CONTRIBUTION TO THE KNOWLEDGE OF THE VEGETATION ON ISLA S. AMBROSIO

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RESUMEN

Contribución al conocimiento de la vegetación en la Isla San Ambrosio. — El autor describe la vegetación de la Isla San Ambrosio entre las Islas Desventuradas, en base a colecciones y fotografías del Sr. G. Lundborg. La colección, con 15 especies en 47 especímenes, es probablemente la más grande que existe. Tres especies son nuevas para la isla y probablemente para la ciencia. Las fotos son las primeras tomadas en la isla y dan nueva luz al conocimiento de la vegetación. El Dr. C. Skottsberg publicará un trabajo sobre la sistemática de la colección Lundborg, mientras el autor describe la nueva especie *Plantago Lundborgii* en este trabajo, dando además un nuevo nombre a *Atriplex foliolosum*.

The botanical history of San Ambrosio and the other islands in the Islas Desventuradas, from the first landing in 1869 by Captain Simpson, is carefully described both by Johnston (1935) and by Skottsberg (1937). Later, to my certain knowledge, plants were collected there only by the Chilean fisherman, B. Gonzalez in 1938; the few specimens in this collection were described by Skottsberg in a paper (1947).

In September 1947, Isla San Ambrosio was visited by a Swedish engineer, Mr. Gösta Lundborg, who in order to study the engines of the fishing-boats made two voyages to the island. Before his departure I had the opportunity of sending by him material to conserve plants and to take photographs, and gave him careful instructions to collect specimens of everything growing. The collection he made in three days is probably the biggest one which actually exists, and it is only to be regretted that its condition, caused by more than two weeks

in seawater, is not of the best. The photos, more than four leica-films, are the first taken on the island. Moreover, these photos give a new view of the vegetation on the high-plain, and it seems though as Mr. Lundborg has been the first, after Captain Simpson, to visit the crest and the tableland of the island.

First I also intended to do the systematical work on Mr. Lundborg's collection, in all 15 species in 47 specimens. Among these 15 species are three, which had not been found before on the island and will probably be new to science. During my stay in Chile (1947-48) it was only possible for me to determine one of these novelties, *Plantago Lundborgii* Sparre n. sp., —dedicated to the collector—, and owing to difficulties caused by the lack of material for comparison, I am going to send the collection to the most eminent expert of the flora of the western pacific islands, professor Carl Skottsberg. The description of the new *Plantago* will be published below.

Here I am going to publish some of Mr. Lundborg's photos and the annotations he has made on the collected plants. As I have mentioned above, these photos give us a sensational new aspect of the vegetation on the table-land, with dense communities of *Thamnoseris lacerata* and *Atriplex sanambrosiana* (1) especially, quite different from the open desert-like vegetation on San Felix, described by Johnston from Dr. Chapin's reports. Moreover, it seems sure that nobody after Simpson has visited the crest, always very difficult to climb. The collections of *Thamnoseris*, which only grows in the plain, are all probably made from specimens blown down into the ravines; which often seems to happen.

In short, I will first mention, that for three or four years, in spite of the lack of fresh water, San Ambrosio is inhabited by two fishermen, who are supplied with food and water from Coquimbo every other month. Unfortunately for the flora they now keep some goats, which seem to thrive.

As the earlier authors also mentioned, the cliffs on San Ambrosio rise more or less vertically from the sea to a height of more than 300 m— according to the Chilean marine maps

(1) New name for *A. foliolosum;* cfr. below.

the highest point on the island is 473 m. The difference in the topographic structure between San Ambrosio and the low, slowly ascending San Felix, of course makes a difference in the vegetation. It is probable, that Johow, who visited San Felix, attributed the same vegetation to the, for him, unknown tableland on San Ambrosio; it is the same in F. Philippi's account of Vidal's collection. Also the considerably greater height on San Ambrosio, absorbing more humidity from the fogs, will make the vegetation richer. The affinity in the composition of the tableland on San Ambrosio and the highest part, Cerro Amarillo (183 m), on San Felix, the latter with the vicarious *Thamnoseris lobata* and *Atriplex Chapinii,* is interesting. The differences on San Ambrosio between the vertical border with the ravines, and the plain, more eroded tableland, is easy to understand.

