

nervo medio venisque stramineis prominentibus nervis utrinsecus 8-11 margine strigulosa interdum revoluta, 30-55 mm. longa, 5-15 mm. lata. Folia juniora floralia pilis longis intense coccineis obsita. Inflorescentia terminalis. Pedicelli ad 7 mm. longi prope apicem bracteolati. Calyx coccineus sat dense pilis coccineis glanduliferis pilosus simul sparsius pilis albidis hirsutulus dorso convexus, 26 mm. longus, ad 4 mm. latus, intus fauce sub staminibus pilis mollibus pilosus infra stamina glaberrimus, calcare brevissimo 1 mm. longo haud orbiculare; lobi calycis brevissimi leviter acuminati minutim hirsuto-ciliolati; appendices duae dorsuales lobis longiores crassiusculae setis validis coccineis basi bulbosis margine vel interdum dorso obsitae, ceterae minores lobis subbreviores setis similibus ciliatae. Petala ignota an nulla (?). Stamina 11 ventralia pilosa alterne inaequalia quorum 3 mediana ceteris longiora inclusa. Ovarium gibbum glaberrimum styli glabri demum subexserti tertiam partem aequans. Ovula 6. Discus dorsualis brevis crasse ovato-cordatus leviter deflexus.

MEXICO: JALISCO: East of San Sebastian, Hacienda del Ottotal, Arroyo de los Hornos, Sierra Madre, alt. 1500 m., woods, on slopes, abundant, March 6, 1927, *Ynez Mexia*, no. 1820 (TYPE, in Gray Herb.).

This novelty finds its closest affinity in *Cuphea Watsoniana* Koehne. It may be distinguished from the latter by its copious glandular pubescence, very short petioles, mostly narrower leaves densely glandular-pilose beneath, strictly terminal inflorescence, uniformly scarlet calyx (that of *C. Watsoniana* having a green throat), much more striking appendages, included pilose stamens and by the disparity in the number of ovules (*C. Watsoniana* has 20-26 ovules).

Upon examination, *Pringle*, no. 2792, distributed as *C. Liebmannii* Koehne ?, proves conspecific with *C. Watsoniana* Koehne. Both this and the type (same collector's no. 4355) are from the same general region.

## II. THE VASCULAR FLORA OF THE GUANO ISLANDS OF PERU.

BY IVAN M. JOHNSTON.

(Plates VI-VII.)

WERE it not for the myriads of sea-fowls that frequent them the islands off the coast of Peru would be known only as local features and of concern only to fishermen and navigators. They are small bits of land. A few of the several score of them have a length of from

five to ten kilometers, but the great majority are very much smaller. Practically all are found strewn close in along the Peruvian coast ten kilometers or less off shore. The most isolated one is less than sixty kilometers from the mainland. In themselves they are forbidding and merit only passing attention of Man. Under the rainless sky which prevails over them, however, the excreta of their enormous bird populations have accumulated, forming vast quantities of that valued and hence much sought-after fertilizer—guano. The islands, consequently, have achieved a fame and importance which their small size, coastal position and general aridity and inhospitality alone would never have given them.

To the naturalist the Peruvian islands have been known only for their bird populations. The truly astonishing size of these and their great economic importance early attracted attention. Concerning the flora and the other than avian fauna of the islands, however, scarcely anything has been recorded. The most successful attempt to remedy this surprising dearth of information regarding the strictly land flora and fauna of the Peruvian islands has come through the collections and studies made on them between Sept. 1919 and Feb. 1920 by Dr. Robert Cushman Murphy, then connected with the Brooklyn Museum and now on the staff of the American Museum of Natural History. Although his primary objects were ornithological, Dr. Murphy, taking full advantage of excellent facilities for visiting the important Peruvian islands, collected and observed all the land plants and animals he could find on them. His collections, with the exception only of the plants, have been reported upon technically ten years ago. The results of their study may be found summarized in Dr. Murphy's delightful book, "The Bird Islands of Peru" which was published (Putnam, New York) in 1925.

The collection of plants made by Dr. Murphy has, through a variety of circumstances, remained until now unrecorded in print. It represents the first ever made of the land flora of the guano islands. Dr. Murphy collected upon all the important Peruvian islands except San Lorenzo, off Callao, and visited all the islands on which any of the higher plants might be expected to occur. His collections, hence, indicate rather well the distribution of such plants among the islands and the probable extent of the flora involved. As a result we can now say with fair confidence that the higher plants are present on only four of the Peruvian islands, namely Lobos de Tierra, San Lorenzo, San Gallan and Viejas. The total flora probably consists of about two dozen species.

