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THE HAWAIIAN PEPEROMIAS

BY

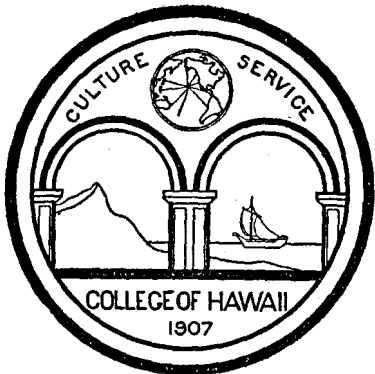
CASIMIR de CANDOLLE  
(Geneva, Switzerland)

AND

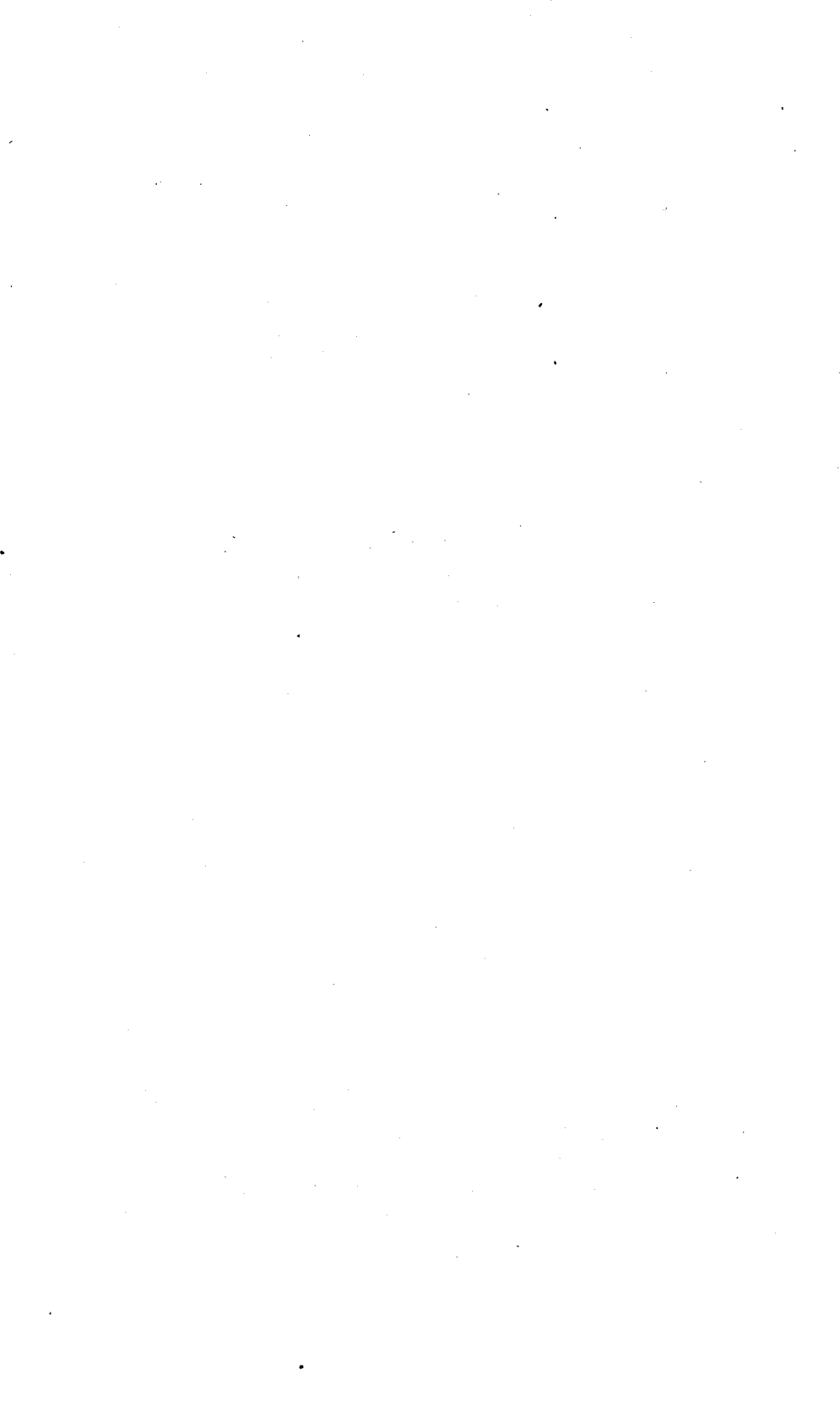
DESCRIPTIONS OF NEW SPECIES  
OF  
HAWAIIAN PLANTS.

BY

J. F. ROCK



HONOLULU:  
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## INTRODUCTION.

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About two years ago, Prof. Casimir de Candolle of Geneva, Switzerland, was asked to identify a considerable number of Hawaiian Peperomias, which the writer had collected under the auspices of the Board of Commissioners of Agriculture and Forestry of the Territory of Hawaii. In response Prof. De Candolle expressed his willingness to undertake the determination of the Hawaiian representatives of this difficult genus and to publish his findings in a Bulletin of the College of Hawaii. The monograph printed on the following pages is the result.

This monograph includes all of the Hawaiian Peperomias previously published, together with the large number of new species collected by the writer and those added by Abbé Urbain Faurie, who visited these islands in the year 1910 to make botanical collections. Fortunately Abbé Faurie sent most of the Peperomias of his collection to Prof. De Candolle, but a few were published by H. Lévillé.

Prof. De Candolle has compiled a most excellent key to the Hawaiian species, which will greatly facilitate their identification by future collectors. We have inserted eight illustrations from photographs of co-types, deposited in the Herbarium of the Board of Agriculture and Forestry, now in the safe-keeping of the College of Hawaii. The types are in the Herbarium of Prof. De Candolle, Geneva, Switzerland.

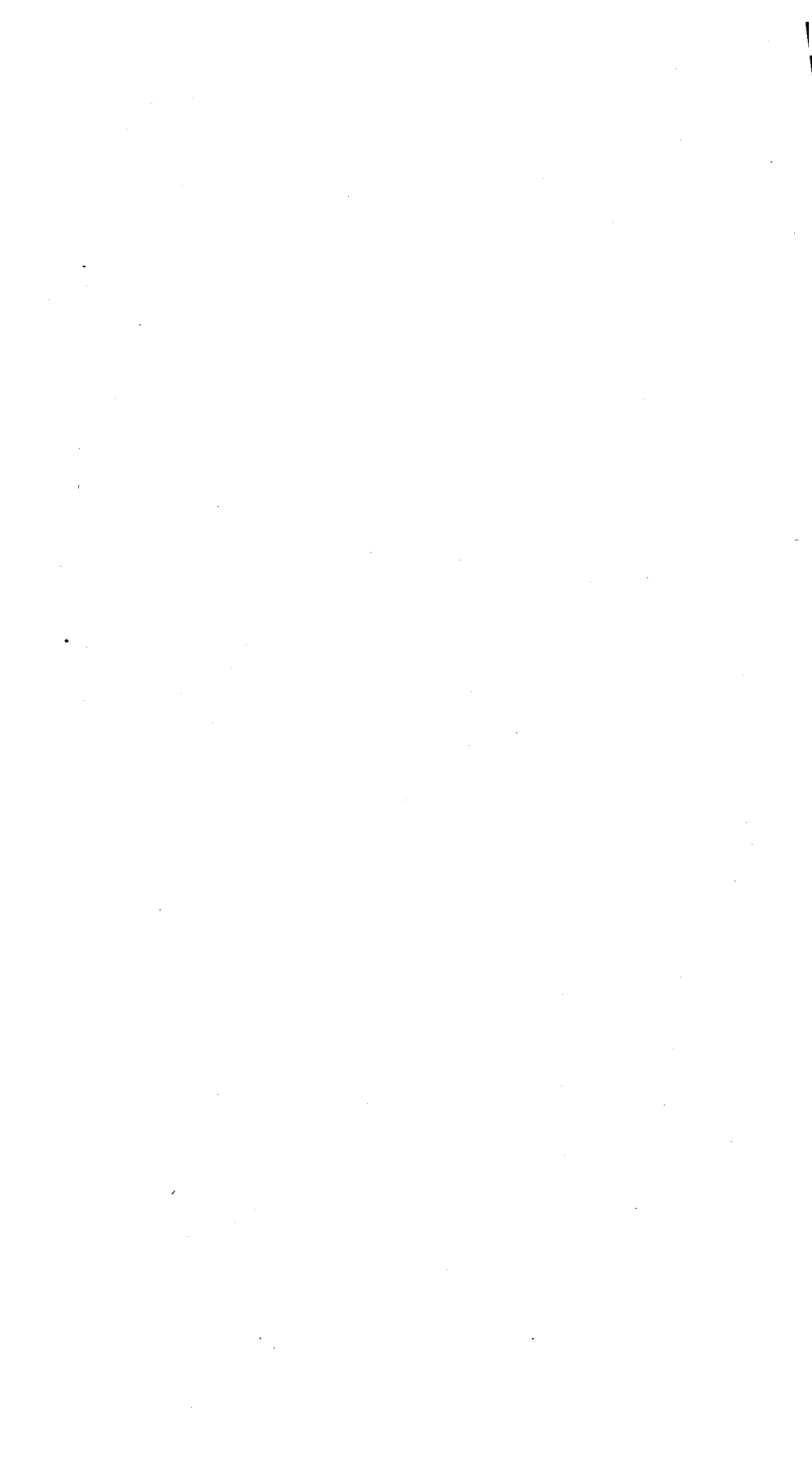
Prof. De Candolle finds seventy-three species of Peperomias in the Hawaiian material already analyzed. In the writer's opinion there remain at least twice that number of species yet to be discovered in these islands. Owing to their succulency, these plants are difficult to prepare for the herbarium and consequently have been more or less neglected in the past. Any collector who will pay particular attention to the Hawaiian Peperomias is certain to be well rewarded with new species.

The Hawaiian rain-forests are full of Peperomias, but they are by no means confined to these districts for they also occur in very dry situations as, for example, on lava fields in desert regions. They are, of course, most numerous in the rain-forests and especially at elevations of from 3500 to 5000 feet.

It may be of interest to note here that the native name for all species of Peperomia is *Alaalawainui*.

JOSEPH F. ROCK.

Honolulu, July 2nd, 1913.



# The Hawaiian Peperomias.

BY

CASIMIR DE CANDOLLE.

The diagnoses and determinations contained in the following pages are the result of a study of the Hawaiian Peperomias collected by Mr. J. F. Rock, which were kindly put at my disposal, two years ago, by the Board of Agriculture and Forestry of Hawaii, and of those which I received at the same time from Father Faurie. In order to facilitate future researches on the subject, I also give, in this paper, an analytical key including all the species hitherto discovered in the Archipelago.

As Hillebrand\*, long ago, pointed out: "the flora of the Hawaiian Islands is very peculiar and contains a much larger proportion of endemic plants than that of any other country." Indeed, according to him, 75.93% of its Vascular Cryptogams and Phanerogams are endemic!

The striking peculiarity of the Hawaiian flora is well illustrated in the case of *Piperaceae*. It is highly interesting, for instance, to find that although there are many spontaneous species of *Piper* in the Pacific and Malayan Islands, this genus has no other representatives in the Hawaiian Archipelago than two cultivated and certainly introduced species namely: *P. Bette* L. and *P. methysticum* Forst., while Peperomias are there extremely numerous and nearly all endemic.

In his Flora of the Hawaiian Islands, published in 1888, Hillebrand describes 19 Peperomias. Since then, before undertaking the present revision, I had already added to them 5 new species while L veill  had added two. Finally the two collections mentioned above have furnished no less than 47. This brings to 73 the total number of Hawaiian Peperomias actually known, of which 67 are endemic. Such a large increase of the number of species belonging to the same genus will, at first, seem hardly credible, and I must say that it greatly surprised me. But one must not forget that all these types are distributed among six islands, each of which has, in a great measure, a flora of its own. For, again to quote Hillebrand†: "The great majority of endemic

\* Flora of the Hawaiian Islands pp. XV and XVII.

† l. c. p. XVII.

species inhabit a limited area, are confined to a single island or portion of it."

Only 6 of the 73 species are not endemic. These are: *P. reflexa* Dietr., *P. leptostachya* Hook. and Arnott, *P. lonchophylla* C. DC., *P. blanda* Kunth, *P. Fernandeziana* Miq. and *P. pallida* Dietr.

*P. reflexa*, as it is well known, grows in nearly all the inter-tropical or sub-tropical countries, so that its presence in the Hawaiian Islands cannot suggest anything concerning the enigmatical origin of their flora. *P. leptostachya*, which has been found in Savaii, Australia and Japan, as well as *P. lonchophylla*, growing in Savaii, connect that flora with those of the western parts, while *P. blanda*, widely spread in the intertropical countries of America, supplies a link between it and the floras of that continent. *P. Fernandeziana* is a species of Juan Fernandez and Chile, to which I referred formerly a specimen collected by Nuttall in Oahu. But as the plant has not been seen there since, I now share Hillebrand's doubts with regard to its presence in that island. And I must say as much of the plant attributed to *P. pallida* by Hooker and Arnott, because their description does not at all agree with that of Dietrich.

The great majority of the Hawaiian species belong to the group of Peperomias having verticillate or opposed leaves, or, more exactly, of those having leaves *apparently* so disposed owing to a periodic and excessive shortening of the internodes. If we exclude *P. pallida* for the reason alluded to above, we find that only 5 species have alternate leaves while everywhere else that type is largely predominant. Another fact deserving also a special notice is the presence in the Hawaiian Archipelago of several species having an ovary with two terminal stigmas, a character which occurs only in a very limited number of Peperomias inhabiting the American Continent.

All the measurements and other leaf characters mentioned in the following analytical key and diagnoses refer to the leaves of the upper part, that is to say, of the flowering part of the branches. The width of the leaves is always taken from their widest portions.

## Key to the Hawaiian Species.

1. A single entire and small stigma or no visible stigma.
2. Leaves in whorls.
3. Rhachis glabrous.
4. Limb glabrous on both surfaces.
5. Length of limb not exceeding 2 centimeters.
  - Limb ovate-elliptic, acute at the base, subacute, or obtuse at the apex, up to 2 cm long and 1.1 cm wide ..... *globulanthera* 1
  - Limb lanceolate, 1.6 cm long, 0.4-0.6 cm wide ..... *ligustrina*. 2
5. Length of limb from 2 to 6 centimeters.
6. Stigma inserted obliquely, a little below the summit of the ovary.
7. Limb 1-nerved.
  - Limb linear-lanceolate, 2-3.8 cm long, 0.8-1.6 cm wide ..... *Hesperomannii*. 3
7. Limb 5-nerved.
  - Limb subobovate-lanceolate, cuneate at the base, up to 3 cm long and 1.1 cm wide. Stem and branches flexuose. *hawaiiensis*. 4
  - Limb elliptic-lanceolate, about 3 cm long and 1.2 cm wide. Branchlets erect, up to 17 cm high ..... *koolauana*. 5
  - Limb elliptic-lanceolate, about 4 cm long and 1.5-2 cm wide. Stem erect, up to 6 dec. high ..... *membranacea*. 6
7. Limb 5-plinerved.
  - Limb elliptic-lanceolate, up to 5.5 cm long and 2.7 cm wide. Stem erect, about 3 dec. high ..... *nudilimba*. 7
7. Limb penninerved.
  - Limb obovate-lanceolate or elliptic-lanceolate, up to 6 cm long and 1.5 cm wide. Stem erect, 3.5 dec. high ..... *kauaiensis*. 8
6. Stigma inserted on the summit of the ovary.
7. Limb 5-plinerved.
  - Limb elliptic-lanceolate, 3.2 cm long, 1.1 cm wide ..... *Hochreutineri*. 9
4. Limb glabrous above, pubescent underneath.
5. Length of limb not exceeding 2.3 centimeters.
6. Stigma inserted obliquely, a little below the summit of the ovary.
7. Spikes little longer than the leaves.
  - Limb ovate or oblong-ovate, acute or subacute at the extreme base, subacute at the apex, 2.3 cm long, 1.1 cm wide. *eekana*. 10

7. Spikes much longer than the limbs.  
Limb subovate-elliptic, acute at the base, obtuse or subacute at the apex, 2 cm long, 1 cm wide ..... kohalana. 26
6. Stigma inserted on the summit of the ovary.  
Limb elliptic-lanceolate, up to 1.5 cm long and 1 cm wide ..... Cookiana. 11
5. Length of limb from 3 to 6 centimeters.
6. Stigma inserted obliquely, a little below the summit of the ovary.
7. Limb 3-nerved.  
Limb lanceolate, up to 4.5 cm long and 1 cm wide ..... Knudsenii. 12
7. Limb 5-7-nerved.  
Limb obovate-lanceolate or elliptic-lanceolate, cuneate at the base, subacute or acuminate at the apex, up to 4.5 cm long and 2 cm wide ..... hypoleuca. 13  
Limb obovate-elliptic, acute at the base, obtuse at the apex, 3.5-4 cm long, 2.5-3.5 cm wide ..... latifolia. 14  
Limb elliptic-lanceolate, 3.2 cm long and 1.7 cm wide ..... kamoloana. 15
7. Limb 5-plinerved.  
Limb ovate, acute at the base, sub-obtusely attenuate at the apex, 3.2-4 cm long, up to 2 cm wide ..... maunakeana. 16  
Limb elliptic-lanceolate, acute at both ends, up to 5 cm long and 2 cm wide..... longirama. 17
6. No visible stigma.
7. Limb 5-plinerved.  
Limb elliptic-lanceolate, acute at the base, subacute at the apex, 5 cm long, 2.5 cm wide ..... astigmata. 18
6. Stigma inserted on the summit of the ovary.  
Limb ovate-lanceolate, acute at the base, obtusely attenuate at the apex, 2.2-3 cm long, 1.3-1.8 cm wide..... ellipticibacca. 19  
Limb elliptic-lanceolate, acute at both ends, 5 cm long, 2-2.5 cm wide.... molokaiensis. 20
5. Length of limb from 7 to 12.5 centimeters.
6. Stigma inserted obliquely, a little below the summit of the ovary.
7. Stem upwards glabrous or puberulous. Limb penninerved.  
Limb elliptic-lanceolate, acute at the base, subacute at the apex, 7.9 cm long, 3-6 cm wide ..... Macraeana. 21
7. Stem upwards densely hirsute. Limb 7-plinerved.  
Limb elliptic-lanceolate, acute at both ends, up to 12.5 cm long and 5.7 cm wide.... pachycaulis. 22
4. Limb pubescent only along the nerves on the upper surface.



