

PLANTAE PAPUANAE ARCHBOLDIANAE, XX *

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THIS PAPER embodies an attempt to name and record the New Guinean collections of *Elatostema* at hand. The genus, as here accepted, is that delineated by Hilde Schröter & Hubert Winkler in Rep. Sp. Nov. Beih. 83 (1, 2), which, as far as I have discovered, is the latest monographic work on the genus. In it *Elatostema* is interpreted as having three subgenera in our area: *Euelatostema*, *Pellionia*, and *Elatostematoides*. In the second part of the monograph the last two are completely revised; apart from two new species described by H. Schröter in Rep. Sp. Nov. 47: 221, 222. 1939, I have found nothing on *Euelatostema* later than Hub. Winkler's treatment in Bot. Jahrb. 57: 520–566. 1922, and an enumeration following this in Nova Guin. Bot. 14: 121–128. 1924. In both of these Hub. Winkler included the genus *Procris* as a subgenus; however, in the latest study this is maintained as a separate genus. At best *Elatostema* is a difficult genus, but now much more so because of the fact that our material has been on loan to Breslau since 1935 and has not been returned even though frequent requests for its return have been made. Hence there has been very little authentic material available for comparison, and practically all the work has been done with only the published descriptions for reference.

I am indebted to Dr. E. D. Merrill for comparing several fragments with Ridley's types from the Wollaston Expedition to Dutch New Guinea which are located in the British Museum. I am grateful to Dr. David D. Keck, Head Curator of the Herbarium of the New York Botanical Garden, for a small but helpful loan of Malaysian material. As always, I am most appreciative of the fine courtesy of Dr. Reed Rollins in making available for study the material in the Gray Herbarium. Unless otherwise indicated the collections cited belong to the Arnold Arboretum.

SUBGEN. EUELATOSTEMA

Elatostema platycarpum sp. nov.

Herba circiter 1 m. alta; caule crasso apicem versus 3 mm. deorsum 5 mm. diametro de nodo ad nodum valde sulcato pubescente vel subto-mentoso, internodiis 1–4 cm. longis, stipularum cicatricibus incompleto annulatis; foliis chartaceis sessilibus 16–36 cm. longis, 7.5–11 cm. latis, obovato-oblongis acuminatis, acumine ad 2 cm. longo, integro, inaequilateralibus basin versus angustatis, basi valde obliquis, latere angustiore ultra basin fere 1.5 cm. cuneatis, in eodem loco latere latiore circiter 5 mm.

*Botanical Results of the Richard Archbold Expeditions. See Jour. Arnold Arb. 30: 139–165. 1949.

latis basi ima auriculatis auriculo caulem partim tegente, margine argute serrato-dentatis, supra asperis rugulosis vel subbullatis parce pubescentibus et copiose punctulatis, subtus parce costa et nervis densius patenti-pilosis, utrinque cystolithis gracilibus, penninerviis, nervis lateralibus utrinsecus 14–16 oblique arcuato-adscendentibus, rete perspicuo; stipulis membranaceis hyalinis lanceolatis 4 cm. longis acuminatis, extus pubescentibus; inflorescentiis ♂: non visis; inflorescentiis ♀: (sicco) usque 5 cm. diametro, interdum ut videtur lobatis et maturitate probabiliter subpulvinatis pedunculatis, pedunculo usque 1.5 cm. longo; bracteis confluentibus tantum margine 2.5–3 mm. liberis, costa obtuse carinatis pubescentibus, bracteolis liberis circiter 1.5 mm. longis sub apice umbonulatis pubescentibus; pedicellis 0.5 mm. longis; perigonii segmentis minutis; achenio 0.5 mm. longo ovoideo, obscure 3–5-angulato.

NORTHEAST NEW GUINEA: wet mountain, Wantoat (Wantot), alt. 1050–1800 m., *Clemens 11046b*, Jan. 1940; Matap, alt. 1500–1800 m., *Clemens 41115*, Feb.-Apr. 1940; wet rocky trail, Yunzaing, alt. about 1500 m., *Clemens 4205*, Aug. 1936; margin of stream, Ogeramngang, alt. about 1650 m., *Clemens 4962*, Jan. 1937.

NETHERLANDS NEW GUINEA: on bank of stream in rain-forest, not common, 6 km. SW. of Bernhard Camp, Idenburg River, alt. 1200 m., *Brass 12947* (TYPE), Feb. 1939 (stout fleshy herb ± 1 m. high; stem ribbed, unbranched; leaves rugose).

This species agrees with the description of *E. finisterrae* Warb. in the large rough sessile leaves with prominent venation on the lower surface, and the large caducous stipules. In the latter, however, the leaves are described as ovate (but broadest above the middle) and subacute, and, according to the measurements given, are only twice as long as broad; whereas those of *E. platycarpum* are obovate-oblong, acuminate, and three times as long as broad. The cystoliths in the type and in *Clemens 11046b* and *41115* are fine and white; those in *Clemens 4205* and *4962* are slightly coarser and yellowish.

I did not find any staminate inflorescence in the Brass collection. In *Clemens 4962* an attached inflorescence appears to be half staminate and half pistillate. In the pistillate part the achenes seem to be nearly mature; on the other hand only a few of the staminate flowers have reached anthesis.

Elatostema elegans Hubert Winkler in Bot. Jahrb. 57: 526. 1922, vel aff.

NETHERLANDS NEW GUINEA: rain-forest; plants forming dense, rounded, flood-resistant clumps in the stony bed of a stream, also gregarious on flood-swept banks of river, 4 km. SW. of Bernhard Camp, Idenburg River, alt. 850 m., *Brass 13073, 13224*, March 1939 (thick, ribbed, branched stems 60 cm. long; leaf-veins red on the lower surface).

These two collections show considerable variation in the serration of the leaves even on the same specimen; the teeth from apex to sinus may be 1.7 mm. broad on some leaves, while on other they are barely 0.5 mm. It should also be pointed out that the serrations do not extend to the apex of the acumen nor to the lowest base of the leaf, as has been described

in the original. Furthermore, the ♀ inflorescence is not nearly so small as that of the type. No indication is given whether it is peduncled or not. In the specimens at hand which, I believe, belong either to this species or are very closely related to it, the ♂ inflorescences are mostly immature (a few have open flowers) and may be as large as 1 cm. diameter, on a peduncle up to 5 mm. long; the outer bracts are confluent, the margins free for about 2 mm., and somewhat keeled; bracteoles are obovate and obtusely keeled or umbonate just below the apex. The ♀ inflorescence is about the same size as the ♂, on a peduncle up to 3 cm. long; the achene is about 0.7 mm. long and straw-colored with minute linear dots running longitudinally over the surface.

Elatostema macrophyllum var. **majusculum** (K. Schum.) Hubert Winkler in Bot. Jahrb. 57: 526. 1922.

Elatostema frutescens var. *majusculum* K. Schum. in K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee Nachtr. 253. 1905.

NORTHEAST NEW GUINEA: Sattelberg, *Warburg* 20775, March-April 1889; gregarious on bank of trail in forest, Ogeramnang to Bulung, alt. about 1650 m., *Clemens* 4903, Jan. 1937 (plant 15 inches to 2 ft.); wet places in bush by the Kajabit Mission, Markham Valley, alt. 240–600 m., *Clemens* 10540, 10765, Aug.-Dec. 1939 (plant 2 ft. high; flowers pale); Boana, alt. 750–1350 m., *Clemens* 41415, 41793, May-Nov. 1940 (plant 2–3 ft. high).

BRITISH NEW GUINEA: gregarious in semi-shade along river banks, Palmer River, 2 miles below junction Black River, alt. 100 m., *Brass* 6913, June 1936 (very large pale fleshy species over 1 m. high; stem deeply fluted between the nodes, pink when cut).

Elatostema retinervium sp. nov.

