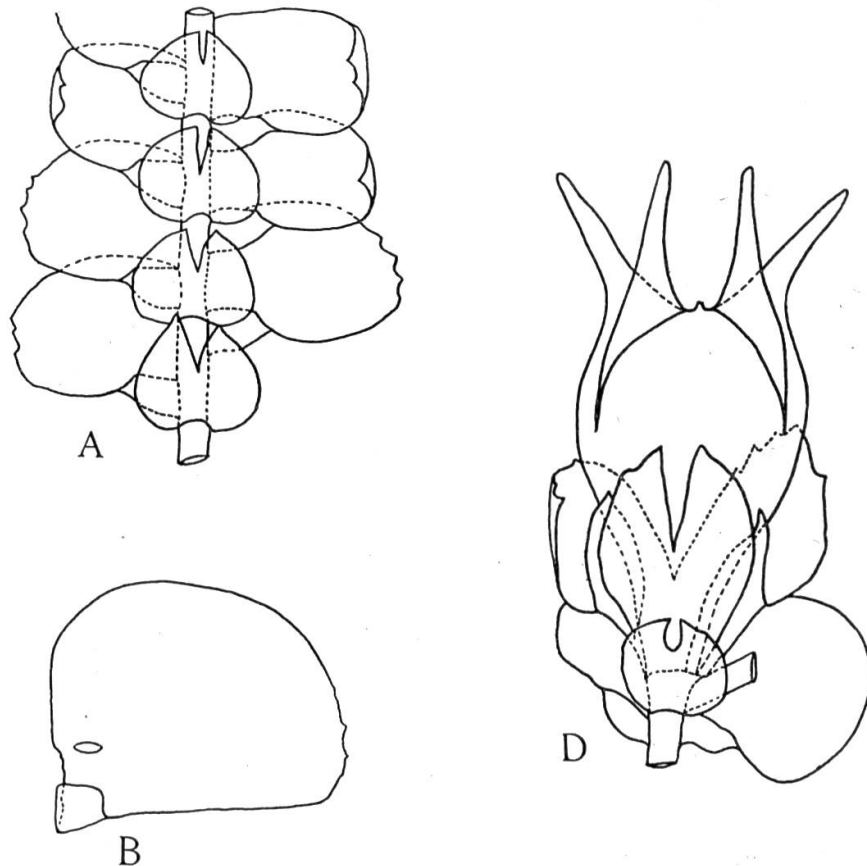


FIG. 13. — *Ceratolejeunea calabariensis*

16. **C. coalita** (Ångst.) Steph. *Sp. Hep.* 5: 402. 1913; = *Lejeunea coalita* Ångst. *Kungl. Vet.-Akad. Förhandl. Stockholm* 30 (5): 135. 1873.

TYPE: TAHITI, 1 sept. 1852, *Andersson*. Not in hb. G.

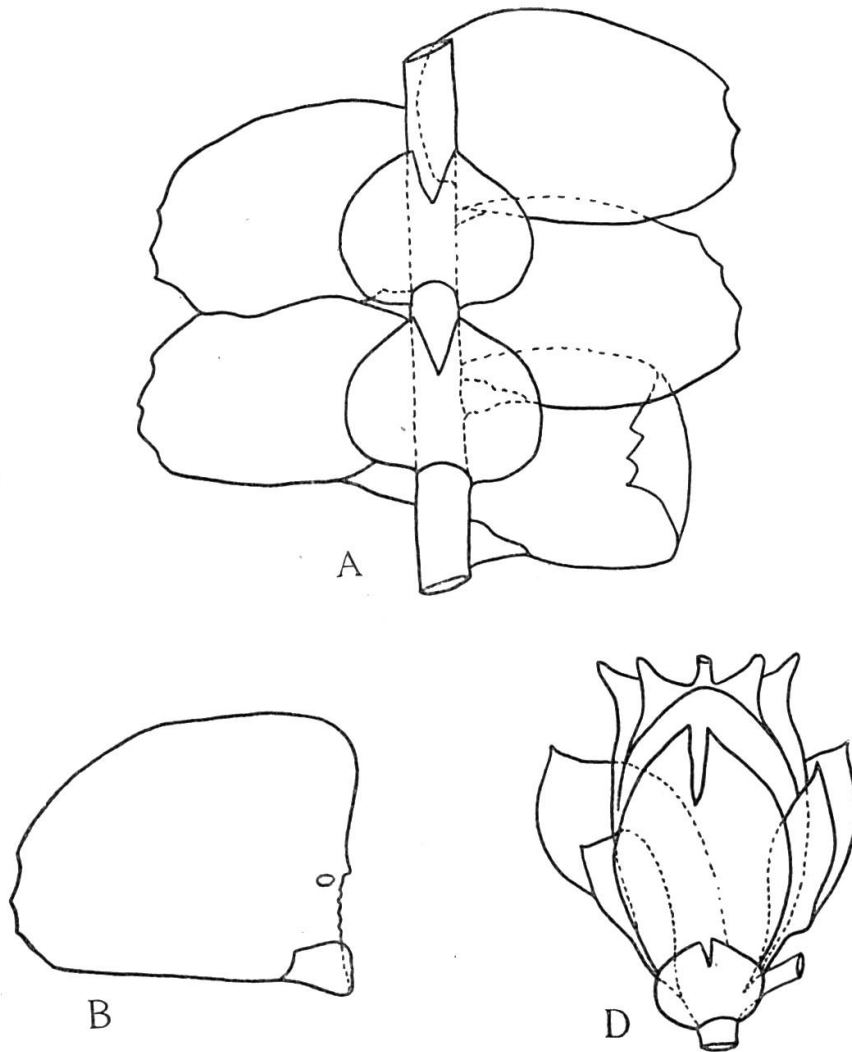
Other specimens: None.

17. **C. coarina** (Gottsche) Steph. *Sp. Hep.* 5: 402. 1913; *Annales Bryol.* 5: 152. 1932; *Bot. Centralbl. Beih.* 49: 604. 1932 = *Lejeunea coarina* Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.*: 395. 1845 = *Jungermannia thymifolia* var. β . Nees (p.p.) in *Martius Fl. Brasiliensis* 1: 359. 1833.

TYPE: BRAZIL: "ad Coari Brasiliae", *Martius*, hb. Nees. There are two fragments in hb. G.; one from hb. Nees direct, and one "hb. Lindenb. ex hb. Nees".

Other specimens: None.

The drawings are based on the type. (Fig. 15).

FIG. 14. — *Ceratolejeunea ceratantha*

18. **C. commixta** (Spruce) Steph. *Sp. Hep.* 5: 404. 1913; *Bot. Centralbl. Beih.* 49: 604. 1932; *Annales Bryol.* 5: 153. 1932 = *Lejeunea commixta* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 204. 1884.

TYPE: PERU, Tarapoto, s.d., Spruce s.n. A small fragment only in hb. G.

Other specimens: None.

Drawings were based on type. (Fig. 16).

19. **C. connata** Steph. in Urban *Symb. Ant.* 2: 471. 1901; *Sp. Hep.* 5: 402. 1913; *Bot. Centralbl. Beih.* 49: 604. 1932; *Annales Bryol.* 5: 156. 1932; *Brittonia* 5: 376. 1945.

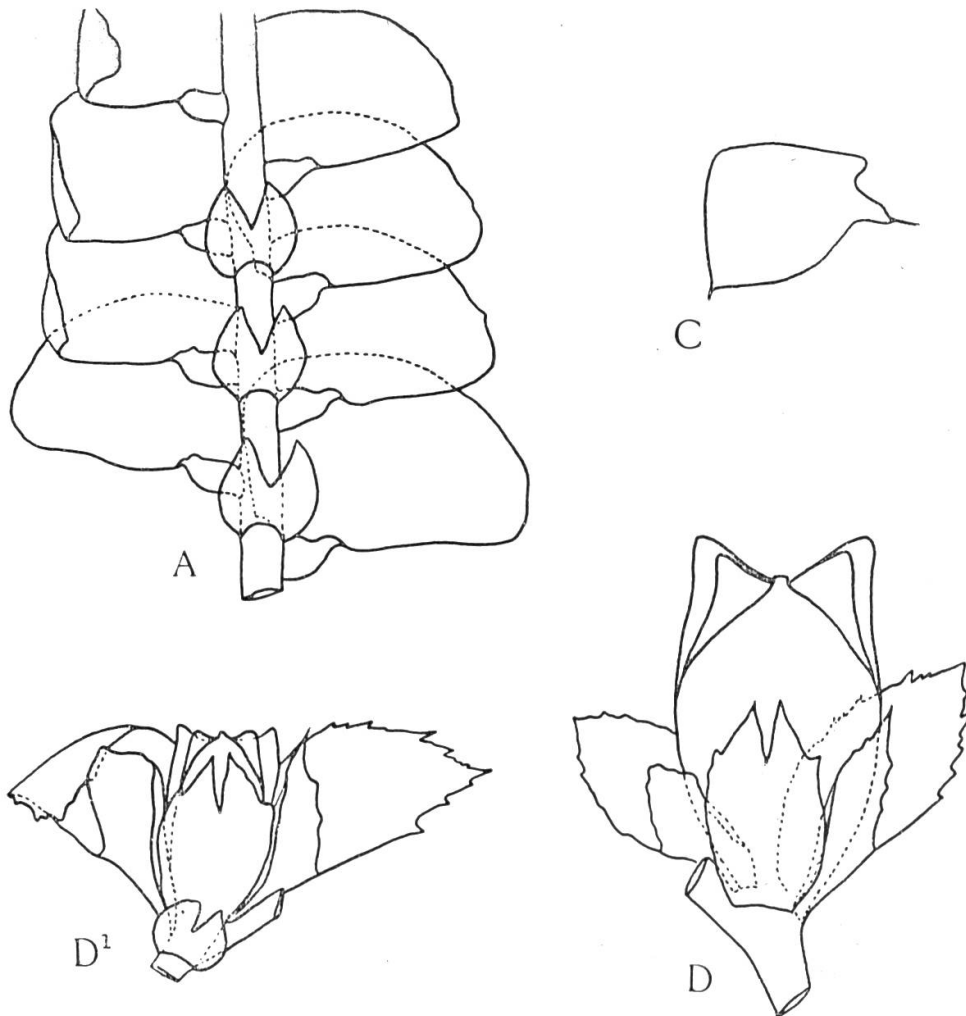


FIG. 15. — *Ceratolejeunea coarvina*

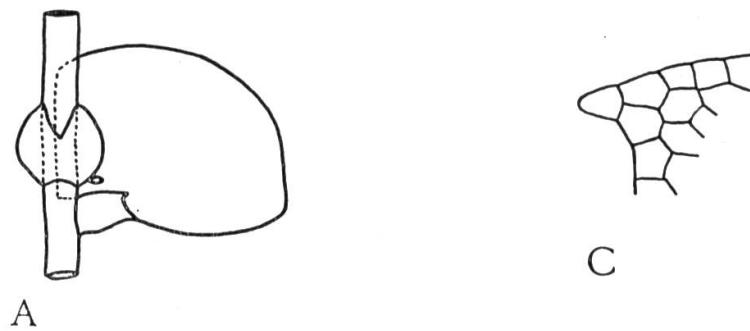


FIG. 16. — *Ceratolejeunea commixta*

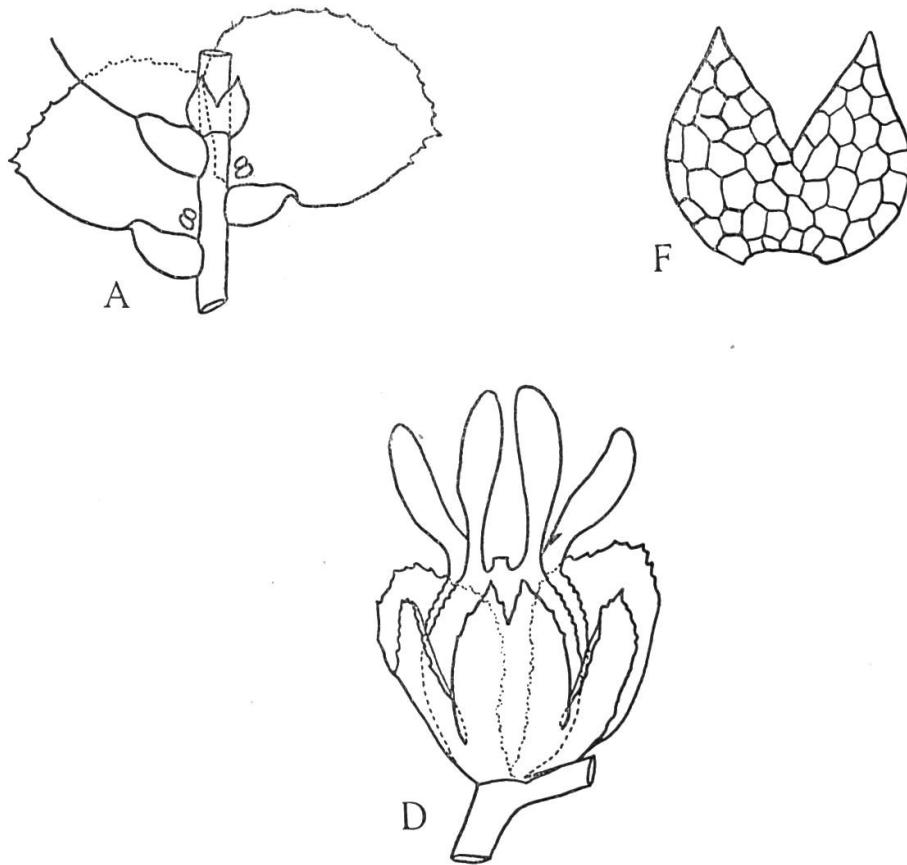


FIG. 17. — *Ceratolejeunea connata*

TYPE : GUADELOUPE, in foliis, 460 m., s.d., *Duss 44*.

Other specimens : DOMINICA, s.d., *Elliott 1647* (with *Prionolejeunea* sp.). — BRAZIL, Salto Trois Sauts, ad ripas fluminis d. Oyapock, ad folia viva, copiosa, skiophila, 1927, *Lützelberg s.n.* (*VERDOORN, Hepat. sel. & crit. 149*).

Drawings based on *Elliott 1647*. (Fig. 17).

This species is now a synonym of *Ceratolejeunea plumula* (Spruce) Steph. (*FULFORD 1945*).

20. **C. corniculata** Spruce ms. in Steph. *Sp. Hep. 5* : 404. 1913 ; *Annales Bryol. 5* : 154. 1932 ; *Bot. Centralbl. Beih. 49* : 604. 1932 ; *Brittonia 5* : 394. 1945.

TYPE : BRAZIL, silva Amazon, San Gabriel, s.d., *Spruce s.n.* A small sample ex hb. Slater in hb. G.

Other specimens : VENEZUELA, Rio Negro et Casiquiasi, in truncis inundatis, s.d., *Spruce s.n.*

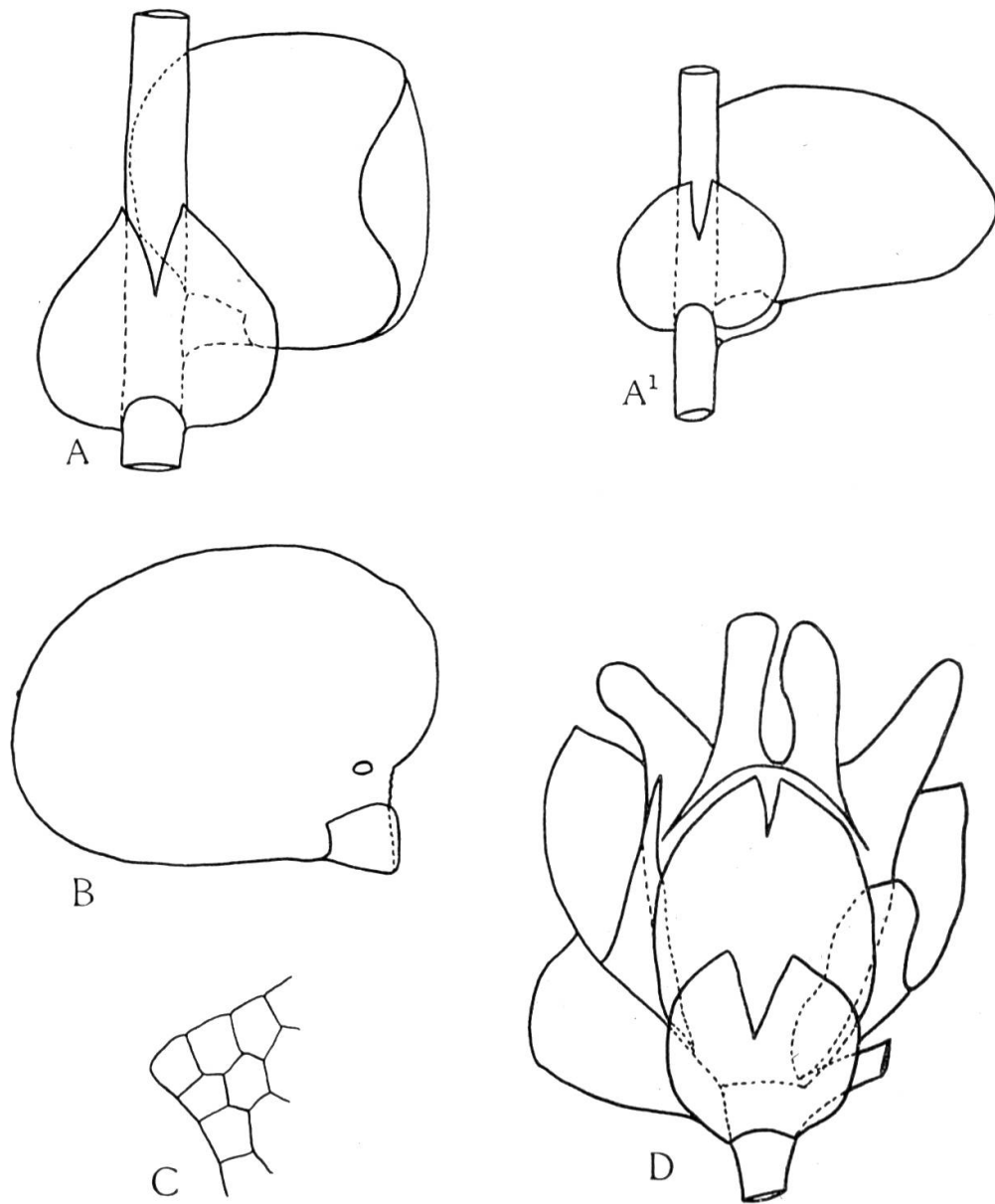
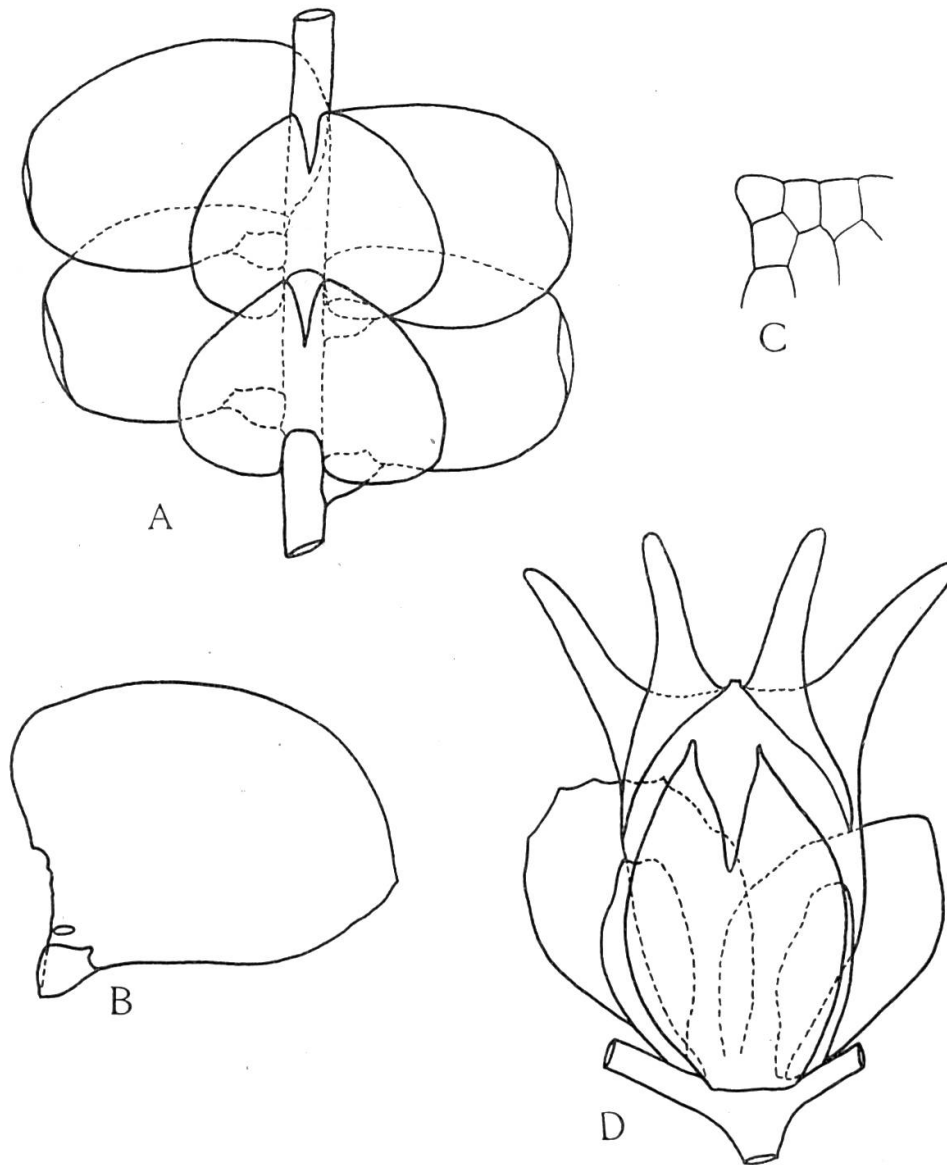


FIG. 18. — *Ceratolejeunea corniculata*

Drawings : *A* — *D* based on the type ; *A*¹ based on the Rio Negro specimens. (Fig. 18).

This species is now a synonym of *Ceratolejeunea megalophysa* (Spruce) Steph. (FULFORD 1945).

FIG. 19. — *Ceratolejeunea cornuta*

21. **C. cornuta** (Lindenb.) Schiffner in *Engler Bot. Jahrb.* **23** : 583. 1897 ; *Sp. Hep.* **5** : 403. 1913 ; *Bot. Centralbl. Beih.* **49** : 604. 1932 ; *Annales Bryol.* **5** : 154. 1932 ; *Brittonia* **5** : 388. 1945 = *Lejeunea cornuta* (Lindenb.) Lindenb. in Gottsche, Lindenb. & Nees, *Syn. Hep.* : 399. 1845 ; *Hedwigia* **27** : 285. 1888 = *Colura cornuta* (Lindenb.) Trev. *Mem. Ist. Lomb.* III, **4** : 402. 1877 = *Jungermannia cornuta* Lindenb. *Nova Acta Phys.-Med. Acad. Caes. Leop.-Car. Nat. Cur.* **14** Suppl. : 23. 1829.

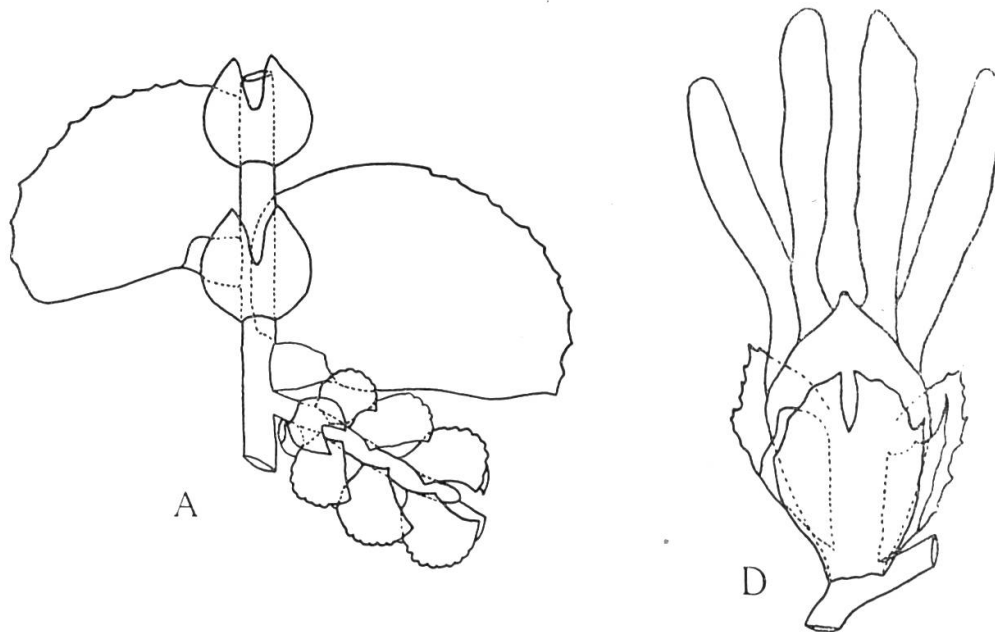


FIG. 20. — *Ceratolejeunea cornutissima*

TYPE : JAMAICA, on *Grammitis serrulatus*, sent by Swartz under *Jungermannia flava* in hb. Weber. A small fragment in hb. G. "Gottsche dedit".

Other specimens : ST. KITTS, s.l., s.d., *Breutel s.n.* — DOMINICA, s.l., s.d., *Elliott 1912*. — GUADELOUPE, s.l., s.d., *Duss 486* ; inter *Sendtneram junip.*, *L'Herminier 648*. — JAMAICA, s.l., s.d., *Curnow 1249*. — MARTINIQUE, s.l., s.d., *Duss s.n.* ; s.l., s.d., *Duchassaing 1110* ; Fort de France, 1893, *Ferrier 20*. — PORTO RICO, inter *Leiomitriam*, s.d., *Sintenis 86*. — TRINIDAD, s.l., s.d., *Crüger s.n.* — GUIANA, s.l., s.d., *Hooker s.n.* — SURINAM, Paramaribo, s.d., *Kegel s.n.* ; Nieuwe Ryweg, s.d., *Kegel s.n.* — BRAZIL, St. Vincent nr. Santos, Sept. 1895, *Horeau 4*, comm. Theriot ; s.l., s.d., *Ule 98* ; Rio Negro, s.d., *Spruce s.n.* — ECUADOR, s.l., 17 Aug. 1893, *Eggers 15151 a*. — CAMEROONS, Buea, 3000 m., 1891, *Jungner 66*.

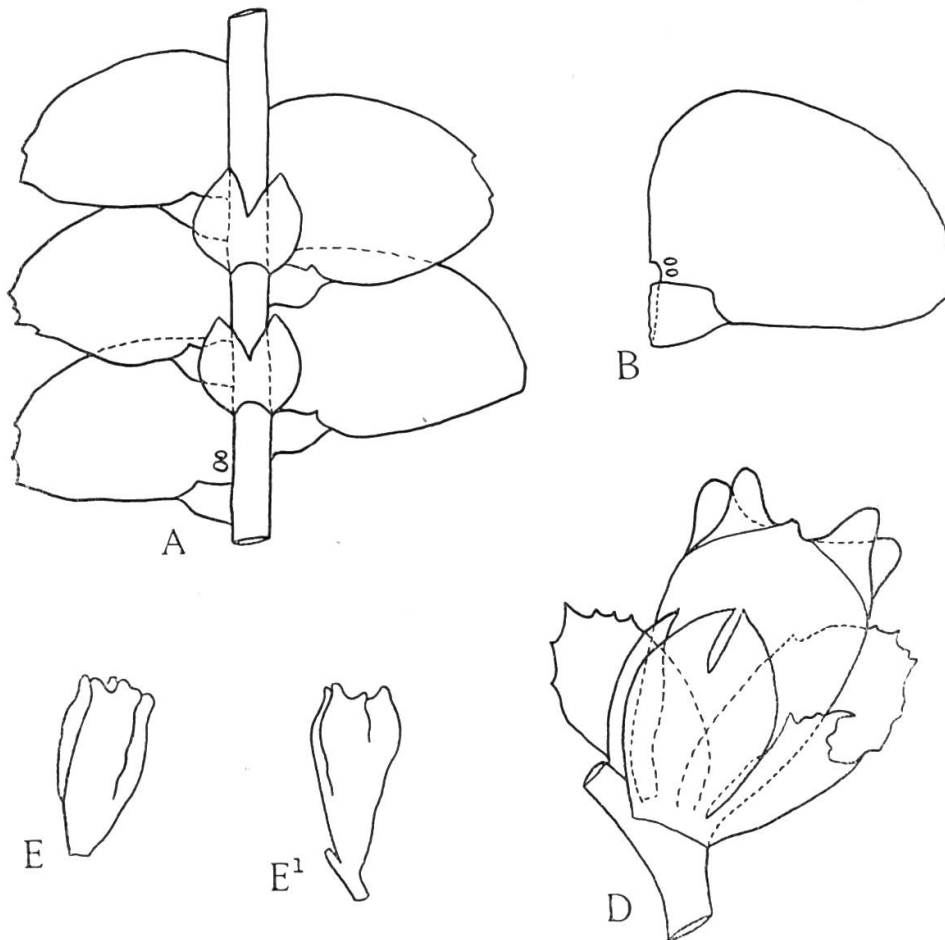
Drawings were based on the type. (Fig. 19).

22. **C. cornutissima** Steph. *Sp. Hep.* 5 : 405. 1913 ; *Annales Bryol.* 5 : 157. 1932 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 ; *Bull. Jard. Bot. Etat Bruxelles* 21 : 66. 1951 = *Lejeunea cornutissima* Steph. *Hedwigia* 31 : 166. 1892.

TYPE : CAMEROONS, Etome, 200 m., s.d., *Dusén 461*.

Other specimens : CAMEROONS, Etome, 1892, *Dusén s.n.*

Drawings were based on *Dusén 461*. (Fig. 20).

FIG. 21. — *Ceratolejeunea cubensis*

23. **C. cubensis** (Montagne) Schiffn. in Engl. & Prantl. *Nat. Pflanzenfam.* 1, 3: 125. 1893; Stephani, *Sp. Hep.* 5: 403. 1913; *Bot. Centralbl. Beih.* 49: 604. 1932; *Annales Bryol.* 5: 157. 1932; *Brittonia* 5: 396. 1945 = *Lejeunea cubensis* Montagne in Ramon de la Sagra, *Hist. Phys., Pol. et Nat. Cuba*, French 2nd. ed.: 481. 1842; Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.*: 396. 1845; Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 202. 1884 = *Colura cubensis* (Montagne) Trev., *Mem. Ist. Lomb.* III, 4: 402. 1877.

TYPE: CUBA, s.l., s.d., *Auber s.n.* "Ad cortices repentem *Lejeuniae serpyllifoliae* radulaeque pallenti immixtam".

A fragment only in hb. G., from Montagne ex hb. Bescherele.

Other specimens: CUBA, s.l., s.d., *Wright 1094, 1097, 1098, 1099, 1100, 1102, 1103, 1212, 1230, 1235* & *1250*; Prov. La Havane, sur

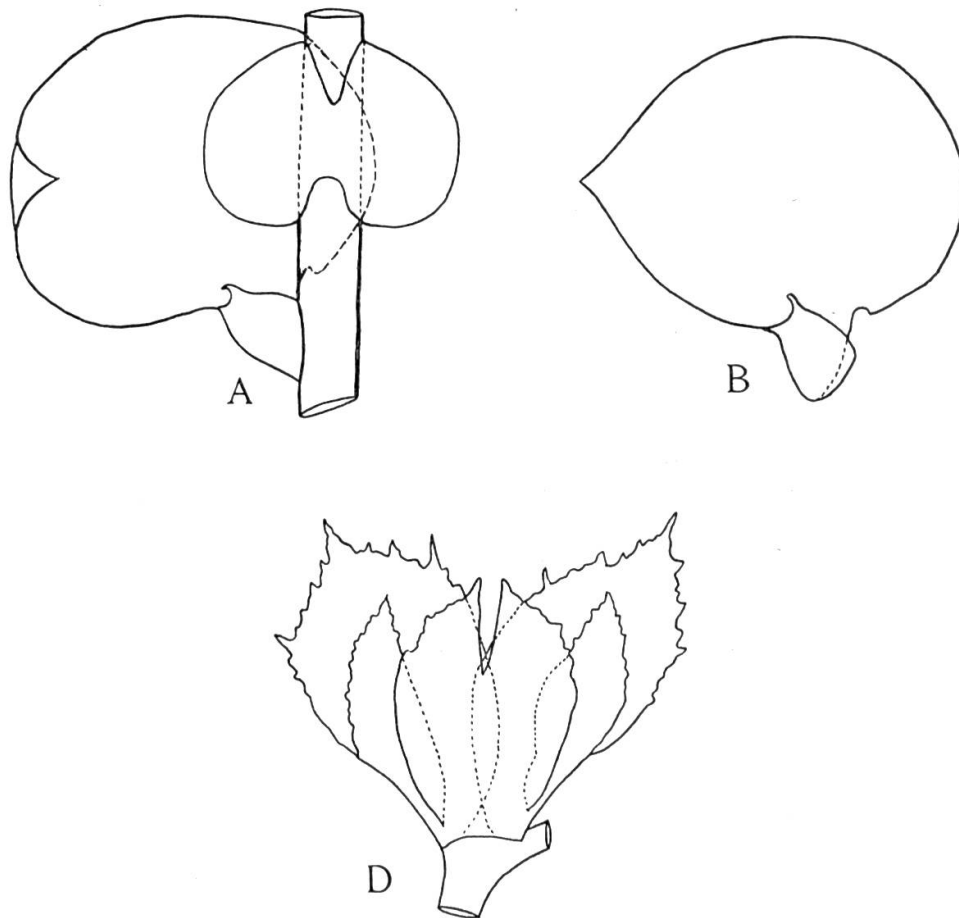


FIG. 22. — *Ceratolejeunea cuspidata*

roche calcaire, Sierra da Camoa, 27.VI.1911, *Frère Léon s.n.* — JAMAICA, s.l., s.d., *Swartz s.n.* (hb. Lindenb. 6769). — PORTO RICO, s.l., s.d., *Sintenis 12*. — SURINAM, juxta flum. Para, s.d., *Suringar s.n.*; s.l., s.d., *Suringar s.n.* (hb. Leiden 435). — BRAZIL, Rio Negro & Uaupés, s.d., *Spruce s.n.*; Para, Manaos etc., s.d., *Spruce s.n.*; s.l., s.d., *Ule 10*. — MARTINIQUE, s.l., s.d., s.col., s.n.; idem ex hb. Montagne.

Drawings based on Cuba, Montagne, hb. Lindenb. 6767. Probably another fragment of the type. (Fig. 21).

24. **C. cuspidata** Steph. *Sp. Hep.* 5 : 406. 1913; *Bot. Centralbl. Beih.* 49 : 614. 1932.

TYPE : JAVA, s.l., s.d., *Karsten s.n.*

Other specimens : None.

Drawings are based on the type. (Fig. 22).

ZWICKEL (1932) refers this species to *Hygrolejeunea*.

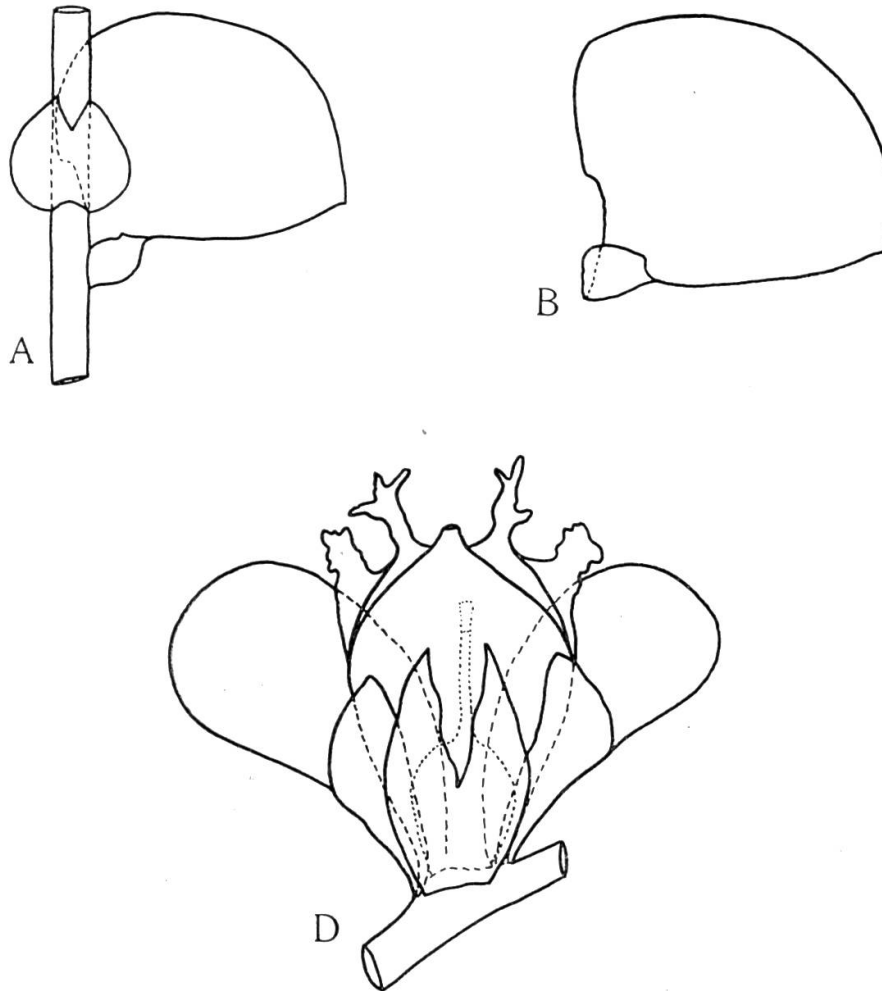


FIG. 23. — *Ceratolejeunea dentatocornuta*

25. **C. deficiens** Herzog, *Rev. Bryol. Lich.* **20** : 148. 1951.

