Rec June 19 14
Ans July 24

Manatee Fla. May 27. 1878.
Post mark June 11th

G. neottifolia fruit abn

Dr Geo Engelmann.
Dear Sir,

I rec'd your favor a few days since, in reply I will visit the locality again in the course of a week but afterwards cannot hope to get there again before late in fall, will endeavor to secure a a dozen specimens for you — A month ago I saw what I took for the microspores which were minute cells in apparently dark liquid filling the spore cases and giving externally to spore cases a black color, there were no stores in these cases — and the spore cases where white therefore in fresh state readily distinguished from the cases or receptacles contain, the microspores, many plants had no microspores apparently, and where they did occur they usually were externally and associated with spore cases on same stalks. in other words all appeared monoecious and more diocious as far as I observed, — The water in which the plant grew was not deep — perhaps two inches to 1½ feet, being on the edge of a hummock pond which at this, the dry season contains little water.

I had passed the same locality — last fall several times thro' the winter and as late as March I think and failed to detect this plant yet I searched close, at this very spot for other plants, besides in April when I collected it the central bus. of many stalks were erect and in an active growing state so that I am of the opinion that its foliage does not remain the entire year, but appears about in middle of march and disappears early in summer perhaps June or July.

Oaks I collected in fall of '77. Lots and fr. always from the same shrub or tree, fls are not represented in any of them, I prepared 12 sets of about 340 specis each, and incorporated all specimens in these sets. 9 sets I have sent off. 3 I have lying at Nanalle in separate boxes

I would much like to have you look over the collections but I hardly know how to arrange so that you can. I could not now have time to open a box and take out the oaks and I would not like either to break a set. If you are willing I might propose this arrangement, — send a set to you in trust — which you could open for study and when I keep them until some one wished purchase them, I sell a set at 50 dollars. If you care to receive them in trust drop me a line and I will forward — I could not again collect in fr. before fall and it is then uncertain whether I am so situated that I can — I think there is one specimen of a pine fl. & coarse marked P. australis but it appeared with shorter needles than I had seen for the north — and Conkey thinks it probably your P. Elliottii, It is the heavily pine here and if it should be your Elliottii then I do not know whether P. australis grows here at all, the spruce pine I must accidentally put in sheets & mark specimens,

very much I wished for your publication on these orders and be grateful to you for them.

I am now on a regular six months' cruise along coast and rivers of S. Fla. I have a man and regularly equipped boat and camp out. I was up the Hillsboro river a few days ago and Tampa bay and now on the upper Manatee River, I write this at Ft Hamer - of Indian war history, and old road leading from this place to Ft Meade on Peace Crk and an old well are the only monumental remains, country is wild - pine barrens broakish marshes, hummocks - surround us. The nearest house or hut is 8 miles up the river, the home of an old accidental who served in the Indian war.

My address remains Manatee Fla, when I write occasion my mail or. here is forwarded

Yours very Respectfully

A. P. Garber.

June 8. I visited locality of Dec 6 on 6 inst found it all disappeared except here and there a few small specimens.

Rec Sept 23d

Punta Rassa. S. Fla.
Sept. 2nd. '78.

Dr Geo Englemann,

Dear Sir, —

I feel generally not in writing humor, when on a botanical cruise on account of being constantly on the go. But I must write a line now to acknowledge the receipt of your letter and valuable publications on the most difficult genera in our service — I appreciate them and thank you for them.

Isoetes — of Manatee perhaps I can find some of the male plants on my return to Manatee, I found another one on the borders of Lake Flirt — near Lake Okechobee — It is very much smaller 3-6 inches high — greener and more erect leas — hardly think that it could be I. flaccida Shuttleworth, — I made a few specimens and will submit to you on my return to Manatee, Nov or Dec. next.