Herba circiter 1 m. alta; caule apicem versus 3 mm. deorsum 5 mm. diametro, inconspicue sulcato adpresse piloso deinde glabrescente, internodiis 2–4 cm. longis, stipularum cicatricibus indistincte annulatis; foliis chartaceis vel subcoriaceis sessilibus 16–21 cm. longis 5–7 cm. latis, oblongis leviter obovatis, subfalcatis, valde inaequilateralibus, utrinque angustatis, acuminatis, acumine 2 cm. longo, basi valde obliquis latere angustiore supra basin 1–1.5 cm. truncato-cuneatis, latere latiore basi ima auriculatis, auriculo caulem tegente, margine (auriculo et acumine inclusis) argute serrato-dentatis, supra bullatis et rugulosis fere glabris (glandulis barbulatis), cystolithis copiosis, subtus costa et venis adpresse pilosis, ceterum glabris, cystolithis in costa et venis obsitis; nervis lateralibus utrinsecus 10–15 obliquis arcuatim conjunctis rete conspicuo; stipulis hyalinis lanceolatis 2.5–3 cm. longis, extus costa praecipue pubescentibus; inflorescentiis ♂: pedunculatis magnis 1.5–2 (interdum 3) cm. latis, vix 1 cm. longis ante anthesis, pedunculo ad 2.3 cm. longo dense piloso; bracteis ut videtur confluentibus tantum margine circiter 3.5 mm. liberis, pubescentibus, parte superiore carinatis et corniculatis; bracteolis spathulatis ad 5.5 mm. longis prope apicem subcarinatis et umbonulatis, apice et dorso superiore linea media subrigide pilosis; floribus ♂ pedicellatis,

pedicello fere 4 mm. longo; perigonii segmentis 4 circiter 2–2.5 mm. longis apice pilis paucis ornatis, duobus oppositis vix 0.2 mm. corniculatis, duobus alteris paulum latioribus circiter 0.5 mm. corniculatis; inflorescentiis ♀ : non maturis, ut videtur sessilibus; floribus pedicellatis; perigonii segmentis 3 inaequalibus quam ovario brevibus gracillimis.

NETHERLANDS NEW GUINEA: gregarious in undergrowth of flood-plain forest, Bele River, 18 km. NE. of Lake Habbema, alt. 2200 m., *Brass 11318* (TYPE), Nov. 1938 (very fleshy and ± 1 m. high; stem not branched; leaves rugose).

I hesitate to suggest which is the closest relative of this species. It seems rather near *E. serra* Winkler except that the venation of the leaves is pinnate, not trinerved. The latter species lacks any indication of the roughish bullate upper leaf-surface which is so characteristic of *E. retinervium*. Here these slightly raised points are tufted with very short hairs (barbulate), and perhaps indicate the presence of a gland or possibly a hydathode, of which there may be one or more in each areola; the venation is impressed above but prominent on the lower surface. Among the close relatives in the pinnate-veined species of the genus are *E. finisterrae* Warb. and *E. platycarpum* Perry. It differs from the latter in its smaller, less obovate, firmer-textured, and more distinctly bullate leaves with the pubescence on the venation of the lower surface appressed rather than loosely spreading. It differs from *E. finisterrae* in the very obviously pedunculate ♂ inflorescence.

Elatostema vicinum sp. nov.

Planta non 1 m. alta, ramosa; caulibus apicem versus hirtellis deorsum glabrescentibus in sicco sulcatis, internodiis superioribus 1.5–3 cm. longis 1.5–3 mm. diametro, inferioribus non visis; foliis tenuiter chartaceis, sessilibus, obovatis, 9–11.5 cm. longis, superiore $\frac{1}{3}$ circiter 3.5–5 cm. latis (ramulorum 3.5–6 cm. longis, 1.3–2.5 cm. latis), inaequilateralibus, basi valde obliquis latere latiore auriculatis, auriculo caulis crassitudinem superante, latere angustiore obtusis, omni margine acute serratis, serraturis saepe iterum semel vel bis leviter serratis, apice subabrupte acuminatis, acumine 1–1.5 cm. longo, supra glabris, cystolithis minimis praecipue in costa et nervis ornatis, subtus laxe hirtellis, penninerviis, nervis lateralibus utrinsecus 7–9 supra manifestis subtus prominulis secundariis et rete utrinque manifestis; inflorescentiis ♂ : axillaribus, sessilibus vel subsessilibus, 1–1.5 cm. diametro, bracteis $\pm$ confluentibus, sub apice carinato-corniculatis, bracteolis linearibus apice pilosis; floribus pedicellatis, perigonii segmentis 4 vix 1.5 mm. longis sub apice 0.7 mm. corniculatis; inflorescentiis ♀ : non visis.

BRITISH NEW GUINEA: common in forests of limestone country, Mafulu, alt. 1250 m., *Brass 5198* (TYPE), Sept.-Nov. 1933 (floor plant under 1 m.; stems fleshy, terete; leaves thin, dark green; inflorescence white).

Amongst the species of New Guinea this is probably nearest to *E. serra* Hub. Winkl., but the latter is described as having oblong-lanceolate leaves, whereas here the leaves are broadest in the upper third, hence obovate.

On account of the slender little horns on the perianth parts and the coarse serration of the leaves I tried to place it in *E. rugosum* A. Cunn. of New Zealand, but in that species the leaves taper very gradually to the apex, while in the Brass specimen the leaves narrow more abruptly into a short acumen. The original reference to *E. rugosum* in our copy of the Kew Index reads as if pl. 9, f. 5-8 belongs to Ann. Nat. Hist., when as a matter of fact it belongs to Archiv. Mus. Hist. Nat. Paris. I have checked the original publication to verify this, only to find myself disappointed not to find any plate at all accompanying the description.

Elatostema reticulatum Weddell in Ann. Sci. Nat. ser. 4, 1: 188. 1854.

SOLOMON ISLANDS: Bougainville: rain-forest, Kupei Gold Field, alt. 950 m., *Kajewski 1624*, April 1930 (very fleshy-leaved plant up to 50 cm. high).

As far as I can see from the description and a couple of specimens from Australia in the Gray Herbarium, this plant represents the above Australian species.

Elatostema salomonense sp. nov.

Planta circiter 35 cm. alta; caulibus, ut videtur, non ramosis, adpresse pubescentibus deorsum glabrescentibus, 1-1.5 mm. diametro, sulcatis, internodiis superioribus 0.8-1.5 cm. inferioribus usque 4 cm. longis; foliis subsessilibus (petiolo vix 5 mm. longo), chartaceis, oblique ovatis vel lanceolatis vel interdum leviter obovatis, 7-20 cm. longis, 2.7-6 cm. latis, valde inaequilateralibus, acuminatis, acumine 1.5-3 cm. longo basi tantum crenato (inferioribus vix acuminatis), basi obliquis, latere latiore leviter cordatis vel breviter auriculatis, auriculo non caulem tegente, latere angustiore angustatis deinde abrupte cuneatis, margine superiore $\frac{2}{3}$ crenato-dentatis, supra glabris cystolithis profuse adspersis, subtus costa et nervis dense adpresse pubescentibus pallidioribus, semipenninerviis (basi trinerviis), nervis lateralibus supra basalibus utrinsecus 4 vel 5 arcuato-adscendentibus, secundariis utrinque manifestis; stipulis 5-10 mm. longis, lanceolatis, acuminatis, tarde caducis; inflorescentiis ♂: circiter 7 mm. latis, 5 mm. longis, dense adpresse pubescentibus, usque 1 cm. pedunculatis, bracteis apicem versus carinato-corniculatis, bracteolis angustioribus carinatis apicem versus minute pubescentibus; floribus pedicellatis, perigonii segmentis 5 oblongis sub apice minute corniculatis pilis paucis ornatis; inflorescentiis ♀: non visis.

SOLOMON ISLANDS: San Cristobal: on forest paths, sides of ravines, lowlands, Waimamura, *Brass 2643* (TYPE, Gray Herb.), Aug. 1932 (very common; whole plant very fleshy; stems corrugated).

This species seems to be most like the Philippine species, *E. simulans* C. B. Rob. It differs from the latter in having larger leaves with longer acumen, longer stipules, pubescent rather than setose stem, and shorter hornlets on the perianth-parts of the staminate flower.

Another collection which belongs in this general alliance, but apparently not identical with either, is *Brass 5374*, floor of tall forest, Mafulu, alt.

1100 m. This specimen is sterile except for one very small pistillate inflorescence.

Elatostema novo-guineense Warb. in Bot. Jahrb. 13: 290. 1891.