1. *The border and the ravines.*

The following species are collected or annotated by Mr. Lundborg:

Parietea feliciana
Atriplex sanambrosiana
Suaeda nesophila
Lepidium Horstii
Malvastrum peruvianum
Cristaria Johowii
Frankenia Vidalii
Nesocaryum stylosum
Solanum sp. (2)
Sicyos bryoniaefolius var.
Lycapsus tenuifolius
Eragrostis peruviana

It is self-evident, that the vegetation is principally concentrated in the ravines and the selves in the usually sterile volcanic rocks (cfr. Pl. III and VI b). In the often very poor communities, it is difficult to speak about different types of vegetation, especially as most of the species seem to grow alone. The most common species here in this group, which give the characteristic aspect to the ravines seem to be the typical halophytic *Atriplex, Suaeda* and *Frankenia.* Here, as in the high plain, *Atriplex* gives a typical grey colour to the vegetation. Further, *Nesocaryum, Sicyos* and *Lycapsus* seem not to be un-

(2) *Solanum* sp. — This form, a heavy shrub, cannot be identical with the previously mentioned, annual *S. brachyantherum.*

common, while all the others, especially *Lepidium* and *Cristaria*, are rare.

2. *The table-land.*

Atriplex sanambrosiana
?Atriplex sp. (3)
Solanum sp. (2)
Plantago Lundborgii (4)
Lycapsus tenuifolius
Thamnoseris lacerata
Eragrostis peruviana

There are principally two different communities in the table-land: the covered *Thamnoseris - Atriplex* - formation and the open mixed formation, consisting of *Atriplex, Lycapsus* and *Eragrostis*. The latter seems to be the more common in the high plain, but the striking aspect of the vegetation is undoubtedly due to the dense shrubberies of *Thamnoseris* and *Atriplex* (cfr. Pl. V and VI). The rich vegetation here depends partly on the higher erosion, partly and perhaps principally on the fogs, which usually cover the crest and the table-land. The influence of sea water seems to be reduced.

The indicator between the two different vegetations, the border and the table-land, seems to be the *Thamnoseris*. The most common plant on the island, *Atriplex sanambrosiana,* grows profusely everywhere; the other more common species, e. g. *Suaeda, Frankenia and Nesocaryum,* are found growing in the ravines to such a height that it is impossible to use them as indicators for the border-vegetation; *Lycapsus* and *Eragrostis* moreover, grow both all over the island, the latter indeed rare in the border.

The still greatest question on San Ambrosio is the absolute lack of cryptogams in the collections. (There is collected a *Caloplaca* (5) on San Felix). Mr. Lundborg looked care-

(3) An interesting new chenopodiaceous species. I have, with the greatest hesitation called it *?Atriplex* sp., later it will prove to be a new genus.

(4) *Plantago Lundborgii* Sparre n. sp., mentioned above.

(5) Described as *Caloplaca elegans*. It seems curious that a typical alpine-antartic form such as *C. elegans* should have been collected here on the islands. It is possible that the determination is wrong and will need a new revision.

fully for these plants too, but with a negative result; but the difference between a crustaceous lichen as e. g. *Caloplaca* and old, dry guano is for a nonbotanist not so great and probably some lichens will be found here later. But where are the mosses?

The relationship of both the new *Solanum* and *Plantago* is to be found, as of the other species on the island —except *Thamnoseris* and the more isolated *Lycapsus*— on the South-american west coast. The new *?Atriplex* is more problematic, and as I have mentioned above it is actually impossible for me to solve the problem.

Finally, there is no more to be said than to quote a sentence by Johnston, written in his paper 13 years ago: "No island off the west coast of America is in a greater need of exploration".

APPENDIX.

Below I give the description of the new species of *Plantago*. Together with this diagnosis I propose a new name for *Atriplex foliolosum* Phil. a binomial which has already been used by Link in 1800, for which information I am greatly indebted to Ing. Agr. Sr. Alberto Soriano, Inst. Darwinion, San Isidro, R. A.

Atriplex sanambrosiana n. nom.

Atriplex foliolosum R. A. Phil. *Bot. Zeit.* XXVIII (1870): 500 *non* Link in Schrader *Bot. Journ.* I (1800): 54.

Plantago Lundborgii n. sp.

Ad *Plantaginem* Sect. *Leucopsyllium* pertinens.