The most northern of the islands mentioned, Lobos de Tierra,

which has the smallest flora as to number of both species and individuals, apparently owes its pitifully small flora in some part to the occasional visits of equatorial storms. On the remaining three islands, however, the flora is dependent upon and directly correlated with the clouds that bathe their rather lofty crests. These fogs, brought about by the cooling of moisture-laden sea-winds which have been upwardly deflected by obstructing headlands or coastal hills, are characteristic features of the littoral of Peru and northern Chile. Forming at between 300 and 400 meters altitude over the islands, and somewhat higher, at about 1000 meters, over the coastal hills on the mainland, they bathe the favored peaks and slopes in wet clouds. On the coastal hills the localized effects of the protection they give from the sun and the moisture brought by them to the soil results in a rather sharply defined zone of lush green vegetation on otherwise barren seaward slopes. This winter and spring fog-correlated vegetation, so conspicuous on the coastal hills of Peru and northern Chile, has been called the Loma Formation. It is one of the most distinctive plant associations in South America. Belonging with it, both ecologically and phytogeographically, are the floras of San Lorenzo, San Gallan and Viejas.

The Peruvian islands have a flora that is merely an impoverished fragment of that of the adjacent mainland. The flora of Lobos de Tierra is the only one uncorrelated with fog. The most common of its two species, *Sesuvium*, is a sea-dispersed halophyte widely distributed in tropical America. Its other species, represented by a single struggling tree of *Prosopis*, may possibly be a relic of a climatically more favorable past. Whatever may be the case, whether its presence is the result of natural dispersal or the agency of man, the colonization of the island by *Prosopis* is scarcely a successful one. The remarkable thing about Lobos de Tierra is that of all the Peruvian islands it alone has developed a flora at low altitudes. On the islands south of Lobos de Tierra a flora is developed only on those which reach an altitude of 350 meters or more and which thereby achieve fog-bathed crests. There are only three of these; San Lorenzo, San Gallan and Viejas. The other Peruvian islands are much lower, most of them being less than 100 meters high and only four reaching up to between 100 and 200 meters in altitude. In their alignment with topographic features on the mainland the islands all clearly reveal their connections with the continent. An elevation of the Peruvian coast by some score of meters would connect most of the islands with adjacent promontories and headlands. A subsidence of similar amount would make islands out of various headlands now part of the mainland.

Under such conditions an endemic insular flora is scarcely to be expected. I am consequently of the opinion that eventual exploration of the headlands on the mainland adjacent to San Gallan and Viejas will reveal there the presence of the species now found on the foggy summits of those islands. It is known that the foggy crests of San Lorenzo have a flora composed of species found in the Loma Formation on the adjacent mainland. While the *Periloba* and *Polyachyrus* that are described from San Gallan seem to have affinities that are Chilean rather than Peruvian, I believe that they represent simply further Chilean elements in the Peruvian flora belonging with the many others that are recognizable in the coastal regions of Peru, particularly in the southern departments. That they have been discovered first on the islands is simply because the headlands of Ica and northern Arequipa have not yet been botanized.

Lobos de Tierra Island, lat.  $6^{\circ} 26'$  S., one of the largest and most northern of the Peruvian islands, is about 10 km. in length and lies over 16 km. from the nearest mainland. The island is rough in topography and reaches at the south end an altitude of almost 100 m. It is barren and quite arid, its only water coming from the equatorial storms, that through the course of the years, occasionally reach south to it. According to Murphy, l. c. 319, "Lobos de Tierra is unique among all the low islands of the Peruvian coast in that it has what may by courtesy be termed a terrestrial flora. Minute green algae color a few of the higher rocks along the western border; and a small, fleshy-leaved flowering plant [*Sesuvium*], which the fishermen call *lejuia*, grows sparingly on the beaches of the east coast. But the outstanding, almost startling, botanical feature of the island is a thorny, acacia-like tree [*Prosopis*], which stands in a sandy sink not far from the Caleta de Cherra and within sight of the light-house. Deriving its water presumably from ocean seepage, this anomalous plant—a single representative of a single species—has contrived to eke out a lengthy existence. According to the most venerable of the Indians, its twisted trunk and bent branches, which reach barely three feet above the ground, have had their present appearance as far back as memory and tradition go."