NORTHEAST NEW GUINEA: forest hill, Sattelberg, alt. about 1000 m., *Clemens* 3098; Ogeramang, alt. about 1750 m. and 1650 m., *Clemens* 4682, 4961, 4976, 4999, Jan. 1937; Sambanga, alt. 1500–1800 m., *Clemens* 7075 in part, 7214, Sept. 1937; Wantoat, alt. 1050–1800 m., *Clemens* 10924, Jan. 1940; Patema, 40 km. inland from Nabire, alt. 300 m., *Kanchira & Hatusima* 12432, Mar. 1940; 4 miles south of Langemak Bay (vicinity of Finschhafen), *Sawyer* 98, Apr. 1945; Lae, *Clemens* 10435, July 1939; Boana, alt. about 1050 m., *Clemens* 41560 (U. of Mich.), July 1940; Yunzaing, alt. about 1500 m., *Clemens* 3467, 3775, 4046, June, Aug. 1936; vicinity of Kajabit Mission, *Clemens* 10784, Aug.-Dec. 1939; Gaeng, alt. 1350 m., *Clemens* 41292 (U. of Mich.), Aug. 1940.

This enumeration of specimens must be considered as belonging to *E. novo-guineense* sensu lato. They vary considerably; some tend to be more pubescent than others; again, quite a number have a long acumen and are dentate or serrate-dentate only on the upper half, while others from the same locality may be very shortly acuminate.

We have at hand for comparison *Schlechter* 16741, named var. *angustifolium* Warb., but cited by Winkler under the species, and *Warburg* 20774 from Sattelberg, probably an isotype of var. *angustifolium* Warb. I cannot see any difference in the two.

Another collection with staminate inflorescence on a peduncle 5 cm. long, but with apparently entire leaves (as far as I can see not differing otherwise), is *Brass* 5387, from stream banks in lower primary forest, Mafulu, Central Division, alt. 1250 m.

Elatostema belense sp. nov.

Planta 30–40 cm. alta sparsim ramosa; caulibus et ramulis adscendentibus pilosis vel glabrescentibus in sicco leviter sulcatis; foliis subsessilibus (petiolo circiter 1 mm. longo) lanceolato-oblongis 6–11 cm. longis, 1–3 cm. latis (ramulorum 2–4 × 0.6–1.1 cm.), leviter inaequilateralibus, apice acuminatis vel interdum acutis, basi obliquis latere angustiore obtusis, latere latiore rotundatis fere subcordatis margine superiore $\frac{2}{3}$ vel $\frac{1}{2}$ grosse et acriter dentatis ceterum integris utrinque pilosis (pilis leviter rigidis) vel glabrescentibus, penninerviis, nervis lateralibus utrinsecus 5–8 oblique adscendentibus; stipulis hyalinis pilosis oblongis, 5 mm. longis acutiusculis; inflorescentiis ♂: pilosis, 8–10 mm. diametro, pedunculatis, pedunculo 2–2.5 cm. longo; bracteis 2 exterioribus late ovatis 6–7 mm. longis, valde carinatis sub apice cornutis, cornu 2 mm. longo, interioribus paulo minoribus, bracteolis spathulato-oblongis; floribus ♂ 2 mm. pedicellatis, perigonio 4-fido, 2 mm. longo, segmentis sub apice circiter 0.5 mm. corniculatis; inflorescentiis ♀ usque 6 mm. diametro, sessilibus vel subsessilibus, dense pilosis vel glabrescentibus, bracteis illis ♂ similibus sed minoribus, bracteolis fere linearibus apicem versus pilosis, floribus ♀ (submaturis) circiter 0.5 mm. pedicellatis, perigonii segmentis minutis

vix visis, staminodiis 3 distincte manifestis; achenio ovali utrinque angustato, 2.5–3 mm. longo, 1–1.1 mm. lato, circiter 8-costato.

NETHERLANDS NEW GUINEA: not common, on shady flood-banks of a forest creek, Bele River, 18 km. NE. of Lake Habbema, alt. 2200 m., *Brass* 11317 (TYPE), Nov. 1938; frequent in flood-plain forest, Bele River, 18 km. NE. of Lake Habbema, alt. 2200 m., *Brass* 11263, Nov. 1938.

In the relatively long-peduncled staminate inflorescence the species suggests *E. novo-guineense* Warb., but the leaves differ in outline, the acumen is much shorter, and the teeth of the leaves deeper and sharper; further, the stipules are oblong and acutish rather than lanceolate and acuminate. The horns of the inflorescence protrude beyond the margin of the bracts rather than being even with it or shorter as shown in the figure of *E. macropus*. The pubescence in *Brass* 11317 is more profuse and mostly longer than that of *Brass* 11263, which has a definite tendency to be glabrous on the older parts of the plant.

Elatostema urvilleanum Brongniart in Bot. Voy. Coq. 210, *pl.* 46, *f.* A. 1829.

SOLOMON ISLANDS: San Cristobal: coral limestone soil near beach, Waimamura, *Brass* 2555, Aug. 1932 (plentiful; attaining 60 cm. in height; whole plant very fleshy).

This plant looks like a very good match for the plate of this Moluccan species.

Elatostema schroeteri nom. nov.

Elatostema serratifolium Hilde Schröter in Rep. Sp. Nov. 47: 221. 1939; non Elmer (1934).

We are fortunate enough to have at hand three of the collections cited (*Clemens* 5992, 6832, 7458) in the original description; in fact we have four, but *Clemens* 7075 is a mixture, and only part of it belongs to this species.

Elatostema schroeteri var. *angustilimbium* var. nov.

Ramulis novellis patenti-pilosis; foliis anguste lanceolatis (6–12 × 1.2–2 cm.) longe acuminatis, acumine 2–2.5 cm. longo, subtus primum costa et nervis lateralibus deinde costa tantum patenti-pilosis, cystolithis supra copiosis.

NETHERLANDS NEW GUINEA: characteristic undergrowth on moist, rocky slopes in Fagaceae forest, Bele River, 18 km. NE. of Lake Habbema, alt. 2300 m., *Brass* 11339 (TYPE of var.), Nov. 1938 (40–60 cm. high).

This variety differs from the species in its narrower leaves with longer acumen, and in the loose and widely spreading pubescence of the branchlets and the midrib and nerves on the lower leaf-surface. The cystoliths are much more profuse in the variety, but I have been unable to determine whether this is a constant feature, in fact, I suspect that it is not.

Elatostema kupeiense sp. nov.

Planta 50 cm. alta fere glabra ramosa; ramis tenuibus in sicco 2.5 mm. diametro, ramulis tenuioribus, internodiis ramulorum 5–10 mm. longis prope apicem minoribus; foliis tenuiter chartaceis subsessilibus (petiolo 0.5–2 mm. longo), oblongo-lanceolatis, 3–6 cm. longis, 0.9–1.5 cm. latis, basi obliquis, latere angustiore obtusis, latere latiore rotundatis vel subauriculatis, sursum fere inciso-serratis, serraturis 5–9, margine tantum prope basim et apice integris, acumine 1–1.7 cm. longo basi 2–3 mm. lato, utrinque glabris (novellis subtus costa pilosulis), penninerviis, nervis lateralibus utrinsecus 5–9 oblique adscendentibus utrinque manifestis, subtus rete manifesto, cystolithis minimis adspersis; stipulis linearibus acuminatis, circiter 6 mm. longis, tarde deciduis; inflorescentiis ♂: circiter 7 mm. diametro, axillaribus, pedunculatis, pedunculo 1–3 cm. longo, bracteis exterioribus 5.5 mm. longis (cornibus 3 mm. inclusis), late ovatis sub apice carinato-cornutis, interioribus angustioribus carinato-corniculatis, corniculo 0.7 mm. longo, carina sparsim et subrigide pilosula; floribus 1.5 mm. pedicellatis, perigonii segmentis 2 mm. longis, 0.7 mm. corniculatis; inflorescentiis ♀: axillaribus sessilibus, tantum 3–4 mm. diametro, bracteis et bracteolis 2–2.5 mm. longis, rigide pilosulis et corniculatis; floribus vix 1 mm. pedicellatis, perigonii segmentis 3 minutis brunnei-glandulosi-adspersis, staminodiis minutis, achenio ovali-fusiforme, circiter 1 mm. longo vix 0.5 mm. diametro.

SOLOMON ISLANDS: Bougainville: rain-forest, Kupei Gold Field, alt. 950 and 1000 m., *Kajewski* 1678, 1696 (TYPE), April 1930 (very fleshy plant).

This species appears most closely allied to *E. acuminatum* Brongn., but in the latter entity the base of the leaf is described as acute, and the lateral nerves appear to extend direct to the first dentation above them. In *E. kupeiense*, on the other hand, each nerve appears to extend into the second dentation above its separation from the midrib.

Elatostema rudicaule Hub. Winkler in Bot. Jahrb. 57: 540, fig. 6. 1922.