TYPE : COSTA RICA, Prov. Guanacaste, El Silencio, 400-700 m., s.d., *Standley 44309 p.p. & 44392* ; Prov. Heredia, Yerba Buena, 2000 m., s.d., *Standley 50010 & 50049*. — HONDURAS, Lancetilla Valley nr. Tela, Dept. of Atlantida, 20-600 m., s.d., *Standley 55622*.

The holotype is not cited. None of these are represented in hb. G.

26. **C. dentatocornuta** Steph. *Sp. Hep.* **5** : 407. 1913; *Bot. Centralbl. Beih.* **49** : 605. 1932.

TYPE : ECUADOR, prov. Azuay, Gualaquiza, in silva ad rivum Sapotilla, 9 Aug. 1909, *Allioni s.n.* (Levier 6536).

Other specimens : None.

Drawings were based on the type. (Fig. 23).

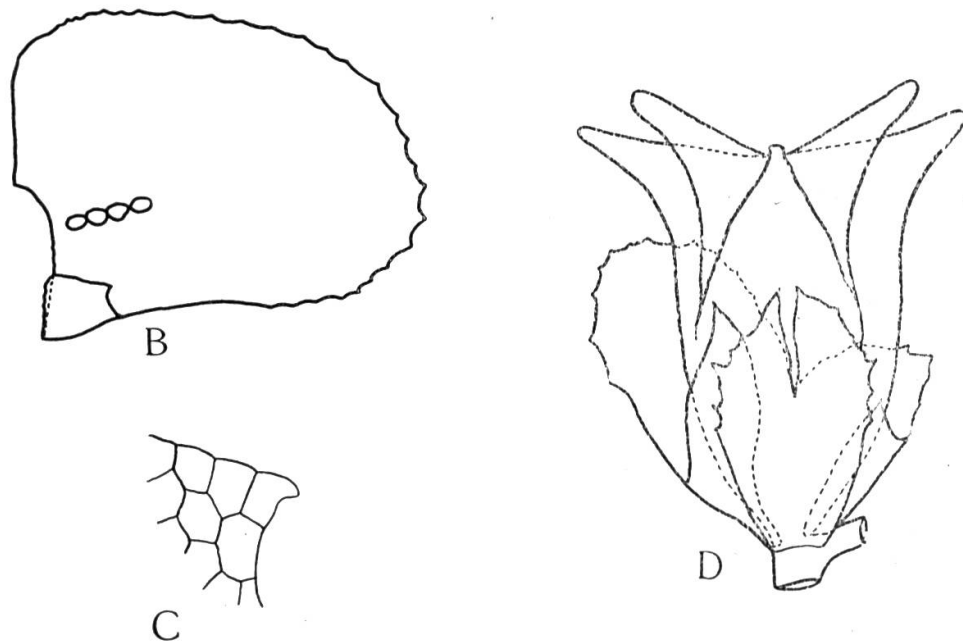


FIG. 24. — *Ceratolejeunea dentistipula*

27. **C. dentistipula** Gottsche ms. in Steph. *Sp. Hep.* 5 : 407. 1913 ; *Bot. Centralbl. Beih.* 49 : 605. 1932 ; *Annales Bryol.* 5 : 152. 1932.

TYPE : CUBA, s.l., s.d., *Wright s.n.* (1101).

Other specimens : GUADELOUPE, s.l., s.d., *L'Herminier s.n.*

Drawings were based on the type. (Fig. 24).

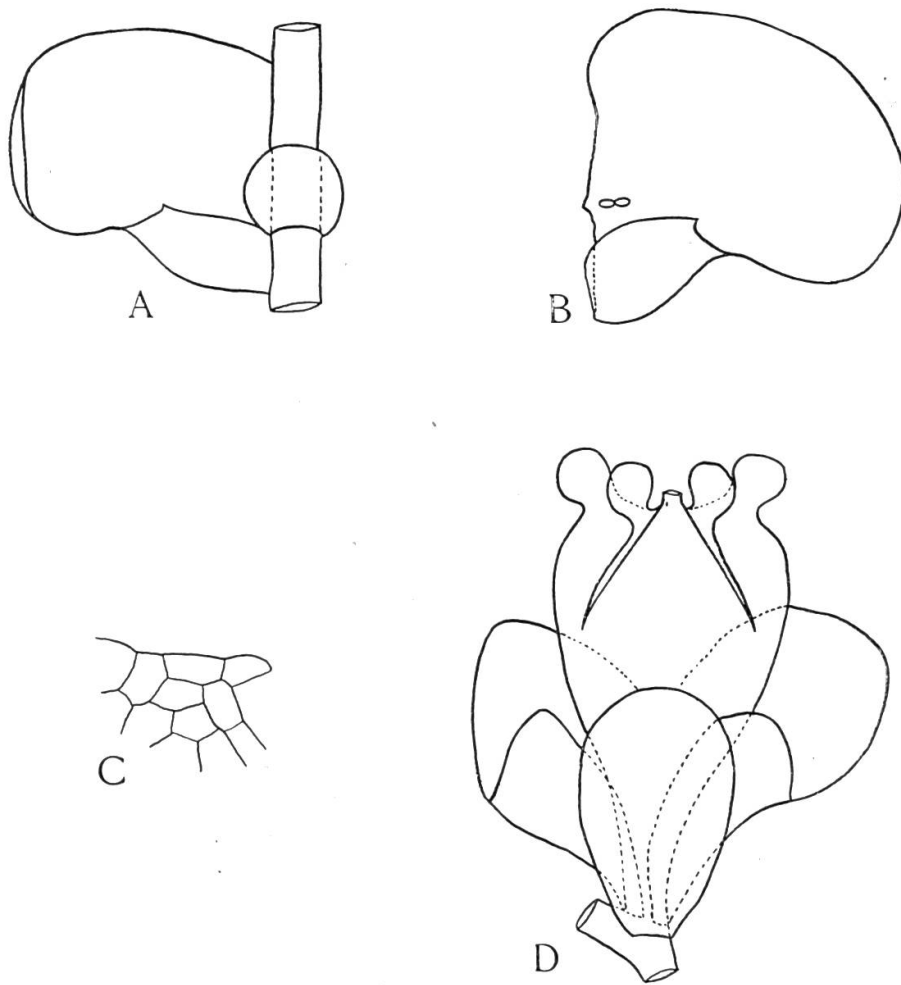
28. **C. desciscens** (Sande-Lacoste) Steph. *Sp. Hep.* 5 : 408. 1913 ; *Bot. Centralbl. Beih.* 49 : 605. 1932 ; *Annales Bryol.* 5 : 154. 1932 ; *Brittonia* 5 : 401. 1945 = *Lejeunea desciscens* Sande-Lacoste *Syn. Hep. Jav.* : 107. 1856.

TYPE : SURINAM. *Focke* in hb. Miquel. Not represented in hb. G.

Other specimens : BRAZIL, Rio Negro, s.d., *Spruce s.n.* ; San Gabriel, s.d., *Spruce s.n.* ex hb. Slater. — JAVA, Pangerango, s.d., s.col., s.n. ex hb. Sande-Lacoste and marked "original".

Drawings were based on the *Spruce* specimen from San Gabriel. (Fig. 25).

29. **C. devexa** (Lindenb. & Gottsche) Steph. *Sp. Hep.* 5 : 408. 1913 ; *Hedwigia* 29 : 16. 1890 ; *Bot. Centralbl. Beih.* 49 : 605. 1932 ; *Annales Bryol.* 6 : 46. 1933 ; *Brittonia* 5 : 402. 1945 = *Lejeunea devexa* Lindenb. & Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.* : 750. 1847.

FIG. 25. — *Ceratolejeunea desciscens*

TYPE : MEXICO, Mirador, Feb. 1843, *Liebman 318* (hb. Lindenb. 6149). A small sample in hb. G.

Other specimens : None.

Drawings were based on the type. (Fig. 26).

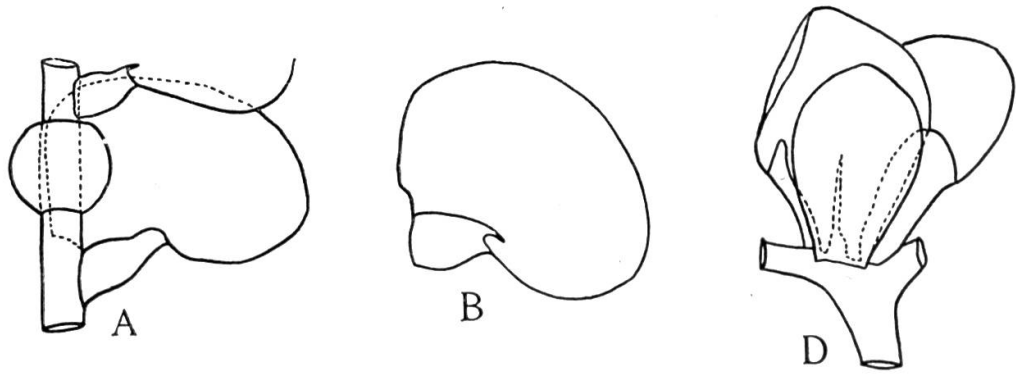
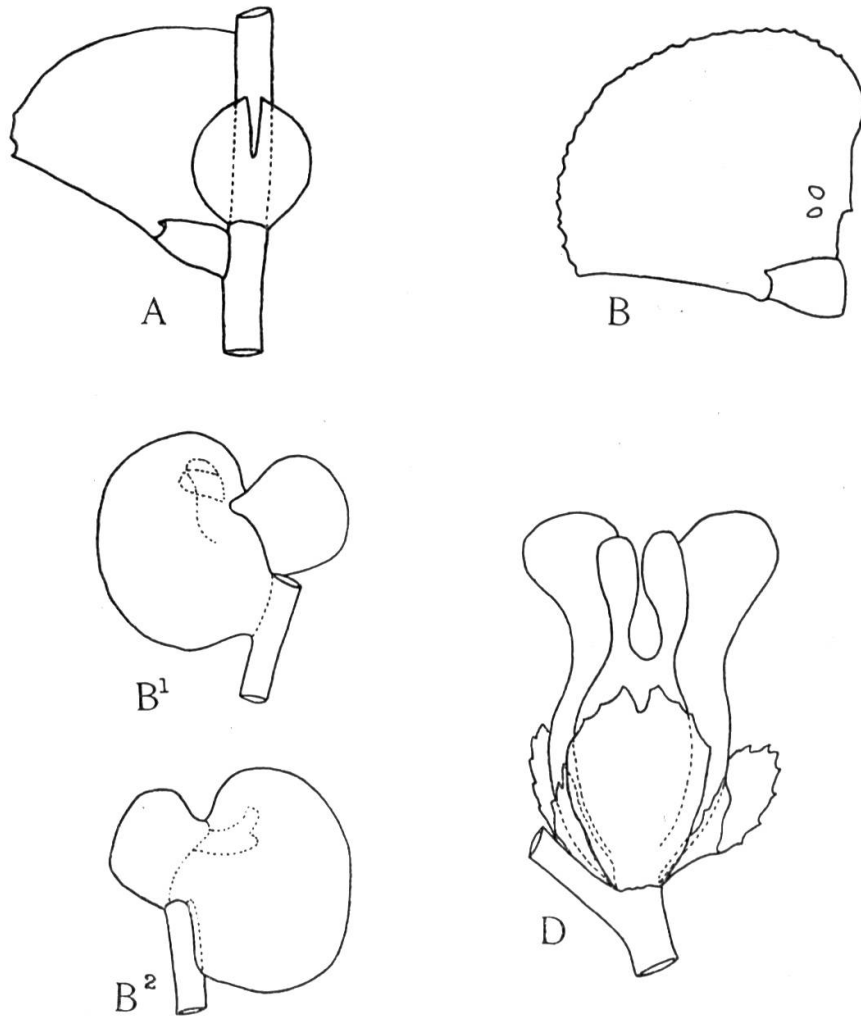
This species is now considered to be a *Neurolejeunea* (ZWICKEL, 1932 ; HERZOG, 1933 ; FULFORD, 1945).

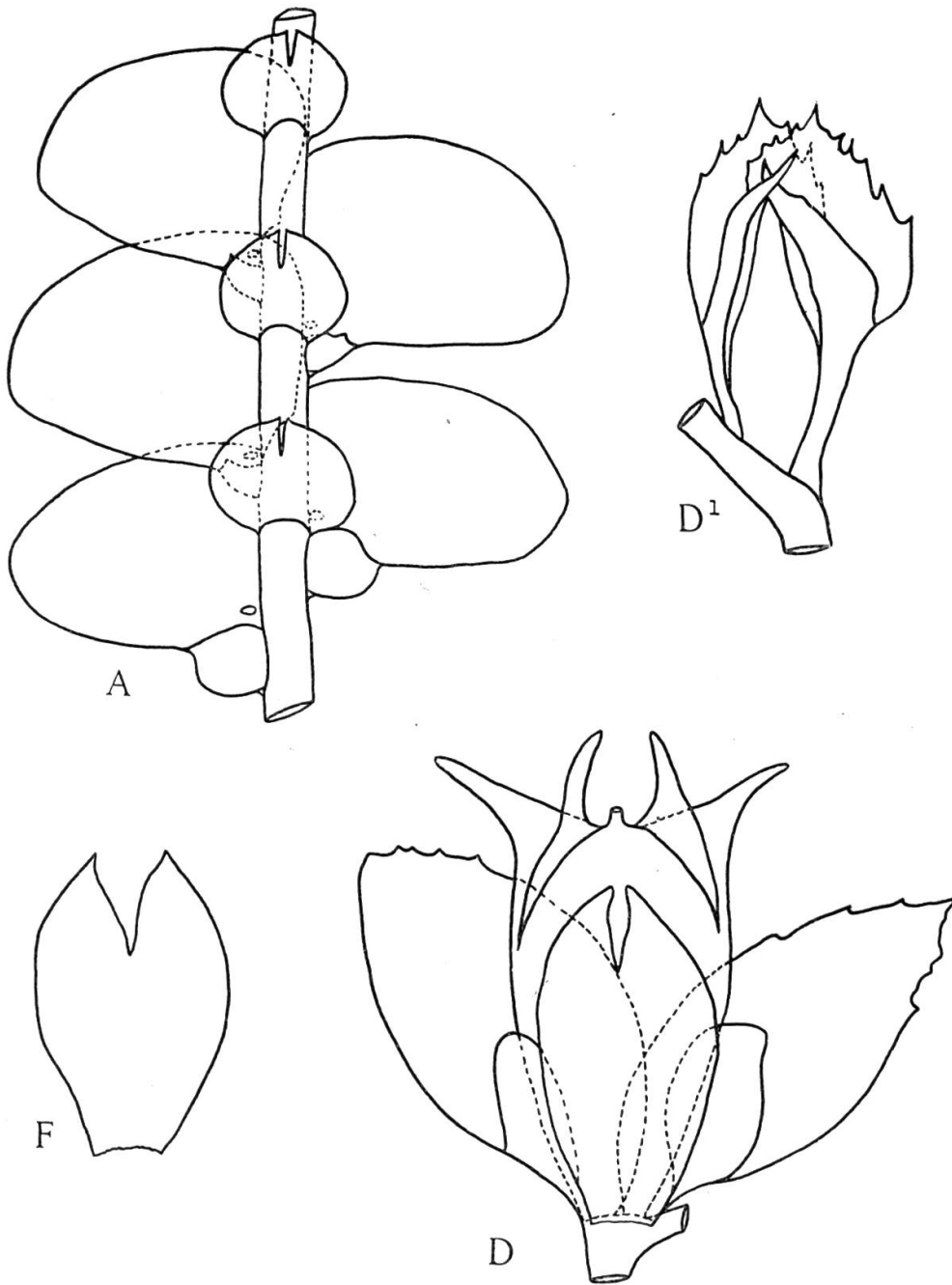
30. **C. diversicornua** Steph. *Sp. Hep.* 5 : 410. 1913 ; *Hedwigia* 30 : 207. 1891 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 ; *Annales Bryol.* 5 : 156. 1932 ; *Bull. Jard. bot. Etat Bruxelles* 21 : 68. 1951.

TYPE : CAMEROONS, s.l., s.d., *Dusen* inter 37.

Other specimens : None.

Drawings were based on the type. (Fig. 27).

FIG. 26. — *Ceratolejeunea devexa*FIG. 27. — *Ceratolejeunea diversicornua*

FIG. 28. — *Ceratolejeunea diversiloba*

31. **C. diversiloba** Steph. *Sp. Hep.* 5: 409. 1913; *Bot. Centralbl. Beih.* 49: 605. 1932; *Annales Bryol.* 5: 154. 1932.

TYPE: DOMINICA, s.l., s.d., *Elliott 1674* p.p.

Other specimens: None.

Drawings were based on the type. (Fig. 28).

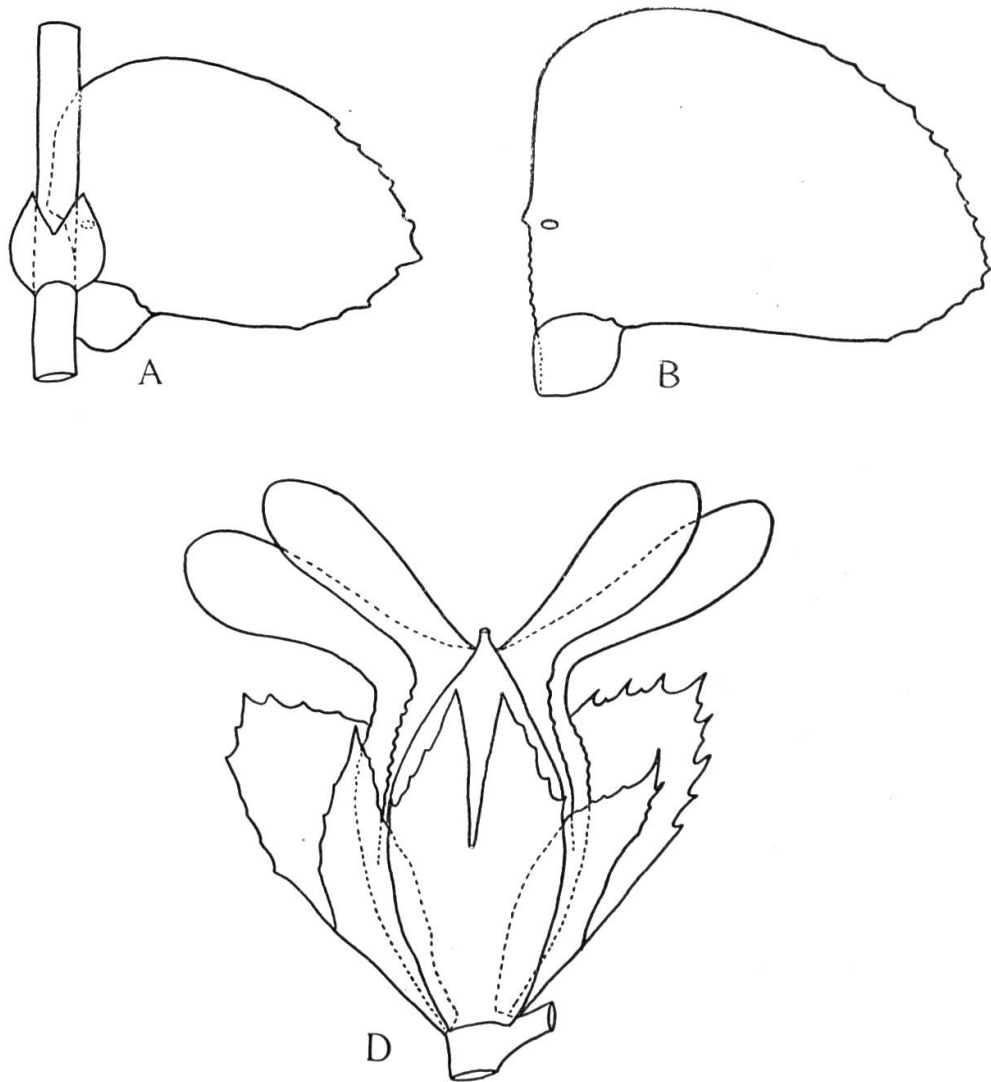


FIG. 29. — *Ceratolejeunea dominicensis*

32. **C. dominicensis** Steph. *Sp. Hep.* 5 : 410. 1913 ; *Bot. Centralbl. Beih.* 49 : 605. 1932 ; *Annales Bryol.* 5 : 154. 1932.

TYPE : DOMINICA, s.l., 1896, *Armitage s.n.* ex hb. Kern, Breslau, under *Odontolejeunea peruviana* (Lehm. & Lindenb.).

Other specimens : None.

Drawings were based on the type. (Fig. 29).

33. **C. emarginatula** Steph. *Sp. Hep.* 5 : 411. 1913 ; *Bot. Tidsskr.* 24 : 278. 1902 ; *Bot. Centralbl. Beih.* 49 : 614. 1932.

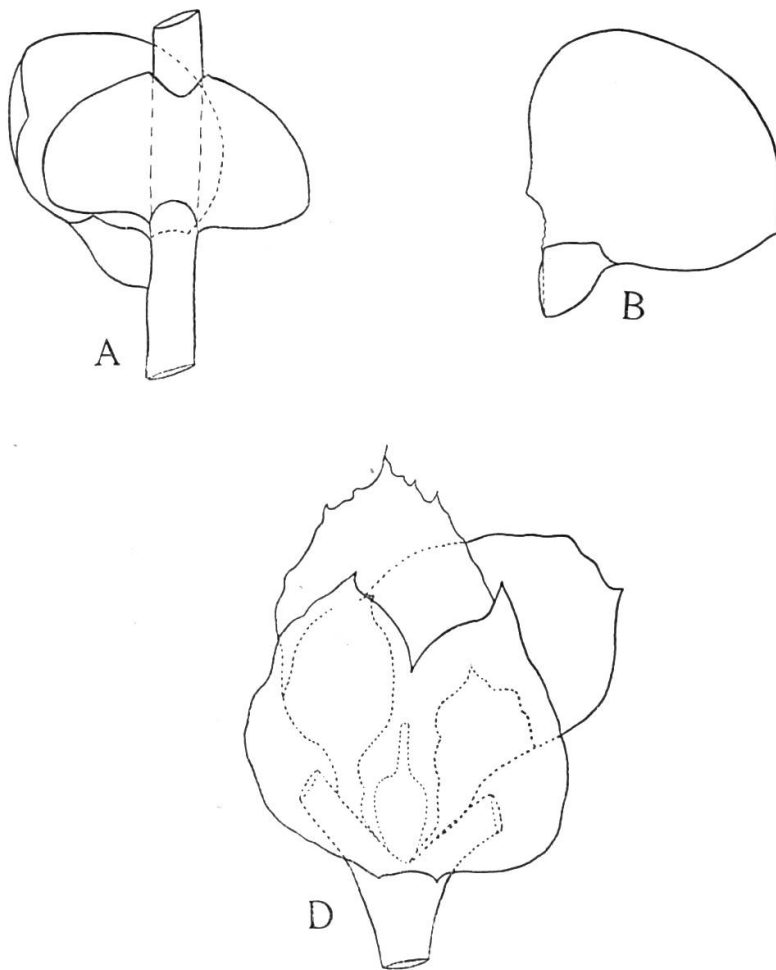


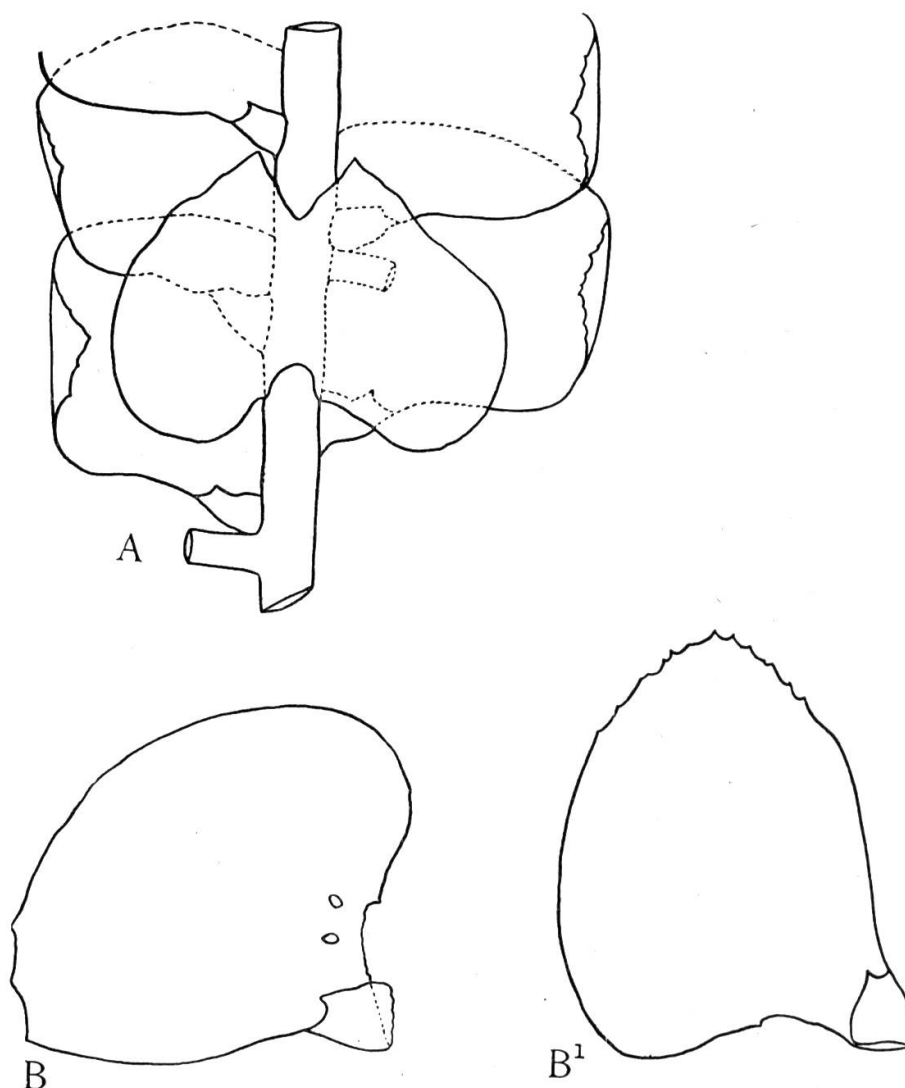
FIG. 30. — *Ceratolejeunea emarginatula*

TYPE : SIAM, Koh Chang, Klong Majum, s.d., *Schmidt II*, "Den Danske Siam Expedition 1899-1900".

Other specimens : None.

Drawings were made from the type. (Fig. 30).

34. **C. fallax** (Lehm. & Lindenb.) Bonner comb. nov. = *Ceratolejeunea brasiliensis* (Gottsche) Steph. *Sp. Hep.* 5 : 397. 1913 ; *Annales Bryol.* 5 : 157. 1932 ; *Bot. Centralbl. Beih.* 49 : 603. 1932 = *Lejeunea brasiliensis* Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.* : 398. 1845 & l.c. : 768. 1847 = *Jungermannia fallax* Lehm. & Lindenb. in Lehm. *Pugillus* 5 : 17. 1833 = *Lejeunea fallax* (Lehm. & Lindenb.) Lehm. & Lindenb. in Gottsche, Lindenb. & Nees, *Syn. Hep.* : 407. 1845 = *Jungermannia sordida* Nees (pro parte) in Martius *Fl. Brasiliensis* 1 : 363. 1833.

FIG. 31. — *Ceratolejeunea fallax*

TYPE : BRAZIL, Serra d'Estrella, s.d., *Beyrich s.n.* (hb. Lindenb. 6884). A fragment only in hb. Steph.

Other specimens : BRAZIL, Prov. Rio Janeiro, Serra da Estrella, s.d., *Beyrich s.n.* ex hb. Nees ; Rio de Janeiro, 1889, *Ule 98* ; s.l., s.d., *Petersen s.n.* ; s.l., s.d., *Mosen 84* ; Nov. Friburg, s.d., *Beyrich s.n.* ; Nov. Friburg, s.d., *Beyrich s.n.* (hb. Lindenb. 6796) ; Apiahy, s.d., *Puiggari 635 & 670* ; Flumen Amaz., s.d., *Martius*, hb. Gottsche 1884 (type of *Lejeunea brasiliensis*) ; s.l., s.d., *Selow s.n.* (hb. Lindenb. 6799) ; s.l., s.d., *Massalongo s.n.* (24) ; Mandioca s.d., s.col., s.n. — BOLIVIA, s.l., 1913, *Herzog 3983*. — DOMINICA, s.l., s.d., *Elliott 1639 & 1914*. — ECUADOR, Prov. Azuay, Gualaquiza, in silva densa obscura

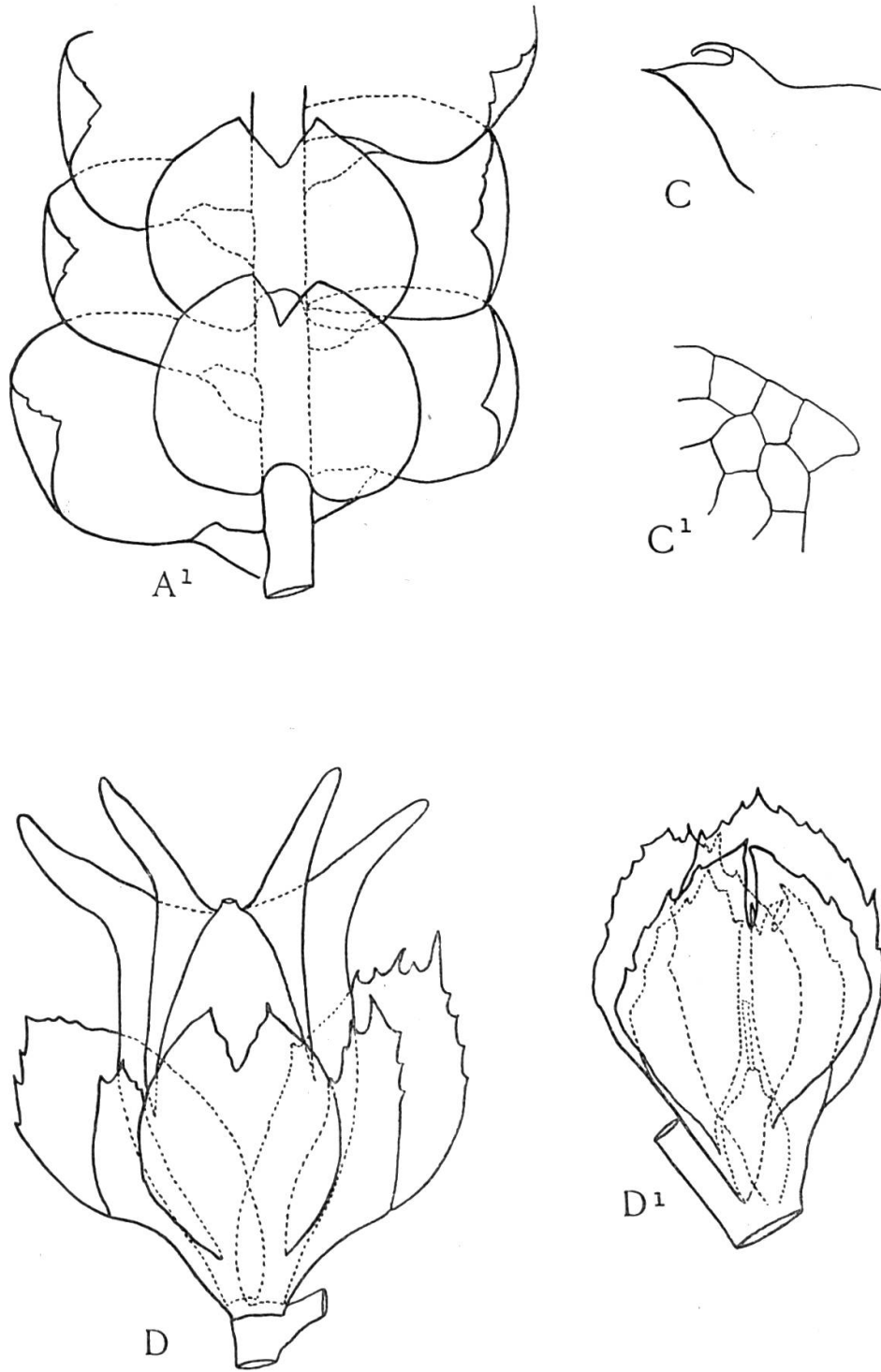
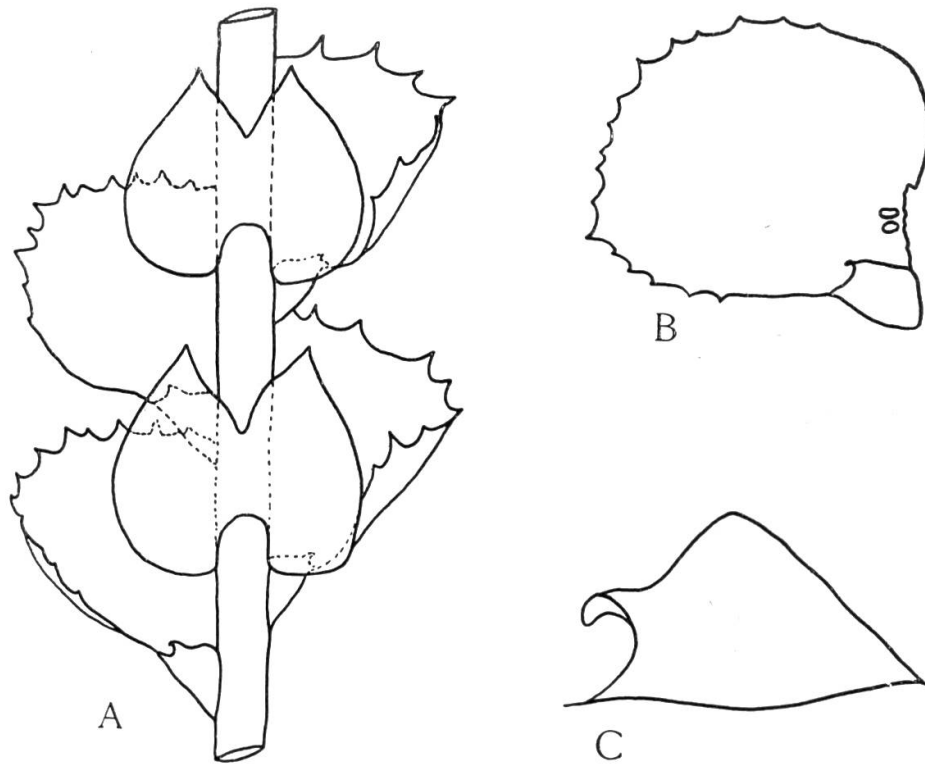


FIG. 32. — *Ceratolejeunea fallax*

FIG. 33. — *Ceratolejeunea filaria*

ad rivum Sapotilla, ad truncum arboris, Mai 1909, *Allioni s.n.* (Lever 6544) ; Manabi, s.d., *Wallich s.n.* (174) ; Chimborazo, s.d., *Spruce s.n.* — VENEZUELA, s.l., s.d., *Fendler 82.* — MEXICO, Mirador, s.d., *Liebmann 91* (hb. Lindenb. 6797) & 35 (hb. Lindenb. 6795) *Liebmann 35* (hb. Lindenb. 6795) & 91 (hb. Lindenb. 6797). — GUADELOUPE, s.l., s.d., *Duss 435* (hb. Urban 1901) ; s.l., 785 m., s.d., *Duss 11* ; in trunco filicum, 1440 m., s.d., *Duss 278* ; s.l., s.d., *Duss 435* (hb. Urban 1901) ; Morne l'Echelle, 1325 m., Dec. 1902, *Duss 1099.* — TRINIDAD, s.l., s.d., *Crüger s.n.* — COSTA RICA, Chemin de Corillo, 300 m., versant atlantique, nov. 1890, *Biolley.* — MARTINIQUE, s.l., s.d., *Hahn s.n.* — JAVA, s.l., s.d., hb. Nees 174. — INS. ST. THOMÉ, s.d., *Müller 46 p.p.*

Drawings : A. & B. are drawn from the type of *Lejeunea fallax*. The rest from the type of *Lejeunea brasiliensis*. (Fig. 31 & 32).