San Lorenzo Island, lat.  $12^{\circ} 06'$  S., lies only a few kilometers to the southwest of Callao. About 8 km. long and nearly 3 km. wide it reaches an altitude of over 370 meters. Its slopes are dry and sandy, but its crests, reaching into the same atmospheric strata as San Gallan and Viejas, like these islands are bathed with fog. A similar fog-correlated vegetation is developed there. The only attempt to list the species of plant found on San Lorenzo is that by Ramondi,

El Peru iv. 405 (1902), whose specific determinations are probably mostly, if not all, incorrect. San Lorenzo not being a guano island, and Dr. Murphy not having collected there, its flora is not treated in detail in this paper.

San Gallan Island, lat.  $13^{\circ} 53'$  S., lies to the southwest of the port of Pisco and about 5.5 km. west of the Paracas Peninsula. The island is about 4 km. long. Prevailing low at its north end, it slopes generally upward and culminates at the south end in cliffs and bold headlands that reach an altitude of about 400 meters. It is the most lofty of all the Peruvian islands. Mostly arid, it is only on and about the foggy crests of the island that its flora is developed (Plate vi). A quotation from Dr. Murphy's book, l. c. 187, gives some idea of the ecological conditions and plant distribution on the island. "We walked through the gently sloping, sandy valley, which was filled here and there with diving petrel burrows, and then turned up the steep, bone-dry hillside toward the rocky central summit. At a slight elevation we encountered the first straggling, stunted growths of the bayonet-leaved epiphyte, *Tillandsia purpurea* [rather *T. latifolia*!]; and, at a height of 1100 feet the desert, with its hot stones and resounding crust of alkaline salt, abruptly gave way to a rock garden such as a landscape architect might well take as an inimitable ideal. On this peak the crumbling granite was exposed in chaotic piles, and here, within a layer of cool, moist air, were fully a dozen species of plants with buds, flowers, and fruit all together. Three of them I had already seen on the crest of Isla Vieja, in Independencia Bay, but the others were all new. Butterflies, grasshoppers, land snails, and lizards dwelt among the rocks and the vegetation, while every crevice and small patch of soil had its aggregation of petrel tunnels. To one who had been living upon the bare low guano islands, the fresh, verdant scene and the smell of foggy air were a delight." Dr. Murphy collected seventeen species of ferns and flowering plants about the summit of San Gallan.

Viejas Island, lat.  $14^{\circ} 14'$  S., lies close in shore in line with the promontories forming the north and south ends of Independencia Bay, and separated from them by more than one and less than nine kilometers of water. It is about 6 km. long and nearly 2 km. wide, and reaches an altitude of about 366 meters. The crest is almost constantly bathed in fog. On this moistened area Dr. Murphy found three kinds of higher plants, all of them belonging to species present on San Gallan.

The collection of plants made by Dr. Murphy on the guano islands, which is the basis of the present paper, was presented to the Brooklyn

Botanic Garden and is now preserved in the herbarium of that institution. For the privilege of studying the collection I am indebted to Dr. C. Stuart Gager, Director of the Garden and to Dr. Henry K. Svenson, Assistant Curator in the herbarium. Dr. Murphy has most kindly supplied for publication some of his excellent photographs of San Gallan and its vegetation. I am also indebted to several of my friends for assistance in the identification of critical groups. The ferns have been named by Dr. W. R. Maxon, the grasses by Prof. A. S. Hitchcock and the bromeliads by Dr. Lyman B. Smith.

#### CATALOGUE OF THE SPECIES.

**Polypodium lanceolatum** L. Sp. Pl. ii. 1082 (1753).

San Gallan (M. 3475). A species widely distributed in the tropics.

**Trisetum spicatum** (L.) Rich. Pl. Eur. i. 59 (1890).

San Gallan (M. 3481). A form of this polymorphous species. Hitchcock, Contr. U. S. Nat. Herb. xxiv. 360 (1927), reports it elsewhere in Peru only from the Andean valleys of the interior. I have collected a similar plant in the Loma Formation in northern Chile.

**Koeleria trachyantha** Ph. Fl. Atac. 55 (1860).

San Gallan (M. 3477). A plant of the coastal hills which ranges from the Lima region south into northern Chile.