NORTHEAST NEW GUINEA: forest hill by water supply, and near clearing west of village, Ogeramngang, alt. about 1740 m., *Clemens* 4576, 5016, Dec. 1936 and Jan. 1937.

BRITISH NEW GUINEA: plentiful on wet banks of a small stream, Mt. Tafa, alt. 2400 m., *Brass* 4830, May–Sept. 1933 (fleshy shrub about 0.5 m., stem 4-angled, upper side fluted).

These collections vary considerably in the size of the leaves (2–6 × 0.8–1.8 cm.) and the pubescence. In *Clemens* 4576 the upper leaves are clothed above with a sparse villosity which probably is lost as the plant matures; the other plants have leaves glabrous on the upper surface; however, all are marked in some degree by the double serration which seems to be the character of this species. Owing to the fact that *Brass* 4830 has leaves with simple serrations as well as leaves with double serrations, it has seemed best to regard a specimen from the Netherlands New Guinea as a variety of this species.

Elatostema rudicaule var. **villiferum** var. nov.

Planta 80 cm. alta, ramosa; ramis glabrescentibus, ramulis hirsutovillosis; foliis 1–2.8 cm. longis, 0.4–0.8 cm. latis, subsessilibus lanceolatis acutis, basi valde obliquis, latere angustiore subtruncatis vel obtusis, latiore auriculatis, serrato-dentatis, dentibus utrinque 7–10 integris, penninerviis, nervis lateralibus hirtellis subrectis eodem numero dentium et in dentibus terminantibus; stipulis lanceolatis hyalinis 3 mm. longis costa pilosulis deciduis; inflorescentiis ♂: sessilibus; bracteis 2 exterioribus circiter 2 mm. longis ovatis obtusiusculis ciliatis sub apice 0.3 mm. corniculatis brunneo-granulosis vel brunneo-lineolatis, interioribus angustioribus sursum pilosulis; floribus ♂ 1.5 mm. pedicellatis; perigonii segmentis 4 vix 1.5 mm. longis apicem versus pilis paucis ornatis et minute corniculatis; inflorescentiis ♀: ei speciei similibus.

NETHERLANDS NEW GUINEA: plentiful in moist hollows in forest undergrowth, Bele River, 18 km. NE. of Lake Habbema, alt. 2300 m., *Brass 11230* (TYPE of var.), Nov. 1938 (plant 80 cm. high; branches spreading).

This plant differs from the species in the simple serration of the leaves and the shaggier pubescence of the branchlets.

Elatostema velutinicaule Hubert Winkler in Bot. Jahrb. 57: 542. 1922.

NORTHEAST NEW GUINEA: Wantoat (Wantot), alt. 1050–1800 m., *Clemens 11000A*, Jan. 1940.

Elatostema Reiterianum Hub. Winkler in Bot. Jahrb. 57: 543. 1922.

NETHERLANDS NEW GUINEA: in forest undergrowth, gregarious and covering the ground in wet bottoms, 9 km. NE. of Lake Habbema, alt. 2800 m., *Brass 10295*, Oct. 1938 (plant 50–60 cm. high; leaves rugose).

This collection with pistillate flowers agrees reasonably well with the original description of the species. Pistillate inflorescence: axillary, subsessile, up to 8 mm. broad and somewhat stiffly pilose; outer bracts broadly ovate, keeled along the upper midrib, about 7 mm. long including a minute horn about 1 mm. at the apex; inner bracts narrower and umbonate; bracteoles narrowly spatulate or linear; perianth segments 4, linear, pilose, hardly 0.5 mm. long; staminodes minute; achene ovoid, 1 mm. long, 0.6–0.7 mm. diameter, neither compressed nor angled.

Elatostema sesquifolium (Reinw.) Hasskarl, Cat. Hort. Bogor. 79. 1844.

—Weddell in Arch. Mus. Hist. Nat. Paris 9: 308. 1856. —Hubert Winkler in Bot. Jahrb. 57: 534. 1922.

Procris sesquifolium Reinwardt in Blume Bijdr. 511. 1825.

Elatostema integrifolium in DC. Prodr. 16(1): 179. 1869.

NETHERLANDS NEW GUINEA: in high rain-forest, Momi, 60 miles south of Manokwari, alt. 50 m., *Kanchira & Hatusima 13291*, March 1940 (plant 60–80 cm. high).

NORTHEAST NEW GUINEA: jungle sidehill, Sattelberg, about 900 m. alt., *Clemens 476*, Oct. 1935; Wantoat (Wantot), alt. 1050–1800 m., *Clemens 11031A*; jungle ravine, 4 miles south of Langemak Bay (vicinity of Finschhafen), alt. about 100 m., *Frank E. Sawyer 102, 120*, April 1945.

BRITISH NEW GUINEA: wet rain-forest floor, Sogeri, about 450 m. alt., *Brass* 644, Nov. 1925 (plant 30–60 cm. high); rain-forest floor, Ihu, Vailala River, *Brass* 996, Feb. 1926.

SOLOMON ISLANDS: Bougainville: creek bank, Kupei Gold Field, *Kajewski* 1625, April 1930.

Elatostema sesquifolium var. *ramosum* Hubert Winkler in Bot. Jahrb. 57: 534. 1922.

NETHERLANDS NEW GUINEA: forming most of the undergrowth in semi-shade on banks of rain-forest streams, alt. 1200 m., *Brass* 12946, Feb. 1939 (slender shrub 1–1.2 m. high; branches spreading).

NORTHEAST NEW GUINEA: Wantoat (Wantot), *Clemens* 11032B, Jan. 1940.

BRITISH NEW GUINEA: common along roadside in light primary forest, Mafulu, alt. 1250 m., *Brass* 5418, Sept.-Nov. 1933 (undershrub less than 1 m. high; leaves dark).

In addition to the specimens cited above as belonging to this species, I should like to call attention to *Clemens* 11308 bis (Univ. of Michigan), Matap, March 1940, in which the leaves are occasionally 1- or 2-incised or lobed. The specimen is very fragmentary, but I believe its alliance is here.

Elatostema humile sp. nov.

Herba 15–20 cm. alta, parce ramosa; caulibus tenuibus apice crispe pubescentibus ceterum glabris, internodiis 3–7 mm. longis; foliis subsessilibus vel breviter petiolatis, petiolo 0.5–1.5 mm. longo, lanceolatis, fere aequilateralibus, 3–5 cm. longis, 0.4–1 cm. latis, apice acutis vel acuminatis basi paulo obliquis, latere angustiore cuneatis, latere latiore obtusis vel subrotundatis, basim versus integris sursum latere latiore 4–8-denticulato-serratis, latere angustiore 3–5-denticulato-serratis maturis glabris, novellis subtus costa crispe pubescentibus ceterum glabris, subpenninerviis basi trinerviis cystolithis linearibus supra adspersis subtus in costa nervisque ornatis; stipulis circiter 5 mm. longis lineari-lanceolatis brunnescentibus hyalinis caducis; inflorescentiis ♂ : usque 7 mm. diametro, pedunculatis pedunculo usque 8 mm. longo, axillaribus, bracteis exterioribus late ovatis 3.5 mm. longis latisque sub apice carinato-corniculatis, corniculo 0.5 mm. longo, interioribus minoribus et bracteolis apicem versus pilis rigidis adspersis; floribus 1.5 mm. pedicellatis, perigonii segmentis 5 circiter 2 mm. longis sub apice 0.5 mm. corniculatis; inflorescentiis ♀ : circiter 5 mm. diametro, axillaribus subsessilibus bracteis et bracteolis quam ♂ minoribus; pedicellis vix 0.5 mm. longis, perigonii segmentis 4 minutis, staminodiis manifestis; achenio 0.7 mm. longo, elliptico, utrinque angustato, acuto.

NETHERLANDS NEW GUINEA: covering stones and mossy rocks in bed of a small stream in rain-forest, 4 km. SW. of Bernhard Camp, Idenburg River, alt. 850 m., *Brass* 13271, 13421 (TYPE), March 1939; in high rain-forest, Chaban, 30 km. inland from Nabire, alt. 300 m., *Kanehira & Hatusima* 11877, Feb. 1940.

This species suggests at once *E. tenuicaule* Hub. Winkl. from New

Guinea, and *E. stenophyllum* Merr. from Guam. It differs from both in that the staminate flower is 5-merous. It should also be noted that the dentations are several on the broader side of the leaves of *E. humile* and extend half-way (or more) from the apex (or just below it) to the base, whereas in *E. tenuicaule* they are only two or three and apical.