35. **C. fastigiata** (Spruce) Steph. *Sp. Hep.* 5 : 411. 1913 ; *Bot. Centralbl. Beih.* 49 : 605. 1932 ; *Brittonia* 5 : 387. 1945 = *Lejeunea fastigiata* Spruce, *Mem. Torrey Bot. Club* 1 : 123. 1900.

TYPE : BOLIVIA, s.l., s.d., *Rusby 3035A*. Not represented in hb. G.
Other specimens : None.

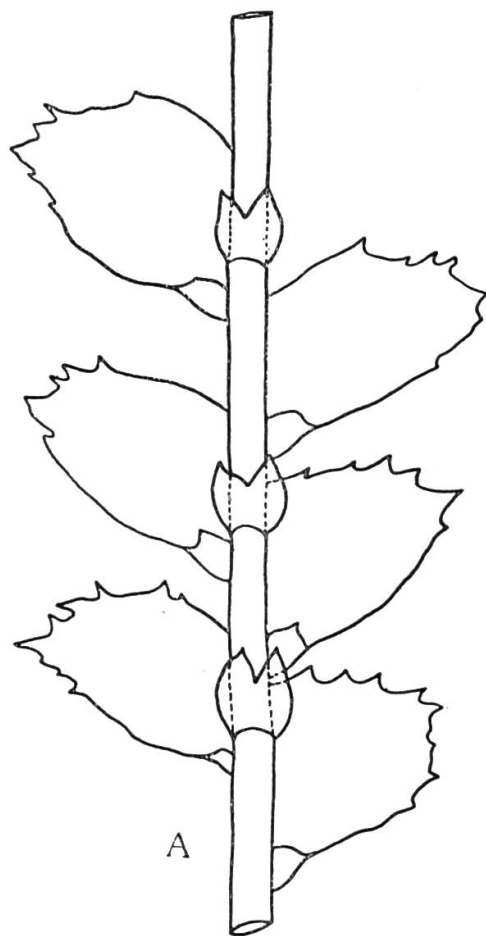


FIG. 34. — *Ceratolejeunea flagelliformis*

36. **C. filaria** (Taylor) Steph. *Sp. Hep.* **5** : 412. 1913 ; *Bot. Centralbl. Beih.* **49** : 605. 1932 ; *Annales Bryol.* **5** : 156. 1932 = *Lejeunea filaria* Taylor in Lehmann *Pug.* **8** : 28. 1844 ; Gottsche, Lindenb. & Nees, *Syn. Hep.* : 402. 1845 ; *Trans. & Proc. Bot. Soc. Edinburgh* **15** : 211. 1884.

TYPE : VENEZUELA, Esmeralda, s.d., Jameson s.n. in hb. Greville.

A single, very small fragment, ex hb. Kew, possibly from the type, is the only material of this species in hb. G.

Drawings were based on "Venezuela, Esmeralda, hb. Lindenberg 6837", not present in hb. G. (Fig. 33).

37. **C. flagelliformis** (Steph.) Fulford, *Bull. Torrey Bot. Club* **71** : 637. 1944 ; *Brittonia* **5** : 379. 1945 = *Ceratolejeunea spinosa* var. *flagelliformis* Steph. *Hedwigia* **34** : 238. 1895 = *Lejeunea flabelliforme* Steph. in Duss, *Muscinées Ant. Franç.* : 13, 1903.

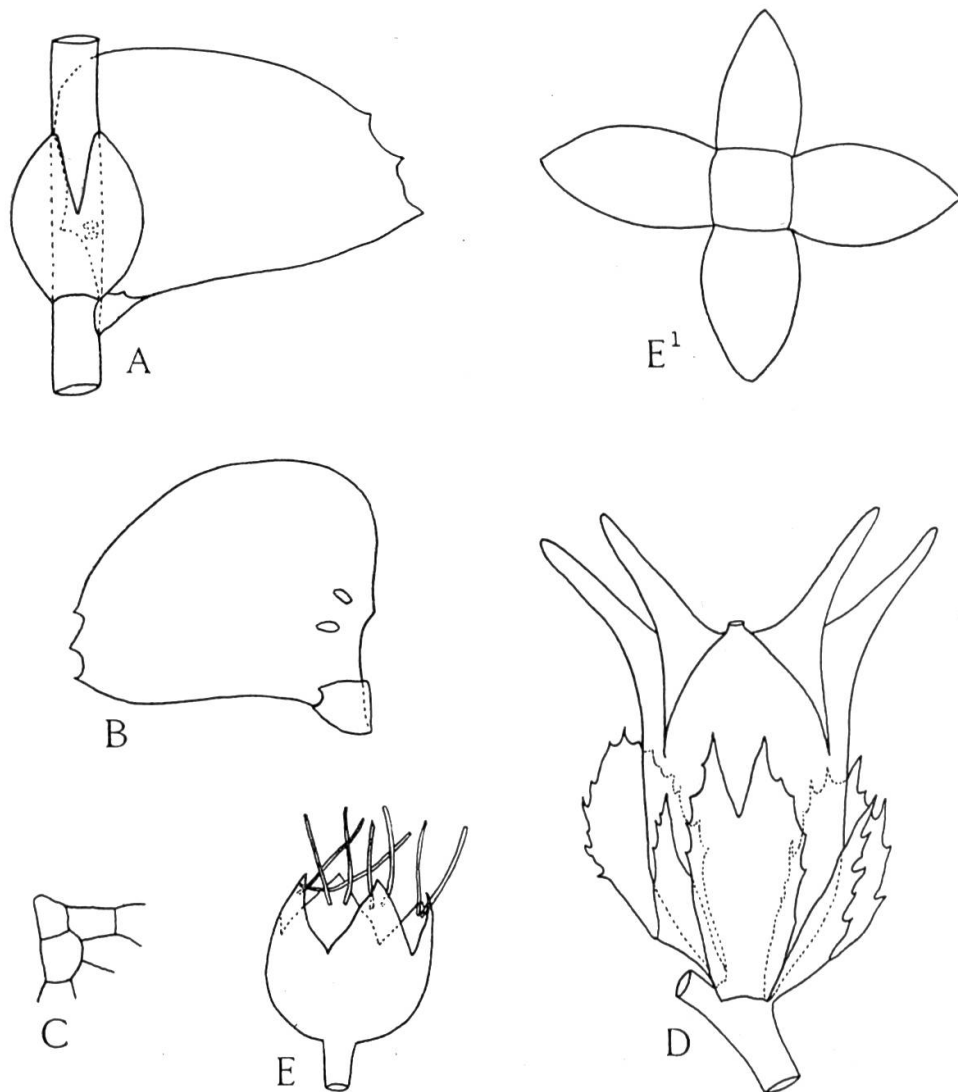


FIG. 35. — *Ceratolejeunea floribunda*

TYPE : MARTINIQUE, s.l., s.d., *Duss 408*.

Other specimens : GUADELOUPE, in rupibus humidis, *Duss s.n.*

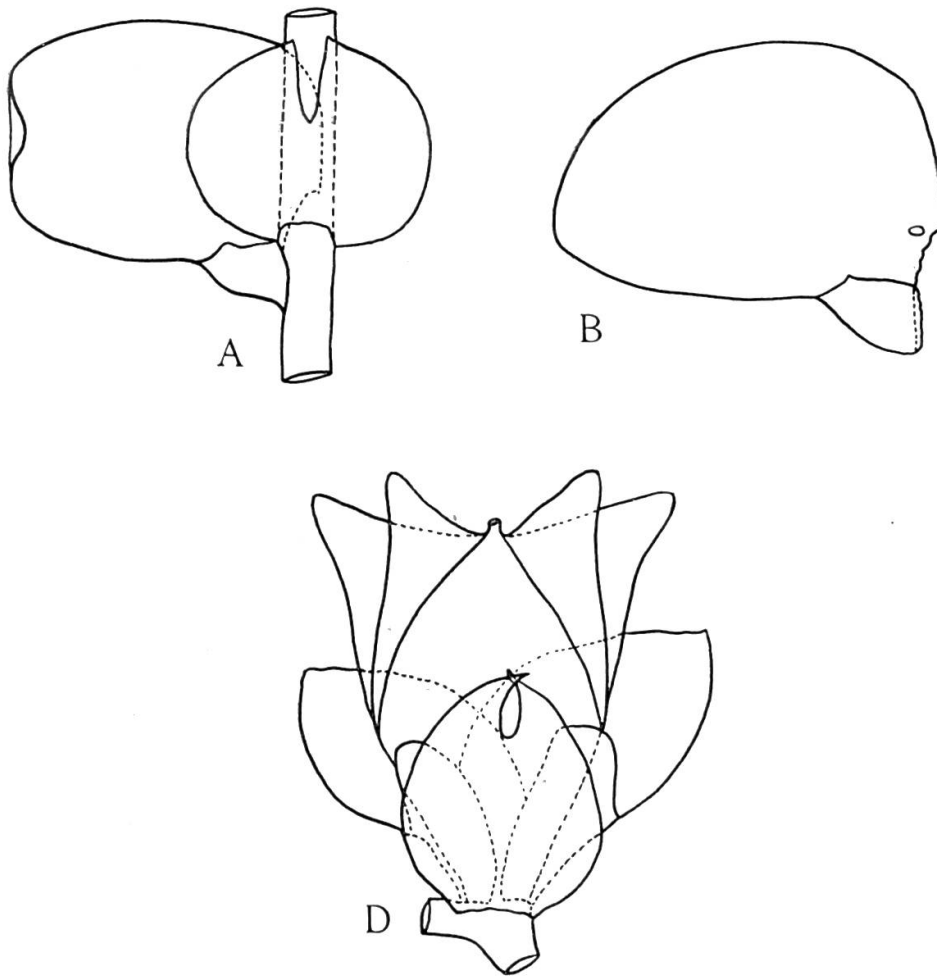
Drawings : From the type. (Fig. 34).

38. **C. floribunda** Steph. *Sp. Hep.* 5 : 412. 1913 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 ; *Annales Bryol.* 5 : 156. 1932 ; *Bull. Jard. Bot. Etat Bruxelles* 21 : 74. 1951.

TYPE : INS. ST. THOMÉ, s.l., 1888, *Quintas s.n.*

Other specimens : None.

Drawings were based on the type. (Fig. 35).

FIG. 36. — *Ceratolejeunea fuliginosa*

39. **C. fuliginosa** (Spruce) Steph. *Sp. Hep.* 5: 413. 1913; *Bot. Centralbl. Beih.* 49: 605. 1932; *Annales Bryol.* 5: 154. 1932; *Brittonia* 5: 390. 1945 = *Lejeunea fuliginosa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 208. 1884.

TYPE: BRAZIL, Rio Negro, cataractes, s.d., *Spruce s.n.* A small sample marked "original" is present in hb. G.

Other specimens: None.

Drawings from "Rio Negro, *Spruce* in hb. Slater". (Fig. 36).

This species is now a synonym of *Ceratolejeunea cornuta* (Lindenb.) Steph. (FULFORD 1945).

40. **C. furcata** Steph. *Sp. Hep.* 5: 413. 1913; *Bot. Centralbl. Beih.* 49: 606. 1932; *Annales Bryol.* 5: 147. 1932.

TYPE: DOMINICA, s.l., s.d., *Elliott 1764*.

Other specimens: DOMINICA, s.l., s.d., *Elliott 1876*.

Drawings were based on the type. (Fig. 37).

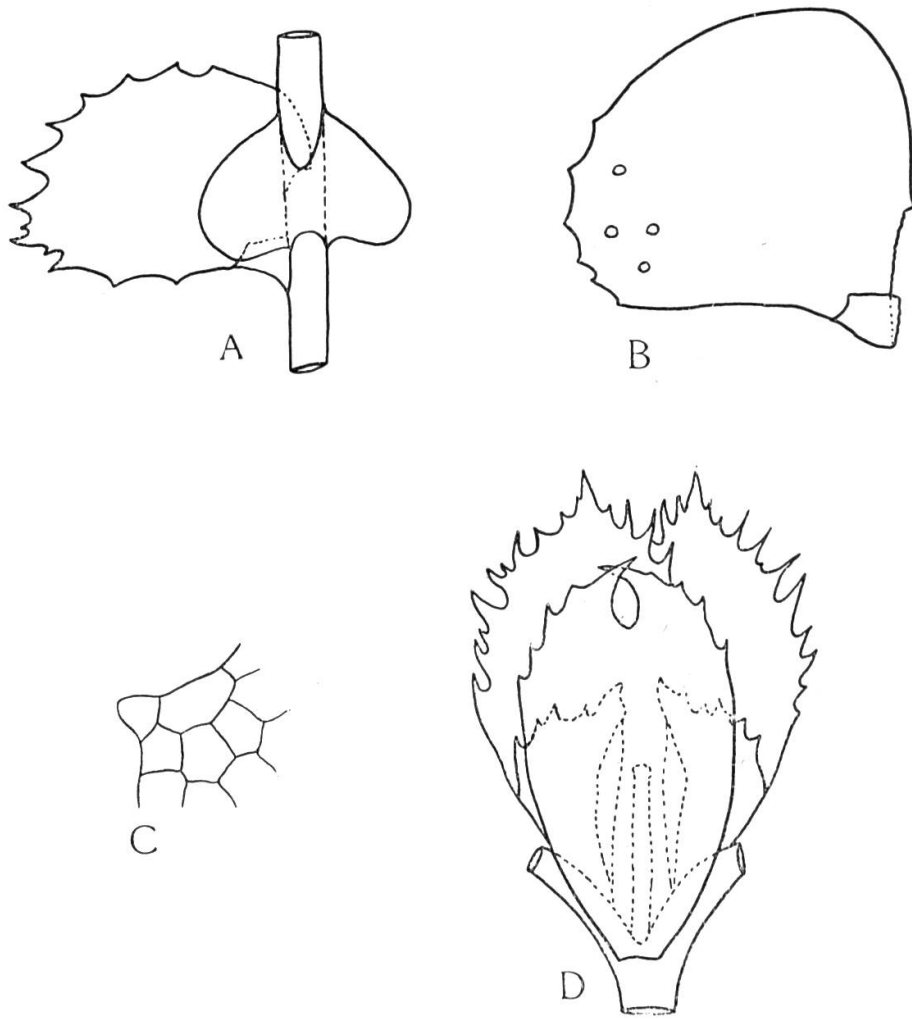


FIG. 37. — *Ceratolejeunea furcata*

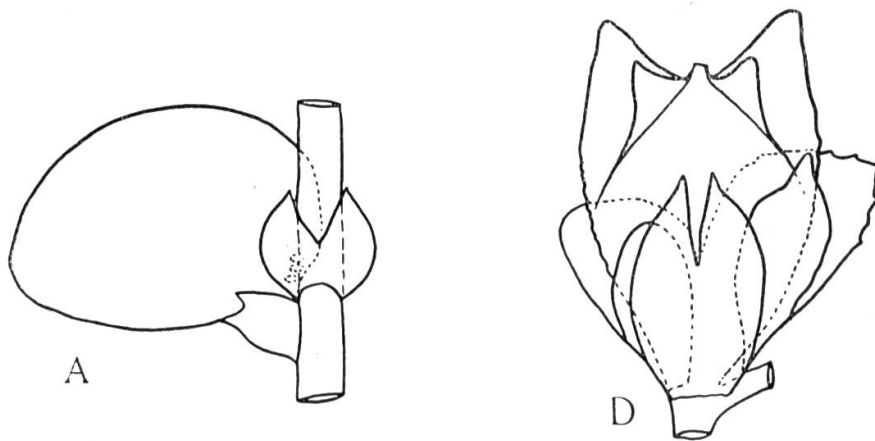


FIG. 38. — *Ceratolejeunea granatensis*

41. **C. fusilobula** Herzog, *Rev. Bryol. Lich.* **20** : 149. 1951.

TYPE : COSTA RICA, Prov. Alajuela, Viento Fresco, 1600-1900 m., s.d., *Standley 47806* p.p. Not in hb. G.

42. **C. globulifera** Herzog, *Rev. Bryol. Lich.* **13** : 23. 1942.

TYPE : COLOMBIA, Dept. El Cauca, La Gallera, Micay Valley, Cord. Occidental, 1400-1500 m., 19/20 June 1922, *Killip 7780 a*. Not in hb. G.

43. **C. graminicolor** (Spruce) Steph. *Sp. Hep.* **5** : 414. 1913 = *Lejeunea graminicolor* Spruce, *Journ. Linn. Soc., Bot.* **30** : 343. 1895.

TYPE : ST. VINCENT, in monte Bonhomme, super *Plagiochilas repens*, Dec. 1891, *Elliott* (Spruce cites both 80 & 92 of *Elliott's*. One of these will therefore have to be selected as a lectotype).

There is no material of this species in hb. G.

44. **C. granatensis** Steph. *Sp. Hep.* **5** : 414. 1913 ; *Bot. Centralbl. Beih.* **49** : 606. 1932 ; *Annales Bryol.* **5** : 157. 1932.

TYPE : ECUADOR, Prov. Azuay, Gualaquiza, in silva infra domum Missionis Salesianorum, ad truncum semiputridum, 29 Jun. 1909, *Allioni s.n.* (hb. Levier 6543).

Other specimens : ECUADOR, Prov. Azuay, Gualaquiza, ad rivum Salado, Dec. 1909, *Allioni s.n.* (hb. Levier 6646).

Drawings were based on the type. (Fig. 38).

45. **C. grandibracteolata** Fulford, *Bull. Torrey Bot. Club* **71** : 637. 1944 = *Ceratolejeunea subserrata* Spruce *Hep. Spruceanae*. Not *Lejeunea* (sub gen. *Ceratolejeunea*) *variabilis* var. *subserrata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* **15** : 207. 1884.

TYPE : BRAZIL, Rio Negro, in cortico foliisque, s.d., *Spruce s.n.* "*Ceratolejeunea subserrata* Spruce".

Isotype in hb. G.

46. **C. grandiloba** Jack & Steph. *Sp. Hep.* **5** : 415. 1913 ; *Hedwigia* **31** : 16. 1892 ; *Bot. Centralbl. Beih.* **49** : 606. 1932.

TYPE : COLOMBIA, New Granada, Prov. Antioquia, Paramo de Sonson, 10,000 ft, 1872, *Wallis s.n.* "auf *Plagiochila cucullifolia*".

Other specimens : COLOMBIA, New Granada, s.l., s.d., *Lindig s.n.*, ex hb. Gottsche. — PERU, Tabina, s.d., *Lechler s.n.*, misit Winter ex hb. Kickx.

Drawings : *A*¹, *B* & *D* from the *Lindig* specimen ; *A*², *D* & *F* from the type. (Fig. 39 & 40).

47. **C. guadalupensis** Steph. *Sp. Hep.* **5** : 415. 1913 ; *Bot. Centralbl. Beih.* **49** : 606. 1932 ; *Annales Bryol.* **5** : 156. 1932.

TYPE : GUADELOUPE, s.l., s.d., *Duss 511*.

Other specimens : JAMAICA, s.l., s.d., s.col., s.n. (hb. Leiden 351).

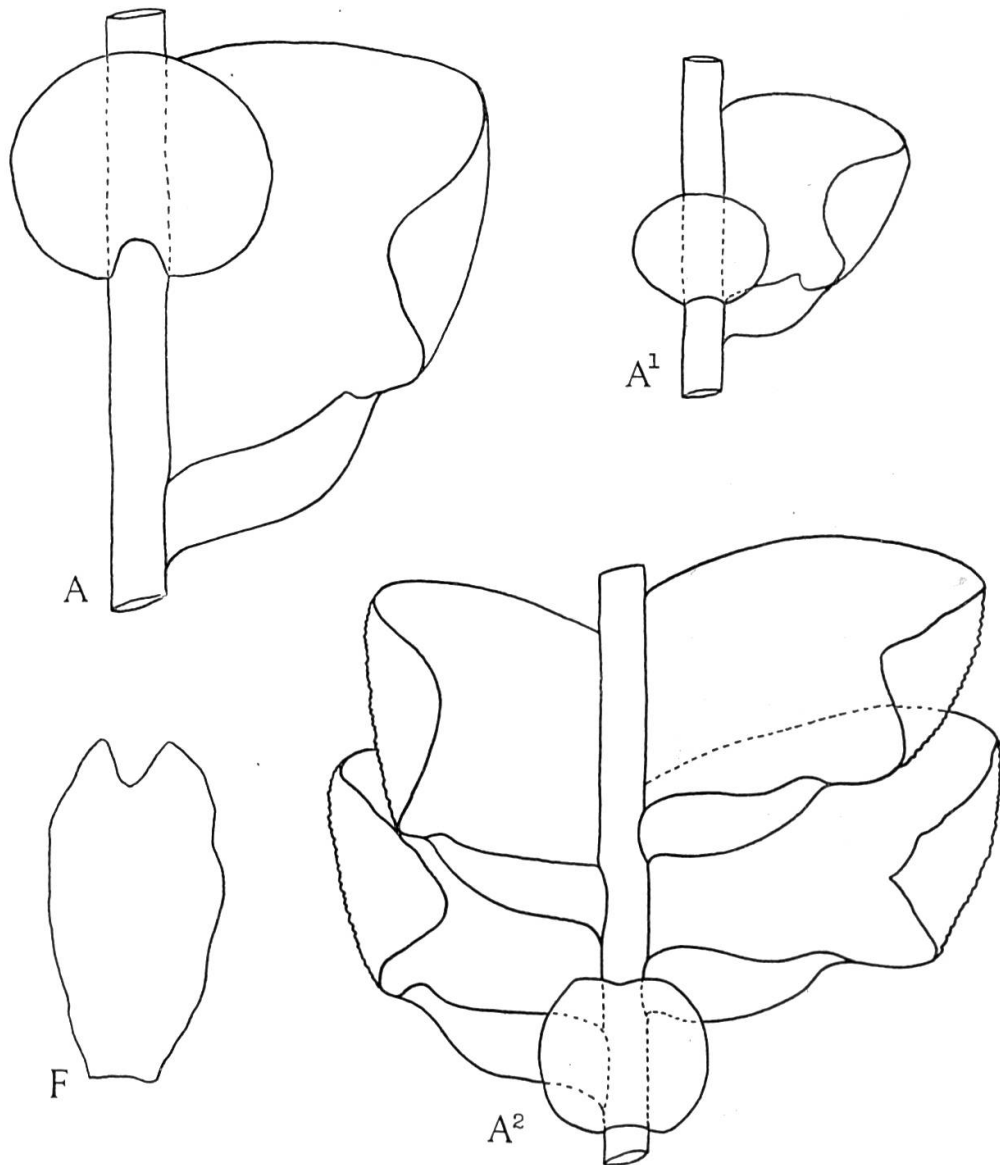
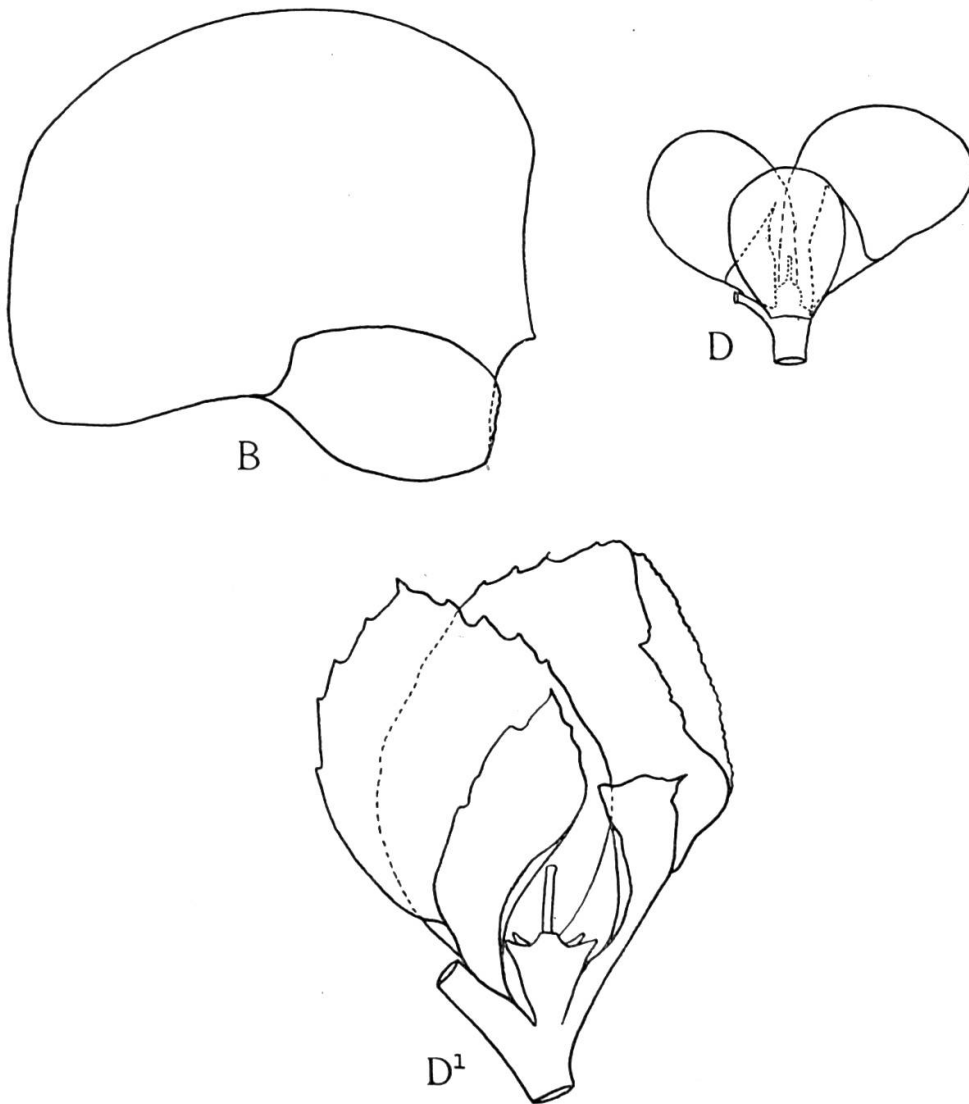


FIG. 39. — *Ceratolejeunea grandiloba*

Drawings : A & B from *Duss 511* ; D from the Jamaica specimen. (Fig. 41).

48. **C. guianensis** (Nees & Montagne) Steph. *Sp. Hep.* 5 : 416. 1913 ; *Bot. Centralbl. Beih.* 49 : 606. 1932 ; *Annales Bryol.* 5 : 154. 1932 ; *Brittonia* 5 : 391. 1945 = *Lejeunea guianensis* Nees & Montagne, *Ann. Sci. nat., Bot.*, 14 : 335. 1840 ; Gottsche, Lindenb. & Nees, *Syn. Hep.* : 397. 1845 ; *Hedwigia* 29 : 92. 1890 = *Colura guianensis* Trev. *Mem. Ist. Lomb.* III, 4 : 402. 1877.

FIG. 40. — *Ceratolejeunea grandiloba*

TYPE : GUIANA, "ad cortices arborum in sylvis humidis montis vulgo Serpent dicti" Apr. 1838, *Leprieur 281 & 291*. (A lectotype may have to be chosen). In hb. G. a small sample labeled "GUIANA, *Leprieur*, Original", ex hb. Bescherelle, is the only material present which may have formed part of the type.

Other specimens : GUIANA, s.l., s.d., *Leprieur & Montagne s.n.* — SURINAM, s.l., s.d., *Kegel 755, 530 & 755*, ex hb. Karl Müller. — WEST INDIES, s.l., s.d., s.col., s.n. (201) Hampe dedit.

Drawings were based on the original material. (Fig. 42).

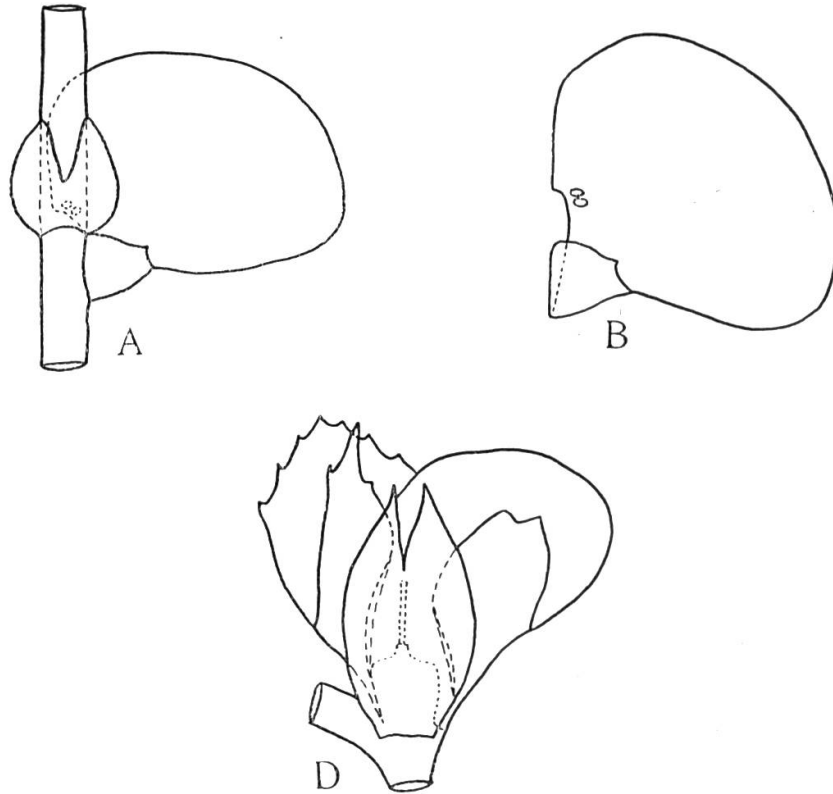


FIG. 41. — *Ceratolejeunea guadalupensis*

49. **C. haeckeriana** (Gottsche & Lindenb.) Steph. *Sp. Hep.* 5 : 417, 1913 ; *Bot. Centralbl. Beih.* 49 : 606, 1932 ; *Annales Bryol.* 5 : 156, 1932 = *Lejeunea haeckeriana* Gottsche & Lindenb. in Gottsche, Lindenb. & Nees, *Syn. Hep.* : 401, 1845.

TYPE : PERU, "in cortice *Cinchonae* (Chinae rubrae) invenit Haecker", hb. Gottsche. A fragment of this specimen, "dedit Gottsche", is in hb. G.

Other specimens : MARTINIQUE, s.l., s.d., *Duss s.n.*

Drawings were based on the type (Fig. 43).

50. **C. heteroloba** Steph. *Sp. Hep.* 5 : 417, 1913 ; *Bot. Centralbl. Beih.* 49 : 606, 1932 ; *Annales Bryol.* 5 : 154, 1932.

TYPE : BOLIVIA, s.l., s.d., *Rusby s.n.*

Other specimens : None.

Drawings were based on the type. (Fig. 44).

51. **C. hylophila** (Spruce) Steph. *Sp. Hep.* 5 : 418, 1913 ; *Hedwigia* 34 : 238, 1895 ; *Bot. Centralbl. Beih.* 49 : 606, 1932 ; *Annales Bryol.* 5 : 154, 1932 ; *Brittonia* 5 : 384, 1945 = *Lejeunea hylophila* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 : 209, 1884.

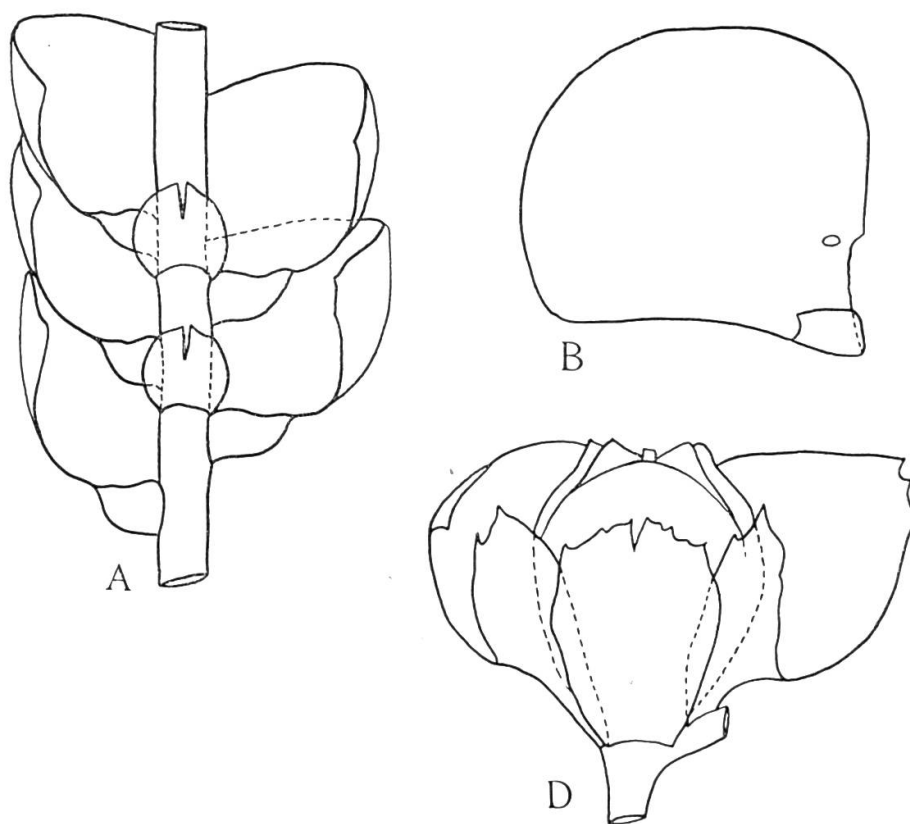


FIG. 42. — *Ceratolejeunea guianensis*

TYPE : BRAZIL, Para, s.d., *Spruce s.n.* Not in hb. G.

Other specimens : BRAZIL, Para et Rio Arissecum, s.d., *Spruce s.n.* ; Flumen Trombetas, s.d., *Spruce s.n.* ; Rio Negro, s.d., *Spruce s.n.*

Drawings were based on the type. (Fig. 45).

This species is now included under *Ceratolejeunea maritima* (Spruce) Steph. (FULFORD, 1945).

52. **C. integrifolia** Evans in Steph. *Sp. Hep.* 5 : 418. 1913 ; *Bull. Torrey Bot. Club* 38 : 213. 1911 ; *Bot. Centralbl. Beih.* 49 : 607. 1932 ; *Annales Bryol.* 5 : 157. 1932 ; *Brittonia* 5 : 391. 1945.

TYPE : BAHAMAS, Waterloo, s.d., *Britton 721*. Not in hb. G.

Other specimens : U.S.A., Florida, s.d., *Underwood 9* ; South Carolina, s.d., *Underwood 2594*.

Drawings were based on *Underwood 2594*. (Fig. 46).

This species is now included under *Ceratolejeunea guianensis* (Nees & Montagne) Stephani (FULFORD 1945).