6. Stigma inserted on the summit of the ovary.  
Limb elliptic-lanceolate, acute at the base, subacute at the apex, 4.5-5.5 cm long, 2-2.5 cm wide ..... *psilostigma*. 23
4. Limb pubescent on both surfaces.
5. Length of limb not exceeding 2 centimeters.
6. Stigma inserted obliquely, a little below the summit of the ovary.  
Limb rounded-ovate, 1.2-2 cm long, 1-1.2 cm wide ..... *opacillimba*. 24  
Limb spatulate, cuneate at the base, rounded at the apex, 1.2-2 cm long, 0.6-0.9 cm wide ..... *mauiensis*. 25  
Limb subovate-elliptic, acute at the base, obtuse or subacute at the apex, about 2 cm long and 1 cm wide.....*kohalana*. 26  
Limb elliptic-lanceolate, acute at both ends, up to 2 cm long and 1 cm wide..... *leptostachya*. 27
5. Length of limb from 2.5 to 3.2 centimeters.
6. Stigma inserted obliquely, a little below the summit of the ovary.  
Limb ovate-oblong to lanceolate, 3-nerved, 1.9-3.2 cm long, 0.8-1.4 cm wide..... *pleiostachya*. 28  
Limb ovate, acute at the extreme base, acutely attenuate at the apex, 3-nerved, 2-2.7 cm long, 1.1-1.6 cm wide..... *refractifolia*. 29  
Limb elliptic-lanceolate, acute at both ends, 3-nerved, up to 2.5 cm long and 0.7 cm wide ..... *asperulata*. 30  
Limb elliptic-lanceolate, acute at the base, subacutely attenuate at the apex, 2.8 cm long, 1.1 cm wide..... *Helleri* var. *ternifolia*. 49  
Limb elliptic, acute at both ends, 3-nerved, up to 2.5 cm long and 1.5 cm wide..... *sandwicensis*. 31  
Limb elliptic-lanceolate, acute at both ends, 5-nerved, up to 3 cm long and 1.5 cm wide. .... *leptostachya*. 27  
Limb obovate or rounded-obovate, cuneate at the base, up to 3 cm long and 1.5 cm wide. .... *pachyphylla*. 32  
Limb ovate, acute at the extreme base, shortly and acutely attenuate at the apex, 5-nerved, up to 3 cm long and 2 cm wide.... *ovatilimba*. 33  
Limb elliptic, acute at the base, rounded or at least obtuse at the apex, 7-plinerved, 2-2.5 cm long, 1.5 cm wide.....*expallescens*. 34
5. Length of limb from 3 to 6 centimeters.
6. Stigma inserted obliquely, a little below the summit of the ovary.

7. Stigma inconspicuous.  
Limb ovate, acute at the extreme base, shortly and acutely attenuate at the apex, 7-nerved, 3-4 cm long, 1.7-2.5 cm wide....  
..... subnudipetiola. 35
7. Stigma pilose.  
Limb elliptic-lanceolate, acute at the base, shortly and acutely attenuate at the apex, up to 4 cm long and 2 cm wide.....  
..... flavinerva. 36
6. Stigma inserted on the summit of the ovary.
  7. Limb 5-7-nerved.  
Limb elliptic, acute at the base, subacute at the apex, 4-5 cm long, 1.8-2 cm wide.....  
..... pukocana. 37
  7. Limb 5-plinerved.  
Limb elliptic, acute at the base, shortly and subacutely acuminate at the apex, 4-5 cm long, 2-2.5 cm wide.....trichostigma. 38
5. Length of limb 6-17 centimeters.
  6. Stigma inserted obliquely, a little below the summit of the ovary.
    7. Limb 5-nerved. Stigma glabrous.  
Limb elliptic-lanceolate, acute at the base, acutely acuminate at the apex, up to 8 cm long and 4 cm wide.....lanaiensis. 39
    7. Limb 5-nerved. Stigma pilose.  
Limb elliptic-lanceolate, acute at the base, acutely acuminate at the apex, 5-6 cm long, 2.3-2.5 cm wide ..... blanda. 40  
Limb elliptic, acute at both ends, up to 6 cm long and 4 cm wide...blanda var. Remy!
    7. Limb 7-plinerved. Stigma inconspicuous.  
Limb elliptic-lanceolate, up to 8 cm long and 4 cm wide .....nudipetiola. 41
3. Rhachis pubescent.
  4. Limb  $\pm$  pubescent on both surfaces, at least when young.
    5. Stigma inserted on the summit of the ovary.
      6. Spike densiflorous.  
Limb rounded or rhomboid-elliptic, 0.6-1.2 cm long. Berry ovate-oblong.....reflexa. 42
      6. Spike laxiflorous.  
Limb rounded or ovate-obtuse, 0.7-1 cm long. Berry subglobose. ....parvula. 43
2. Leaves opposite.
  3. Length of limb not exceeding 4 cm.
    4. Limb glabrous on both surfaces; ciliate near the apex.
      5. Stigma inserted obliquely, a little below the summit of the ovary.
    6. Stem glabrous.  
Limb ovate-lanceolate, acute at the extreme base, shortly and acutely attenuate at the apex, 5-nerved, 2-3.5 cm. long, 1.7-3.2 cm wide ..... subnudilimba. 44

- Limb elliptic-subobovate-lanceolate, cuneate at the base, subacute at the apex, 5 nerved, up to 3.7 cm long and 1.5 cm wide..... nudipeduncula. 45
6. Stem hirsute.  
Limb ovate-oblong, acute at the apex, 3-nerved, 2-2.5 cm long, 1.4 cm wide..... Fernandeziana. 46
4. Limb glabrous above, pubescent underneath.
5. Stigma inserted obliquely, a little below the summit of the ovary.  
Limb rhombo-elliptic or sublanceolate, cuneate or obtuse at the base, attenuate or sub-obtusely acuminate at the apex, 1.5-2 or 3.5 cm long, 1-1.5 cm wide..... insularum. 47  
Limb ovate-elliptic or obovate-rounded; cuneate at the base, obtuse at the apex, 5-7 nerved, 3.5-4 cm long, 2.5-3.5 cm wide..... latifolia. 14
5. Stigma inserted on the summit of the ovary.  
Limb elliptic, cuneate at the base, acute or subacute at the apex, 4-5.5 cm long, 2-3 cm wide ..... erythroclada. 48
4. Limb pubescent on both surfaces.
5. Stigma inserted obliquely and a little below the summit of the ovary.  
Limb obovate or rounded-obovate, cuneate at the base, 2-3 cm long, 1.8-2 cm wide..... pachyphylla. 32  
Limb elliptic-oblong, acute at both ends, 3-nerved, about 3 cm long and up to 1.2 cm wide ..... Helleri. 49
3. Length of limb 5.5-10 centimeters.
4. Limb glabrous above, pubescent underneath.
5. Stigma inserted obliquely, a little below the summit of the ovary.
6. Stem and branchlets glabrous or subglabrous.  
Limb obovate, cuneate at the base, obtuse at the apex, 5-plinerved, about 8 cm long and 4 cm wide..... obovatilimba. 50  
Limb elliptic-lanceolate, acute at both ends, 7-plinerved, 9.5 cm long, 3.5 cm wide..... subglabricaulis. 51
5. Stigma inserted on the summit of the ovary.
6. Stem and branchlets glabrous or subglabrous.  
Limb elliptic-lanceolate or elliptic, acute at the base, acutely and long or shortly acuminate at the apex, 5.5-7.5 cm long, 2.8-2.5 or 3.2-4.5 cm wide ..... disparifolia. 52
6. Stem and branchlets pubescent, at least upwards. Spikes shorter than the limbs.

7. Stigma orbicular and ciliate.  
Limb elliptic-obovate, cuneate at the base, obtuse or shortly attenuate at the apex, 5-plinerved, up to 8 cm long and 4 cm wide ..... *astrostigma*. 53
7. Stigma papillose.  
Limb subobovate-lanceolate, cuneate at the base, obtuse or acute at the apex, 7-plinerved, 7-10 cm long, 4.2-4.7 cm wide ..... *cornifolia*. 54
4. Limb pubescent on both surfaces, 11-plinerved.  
Limb ovate-acuminate, rounded at the base, acutely acuminate at the apex, up to 7.5 cm long and 3 cm wide.....*hirtipetiola*. 55
2. Leaves alternate.
3. Limb glabrous on both surfaces.
4. Stigma inserted obliquely and a little below the summit of the ovary.
5. Peduncles about as long as the petioles.  
Limb oblong-elliptic, cuneate at the base, acute at the apex, 3-nerved, 2.5 cm long, 0.7-0.8 cm wide ..... *oahuensis*. 56  
Limb elliptic-lanceolate, cuneate at base, acute at the apex, 3-4 cm long, 0.8-1 cm wide....  
..... *oahuensis* forma b.  
Limb elliptic-lanceolate, cuneate at the base, acutely acuminate at the apex, up to 8.5 cm long and 1.9 cm wide.....*lonchophylla*. 57
5. Peduncles much longer than the petioles.  
Limb elliptic-rhomboid, cuneate at the base, subobtuse at the apex, 3-5 nerved, up to 6 cm long and 2 cm wide.....*pallida*. 58
3. Limb glabrous above, pubescent underneath.
4. Stigma inserted obliquely and a little below the summit of the ovary.  
Limb rounded or obovate-rounded, 5-nerved, about 3.2 cm long and up to 3.7 cm wide .....*dentulibractea*. 59  
Limb rhomboid, cuneate at the base, subobtuse at the apex, 3-5-nerved, 4 cm long, 2 cm wide ..... *purpurascens*. 60
4. Stigma inserted on the summit of the ovary.  
Limb rounded, 7-nerved, 1.5-2 cm long.....  
..... *punaluuna*. 61
1. One bilobulate stigma or two distinct stigmas, lobules and stigmas very small, inserted on the summit of the ovary and opposed to the rachis.
2. Leaves in whorls.
3. Length of limb not exceeding 2.7 centimeters.
4. Limb glabrous on both surfaces.  
Limb oblong, cuneate at the base, acute at the apex, up to 2.7 cm long and 0.5 cm wide ..... *Fauriel*. 62
4. Limb pubescent on both surfaces.

5. Stigmas fleshy, glabrous.  
Limb obovate, cuneate at the base, up to 2.3  
cm long and 1.2 cm wide .....  
..... sarcostigma. 63
5. Stigmas ciliate.  
Limb obovate, cuneate at the base, up to 1.7  
cm long and 0.9 cm wide....mahanana. 64
3. Length of limb 4-5 centimeters.  
5. Stigmas ciliate.  
Limb oblong-obovate, cuneate at the base,  
rounded or at least obtuse at the apex, 5-  
plinerved, 4-5 cm long 2-2.7 cm wide.....  
..... rigidolimba. 65
3. Length of limb 6-17 centimeters.  
4. Limb glabrous on both surfaces, 5-plinerved.  
Limb lanceolate, up to 7.5 cm long and 2 cm  
wide ..... nervosa. 66
4. Limb glabrous above, pubescent underneath.  
5. Stem and branches quite glabrous.  
Limb elliptic-lanceolate, cuneate at the base,  
obtusely or acutely acuminate at the apex,  
9-10 cm long, 3.2-4.6 cm wide.....  
..... Illifolia forma c. 69
5. Stem and branches pubescent, at least upwards.  
6. Stigmas glabrous.  
Limb ovate-acuminate, rounded at the base,  
subacutely acuminate at the apex, 5-7- pli-  
nerved, up to 6 cm long and 3 cm wide....  
..... Rockii. 67
6. Stigmas long ciliate.  
Limb ovate, rounded at the base, acutely  
acuminate at the apex, 7-nerved, 9.7 cm  
long, 5.1 cm wide.....parvanthera. 68  
Limb elliptic-lanceolate, cuneate at the base,  
obtusely or acutely acuminate at the apex,  
up to 9 cm long and 3.5 cm wide.....  
..... Illifolia. 69
4. Limb pubescent on both surfaces, penninerved.  
Limb elliptic-lanceolate, acute at both ends,  
14-17 cm long, 5-7 cm wide.....  
..... longillimba. 70
2. Leaves opposite.  
3. Limb glabrous on both surfaces.  
Limb elliptic-, or subobovate-lanceolate, 5-pli-  
nerved, about 4 cm long and 2-2.5 cm wide  
..... pluvigaudens. 71
3. Limb glabrous above, pubescent underneath.  
Limb ovate, rounded at the base, sub-attenuate  
or obtuse at the apex, 5-nerved, 2.7-3 cm  
long, 1.7-2.4 cm wide...villipeduncula. 72
3. Limb pubescent on both surfaces.  
Limb ovate-lanceolate, acute at the base,  
acutely acuminate at the apex, penninerved,  
8-10 cm long, 3.2-3.5 cm wide .....  
..... graciliscens. 73

1. *Peperomia globulanthera* C. DC. n. sp.

Caulis ramisque glabris; foliis ternis vel oppositis, modice petiolatis; limbo ovato-elliptico basi acuto apice subacuto utrinque glabro superne ciliolato 3-nervio, petiolo glabro; pedunculis axillaribus terminalibusque glabris petiolos superantibus, spicis glabris limbos paullo superantibus; bracteae pelta rotunda centro pedicellata; antheris globosis quam filamenta multo brevioribus; ovario emerso ovato superne attenuato, summo apice stigma globosum pilosum gerente, bacca oblongo-ovata glandulis asperulata sine pseudocupula maturitate rhachis processu conico sustentata.

Caulis circiter 40 cm altus fere usque ad 2 mm. crassus in sicco lignescens. Folia supra ternata subsequenter opposita. Limbi in sicco membranacei creberrime pellucido-punctulati, superi usque ad 1.5 cm longi et 8 mm lati, subsequentes usque ad 2 cm longi et 1.1 cm lati. Petioli 5 mm pedunculi 1 cm longi spicae usque ad 2 cm longae et 0.5 mm crassae; bracteae pelta paullo ultra 0.5 mm diam.; bacca paullo sub 1 mm longa.

Maui, on the high swampy plateau and along the trail leading to Puu Kukui: J. F. Rock.

2. *Peperomia ligustrina* Hillebr. Fl. p. 425.

Forma b C. DC. n. f.; limbo longiore 2.2-3 cm longo.

Maui, in the stream bed of Waikamoi on rocks, submerged, May, 1911: J. F. Rock.

3. *Peperomia Hesperomannii* Wawra in Flora 1875 p. 226:

Kauai, Mt. Waialeale, 6000 (5080) feet.

4. *Peperomia hawaiensis* C. DC. n. sp.

Caulis ramulisque glabris; foliis ternis vel oppositis modice petiolatis; limbo obovato-lanceolato basi cuneato apice acute breviter attenuato, utrinque glabro superne parce ciliolato, 5-nervio nervis externis quam alii multo tenuioribus, petiolo glabro; pedunculis axillaribus terminalibusque glabris petiolos superantibus; spicis glabris limbos fere triplo superantibus subdensifloris; bracteae pelta subelliptico-rotunda paullo supra centrum pedicellata; ovario emerso turbinato summo apice stigma papillosulum gerente.

Caulis inferne repens e nodis radicans in sicco usque ad 2 mm crassus ramulosus superne flexuosus. Folia supra terna, infera opposita. Limbi in sicco rigidi pellucido-punctulati, superi usque ad 2.3 cm longi et 1.1 cm lati, inferi usque ad 3 cm longi et 2 cm lati. Petioli 5 mm pedunculi circiter 1 cm longi. Spicae florentes usque ad 6 cm longae et 1.5 mm crassae; bracteae pelta 0.5 mm longa et fere 0.75 mm lata.