Elatostema morobense sp. nov.

Planta circiter 15 cm. alta, basi ramosa; ramis adscendentibus tenuibus glabris, 1–1.5 mm. diametro, internodiis 4–6 mm. apicem versus 2 mm. longis; foliis distichis subsessilibus (petiolo 1 mm. longo), 1–1.7 cm. longis, 5–8 mm. latis, oblongis vel obovato-oblongis, inaequilateralibus, basi valde obliquis, latere latiore subcordatis, latere angustiore cuneatis, prope apicem utrinque bidentatis vel latere angustiore tantum uno dente instructis, supra strigulosis, pilis 0.5–0.7 mm. longis pellucidis, cystolithis linearibus vix 0.5 mm. longis, subtus glabris pallidioribus, triplinerviis, nervis lateralibus 2 prope apicem in lobos terminantibus acutis; stipulis lineari-oblongis abrupte acuminatis, 4–6 mm. longis, hyalinis in lineam mediam fulvis glabris, deciduis; inflorescentiis ♂ : non visis; inflorescentiis ♀ : 4–5 mm. diametro sessilibus, bracteis ciliatis subrigide pilosis, exterioribus 2 ovatis, 3.5 mm. longis sub apice circiter 1 mm. corniculatis, interioribus oblongis corniculatis, bracteolis linearibus pilosis; floribus ♀ submaturis 1 mm. pedicellatis, perigonii segmentis 4 minutis, staminodiis 4, ovario oblongo, utrinque paulo angustato, 1 mm. longo, longitudinaliter et interrupte brunneo-lineato.

NORTHEAST NEW GUINEA: Tobou vicinity, *Clemens* 6375A (TYPE), May 1937; high forest trails, banks, etc., Sambanga, alt. 1500–1600 m., *Clemens* 6950, 7843, Sept., Dec. 1937. All from Morobe District.

As far as I can suggest the nearest relative of this species appears to be *E. lingelsheimii* Hub. Winkl. Its striking characters are the glabrous stems, stipules, and lower leaf-surfaces, and the semi-transparent rather coarse hairs (appressed towards the apex of the leaves), which are fairly plentiful on the upper leaf-surfaces; the dentation is confined practically to the apparently broad and slightly oblique apex of the leaves.

Elatostema cupulare Hub. Winkler var. *pedunculatum* var. nov.

Planta quam typus, ut videtur, minus pubescens; foliis 3.7–5.3 cm. longis, 0.8–1.1 cm. latis; inflorescentiis ♂ : 0.5–1.8 cm. pedunculatis.

NORTHEAST NEW GUINEA: in bamboo thicket along bank of a small stream, near Finschhafen, *Reeder* 888 (TYPE of var.), Mar. 1944.

The leaves of this variety very closely resemble those of this species shown in Bot. Jahrb. 57: 536, fig. 4. 1922; they are, however, slightly narrower, and the staminate inflorescence is pedunculate rather than sessile.

Elatostema tricanthum Lauterbach in K. Schum. & Lauterb., Fl. Deutsch. Schutzgeb. Südsee Nachtr. 255. 1905, vel aff.

NORTHEAST NEW GUINEA: mossy bush, Upper Camp A, 2700–3000 m., *Clemens* 10090, March 1939.

This collection looks very much like a carbon rubbing of *E. tricanthum* Lauterb. which Dr. Merrill sent me from the British Museum. However, Dr. Merrill does not think that the small plant sent with it for comparison matches it; the original description characterizes the stem as fulvous-villous, whereas in this collection the stems are appressed-pilose with short hairs.

Elatostema podophyllum Weddell in Ann. Sci. Nat. 4, 1: 189. 1854, vel aff.

NETHERLANDS NEW GUINEA: in forest near Iray, Lake Giji, Angi, Arfak mountains, alt. 1900 m., *Kanchira & Hatusima* 13799, April 1940.

This specimen does not have so many cystoliths as the one Philippine specimen which I have seen, but in other characters the two are much alike.

Elatostema poteriifolium Ridley in Trans. Linn. Soc. Bot., ser. 2, 9: 155. 1916, vel aff.

NETHERLANDS NEW GUINEA: common on mossy logs in moist forest of valley bottom and along the banks of streams in forest, 9 km. NE. of Lake Habbema, alt. 2800 m., *Brass* 10300, 10550, Oct. 1938; very abundant in moist gullies, Bele River, 18 km. NE. of Lake Habbema, alt. 2300 m., *Brass* 11226, Nov. 1938 (forest ground herb).

At the British Museum, Dr. Merrill compared a fragment of *Brass* 10550 with the type of *E. poteriifolium* Ridl. He wrote me that this is near, but not identical with Ridley's species. He pointed out that there are very long hairs on both the stem and the leaves of the Kloss specimen (the type) and also that the stem is very densely pubescent with a mixture of short and long hairs. In the *Brass* specimens some leaves are practically glabrous, others have long hairs on them. I suspect this question of pubescence is a variable character; on the other hand I do not find the two types of pubescence on the stems of these collections.

Elatostema mongiense var. *gracile* Hubert Winkler in Bot. Jahrb. 57: 543. 1922.

BRITISH NEW GUINEA: banks of a gully in dense valley forest, not very common, Mt. Tafa, alt. 2400 m., *Brass* 5000, May-Sept. 1933 (stem and branches thick and fleshy).

It is very difficult to place this single specimen with only the brief descriptions of the species and variety at hand. However, with the hope that it may be a help to the next worker on this group I am adding a brief description of this specimen. Plant herbaceous, about 40 cm. tall, the upper part of the stem profusely branched; stem subsulcate and glabrescent, branches and branchlets slender and crisply pilose, internodes of the branches 1–2.5 cm., of the ultimate branchlets about 1–2.5 mm. long; leaves distichous, subsessile, oblong, 3.5–6.5 mm. long, 1.5–2.3 mm. broad, obtuse, strongly oblique at base, on the broader side rounded-auriculate, the auricle covering the very short petiole and the stem, on the narrower side rounded or subtruncate, upwards 2–4 obtusely serrate on the broader

side and 2–3 on the narrower, upper surface glabrous, the lower pubescent along the veins; stipules minute, shortly pilose and caducous; only the ♂ inflorescence seen; flowers single, subsessile, 2-bracted, bracts 0.5 mm. long, lanceolate and shortly pilose; perianth-segments 4 with somewhat rounded apices and just below them minutely horned; stamens 4.

In the solitary staminate flowers and the size of the leaves this plant suggests *E. polypodioides* Ridl.; however, the “conspicuous rounded depressions” on the lower surface of the leaves (as described for Ridley’s species) and the trichomes on the “elevations” of the upper surface are lacking.

***Elatostema whartonense* sp. nov.**

Frutex epiphyticus parvus (specimine incompleto 35 cm. longo); ramis 4 mm. diametro sulcatis glabrescentibus, ramulis numerosis fere adpresse hirtellis, internodiis 1–3 mm. longis; foliis distichis 6–9 mm. longis, 2–3 mm. latis, chartaceis subsessilibus (petiolo 0.5 mm. longo) oblongis obtusiusculis et interdum apiculatis, basi valde obliquis, latere latiore auriculatis, auriculo 1–1.3 mm. longo, sursum 1–3 grosse dentatis, dentibus acutis vel obtusiusculis, latere angustiore basi rotundatis et apicem versus uno dente instructis, penninerviis, supra glabris, subtus costa et nervis lateralibus subadpresse hirtellis ceterum glabris, cystolithis prope nervos paucis minimis; stipulis subpersistentibus circiter 3 mm. longis hyalinis lineari-lanceolatis adpresse hirtellis; inflorescentiis ♂ : non visis; inflorescentiis ♀ : axillaribus paucifloris sessilibus 2–2.5 mm. longis; bracteis 2 latioribus plerisque angustioribus, non cornutis hirtellis; bracteolis lineari-lanceolatis hirtellis; perigonii segmentis 4 aequalibus, 0.5 mm. longis linearibus; staminodiis minutis; achenio 1.5–1.8 mm. longo, oblongo apice acuto, 4-costato.

BRITISH NEW GUINEA: Murray Pass, Wharton Range, alt. 2840 m., *Brass* 4609 (TYPE), June–Sept. 1933 (single colony seen; epiphytic small shrub; leaves pale).