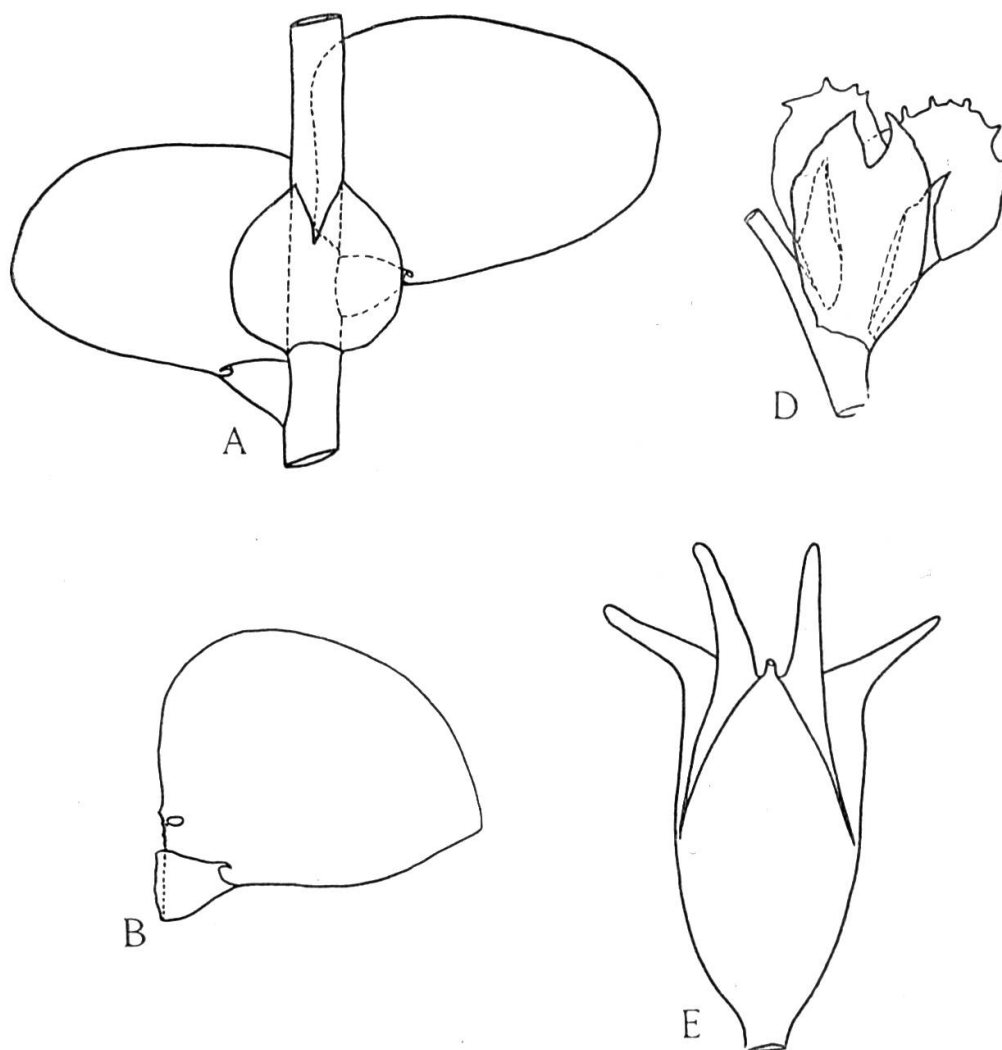
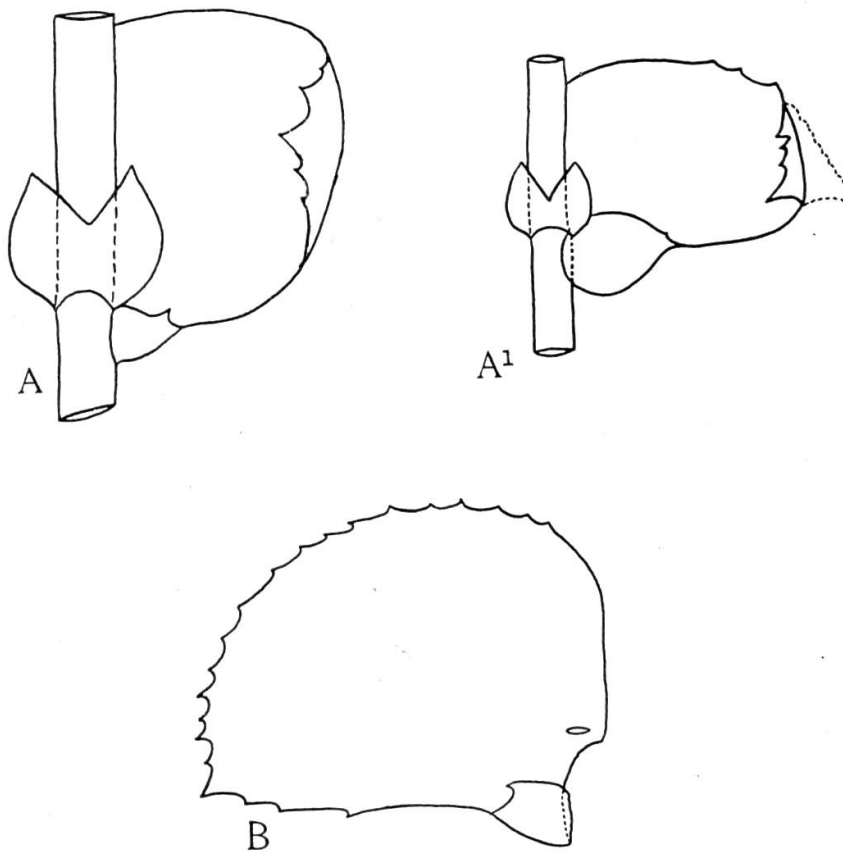


FIG. 43. — *Ceratolejeunea haeckeriana*

53. **C. involvens** (Nees & Montagne) Steph. *Sp. Hep.* 5 : 419. 1913 ; *Bot. Centralbl. Beih.* 49 : 607. 1932 = *Lejeunea involvens* Nees & Montagne, *Ann. Sci. Nat.* 14 : 336. 1840 ; Gottsche, Lindenb. & Nees, *Syn. Hep.* : 400. 1845 ; *Hedwigia* 29 : 95. 1890.

TYPE : GUIANA, Mt. Serpent, Apr. 1838, *Leprieur* 257 & 287. Not in hb. G. as such. "Hb. Lindenberg 6822", the type, according to STEPHANI (1890), must be one of these. A fragment of 6822 is present in hb. G.

Other specimens : GUIANA, s.l., s.d., *Leprieur*, dedit Bescherelle (sub *Lejeunea granulata* in hb. Bescherelle) ; s.l., s.d., *Montagne* s.n. — BRAZIL, s.l., s.d., s.col., s.n. ex hb. Jack. — FRENCH GUIANA, Macourie,

FIG. 44. — *Ceratolejeunea heteroloba*

1905, *Galliot* 307 ; s.l., s.d., *Sagot* 1093 ; St. Jean, s.d., s.col., s.n. (hb. Theriot 66). — BRITISH GUIANA, Georgetown, 1896, *Quelch* s.n. (hb. Levier 234). — SURINAM, Ins. Saba, s.d., *Suringar* s.n. (hb. Leiden 600) ; s.l., s.d., *Wullschlaegel* 1236 & 1244 ; s.l., s.d., *Kegel* 530. — COSTA RICA, forêts du Rio Narango, 200-250 m., mars 1893, *Tonduz* s.n. (hb. Cardot 15550) ; s.n. (hb. Cardot) ; Sto Domingo do Golfo Dulce, 1896, *Tonduz* s.n. (hb. Cardot 15551). — CUBA, s.l., s.d., *Wright* 1211, 1092. — GUADELOUPE, s.l., 900 m., s.d., *Duss* 96 ; 1010 m., *Duss* 189 ; 570 m., *Duss* 193 ; s.l., s.d., *Duss* 302. — DOMINICA, s.l., s.d., *Elliott* 1193. — MARTINIQUE, s.l., Aug. 1901, *Duss* 659 ; idem, sept 1901, *Duss* 583 ; s.l., s.d., *Duss* s.n.

Drawings were based on : Lindenb. 6822 for *A* and *B* & *Kegel* 530 for *A*¹. (Fig. 47 & 48).

54. **C. jungneri** Steph. *Sp. Hep.* 5 : 419. 1913 ; *Hedwigia* 34 : 234. 1895 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 ; *Annales Bryol.* 5 : 156. 1932 ; *Bull. Jard. Bot. Etat Bruxelles* 21 : 75. 1951.

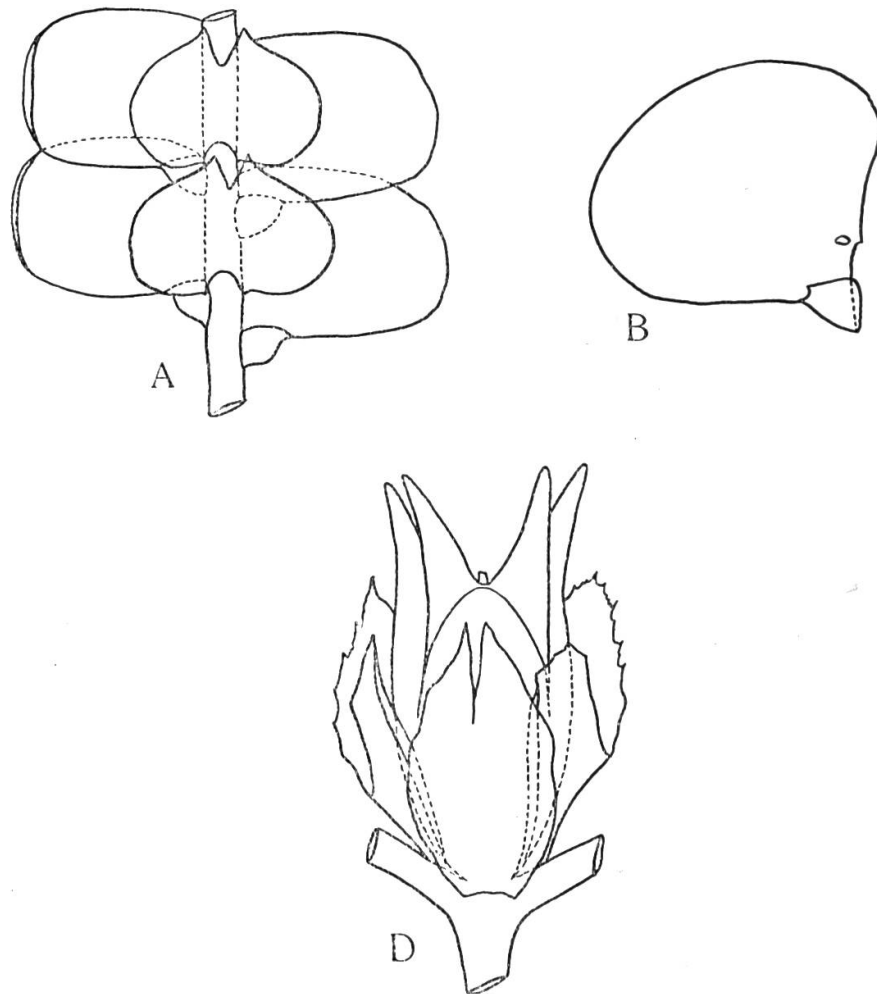


FIG. 45. — *Ceratolejeunea hylophila*

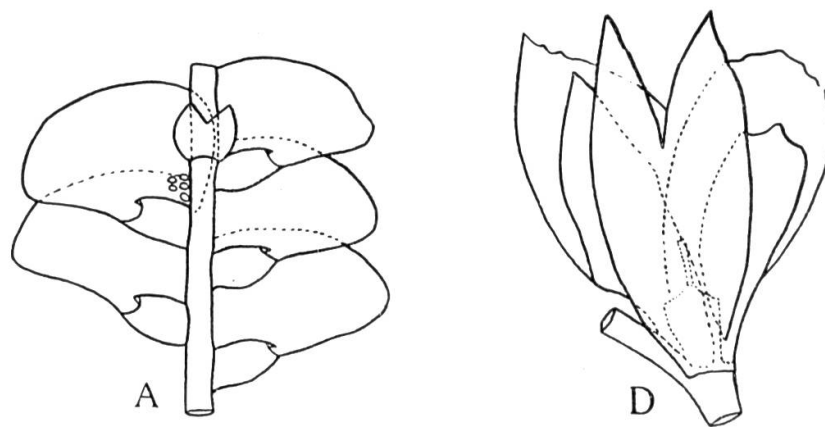
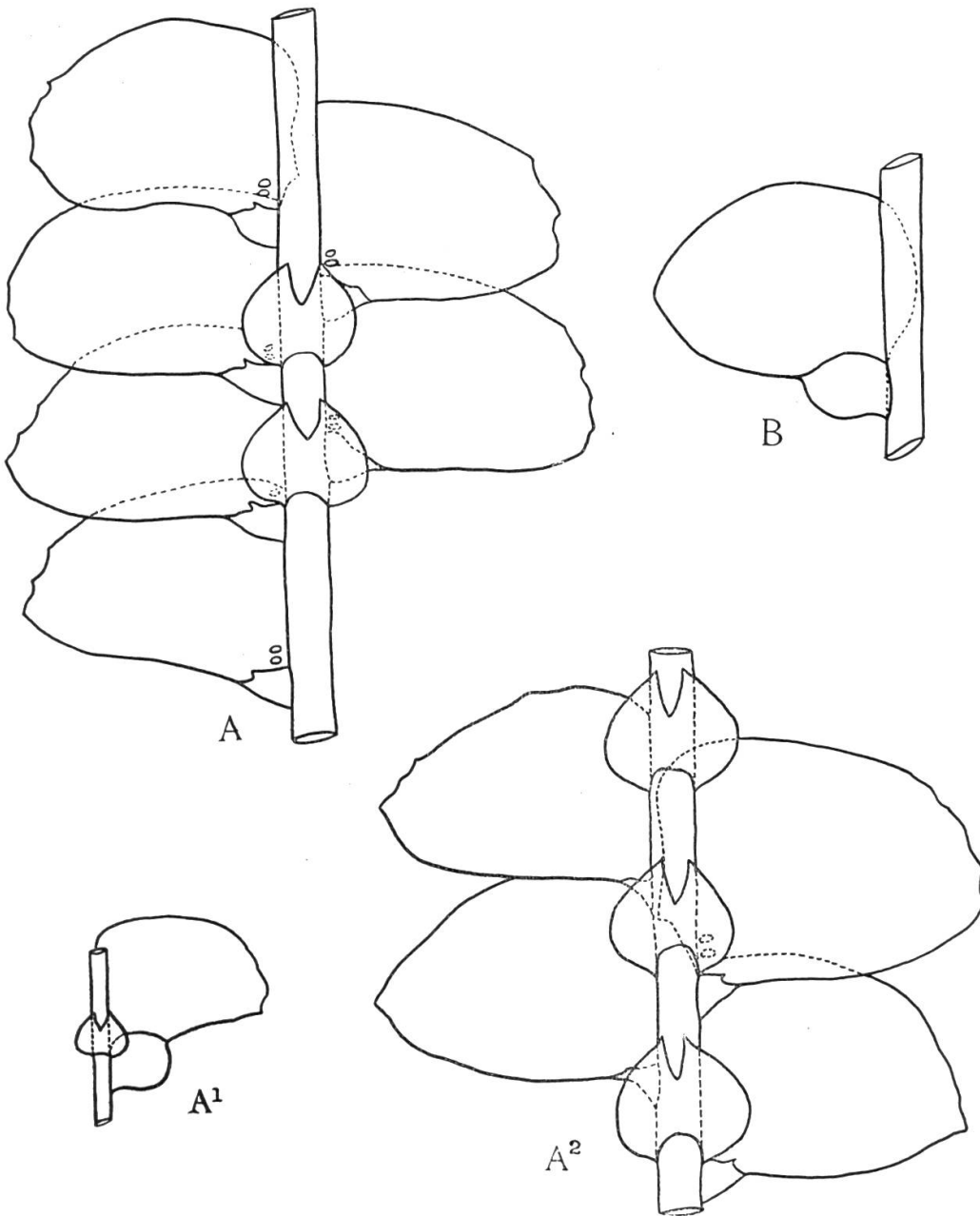


FIG. 46. — *Ceratolejeunea integrifolia*

FIG. 47. — *Ceratolejeunea involvens*

LECTOTYPE : CAMEROONS, Ekunda N'dene, 10 sept. 1892, *Dusén* 936. *Jungner 71*, cited by VANDEN BERGHEN (1951) is not admissible as a lectotype as it is not one of the specimens listed by STEPHANI (1895) and therefore does not follow Appendix 1 § 4 *b* of the Code of Nomenclature. *Jungner 71* can therefore be annulled as a type (Art. 19).

Other specimens: CAMEROONS, Buea, 4000', 1891, *Jungner 71*; Bibundi, Nov. 1891, *Jungner 264*; s.l., s.d., *Staudt 694 a*.

Drawings were based on *Jungner 71*. (Fig. 49).

There are many indications that *Jungner 71* served as the basis for the description of the species, but, as it has already been indicated above, it cannot be established as a type.

55. **C. karstenii** Steph. *Sp. Hep.* 5: 420. 1913; *Bot. Centralbl. Beih.* 49: 614. 1932.

TYPE: JAVA, Tjibodas, 1889, *Karsten s.n.* Not in hb. G.

Other specimens: None.

Drawings were based on the type. (Fig. 50).

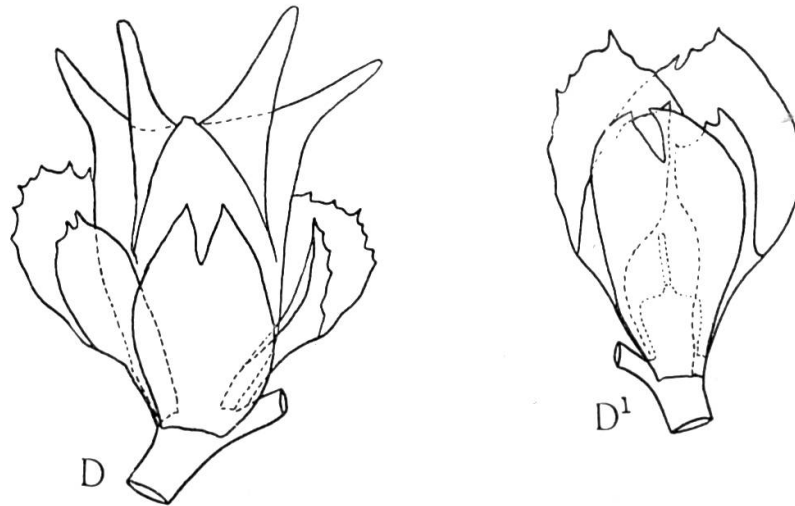


FIG. 48. — *Ceratolejeunea involvens*

56. **C. kegelii** (Lindenb. & Gottsche) Steph. *Sp. Hep.* 5: 420. 1913; *Bot. Centralbl. Beih.* 49: 607. 1932; *Annales Bryol.* 5: 157. 1932 = *Lejeunea Kegelia* Lindenb. & Gottsche, *Linnaea* 24: 635. 1851.

TYPE: GUIANA, Paramaribo, s.d., *Kegel 505* (a fragment).

Other specimens: S. DOMINGO: Sierra de Paloquemado, 770 m. 10.V.1887, *Eggers s.n.* (264); s.l., s.d., *Eggers 13, 14 & 24*. — CUBA s.l., s.d., *Wright 1104*.

57. **C. lechleriana** Steph. *Sp. Hep.* 5: 421. 1913; *Hedwigia* 23: 235. 1895; *Bot. Centralbl. Beih.* 49: 607. 1932.

TYPE: PERU, Tatanara, *Lechler s.n.*

Other specimens: None.

Drawings: There were based on the type (Fig. 51).

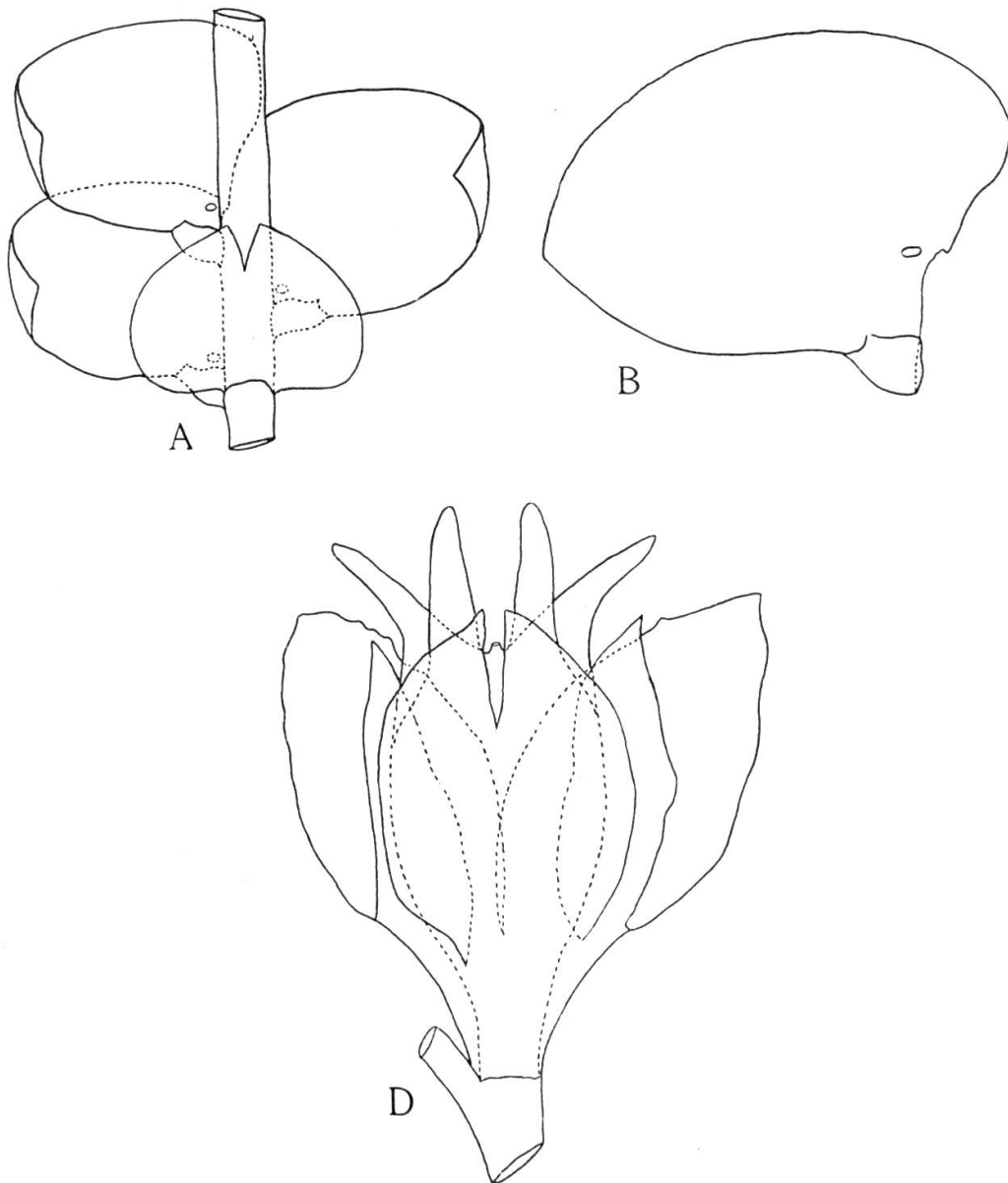


FIG. 49. — *Ceratolejeunea jungneri*

58. **C. ledermannii** Steph. *Sp. Hep.* 6 : 399. 1923 ; *Bot. Centralbl. Beih.* 49 : 614. 1932.

TYPE : NEW GUINEA, *Ledermann s.n.*

No material of this species is present in hb. G.

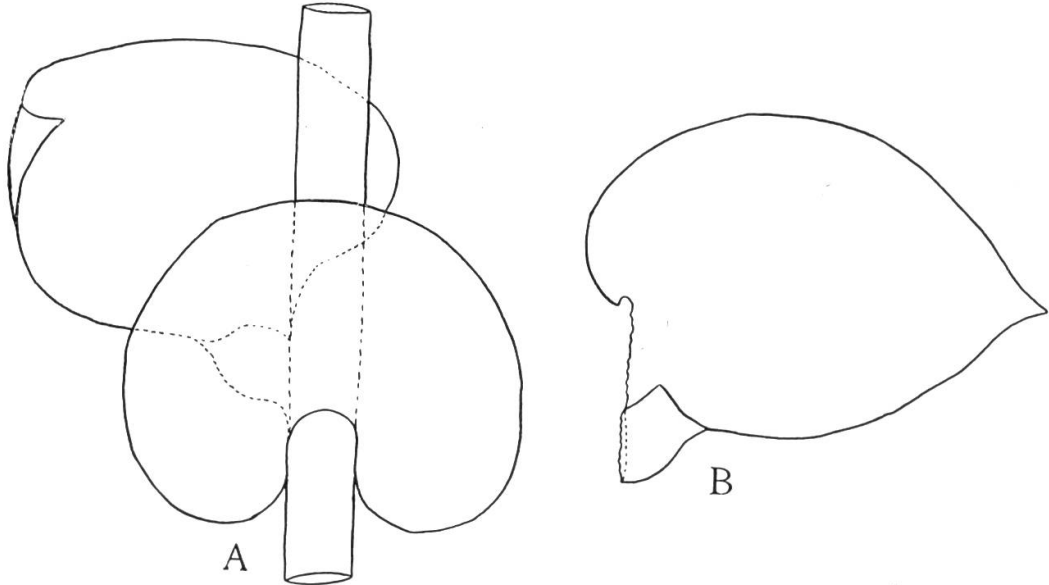


FIG. 50. — *Ceratolejeunea karstenii*

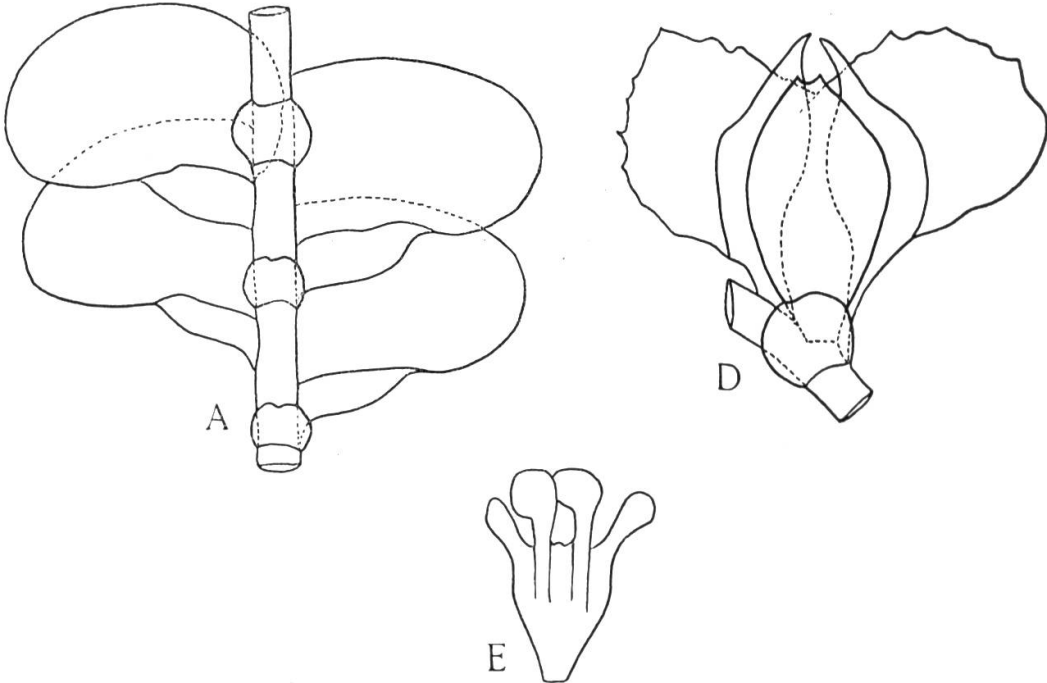


FIG. 51. — *Ceratolejeunea lechleriana*

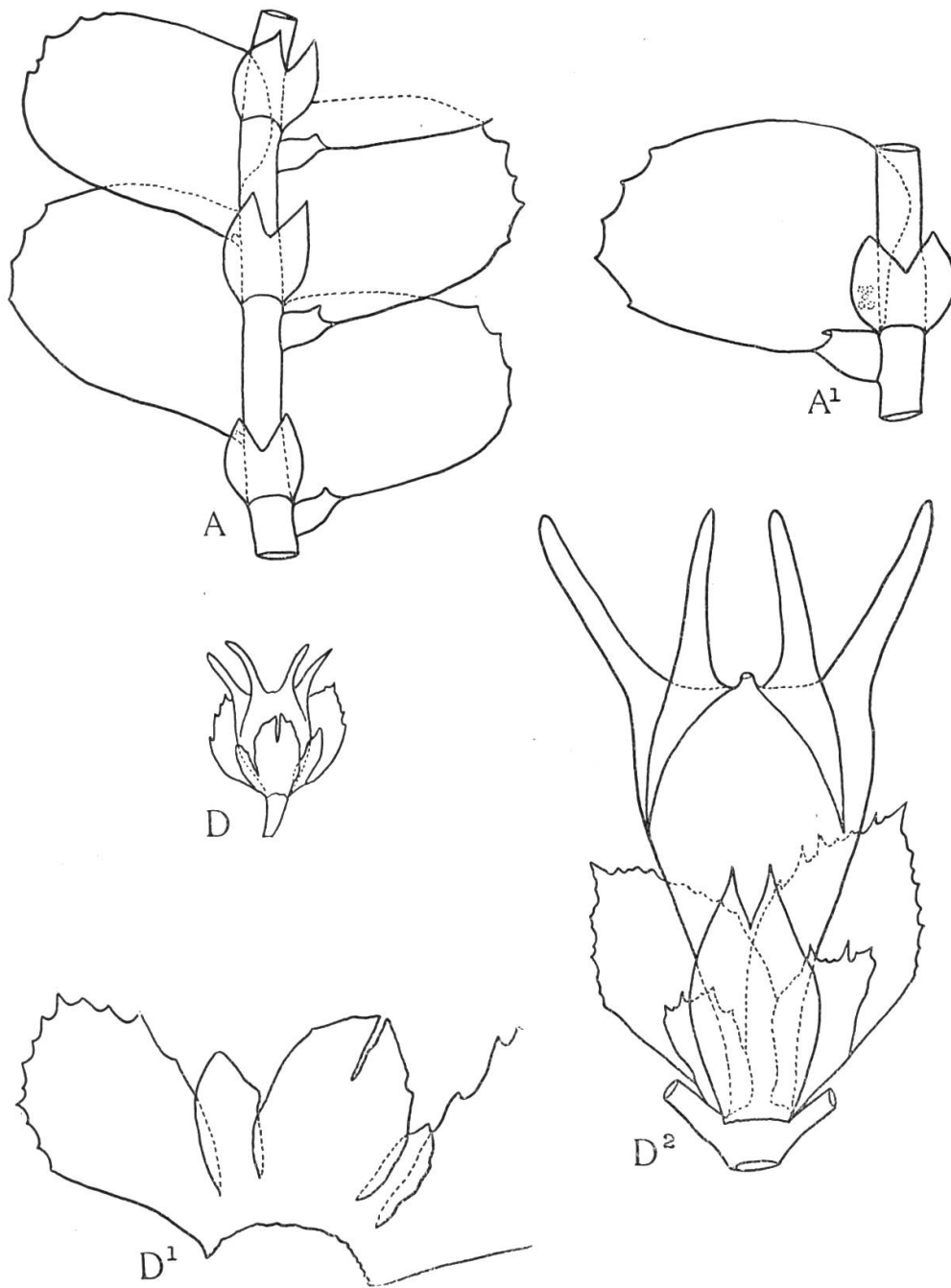


FIG. 52. — *Ceratolejeunea longicornis*

59. **C. litoralis** Herzog, *Rev. Bryol. Lich.* **13**: 23. 1942; *Brittonia* **5**: 385. 1945.

TYPE: COLOMBIA, Buenaventura, 5/10 oct. 1922, Killip 11710. Not. in hb. G.

Now considered to be a synonym of *Ceratolejeunea maritima* (Spruce) Steph. (FULFORD, 1945).

60. **C. longicornis** (Gottsche) Steph. *Sp. Hep.* **5**: 421. 1913; *Bot. Centralbl. Beih.* **49**: 607. 1932; *Annales Bryol.* **5**: 157. 1932 = *Lejeunea longicornis* Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.*: 401. 1845.

TYPE: ST. CHRISTOPHER, s.l., 1841, Breutel s.n. (hb. Gottsche). A fragment only in hb. G.

Other specimens: ST. CHRISTOPHER, s.l., s.d., s.col., s.n. — WEST INDIES, s.l., s.d., Breutel s.n. (hb. Jack 71). — NICARAGUA, s.l., s.d., Rothschild s.n. — BRAZIL, s.l., s.d., Massalonga s.n. (27); PARA, s.d., Zeller s.n. ex hb. D. Christ (hb. Levier 2160).

Drawings: *A*¹ and *D*² were based on the type, the remainder on hb. Jack 71. (Fig. 52).

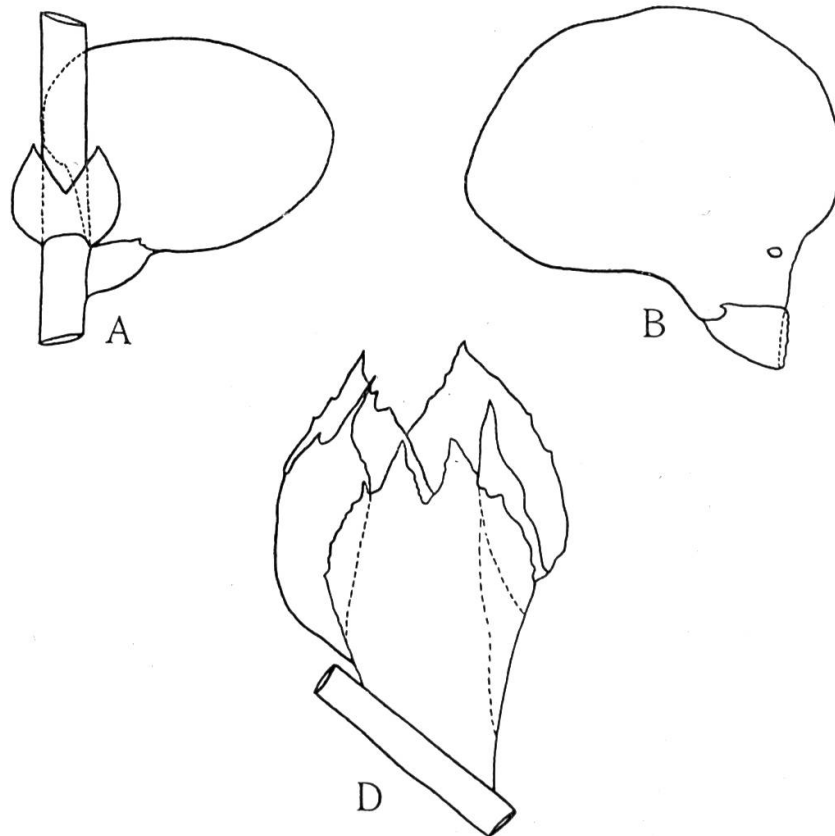


FIG. 53. — *Ceratolejeunea luteola*

61. **C. luteola** (Spruce) Steph. *Sp. Hep.* 5 : 422. 1913 ; *Bot. Centralbl. Beih.* 49 : 607. 1932 ; *Brittonia* 5 : 402. 1945 = *Lejeunea luteola* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 : 205. 1884.

TYPE : BRAZIL, Rio Negro, San Carlos, s.d., *Spruce s.n.* A small sample marked "original" in hb. G.

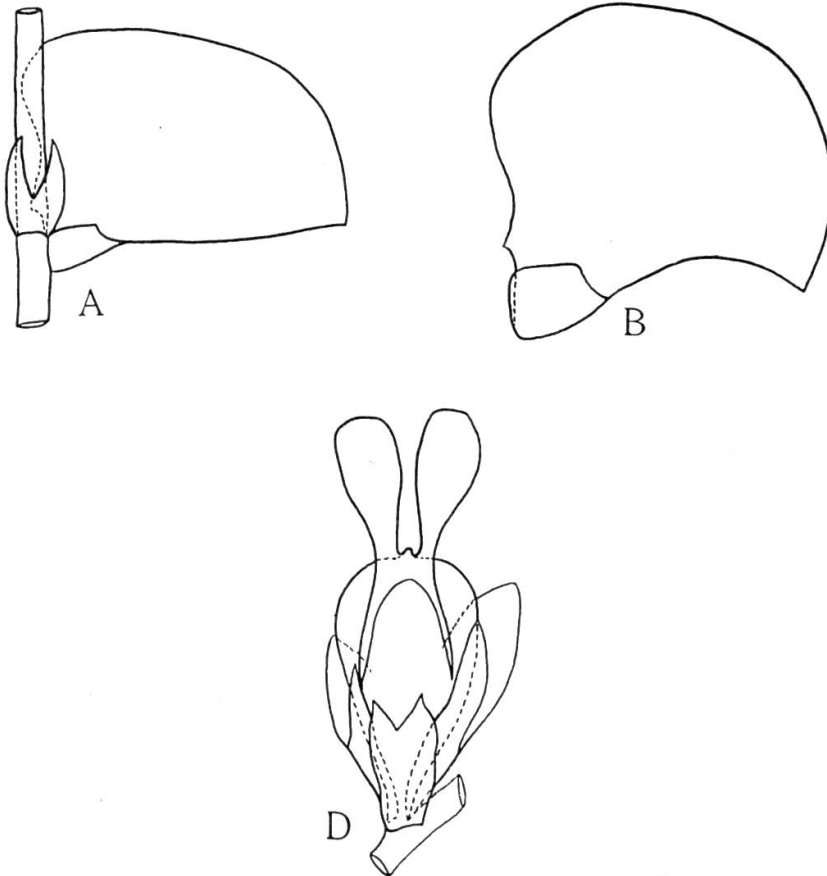


FIG. 54. — *Ceratolejeunea malleigera*

Other specimens : BRAZIL, San Carlos, in trunco vetusto, s.d., *Spruce s.n.*

Drawings were based on the type. (Fig. 53).

This species may belong to the genus *Prionolejeunea* (FULFORD, 1945).

62. **C. malleigera** (Spruce) Steph. *Sp. Hep.* 5 : 422. 1913 ; *Bot. Centralbl. Beih.* 49 : 607. 1932 ; *Brittonia* 5 : 377. 1945 = *Lejeunea malleigera* Spruce, *Mem. Torrey Bot. Club* 1 : 123. 1890.

TYPE : BOLIVIAN ANDES, "in fronde Acrostichi", 1885, *Rusby* 3025 p.p.