Hawaii, Holokaiea gulch rain-forest, 3200 ft: J. F. Rock n. 4424; rain-forest of Kohala mountain, 4000 ft: J. F. Rock.

5. *Peperomia koolauana* C. DC. n. sp.

Omnino glabra, foliis ternis oppositisve modice petiolatis; limbo elliptico-lanceolato interdum oblique inaequilatero, 5-nervio; pedunculis axillaribus terminalibusque petiolos aequantibus, spicis quam folia fere duplo longioribus densifloris filiformibus, bracteae pelta orbiculari centro breviter pedicellata; antheris minutis rotundatis quam filamenta brevioribus; ovario emerso ovato paullo sub apice obtuso stigma globosum oblique gerente.

Ramuli e caule procumbente erecti circiter 17 cm longi duri 2 mm crassi. Limbi in sicco membranacei creberrime pellucido-punctulati circiter 3 cm longi et 1.2 cm lati. Petioli circiter 7 mm longi. Spicae fere 6 cm longae et 1 mm crassae; bracteae pelta 0.5 mm diam;

Oahu, Koolau Mts. altid. 2500 ft: J. F. Rock n. 66, 1016.

6. *Peperomia membranacea* Hook. et Ar. in Bot. Beech. p. 96.

Oahu, Beechey. Maui, on the main ridge leading to the highest peak Puu Kukui, 5700 ft. swampy forest: J. F. Rock.

7. *Peperomia nudilimba* C. DC. n. sp.

Caule ramulisque glabris; foliis ternis-quaternis, modice petiolatis glabris; limbo elliptico-lanceolato basi acuto apice obtusiuscule attenuato, 5-plinervio nervo centrali nervos adscendentes utrinque 2 mittente quorum supremus fere a 5 mm supra basin solutus; pedunculis axillaribus terminalibusque glabris petiolos superantibus; spicis glabris limbos adultos paullo superantibus; bracteae pelta rotunda centro pedicellata; antheris ellipticis, thecis filamenta fere aequantibus; ovario emerso obovato apice obliquo, stigmatate inconspicuo.

Planta erecta 30 cm alta. Caulis apice ramosus, in sicco coriaceus, inferne fere 3 mm crassus. Limbi in sicco rigido-membranacei creberrime pellucido-punctulati, usque ad 5.5 cm longi et 2.7 cm lati, nervis in sicco subtus prominulis. Petioli usque ad 1 cm longi. Spicae florentes usque ad 6 cm longae et 1.5 mm crassae; bracteae pelta paullo ultra 0.5 mm. diam.

Hawaii, Mts. of Kohala: J. F. Rock.

8. *Peperomia kauaiensis* C. DC. n. sp.

Caule erecto glabro; foliis ternis longiuscule petiolatis glabris; limbo obovato-vel-elliptico-lanceolato basi cuneato apice acute attenuato, penninervio nervo centrali nervos adscendentes tenues utrinque 3 mittente quorum supremus ab 1 cm supra basin solutus; pedunculis axillaribus terminalibusque glabris petiolos fere aequantibus: spicis glabris florentibus quam limbi paullo brevioribus funiculi-

formibus densifloris; bracteae pelta rotunda centro pedicellata; antheris ellipticis quam filamenta longioribus, ovario emerso obovato paullo sub apice stigma minutum glabrum gerente.

Caulis simplex circiter 35 cm longus in sicco coriaceus et complanatus. Limbi in sicco membranacei haud dense pellucido-punctulati, sup̄eri circiter 6 cm longi et 1.5 cm lati, subsequentes usque ad 7 cm longi et 1.7 cm lati. Petioli 1 cm longi. Spicae florentes 4 cm longae, 2 mm crassae; bracteae pelta 0.5 mm diam.

Kauai, Hanapepe: Faurie n. 100.

Forma b, limbo minore usque ad 3.5 cm longo et 1 cm lato. Kauai, Kauhao, 800 m: Faurie n. 101.

9. *Peperomia Hochreutineri* C. DC. in Ann. Cons. bot.

Gen. vol. XV, XVI, p. 234.

Kauai, Waimea.

10. *Peperomia eekana* C. DC. n. sp.

Ramis e caule procumbente erectis dense et sat longe hirsutis; foliis plerumque ternis modice petiolatis; limbo ovato vel oblongo-ovato basi ima obtuso vel subacuto apice subacuto, supra glabro subtus dense hirsuto, 3-nervio, petiolo dense hirsuto; pedunculis axillaribus terminalibusque haud dense hirsutis petiolos multo superantibus; spicis glabris limbos aequantibus vel paullo superantibus, subdensifloris; bracteae pelta rotunda centro sessili; antheris ellipticis, thecis quam filamenta brevioribus; ovario emerso obovato paullulo sub apice stigma carnosum glabrum gerente.

Caulis procumbens, haud dense hirsutis, e nodis radicans, 2 mm crassus pill 1 mm longi. Limbi in sicco subrigidi pellucido-punctulati, subtus in vivo pallidi in sicco pallide rubiginosi, superi usque ad 23 mm longi et 11 mm lati. Petioli superi 3-4 mm, pedunculi 10 mm longi. Spicae 2.5-3.5 cm longae 1.5 mm crassae; bracteae pelta 0.5 mm diam. Bacca matura rhachis processus sustenta.—*P. hypoleuca*, var. *montis Eeka* Hillebr. Fl. p. 422.

Maui occidentali, monte Eeka: Hillebr in h. Berol.; Oahu on and near the summit of Konahuanui: Heller n. 2243; Koolau Mts.: J. F. Rock, n. 10 et 23.

11. *Peperomia Cookiana* C. DC. in Prodr. v. XVI, 1. p. 450.

Maui and Molokai (f. Hillebr. Fl. p. 427.)

12. *Peperomia Knudsenii* C. DC. n. sp.

Caule piloso; foliis ternis breviter petiolatis, limbo lanceolato supera glabro subtus piloso, 3-nervio, petiolo dense piloso; pedunculis axillaribus terminalibusque petiolos pluries superantibus parce pilosis; spicis glabris limbos paullo superantibus subdensifloris; bracteae



pelta orbiculari centro pedicellata; antheris rotundatis minutis, bacca ovata basi immersa apice oblique rostellata glandulis asperulata.

Planta ut videtur erecta. Caulis in sicco 1 mm crassus. Limbi in sicco firmi supra fuscii subtus pallidiores, usque ad 4.5 cm longi et 1 cm. lati. Petioli 3 mm, pedunculi fere 2 cm longi. Spicae fere 5.5 cm longae, 1 mm crassae; baccae mucronulus flavicans.—Planta verisimiliter a cl. Hillebrand (Flor. p. 421) post *Macraeana*,  $\gamma$  citata.

Kava (Kauai?)\*: Knudsen in h. Berol. ex. h. Hillbr.

13. *Peperomia hypoleuca* Miq. Syst. Pip. p. 136.

Kauai, Oahu, Maui (f. Hillebr. Fl. p. 422.) Hawaii, forest near Kilauea volcano, 4000 ft.: J. F. Rock.

14. *Peperomia latifolia* Miq. l. c. p. 128.

Kauai, Hanapepe fall: Faurie n. 145.; Oahu, Kalihi: Faurie n. 146; on Tantalus: Heller n. 2116; Molokai, Pukoo: Faurie n. 144; Maui, along Waikamoi ditch trail, in dense forest: J. F. Rock, Haleakala, 1000 m.: Faurie n. 106, 147; Lanai, Mahana valley: J. F. Rock n. 8092.

15. *Peperomia kamoloana* C. DC. n. sp.

Caule ramisque haud dense pilosis; foliis ternis modice petiolatis; limbo elliptico-lanceolato basi et apice acuto supra glabro subtus subdense piloso, 5-nervio; petiolo haud dense piloso; pedunculis axillaribus terminalibusque petiolos superantibus parce pilosis; spicis glabris folia paullo superantibus densifloris filiformibus; bracteae pelta rotunda centro longiuscule pedicellata, antheris rotundato-ellipticis quam filamenta brevioribus; ovario emerso ovato paullo sub apice obtuso stigma papillosum gerente; bacca ovata superne subattenuata glandulis albidis asperulata.

Planta erecta. Caulis ramosus in sicco subrigidus et complanatus inferne 2 mm crassus. Limbi in sicco membranacei parce pellucido-punctulati, 3.2 cm longi, 1.7 cm lati. Petioli 6 mm. pedunculi 2 cm longi. Spicae usque ad 5 cm longae, in sicco sub 1 mm crassae; bracteae pelta 0.5 mm diam., bacca paullo longior, sine pseudocupulo.

Molokai, Kamolo: Faurie n. 124.

16. *Peperomia maunakeana* C. DC. n. sp.

Ramulis junioribus hirtellis; foliis ternis modice petiolatis; limbo ovato-lanceolato basi acuto apice obtusiuscule attenuato, supra glabro subtus hirtello, 5-plinervio nervo centrali a 5 mm supra basin trifido; pedunculis axillaribus terminalibusque petiolos fere aequantibus jun-

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\* Unquestionably Kauai, for Knudsen collected only on that island. J. F. Rock.

loribus hirtellis; spicis glabris quam limbi paullo brevioribus; bracteae pelta rotunda centro pedicellata; antheris rotundato-ellipticis quam filamenta adulta sat longa brevioribus; ovario emerso obovato paullo sub apice stigma minutum glabrum gerente.

Planta erecta circiter 30 cm alta. Caulis glaber inferne 6 mm crassus. Limbi in sicco rigidi fere pellucido-punctulati, superi 5-4 cm longi, usque ad 2 cm lati, subsequentes basi rotundati; nervi subtus prominanti. Petioli 0.8-1 cm longi cito fere glabri. Spicae florentes 2.5 cm longae usque ad 1.5 mm crassae; bracteae pelta 0.5 mm diam.

Hawaii, Maunakea, 1500 m. Julio: Faurie n. 127.

17. *Peperomia longirama* C. DC. n. sp.

Ramis superne haud dense pilosis; foliis oppositis-ternis modice petiolatis; limbo elliptico-lanceolato basi et apice acuto; supra glabro subtus hirsuto, 5-plinervio nervo centrali nervos adscendentes 2 mittente quorum supremus a 0.5-1 cm supra basin solutus, petiolo superne hirsuto, pedunculis axillaribus terminalibusque petiolos fere aequantibus superne parce pilosis; spicis glabris florentibus quam limbi paullo brevioribus funiculiformibus densifloris; bracteae pelta orbiculari centro pedicellata; antheris ellipticis quam filamenta adulta paullo brevioribus; ovario emerso obovato paullo sub apice obtuso stigma punctiforme glabrum oblique gerente.

Caulis glaber in sicco coriaceus usque ad 4 mm crassus, sat longe ramosus ramis usque ad 30 cm longis. Limbi in sicco rigido-membranacei creberrime pellucido-punctulati, superi usque ad 5 cm longi et 2 cm lati, subsequentes usque ad 6 cm longi et 2.6 cm lati. Petioli superi 0.6-1 cm longi. Spicae florentes 3.5 cm longae 1.5 mm crassae; bracteae pelta fere 0.5 mm diam.

Oahu, Koolau Mts. Punaluu Mts: J. F. Rock n. 414, 458.

18. *Peperomia astigmata* C. DC. n. sp.

Plate I.

Caule superne dense hirsuto; foliis sat longe petiolatis; limbo elliptico-lanceolato basi cuneato apice subacute attenuato supra glabro subtus dense hirsuto, 5-plinervio, nervo centrali fere a 5 mm supra basin trifido, petiolo dense hirsuto; pedunculis axillaribus terminalibusque petiolos fere aequantibus haud dense hirsutis; spicis glabris limbos fere aequantibus densifloris; bracteae pelta rotunda centro pedicellata; antheris rotundatis quam filamenta longiuscula brevioribus; ovario emerso oblongo-obovato apice rotundato, stigmatate nullo.

Caulis erectus circiter 40 cm longus, in sicco coriaceus usque ad 5 mm crassus. Folia opposita vel ternata. Limbi in sicco rigido-membranacei creberrime pellucido-punctulati, superi 5 cm longi 2.5

cm lati, subsequentes usque ad 8 cm longi et 3 cm lati. Petioli superi 1 cm subsequentes 1.5 cm longi. Spicae usque ad 5 cm longae et 1 mm crassae, bracteae pelta 0.5 mm diam.

Hawaii, Kohala Mts: J. F. Rock.

19. *Peperomia ellipticibacca* C. DC. n. sp.

Caule ramisque dense hirsutis; foliis ternis modice petiolatis; limbo ovato-lanceolato basi acuto apice obtusiuscule attenuato supra glabro subtus hirsuto 3-nervio, petiolo dense hirsuto; pedunculis axillaribus terminalibusque petiolos multo superantibus hirsutis; spicis glabris limbos fere aequantibus densifloris; bracteae pelta rotunda centro pedicellata; antheris rotundato-ellipticis, quam filamenta multo brevioribus; ovario emerso ovato summo apice stigmati fero, stigmate rotundo carnosio papillosuloque; bacca elliptica glandulis globosis densissime conspersa sine pseudocupula.

Herba e basi radicante erecta circiter 25 cm alta, caulis inferne usque ad 6 mm crassus. Limbi in sicco rigido-membranacei creberime pellucido-punctulati, superi 2.2-3.5 cm longi et 1.3 cm lati, subsequentes usque ad 4 cm longi et 2.7 cm lati, inferi obovati basi cuneati apice breviter et obtuse attenuati 4.5 cm longi 2 cm lati. Petioli superi 2-3 mm pedunculi usque ad 1.2 cm longi. Spicae 1 cm longae 1.5 mm crassae; bracteae pelta 0.5 mm diam; bacca paullo ultra 1 mm longa.

Oahu, Punaluu: Faurie n. 131; Koolau: J. F. Rock. n. 457.

20. *Peperomia molokaiensis* C. DC. n. sp.

Caule ramisque glabris; foliis ternis modice petiolatis, limbo elliptico-lanceolato basi acuto apice acute acuminato supra glabro subtus piloso, 5-plinervio nervo centrali a fere 1 cm supra basin trifido, petiolo glabro; pedunculis axillaribus terminalibusque glabris petiolos fere aequantibus, spicis glabris limbos supremos fere aequantibus densifloris, bracteae pelta rotunda centro pedicellata, antheris ellipticis, thecis filamenta longiuscula fere aequantibus, ovario emerso turbinato summo apice rotundo stigma minutum glabrum gerente.

Caulis erectus, ut videtur circiter 40 cm altus, in sicco coriaceus complanatus inferne 4 mm crassus. Limbi in sicco membranacei haud crebre pellucido-punctati, supremi circiter 5 cm longi 2-2.5 cm lati, subsequentes usque ad 9 cm longi et 3 cm lati. Petioli supremi 1 cm, subsequentes usque ad 2 cm longi. Spicae florentes 1.5 mm crassae, bracteae pelta 0.5 mm diam.

Molokai, Pukoo, Maio: Faurie n. 128.

21. *Peperomia Macraeana* C. DC. in Journ. bot. 1866.

p. 145, in Prodr. v. XVI, 1 p. 457.

Maui and Molokai (f. Hillebr. Fl. p. 421). Hawaii: Macrae (f. C. DC. l. c.).

22. *Peperomia pachycaulis* C. DC. n. sp.

Caule superne dense hirtello inferne crasso et glabro; foliis oppositis-ternis sat longe petiolatis; limbo elliptico-lanceolato basi et apice acuto, supra ad nervos et praesertim ad centralem subtus ubique et sat dense hirtello, 7-plinervio, nervo centrali nervos adscendentes utrinque 2 mittente quorum supremus a 3 cm supra basin solutus nervo laterali adscendente utrinque a basi soluto, petiolo dense hirtello; pedunculis axillaribus terminalibusque dense hirtellis petiolos subaequantibus, spicis glabris quam limbi brevioribus densifloris, bracteae pelta rotunda centro pedicellata; antheris rotundato-ellipticis, thecis quam filamenta inserta brevioribus; ovario emerso obovato paullo sub apice stigma punctiforme et inconspicuum oblique gerente.

Herba ut videtur erecta, circiter 50 cm alta. Caulis simplex in sicco coriaceus et complanatus inferne usque ad 1.5 cm crassus. Limbi in sicco membranacei e pellucido-punctulati, 10-12.5 cm longi et 5.7 cm lati. Petioli circiter 4 cm, pedunculi 1 cm longi. Spicae florentes circiter 4 cm longae et 2 mm crassae in sicco complanatae; bracteae pelta 0.5 mm diam.

Molokai?: Faurie n. 130.

23. *Peperomia psilostigma*. C. DC. n. sp.

Caule ramulisque glabris; foliis modice petiolatis oppositis vel ternis-quaternis; limbo elliptico-lanceolato, basi acuto apice obtusiusculo, supra ad nervos haud dense piloso subtus glabro margineque superne ciliato, 5-plinervio nervo centrali paullo supra basin trifido, nervo laterali adscendente utrinque a basi soluto; petiolo glabro; pedunculis axillaribus terminalibusque glabris petiolos adultos fere aequantibus, spicis limbos fere aequantibus funiculiformibus densifloris glabris; bracteae, pelta orbiculari centro pedicellata, pedicello cum flore rhachi haud profunde immerso; antheris ellipticis filamenta superantibus; ovario obovato summo apice stigmatifero stigmate orbiculari glabro.