In Winkler’s key to the species, Bot. Jahrb. 57: 521–523. 1922, this species appears closest to *E. peperomioides*, but it is readily distinguished from that species by the smaller size of the leaves and their dentation as well as by the lack of horns on the bracts of the inflorescence. Its leaves are about the size of those of *E. mongiense* Lauterb.; however, in the latter species the whole margin of the leaf is rounded-serrate, whereas in *E. whartonense* the narrower side has only one dentation, on the broader side are 1–3 (mostly 2) teeth towards the apex; the pubescence along the nerves of the lower surface often projects like minute tufts beyond the tip of these teeth, causing them to appear sharper than they really are.

***Elatostema perpusillum* sp. nov.**

Herba parva epiphytica ramosa; caulibus gracilibus in speciminibus vix 1.5 mm. diametro sursum ad 0.4 mm. diametro, ramulis parce pilosis vel glabris, internodiis 1–5(–8) mm. longis; foliis subsessilibus (petiolo plerumque vix 0.5 mm. longo, interdum fere 1 mm. longo), distichis in

ambitu et magnitudine valde diversis, 5×3 mm., 11×3 mm., 10×4 mm., 10×6 mm., 14×5 mm., 21×4 mm., 19×7 mm., oblongis vel obovatis fere aequilateralibus, basi parum obliquis, cuneatis vel latere latiore fere obtusis, apice obtusis vel obtusiusculis latere latiore 1–4-dentatis, latere angustiore 1–3-dentatis, supra glabris subtus minute et conperse fusco-granulosis costa pilosulis, penninerviis vel basi trinerviis et superne nervis lateralibus 1–3 in dentes terminantibus; stipulis lanceolatis vix 1.5 mm. longis cito caducis; inflorescentiis ♂: singulis axillaribus 1–3-floris breviter pedunculatis, pedunculo usque 1.5 mm. longo; bracteis 2 exterioribus circiter 2 mm. longis obtusis carinatis 0.5 mm. corniculatis glabris vel costa parce pilosulis, interruptis lineolis brunneis ornatis, interioribus similibus sed angustioribus; floribus ♂: perigonii segmentis 4 vel 5, obovatis 2 mm. longis sub apice 0.5 mm. corniculatis; inflorescentiis ♀: circiter 2.5 mm. longis latisque, sessilibus vel subsessilibus paucifloris, bracteis et bracteolis rigide pilosis, pilis usque 2 mm. longis; floribus ♀: perigonii segmentis 4 linearibus longe pilosis conperse brunneo-granulosis, juvenilibus ovario longioribus, maturis longitudine achenii fere aequantibus; staminodiis in fructu manifestis; achenio ovoideo 1.2 mm. longo compresso minute ruguloso.

NETHERLANDS NEW GUINEA: climbing on undergrowth of rain-forest gullies, common, 15 km. SW. of Bernhard Camp, Idenburg River, alt. 1800 m., *Brass 12029* (TYPE), Jan. 1939.

Out of four staminate inflorescences which I examined, I found only one in which the perianth parts were four; in all others the perianth was 5-parted. It is a curious feature that the staminate inflorescence is practically glabrous (occasionally with a few scattered hairs on bracts and bracteoles), but the pistillate inflorescence is clothed with relatively long hairs on bracts, bracteoles, and perianth, in fact the pistillate inflorescence is very difficult to dissect on account of the long hairs being tangled in the pressed specimen. The pistillate flower is very short-pedicelled in this species. I had thought at first to place this specimen in *E. hymenophyllum* Hub. Winkl., but the only cystoliths apparent are along the main branches; very few stipules remain on the collection, and the staminate flowers are on much shorter pedicels than those in *E. hymenophyllum*. It should also be compared with *E. fragile* Hub. Winkl. The latter has simple canaliculate stems (when dry) and persistent stipules, as well as incised-serrate leaves; on the other hand, in *E. perpusillum* the stems are subterete (canaliculate only at the apex), the stipules caducous, and the leaves serrate-dentate, not incised. *Elatostema doormanianum* and *E. perpusillum* have a wide variation in the size of the leaves, but in the former the base is described as subauriculate on one side, in the latter both sides are cuneate at the base, or one side is at most somewhat obtuse.

Elatostema tridens sp. nov.

Herba parva repens ad apicem breviter adscendens parce ramosa; caulibus tenuibus pilosulis; foliis distichis subsessilibus oblongis, 7–13 cm.

longis 3–5 cm. latis, valde inaequilateralibus, apice inaequaliter grosse tridentatis, dente medio longiore, latere latiore dente minore interdum auctis, basi valde obliquis, latere angustiore subacuminatis, latere latiore anguste auriculato-semicordatis, auriculo petiolum 1–2 mm. longum tegente, supra prope marginem sparsim pilosulis ceterum glabris, subtus costa et nervis et interdum margine sparsim pilosulis; basi trinerviis, in latere latiore sursum nervo basali cum 1–2 lateralibus conjuncto, cystolithis supra conspersis subtus praecipue in nervis conspersis; stipulis vix 1 mm. longis hyalinis caducis; dioicis; inflorescentiis ♂ : singulis axillaribus subsessilibus; bracteis 2 exterioribus late ovatis circiter 4 mm. longis sub apice haud 1 mm. corniculatis, interioribus 6 circiter 3 mm. longis corniculatis, bracteolis corniculatis apice pilis paucis ornatis; floribus 5 breviter pedicellatis ante anthesin; perigonii segmentis 4 subaequalibus sub apice pilis paucis ornatis et corniculatis; inflorescentiis ♀ : singulis sessilibus; bracteis 2 exterioribus ovatis 3 mm. longis, concavis apicem versus subcarinatis et ciliatis sub apice corniculatis, interioribus angustioribus ciliatis et corniculatis, bracteolis ciliatis; floribus ♀ immaturis 2 mm. pedicellatis; perigonii segmentis 3 inaequalibus; ovario ellipsoideo.

NETHERLANDS NEW GUINEA: sandy edges of a stream in forest, 9 km. NE. of Lake Habbema, alt. 2700 m., *Brass 10770*, Oct. 1938; here and there on wet shady banks of a stream, Bele River, 18 km. NE. of Lake Habbema, alt. 2200 m., *Brass 11310* (TYPE), Nov. 1938.

Unfortunately I cannot suggest an alliance for this species.

SUBGEN. PELLIONIA

Elatostema angulare Hubert Winkler in Bot. Jahrb. 57: 549, fig. 8. 1922. — Schröter & Winkler in Rep. Spec. Nov. Beih. 83(2): 46. 1936.

NETHERLANDS NEW GUINEA: in flood-plain rain-forest, alt. 850 m., *Brass 13378, 13499*, March 1939 (low epiphyte; stem fleshy, unbranched, 60–80 cm. long).

These two staminate specimens suit the description of this species. Unfortunately there are no duplicates, and the pistillate plants are still unknown.

Elatostema sinuatum (Bl.) Hasskarl, Catalog. Pl. Bogor. 79. 1844, ampl. Hilde Schröter in Rep. Spec. Nov. Beih. 83(2): 29, 30. 1936.

BRITISH NEW GUINEA: riverine rain-forest, Palmer River, 2 miles below Black River Junction, alt. 100 m., *Brass 6906*, June 1936 (epiphytic close to the ground; stems reddish, 60–80 cm. long, one, two, or more produced from small fleshy stock 3–5 cm. diameter; petioles, midrib and nerves on the lower surface of the leaves reddish).

Although this specimen does not agree too well in foliar characters, I cannot seem to place it elsewhere than with this species. The leaves are 7.5–13 cm. long (including acumen 2 cm. long), 1.5–3.5 cm. wide, lanceolate or oblong-lanceolate, with cuneate base of lower leaves short and

broad, the upper half of the margin denticulate, entire below. The small leaves are lanceolate or ovate, 1–2 cm. long.

Elatostema sinuatum var. **pedunculatum** (Hub. Winkler) Hilde Schröter in Rep. Spec. Nov. Beih. 83(2): 32. 1936.

NORTHEAST NEW GUINEA: Sepik River near August River, Womersley, NGF 3800, Sept. 1949 (epiphyte near base of trees; branches long and spreading).

NETHERLANDS NEW GUINEA: common in rain-forest of river flood plain, 4 km. SW. of Bernhard Camp, Idenburg River, alt. 850 m., Brass 13689, Mar. 1939 (small fleshy unbranched semi-epiphyte; stems, petioles, and peduncles red); rain-forest of moist hollows, Bernhard Camp, Idenburg River, alt. 60 m., Brass 13771 (♀), 13771A (♂), April 1939 (common low epiphyte; several fleshy spreading branches 1–1.5 m. long; inflorescence red).