A fragment of the type, "ex hb. Spruce", is the only material of this species in hb. G. (Fig. 54).

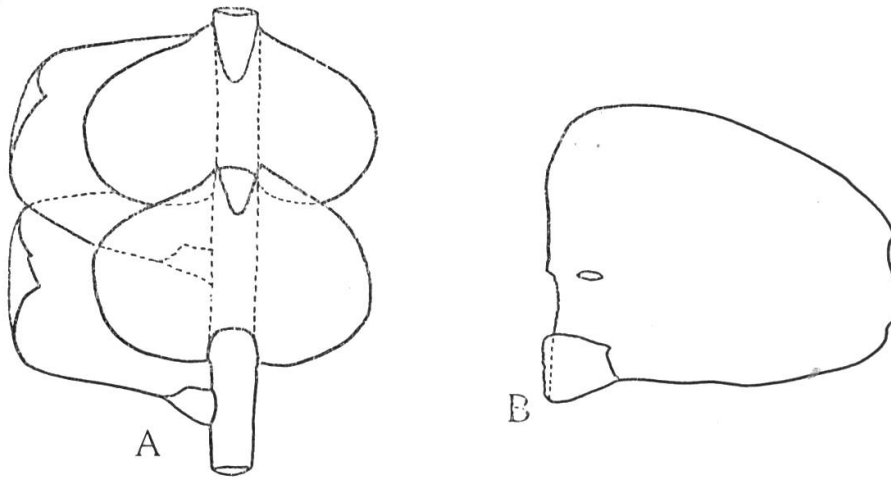


FIG. 55. — *Ceratolejeunea maritima*

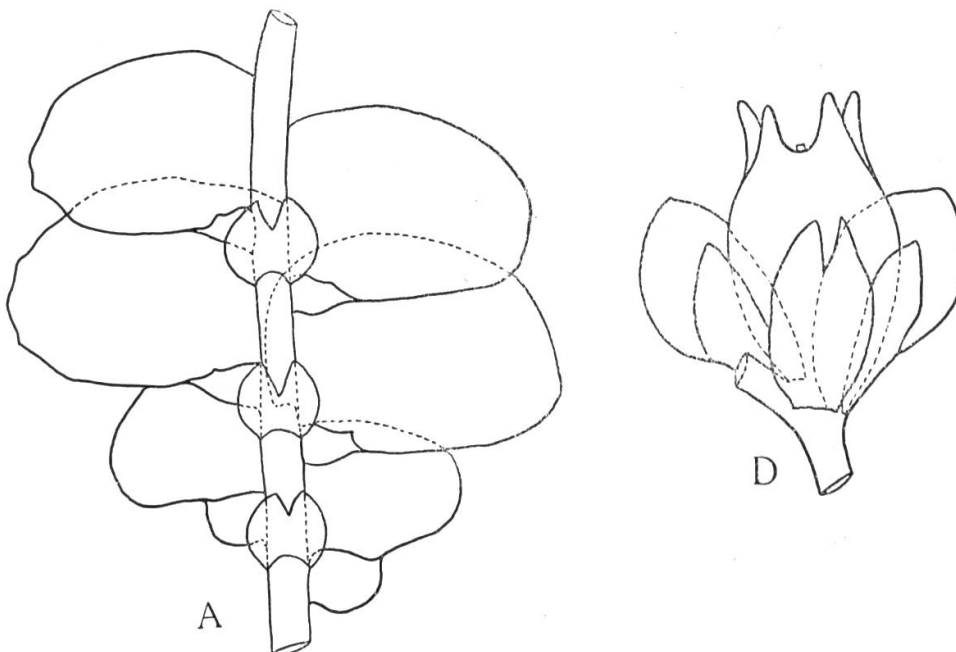
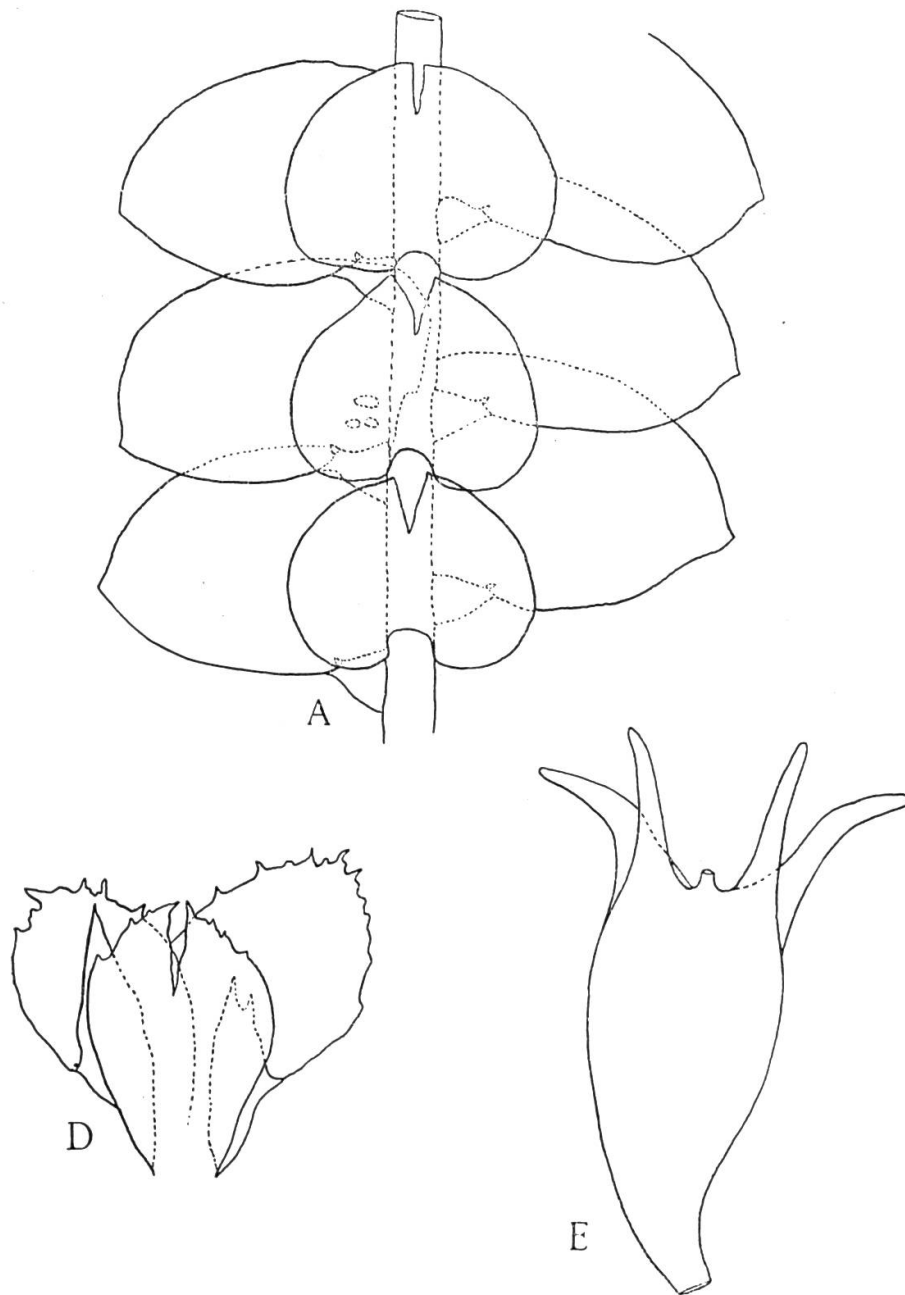


FIG. 56. — *Ceratolejeunea martiana*

FIG. 57. — *Ceratolejeunea mascarena*

63. **C. maritima** (Spruce) Steph. *Sp. Hep.* 5: 423. 1913; *Bot. Centralbl. Beih.* 49: 607. 1932; *Annales Bryol.* 5: 154. 1932; *Brittonia* 5: 384. 1945 = *Lejeunea maritima* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 210. 1884.

TYPE : BRAZIL, Caripe near Para, s.d., *Spruce s.n.*

A sample of *Hepaticae Spruceanae* "Caripe pr. Para, in saxis maritimis", is the only material of this species in hb. G.

Drawings were based on the original. (Fig. 55).

64. **C. martiana** (Gottsche) Steph. *Sp. Hep.* 5 : 423. 1913 ; *Bot. Centralbl. Beih.* 49 : 608. 1932 = *Lejeunea martiana* Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.* : 398. 1845.

TYPE : BRAZIL, River Amazon, s.d., *Martius*. A fragment only in hb. G.

Other specimens : BRAZIL, Rio Negro, s.d., *Spruce s.n.* ; Mte Para, s.d., *Spruce s.n.* ; s.l., inter *Plagiochilas*, 1883, *Uhle s.n.* ; Ostia flum. Amazonum, s.d., *Poeppig s.n.*

Drawings were all based on the type. (Fig. 56).

65. **C. mascarena** Steph. *Sp. Hep.* 5 : 424. 1913 ; *Bot. Gaz.* 15 : 284. 1890 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 ; *Annales Bryol.* 5 : 155. 1932.

TYPE : MAURITIUS, s.l., s.d., *Rodriguez s.n.* (hb. Renauld 98).

Other specimens : MAURITIUS, s.l., 1838, *Duisabo s.n.* (ex. bh Montagne). — MADAGASCAR, Mahambo, s.d., *Perrot 267*. — FRENCH EQUATORIAL AFRICA, Brazzaville, s.d., *Thollon s.n.* (ex hb. Mus. Paris). A fragment only.

Drawings : Based on "Madagascar hb. Montagne" (see *Bot. Gaz.* 15 : 284. 1890). (Fig. 57).

66. **C. mauritiana** Steph. *Sp. Hep.* 5 : 425. 1913 ; *Bot. Gaz.* 15 : 285. 1890 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 ; *Annales Bryol.* 5 : 156. 1932.

TYPE : MAURITIUS, s.l., s.d., *Rodriguez s.n.* (hb. Renauld 99). A very small sample only in hb. G.

Other specimens : MADAGASCAR, Prov. of Siamaianteres, 20 Feb. 1900, s.col. 2 (ex hb. Général Paris).

Drawings were based on the type. (Fig. 58).

67. **C. megalophysa** (Spruce) Steph. *Sp. Hep.* 5 : 425. 1913 ; *Bot. Centralbl. Beih.* 49 : 608. 1932 ; *Annales Bryol.* 5 : 154. 1932 ; *Brittonia* 5 : 394. 1945 = *Lejeunea megalophysa* Spruce, *Trans. & Proc. Bot. Soc. Edinburg* 15 : 202. 1884.

TYPE : BRAZIL, Flumen Uaupés, s.d., *Spruce s.n.*

Other specimens : BRAZIL, San Gabriel, s.d., *Spruce s.n.* ; Antonio Lemosipagos, prope Gurupa, 1928, *Lützelberg s.n.* (VERDOORN, *Hep. Select. & Crit.* 150).

Drawings were based on the San Gabriel specimen. (Fig. 59).

68. **C. microrhegma** (Spruce) Steph. *Sp. Hep.* 5 : 426. 1913 ; *Bot. Centralbl. Beih.* 49 : 608. 1932 ; *Annales Bryol.* 5 : 154. 1932

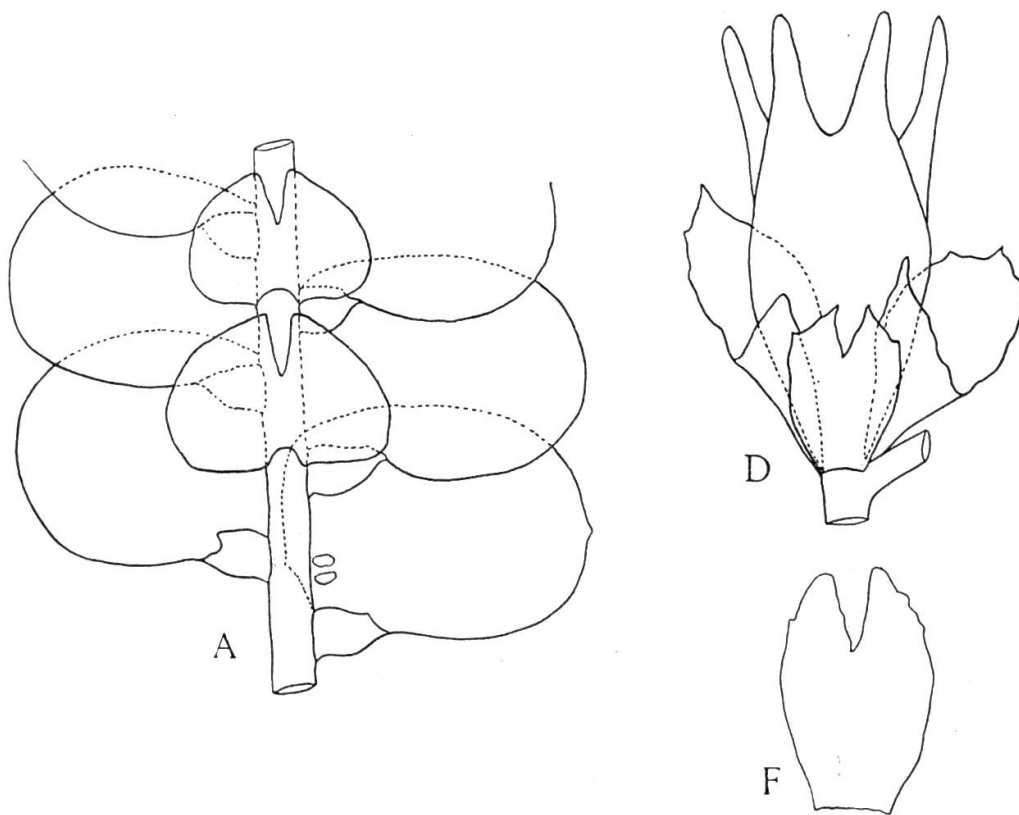


FIG. 58. — *Ceratolejeunea mauritiana*

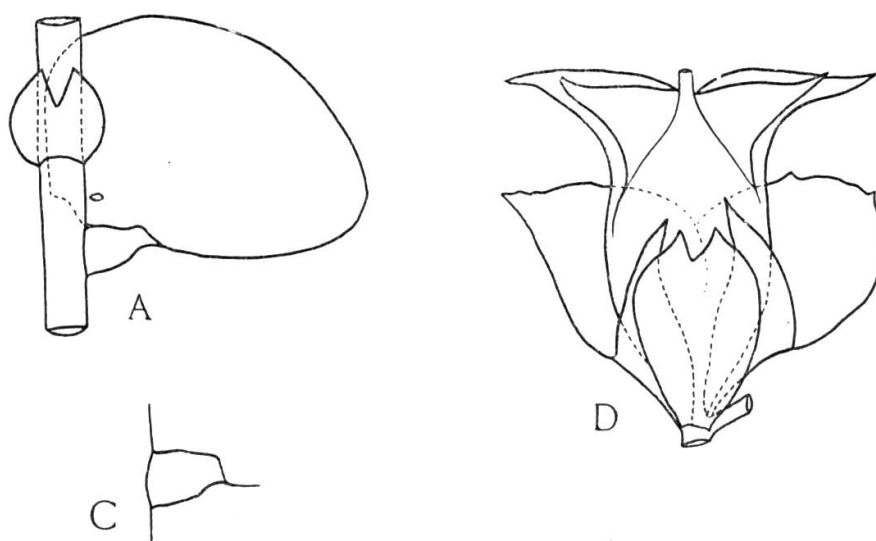


FIG. 59. — *Ceratolejeunea megalophysa*

= *Lejeunea microrhegma* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* **15** : 209. 1884.

TYPE : PERU, Canelos, 1000 m., s.d., *Spruce s.n.* A fragment only in hb. G.

Other specimens : None.

Drawings were based on the type. (Fig. 60).

69. **C. miradorensis** (Steph.) Steph. *Sp. Hep.* **5** : 426. 1913 ; *Bot. Centralbl. Beih.* **49** : 608. 1932 ; *Annales Bryol.* **5** : 154. 1932 ; *Hedwigia* **29** : 93. 1890 = *Lejeunea miradorensis* Steph. *Hedwigia* **29** : 93. 1890 = *Lejeunea brasiliensis* Gottsche var. δ , *Hedwigia* **29** : 93. 1890.

LECTOTYPE : MEXICO, Mirador, s.d., *Liebman s.n.* (hb. Lindenberg 6791). A small sample only in hb. G.

Other specimens : MEXICO, Mirador, s.d., *Liebman s.n.* (hb. Lindenberg 6792, 6793, 6794 & 6798. None of these are represented in hb. G.).

Drawings were based on hb. Lindenberg 6791. (Fig. 61).

70. **C. mollis** Pearson, *Annales Bryol.* **4** : 99. 1931.

TYPE : JAMAICA, Cinchona, 5000 ft, Aug. 1909, *Bower s.n.* Not in hb. G.

71. **C. moniliata** Herzog, *Mitt. Inst. allg. Bot. Hamburg* **7** : 205. 1931 ; *Bot. Centralbl. Beih.* **49** : 614. 1932.

TYPE : WEST BORNEO, Bukit Raja, 1250 m., 16 Dec. 1924, *Winkler 3360 f* ; Bukit Mehipit, 500 m., 10 Dec. 1924, *Winkler 3131* ; Sungei Malang, 28 Jan. 1925, *Winkler 3290, 3291 a*.

Holotype not specified. None in hb. G.

72. **C. monticola** (Spruce) Steph. *Sp. Hep.* **5** : 427. 1913 ; *Bot. Centralbl. Beih.* **49** : 608. 1932 ; *Annales Bryol.* **5** : 154. 1932 = *Lejeunea monticola* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* **15** : 204. 1884.

TYPE : PERUVIAN ANDES, Guayrapurina, s.d., *Spruce s.n.* A few fragments only in hb. G ex hb. Slater.

Other specimens : None.

Drawings were based on the type. (Fig. 62).

73. **C. mosenii** Steph. *Sp. Hep.* **5** : 428. 1913 ; *Bot. Centralbl. Beih.* **49** : 608. 1932 ; *Annales Bryol.* **5** : 154. 1932 ; *Brittonia* **5** : 396. 1945 ; *Hepaticae N. America*, in *Univ. Washington Publ. Biol.* **6** : 853. 1947.

TYPE : BRAZIL, Prov. S. Paulo, Santos, Sororocaba, ad arborem silvae primaevae, 18 Jan. 1875, *Mosén Dj.*

Other specimens : None.

Drawings were based on the type. (Fig. 63).

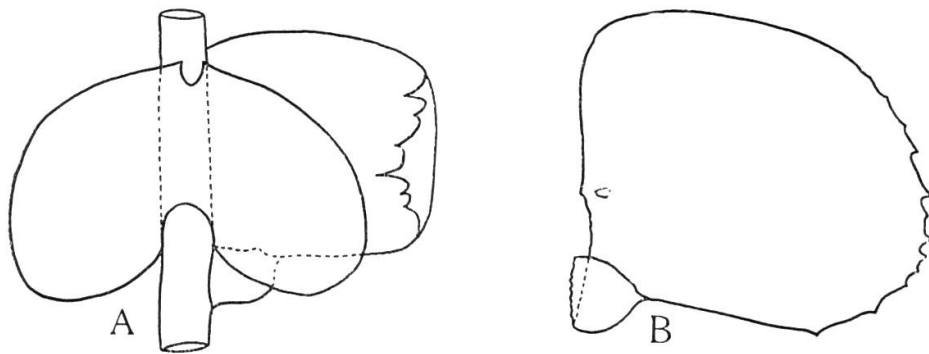


FIG. 60. — *Ceratolejeunea microrhegma*

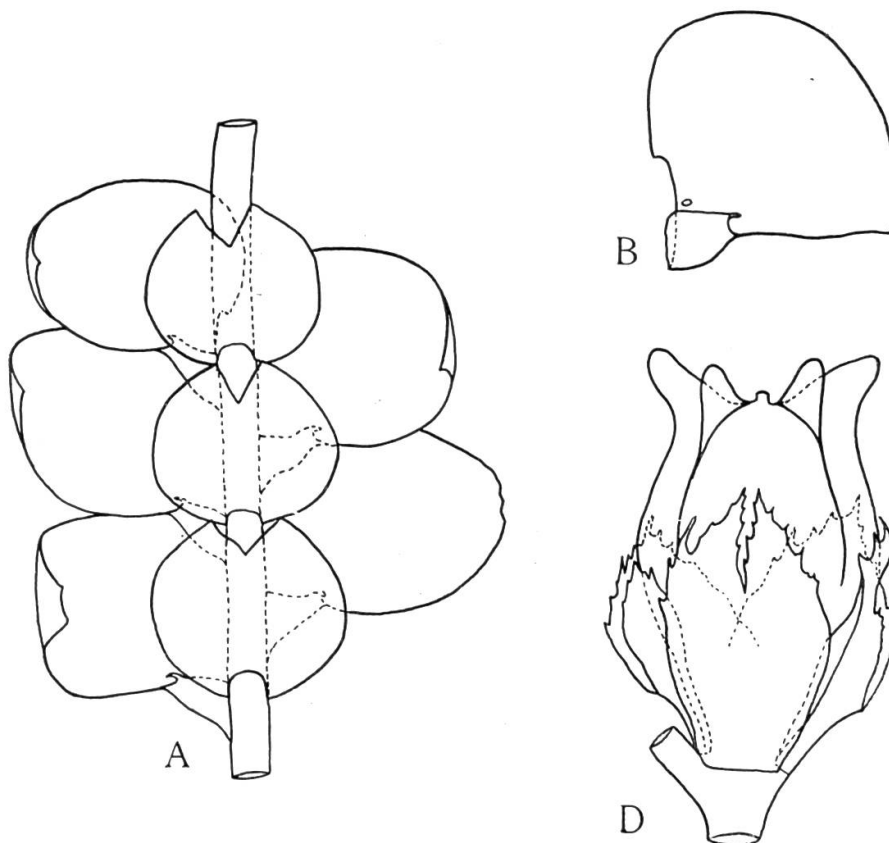


FIG. 61. — *Ceratolejeunea miradorensis*

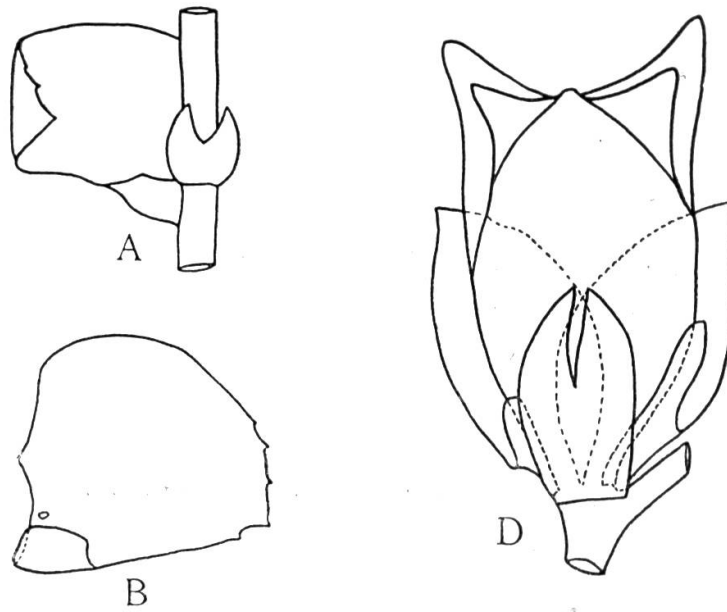


FIG. 62. — *Ceratolejeunea monticola*

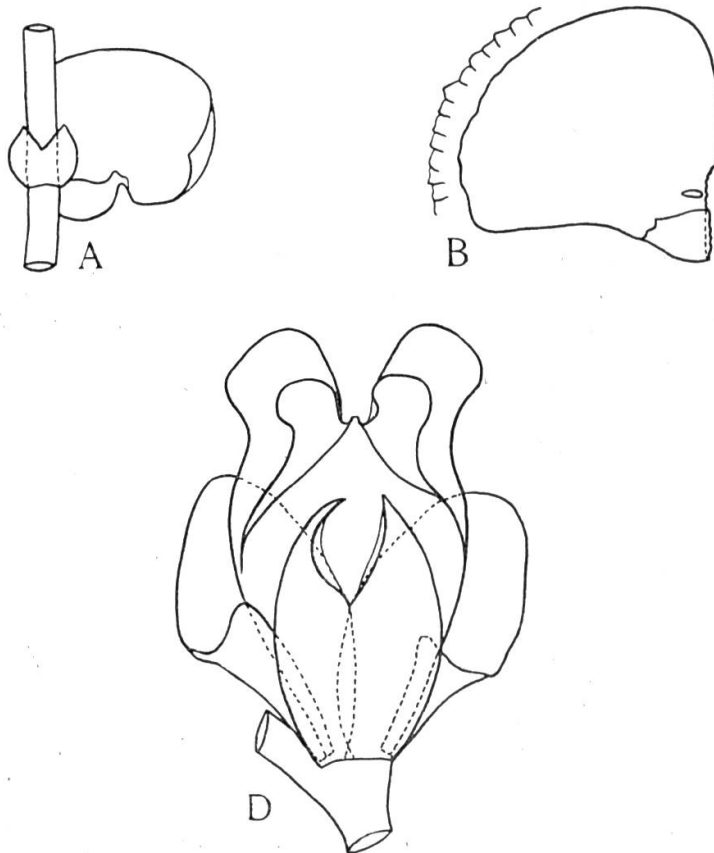
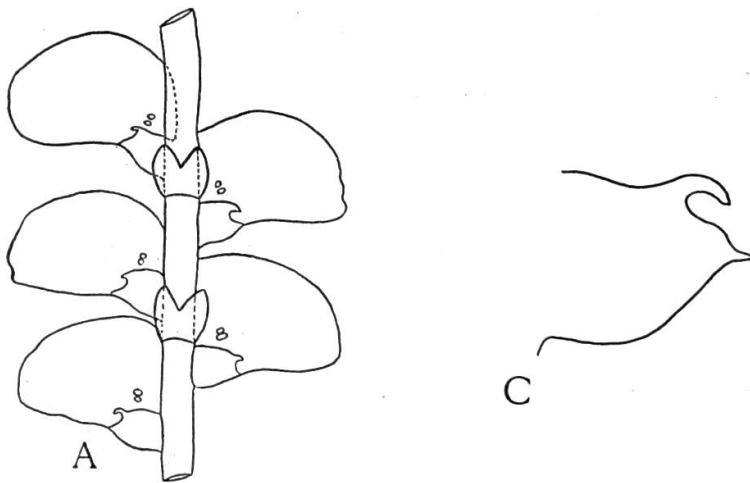


FIG. 63. — *Ceratolejeunea mosenii*

FIG. 64. — *Ceratolejeunea oculata*

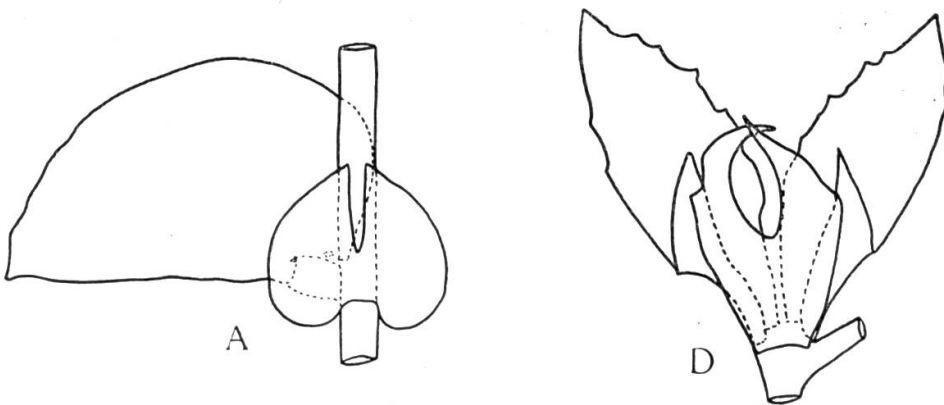
This species is now considered to be a synonym of *Ceratolejeunea cubensis* (Montagne) Schiffn. (FULFORD, 1945, FRYE & CLARKE, 1947).

74. **C. multiocellata** Herzog, *Rev. Bryol. Lich.* **20** : 150. 1951.

TYPE : COSTA RICA, Prov. Cartago, Pejivalle, 900 m., s.d., Standley 46809. Not in hb. G.

75. **C. oceanica** (Mitten) Steph. *Sp. Hep.* **5** : 428. 1913; *Bot. Centralbl. Beih.* **5** : 614. 1932 = *Lejeunea oceanica* Mitten in Seemann *Flora Vitiensis* : 414. 1871.

Specimens : SAMOA, on *Garovaglia powellii* s.d., Powell s.n.; Raiatea s.d., Collie s.n. One of these must be chosen as a lectotype. No material of this species is present in hb. G.

FIG. 65. — *Ceratolejeunea oxygonia*

76. **C. oculata** (Gottsche) Steph. *Sp. Hep.* 5: 428. 1913; *Bull. Hb. Boiss.* 5: 842. 1897; *Bot. Centralbl. Beih.* 49: 614. 1932; *Annales Bryol.* 5: 156. 1932 = *Lejeunea oculata* Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.*: 357. 1845.

TYPE: OWAIHI ISLAND, ad *Radulam javanicam*, 1793, s.col., s.n. (hb. Hooker). A small fragment only in hb. G.

Other specimens: OWAIHI ISLAND, s.l., s.d., s.col., s.n. ex hb. Meissner.

Drawings were based on the type. (Fig. 64).

77. **C. oxygonia** Gottsche ms. in Steph. *Sp. Hep.* 5: 429. 1913; *Bot. Centralbl. Beih.* 49: 608. 1932; *Annales Bryol.* 5: 154. 1932.

TYPE: CUBA, Mte Verde, s.d., *Wright s.n.* (hb. Gottsche). Not in hb. G.

Other specimens: CUBA, s.l., s.d., *Wright s.n.* A fragment only in hb. G.

Drawings were based on the type. (Fig. 65).

78. **C. papuliflora** Steph. *Sp. Hep.* 5: 430. 1913; *Bot. Centralbl. Beih.* 49: 613. 1932; *Annales Bryol.* 5: 158. 1932.

TYPE: MADAGASCAR, Tamatave, s.d., s.col., s.n. ex hb. Kew.

Other specimens: None.

Drawings were made from Madagascar, Ténérive, s.d., s.col., s.n., hb. Levier 348. Not in hb. G. (Fig. 66).

79. **C. parisii** Steph. *Sp. Hep.* 5: 429. 1913; *Bot. Centralbl. Beih.* 49: 608. 1932; *Annales Bryol.* 5: 156. 1932.

TYPE: FRENCH GUIANA, Camp à la Forestière (Maroni), Dec. 1904, *Michel II* (ex hb. E.G. Paris).

Other specimens: None.

Drawings were based on the type. (Fig. 67).

80. **C. patentissima** (Hampe & Gottsche) Evans in Steph. *Sp. Hep.* 5: 431. 1913; *Bull. Torrey Bot. Club* 32: 286. 1905; *Bot. Centralbl. Beih.* 49: 608. 1932; *Annales Bryol.* 5: 154. 1932; *Brittonia* 5: 382. 1945 = *Lejeunea patentissima* Hampe & Gottsche, *Linnaea* 25: 355. 1852; *Hedwigia* 27: 288. 1888.

TYPE: PORTO RICO, s.d. *Schwanecke s.n.* (300).

Other specimens: GUADELOUPE, s.l., s.d., *Herminier s.n.* — PORTO RICO, s.l., s.d., *Schwanecke s.n.* (hb. Karl Müller 45).

Drawings: None.

81. **C. patulistipa** Steph. *Sp. Hep.* 5: 431. 1913; *Hedwigia* 34: 235. 1895; *Annales Bryol.* 5: 154. 1932; *Bot. Centralbl. Beih.* 49: 609. 1932.

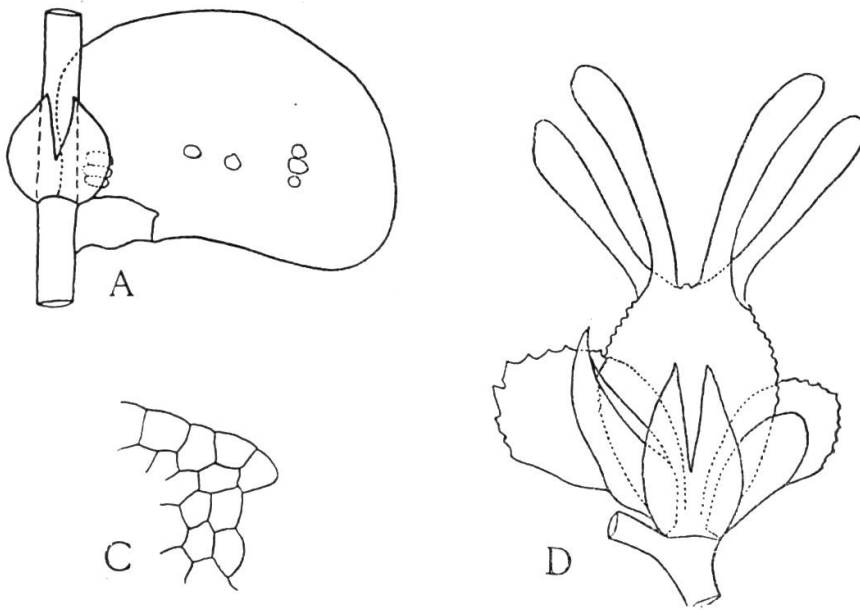


FIG. 66. — *Ceratolejeunea papuliflora*

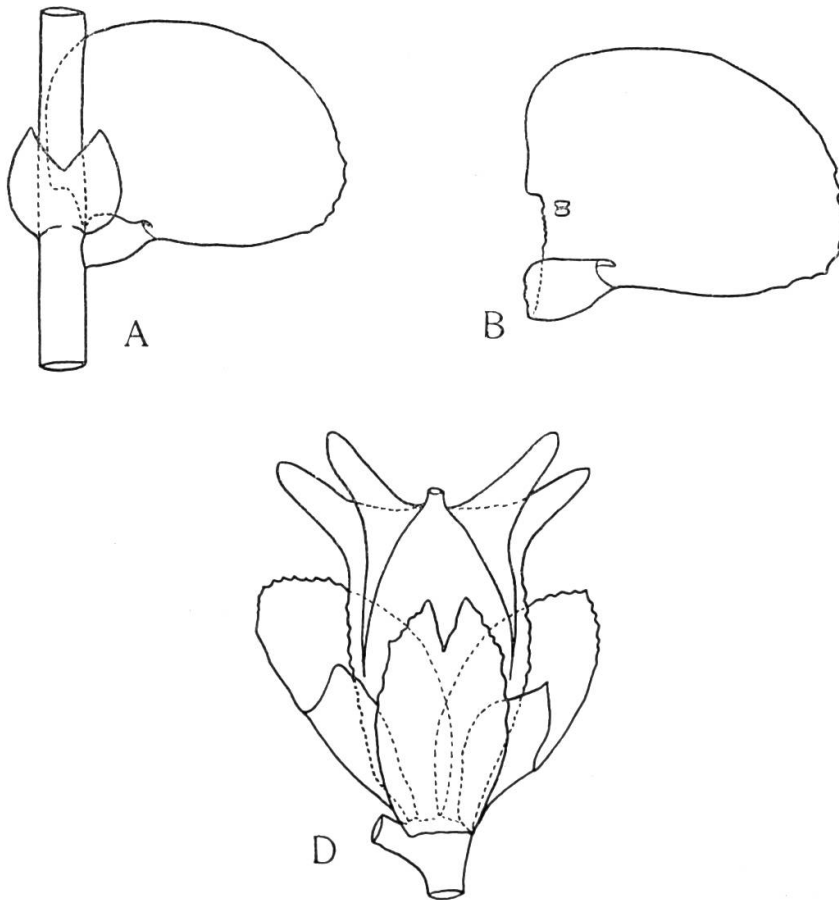


FIG. 67. — *Ceratolejeunea parisii*

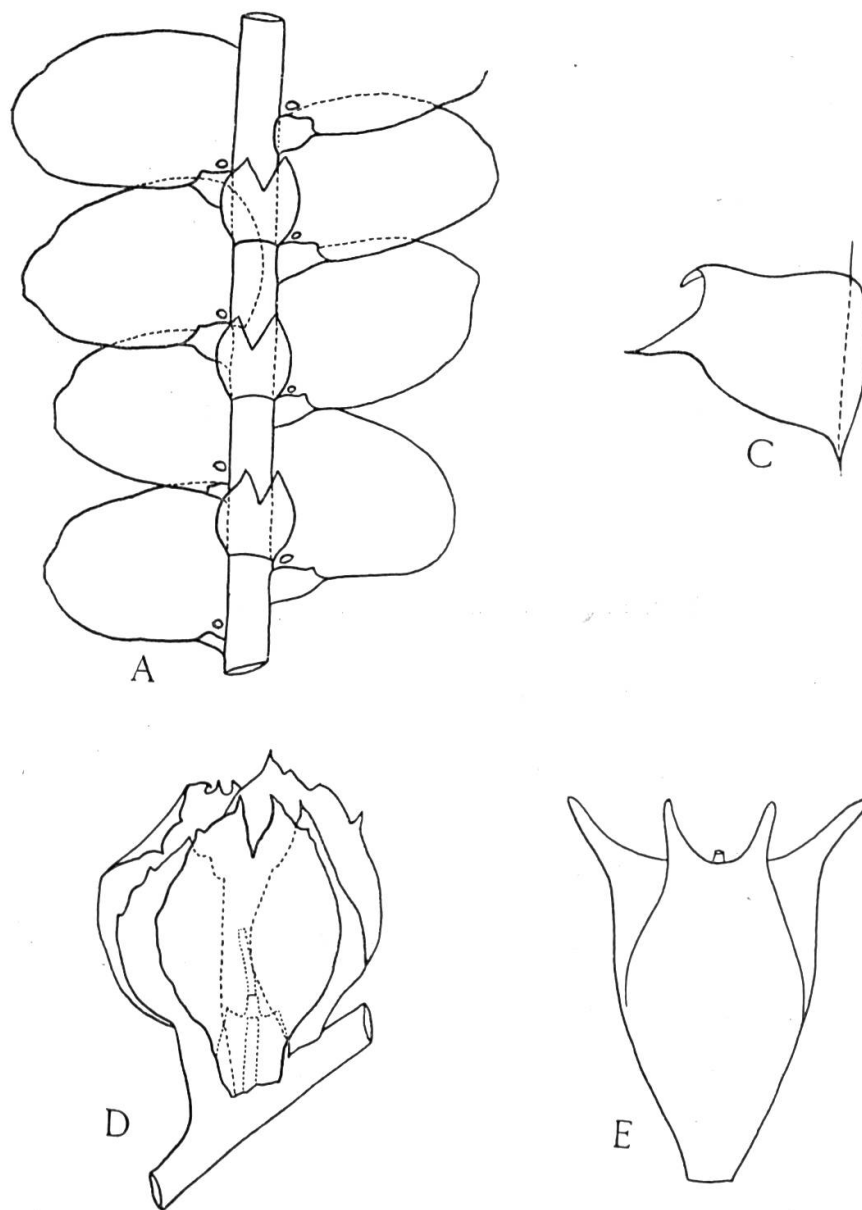


FIG. 68. — *Ceratolejeunea patulistiwa*

TYPE : SURINAM, s.l., s.d., *Kegel 755*.