**Stipa disticha** Hitchc. Contr. U. S. Nat. Herb. xxiv. 288 (1925).

San Gallan (M. 3478, TYPE). A very distinct species known only from the Dr. Murphy's collection. Its relations seem to be southern.

**Tillandsia latifolia** Meyen, Reise ii. 45 (1835).

San Gallan (M. 3482). The most common and conspicuous plant on the island, growing luxuriantly over gravelly slopes and out-crops above 300 m. alt. and even staggling down below the cloud-zone in occasional stunted examples to about 10 m. alt. The best developments of the plants were towards the crests on lee exposures. The species is widely distributed along the Peruvian coast and has been reliably reported from San Lorenzo.

**Tillandsia recurvata** L. Sp. Pl. ed. 2, i. 410 (1762).

Viejas (M. 3221) and San Gallan (M. 3468). On Viejas it grows only on crumbling rocks about the summit. On San Gallan in the cloud belt it is not uncommon, and is usually found clinging to the lee side of rocks. According to Dr. Smith this island plant represents a phase of the variable and very widely distributed *T. recurvata* notable chiefly for its stout habit and long, trailing stems.

**Parietaria debilis** Forst. Prodr. 73 (1786).

San Gallan (M. 3471). A widely distributed herb frequent in moist, sheltered places in western Peru.

**Suaeda foliosa** Moq. in DC. Prodr. xiii. pt. 2, 156 (1849).

San Gallan (M. 3465). A spreading succulent shrub of the coastal hills of central and southern Peru and northern Chile.

**Sesuvium Portulacastrum** L. Syst. ed. 10, ii. 1058 (1759).

Lobos de Tierra (M. 3464). Growing sparingly along the beach on the east side of the island. A widely distributed halophyte in the American tropics.

**Prosopis chilensis** (Molina) Stuntz, U. S. Bur. Pl. Indust., Invent. Seeds xxxi. 85 (1914).

Lobos de Tierra (M. 3463). Represented on the islands by a single, stunted, wind-swept tree slightly back and above the shore. A photograph of this individual is to be found on the plate in Dr. Murphy's book opposite page 320. The species is a widely distributed one in well drained soils throughout most of the coastal area of Peru and Chile.

**Geranium limae** Kunth, Pflanzenr. [Heft 53] iv. Fam. 129, 74 (1912).

San Gallan (M. 3473, 3474). This is the only Peruvian species of a group that is prevailing Chilean. The type and previously only known specimen is given as from "Lima und S. Lorenz." The San Gallan plant may be somewhat more densely hairy on the stems but otherwise appears to agree closely with the type.

**Oxalis carnosa** Molina Sagg. Chile ed. 2, 288 (1810).

Viejas (M. 3218) and San Gallan (M. 3469). A plant widely distributed along the coast of western South America.

**Palaua moschata** Cav. Monadelph. Class. Dissertat. i. 41 (1790).

San Gallan (M. 3466). Growing chiefly in sheltered hollows between rocks about the summit. The flowers are lavender or pale purplish. Otherwise known only from San Lorenzo Island and the hills near Lima.

**Daucus montanus** H. & B. ex Schultes, Syst. vi. 482 (1820).

San Gallan (M. 3476). Widely distributed in western South America.

**Apium ammi** (Jacq.) Urban in Mart. Fl. Bras. xi. pt. 1, 341 (1879).

San Gallan (M. 3480). A plant common in the coastal hills of Peru.

**Periloba insularis** Johnston, sp. nov., perennis; caulibus prostratis 5-15 cm. longis sparse divaricateque ramosis saepe 1.5-3 mm. crassis, dense villosulis (pilis simplicibus furcatisve), minute stipitato-glanduliferis, tandem glabrescentibus, basibus prominentibus petiolorum cicatricosis, maturitate cortice pallido suberoso glabrato obtectis, e caudice prostrato laxissime divaricateque ramoso indurate crasseque fusco-corticoso lignoso usque ad 12 mm. crasso erumpentibus; foliis villosulis pilis furcatis simplicibusve dense vestitis minute