Planta annua, parva; radix verticalis elongata, valida; folia rosulata, erecta, linearia vel anguste linearia, margine involuta, apice acutiusculo, basi angustissima, in petiolum attenuata, dense albo-hirsuta, 6-11 cm longa, 0,2 0,4 cm larga; inflorescentia multiflora, pedunculi folia superantes, 7-16 cm alti, albo-hirsuti, spica densa, recta, ± cylindrica; bractea flores inferiores superans vel aequans, lineari-lanceolata vel anguste lanceolata, acuta, ad basin late membranacea, albo-hir-

suta, 5--8 mm longa, 1,5-2 mm lata, elliptica, acutiuscula, late membranacea, hirsuta; lobi corollae angusti, lanceolati, acutiusculi; antherae corollam pauce superantes; capsula rotundato-ovata, circ. in medio vel infra medium circumscissa.

Typus: Islas Desventuradas: Islas San Ambrosio, G. Lundborg nº 10. (fl. 18-IX-1947).

Icon: Pl. VII.

Dedicata collectori Gösta Lundborg.

Distribution: Endemic on Isla San Ambrosio.

Localities: Actually known only from the type-locality:

Islas Desventuradas: Isla San Ambrosio, rare in the high plain, 18-IX-1947, G. Lundborg nº 10 (Coll. B. Sparre, later Hb. Botanical Garden, Gothenburg).

The new species belongs to the *Plantago patagonica*-group and seems to be closely related to *P. hirsuta* from the Peruvian coastal plain. It is well distinguished from the latter by its habit (cfr. Weberbauer, *Die Pflanzenwelt der peruanischen Anden* (1911) : 137, figura 7 B., as *P. limarensis*), the longer, narrower leaves, the more membranaceous, broader and more acute sepals and the more globose capsule.

In gratitude to Mr. Lundborg for the large collection and for his good annotations and photos, I have dedicated the new species to him.

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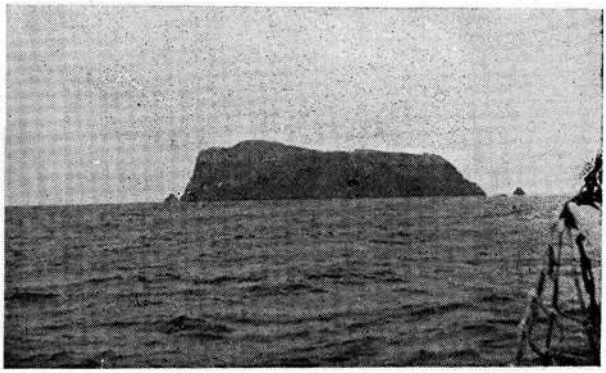
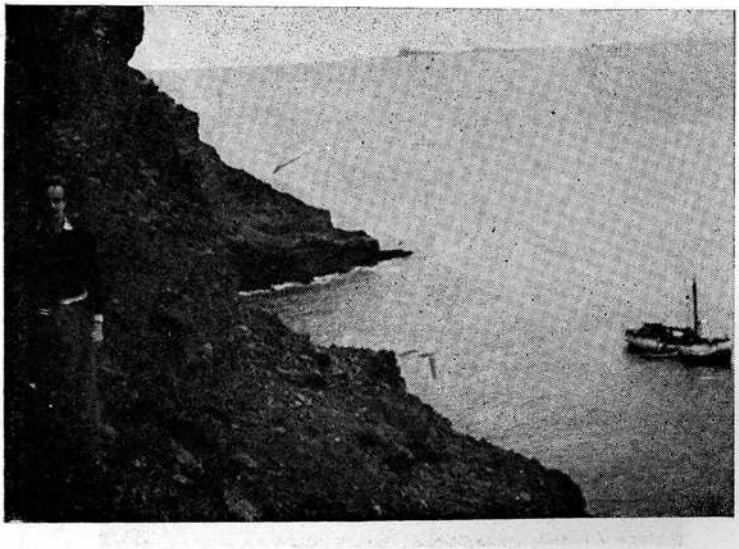
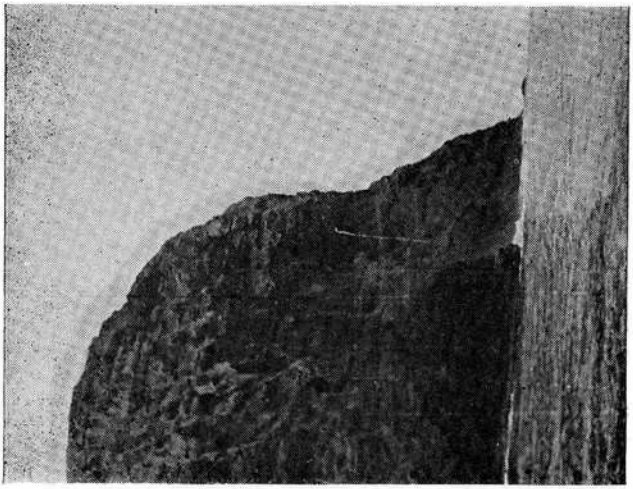