Caules a basi e nodis radicante erecti circiter 40 cm alti, glabri, superne verticillatim ramosi, in sicco duri, inferne usque ad 0.4 cm crassi. Limbi in sicco rigidi pellucido-punctulati, 4.5-5.5 cm longi 2-2.5 cm lati. Petioli adulti circiter 1 cm longi. Spicae circiter 2 mm crassae; bracteae pelta 0.5 mm diam.—Species *P. lanceolatae* C. DC.

ex Andibus Quitensibus proxima, ramulis glabris spicis multo brevioribus et crassioribus ab ea discrepans.

Maui, on the high swampy plateau and along the trail leading to Puu Kukui, 7540 ft: J. F. Rock.

Forma b; limbo in sicco subtus rubrocochlearis nervis flavis; *ibid.*

24. *Peperomia opacilimba* C. DC. n. sp.

Ramulis junioribus dense hirsutis dein glabris et minute lenticellosis; foliis ternis modice petiolatis; limbo rotundato-ovato utrinque et praesertim subtus hirsuto; petiolo juniore dense hirsuto dense subglabro et minute lenticelloso; pedunculis axillaribus terminalibusque parce pilosis petiolos superantibus; spicis glabris limbos fere aequantibus, filiformibus subdensifloris; bracteae pelta rotunda centro pedicellata; antheris rotundatis minutis, thecis quam filamenta paullo brevioribus; ovario emerso obovato paullo sub apice stigma globosum glabrum oblique gerente; bacca obovata apice oblique et obtuse apiculata, glandulis asperulata.

Caulis inferne radicans in sicco lignescens usque ad 4 mm crassus, ramuli spiciferi erecti usque ad 10 cm alti. Limbi in sicco coriacei, superi usque ad 1.5 cm longi et 1.2 cm lati, subsequentes usque ad 2 cm longi et 1.2 cm lati. Petioli superi circiter 5 mm, pedunculi usque ad 1.2 cm longi. Spicae usque ad 1.7 cm longae fere 1 mm crassae; bracteae, pelta 0.5 mm diam.; bacca paullo ultra 0.55 mm longa, sessilis.

Hawaii, Maunakea, 2000 m. Julio: Faurie n. 169.

25. *Peperomia mauiensis* Wawra in Flora 1875, p. 225.

Maui, basi rupium in vallibus; Faurie, n. 103.

Var. *parvifolia* Hillebr. Fl. (1888) p. 425.

Maui, Iao Valley in lacunis seccus torrentes: Faurie n. 110, Makawao 700 m. n. 102.

26. *Peperomia kohalana*. C. DC. n. sp.

Plate II.

Caule ramulisque hirsutis; foliis ternis-quaternis modice petiolatis; limbo subovato-elliptico, basi ima acuto apice obtuso vel subobtusulo utrinque hirsuto supra postea subglabro, 3-nervio, petiolo hirsuto; pedunculis axillaribus terminalibusque hirsutis petiolos multo superantibus, spicis quam limbi fere triplo longioribus glabris filiformibus subdensifloris; bracteae pelta rotunda centro pedicellata, antheris rotundatis parvis filamenta fere aequantibus; ovario emerso ovato paullo sub apice obtuso stigma globosum glabrum gerente, bacca ovata apice obtusa, glandulis asperulata.

Planta terricola. Rami e caule procumbente radicante 2.5 mm

crasso erecti, ramuli spiciferi 1 mm crassi. Limbi in sicco rigidi subopaci haud pellucido-punctulati, subtus ad paginam rubescentes vel rubromaculati ad nervas flavescentes, superi circiter 2 cm longi et 1 cm lati. caulini subsequentes usque ad 3 cm longi et 1.5 cm lati. Petioli 4 mm pedunculi 11 mm longi. Spicae 0.75 mm crassae; bracteae pelta 0.5 mm diam.; bacca paullo sub 1 mm longa. Species limbis subtus partim rubescentis et flavescentes *P. flavinervam* referens sed limbis multo minoribus ellipticis et apice haud acutis ac spicis longioribus et stigmatibus glabro ab ea a *leptostachya* forma limbi et pilis longioribus discrepans.

Hawaii, Paauhau forest: J. F. Rock n. 4428; dense rain forest of Kohala mountain, 4000 ft: J. F. Rock.

27. *Peperomia leptostachya* Hook. & Arn. in Beech. Bot. p. 96. (1832)

Kauai, Koloa: Faurie n. 152; Oahu, Kalihi n. 154; Molokai, Kamolo n. 151, 156, 166.

Forma *carnosior* C. DC. n. f. caule carnosio in sicco usque ad 5 mm crasso.

Kauai, along the Hanapepe river near the falls: A. Heller n. 2570; Oahu: A. Heller n. 2237; Maui, east woods of Hamakua, 4000 ft: J. F. Rock n. 8541; Nahiku: Faurie n. 121.

28. *Peperomia pleistostachya* Hillebrand. Fl. p. 427.

Molokai, pali of Pelekunu: Hillebr.

29. *Peperomia refractifolia* Lévillé in Fedde Rep.

v. X. p. 151 (1912) amend.

Caulibus ramosis hirsutis; foliis ternis modice petiolatis; limbo ovato basi ima acuto apice acuto attenuato utrinque hirsuto, 3-nervio, petiolo hirsuto; pedunculis axillaribus terminalibusque haud dense hirsutis petiolos superantibus, spicis glabris quam limbi fere triplo longioribus densifloris; bracteae pelta orbiculari centro pedicellata; antheris ellipticis thecis filamenta superantibus; ovario emerso obovato paullo sub apice stigma rotundatum glabrum gerente; bacca ovata apice breviter et obtuse apiculata.

Rami a caule radicante divaricantes 1.5 mm crassi in sicco nigri. Limbi in sicco rigidi nigri opaci, 2-2.7 cm longi 1-1.6 cm lati. Petioli 0.6-1 cm pedunculi usque ad 1.5 cm longi. Spicae usque ad 9.5 cm longae 1 mm crassae in sicco nigrae; bracteae pelta 0.5 mm diam.; bacca 0.75 mm longa.

Molokai, Pukoo, 800 m., Maio: Faurie n. 133; Hawaii, dense wet forest near Kilauea volcano, altid. 4000 ft, July, J. F. Rock; Moonuhea, slopes of Mt. Hualalai, 6000 ft. on *Acacia* Koa: n. 4430.

30. *Peperomia asperulata*, C. DC. in Ann. Cons. bot. Gen. Vol. XV, XVI, p. 233.

Kauai, Waimea.

31. *Peperomia sandwicensis* Miq. Syst. Pip. p. 126.  
Oahu.

32. *Peperomia pachyphylla* Miq. Syst. Pip. p. 137.  
Oahu: Beechey; Molokai (f. Hillebr. Fl. p. 424.)

33. *Peperomia ovatilimba* C. DC. n. sp.

Caule ramulisque dense villosis; foliis ternis modice petiolatis; limbo ovato basi ima acuto obtusove apice breviter et acute attenuato, supra ad nervos subtus ubique et longiuscule piloso, ciliolato; 5-nervio nervis tenuibus; petiolo dense villosa; pedunculis axillaribus terminalibusque villosis petiolos superantibus, spicis glabris quam limbi usque ad duplo longioribus filiformibus; bracteae pelta orbiculari centro pedicellata; antheris rotundato-ellipticis, thecis filamenta aequantibus; ovario emerso ovato paullo sub apice obtuso stigma pilosum cito glabrum oblique gerente; bacca ovata apice oblique et brevissime apiculata glandulis dense asperulata.

Caulis e basi repente erectus?, ramosus circiter 35 cm longus inferne usque ad 2 mm. crassus. Limbi in sicco membranacei haud dense pellucido-punctulati, superi usque ad 3 cm longi et 2 cm. lati. Petioli superi usque ad 7 mm, pedunculi adulti 1-1.2 cm longi. Spicae 1 mm crassae; bracteae pelta 0.5 mm diam.; bacca 0.75 mm longa.

Kauai, Olokele, 1000 m.: Faurie n. 125; Molokai, Pukoo: Faurie n. 123, 165; Hawaii, Alakahi Valley, 4300 ft. swampy land: J. F. Rock n. 4417, 4419; Mt. Kohala: J. F. Rock: Hilo: Faurie no. 153, 155.

Forma b; pilis ramulorum et foliorum brevioribus, pedunculis petiolos multo superantibus, spicis quam limbi fere triplo, longioribus.

Lanai, Mahana Valley, leaves reddish: J. F. Rock n. 8093; Maui, in woods at Hamakua n. 8583; Hawaii, Waipio Valley: n. 4646.

Forma c; limbo supra ubique pubescente, usque ad 4 cm longo et 3.2 cm lato.

Kauai, Olokele, 600 m: Faurie n. 125; Molokai, Pukoo: n. 123, 165; Hawaii, forest of Paauhau, altid. 3600 ft: J. F. Rock n. 3253, 4426, 4429, Alakahi Valley, altid. 4200 ft. n. 4418; Kohala: Faurie n. 134; Mauna Kea, 2000 m., n. 149.

34. *Peperomia expallescens* C. DC. n. sp.

Caule superne hirsuto inferne glabro; foliis ternis modice petiolatis; limbo elliptico basi acuto apice rotundato vel saltem obtuso

utrinque et subtus densius piloso, 7-plinervio, nervo centrali nervos utrinque 2-mittente nervoque uno utrinque a basi soluto, petiolo hirsuto; pedunculis axillaribus terminalibusque hirsutis petiolos fere aequantibus, spicis glabris folia fere aequantibus bractee pelta orbiculari centro pedicellata pedicello cum flore rhachi leviter immerso; antheris ellipticis, thecis quam filamenta adulta brevioribus, ovario obovato paullo sub apice stigma inconspicuum glabrum gerente.

Caules e basi radicante erecti, inferne circiter 2 mm crassi. Limbi carnosus in sicco rigidi opaci pallidi pellucido-punctulati, 2-2.5 cm longi 1.5 cm lati. Petioli 7 mm, pedunculi 5 mm longi. Spicae florentes usque ad 3 cm longae, 1 mm crassae; bractee pelta 0.5 mm diam.

Maul, on the high swampy plateau and along the trail leading to Puu Kukui, 5780 ft.: J. F. Rock.

### 35. *Peperomia subnudipetiola* C. DC. n. sp.

Caule tantum apice et parce piloso; foliis ternis modice petiolatis; limbo ovato basi ima acuto apice breviter et acute attenuato utrinque hirsuto, 7-nervio nervis externis quam alij tenuioribus, petiolo superne parce piloso; pedunculis axillaribus terminalibusque, petiolos paullo superantibus superne parce pilosis, spicis glabris limbos paullo superantibus densifloris; bractee pelta rotunda centro pedicellata; antheris ellipticis, thecis quam filamenta adulta paullo brevioribus; ovario emerso obovato paullo sub apice stigma punctiforme inconspicuum oblique gerente.

Planta erecta. Caulis ut videtur simplex usque ad 2 mm crassus. Limbi in sicco membranacei pellucido-punctulati, 3-4 cm longi 1.7-2.5 cm lati. Petioli usque ad 1 cm pedunculi usque ad 1.4 cm longi. Spicae florentes circiter 5.5 cm longae 2 mm crassae; bractee pelta fere 0.5 mm diam.

Oahu, Punaluu, 800 m: Faurie n. 129 p. p. et 1131.

### 36. *Peperomia flavinerva* C. DC. n. sp.

#### Plate III.

Caule superne ramisque dense et sat longe hirsutis; foliis ternis modice petiolatis, limbo ovato-lanceolato basi acuto apice acute et breviter attenuato, supra tantum inferne et praesertim ad nervum centralem subtus ubique hirsuto, 5-nervio nervis in sicco flavis; petiolo hirsuto; pedunculis axillaribus terminalibusque hirsutis petiolos superantibus, spicis limbos fere aequantibus densifloris glabris; bractee pelta subelliptico-rotunda paullo supra centrum longiuscule pedicellata; antheris ellipticis filamenta aequantibus; ovario emerso ovato paullo sub apice obtuso stigma sat longe pilosum gerente.

Caules e basi stolonifera erecti usque ad 35 cm longi et 3 mm



crassi in sicco tetragono-complanati; pilli 1 mm longi. Limbi in sicco membranacei pellucido-punctulati, in vivo subtus rubri cum nervis flavis, superi usque ad 3 cm longi et 1.5 cm lati, caulini usque ad 4 cm longi et 2 cm lati. Petioli usque ad 1.2 cm longi. Spicae florentes circiter 3 cm longae et 1.55 mm crassae; bracteae pelta 0.75 mm longa et paullo angustior.

Molokai, Pelekunu forest, 4800 ft: J. F. Rock n. 6142.

37. *Peperomia pukooana* C. DC. n. sp.

Caule ramisque dense hirsutis; foliis oppositis modice petiolatis; limbo elliptico basi acuto apice subacuto utrinque dense hirtello, 5-7 nervio, petiolo dense hirtello; pedunculis axillaribus terminalibusque hirtellis petiolos superantibus, spicis quam folia paullo longioribus glabris funiculiformibus densifloris; bracteae pelta rotunda centro pedicellata; antheris ellipticis, thecis filamenta superantibus; ovario emerso suboblongo-obovato summo apice stigma sat longe pilosum gerente.

Caulis e basi radicante erectus circiter 20 cm altus, in sicco coriaceus inferne usque ad 3 mm crassus, superne breviter ramosus. Limbi in sicco membranacei pellucido-punctulati, 4-5 cm longi 1.8-2 cm lati. Petioli 5 mm, pedunculi usque ad 1.3 cm longi. Spica florens usque ad 6 cm longa et paullo ultra 1 mm crassa; bracteae pelta 0.5 mm diam.

Molokai, Pukoo: Faurie n. 120.

38. *Peperomia trichostigma* C. DC. n. sp.

Caule superne ramoso et dense pubescente; foliis oppositis ternis modice petiolatis; limbo elliptico basi acuto apice breviter et subacute acuminato supra prope basin subtus ubique et sat dense pubescente, 5-plinervio nervo centrali paullulo supra basin trifido laterali utrinque a basi soluto quam alii multo tenuiore, petiolo pubescente; pedunculis axillaribus terminalibusque dense pubescentibus petiolos superantibus; spicis glabris filiformibus densifloris quam limbi multo longioribus; bracteae pelta rotunda centro pedicellata; antheris ellipticis, thecis quam filamenta adulta sat longa brevioribus; ovario emerso ovato summo apice stigma subovatum pilosum gerente.

Planta terricola ut videtur erecta usque ad 50 cm alta. Caulis in sicco lignescens inferne fere glaber et usque ad 4 mm crassus. Limbi in sicco firmo-membranacei pellucido-punctulati, 5 cm longi et 2-2.5 cm lati. Petioli 6 mm, pedunculi usque ad 1 cm longi. Spicae florentes usque ad 7.5 cm longae et 1 mm crassae; bracteae pelta 0.5 mm diam.

Maui, on the high swampy plateau and along the trail leading to Puu Kukui, 5780 ft: J. F. Rock.

Forma b; limbo in sicco subtus rubro cum nervis flavis.

39. *Peperomia lanaiensis* C. DC. n. sp.

Caule hirsuto; foliis ternis modice petiolatis; limbo elliptico-lanceolato basi acute attenuato apice acute acuminato 5-nervio supra ad nervos et inferne ad paginam subtus ubique hirtello, petiolo hirtello; pedunculis axillaribus terminalibusque parce puberulis petiolos superantibus; spicis glabris filiformibus subdensifloris limbos fere duplo superantibus; bracteae pelta rotunda centro pedicellata; antheris ellipticis quam filamenta adulta sat longa brevioribus; ovario emerso obovato glandulis consperso, paullo sub apice obtuso stigma minutum glabrum oblique gerente; bacca ovata glandulis asperulata apice oblique et flavide rostellata.

Planta erecta circiter 40 cm alta. Caulis simplex vel superne parce ramosus inferne 4 mm crassus in sicco lignescens. Limbi in sicco membranacei creberrime pellucido-punctulati usque ad 8 cm longi et 4 cm lati. Petioli 1 cm pedunculi 2 cm longi. Spicae 1 mm crassae; bracteae pelta 0.5 mm diam. bacca fere 0.75 mm. longa, sine pseudocupula. Species a/P. *blanda* Kth. Tantum limbis majoribus pilisque multo brevioribus ac stigmatibus glabro discrepans.

Lanai, Mahana Valley, 2000 ft: J. F. Rock n. 8089, 8093 p-p.

40. *Peperomia blanda* Kunth Nov. Gen. V. I, p. 67.

Hawaii, Waipio Valley: J. F. Rock.