Other specimens : SURINAM, s.l., s.d., *Kegel 530* ; idem *Kegel s.n.* ;
 Ins. (illegible), 1885, *Suringar 132*. — GUADELOUPE, s.l., s.d., *L'Herminier s.n.*

Drawings : Based on the type. (Fig. 68).

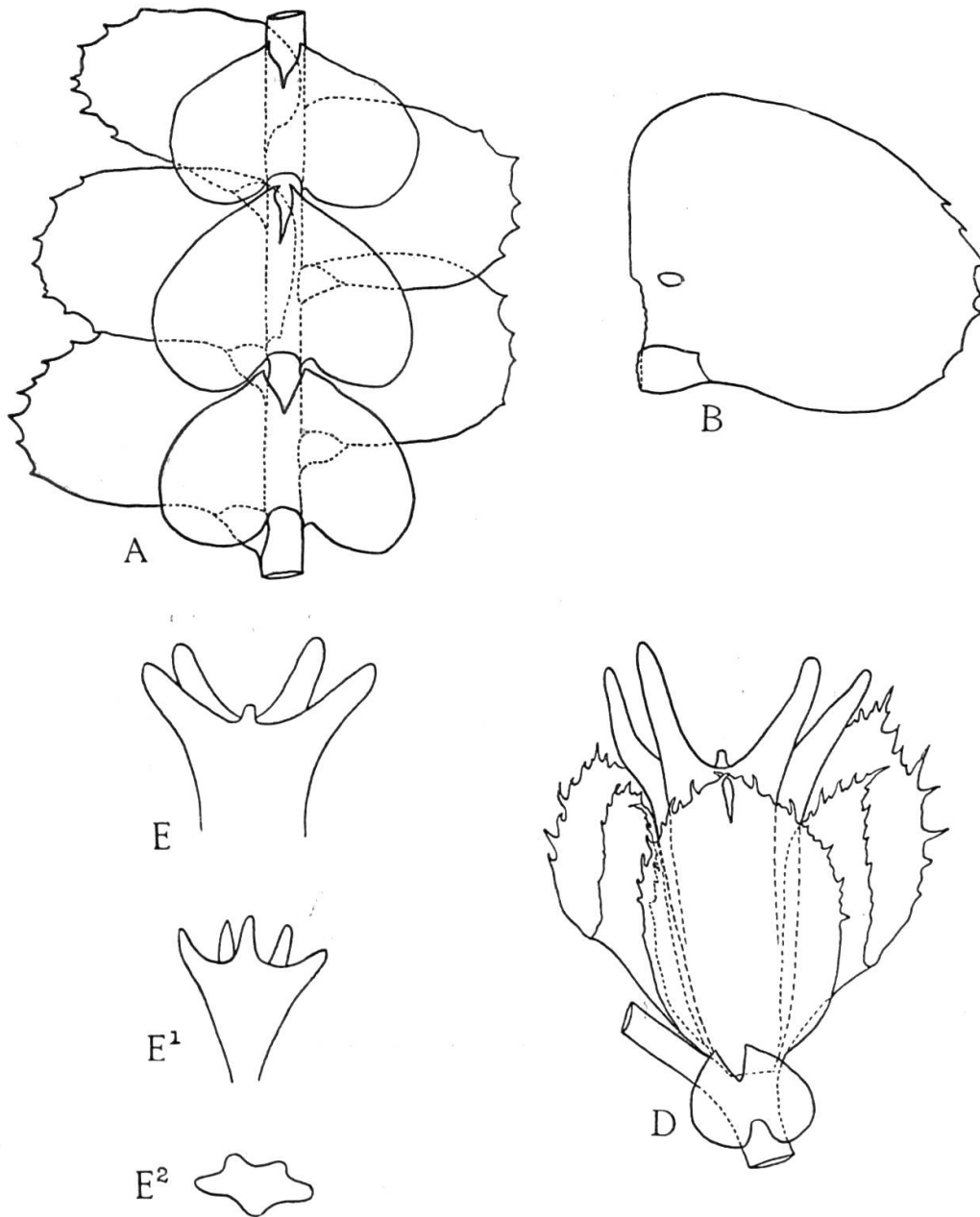


FIG. 69. — *Ceratolejeunea peruviana*

82. **C. peruviana** Steph. *Sp. Hep.* 5: 432. 1913; *Hedwigia* 34: 236. 1895; *Bot. Centralbl. Beih.* 49: 609. 1932; *Annales Bryol.* 5: 154. 1932.

TYPE: PERU, prope Tatanara, Aug. (1854?), *Lechler Pl. Peruv.* ed. R.F. Hohenacker 85.

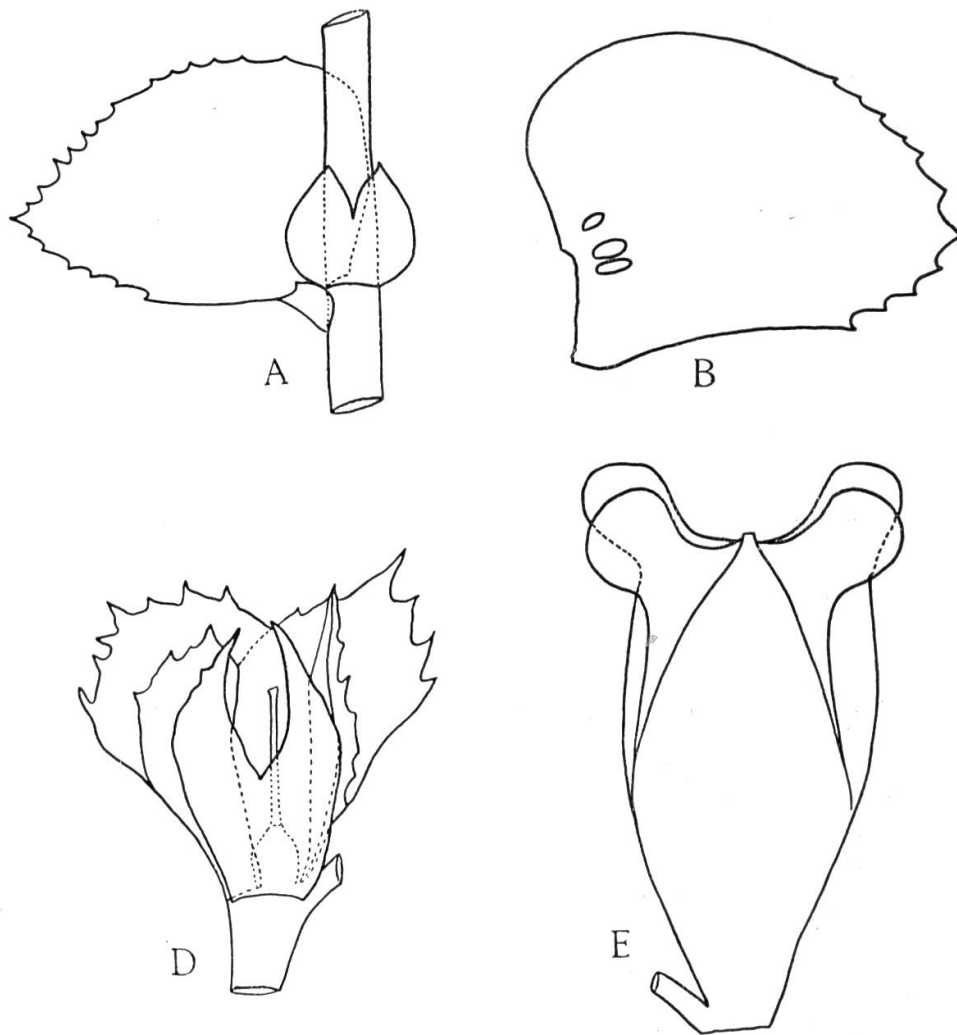


FIG. 70. — *Ceratolejeunea platyceras*

Other specimens : PERU, Tatanara, s.d., *Lechler* (83) comm. Keck, sub *Lejeunea spinosa* Gottsche ; St. Gavan, Aug. 1854, *Lechler* 659 a. — BOLIVIA, s.l., s.d., *Herzog* 2770.

Drawings were based on the type. (Fig. 69).

83. **C. platyceras** (Spruce) Steph. *Sp. Hep.* 5 : 432. 1913 ; *Bot. Centralbl. Beih.* 49 : 609. 1932 ; *Annales Bryol.* 5 : 157. 1932 = *Lejeunea platyceras* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 : 210. 1884.

TYPE : ECUADOR, In valle flum. Pastasa infra Baños, 1500 m., s.d., *Spruce s.n.* A fragment only in hb. G.

Other specimens : None.

Drawings from the type (hb. Slater). (Fig. 70).

84. **C. plumula** (Spruce) Steph. *Sp. Hep.* 5: 433. 1913; *Bot. Centralbl. Beih.* 49: 609. 1932; *Annales Bryol.* 5: 157. 1932; *Brittonia* 5: 376. 1945 = *Lejeunea plumula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 201. 1884.

TYPE : PERUVIAN ANDES, Mt. Guayrapurina, 1000 m., s.d., *Spruce s.n.* A fragment only in hb. G.

Other specimens : DOMINICA, s.l., s.d., *Elliott 969.*

Drawings : Based on *Elliott 969.* (Fig. 71).

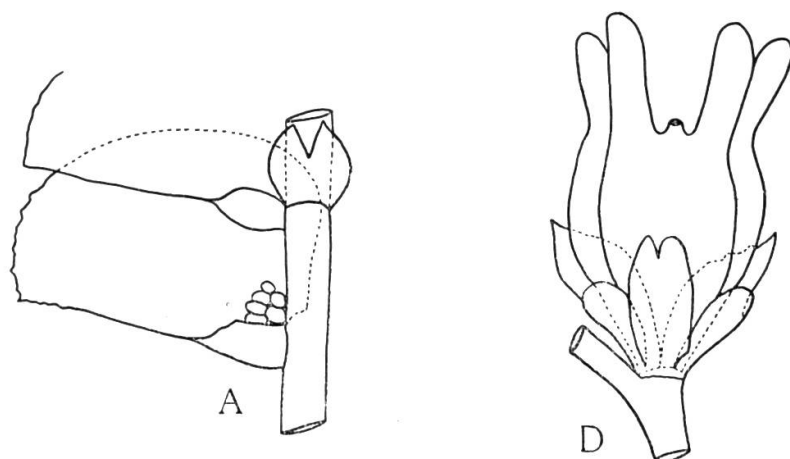


FIG. 71. — *Ceratolejeunea plumula*

85. **C. poeppigiana** (Nees) Steph. *Sp. Hep.* 5: 433. 1913; *Bot. Centralbl. Beih.* 49: 609. 1932; *Annales Bryol.* 5: 152. 1932 = *Lejeunea poeppigiana* Nees ms. *Hedwigia* 29: 92. 1890 = *Lejeunea ceratantha* Nees & Montagne var. *poeppigiana* Nees in Gottsche, *Lindenb. & Nees Syn. Hep.*: 396. 1845 = *Jungermannia thymifolia* Nees var B** in *Martius Fl. brasiliensis* 1: 359. 1833.

TYPE : BRAZIL, s.l., "ad filicum frondes, s.d.", *Poeppig* (hb. Hampe & hb. Nees) (hb. Lindenb. 6774). A fragment only of *Lindenb. 6774* in hb. G.

Other specimens : BRAZIL, *Apiahy*, *Yporanga*, s.d., *Puiggari 829.*

Drawings : Based on *Lindenb. 6774.* (Fig. 72).

86. **C. portoricensis** (Hampe & Gottsche) Evans, *Bull. Torrey Bot. Club* 34: 15. 1907; *Brittonia* 5: 399. 1945 = *Neurolejeunea portoricensis* (Hampe & Gottsche) *Schiffner* in *Engler & Prantl Nat. Pflanzenfam.* 13: 131. 1895; *Stephani, Sp. Hep.* 4: 696. 1911 = *Lejeunea portoricensis* Hampe & Gottsche, *Linnaea* 25: 352. 1852 = *Lejeunea* subgen. *Neurolejeunea portoricensis* Hampe & Gottsche in *Stephani, Hedwigia* 27: 288. 1888.

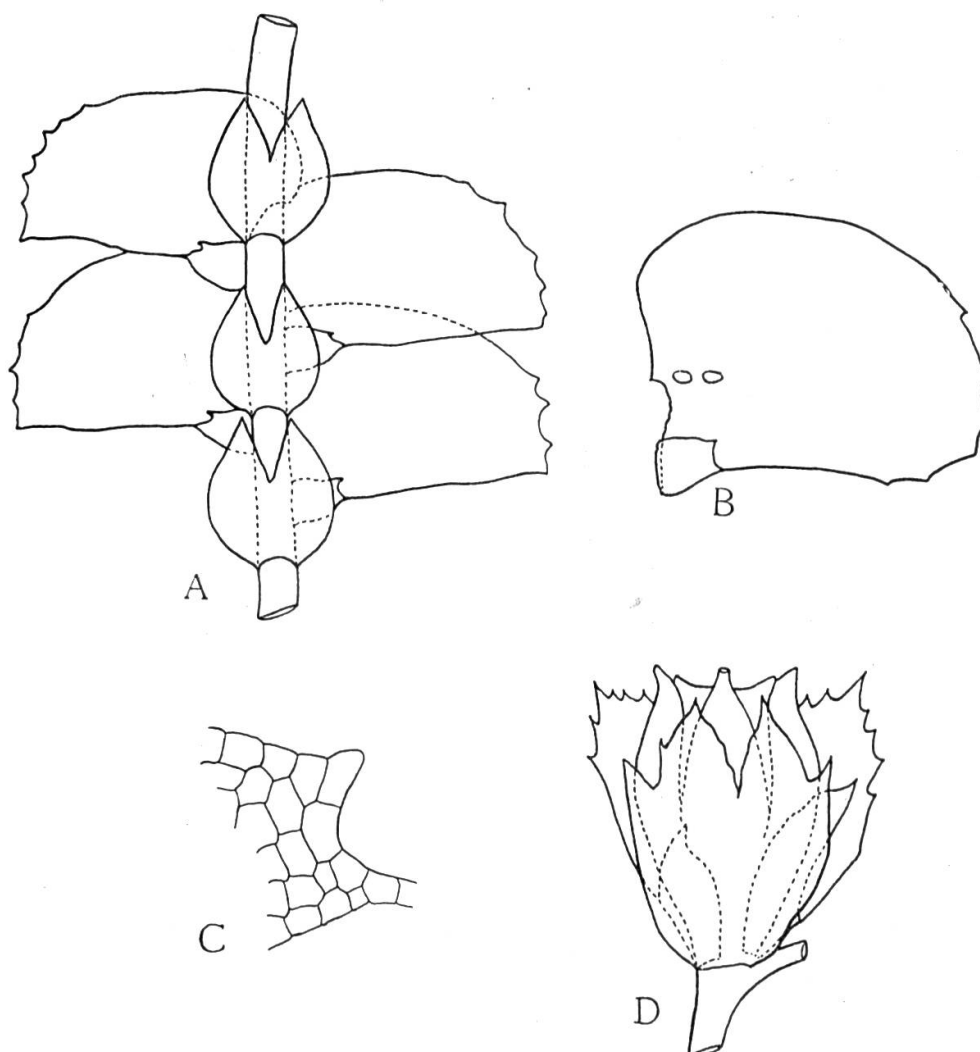


FIG. 72. — *Ceratolejeunea poeppigiana*

TYPE : PORTO RICO, s.l., s.d., *Schwanecke s.n.* (301) a small fragment sub *Neurolejeunea portoricensis* in hb. G.

Other specimens : None.

87. **C. pseudoneura** Zwickel, *Annales Bryol.* 6 : 110. 1933 ; *Brittonia* 5 : 397. 1945.

TYPE : CUBA, s.d., s.l., s.d., *Wright s.n.* (hb. Munich 14). Not in hb. G.

A synonym of *Ceratolejeunea rubiginosa* Steph. (FULFORD, 1945).

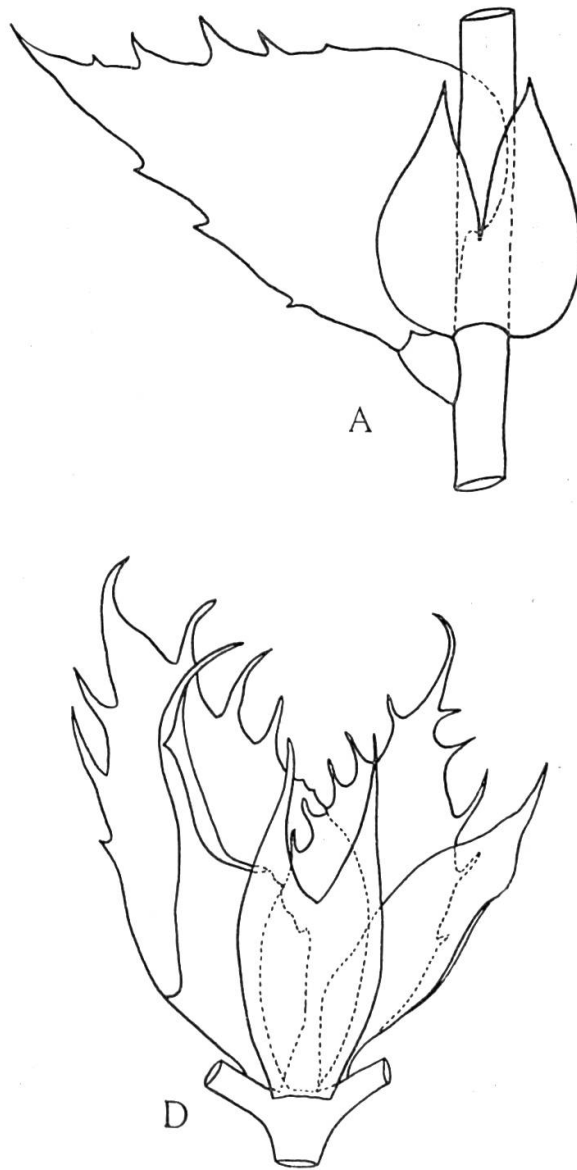


FIG. 73. — *Ceratolejeunea pungens*

88. **C. pungens** Spruce in Steph. *Sp. Hep.* 5: 434. 1913; *Bot. Centralbl. Beih.* 49: 609. 1932; *Annales Bryol.* 5: 154. 1932; *Brittonia* 5: 372. 1945.

TYPE: ECUADOR, Canelos, s.d., *Spruce s.n.* Isotype only in hb. G.

Other specimens: None.

Drawings: Based on isotype. (Fig. 73).

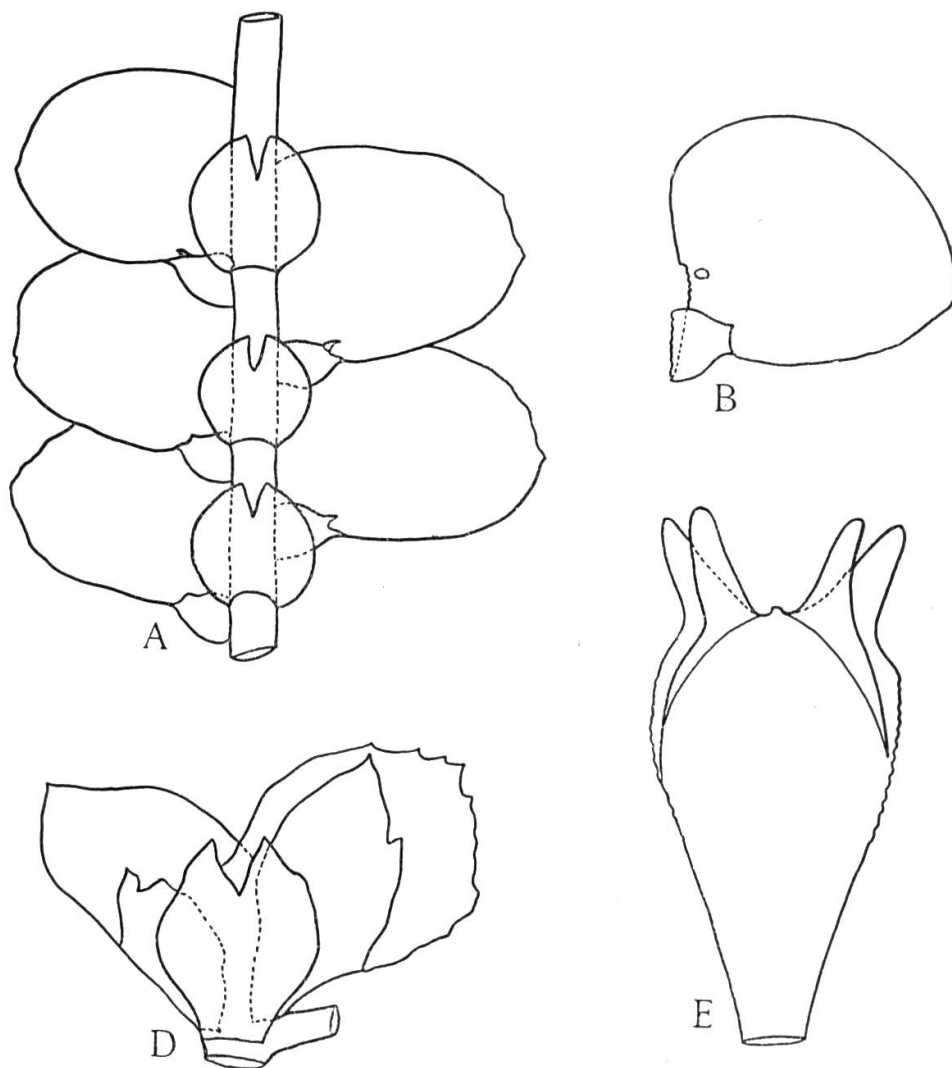


FIG. 74. — *Ceratolejeunea pyriformis*

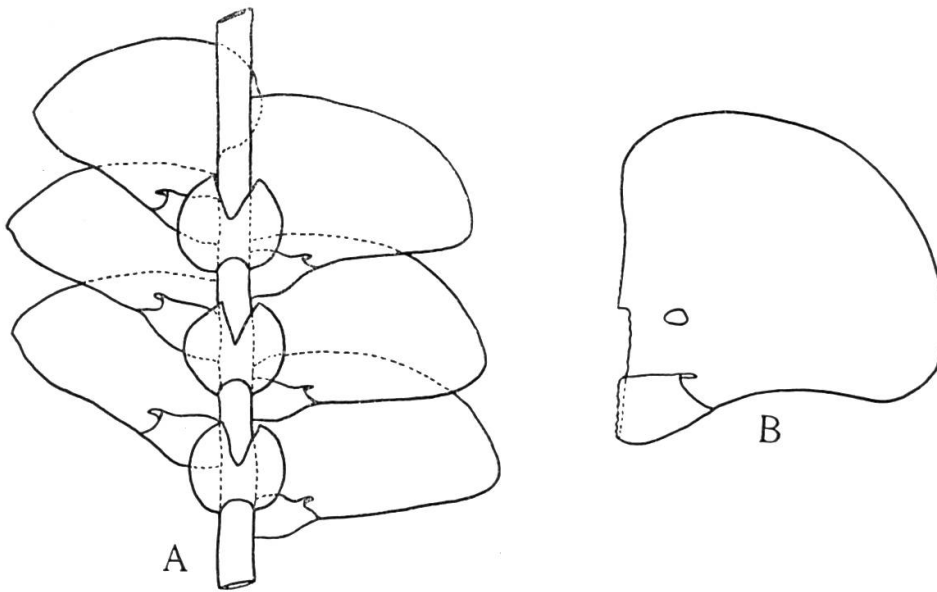
89. **C. pyriformis** (Steph.) Steph. *Sp. Hep.* 5: 435. 1913; *Bot. Centralbl. Beih.* 49: 609. 1932; *Annales Bryol.* 5: 155. 1932 = *Lejeunea pyriformis* Steph. *Hedwigia* 29: 93. 1890.

TYPE: MEXICO, Zacuapam, s.d., *Liebman 544 a* (hb. Lindenberg 6782).

Other specimens: None.

Drawings: Based on the type. (Fig. 74).

90. **C. radicata** (Nees) Steph. *Sp. Hep.* 5: 435. 1913; *Annales Bryol.* 5: 155. 1932; *Bot. Centralbl. Beih.* 49: 610. 1932 = *Lejeunea*

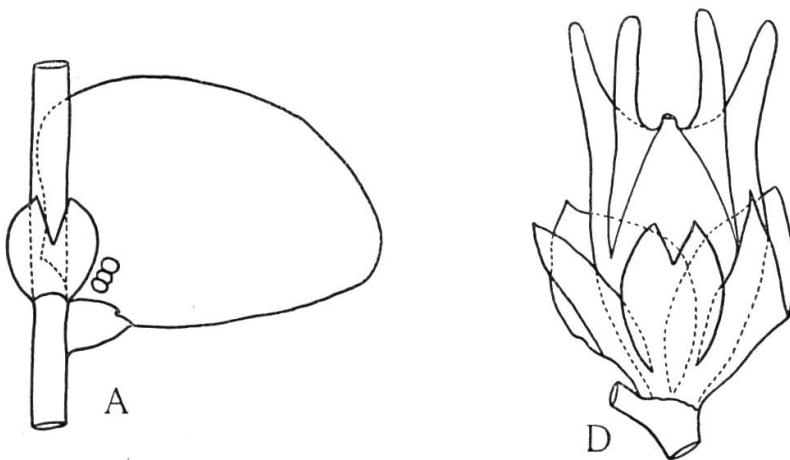
FIG. 75. — *Ceratolejeunea radicata*

radicata Nees in Ramon de la Sagra *Hist. Phys. Pol. & Nat. de l'Ile de Cuba*; Montagne *Pl. cell.*: 475. 1842; Gottsche, Lindenb. & Nees *Syn. Hep.*: 401. 1845.

TYPE: GUIANA, s.l., s.d., *Leprieur s.n.* A few fragments only in hb. G. (ex hb. Montagne & hb. Bescherelle).

Other specimens: None.

Drawings: based on the type. (Fig. 75).

FIG. 76. — *Ceratolejeunea remotistipula*

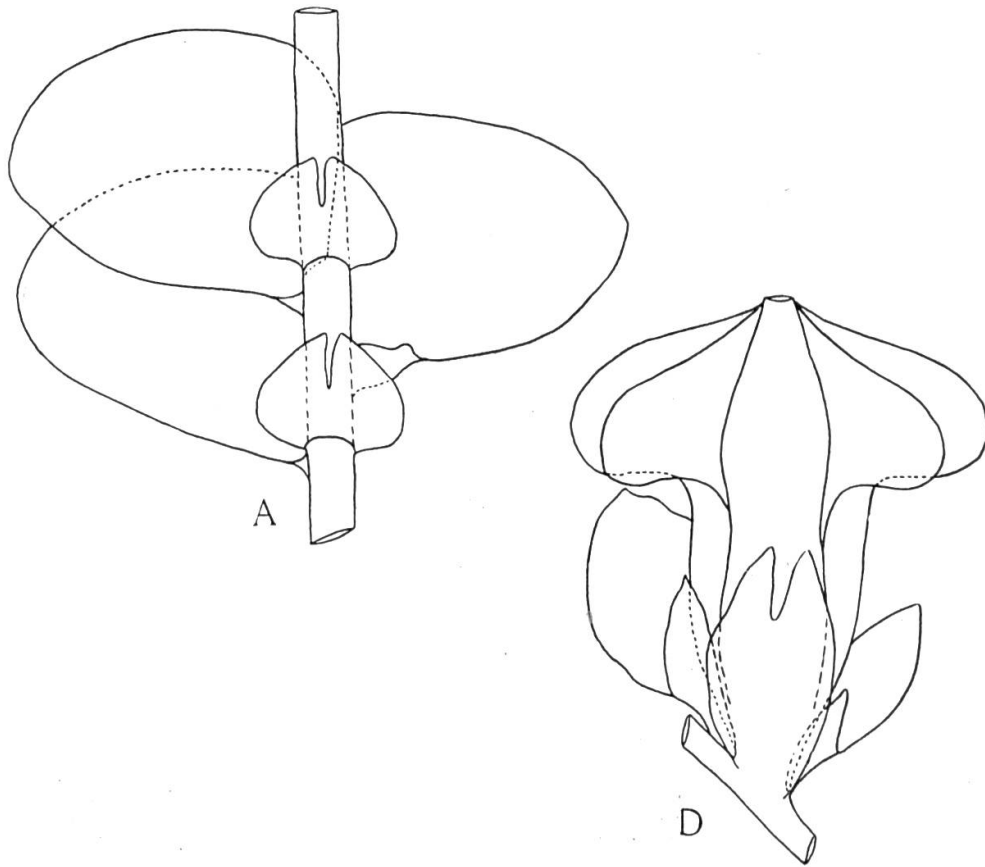


FIG. 77. — *Ceratolejeunea renauldii*

91. **C. remotistipula** Steph. *Sp. Hep.* 5 : 437. 1913 ; *Bot. Centralbl. Beih.* 49 : 610. 1932 ; *Annales Bryol.* 5 : 157. 1932.

TYPE : SURINAM, s.l., s.d., s.col., s.n. (hb. Lindenberg 6906) ex hb. Hampe. A fragment only in hb. G.

No other material of this species present in hb. G.

Drawings based on the hb. Hampe specimen. (Fig. 76).

92. **C. renauldii** Steph. *Sp. Hep.* 5 : 436. 1913 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 = *Lejeunea renauldii* Steph. *Bot. Gaz.* 15 : 286. 1890.

TYPE : BOURBON, s.l., s.d., *Rodriguez s.n.* (Renauld 141). A fragment only in hb. G.

No other material of this species present in hb. G.

Drawings : Based on *Renauld 141*. (Fig. 77).

93. **C. renistipula** Steph. *Sp. Hep.* 5 : 436. 1913 ; *Hedwigia* 34 : 236. 1895 ; *Bot. Centralbl. Beih.* 49 : 614. 1932 ; *Annales Bryol.* 5 : 156. 1932.

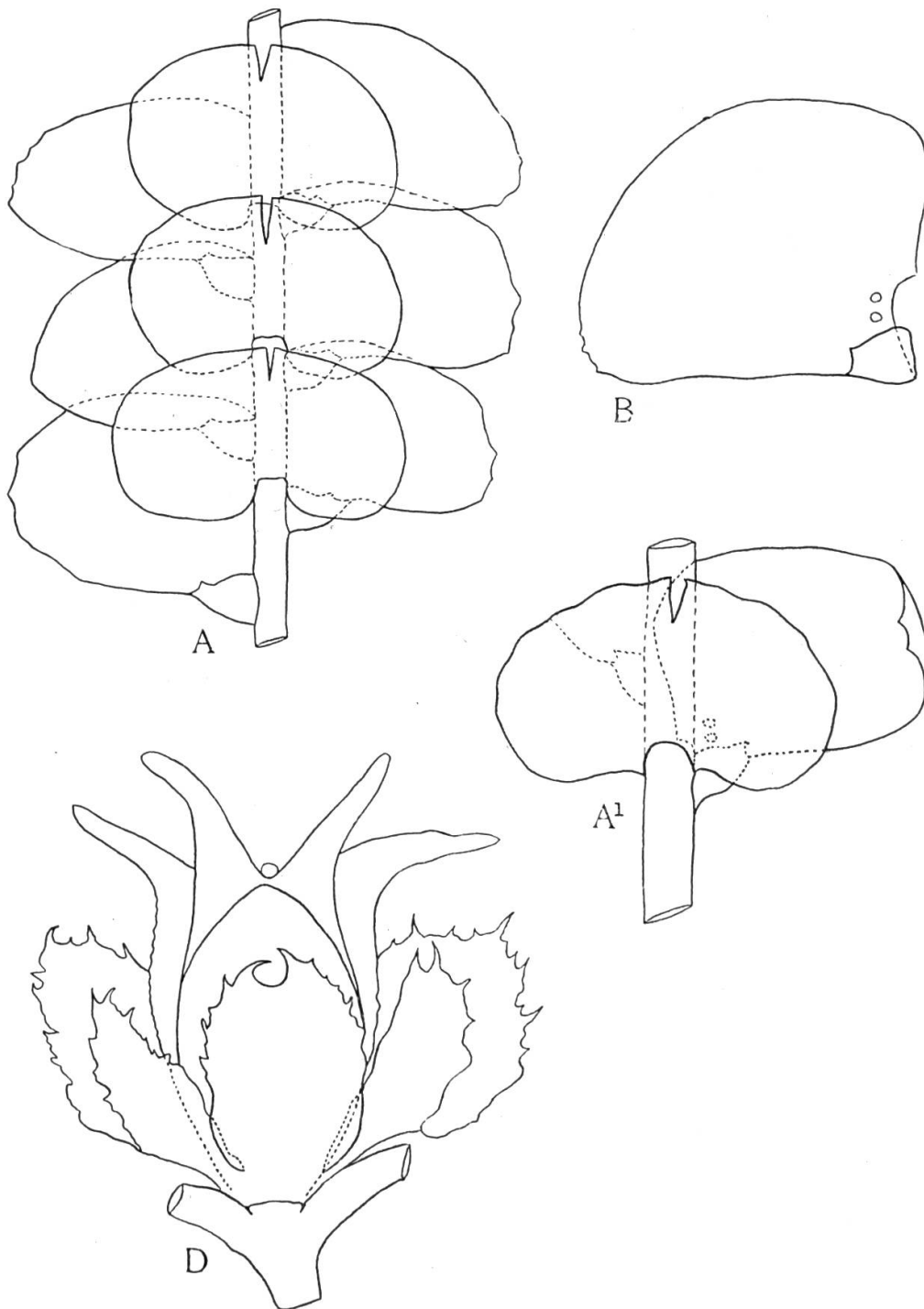
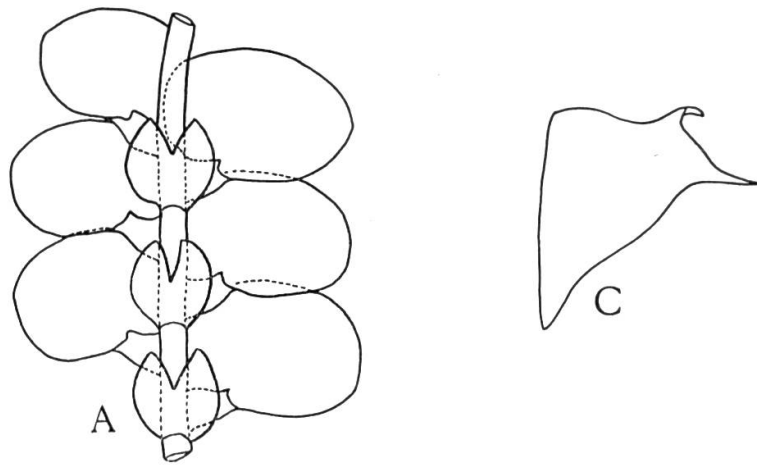


FIG. 78. — *Ceratolejeunea venistipula*

FIG. 79. — *Ceratolejeunea rigidula*

TYPE : TAHITI, s.l., s.d., *Vesco s.n.* (85) ex hb. Bescherelle, sub *Ceratolejeunea brasiliensis*.