stipitato-glanduliferis integerrimis crassiusculis, lamina ovata vel obovata 10–15 mm. longa 6–8 mm. lata apice rotundata basi in petiolo 5–10 mm. longo gradatim attenuata; basi petioli indurata persistenti; foliis capitum caudicis rosulatis; foliis caulinis ramealibusque 1–15 mm. distantibus superioribus vix conspicue reductis; floribus in axillis foliorum superiorum solitariis; pedicellis gracilibus ca. 10 mm. longis maturitate deflexis; calycibus obconicis 1 cm. longis ultra medium in lobos duos acutos incisis, fructiferis ca. 8 mm. diametro 6–7 mm. altis, lobis incurvatis; corolla infundibuliformi caeruleo 2 cm. longa extus villosula et glanduligera; tubo cylindrico 5 mm. longo per calycem occulto intus villosus; faucibus gradatim ampliatis ca. 10 mm. longis ad 10 mm. diametro; filamentis inclusis 3 et 4 mm. longis ca. 5 mm. supra basem corollae affixis ad basem versus dilatatis, partibus inferioribus et decurrentibus dense villosis, aliter glaberrimis; antheris ellipticis ca. 1.8 mm. longis; stylo glaberrimo 10 mm. longo; receptaculo maturitate hemisphaerico 2–2.5 mm. diametro irregulariter profundeque lacunoso; nuculis 15–20 percongestis distinctis evidenter 2–3-seriatis basi affixis evidenter inaequalibus 1–2.5 mm. longis plus minusve angulatis polymorphis nigris sub lente minute delicateque alveolatis plus minusve opacis.—  
 PERU: fog-bathed crest of San Gallan Island, Nov. 27, 1919, *R. C. Murphy* 3472 (TYPE, Brooklyn Bot. Garden; ISOTYPE, Gray Herb.)

A very distinct species of a genus heretofore unknown in the Peruvian flora. All the congeners of *P. insularis* are Chilean. None of them, however, seems closely related to it. If it were necessary to indicate a particular affinity I should suggest *P. paradoxa* (Lindl.) Raf. of the coast of central Chile. The island plant can be distinguished from all other members of its genus by its very woody caudex and dense, forking or even dendritic pubescence. From most species it is further distinguished by having the corolla-tube villous within and in having conspicuously unequal nutlets. The calyx is not at all plicate and seems to be prevailing two-lobed. In the nature of the pubescence on the herbage, in its villous corolla-tube and in the attachment of its small nutlets the plant rather suggests a species of *Bargemontia*. The elevated gynobase, the pluriseriate arrangement of the nutlets, and the broad leaves, however, are all indicative of its affinities in *Periloba*. Its fruit, clearly and unmistakably, removes it from *Nolana*, although the gross habit, though not pubescence, does suggest the well known species of the Peruvian coastal region, *N. prostrata* L. f.

***Solanum tuberiferum*** Dunal in DC. Prodr. xiii. pt. 1, 63 (1852).  
 San Gallan (M. 3470). The specimen is poor but represents,

almost certainly, this species. It is a plant of the coastal hills of Peru.

**Solanum Murphyi** Johnston, sp. nov., succulentum glaberrimum erectum; radice crassa palariramosa ut videtur annua; caulibus 8-12 mm. crassis purpureo-tinctis breviter subdichotome ramosis 15-30 cm. altis flexuosis ad basem versus aliquanto induratis ceterum herbaceis fistulosis; ramis 5-12 cm. longis ascendentibus saepissime simplicibus foliosis 4-8 mm. crassis confertis vel distantibus; foliis succosis 1.5-2.5 cm. longis 5-8 mm. latis 5-7-lobatis viridis, margine evidenter revolutis, supra minute papillatis, subtus leavibus cum costa lata conspicua ornatis; lamina ovata vel ovato-oblonga 7-13 mm. longa in petiolum alatum abrupte contracta, lobis 2-3-jugatis 1-2.5 mm. longis et latis obtusis sinibus saepissime apertis obtusis; inflorescentia cymosa 1-2-flora in ramis saepe terminali; pedicellis gracilibus sulcatis 5-9 mm. longis erectis, fructiferis deflexis; calyce 4-4.5 mm. longo, lobis 5 erectis oblongis 3-3.5 mm. longis 1-1.5 mm. latis, apice obtusis, extus glaberrimis minute papillatis, intus stipitato-glanduliferis; corolla purpureo-caerulea cupuliformi vel rotato-infundibuliformi 1.5-2 cm. diametro ca. 12 mm. longa quam calyce 3-4-plo longiori extus villosula intus glabra, lobis latis rotundis ca. 8 mm. latis ca. 1.5 mm. longis apiculatis, sinibus lobulis rotundis 2 mm. latis ca. 0.9 mm. altis ornatis; filamentis aequalibus ca. 1.5 mm. supra basem corollae affixis subulatis glaberrimis 4 mm. longis immam ad basem ca. 0.8 mm. latis; antheris distinctis oblongis aequalibus 2-2.5 mm. longis biporosis; stylo 5.5 mm. longo glaberrimo; stigmate 1 mm. longo compresso; fructu globoso 5-7 mm. diametro.—PERU: growing about rocks on foggy summit of Viejas Island, Nov. 17, 1919, *R. C. Murphy* 3219 (TYPE, Brooklyn Bot. Garden; ISOTYPE, Gray Herb.).