Var. *glabrior* C. DC. n. var.; Caule glabro, ramulis hirtellis; foliis plerumque ternis, limbo elliptico-lanceolato, 4.5-5 cm longo 2.5-3 cm lato supra subglabro glabrove subtus hirtello, 5-nervio; spicis usque ad 8 cm. longis.

Oahu, Kalihi: Faurie n. 163, Hawaii, Halawa, n. 114, Kohala, n. 115.

Var. *Remyi* C. DC. n. var. *P. Remyi* C. DC. in Ann. Cons. bot. Gen. 2 me ann. p. 286; limbo magis elliptico, pilis quam in specie brevioribus.

Kauai, on the ridge west of Hanapepe: Heller n. 2633.

41. *Peperomia nudipetiolata* C. DC. n. sp.

Caule glabro; foliis ternis oppositisve sat longe petiolatis; limbo elliptico-lanceolato basi cuneato apice acute acuminato, supra ad nervos et haud dense subtus ubique et subdense piloso, 7-plinervio nervo centrali fere a 1.5 cm supra basin trifido nervis lateralibus utrinque 2 a basi solutis quorum caterni aliis multo tenuiores, petiolo glabro; pedunculis glabris petiolos aequantibus, spicis glabris quam limbi paullo brevioribus funiculiformibus densifloris, bracteae pelta rotunda centro pedicellata; antheris ellipticis quam filamenta brevioribus; ovario emerso obovato superne subcomplanato, stigmatibus inconspicuo.

Caulis in sicco coriaceus complanatus, usque ad 4.5 mm crassus. Limbi in sicco firmo-membranacei crebre pellucido-punctulati, usque ad 8 cm longi et 4 cm lati. Petioli 1-1.5 cm longi. Spicae florentes circiter 6 cm longae et usque ad 2 mm crassae; bracteae pelta 0.5 mm diam.

Hawaii, Holoalea Gulch, altid. 3200 ft: rain belt: J. F. Rock, n. 4423.

$\beta$ . microtricha; limbis 5-plinerviis, pilis parvis hyalinis cito deciduis; pedunculis solitariis vel in apice ramuli binatis ternatisve vel usque ad 5 umbellatis squamis fultis.

Hawaii, Kohala Mts: J. F. Rock.

42. *Peperomia reflexa* Dietr. Sp. V-I, p. 180.

Forma *Forsteriana* Miq. Syst. Pip. p. 173.

Kauai, Waimea, 1000 m.: Faurie n. 134; Oahu, Kalihi in rupibus; n. 135; Hawaii, Hilo, n. 137.

Forma *parvifolia* C. DC. in Prodr. v. XVI, 1, p. 452.

Kauai, on the ridge opposite Gay & Robinson's Hanapepe Valley house: A. A. Heller, n. 2534; on Kaholuamano above Waimea, n. 2481; between Hanapepe and Wahiawa, n. 2077; Maunakea, 2000 m: Faurie n. 138; Oahu, Honolulu in arboribus: Faurie n. 139; Lanai, Mahana Valley: J. F. Rock, n. 8091; Maui, Haleakala, 1000 m.: Faurie, n. 136; Hawaii: A. A. Heller, n. 2077.

43. *Peperomia parvula* Hillebr. Fl. p. 626.

Oahu: Hillebr.

44. *Peperomia subnudilimba* C. DC. n. sp.

Caule et ramulis glabris; foliis oppositis modice petiolatis; limbo ovato-elliptico-lanceolato basi ima acuto apice breviter et acuto attenuato, utrinque glabro apicem versus ciliolato, 5-nervio nervo externo utrinque quam alii tenuiore, petiolo glabro; pedunculis glabris petiolos multo superantibus, spicis glabris quam limbi paullo longioribus filiformibus; bracteae pelta orbiculari centro pedicellata; antheris rotundato-ellipticis quam filamenta adulta multo brevioribus; ovario emerso obovato paullo sub apice stigma orbiculare glabrum oblique gerente; bacca ovata apice oblique apiculata gladulis asperulata.

Caulis e basi radicante erectus in sicco lignescens usque ad 2.5 mm crassus. Limbi in sicco membranacei crebre pellucido-punctulati, 2-3.5 cm longi 1.7-2.3 cm lati. Petioli 6 mm pedunculi 1.2-2 cm longi. Spicae usque ad 5 cm longae et 1 mm crassae; bracteae pelta 0.75 mm diam.; bacca 0.55 mm longa.

Maui, on the high swampy plateau and along the trail leading to Puu Kukui, 5780 ft: J. F. Rock.

45. *Peperomia nudipeduncula* C. DC. n. sp.

Caule ramulisque glabris; foliis oppositis longiuscule petiolatis; limbo elliptico-subobovato-lanceolato basi cuneato apice acute acuminato utrinque glabro apicem versus ciliolato, 5-nervio nervis lateralibus tenuissimis, petiolo glabro tenui; pedunculis axillaribus terminalibusque petiolos superos superantibus; spicis glabris florentibus limbos fere aequantibus haud densifloris; bracteae pelta obovata centro pedicellata, antheris ellipticis quam filamenta sat longa brevioribus, ovario emerso obovato apice obliquo, stigmatibus inconspicuis; bacca obovata sublaevi basi brevissime stipitiformi.

Caulis erectus in sicco coriaceus et complanatus inferne usque ad 3 mm crassus. Limbi in sicco rigido-membranacei pellucido-punctulati, usque ad 3.7 cm longi et 1.5 cm lati. Petioli superi 5 mm subsequentes usque ad 1 cm pedunculi 1 cm longi. Spicae in sicco complanatae 1 mm crassae; bracteae pelta 0.75 mm longa usque ad 0.5 mm lata; bacca 1.5 mm longa.

Hawaii, Maio: Faurie n. 167.

46. *Peperomia Fernandeziana* Miq. Syst. Pip. p. 139.

Oahu?: Nuttal.

47. *Peperomia insularum* Miq. in Hook. Lond. Journ. bot. v. IV, p. 422.

Oahu: Diell, n. 53.

48. *Peperomia erythroclada* C. DC. n. sp.

Ramis superne dense hirsutis; foliis oppositis modice petiolatis; limbo elliptico basi cuneato apice acuto subacutove, supra glabro subtus dense hirsuto, 5-plinervio, nervo centrali nervos 2 mittente quorum supremus a 3-4 mm. supra basin solutus, petiolo hirsuto; pedunculis axillaribus terminalibusque hirsutis petiolos paullo superantibus, spicis glabris florentibus quam limbi paullo brevioribus; bracteae pelta rotunda centro pedicellata pedicello cum flore rhachi haud profunde immerso; ovario obovato summo apice stigma minutum gerente.

Planta circiter 30 cm alta. Caulis inferne glaber in vivo ruber, in sicco lignescens usque ad 3 mm crassus. Limbi in sicco membranacei subopaci pellucido-punctulati in vivo subtus rubri cum nervis viridibus, superi 4 cm longi et fere 2 cm lati, subsequentes 5.5 cm longi et 3 cm lati. Petioli superi 5 mm, subsequentes 1.5 cm longi. Pedunculi fere 9 mm longi. Spicae florentes usque ad 4 cm longae et fere 1.5 mm crassae; bracteae pelta paullo ultra 0.75 mm. diam.

Lanai, Mahana Valley: J. F. Rock, n. 8001.

49. *Peperomia Helleri* C. DC. in Ann. Cons. bot. Gen. 2 me. ann. p. 283.

Kauai, editis ad occidentem fluvii Hanapepe: Heller.

Var. *ternifolia* C. DC. n. v.; foliis oppositis-ternis.

Kauai, Waimea, 1000 m.: Faurie n. 105, 117; forest of Kaholua-  
mano: J. F. Rock n. 1556; A. A. Heller n. 2632.

50. *Peperomia obovatilimba* C. DC. n. sp.

Caule glabro: foliis oppositis sat longe petiolatis; limbo obovato basi cuneato apice obtuso supra glabro subtus sat dense piloso, 5-  
plinervio nervo centrali a 1 cm supra basin trifido, petiolo subglabro; pedunculis axillaribus glabris quam petioli paullo brevioribus; spicis glabris sat crassis quam limbi paullo brevioribus; bracteae pelta rotunda centro pedicellata; antheris ellipticis quam filamenta adulta brevioribus; ovario emerso obovato paullo sub apice obtuso stigma minutum glabrum oblique gerente.

Planta terricola ut videtur erecta. Caulis circiter 20 cm longus simplex in sicco coriaceus usque ad 4 mm crassus. Limbi in sicco firmo-membranacei creberrime pellucido-punctulati, circiter 8 cm longi et 4 cm lati. Petioli 1.8 cm, pedunculi 1 cm longi. Spicae florentes 6 cm longae, 3 mm crassae; bracteae pelta 0.75 mm diam.

Mau, along Waikamoi ditch trail, dense rain forest: J. F. Rock.

51. *Peperomia subglabricaulis* C. DC. n. sp.

Caule ramisque tantum apice et parcissime pilosis; foliis oppositis modice petiolatis; limbo elliptico-lanceolato basi et apice attenuato et acuto supra glabro subtus sat dense piloso, 7-plinervio; nervo centrali a 1 cm supra basin trifido nervis lateralibus adscendentibus utrinque 2 a basi solutis, petiolo fere glabro; pedunculis axillaribus terminalibusque parcissime pilosis quam petioli paullo brevioribus; spicis florentibus glabris quam limbi paullo brevioribus densifloris; bracteae pelta rotunda centro pedicellata; antheris rotundato-ellipticis, thecis adultis quam filamenta inserta brevioribus; ovario emerso obovato paullo sub apice stigma inconspicuum glabrum gerente.

Planta ut videtur erecta circiter 30 cm alta. Caulis in sicco subcoriaceus complanatus inferne usque ad 5 mm crassus. Limbi in sicco membranacei pellucido-punctulati 9.5 cm longi, 3.5 cm lati. Petioli usque ad 1.5 cm longi. Spicae florentes 5.5 cm longae 2 mm crassae; bracteae pelta 0.5 mm diam.

Molokai: Remy n. 189; Oahu, Punaluu, 800 m.: Faurie n. 129, pp.

52. *Peperomia disparifolia* C. DC. n. sp.

Caule ramisque glabris; foliis oppositis sat longe petiolatis; limbo elliptico-lanceolato basi acuto apice acute et sat longe acuminato vel

elliptico basi acuto apice brevissime et acute acuminato, supra glabro subtus hirsuto, 5-plinervio nervo centrali fere a 5 mm supra basin trifido; petiolo sat tenui parce piloso; pedunculis axillaribus terminalibusque glabris quam petioli multo brevioribus; spicis glabris quam limbi brevioribus apice attenuatis densifloris; bracteae pelta rotunda centro pedicellata, antheris rotundatis filamenta fere aequantibus; ovario emerso subobovato summo apice stigma longe pilosum gerente.

Caulis ut videtur erectus, ramosus, inferne usque ad 4 mm crassus, in sicco coriaceus et complanatus. Limbi in sicco membranacei creberrime pellucido-punctati, superi inaequales, nempe elliptico-lanceolati 5.5-7.5 cm longi et 2.8-2.5 cm lati, elliptici 3.8-6.5 cm longi et 3.2-4.5 cm lati. Petioli 1 cm longi in sicco circiter 1 mm crassi. Pedunculi circiter 5 mm longi. Spicae 4 cm longae et inferne 2 mm crassae; bracteae pelta 0.5 mm diam.; bacca ignota rhachi processu conico sustentata.

Oahu, Koolau Mts.: J. F. Rock, n. 413.

53. *Peperomia astrostigma* C. DC. n. sp.

Caule superne hirsuto et cito glabro; foliis sat longe petiolatis; limbo elliptico-obovato basi cuneato apice obtuso vel breviter attenuato, supra glabro subtus sat longe hirsuto, 5-plinervio nervo centrali a fere 5 mm supra basin trifido; petiolo juniore hirsuto; pedunculis axillaribus terminalibusque glabris quam petioli brevioribus; spicis glabris quam limbi paullo brevioribus densifloris, sat crassis; bracteae pelta obovato-rotunda centro pedicellata; antheris rotundatis quam filamenta adulta brevioribus; ovario emerso rotundato-obovato summo apice stigma orbiculare ciliatum gerente; bacca elliptica glandulis asperata.

Herba terricola. Caulis inferne e nodis radicans usque ad 4 mm crassus, in sicco complanato-tetragonus, coriaceus. Folia opposita. Limbi in sicco rigiduli creberrime pellucido-punctulati, usque ad 7 cm longi et 4 cm lati. Petioli usque ad 1.7 cm pedunculi usque ad 1 cm longi. Spicae carnosae, submaturae 4-6 cm longae 3 mm crassae. Bracteae pelta 0.5 mm diam. pedicellus obconicus; filamenta 0.5 mm longa. Baccae 1 mm longae sine pseudocupula maturitate rhachis processu conico sustentatae.

Mau, along Waikamoi ditch trail in dense forest: J. F. Rock.

54. *Peperomia cornifolia* C. DC. n. sp.

Caule superne ramisque dense et sat longe hirsutis; foliis oppositis longiuscule petiolatis, limbo subobovato-lanceolato cuneato apice obtuso subacutove, supra glabro subtus piloso, 7-plinervio, nervo centrali nervos 2 adscendentes utrinque mittente quorum supremi supra medium limbi soluti nervo laterali adscendente utrinque a basi soluto

petiolo primum hirsuto, cito glabro pedunculis axillaribus glabris quam petioli brevioribus, spicis glabris quam limbi brevioribus, densifloris apice attenuatis; bracteae pelta obovata paullo supra centrum pedicellata; ovario emerso ovato summo apice stigma papillosum gerente, bacca elliptica glandulis asperulata.

Caulis a basi procumbente e nodis radicante glabro 5 mm crasso erectus in sicco coriaceus et complanatus. Limbi in sicco subrigidi creberrime pellucido-punctati, subtus ad paginam rubescentes ad nervos et marginem flavescentes, 7-10 cm longi, 4.2-4.7 cm lati. Petioli usque ad 1.5 pedunculi usque ad 5 cm longi. Spicae sparsim bacciferae usque ad 5 cm longae et inferne 4 mm crassae; bracteae pelta fere 0.75 mm longa; bacca 1.5 mm longa, sessilis.

Hawaii, in dense forest of Kohala mountain, 4000 ft. J. F. Rock.

55. *Peperomia hirtipetiola* C. DC. n. sp.

Caule ramulisque superne sat longe pilosis; foliis oppositis modice petiolatis; limbo ovato-acuminato basi rotundato apice acute acuminato, supra sparsim subtus dense piloso, 11-plinervio nervo centrali nervos utrinque 3 ascendentes mittente quorum supremus fere a 3 cm supra basin solutus nervisque lateralibus utrinque 2 a basi solutis; petiolo dense hirsuto; pedunculis axillaribus terminalibusque hirsutis petiolos fere aequantibus; spicis glabris limbos aequantibus vel paullo brevioribus funiculiformibus densifloris; bracteae pelta orbicularis centro pedicellata pedicello cum flore rhachi haud profunde immerso; antheris rotundatis quam filamenta longiuscula brevioribus; ovario paullo sub apice oblique et indistincte stigmatifero.

Herba terricola. Caulis erectus circiter 25 cm altus in sicco coriaceus inferne glaber 3.5 mm crassus superne pilosus pilis fere 1 mm longis. Limbi in sicco membranacei creberrime pellucido-punctulati usque ad 7.5 cm longi et 3 cm lati. Petioli 1 cm, pedunculi 8 mm longi. Spicae florentes usque ad 6.5 cm longae et 2 mm crassae; bracteae pelta 0.5 mm diam.

Maui, along Waikamoi ditch trail, dense forest: J. F. Rock.

56. *Peperomia oahuensis* C. DC. in Prodr. V. XVI, 1, p. 422,

Forma b. C. CD. n. f.

Limbo majore, elliptico-lanceolato, 3-4 cm longo 0.8-1 cm lato; spicis quam folia paullo brevioribus, haud densifloris, bacca globosa rhachis processu conico sustente glandulis asperulata, 0.5 diam.

Oahu, Punaluu: Faurie n. 143; Molokai, Pukoo: n. 141; Maui, Nahiku, in arboribus n. 140.

57. *Peperomia lonchophylla* C. DC. in K. Sch. et Lauterb.

Fl. D. Schutz, p. 225.

Oahu, Koolau mts.: J. F. Rock, n. 1015.

58. *Peperomia pallida* Dietr. sp. v. 1, p. 153.

Doubtful in the Hawaiian Islands. (Hillebr. Fl. p. 418.)

59. *Peperomia dentulibractea* C. DC. n. sp.

Caule superne dense hirsuto; foliis modice petiolatis; limbo rotundato vel obovato-rotundato, supra glabro subtus hirsuto, 5-nervio; petiolo hirsuto; pedunculis oppositifoliis hirsutis petiolos fere aequantibus; spicis glabris folia fere aequantibus; bracteae pelta rotundato-obovata inferne obtuse 2-3 dentula centro pedicellata; antheris ellipticis filamenta aequantibus, ovario emerso obovato paullo sub apice oblique stigmatifero stigmatate papilloso; bacca ovata glandulis asperata.