These collections appear to agree fairly well with the description cited above.

Elatostema pauperatum Hubert Winkler in Bot. Jahrb. 57: 551. 1922. — Schröter & Winkler in Rep. Spec. Nov. Beih. 83(2): 45. 1936.

NETHERLANDS NEW GUINEA: frequent in rain-forest ravines, 6 km. SW. of Bernhard Camp, Idenburg River, alt. 1200 m., Brass 12936, Feb. 1939 (ascending herb ± 60 cm.); epiphytic in rain-forest, Sennen, 40 km. inland from Nabire, alt. 300 m., Kanehira & Hatusima 12478, March 1940.

In size of leaves and small inflorescences these two collections agree with the description of *E. pauperatum* Hub. Winkl.

Aff. **Elatostema cauliflorum** Hubert Winkler in Bot. Jahrb. 57: 556. 1922.

NETHERLANDS NEW GUINEA: in high rain-forest, Papaya, 20 km. inland from Nabire, alt. 100 m., Kanehira & Hatusima 11715, Feb. 1940; Patema, 40 km. inland from Nabire, alt. 300 m., Kanehira & Hatusima 11964, Feb. 1940.

I have been at a loss to place these two collections with any degree of certainty. However, after examining the plate of *E. lamii* Hub. Winkl., which has been accepted as a synonym of *E. cauliflorum* by Schröter & Winkler, I am satisfied that the plants cited here are closely allied. The leaves are smaller, without a definitely marked acumen, and the flowers are smaller than those described for this species.

Elatostema inconstans sp. nov.

Planta scandens ut videtur dioica, parce ramosa, glabra partibus juvenilibus squamulis brunneis minutis parce conspersa; caulibus adscendentibus superne sat tenuibus subsulcatis inferne sublignescens subteretibus; foliis pusillis non visis; foliis normalibus chartaceis subsessilibus (petiolo vix 2 mm. longo), linearibus vel lineari-oblongis vel lanceolato-oblongis vel anguste obovatis, superioribus 5×0.4 – 0.8 cm., 4.5×1.3 cm., 6.5×2 cm., inferioribus 0.5×0.3 cm., 2.5×0.4 cm., 2×1 cm., parum inaequilateralibus, apice obtusiusculis vel subacuminatis, basi parum obliquis cuneatis vel obtusis, supra trientem vel dimidium serrato-dentatis,

utrinque cystolithis copiosis, pinnatinerviis vel in foliis angustioribus fere semipenninerviis, nervis lateralibus utrinsecus 5–9 arcuatim anastomosantibus; stipulis deciduis 7–9 mm. longis, lineari-lanceolatis, hyalinis; inflorescentiis ♂ : non visis; inflorescentiis ♀ : axillaribus sessilibus vel subsessilibus, bracteis et bracteolis stipulis similibus sed minoribus usque 2 mm. longis; floribus fasciculatis, 5-meris pedicellatis, pedicello usque fere 3 mm. longo, perigonii segmentis ad basin liberis ovatis 2 mm. longis valde carinatis sub apice longe cornutis, cornu usque 3 mm. longo; achenio immaturo 1.5 mm. longo ovoideo minute verruculoso.

BRITISH NEW GUINEA: on woody undergrowth of lower ridge forests, common, Palmer River, 2 miles below Black River junction, alt. 100 m., *Brass* 7154 (TYPE), July 1936 (climbing to 1 m.).

Possibly this collection is near *E. cauliflorum* or *E. paramelanum*, both of which are characterized by longish acuminate leaves; the leaves of *E. inconstans* are indeed variable but never longish acuminate; the flowers are closely clustered; the horns of the perianth-segments are as long as or longer than the main body of the segments.

Elatostema grammicum sp. nov.

Herbacea glaberrima; caulibus radicibus scandentibus apicem versus parce ramosis subteretibus; foliis pusillis non visis, foliis normalibus chartaceis, 5–11.3 cm. longis 1.7–4.3 cm. latis, lanceolatis vel elliptico-lanceolatis utrinque angustatis, apice breviter et obtusissime acuminatis, basi cuneatis, utrinque cystolithis oculo nudo manifestis et copiosis, costa supra canaliculata subtus prominula, nervis lateralibus utrinsecus 4 vel 5 subobscuris arcuatim conjunctis; petiolo 1.3–3.3 cm. longo; stipulis 1.5–2 mm. longis ovatis submembranaceis caducis; inflorescentiis ♂ : non visis; inflorescentiis ♀ : saepissime e caule scandente defoliato ortis, usque 2 cm. longis latisque laxe cymosis, squamulis minutis brunneis conspersis, pedunculo usque 1 cm. longo; bracteolis graciliter lanceolatis circiter 0.5 mm. longis; floribus pedicellatis, pedicello 0.5–2 mm. longo, 5-meris, perigonii segmentis ad basin liberis, oblongo-lanceolatis 2.5 mm. longis, apice cornutis, cornu 1–1.5(–2) mm. longo, staminodiis in flore minimis, in fructu obviis; achenio fere 2 mm. longo ovoideo compresso subreticulate brunneo-lineato.

BRITISH NEW GUINEA: Fly River, 528 mile Camp, alt. 80 m., *Brass* 6791 (TYPE), May 1936 (slender root-climber 1 m. long, attached to base of a tree; leaves glabrous, fleshy, the nerves very dark above; inflorescence green).

According to the description of *E. truncicola* Hub. Winkl., it must be the closest relative of this species; however, the Brass collection differs in having much smaller stipules, an abundance of linear cystoliths on both surfaces of the leaves, pedunculate and loosely cymose inflorescences.

Elatostema mafuluense sp. nov.

Suffruticosa, glabra, ramosa; specimine uno ramo vel ramulo consistente basi 4 mm. apice 1 mm. diametro sicco angulato; foliis normalibus petio-

latis, petiolo 1–2 cm. longo, oblongis 7–13 cm. longis, 2–4 cm. latis, apice abrupte acuminatis, acumine 0.7–1.5 cm. longo acuto, basi cuneatis paulo obliquis, integris vel subintegris, penninerviis, nervis lateralibus utrinsecus 7–9 utrinque manifestis obliquo-adscendentibus, cystolithis numerosis tenuiter linearibus; stipulis lanceolatis 1.1 cm. longis, caducis; inflorescentiis ♂ : non visis; inflorescentiis ♀ : circiter 10 mm. diametro, pedunculatis, pedunculo 3 mm. longo, axillaribus; floribus 2 mm. pedicellatis, perigonii segmentis 2–2.5 mm. longis sub apice carinato-cornutis cornu 1–1.5 mm. longo, staminodiis manifestis, achenio 2 mm. longo, 1.2 mm. lato, ovoideo lateraliter compresso, stramineo tuberculato.

BRITISH NEW GUINEA: amongst herbaceous growth in gully of forest, Mafulu, alt. 1200 m., *Brass* 5149 (TYPE), Sept.-Nov. 1933 (low somewhat fleshy shrub with shining thick leaves; branches, petioles and inflorescence reddish).

I am at a loss to suggest a close relative of this species. Tracing it through the key in Rep. Sp. Nov. Beih. 83(2): 2–8. 1936, it seems nearest the description of *E. truncicola* Hub. Winkl., from which one gathers that the main part of the perianth is 2–2.5 mm. long, and by referring to the key finds the horns are 2 mm. long, that is in all 4–4.5 mm. long, which is approximately the size of the fruiting calyx in the species above described. However, *E. truncicola* is a climber with rooting stems, reddish fruit, and leaves resembling those of *Procris*; none of these characters appear to suit *E. mafuluense*.

Elatostema curvitepalum sp. nov.

Planta herbacea vel suffruticulosa epiphytica glabra; caulibus breviter scandentibus simplicibus, internodiis 1–1.5 cm. longis; foliis chartaceis subsessilibus (petiolo haud 1 mm. longo) obovato-oblongis, superioribus 9.5–16 cm. longis, 2.8–4 cm. latis, infimis 2 cm. longis, 0.8 cm. latis, longe acuminatis, acumine 1.5–3.5 cm. longo, basi paulo obliquis cuneatis vel obtusiusculis, margine (fere integris) obsolete denticulatis vel undulatis, cystolithis linearibus supra parcissime conspersis subtus praecipue in costa et nervis ornatis, nervis lateralibus utrinsecus costa 8–10 utrinque manifestis; stipulis hyalinis lineari-lanceolatis 6–12 mm. longis, basi 1.5–2 mm. latis; inflorescentiis ♂ : non visis; inflorescentiis ♀ : axillaribus, laxe capituliformibus vel compacte cymosis, 1–1.5 cm. diametro, subsessilibus; floribus pedicellatis, pedicellis usque 2.5 mm. longis; perigonii segmentis obovato-oblongis circiter 1.5 mm. longis cucullatis margine brunneo-glanduloso-adspersis; staminodiis brunneis; achenio ovoideo lateraliter compresso, verruculoso, 1 mm. longo.