An interesting member of *Solanum* subsection *Dulcamara*, characterized by its glabrous, very succulent herbage and its broadly and very shallowly lobed corollas. It seems to be related to the Chilean *S. Feuillei* Dunal. The corolla of *S. Murphyi* has five very broad short lobes that alternate with smaller but similarly proportioned lobes produced in the sinuses. Along with *Tillandsia* and *Oxalis* this plant formed the entire vascular flora of Viejas Island. A collection (no. 3479) and an excellent photograph (plate vii) obtained by Dr. Murphy near the crest of San Gallan evidently represent the same species. Except that the plants are distinctly shrubby below the middle and seem to be persistent, they differ in no evident way from those of Viejas Island which have furnished the basis of my description given above. I believe that they are conspecific.

**Polyachyrus nesites** Johnston, sp. nov., suffruticosus 2.5–3 dm. altus; caulibus vetustioribus caudicem laxè ramosus decumbens formantibus; ramis erectis vel ascendentibus numerosis 1–2.5 dm. longis evanescenter canescenterque arachnoideis vetustate plus minusve glabrescentibus 2.5–4 mm. crassis; foliis 4–7 cm. longis 13–26 mm. latis numerosis supra medium caulis abrupte reductis carnosulis pinnate lobatis, supra glabratis et sparse glandulosis, subtus incano-arachnoideis, margine evidenter revolutis, lobis elongatis divaricatis vel antrorse ascendentibus distantibus 4–6 integerrimis vel evidenter unidentatis 2–5 mm. latis basi confluentibus subtus prominente medio-costatis; alis petioli conspicuis infra basem petioli in caulem vix decurrentibus apud folia mediana auriculas 3–4 mm. latas amplexicaules formantibus; glomerulis capitulorum 14–18 mm. diametro 3–12 globosis in paniculam subcorymbosam vel racemum congestum dispositis; receptaculo lanuginoso, bracteis navicularibus 2–3 mm. longis glabratis; involucris flosculorum 1–2-floris 3.5–4 mm. longis glaberrimis; tegulo exteriori paullo brevissime ad basem versus callo prominenti notato; flosculis roseis 5–6.5 mm. longis, tubo (faucibus vix differentiatis) ca. 4 mm. longo, labia interiori in lobos 2 acutos ligulatos 2.5 mm. longos divisa, labia exteriori ovato-elliptica apice tridentata; antheris (partibus fertilibus) ca. 1.4 mm. longis linearibus apice appendicula oblongo-lanceolata ca. 1 mm. longa coronatis basi cum caudis subulatis laevibus ca. 1 mm. longis ornatis; setis pappi ca. 5 mm. longis albis.—PERU: in sheltered places near the crest of San Gallan Island, Nov. 27, 1919, *R. C. Murphy* 3467 (TYPE, Brooklyn Bot. Garden; photo and frag., Gray Herb.).

Among the Peruvian species probably closest to *P. echinopsoides* (Hook.) DC., but differing in habit of growth, in less copious arachnoid indument of the herbage, and in the smaller thicker leaves which are glabrate above and have narrow elongate more separated lobes. Its closest relative seems to be in *P. Poeppigii* Kunze, of central Chile. A photograph of the living plant is reproduced on Plate VII.

#### EXPLANATION OF PLATES.

##### PLATE VI.

- Fig. 1. San Gallan Island from the southeast, showing the vegetation-supporting fogs that bathe the crests of the island.  
 Fig. 2. San Gallan Island. A view near the summit, showing the growths of *Tillandsia latifolia* that darken the lee-sides of the higher ridges.

##### PLATE VII.

- Fig. 3. *Solanum Murphyi* sp. nov. A living plant near the summit of San Gallan Island.  
 Fig. 4. *Polyachyrus nesites* sp. nov. A plant growing near the summit of San Gallan Island, the type station.