Ramuli spiciferi e basi radicante repente surgentes 2 mm crassi. Folia alterna. Limbi in sicco membranacei sparsim pellucido-punctati, circiter 3.2 cm longi, 3.2-3.7 cm lati. Petioli usque ad 12 mm longi. Spicae 4 cm longae, 1.5 mm crassae; bracteae pelta 0.5 mm longa. Bacca 0.55 mm. longa.

Molokai, Maunahui gulch, in shady gorge, 3200 ft. March: J. F. Rock. n. 6139.

60. *Peperomia purpurascens* C. DC. in Prodr. V. XVI. 1, p. 412.

61. *Peperomia punaluuna* C. DC. n. sp.

Caulibus dense hirsutis; foliis alternis modice petiolatis; limbo rotundo supra glabro subtus hirsuto, 7-nervio, petiolo hirsuto; pedunculis terminalibus axillaribusque petiolos superantibus hirsutis, spicis glabris limbos paullo superantibus adultis haud densifloris; bracteae pelta orbiculari margine obtuse et irregulariter denticulata centro breviter pedicellata; antheris rotundato-ellipticis, thecis filamenta brevia fere aequantibus; ovario obovato summo apice stigma parvum papillosulum gerente; bacca obovata inferne glandulis asperulata.

Caulis e basi radicante erectus usque ad 18 cm longus inferne subglaber usque ad 2 mm crassus. Limbi in sicco subcoriacei pellucido-punctulati, 1.5-2 cm longi, nervis tenuibus inconspiculis. Petioli 1 cm, pedunculi 1.2 cm longi. Spicae circiter 2 cm longae, 2 mm crassae; bracteae pelta 0.5 mm diam.; bacca 1 mm longa.

Oahu, Punaluu, 800 m., Maio: Faurie n. 159.

62. *Peperomia Fauriei* Lévillé in Fedde Rep. X., p. 151, amend.

Ramulis junioribus hirsutis; foliis quaternis-quinis, limbo anguste oblongo basi cuneato apice subacuto juniore supra hirtello adulto utrinque glabro apice ciliolato glabrove tenuiter 3-nervio, petiolo juniore supra hirtello cito glabro; pedunculis terminalibus glabris petiolos pluries superantibus; spicis folia subduplo superantibus subdensifloris glabris; bracteae pelta rotunda fere centro pedicellata;



antheris ellipticis filamenta fere aequantibus; ovario emerso ovato glandulis nigris asperulato summo apice stigmatifero, stigmate bilobo lobis antero-posticis rotundatis papillosulis; bacca elliptica glandulis nigris parce asperulata apice stigmate apiculata.

Erecta. Caulis in sicco coriaceus, glaber fere usque ad 5 mm crassus superne dichotome ramulosus, ramuli spiciferi circiter 0.55 mm crassi. Limbi in sicco rigido-membranacei, pellucido-punctulati, usque ad 2.6 cm longi et 5 mm lati. Petioli 1.5 mm, pedunculi 1.8 cm longi. Spicae bacciferae usque ad 4 cm longae 1 mm crassae; bracteae pelta fere 0.5 mm diam.; bacca paulo ultra 0.5 mm longa in sicco fuscescens, sessilis sine pseudocupula.

Molokai, in petrosis rivulorum, Maio: Faurie n. 108.

63. *Peperomia sarcostigma* C. DC. n. sp.

Ramulis dense hirsutis; foliis ternis modice petiolatis; limbo obovato basi cuneato, supra inferne ad nervum centralem subtus ubique et praesertim ad nervum centralem hirsuto, 3-nervio, petiolo hirsuto; pedunculis axillaribus terminalibusque parce pilosis petiolos superantibus; spicis glabris limbos paulo superantibus; bracteae pelta rotunda centro pedicellata pedicello sat crasso; ovario emerso ovato summo apice stigmata 2 rotundata carnosa glabra antero-postica.

Planta muscicola. Caulis prostratus e nodis radicans glaber circiter 2 mm crassus ramis erectis usque ad 20 cm longis ramulosis. Limbi in sicco rigidi creberrime pellucido-punctulati, superi 1.5 cm longi, 9 mm lati. Petioli 3 mm, pedunculi 6 mm longi. Spicae florentes 2 cm longae 1.5 mm crassae; bracteae pelta 0.5 mm diam.

Maui, on the high swampy plateau and along the trail leading to Puu Kukui, 5780 ft.: J. F. Rock.

64. *Peperomia mahanana* C. DC. n. sp.

Ramulis dense hirtellis; foliis quaternis modice petiolatis; limbo e basi cuneato obovato utrinque petioloque dense hirtellis, 3-nervio minute pellucido-punctulato; pedunculis terminalibus petiolos pluries superantibus; spicis glabris filiformibus densifloris limbos pluries superantibus; bracteae pelta rotunda centro pedicellata cum flore rhachi inferne immersa; antheris ellipticis filamenta fere aequantibus; ovario obovato apice et paulo oblique stigmata 2 rotunda ciliata gerente; bacca ovata sublaevi apice apiculata.

Planta arboricola. Rami e caule repente glabro in sicco coriaceo 2 mm crasso surgentes erecti circiter 12 cm alti inferne glabri superne ut ramuli dense hirsuti. Limbi in sicco rigidi opaci, usque ad 1.7 cm longi et 1 cm lati. Petioli 4 mm, pedunculi fere usque ad 4 cm longi. Spicae usque ad 5 cm longae et 1 mm crassae. Bracteae pelta fere 0.3 mm diam. Bacca sessilis 0.5 mm longa, apice flavida.

Lanai, on the trunk of *Aleurites moluccana*, in Mahana Valley:  
J. F. Rock, n. 8090.

65. *Peperomia rigidolimba* C. DC. n. sp.

Plate IV.

Caulis ramulisque dense et sat longe hirsutis; foliis plerumque ternis breviter petiolatis; limbo oblongo-obovato basi cuneato apice rotundato vel saltem obtuso, supra glabro subtus sat dense piloso, 5-nervio, petiolo sat dense piloso; pedunculis axillaribus glabris petiolos fere aequantibus spicis quam limbi paullo brevioribus densifloris glabris rhachi in sicco rubra; bracteae pelta subelliptico-rotunda centro pedicellata; antheris ellipticis, thecis filamenta sat longa fere aequantibus; ovario emerso turbinato summo apice stigmata 2 antero-postica rotundata ciliata dein glabra gerente; bacca ovato-globosa glandulis asperulata.

Caulis basi radicans, circiter 30 cm altus in sicco coriaceus et atrorubescens, inferne circiter 4 mm crassus. Limbi in sicco rigidi subcoriacei crebre pellucido-punctulati subtus rubescentes cum nervis flavicantibus, 4-5 cm longi, 2-2.7 cm lati. Petioli 5-6 mm longi. Spicae usque ad 4 cm longae et 3 mm crassae; bracteae pelta fere 0.5 mm longa et paullo latior; bacca 1 mm longa.

Hawaii, Mt. Kohala: J. F. Rock.

66. *Peperomia nervosa* C. DC. n. sp.

Plate V.

Caulis ramulisque glabris; foliis ternis axillaribusque adjunctis adspicis quinis, modice petiolatis, limbo lanceolato utrinque glabro 5-plinervio; petiolo glabro; pedunculis axillaribus folia fere aequantibus filiformibus sublaxifloris; bracteae pelta orbiculari centro sessili; ovario emerso subgloboso summo apice stigma bilobatum gerente lobis antero-posticis rotundatis puberulis.

Herba erecta. Caulis in sicco coriaceus, ramuli spiciferi circiter 2.5 mm crassi. Limbi in sicco firmi opaci pellucido-punctulati, usque ad 7.5 cm longi et 2 cm lati. Petioli circiter 1 cm longi. Spicae florentes 1 mm crassae.—P. *Macraeana*,  $\gamma$  *nervosa* Hillebr. Flor. p. 421.

Kauai, on Kaholuamano above Waimea, Hillebr. in h. Berol; Heller n. 2826 in h. Boiss.: J. F. Rock, n. 2502.

67. *Peperomia Rockii* C. DC. n. sp.

Plate VI.

Caulis superne dense hirsuto; foliis oppositis modice petiolatis; limbo ovato-acuminato basi rotundato apice subacute acuminato supra junior parce piloso et cito glabro subtus dense piloso, 7-plinervio

nervo centrali nervos adscendentes utrique 2 mittente quorum supremus a 5 mm supra basin solutus nervo laterali utrinque a basi soluto quam alii magis arcuato, petiolo dense hirsuto; pedunculis axillaribus terminalibusque hirsutis petiolos fere aequantibus, spicis glabris quam limbi brevioribus sat crassis densifloris; bracteae pelta obovata supra centrum longiuscule pedicellata, antheris rotundatis minutis; ovario emerso ovato summo apice stigmata 2 antero-postica rotundata glabra gerente; bacca ovata glandulis densissime conspersa.

Planta terricola. Caulis ut videtur erectus, teres, circiter 30 cm altus, inferne glaber, usque ad 7 mm crassus. Limbi in sicco subrigidi creberrime pellucido-punctulati, in sicco supra virescentes subtus pallide flavescences, usque ad 6 cm longi et 3 cm lati. Petioli 1 cm, pedunculi 0.8 cm longi. Spicae usque ad 4.5 cm longae 3 mm crassae dense bacciferae; bracteae pelta 0.5 mm longa; bacca fere 1.5 mm longa.

Molokai, Kaluaha forest, 2500 ft.: J. F. Rock, n. 7013.

68. *Peperomia parvanthera* C. DC. n. sp.

Caule superne hirsuto; foliis oppositis-ternis sat longe petiolatis; limbo ovato basi rotundato apice acute acuminato supra basi ima excepta glabro, subtus hirsuto, 7-nervio, petiolo hirsuto; pedunculis axillaribus terminalibusque haud dense pilosis quam petioli brevioribus, spicis glabris quam limbi multo brevioribus densifloris; bracteae pelta rotundato-obovata supra medium breviter pedicellata; antheris minutis ellipticis, thecis filamenta brevia fere aequantibus; ovario emerso ovato dense glanduloso, summo apice stigmata 2 antero-postica rotundata longe ciliata gerente; bacca subglobosa glandulis dense conspersa apice stigmatibus bimucronulata.

Caulis erectus in sicco coriaceus et complanatus inferne glaber usque ad 7 mm crassus. Folia infera opposita supera terna. Limbi in sicco membranacei haud dense pellucido-punctati, 9.7 cm longi, 5.1 cm lati. Petioli 2 cm, pedunculi 1 cm longi. Spicae 5.5 cm longae, inferne bacciferae 3 mm crassae apice attenuatae; bracteae pelta 0.5 mm longa; bacca fere 1 mm longa. Stigmata primum glabra dein ciliata et postea glabra.

Molokai, Pukoo: Faurie n. 164.

69. *Peperomia lillifolia* C. DC. n. sp.

Plate VII.

Caule juniore superne piloso cito glabro; foliis oppositis vel fere ternis-quaternis, longe petiolatis; limbo elliptico-lanceolato basi cuneato apice obtusiuscule vel acute acuminato, supra glabro subtus piloso pilis cito deciduus, 5 plinervio nervo centrali a 2 cm supra

basin trifido; petiolo apice piloso; pedunculis axillaribus terminalibusque quam petioli multo brevioribus junioribus pilosis cito glabris; spicis glabris quam limbi multo brevioribus; bracteae pelta orbiculari centro sat longa pedicellata; antheris ellipticis quam filamenta brevia longioribus; ovario emerso obovato summo apice stigmata 2 antero-postica lunulata dense et longe ciliata gerente.

Planta erecta. Caulis inferne 4 mm crassus ramosus in sicco rigidus. Folia supra vel subverticillata et terna-quaterne, caulina opposita. Limbi in sicco membranacei pellucido-punctulati, superiusque ad 9 cm longi et 3.3 cm lati, subsequentes usque ad 10.5 cm longi et 4.3 cm lati. Petioli 2-2.5 cm, pedunculi 5 mm longi. Spicae florentes usque ad 4 cm longae et 2 mm crassae; bracteae pelta 0.5 mm diam.

Molokai, forest of Kaluaha: J. F. Rock n. 7012; Hawaii, Kohala: J. F. Rock.

Forma b; caule omnino glabro.

Molokai: J. F. Rock n. 7070; Maui, the high swampy plateau and along the trail leading to Puu Kukui, 5780 ft.: J. F. Rock.

Forma c; caule omnino glabro; limbis supra ad nervos et subtus ubique pilosis superis 4-5 cm longis 1.5-2.3 cm latis; bacca oblongo-elliptica basi brevissime stipitiformi glandulis sphaericis dense asperulata, fere 1.5 mm longa.

Hawaii, forest of Honokananui: J. F. Rock n. 8365; woods above Waimea: n. 4422.

Forma d; caule omnino glabro, limbis supra ad nervos parce pilosis subtus glabris, superis 3-5 cm longis 1.5-2.8 cm latis; bacca oblongo-ovata.

Hawaii, Kohala Mts.: J. F. Rock.

#### 70. *Peperomia longilimba* C. DC. n. sp.

##### Plate VIII.

Caule longe piloso; foliis oppositis vel supremis ternis, longe petiolatis; limbo magno elliptico-lanceolato basi et apice acuto utrinque sat longe piloso, penninervio nervo centrali ex paullo ultra  $\frac{1}{2}$  longitudinis suae nervos adscendentes utrinque 5 mittente, petiolo sat longe piloso; pedunculis axillaribus terminalibusque, pilosis quam petioli multo brevioribus; spicis glabris quam limbi paulo brevioribus funiculiformibus densifloris; bracteae pelta orbiculari centro sat longe pedicellata; antheris ellipticis filamenta fere aequantibus; ovario emerso ovato glandulis asperulato, summo apice stigma bilobulatum gerente lobulis rotundatis carnosis glabris; bacca elliptica apice apiculata glandulis asperulata.

Planta terricola. Caulis erectus in sicco coriaceus 4 mm crassus pilis fere 2 mm longis. Limbi in sicco membranacei creberrime

pellucido-punctulati 14-17 cm longi, 5.7 cm lati. Petioli 3.5-4 cm, pedunculi 1.3 mm longi interdum basi bifidi. Spicae usque ad 11 cm longae et 2 mm crassae; bractee pelta paullo sub 0.5 mm diam.; bacca 1 mm longa.

Maui, along Waikamoi ditch trail dense forest: J. F. Rock; West forest of Hamakua, north slope of Haleakala 4000 ft. Sept.: n. 8506, specimen sterile; Lanai, Mahana Valley; n. 8094, specimen sterile.

71. *Peperomia pluvigaudens* C. DC. n. sp.

Caulis glabro simplici; foliis oppositis modice petiolatis glabris; limbo elliptico-vel-subobovato-lanceolato basi cuneato apice acute attenuato, 5-plinervio nervo centrali paullo supra basin trifido; pedunculis axillaribus glabris petiolos fere aequantibus apice in spicam incrassatis, spicis adultis limbos subaequantibus glabris funiculiformibus densifloris; bractee pelta adulta subovato-rotunda inferne obtuse et irregulariter denticulata centro pedicellata; ovario emerso turbinato summo apice stigmata 2 antero-postica rotundata ciliata et ciliis cito deciduis; bacca subovato-globosa glandulis densissime asperulata.

Caulis in sicco complanatus coriaceus, usque ad 4 mm crassus. Limbi in sicco rigidi creberrime pellucido-punctulati subtus ad paginam rubescentes cum nervis flavicantibus, circiter 4 cm longi, 2-2.5 cm lati. Petioli 0.7-1 cm longi. Spicae usque ad 3.5 cm longae 2 mm crassae; bractee pelta 0.5 mm diam., bacca fere 1 mm longa, sessilis.

Hawaii, Mt. Kohala, west of Honokananui gulch, dense rain forest, 4000 ft.: J. F. Rock n. 8365; Holokaiea gulch, Waimea, 3200 ft. rain belt: n. 4430.

72. *Peperomia villipeduncula* C. DC. n. sp.

Caulibus ramulisque densissime hirsutis; foliis oppositis modice petiolatis; limbo in foliis superis ovato basi rotundato apice subatenuato obtusoque, supra glabro subtus hirsuto, obscure 5-nervio, petiolo dense hirsuto; pedunculis hirsutis petiolos multo superantibus, spicis glabris, adultis quam folia duplo brevioribus; bractee pelta orbiculari centro pedicellata; antheris rotundatis minutis quam filamenta multo brevioribus; ovario emerso summo apice stigmata 2 rotundata ciliata gerente; bacca elliptica glandulis viscidis conspersa.

Caulis e basi radicante erecti usque ad 6 cm longi et inferne fere usque ad 2 mm crassi. Limbi in sicco coriacei opaci, 2.7-3 cm longi, 1.7-2.4 cm lati. Petioli superi 7 mm, pedunculi adulti 1.1 cm longi. Spicae adultae 1.5 cm longae, 1 mm crassae; bractee pelta 0.5 mm diam.; bacca matura rhachi processu conico sustentata, 1 mm longa.

Oahu, Punaluu Mts.: J. F. Rock.

73. *Peperomia gracilescens*. C. DC. n. sp.