Other specimens : TAHITI, s.l., s.d., *Vesco s.n.* (108) ; s.l., 1847, *Vesco s.n.* (26), (84) & (17) ; Vallée de Puaa, s.d., *Nadeaud 8* ; s.l., s.d., *Nadeaud 24, 25 p.p., 35, 51 p.p., 60, 67 p.p., 79, 90, 95, 144, 146, 167, 169, 170, 171* & *s.n.* (106) ; s.l., s.d., *Mercier s.n.* (105) — NORFOLK ISLAND, s.l., s.d., *Robinson 53* (ex hb. Melbourne). — SAMOA, s.l., s.d., *Rechinger 3306 p.p. & s.n.* — ANDAMAN ISLANDS, Port Blair, Oct. 1898, *Man s.n.* (hb. Levier 1699 & 1712) — PHILIPPINE ISLANDS, Luzon, Manilla, s.d., *Semper s.n.* — BANCA ISLAND, s.l., 1883, *Luerssen 1368* (142).

Drawings : *A* from *Robinson 53*, the rest from the type. (Fig. 78).

94. ***C. rigidula*** (Nees & Montagne) Steph. *Sp. Hep.* **5** : 437. 1913 ; *Hedwigia* **34** : 238. 1895 ; *Annales Bryol.* **6** : 108. 1933 ; *Brittonia* **5** : 402. 1945 = *Lejeunea rigidula* Nees & Montagne, *Ann. Sci. Nat.* **14** : 336. 1840 ; Gottsche, Lindenb. & Nees. *Syn. Hep.* : 371. 1845 ; *Hedwigia* **29** : 82. 1890.

TYPE : GUIANA, Mt. Serpent, Apr. 1838, *Leprieur 257* (287 also cited is a mixture with *Ceratolejeunea involvens* : *Ann. Sci. Nat.* **14** : 336. 1840). A small fragment only in hb. G.

Other specimens : None.

Drawings : Based on the fragment in hb. G. (Fig. 79).

This species is now considered to be an *Euosmolejeunea* (ZWICKEL, 1933, FULFORD, 1945). It is perhaps of some significance that a cited

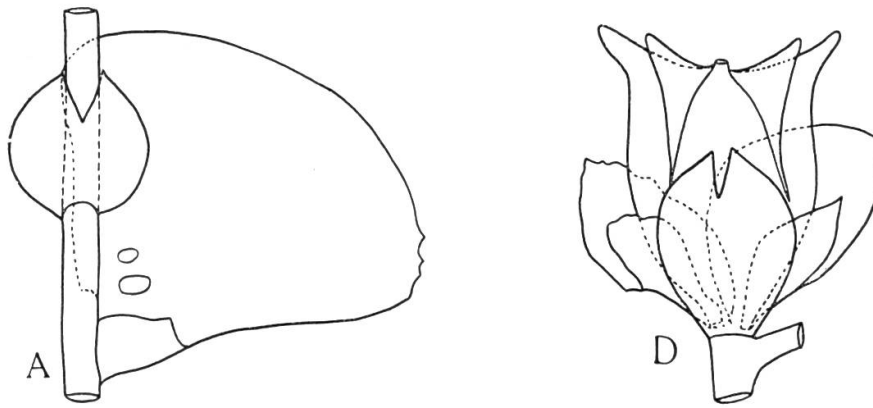


FIG. 80. — *Ceratolejeunea rionegrensis*

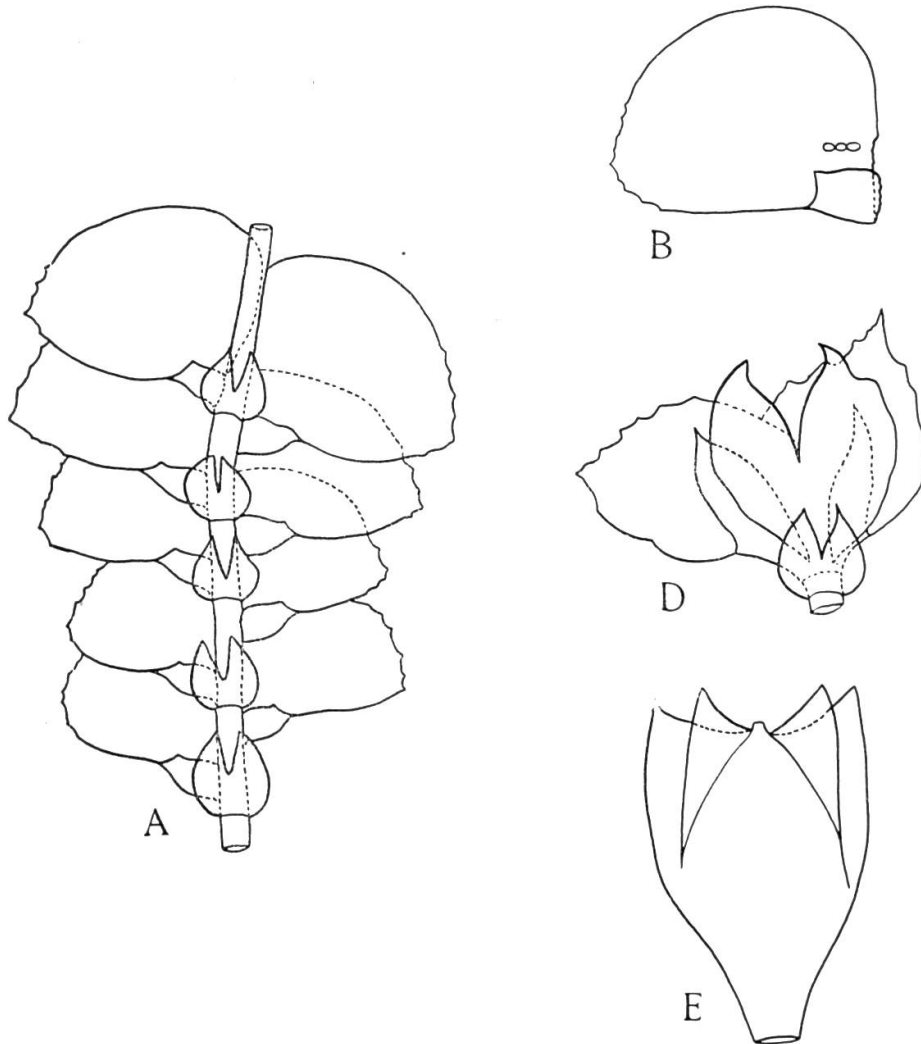


FIG. 81. — *Ceratolejeunea rubiginosa*

specimen, [Guiana, leg. *Leprieur*, of *Euosmolejeunea duriuscula* (Nees) Steph. (*Sp. Hep.* 5 : 580. 1913) = *Lejeunea duriuscula* Nees (Gottsche, Lindenb. & Nees, *Syn. Hep.* : 364. 1845)] was inscribed "*Lejeunea rigidula* Mont." (l.c. : 364. 1845). This particular sample is mentioned by STEPHANI (*Hedwigia* 29 : 80. 1890) under Lindenbergl 6465 and transferred to *Ceratolejeunea involvens*. It may well be that a certain confusion may have existed, and may still exist regarding the respective identities of the types of *Euosmolejeunea duriuscula*, on the one hand, and *Ceratolejeunea rigidula* on the other. A sample of either may bear the epithet "*rigidula*"; the origin "Guiana" and the collector "Leprieur". It is proposed to attempt to verify this hypothesis at a later date.

Lejeunea rigidula Nees & Montagne sensu Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 : 203. 1884 = *Ceratolejeunea megalophysa* (Spruce) Stephani (FULFORD, 1945).

Specimens : BRAZIL, Rio Negro, s.d., *Spruce s.n.*

95. **C. rionegrensis** Steph. *Sp. Hep.* 5 : 438. 1913 ; *Bot. Centralbl. Beih.* 49 : 610. 1932 ; *Annales Bryol.* 5 : 156. 1932.

TYPE : BRAZIL, Rio Negro, in palmarum foliis, s.d., *Spruce s.n.* sub "*Ceratolejeunea rigidula* Montagne".

Other specimens : None.

Drawings : Based on co-type. (Fig. 80).

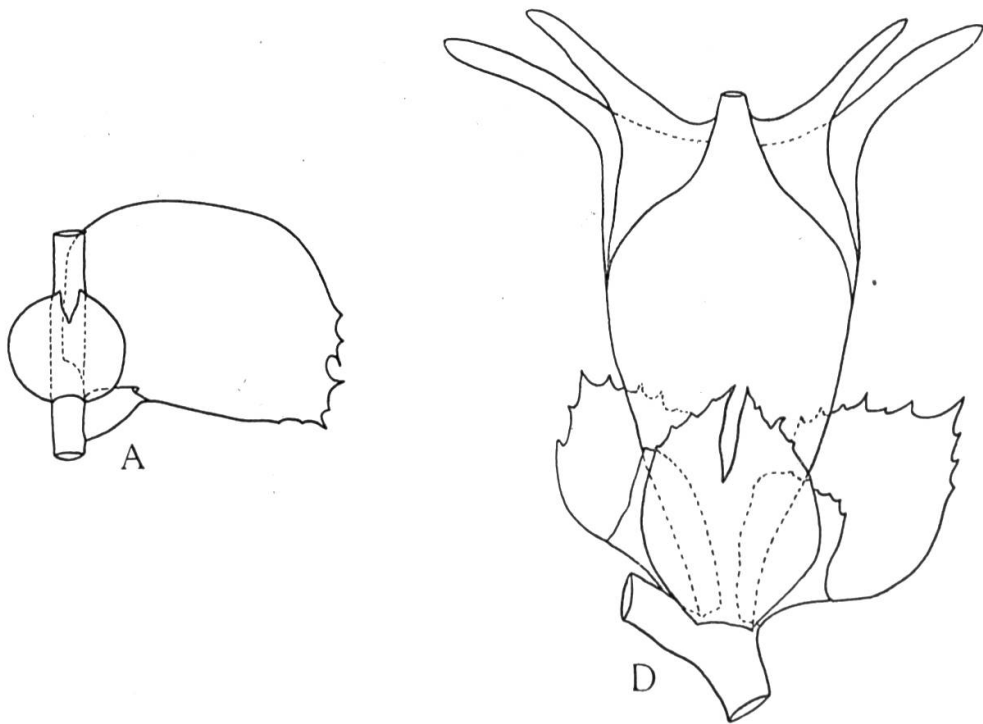


FIG. 82. — *Ceratolejeunea rufopellucida*

It is perhaps worth pointing out here that the type specimen mentioned above is also cited by FULFORD under *Ceratolejeunea megalophysa* although she does not include *C. rionegrensis* as a synonym. This may imply that the sample contains a mixture of both species. (FULFORD, 1945).

96. **C. rubiginosa** Steph. *Sp. Hep.* 5: 438. 1913; *Hedwigia* 34: 237. 1895; *Bot. Centralbl. Beih.* 49: 610. 1932; *Annales Bryol.* 5: 152. 1932; *Brittonia* 5: 397. 1945.

TYPE: CUBA, s.l., s.d., *Wright s.n.* (193) ex hb. Austin.

Other specimens: None.

Drawings: Based on the type. (Fig. 81).

97. **C. rufo-pellucida** (Spruce) Steph. *Sp. Hep.* 5: 439. 1913; *Bot. Centralbl. Beih.* 49: 610. 1932; *Annales Bryol.* 5: 155. 1932 = *Lejeunea rufo-pellucida* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 207. 1884.

TYPE: BRAZIL, Silva Amazonica, San Carlos del Rio Negro, s.d., *Spruce s.n.*

Other specimens: None.

Drawings: Based on the type ex hb. Slater. (Fig. 82).

98. **C. sacculosa** Herzog, *Rev. Bryol. Lich.* 13: 20. 1942.

TYPE: COLOMBIA, Dept. El Cauca, "La Gallera", Micay Valley, 1400-1600 m., 29/30 June 1922, *Killip 7780*. A fragment only in hb. G.

99. **C. saxbyi** Pearson, *Mem. & Proc. Manchester Lit. & Philos. Soc.* 64: 4. 1921; *Bull. Jard. Bot. Etat. Bruxelles* 21: 74. 1951.

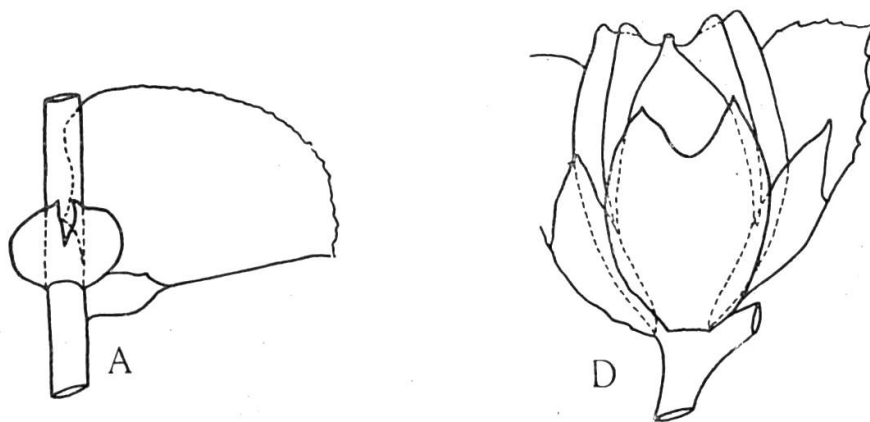


FIG. 83. — *Ceratolejeunea scaberula*

TYPE : GOLD COAST, Prestea District, Tarkwa, 1911, *Saxby s.n.*
Not in hb. G.

This species may be a synonym of *Ceratolejeunea calabariensis*
(VANDEN BERGHEN, 1951).

100. **C. scaberula** (Spruce) Steph. *Sp. Hep.* 5 : 439. 1913 ; *Annales Bryol.* 6 : III. 1933 ; *Brittonia* 5 : 402. 1945 = *Lejeunea* subgen. *Prionolejeunea scaberula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 : 159. 1884.

TYPE : BRAZIL, Rio Negro, s.d., *Spruce s.n.*

Other specimens : None.

Drawings : From the type, «ex hb. Slater». (Fig. 83).

This species is considered by ZWICKEL (*Annales Bryol.* 6 : III. 1933) to be a *Prionolejeunea* but his conclusions are based on a specimen which is not the type (SPRUCE, 1884) and therefore, although the Perrottet specimen may well be a *Prionolejeunea*, he cannot on that basis transfer the whole species to another genus. FULFORD (1945) endorses this transfer although she does not state whether she examined the type.

101. **C. schwanecke**i Steph. *Sp. Hep.* 5 : 440. 1913 ; *Hedwigia* 34 : 237. 1895 ; *Bull. Torrey Bot. Club* 32 : 282. 1905 ; *Bot. Centralbl. Beih.* 49 : 610. 1932 ; *Annales Bryol.* 5 : 155. 1932 ; *Brittonia* 5 : 384. 1945 = *Lejeunea ceratantha* Hampe & Gottsche, *Linnaea* 25 : 356. 1852 (not Nees & Montagne).

TYPE : PORTO RICO, s.l., s.d., *Schwanecke s.n.* A fragment only in hb. G.

Other specimens : PORTO RICO, North slope of the Luquillo Mountains, 2500 ft, 27 Feb. 1900, *Heller 5.* — GUADELOUPE, s.l., s.d., *Duss 181.*

Drawings : Based on the type. (Fig. 84).

This species is now considered a synonym of *Ceratolejeunea maritima* (Spruce) Steph. (FULFORD, 1945).

102. **C. singaporensis** (Lindenb.) Steph. *Sp. Hep.* 5 : 441. 1913 ; *Bot. Centralbl. Beih.* 49 : 615. 1932 ; *Annales Bryol.* 5 : 157. 1932 = *Lejeunea singaporensis* Lindenb. in Gottsche, Lindenb. & Nees, *Syn. Hep.* : 397. 1845 ; *Hedwigia* 29 : 93. 1890.

TYPE : MALAYA, Singapore, s.d., *Wallich s.n.* (6783 in hb. Lindenberg). A few fragments only in hb. G.

Other specimens : ANDAMAN ISLES, Port Blair, 1893, *Man s.n.* (hb. Levier 753).

Drawings : Based on a *Wallich* specimen "Asia tropica". (Fig. 85).

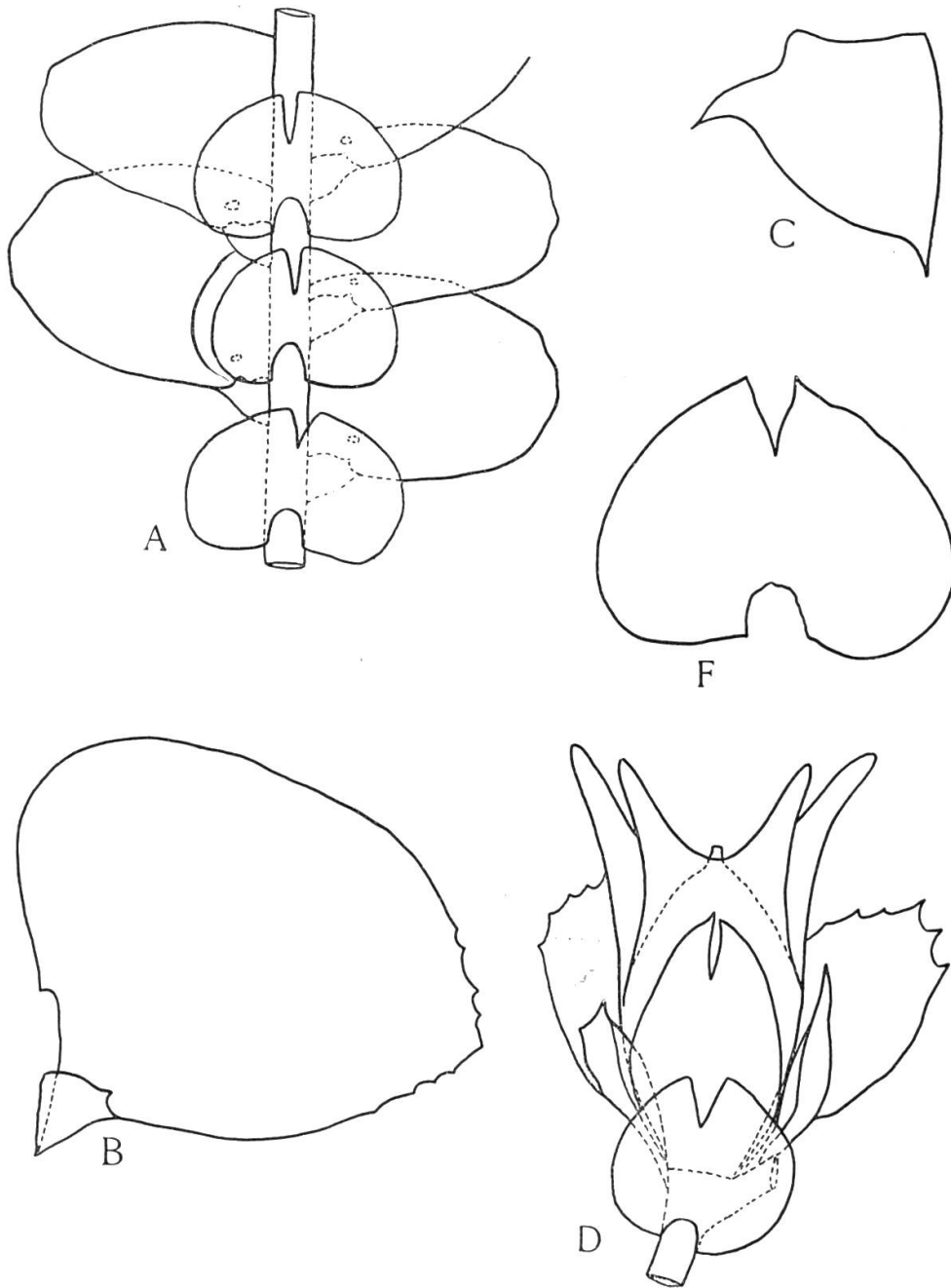


FIG. 84. — *Ceratolejeunea schwaneckeii*

103. **C. sintensisii** Steph. *Sp. Hep.* 5: 441. 1913; *Hedwigia* 34: 237. 1895; *Bull. Torrey Bot. Club* 32: 285. 1905; *Bot. Centralbl. Beih.* 49: 610. 1932; *Annales Bryol.* 5: 156. 1932.

TYPE: PORTO RICO, s.l., nov. 1886, *Sintensis* 125. A few fragments only in hb. G.

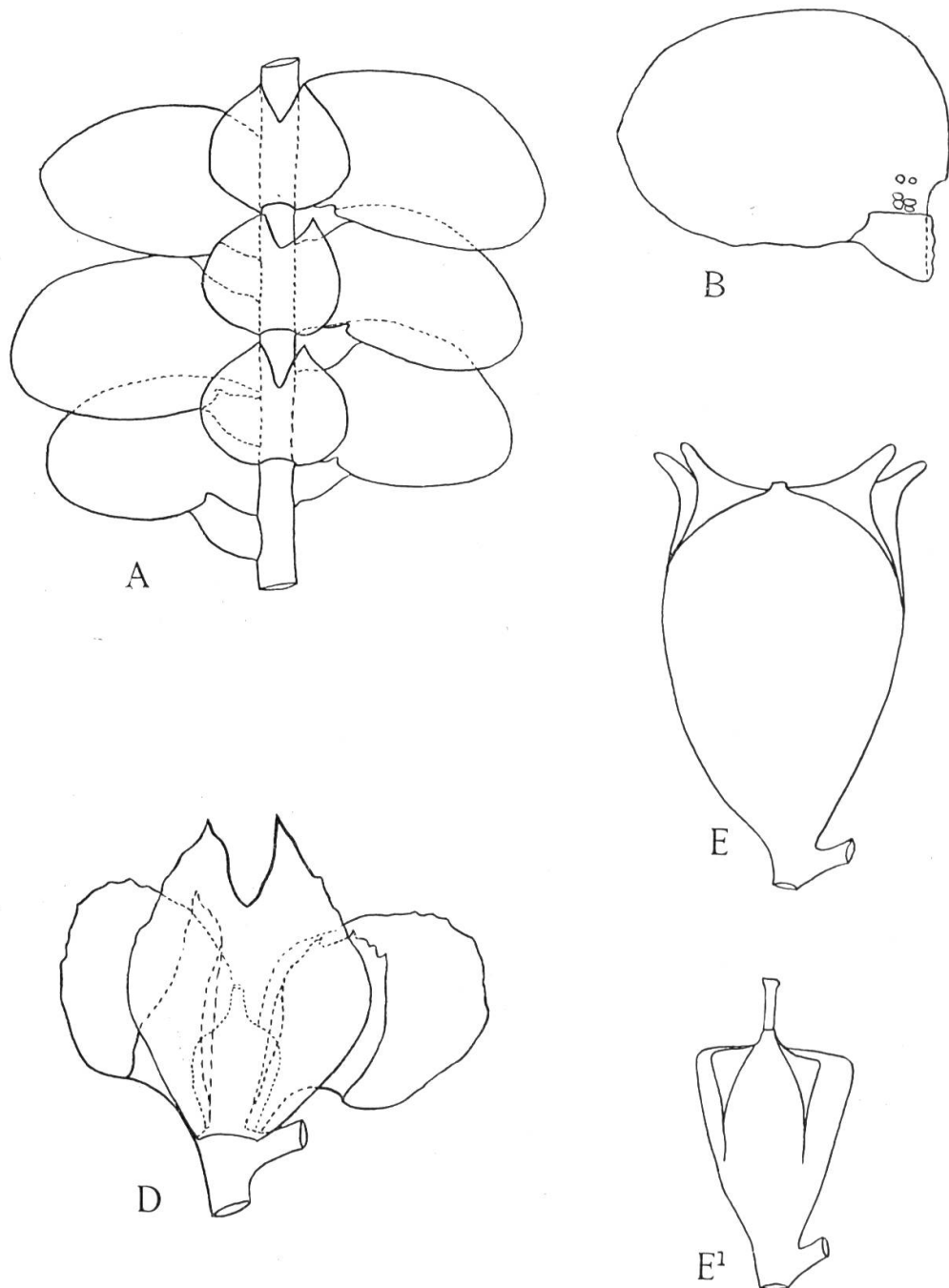
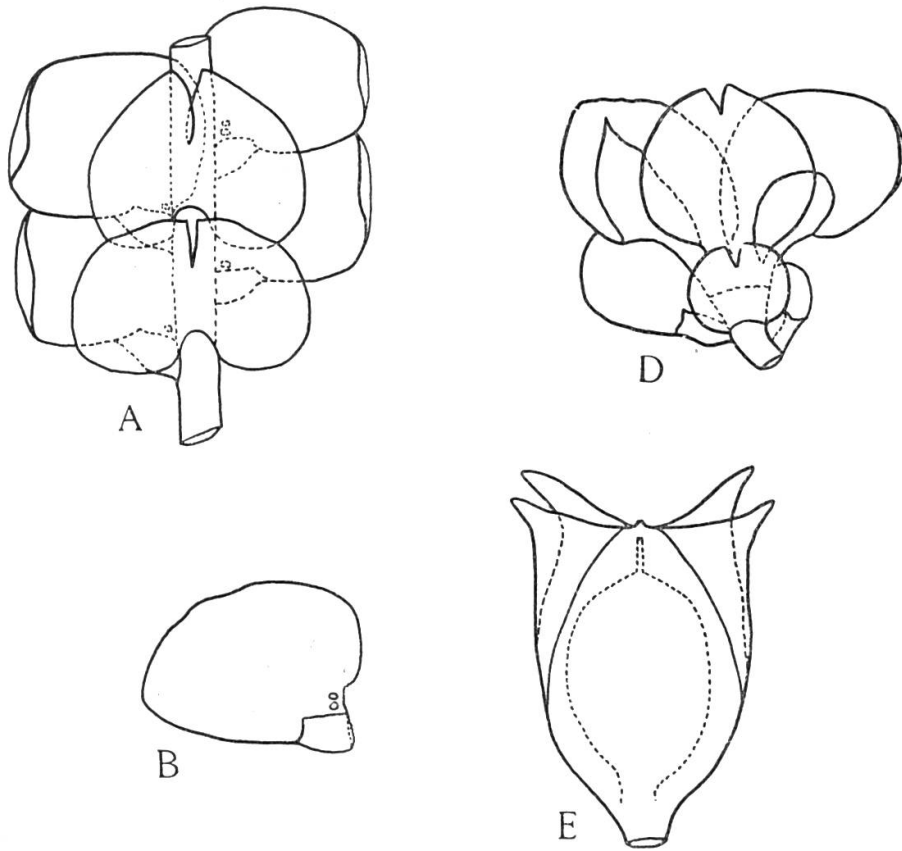


FIG. 85. — *Ceratolejeunea singaporensis*

Other specimens: PORTO RICO, Prope Adjuntas, 22 May 1886, *Sintenis 91 & 102*. — MARTINIQUE, s.l., sept. 1901, *Duss 634*. — MEXICO, Mirador, s.d., *Liebman 336*.

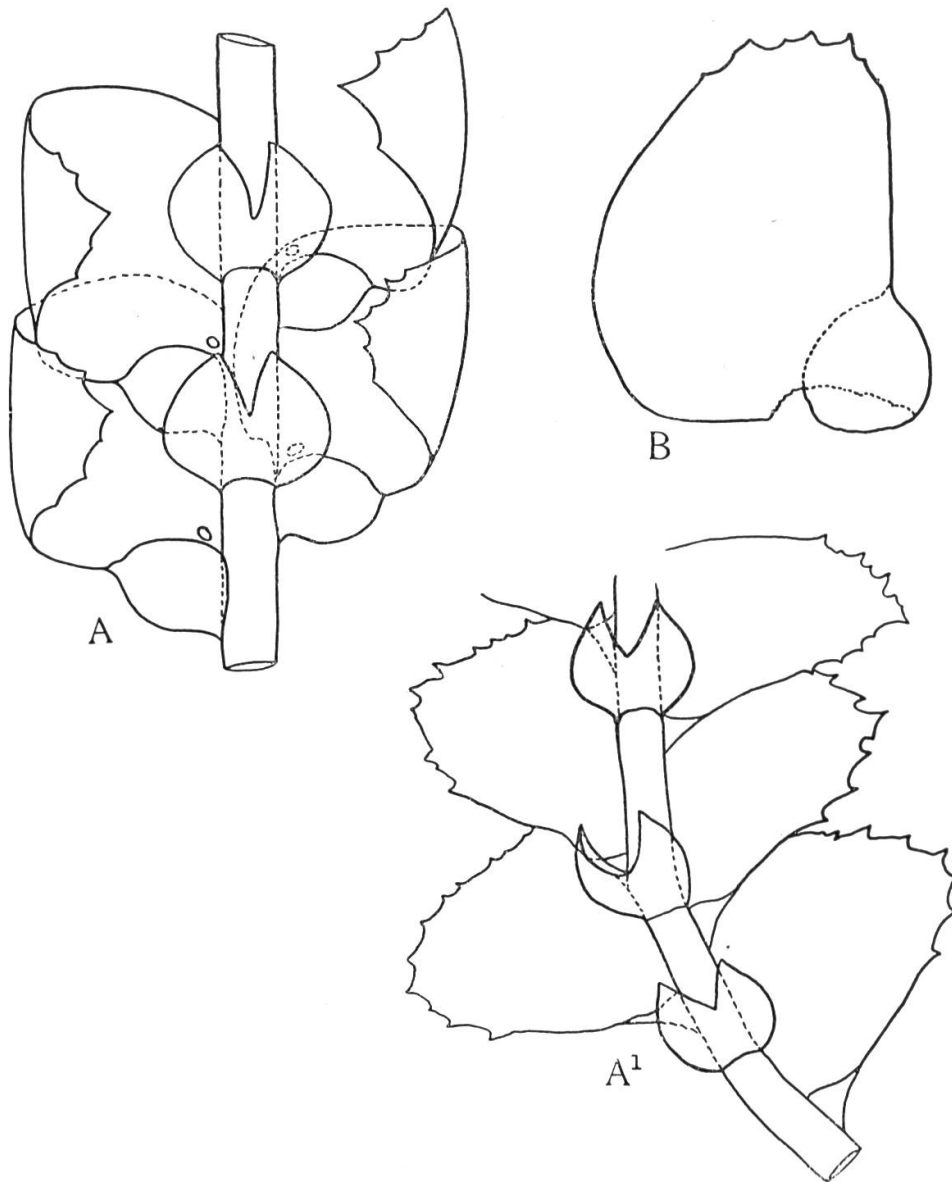
Drawings: Based on the type. (Fig. 86).

FIG. 86. — *Ceratolejeunea sintensisii*

It would appear that FULFORD (1945) regarded *C. sintensisii* as a synonym of *C. cornuta* (Lindenb.) Steph. for, although it is not included in the list of synonyms, *Sintensis* 125, the type of the present species, is listed among the specimens of *C. cornuta* as well as *Sintensis* 91 & 102. Although, it is true that STEPHANI cited these specimens under *Lejeunea* (*Ceratolejeunea*) *cornuta* in 1888 (*Hedwigia* 27: 285), it is clear from the herbarium material that, later, he regarded them as representing a distinct species, accepted, provisionally at any rate, by EVANS (1905).

104. ***C. spinosa*** (Gottsche) Steph. *Sp. Hep.* 5: 442. 1913; *Bull. Torrey Bot. Club* 32: 278. 1905; *Bot. Centralbl. Beih.* 49: 610. 1932; *Annales Bryol.* 5: 155. 1932; *Brittonia* 5: 373. 1945 = *Lejeunea spinosa* Gottsche in Gottsche, Lindenb. & Nees, *Syn. Hep.*: 402. 1845; *Trans. & Proc. Bot. Soc. Edinburgh* 15: 211. 1884; *Hedwigia* 29: 96. 1890 = *Colura spinosa* (Gottsche) Trevisan, *Mem. Ist. Lombardo* III, 4: 402. 1877.

TYPE: ST. KITTS, s.l., s.d., *Breutel* (hb. Lindenberg 6835).

FIG. 87. — *Ceratolejeunea spinosa*

Other specimens : ST. KITTS, s.l., s.d., *Breutel s.n.* (117) sub *Lejeunea cornuta* ; idem com. Gottsche. — GUADELOUPE, s.l., s.d., *Hermisier s.n.* ; idem, *Husnot 1329*. — MARTINIQUE, s.l., sept. 1901, *Duss 584 p.p.*, 109, (408) & *s.n.* ; s.l., 1887, *Bordaz 96* sub “*Radula*” ? ex hb. Cardot ; s.l., s.d., *Hahn s.n.* — DOMINICA, s.l., s.d., *Elliott 1194, 1200 b, 1200 c, 1707 & 2184*. — PORTO RICO, Sierra de Luquitto, July 1885, *Sintenis 34* ; s.l., s.d., *Sintenis 33* (hb. Urban) ; El Yunque, 18 July 1902, *Evans 167* ; s.l., s.d., *Schwanecke s.n.* (274). — CUBA, s.l., s.d., *Wright 1091 & 1209*. — ECUADOR, Manabi, s.d., *Wallis s.n.* —

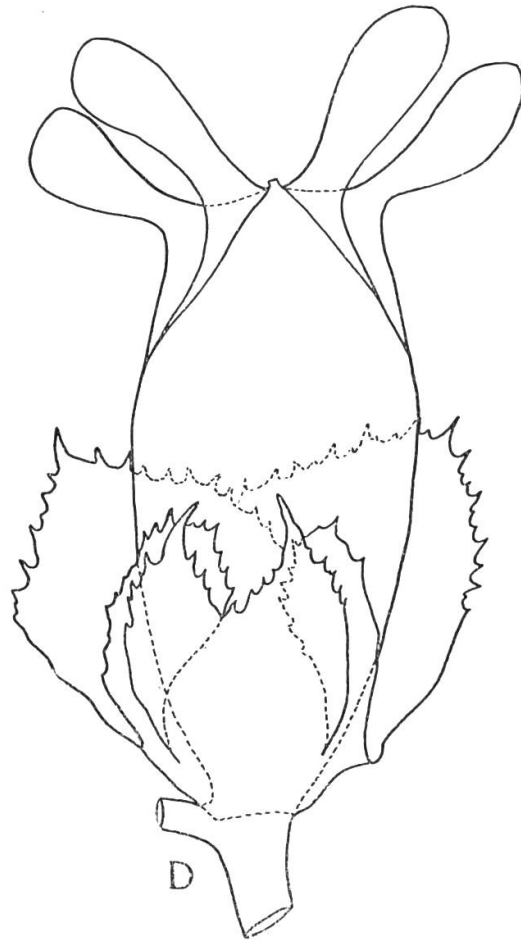


FIG. 88. -- *Ceratolejeunea spinosa*

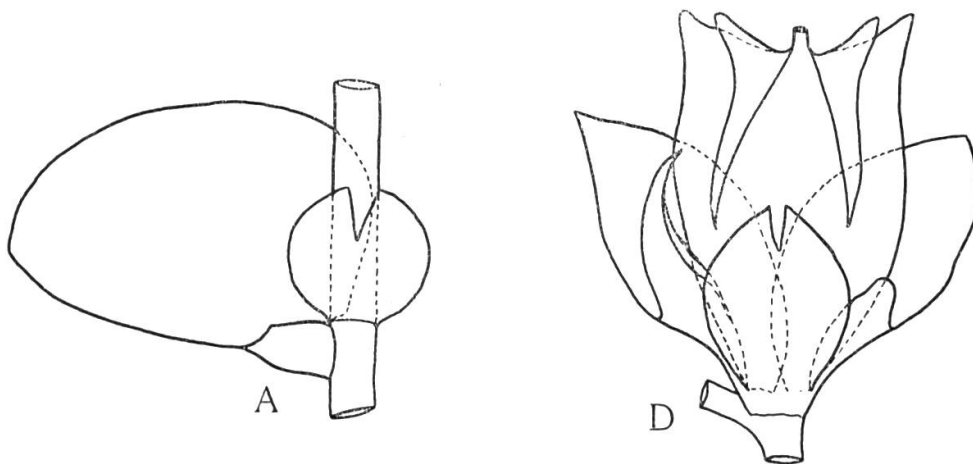


FIG. 89. — *Ceratolejeunea splitgerberiana*

PERU, S. Gavan, s.d., *Lechler s.n.* — GUIANA, s.l., s.d., *Suringar s.n.* (hb. Paris 152).

Drawings: *B* & *D* from the original, *A*¹ from the *Lechler* sample. (Fig. 87 & 88).