Fig. 1 (upper). SAN GALLAN ISLAND FROM SOUTHEAST.

Fig. 2 (lower). UPPER RIDGES OF SAN GALLAN ISLAND.

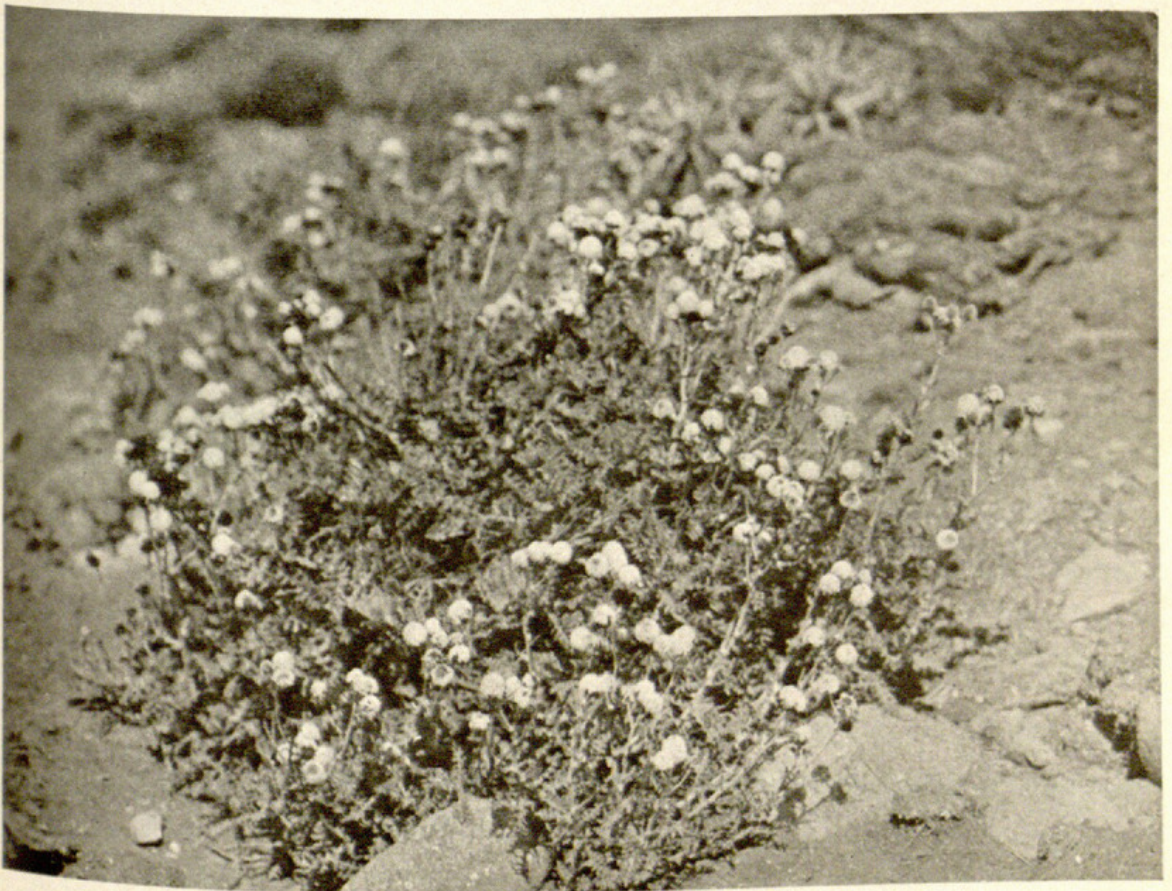


Fig. 3 (upper). *SOLANUM MURPHYI* sp. nov.

Fig. 4 (lower). *POLYACHYRUS NESITES* sp. nov.



Johnston, I. M. 1931. "The vascular flora of the Guano Islands of Peru." *Contributions from the Gray Herbarium of Harvard University* (95), 26–35.  
<https://doi.org/10.5962/p.336136>.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/123764>

**DOI:** <https://doi.org/10.5962/p.336136>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/336136>

**Holding Institution**

Missouri Botanical Garden, Peter H. Raven Library

**Sponsored by**

Missouri Botanical Garden

**Copyright & Reuse**

Copyright Status: Permission to digitize granted by rights holder

Rights Holder: Harvard University Herbaria

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.