Ramis superna sat longa pilosis; foliis oppositis longa petiolatis; limbo ovato-lanceolato basi acuto apice acute acuminato supra sparsim subtus sat dense pilosus ciliolato, penninervio nervo centrali nervos adscendentes utrinque 5 mittente quorum supremus a medio infimi paullo supra basin soluti, petiolo piloso pedunculis axillaribus terminalibusque pilosis quam petioli brevioribus, spicis glabris quam limbi paullo brevioribus funiculiformibus densifloris; bracteae pelta orbiculari centro pedicellata, ovario emerso ovato summo apice stigma carnosum glabrum bilobulatum gerente; bacca elliptica glandulis asperulata apice stigmatate persistente apiculata.

Planta terricola. Caulis longe ramosus, rami in sicco duri, usque ad 25 cm longi et 3 mm crassi, pili paullo infra 1 mm longi, limbi in sicco membranacei creberrime pellucido-punctulati, 8-10 cm longi 3.2-3.5 cm lati. Petioli usque ad 1.7 cm, pedunculi usque ad 1 cm longi. Spicae usque ad 6.5 cm longae et paullo sub 2 mm crassae; bracteae pelta 0.5 mm diam.; bacca fere 1 mm longa.

Maui, along Waikamoi ditch trail in dense forest, May: J. F. Rock; Maui: Remy n. 186.

# New Species of Hawaiian Plants

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By

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## GESNERIACEAE

*Cyrtandra cyaneoides* Rock sp. nov.

Plant subherbaceous, somewhat woody at the base, stem erect, not branching, 11-12 dm high, 4 cm in diam., bearing a crown of leaves at the apex, not unlike a species of *Cyanea*; leaves 45-55 cm long, including the thick winged petiole, 22.5-35 cm broad, midrib fleshy, obovate, rounded at the apex, suddenly narrowing below into a margined petiole, the latter 1.5 cm thick, texture of leaves thick but coriaceous to fleshy, upper surface deeply rugose, all veins impressed, dark green, lighter underneath, glabrous, dull, young leaves and petioles covered with a light silky brown tomentum, with erose margins, young leaves almost fringed. Flowers numerous in subsessile clusters surrounding the stem and hidden; calyx with prominent veins, curved, yellowish brown, five cleft, bi-labiate, lower lip consisting of two sepals 12 mm long, suddenly narrowing into filiform apices, upper lip of three sepals half as long as lower lip, the two outer ones only beaked, all parts covered with a silky brown tomentum; corolla enclosed in the calyx, white, 36 mm long including the 25 mm long tube, slightly curved, two upper petals rounded and smaller than the three lower which are acute, pubescent; stamens adhering in the lower half of the tube, filament 10 mm long; style 14 mm long, green, thickening towards the base; stigma flattened, two lobed, the lobes obtuse, 2 mm long; fruit ovoid (immature), calyx deciduous from fruit, on pedicels of 8-10 mm, and covered in its young state with a brown tomentum.

Kauai: Growing on cliffs near streams or waterfalls at an elevation of 4000 feet, type no. 2282, College of Hawaii Herbarium. Only one specimen observed, collected March 3, 1909, Kaholuamano, along trail to Waialae Valley, when in company

with Mr. Francis Gay, who gave *Mapele* as the native name of the plant.

This species is one of the most striking *Cyrtandras* the writer has ever met with in the Hawaiian forests. It resembles a *Cyanea* of the section *Palmaeformes*, hence the specific name.

#### CAMPANULACEAE-LOBELIOIDEAE

*Clermontia montis-Loa* Rock sp. nov.

Plate IX.

A small tree or shrub, many branched; leaves thick leathery, glossy, dark green above, lighter underneath, flowers single or two on a very short peduncle; calyx, ovarian portion oblong, green, as well as the lobes which are twice as long as, and enclosing the corolla; corolla light purplish green, the dorsal slit extending below the middle; staminal column dark purple, glabrous, anthers darker, glabrous, the two lower penicillate; stigmatic lobes short, with a whitish tomentum at the base; berry large, orange-colored, globose to ovoid, 25 mm in diam.

Hawaii: Forests of Naalehu, Kau, southern slopes of Mauna Loa, elevation 4000 feet, in dense forest. Collected January 9, 1912. Type no. 10002 in the College of Hawaii Herbarium.

This species seems to be intermediate between *Cl. macrocarpa* and *Cl. oblongifolia*, though quite distinct from either. The flowers are much smaller than in either of these species and are on very short peduncles of often only 3 mm.

*Clermontia Walmeae* Rock sp. n.

A shrub 3-5 m high, many branched, of the typical *Clermontia* type; branches slender, glabrous; leaves bright green, glossy, subcoriaceous to chartaceous, glabrous on both sides, only the young leaves puberulous underneath, elliptic-lanceolate, acute at both ends, mucronate at the apex, crenate to crenulate, callous, covered with a fine impressed areolar network, midrib reddish, 10-15 cm long, 2-3.5 cm wide, on petioles of 2.5-3.5 cm; cyme 3-5 flowered, puberulous, axillary, the common peduncle 2-3 cm, pedicels 10-15 mm, bibracteolate at or below the middle; ovarian portion of calyx subglobose, 6-8 mm in diam., the lobes linear-lanceolate recurved, acute, 5-8 mm long, puberulous, corolla purple, slender, slightly curved, somewhat pubescent, 3-4 cm long, 3-4 mm wide, deeply lobed more than half the length of the corolla, the lobes linear-lanceolate, acute, the dorsal slit not always extending to the base, but often only beyond the middle; staminal column glabrous, anthers entirely glabrous, the lower ones bearded



only; fruits dark orange yellow, globose with truncate apex and persistent calycine lobes.

Hawaii: Dense swampy forests above Waimea Village, Parker Ranch, elevation 4000 feet. Coll. J. F. Rock, July 12, 1909. Type no. 4794.—the Herbarium Board of Agric. & For. Hawaii.

An exceedingly handsome species, related to *Cl. parviflora* Gaud. but differing from it in the short calycine lobes, long slender corolla, which is much larger, and the subcoriaceous elliptic-lanceolate leaves, which remind one of those of *Cl. persicaefolia* Gaud.

It may be remarked that this species, together with *Cl. leptoclada*, *Cl. parviflora*, *Cl. parviflora* var. *calycina*, and var. *pleiantha* seem all more or less related and should form a section by themselves. There are a number of other varieties not yet described which would also fall into this group. The close relationship of these plants is unmistakable; it however contradicts Hillebrand's sectional arrangement.

It may be remarked that the species published by H. Lévillé in Fedde Repertorium X. 10/14 (1911) 156 under the name *Cyanea Blinii* Lévl. sp. n. collected by Abbé Faurie, no. 575, May, 1909, at Glenwood, near Hilo, Hawaii, of which the writer possesses a co-type, is *Clermontia parviflora* Gaud.  $\beta$  var. *pleiantha* Hbd.

#### **Clermontia Kohalae** Rock

var. **robusta** Rock var. nov.

A small tree or shrub, branches exceedingly stout, woody to the last ramification, bark thick corky and covered with numerous thick knobby leaf-scars; leaves smaller than in the species and on much shorter petioles, densely crowded at the apex of each branchlet; inflorescence the same as in the species, flowers thicker and more fleshy, the cymes in the axils of the uppermost leaves and not all along the stem as in the species.

Hawaii: Mountains of Kohala, along stream beds and near waterfalls at an elevation of 1500 feet, back of Kohala proper. Coll. J. F. Rock July 1910; type no. 8811 in the Board of Agriculture and Forestry Herbarium.

This variety is one of the most robust *Clermontia* known to the writer.

#### **Cyanea communis** Rock sp. n.

Plant single stemmed, erect, not branching, fleshy, but woody towards the base, hirsute in the upper portion, 4-16 dm high, leaves pale green, ovate-oblong, acuminate at both ends, chartaceous, irre-

gularly serrate to dentate with the exception of the base proper, glabrous or slightly hispidulous above, pubescent underneath or only along the prominent veins and midrib, young leaves hirsute on both faces, 10-20 cm long, 3-5 cm wide, on hirsute petioles of 2.5-6 cm; racemes arranged all along the naked stem and in the axils of the leaves; peduncle 1.5-3 cm, hirsute, occasionally with foliaceous bracts, or naked, or with a few knobby scars at the end, 3-7 flowered, pedicels slender, hirsute, 6-12 mm; calyx ovoid, puberulous, the lobes one third its length, acute, triangular; corolla pale purple to pink, slightly curved, tomentulose, 30 mm long, 4 mm wide, very thin, the dorsal slit extending only one third its length, or even less, the lobes unequal, linear; staminal column glabrous as are the bluish anthers; fruit ovoid to globose, dark orange colored 10-16 mm in diameter, crowned by the calycine lobes; seeds smooth, shining, reddish brown.

Kauai: In the forests at Kaholuamano, above Waimea; the most common *Cyanea*. The plant is absent at Halemanu which latter locality is separated from the former by the Waimea canyon. The plant is terrestrial and does not branch like *C. hirtella*, which is common at Halemanu and is a branching shrub 20 feet in height. *Cyanea communis* was also observed by the writer on the high central plateau and at the summit of Kauai, Mt. Waialeale, the only *Cyanea* present on that mountain. It was found growing on trees, thickly covered with moss. It ranges from an altitude of 4000 to 5000 feet. Coll. J. F. Rock; Sept. 1909, no. 4885, which is the type in the Board of Agric. and Forestry Herbarium, no. 5942, Waialae Valley, and Octob. 1911, no. 8865, Kaholuamano, fruiting only. The plant flowers in the early part of the summer. There is a fruiting specimen of this species in the Gray Herbarium, collected by A. A. Heller, Aug. 30, 1895, no. 2769, from the type locality.

The plant is quite different from *C. hirtella*, which the writer had occasion to compare with *C. communis* growing in the field. It is undoubtedly related to *C. hirtella*, but differs from it in the smaller, very pale flowers, in the arrangement of the racemes, and in the much smaller leaves which are of entirely different shape. However, the species described would form a marked group with *C. hirtella*, *C. fissa*, *C. recta*, and *C. sylvestris*.

Hillebrand says that *C. recta* (which he had not seen) seems to border on var  $\delta$  of *C. angustifolia*. The writer had opportunity to examine Wawra's type through the courtesy of Prof. Dr. A. Zahlbruckner of Vienna and must state that *C. recta* is a very distinct species and has no resemblance to any variety of *C. angustifolia*.

*Cyanea wallauensis* Rock sp. n.

Plant erect, 1.5 m high, not branching, stem fleshy, but woody at the base, unarmed and covered in its upper portion with leaf-scars, with a crown of leaves at the apex; leaves chartaceous when dry, somewhat fleshy when fresh, pale green, dull and glabrous above, with prominent veins and impressed midrib, obovate-oblong, cuspidate to acute at the apex, gradually narrowing at the base, somewhat wavy and eroso-dentate at the margin, puberulous underneath, 30-40 cm long, 10-18 cm wide on petioles of 4-8 cm, young leaves hispid; racemes arranged along the upper portion of the stem, somewhat similar to *Cyanea acuminata*, peduncle thick, densely studded with large close knobby scars of a pale color almost from the base, about 4 cm long, 6-8 flowered at the apex, peduncle hirsute as are the linear bracts; pedicels 1 cm long, hispid; calyx hispidulous to hirsute, the ovarian portion 10 mm, the linear oblong lobes 15-18 mm, free to the base; corolla of a dirty white, the tube 22-25 mm, hirsute as are the unequal lobes, the dorsal slit extending  $\frac{2}{5}$  its length; staminal column dark purple, glabrous, the lower anthers bearded, stigma surrounded at its base by a tuft of small, white hairs; fruit unknown; but calyx-lobes persistent with fruit as is evidenced from very young fruits.

Molokai: Valley of Wailau; at the bottom of the valley at 1000 feet elevation, near the head of Wailau, along the stream-bed among dense vegetation of ferns, *Cyanea grimesiana*, *Antidesma platyphyllum*, *Musa sapientum*, etc. Coll. J. F. Rock, April 1910, type no. 8812 in College of Hawaii Herbarium.

The plant comes nearest to *C. solenocalyx* Hbd., but differs from it in the often cuspidate leaves, thick peduncle with dense knobby scars and the very short white flowers, which are almost hidden in the calyx.

*Cyanea macrostegla* Hbd.

var. *parvibracteata* Rock var. nov.

## Plate X.

Leaves large, 45-64 cm by 7-14 cm, coriaceous, scabrous above, dull pubescent underneath, margin irregularly notched or laciniiform, broadly oblong in outline; peduncle 4-6 cm, fleshy, bracteate at the apex, bracts linear-subulate 5 by 1 mm; pedicels 15 mm, apparently naked; calyx pubescent, the ovarian portion obconical, the lobes as in var.  $\beta$ ; corolla dark purple, pubescent as in var.  $\beta$ ; berry ovoid, dark yellowish, 25-30 mm by 18-27 mm, crowned by the calycine lobes.

Maui: Northwest slopes of Mt. Haleakala, East Maui, along

the trail leading from Ukulele to Waikamoi, elevation 5000 feet, flowering March 1912, Rock and Ceresole no. 10057; fruiting May 1911, northern slopes of Haleakala along a stream above Nahiku, elevation 3500 feet, Rock no. 8792, in the Herbarium of the College of Hawaii.

***Rollandia purpurellifolia* Rock sp. n.**

Plant 3-5 dm high with fleshy stem, unbranched, unarmed and perfectly glabrous; leaves sessile or on petioles of 5-8 mm, linear-oblong, 16-35 cm long, 3.5-6.5 cm wide, dull, dark green above, dark purple underneath and shining, perfectly glabrous on both sides, acute or obtuse at the apex, with irregularly denticulate margins, but the last third entire, inflorescence perfectly glabrous, axillary, peduncles slender, with few knobby scars, 15-25 mm long, bracteate at the apex, pedicels slender, blackish-purple, 12-20 mm long, bi-bracteolate below the middle; flowers unknown; fruits dark purple to black, obovoid, crowned with the 4-6 mm long, acute calycine lobes, 15-18 mm long when mature.

Oahu: dense forests of Punaluu Mts., at the summit ridge above Hauula in dense shade with *Lysimachia longisepala* and numerous ferns, etc.

A striking species with dark purple leaves. Coll. J. F. Rock, Aug. 1908 and August, 1911; type no. 8824 in the Herbarium of the Board of Agriculture and Forestry, Honolulu.

The plant comes nearest to *R. longiflora* Wawra.

***Rollandia truncata* Rock sp. n.**

A low plant 3-4 dm high with fleshy muricate stem; leaves large, chartaceous, broadly obovate-oblong, acute at the apex, decidedly truncate at the base with perhaps a slight indication of becoming subcordate, pale green, glabrous above, with here and there, especially on the veins, a few minute conical spines, 40-42 cm long, 18-20 cm wide, puberulous underneath, on muricate petioles of 14 cm; racemes axillary, slender, 5.5 cm long, bracteate from the base, hispidulous, the number of bracts increasing towards the apex, whole inflorescence rather broadly contracted, the lower flowers mature, while the apical ones occur as minute buds; pedicels single in the axils of each bract, long, slender, 22-26 mm long, bi-bracteolate at or below the middle, pubescent; calyx 10 mm long, the ovarian portion obconical, the lobes as long as the tube, 5 mm, broadly obtuse; corolla pale purplish-pink, slender, very thin puberulous in the bud, glabrous when open, slightly curved, or almost straight, the dorsal slit extending to the middle, staminal column only at the very base adnate

to the corolla, often hardly noticeably so, glabrous, pale; anthers bluish, glabrous, the two lower bearded.

Oahu: Mountains of Punaluu, Punaluu Valley trail, 1000 feet elevation in company with *Cyrtandra*, *Scaevola*, *Acacia Koa*, etc. Coll. J. F. Rock Aug. 1911, type no. 8840 in the herbarium of the Board of Agriculture and Forestry which is in the safe-keeping of the College of Hawaii.

This exceedingly interesting plant seems to furnish almost the intermediate between the genera *Rollandia* and *Cyanea*. In the former genus the dorsal slit extends to the middle while in the latter beyond the middle; the staminal column in this species is only at the very base adnate to the corolla, appearing almost free, a fact which brings it very near to *Cyanea*; in the outward aspect it is however a typical *Rollandia*.

#### TREMATOLOBELIA Zahlbr. in lit.

Syn. *Trematocarpus* A. Zahlbr. in Ann. Mus. Vindob. VI. 3/4 (1891) 430 fig. 1.

Calycis tubus sub anthera adnatus, subglobosus, limbus 5-partibus; corolla arcuata, decidua, tubo dorso a basi fisso, limbi lobis incurvis inaequalibus, 2 majoribus altius liber, rectus, tubo corollae multo longior; antherae 2 minores vertice penicillatae, 3 majores glabrae; ovarium inferum, 2-loculare, placentis  $\infty$ -ovulatis. Capsula infera, lignosa, vertice clausa et umbonata, lateraliter inter costas praesertim versus basim foraminibus ovalibus aut rotundatis dehiscens. Semina parva, pressione mutua marginata. Embryo rectus, radícula juncta hilum, lobis rotundatis planis; ex Zahlbr. Ann. l. c. p.