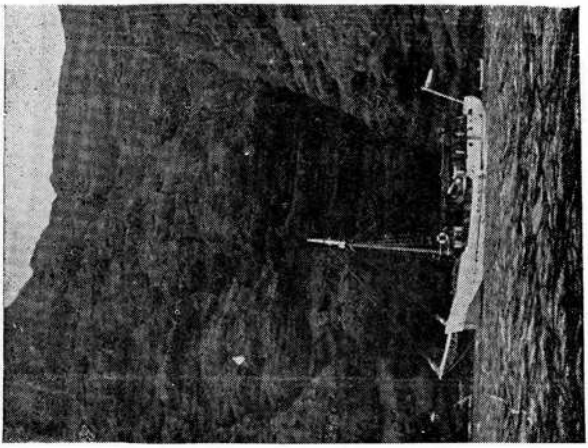
a. Isla San Ambrosio, from S.



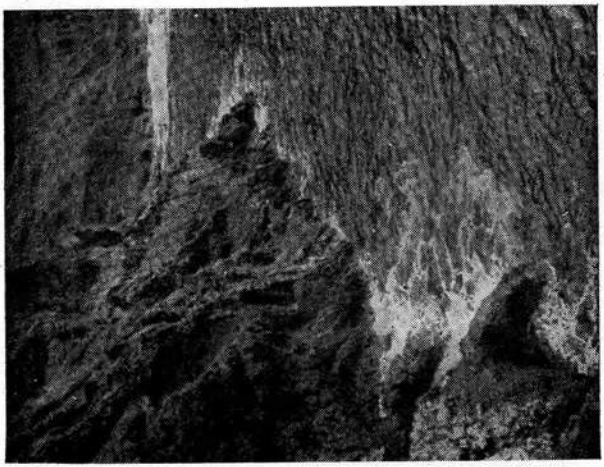
b. View taken from San Ambrosio of the other islands in the group. From left to right: Islas González, San Felix and the Cathedral Peterborough.



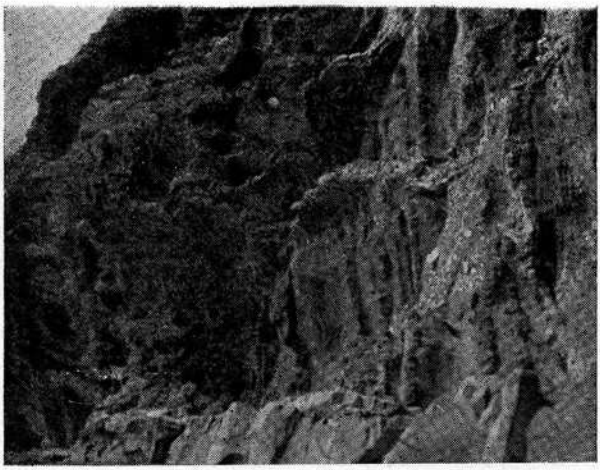
b. The western cape of the island.



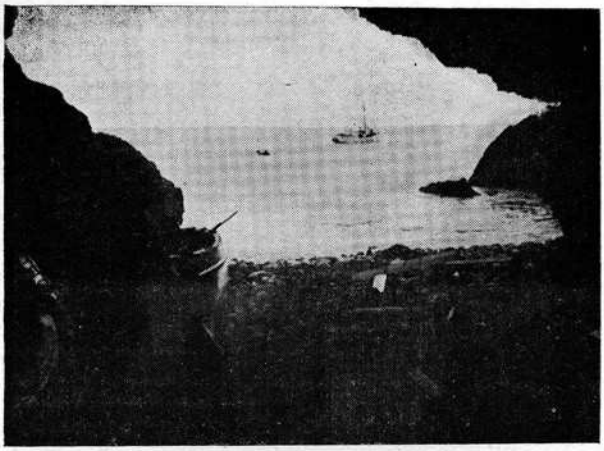
a. The rocks rise quite vertically from the sea on the southern side.