BRITISH NEW GUINEA: epiphytic near ground on riverbank trees or on undergrowth bushes of lower ridge forests, Palmer River, 2 miles below junction Black River, alt. 100 m., *Brass* 6871 (TYPE), 7155, June, July 1936 (small epiphyte of shortly climbing habit).

In addition to the above collections which are pistillate, there is a staminate collection which may belong here: *Brass* 6722, Fly River, 528 mile Camp, alt. 80 m., a small plant climbing to 2 m. on substage tree,

with branches and leaves somewhat fleshy, and very small fleshy white flowers in short panicles below the leaves. Although superficially the leaves look like those of the pistillate collections, they are larger and under a lens appear abundantly punctate on the upper surface; the lower surface has a brownish color, whereas the others are grayish. Since they do not come from the same locality, with the paucity of material for comparison it seems best only to call attention to this collection here.

Elatostema eludens sp. nov.

Planta circiter 25–35 cm. alta, glabra; caulibus in sicco sulcatis vel angulatis, internodiis inferioribus usque 4 cm. apicem versus 1 cm. longis; foliis normalibus breviter petiolatis, petiolo 3–11 mm. longo, tenuiter chartaceis, oblongo-lanceolatis, 13–17 cm. longis, 3–6 cm. latis (inferioribus 6.5×2 cm.), basi obliquis, utrinque cuneato-obtusis, apice longe acuminate, acumine 2–4 cm. longo, subintegro vel inferiore dentato, margine superiore $\frac{1}{2}$ leviter crenato-dentatis vel dentato-serratis, supra copiose punctatis subtus pallidioribus, penninerviis, nervis lateralibus utrinsecus 8–11 oblique adscendentibus prominulis, secundariis et rete utrinque manifestis; inflorescentiis ♂: non visis; inflorescentiis ♀: axillaribus, sessilibus 6–8 mm. diametro; floribus usque circiter 2 mm. pedicellatis, perigonii segmentis 5, lineari-oblongis carinato-cucullatis circiter 1.5 mm. longis, (in fructu) staminodiis expansis fere 1.5 mm. longis, achenio ovoideo lateraliter compresso 1 mm. longo 0.5 mm. lato, brunnei-lineolato.

NETHERLANDS NEW GUINEA: abundant in the dense herbaceous undergrowth of rain-forest on alluvial flats, Bernhard Camp, Idenburg River, alt. 55 m., *Brass 13816* (TYPE), April 1939.

The flowers of this species are very much like those of *E. curvitepalum* described above, but smaller. The leaves resemble those of *E. Weinlandii*. In the latter, however, the perianth is finer and shorter than in *E. eludens*.

SUBGEN. ELATOSTEMATOIDES

Elatostema Beccarii Hilde Schröter in Rep. Spec. Nov. Beih. 83(2): 125, pl. 35. 1936.

BRITISH NEW GUINEA: gregarious herb abundant below flood-level on slopes of high forested promontories along river, Fly River, 528 mile Camp, alt. 80 m., *Brass 6726*, May 1936; on inundated slopes of rocky promontories along river, Palmer River, 1 mile above Black River junction, *Brass 6959, 6962, 6963*, June 1936 (the chief constituents of a dense herbaceous inundation-community on the steep sides of a forest-clad promontory, massed in pure stand on limestone outcrop frequently covered by river); Palmer River, 2 miles below Black River junction, alt. 100 m., *Brass 7107*, June 1936.

All these collections agree with the habit of *E. Beccarii* Schröter as shown in the plate cited above. Schröter mentioned in the discussion that the flowers in the type are badly preserved. Here the inflorescences (up to 3.5 cm. broad and 2 cm. long) are for the most part not sessile and capituliform but pedunculate (peduncles up to 5 mm. long) and cymose.

The perianth segments are elliptic-oblong or oblong rather than lanceolate or linear-lanceolate, and about 1 mm. long; the fruit is slightly longer.

Elatostema Weinlandii K. Schumann in Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee Nachtr. 254. 1905. — Hubert Winkler in Bot. Jahrb. 57: 553. 1922.

Elatostema Weinlandii var. *eu-Weinlandii* Hilde Schröter in Schröter & Winkler in Rep. Sp. Nov. Beih. 83(2): 115. 1936.

NORTHEAST NEW GUINEA: Sattelberg, alt. about 1000 m., *Clemens* 3110, May 1936; Boana, alt. about 900 m., *Clemens* 8397, July 1938 (plant 4–5 ft. high); vicinity of Kajabit Mission, alt. 240–600 m., *Clemens* 10592, Aug. 1939; jungle ravine, 4 miles south of Langemak Bay (vicinity of Finschhafen), alt. 100 m., *Sawyer* 103, Apr. 1945.

BRITISH NEW GUINEA: plentiful in flood-plain forest, Palmer River, 2 miles below Black River junction, alt. 100 m., *Brass* 7330, July 1936 (usually gregarious in stands 80–100 cm. high).

Elatostema Weinlandii var. *yulense* (Hallier f.) Hubert Winkler in Bot. Jahrb. 57: 555. 1922. — Schröter & Winkler in Rep. Sp. Nov. Beih. 83(2): 120. 1936.

BRITISH NEW GUINEA: abundant in semi-shade on promontories along river, Fly River, 528 mile Camp, alt. 80 m., *Brass* 6778, May 1936 (woody herb 50–60 cm. high; petioles red); gregarious in forest undergrowth on high promontories along river, Fly River, 528 mile Camp, alt. 80 m., *Brass* 6776, May 1936 (scrambling shrub attaining 2 m., inflorescence red, usually lateral).

The first cited collection (*Brass* 6778) is pubescent along the stems and the veins of the lower surface of the leaves. The leaves are 11–20 cm. long, 3–5 cm. broad. This is very like the description of var. *yulense*. The other specimen has much broader leaves, 17–19 cm. long, 6–7.5 cm. broad. The leaves are glabrous except at the very base; the petioles and the inflorescences are pubescent.

Elatostema Weinlandii var. *Kochii* (Valeton) Hubert Winkler in Bot. Jahrb. 57: 554. 1922. — Schröter & Winkler in Rep. Sp. Nov. Beih. 83(2): 119, *pl.* 31. 1936.

NETHERLANDS NEW GUINEA: common in rain-forest of river flats, 4 km. SW. of Bernhard Camp, Idenburg River, alt. 850 m., *Brass* 13688, March 1939 (semi-epiphytic; stems to 1 m. long, not branched); abundant in rain-forest on lower slopes, Bernhard Camp, Idenburg River, alt. 60 m., *Brass* 13798, April 1939 (ascending and branched, about 60 cm. high); rain-forest of moist hollows, Bernhard Camp, Idenburg River, alt. 60 m., *Brass* 13771B, 13771C, April 1939 (common low epiphyte; several fleshy spreading branches 1–1.5 m. long).

Elatostema Weinlandii var. *inamoenum* (Hub. Winkler) Hilde Schröter in Schröter & Winkler in Rep. Sp. Nov. Beih. 83(2): 118. 1936.

NORTHEAST NEW GUINEA: jungle ravine, 4 miles south of Langemak Bay (vicinity of Finschhafen), alt. about 100 m., *Sawyer* 101, April 1945 (plants 5–10 inches high).

Cf. *Elatostema rigidum* var. *laxum* (Elmer) Hilde Schröter in Schröter & Winkler in Rep. Sp. Nov. Beih. 83(2): 111. 1936.

BRITISH NEW GUINEA: forest, Koitaki, alt. about 450 m., Carr 12018, Apr. 1935 (herb about 3 ft. tall; flowers whitish).

The inflorescence on the specimen at hand is too immature to show details. The leaves are most like those of *E. rigidum* var. *laxum* (Elm.) H. Schröter, but in some of the Philippine specimens the dentation is coarser. Probably *E. kietanum* Rech. is closely related, but the leaves of Rechinger's species are not so definitely serrate-dentate.

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