The genus *Trematolobelia* consists of a single species and two varieties. The latter are new and described here in the following pages.

#### *Trematolobelia macrostachys* A. Zahlbr.

Plates XI and XII.

Syn.: *Trematocarpus macrostachys* A. Zahlbr. in Ann. Mus. Vindob. VI. 3/4 (1891) 432.—*Lobelia macrostachys* Hook. et Arn. Bot. Beech. Voy. (1832) 88; DC. Prodr. VII. (1838) 387;—*Wawra* in Flora (1873) 48;—Hbd. Fl. Haw. Isl. (1888) 238.—*Delissea?* *macrostachys* Presl Prodr. Lobel. (1836) 47. For reference to discussion on *Trematocarpus* see Ann. of Bot. VII. (1893) 289 and 397.

In a letter received from Dr. A. Zahlbruckner the writer's attention was called to the controversy in regard to the genus *Trematocarpus*. The writer, who has had ample opportunity to study this plant in all its stages in the field and that on all the

islands of the Hawaiian group, can only corroborate Dr. Zahlbruckner's conclusions. As is known, the plant flowers the last year of its life, and perfectly mature fruiting specimens, of which the epicarp had decayed, were observed by the writer in the Hawaiian forests. All capsules had the peculiar holes, which are very numerous and of different sizes and shapes, becoming larger at the base of the capsule. Mr. Botting Hemsley suggested that these holes may have been the work of insects in the herbarium and that Zahlbruckner had monstrous capsules. This the writer can absolutely prove to be not the case as is shown in the accompanying illustration. (Plate XI). He can also verify that the apex of the capsule is always indehiscent and that even after pressure had been applied it remained unopened, the carpidia had however become separated from the ligneous capsular wall, were torn, and the capsules were empty. All this was observed in the field and not from specimens preserved in an herbarium for sixty years or more as was the case with Dr. Stapf's specimens.

The flowering habit of this beautiful plant is also different from that of the other Hawaiian *Lobelia*, as the accompanying illustration (plate XII) shows.

***Trematolobelia macrostachys* Zahlbr. var. *grandifolia* Rock var. n.**

Plant erect, branching as in the species; stem dark reddish, leaves large, obovate-oblong, subentire or faintly crenulate with callous glands, pale green, midrib dark, blackish, acute or obtuse at the apex, gradually narrowing at the base into broad, margined petioles of 2-5 cm, 26-30 cm long, 5-7 cm broad; racemes longer than in the species, robust 50-60 cm long, bracts broad, foliaceous; calyx twice as large as in the species, corolla not of even width, somewhat sigmoid, pure white, broader and longer than in the species.

Hawaii: Mountains of Kohala, along the edge of Kawainui gorge, 4400 feet elevation. Coll. flowering Oct. 1909, R. S. Hosmer; type no. 6090 in Board of Agriculture and Forestry (College of Hawaii) Herbarium.

**var. *Kauaiensis* Rock**

Syn.: *Lobelia macrostachys* H. et A. var. *Kauaiensis* Rock in *Indig. Trees Haw. Isl.* (1913) 77 nom. nud.

Plant much smaller than the species, stems black; leaves linear oblong, acuminate at both ends, dark green, glossy with red veins, midrib and callous glands, 16 cm long, 3 cm wide; racemes short, 24-34 cm long, flowers very strongly arched, the apex returning to the level of the base, of a scarlet red; otherwise as in the species.

Kauai: Summit of Mt. Waialeale, elevation 5200 feet, in the open flat swamps in company with *Lobelia kauaiensis*, *Tetraplasandra Waialealae*, *Geranium humile* var. *Kauaiense*, etc. Also along Kailiili and Kaluiti streams and near Keaku cave; flowering Oct. 20, 1911. Coll. J. F. Rock; type in the College of Hawaii Herbarium, no. 8877.

A very handsome plant and quite conspicuous by its bright red flowers, dark green leaves, with red venation.

*Lobelia Gaudichaudii* DC.

var. *longibracteata* Rock var. n. in Indig. Trees Haw. Isl. (1913) 78  
nom. nud.

Plant 3-5 m high, branching candelabra like into 5-7 erect ascending branches, leaves as in species though longer; racemes larger and longer, and covered throughout with a viscous exudation; peduncles about 6 cm long; calyx as in the species, the calycine lobes linear lanceolate, acuminate, 3.5 cm long, 5 mm wide, reaching about to the middle of the corolla, bracts linear lanceolate, 60-80 mm long; 6-10 mm wide, reddish, acuminate, minutely denticulate near the apex; corolla as in the species.

This variety is at once distinguished from the species in its branching habit, and larger size, but mainly in the long racemes with their long, linear-lanceolate, acuminate bracts, and long calycine lobes. One of the handsomest Hawaiian *Lobelias*.

Maui: On the highest point of West Maui on the very edge overlooking Iao Valley, 5700 feet elevation, in company with *Clermontia grandiflora*, *Pelea*, etc. Coll. flowering, Aug. 1910, Rock and Hammond; type no. 8818 in College of Hawaii Herbarium.

Remarks on certain Hawaiian plants described by H. Lévillé in Fedde Repertorium X. 10/14 (1911) 156-157.

*Cyanea Fauriei* Lévl. (no. 565 Faurie.) This species is identical with *Cyanea coriacea* Gray; at first sight it appears to be related to *C. comata* Hbd. Gray's specimens had young and not fully developed racemes which accounts for the description giving the length as 3 inches. The writer has abundant material with racemes of varying length from 7 to 22 cm.

*Clermontia Fauriei* Lévl. (no. 578 Faurie.) This is a very young branch of *Clermontia Gaudichaudii*, the only representative of the genus *Clermontia* found on Kauai. Owing to its being from a young specimen the leaves appear very thin and pale green.

H. Lévillé certainly confused many Hawaiian plants; some cases are really unpardonable and ridiculous. The common nyctaginaceous *Pisonia Brunoniana*, of which he had fine fruiting specimens, he labeled *Labordea*, and our *Pisonia sandwicensis* Hbd., he describes in Fedde Repertorium as a new species under the name of *Labordea Fauriei* Lévl., saying *a ceteris speciebus diversa*; this is certainly true, for a nyctaginaceous plant must certainly differ from a loganiaceous one.

One very unpardonable mistake he made was in describing the well known *Hibiscus schizopetalus*, which is cultivated all over the tropics and is a common garden plant in Honolulu as *Hibiscus Fauriei* Lévl., sp. n.

Besides this, he describes as new species ordinary road weeds, as for example a world-wide *Crepis*, as *Crepis molokaiensis* Lévl. sp. n.

*Suttonia molokaiensis* Lévl., (no. 435 Faurie). This plant is not a *Suttonia* at all but a variety of the sapotaceous *Sideroxylon spathulatum* Hld., described by the writer in his Indig. Trees Haw. Isl., page 392.

*Metrosideros Feddei* Lévl. (no. 25 Faurie). This is Heller's *Nania tremuloides*, now *Metrosideros tremuloides* (Heller) Rock.

*Labordea Fauriei* Lévl. (no. 713 Faurie) Identical with the nyctaginaceous *Pisonia sandwicensis* Hbd. now *Rockia sandwicensis* (Hbd.) Heimerl.

*Viola sandwicensis* Lévl. (no. 1 Faurie).

The fragment of a plant bearing the above name is at once



recognizable as a *Cyrtandra*. It is indeed surprising to find a *Cyrtandra* described as a new species of Violet. The larger portion of every number of Fedde's Repertorium consists of *Decades plantarum novarum* by H. Lévillé, which have reached now the number CXXIV with 1240 new species. If all are of the same nature as his descriptions of new Hawaiian plants, most certainly there will be an appalling synonymy and a chaos which will take much longer to straighten out than it took H. Lévillé to create.

All the numbers mentioned are in the possession of the Herbarium of the College of Hawaii. They were bought from Abbé Faurie.

J. F. ROCK.

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\* The new genus, species, and varieties are in bold type.



Plate I.

18. *Peperomia astigmata* C.D.C. n. sp.



Plate II.

26. *Peperomia kohalana* C.DC. n. sp.



Plate III.

36. *Peperomia flavinerva* C.DC. n. sp.



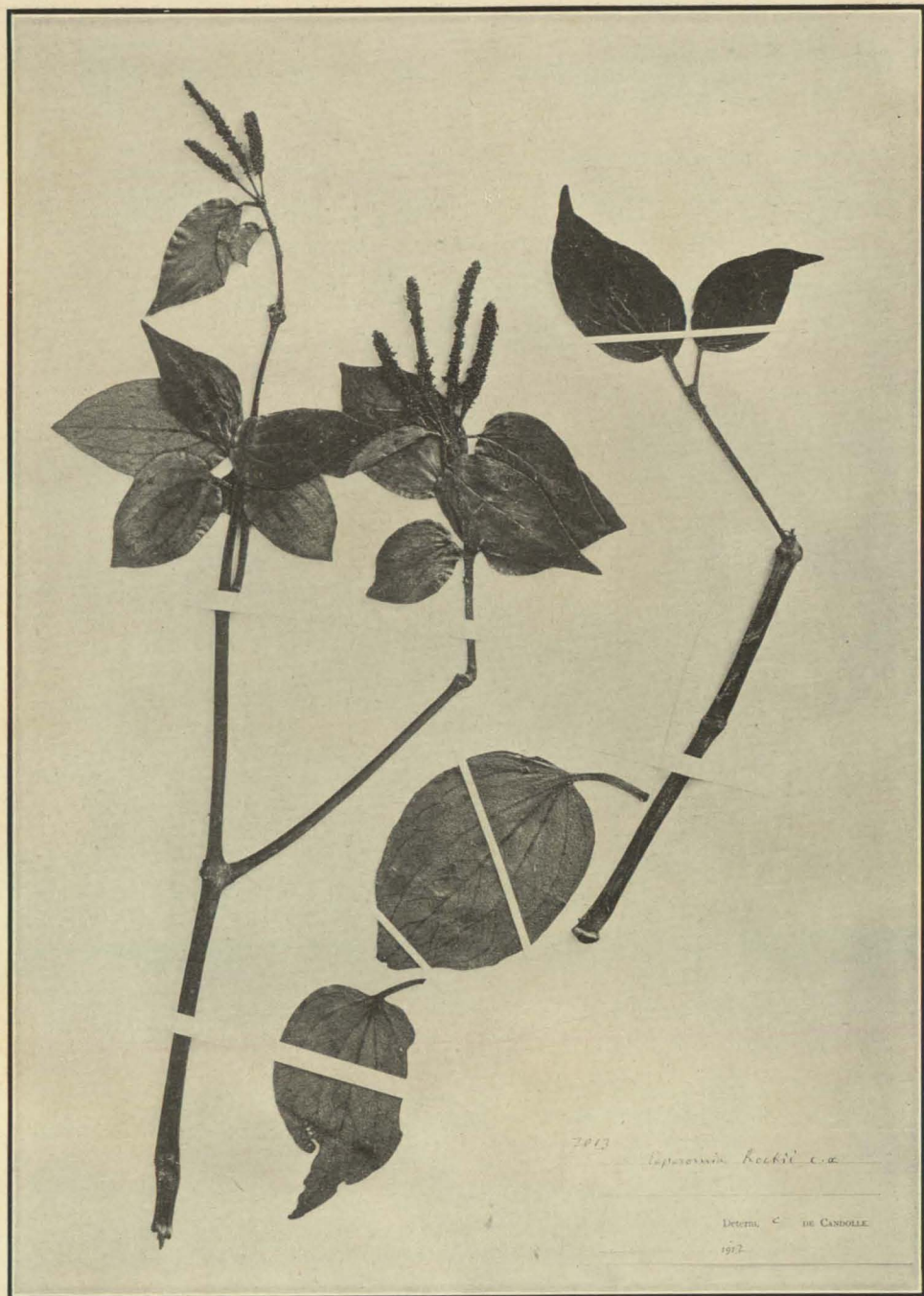
Plate IV.

65. *Peperomia rigidolimba* C.DC. n. sp.



Plate V.

66. *Peperomia nervosa* C.D.C. n. sp.



7413 *Peperomia Rockii* C.D.C.

Determ. C. DE CANDOLLE  
1912

Plate VI.

67. *Peperomia Rockii* C.D.C. n. sp.





No. 7012

FLORA OF THE HAWAIIAN ISLANDS  
HERBARIUM  
BOARD OF AGRICULTURE & FORESTRY, TERRITORY OF HAWAII  
COLLECTOR J. F. ROCK

*Peperomia lilifolia* C. DC.

Date June 1910

Locality Kauai, Hawaii

Plate VII.

69. *Peperomia lilifolia* C. DC. n. sp.



Plate VIII.

70. *Peperomia longilimba* C.D.C. n. sp.

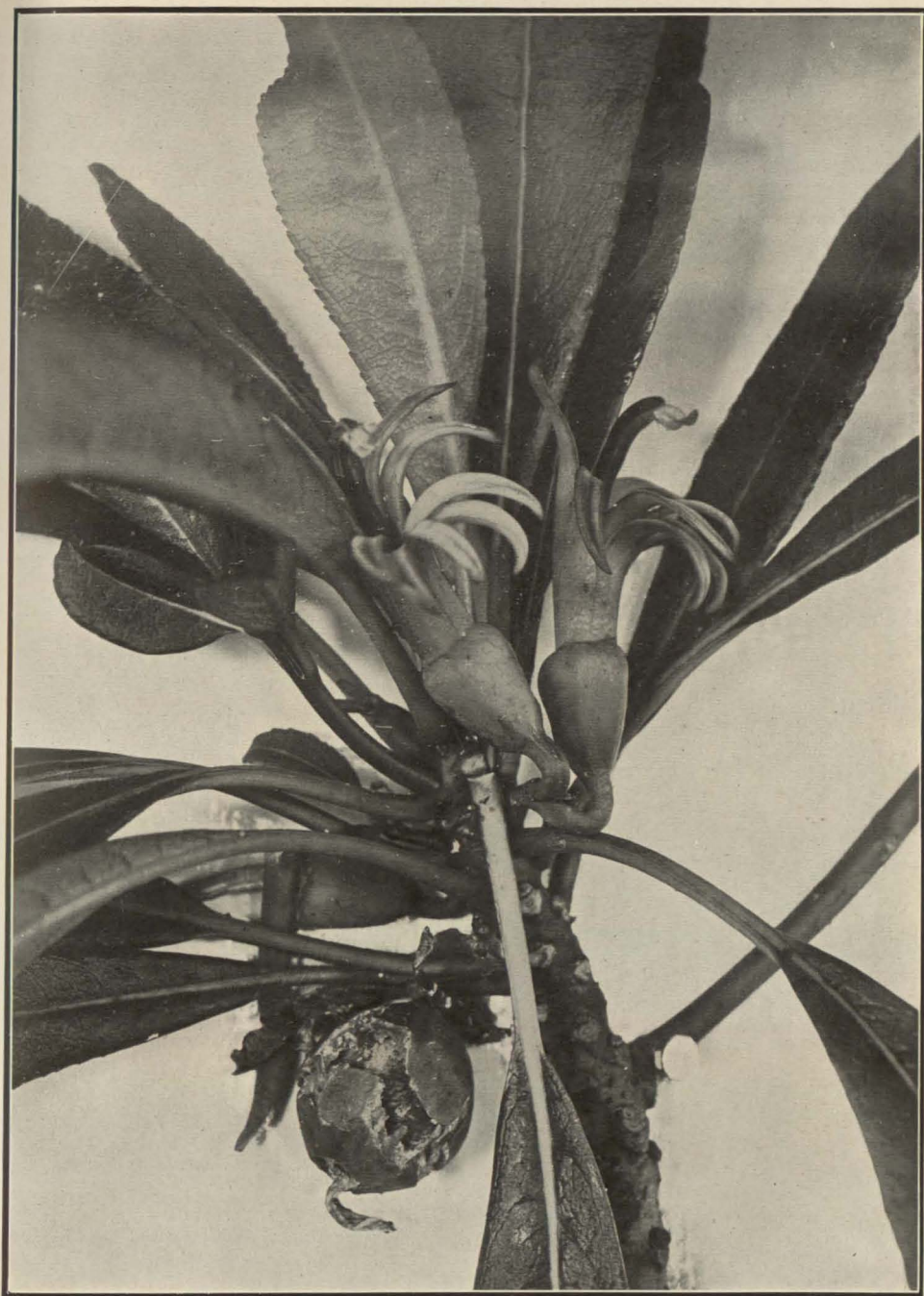


Plate IX.

*Clermontia montis* Loa Rock.  
Natural size.



Plate X. *Cyanea macrostegia* Hbd. var. *parvibracteata* Rock.  
One-half natural size.



Plate XI.

*Trematolobelia macrostachys* Zahlbr.  
Showing portions of fructing racemes perfectly mature.



Plate XII.

*Trematolobelia macrostachys* Zahlbr.  
Typical Oahu specimen in flower, about one-fifth natural size.