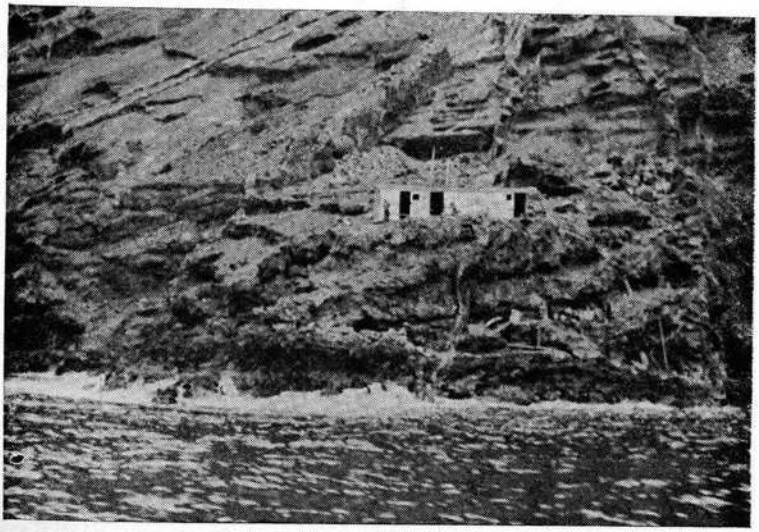
a. Sterile typical volcanic rocks in the border.



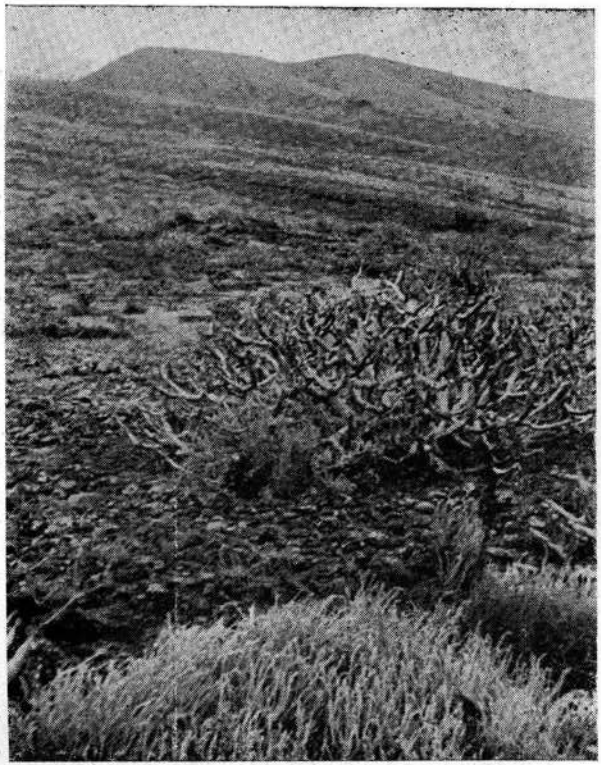
b. Volcanic rocks, also quite sterile, in the higher parts of the islands.



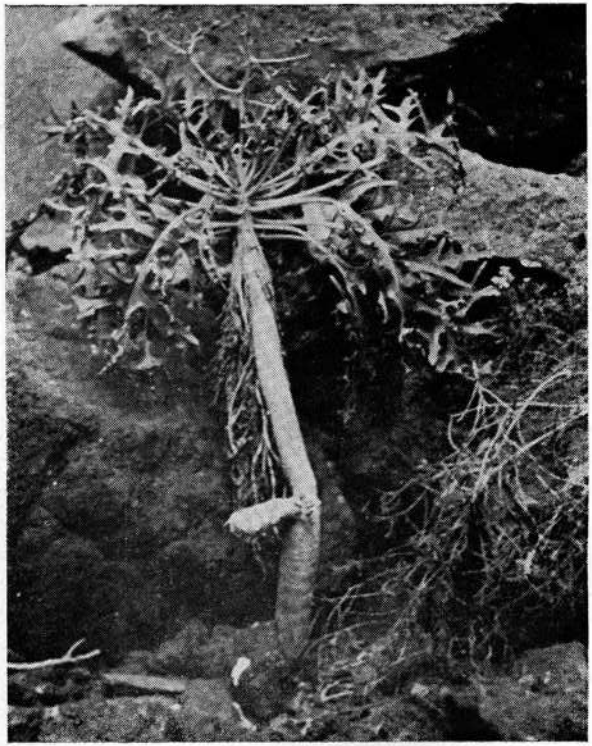
a. The only beach, 20 m long; with no possibility of penetrating inland.



b. The fisherman's hut on a rock, about 12 m high: here it is possible to land and penetrate into the island.