105. **C. splitgerberiana** (Montagne) Steph. *Sp. Hep.* 5: 443. 1913; *Bot. Centralbl. Beih.* 49: 611. 1932; *Annales Bryol.* 5: 155. 1932 = *Lejeunea splitgerberiana* Montagne, *Ann. Sci. Nat. Paris sér. 2*, 16: 112. 1841; Gottsche, Lindenb. & Nees, *Syn. Hep.*: 400. 1845.

TYPE: SURINAM, s.l., s.d., *Splitgerber 1222*. Not in hb. G.

Other specimens: SURINAM, s.l., s.d., *Splitgerber s.n.* (ex hb. Montagne); s.l., s.d., *Suringar s.n.*

Drawings: Based on the *Suringar* specimen. (Fig. 89).

106. **C. spruceana** Zwickel, *Annales Bryol.* 6: 108. 1933; *Brittonia* 5: 394. 1945 = *Lejeunea* subgen. *Ceratolejeunea rigidula* (Nees & Montagne) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 203. 1884.

TYPE: BRAZIL, Rio Negro, s.d., *Spruce s.n.* (Hep. *Spruceana* as "*Ceratolejeunea rigidula*").

Considered by FULFORD (1945) to be the same as *Ceratolejeunea megalophysa*.

107. **C. stenostoma** Herzog, *Mem. Soc. Flora & Fauna Fennica* 25: 67. 1949.

TYPE: BOLIVIA, San Carlos bei Mapiri, 850 m., 1922, *Buchtien 283*. Not in hb. G.

108. **C. stictophylla** Herzog, *Bull. Jard. Bot. Etat Bruxelles* 21: 81. 1951.

TYPE: NIGERIA, Ijebu-Ode, March 1946, *Jones 17251*. Not in hb. G.

109. **C. szyszyłowiczii** (Loitl.) Steph. *Sp. Hep.* 5: 443. 1913; *Bot. Centralbl. Beih.* 49: 611. 1932 = *Lejeunea* subgen. *Ceratolejeunea szyszyłowiczii* Loitl. *Diss. Cl. Math.-Phys. Acad. Litt. Cracow.* 29: 233. 1894.

TYPE: PERU, Tambillo, s.d., *Jelski 527 & 440* for the male plant. A very small fragment of 527, "com. Loitlesberger 1895", is present in hb. G.

Other specimens: None.

Drawings: from *Jelski 527*. (Fig. 90).

110. **C. tahitensis** Steph. *Sp. Hep.* 5: 444. 1913; *Bot. Centralbl. Beih.* 49: 615. 1932; *Annales Bryol.* 2: 152. 1932.

TYPE: TAHITI, s.l., s.d., *Nadeaud s.n.*

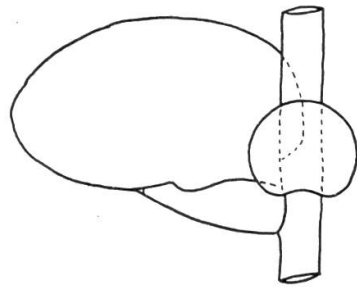


FIG. 90. — *Ceratolejeunea szyszyłowiczii*

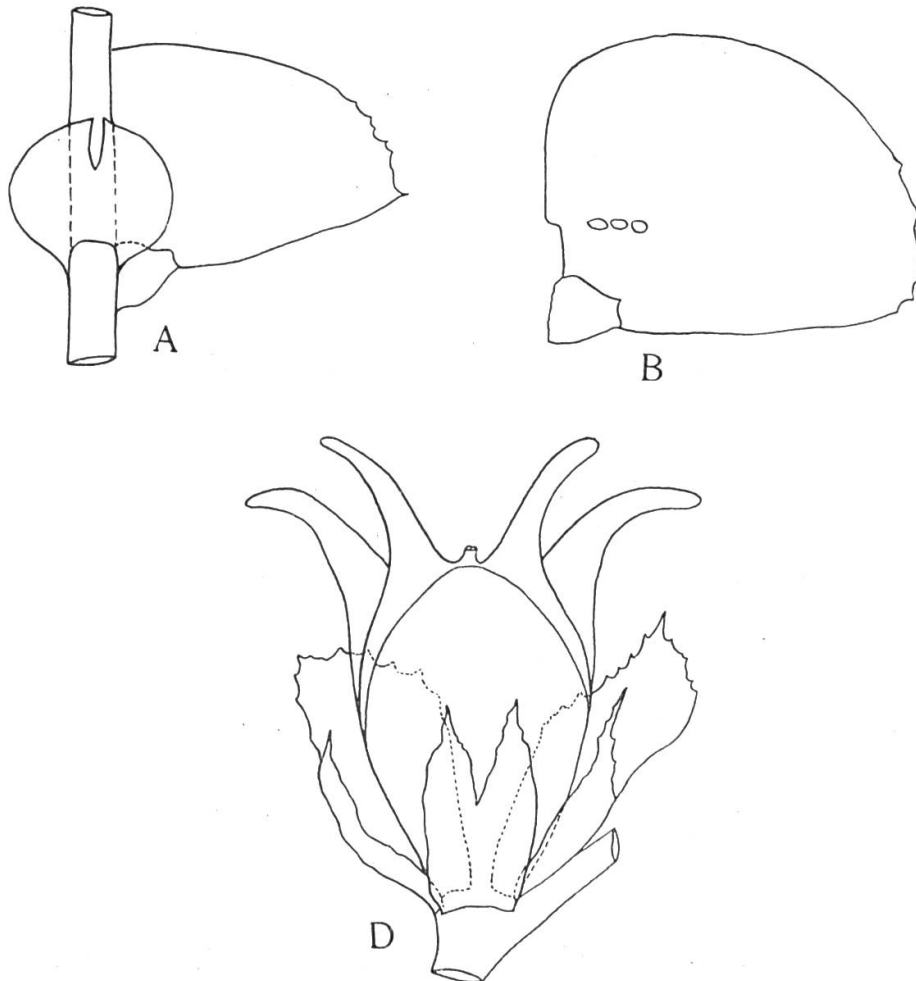


FIG. 91. — *Ceratolejeunea tahitensis*

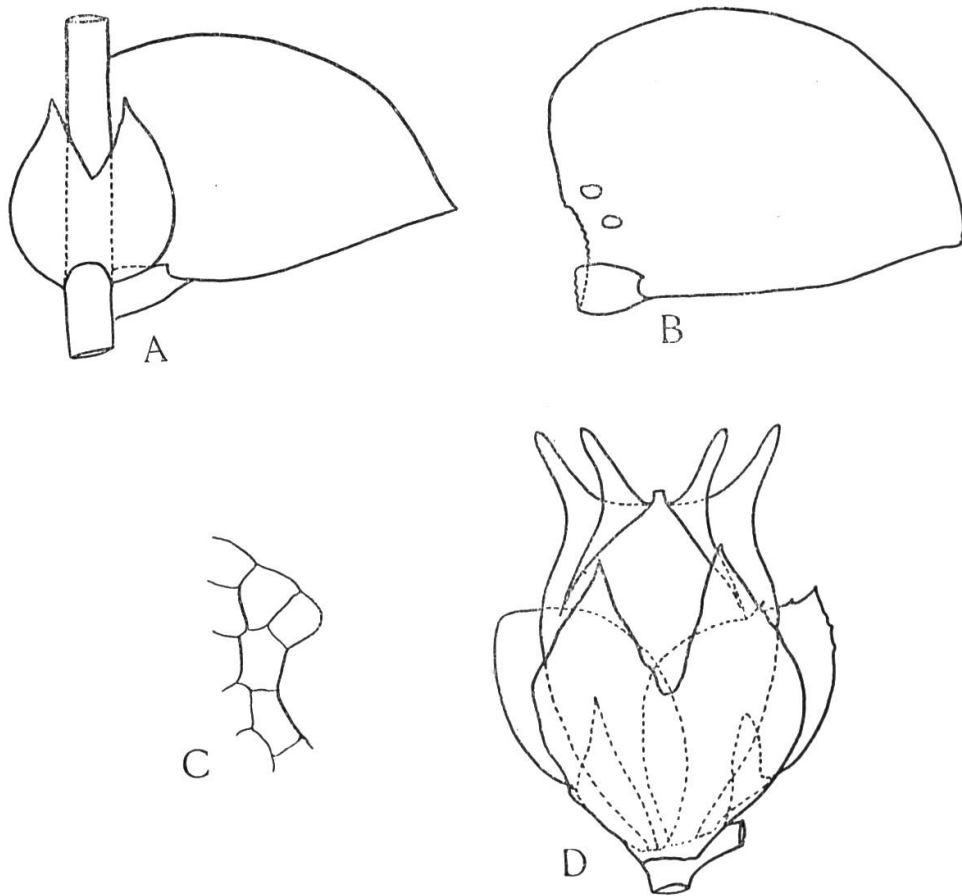


FIG. 92. — *Ceratolejeunea tenuicornuta*

Other specimens: JAVA, s.l., s.d., *Luerssen 142*. — SUMATRA, s.l., s.d., *Kehding 957* (inter *Plagiochila sandei*). — PHILIPPINES, Luzon, Prov. Tayabas, Infanta, Mt. Binuang, Aug. 1909, *Robinson s.n.* (Bureau of Science No. 9585).

Drawing: from the type. (Fig. 91).

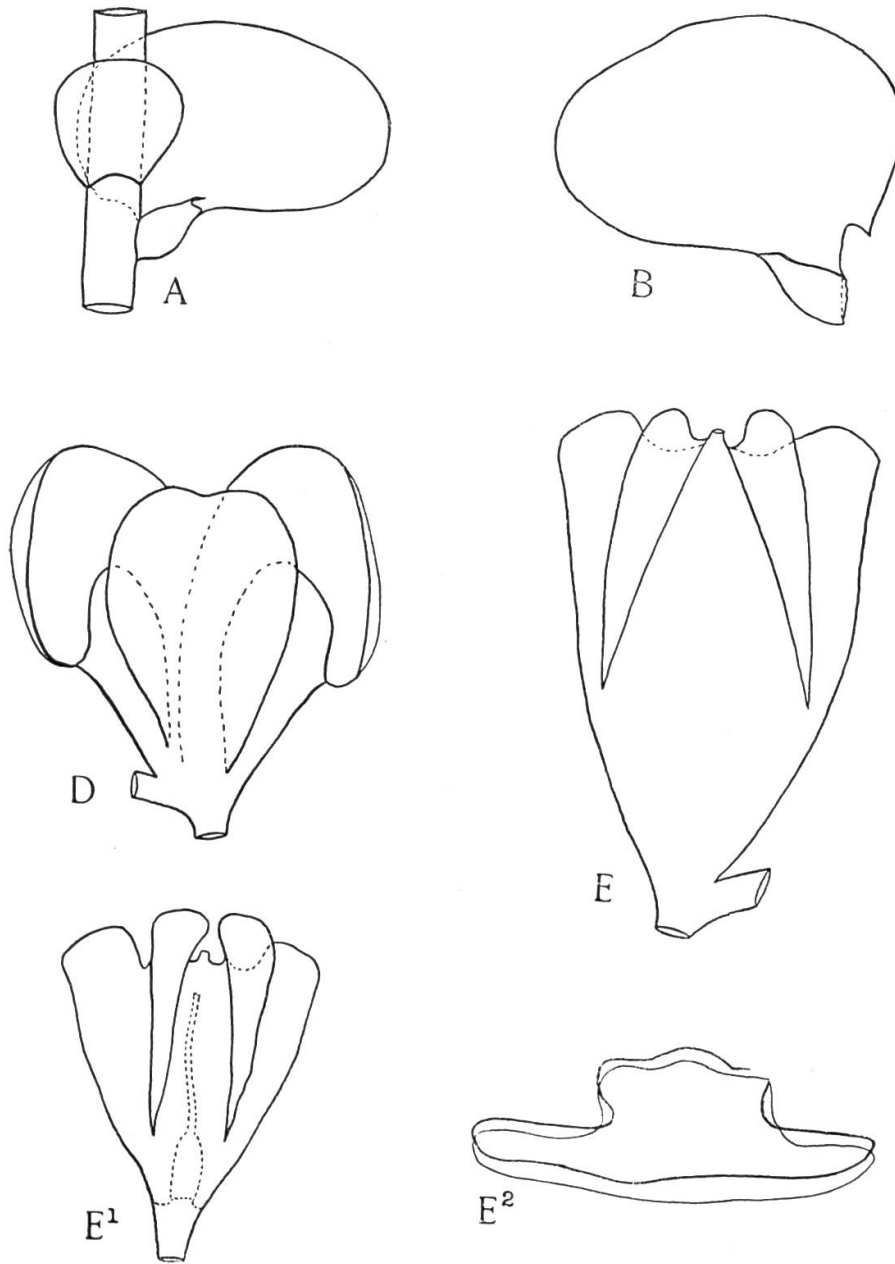
III. **C. tenuicornuta** Steph. *Sp. Hep.* 5: 444. 1913; *Bot. Centralbl. Beih.* 49: 611. 1932; *Annales Bryol.* 5: 156. 1932.

TYPE: BRAZIL, s.l., s.d., *Ule 214*.

Other specimens: None.

Drawings: Based on the type. (Fig. 92).

II2. **C. thwaitesiana** (Mitten) Steph. *Sp. Hep.* 5: 445. 1913; *Bot. Centralbl. Beih.* 49: 615. 1932 = *Lejeunea thwaitesiana* Mitten, *Journ. Proc. Linn. Soc. London* 5: 117. 1861.

FIG. 93. — *Ceratolejeunea uleana*

TYPE : CEYLON, s.l., s.d., *Thwaites s.n.* Not in hb. G.

No material of this species is present in hb. G.

Drawings : None.

STEPHANI also included *Lejeunea thwaitesiana* Mitten as a synonym under *Drepanolejeunea thwaitesiana* (Mitten) Steph. *Sp. Hep.* 5 : 350. 1913.

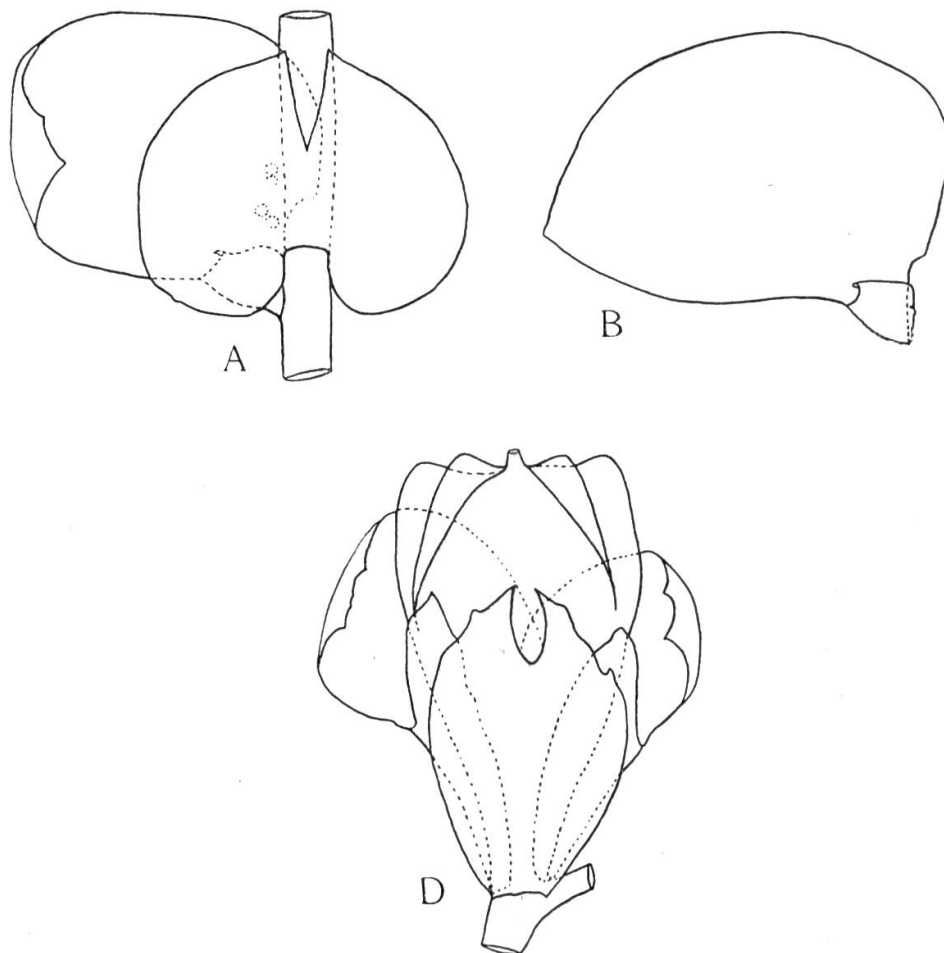


FIG. 94. — *Ceratolejeunea umbonata*

113. **C. uleana** Steph. *Sp. Hep.* 5: 445. 1913; *Bot. Centralbl. Beih.* 49: 611. 1932; *Annales Bryol.* 6: 112. 1933; *Brittonia* 5: 402. 1945.

TYPE: BRAZIL, s.l., s.d., *Ule* 87.

Other specimens: None.

Drawings: From the type. (Fig. 93).

This species is now considered to be a *Neurolejeunea* (ZWICKEL, 1933; FULFORD, 1945).

114. **C. umbonata** Steph. *Sp. Hep.* 5: 446. 1913; *Bot. Centralbl. Beih.* 49: 613. 1932; *Bull. Jard. Bot. Etat Bruxelles* 21: 70. 1951.

TYPE: CAMEROONS, Bodje, 1908, *Ledermann* s.n.

Other specimens: WEST AFRICA, Monrovia, July 1890, *Dusén* 90 & 95. — CAMEROONS, Lower Bomana, 8 Dec. 1890, *Dusén* 60.

Drawings: From the type. (Fig. 94).

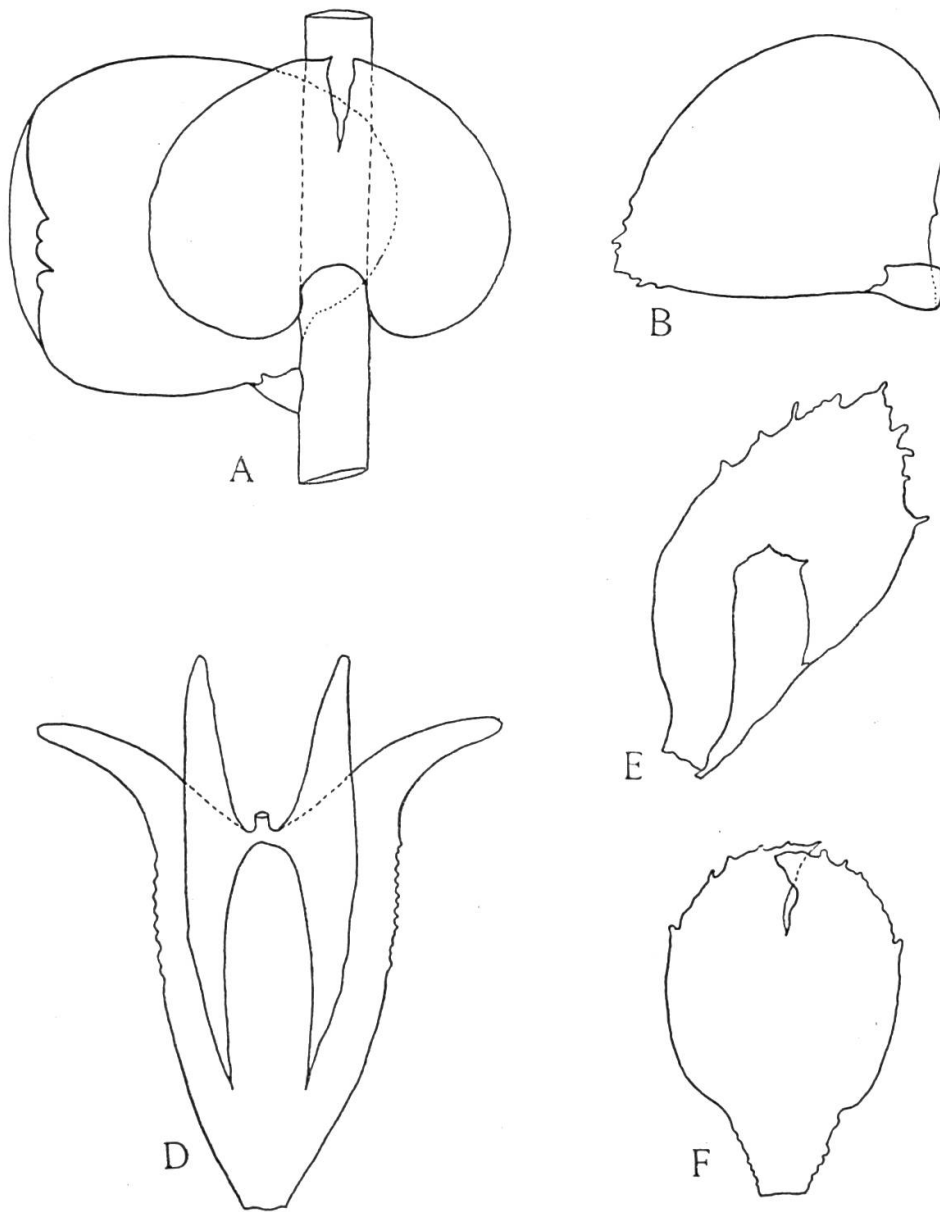


FIG. 95. — *Ceratolejeunea usambarensis*

115. **C. usambarensis** Steph. *Sp. Hep.* 5: 446. 1913; *Denkschr. Math.-Nat. Kl. Kaiserl. Akad. Wiss. Wien* 88: 731. 1913; *Bot. Centralbl. Beih.* 49: 613. 1932; *Bull. Jard. Bot. Etat Bruxelles* 21: 75. 1951.

Lectotype: EAST AFRICA, Usambara, Amani, 800 m., July 1909, *Brunnthaler* (8).

Other specimens: EAST AFRICA, Usambara, s.d., *Brunnthaler* (9) & (33).

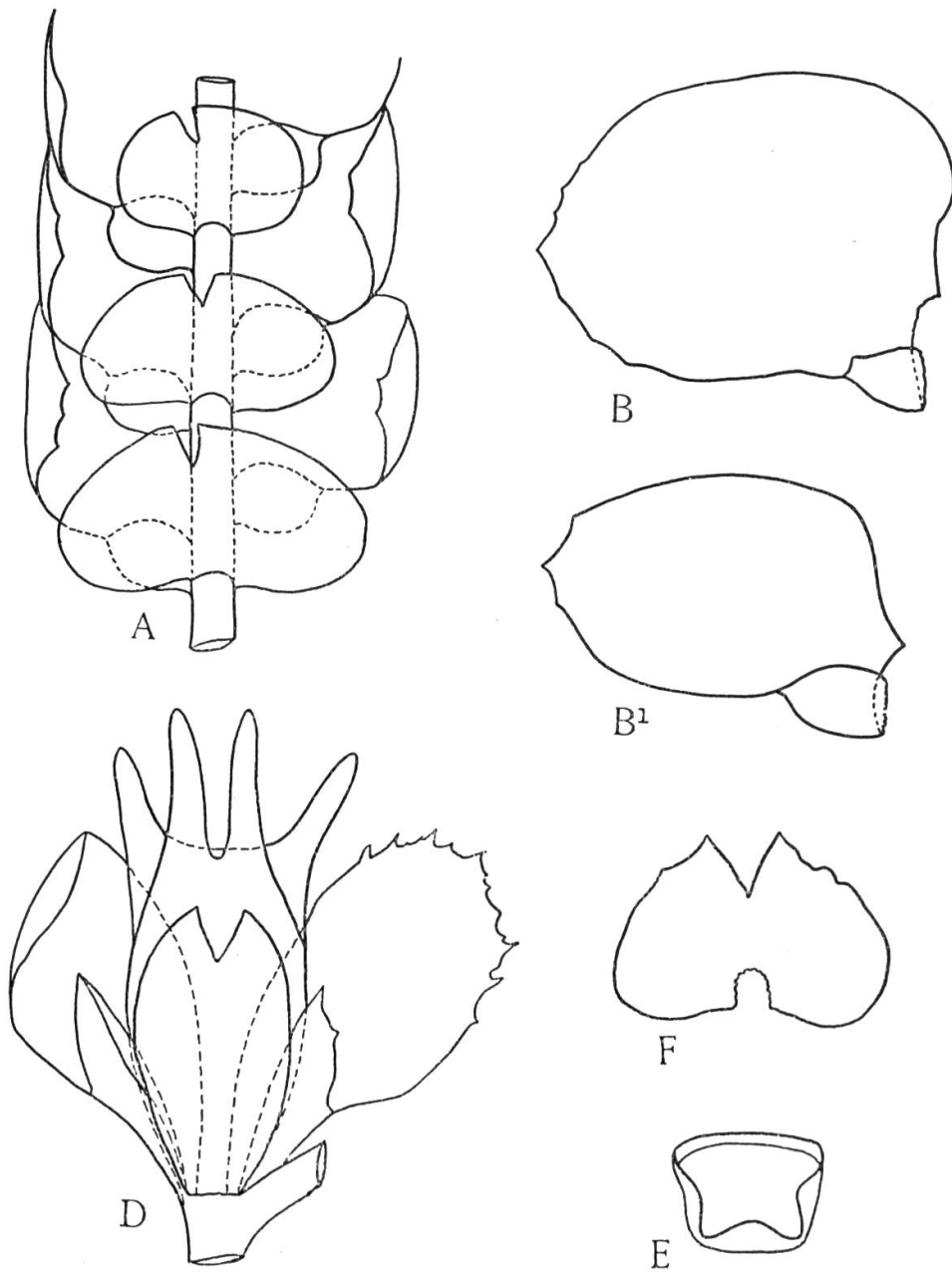
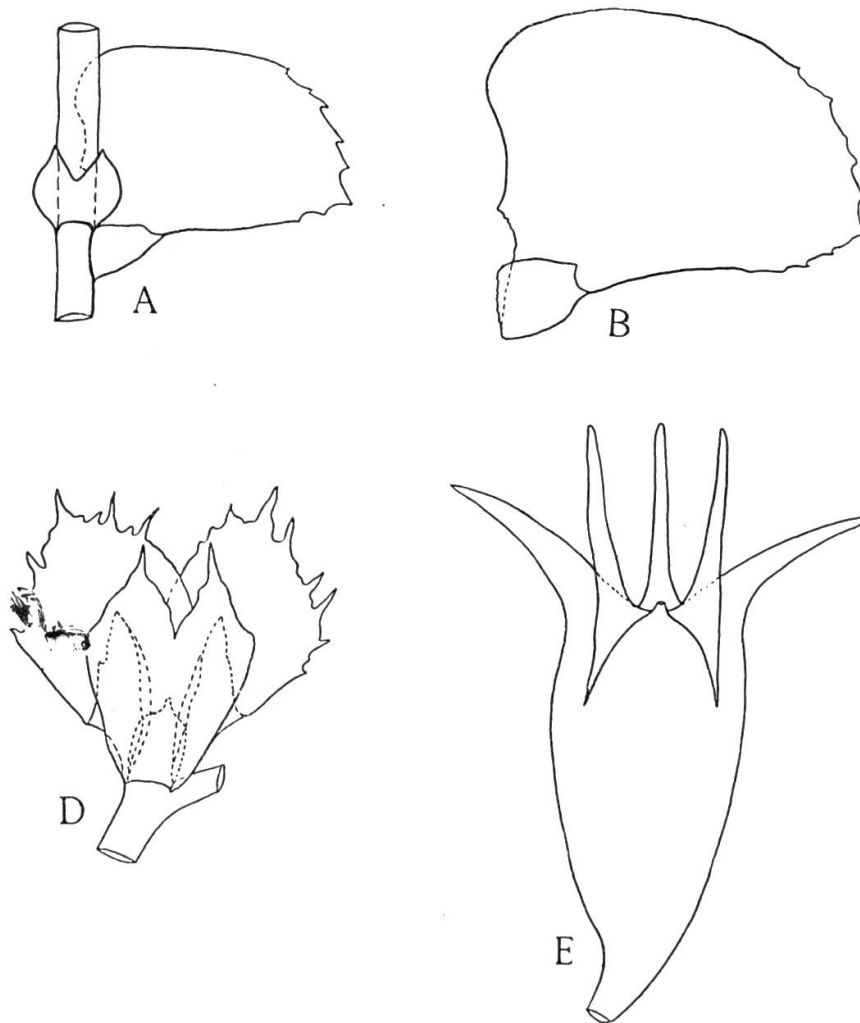


FIG. 96. — *Ceratolejeunea variabilis*

Drawings: From a *Brunnthaler* specimen, number not specified. (Fig. 95).

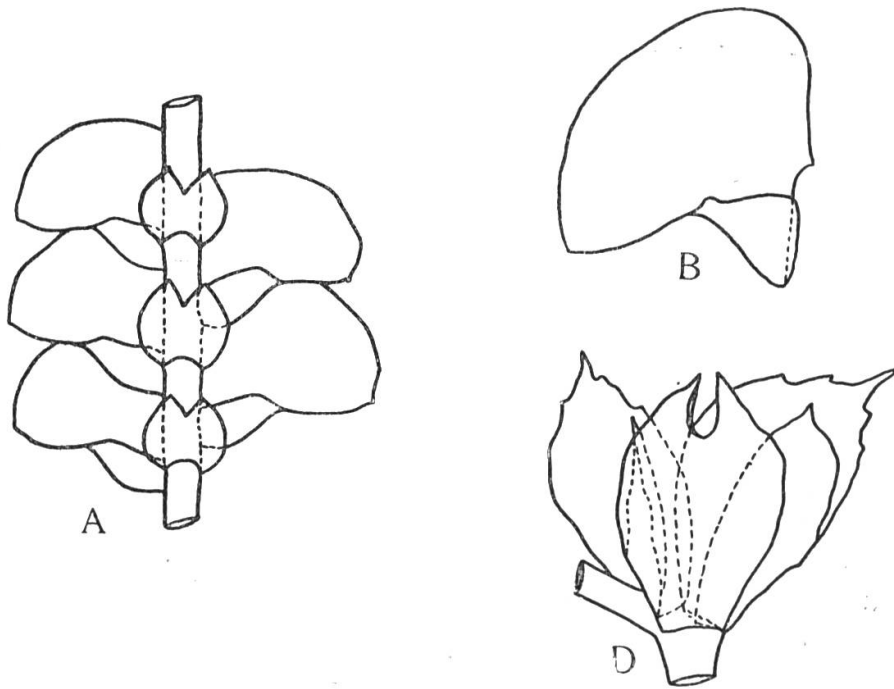
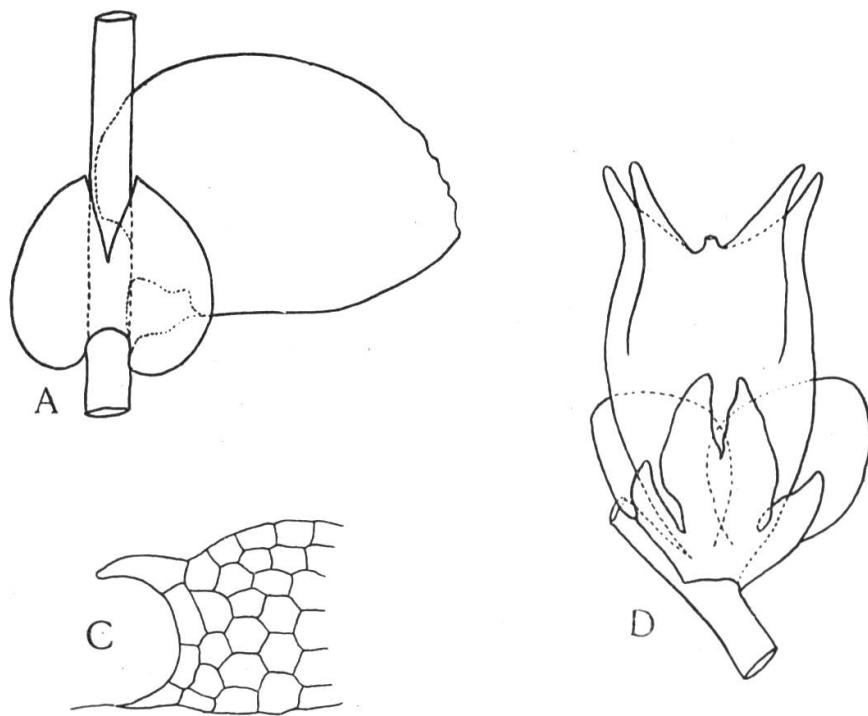
This species is now considered to be a synonym of *Ceratolejeunea jungneri* Steph. (VANDEN BERGHEN, 1951).

FIG. 97. — *Ceratolejeunea vitiensis*

116. **C. valida** Evans in Steph. *Sp. Hep.* **5**: 447. 1913; *Bull. Torrey Bot. Club* **32**: 280. 1905; *Bot. Centralbl. Beih.* **49**: 611. 1932; *Brittonia* **5**: 386. 1945.

TYPE: PORTO RICO, El Yunque, s.d., *Evans 91*. Not in hb. G.
This species is not represented in hb. G.

117. **C. variabilis** (Lindenb.) Schiffner *Sp. Hep.* **5**: 448. 1913; *Engl. & Pr. Nat. Pflanzenfam.* **13**: 125. 1893; *Bull. Torrey Bot. Club* **32**: 284. 1905; *Bot. Centralbl. Beih.* **49**: 611. 1932 = *Lejeunea variabilis* Lindenb. in Gottsche, Lindenb. & Nees *Syn. Hep.*: 399. 1845; *Trans. & Proc. Bot. Soc. Edinburgh* **15**: 206. 1884; *Hedwigia* **29**: 94. 1890.

FIG. 98. — *Ceratolejeunea wallisii*FIG. 99. — *Ceratolejeunea zenkeri*

TYPE : ST. KITTS, s.l., s.d., *Breutel s.n.* (in hb. Gottsche). A few fragments only in hb. G. ("original ex hb. Lehmann, hb. Lindenberg 68II").

Other specimens : ANTILLES, s.l., s.d., *Husnot s.n.* (57) "Gottsche det.". — CUBA, s.l., s.d., *Wright 1096*. — DOMINICA, s.l., s.d., *Elliott 1053, 1054, 1055, 1094, 1112, 1121, 1809, 1879 & 1938* p.p. ; Mt. Isabel de la Torre, 770 m., 19.II.1887, *Eggers 19*. — GUADELOUPE, s.l., s.d., *Duss 196, 229, 263, 328 & 538* ; *L'Herminier 64* (15) ; *Husnot 213 b, 248 a & s.n.* ; *Marie 74*. — MARTINIQUE, s.l., 1886, *Bordaz 88* ; s.l., s.d., *Husnot 248 & (1106)* ; s.l., s.d., *Duss s.n.* (1890 ex hb. Urban. — PORTO RICO, s.l., s.d., *Schwanecke (51) & s.n.* ; idem s.col. 2134 ; Sierra de Luquillo, 24.VI.1885, *Sintenis 7* ; idem, 13.VII.1885, *Sintenis 23* ; Prope Ajuntas, 11.IV.1886, *Sintenis 78* ; idem, 22.V.1886, *Sintenis 100*. — WEST INDIES, s.l., s.d., *Breutel s.n.* (hb. Levier 1231). — BRAZIL, s.l., s.d., *Mosén 29* ; Amazon, cataracts of Negro river, s.d., *Spruce s.n.* — PANAMA, Chiqué, s.d., *Miliou 424*. — FERNANDO PO, May 1885, *Monkemeyer 29*. — NIGER TERRITORY, New Calabar, 8 Oct. 1884, *Monkemeyer 23*.

Drawings : From an unspecified sample from Guadeloupe. (Fig. 96). The African specimens are probably *Ceratolejeunea calabariensis*.

118. **C. vitiensis** Steph. *Sp. Hep.* 5 : 448. 1913 ; *Bot. Centralbl. Beih.* 49 : 615. 1932.

TYPE : VITI ISLANDS, s.l., s.d., comm. *D. Howard*, hb. Kew. A few fragments only in hb. G.

Other specimens : None.

Drawings : From the type. (Fig. 97).

119. **C. wallisii** Steph. *Sp. Hep.* 5 : 449. 1913 ; *Hedwigia* 34 : 239. 1895 ; *Bot. Centralbl. Beih.* 49 : 611. 1932 ; *Annales Bryol.* 5 : 611. 1932.

TYPE : ECUADOR, Manabi, s.d., *Wallis s.n.* (ex hb. Müller Halensis). A fragment only in hb. G. (Fig. 98).

Other specimens : None.

120. **C. zenkeri** Steph. *Sp. Hep.* 5 : 449. 1913 ; *Bot. Centralbl. Beih.* 49 : 613. 1932 ; *Annales Bryol.* 5 : 155. 1932 ; *Bull. Jard. Bot. Etat Bruxelles* 21 : 78. 1951.

TYPE : CAMEROONS, Bipinde, s.d., *Zenker 3935 g* ex hb. Berlin.

Other specimens : None.

Drawings : Based on the type. (Fig. 99).

VANDEN BERGHEM (1951) considers the type of this species to be the same as *Ceratolejeunea calabariensis*.

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