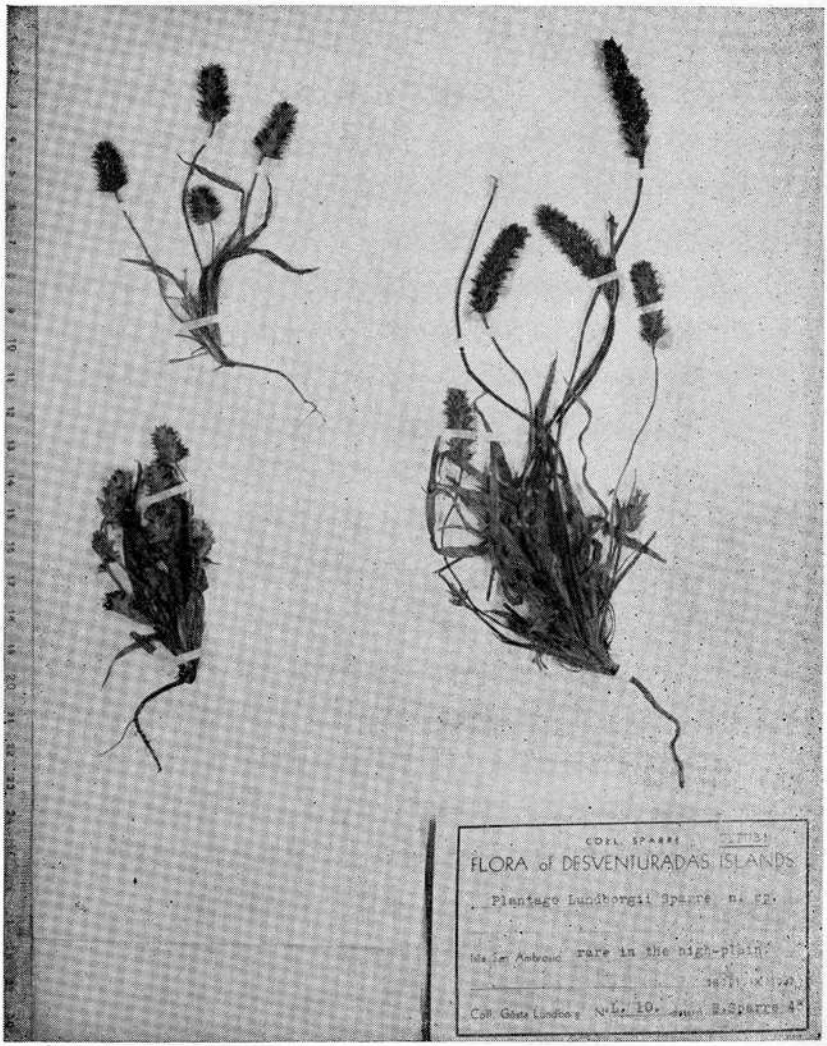
a. The more or less covered vegetation in the plain. Big tussocks of *Atriplex sanambrosiana* and the fat. shrubby *Thamnoseris lacerata* are the dominants and between them poorer groups of *Lycapsus tenuifolius* and *Eragrostis peruviana*.



b. Flowering specimen of *Thamnoseris lacerata*, blown down from the plain; in the right part of the photo flowering *Lycapsus tenuifolius* and slender branches of *Atriplex sanambrosiana*.

a. Covered *Thamnoseris-Atriplex sanambrosiana*-formation in the plain. The vegetation in the foreground principally of small specimens of the same two species, but also of *Solanum* sp., *Plantago Lundborgii* and *Eragrostis peruviana*. The white lichenoid spots on the stones are guano.

b. Typical vegetation in the ravines. Dense tussocks of *Atriplex sanambrosiana* (left) and *Nesocaryum stylosum;* besides *Lycapsus tenuifolius, Sicyos bryoniaefolia* and down-blown parts of *Thamnoseris*. Mr. Lundborg holds a branch of the latter.



a. *Plantago Lundborgii* Sparre n. sp. — Type specimen.