Vitis — I meet V. vulpina, cordifolia Caribaea, acida, bipinatta and cyciadis, — but of the Caribaea I have failed to get — I saw it very

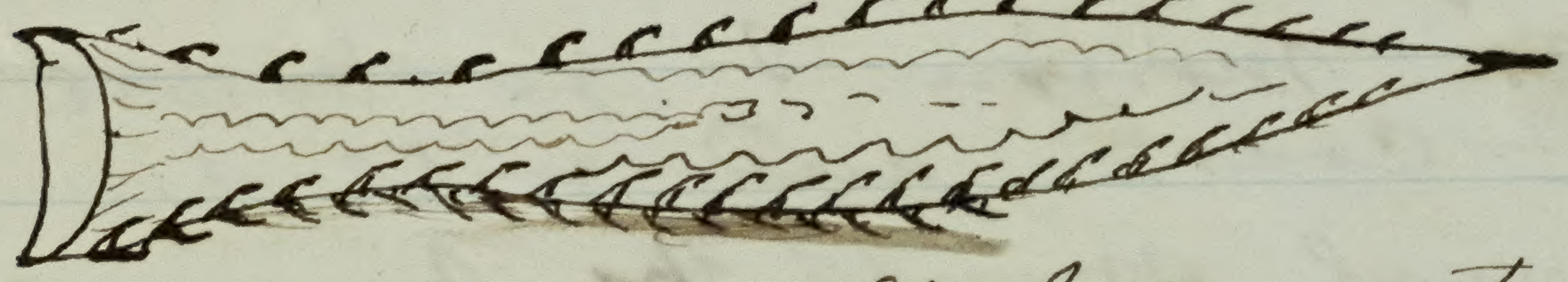
abundant on the upper Cabrosa R. at Ft Thompson and known to the settlers on the river as the Ft Thompson grape. The berry is size smaller than Labrusca as I meet and pulp less decided, darker red, no foxy flavor, and from the few I tasted, which tho' were perhaps overripe, slightly-acid. They ripen latter part of July and are much esteemed by natives for wine.

Cacti I meet Cereus both - in Chapmans Flora, - Opuntia Ficus Indica Vulgaris, and polyacantha

But I met 2 years ago a Cereus with a large red flower the stem angular and growing from different either two described in S. Fl. It flo in the spring up to latter part of May - Last June I returned again to the locality saw plenty but all in fr. Perhaps I may sometime again I may get a fl when I will send it, or send the stalk.

The Yucca aloifolia et gloriosa I have so far failed to recognize them separately - but I will continue to look for the rarer one.

There is (a species or perhaps) an Agave, for I have so far failed to find it in fl, at a distance the young or trunkless plant would resemble Agave rigida var Sisalana — but I have seen it with a trunk 6-8 ft high — the upper part of the trunk is slightly enlarged so with the leaves on its entire length; the leaves are thick rigid about 2 3 feet long — spine pointed — the spine is ~~1/2 to 3~~ 3 inches long, hard and sharp On the edge of the lf. are recurved spines about 1/8 inch long at intervals of 1/2 — 1 inch on the edge of the leaf to within 3 or 4 inches of the spine point where they disappear — longitudinally thro' there are apparently 3 lines of obscure crescentic markings so.



Indeed part of a lf but unsatisfactory

Pine known here as Spruce pine, most frequently — grows on high sand ridges — bears many cones which remain on limbs year after year I think, very much like P. pungens — but cone size and appearance of northern yellow pine however habit and appearance of tree is different from that —

Pinus Glabra

All the Pine in S. Fla. is Elliotts

and the Spruce Pine — P. australis
The forest pine of Eastern middle
Florida and north I have not
seen south of Tampa — The
immense Pine forests of S. Fla
are wholly composed of Elliotts
and known to the natives as
the short straw pine, and the
wood being much harder to split
and work than the long straw
or P australis, Elliotts pine
appears to me taller, ~~than~~ more
slender trunk than P. australis
When I return to Manatee
I will collect these Pines
and oaks and such other
plants as you are specially
interested in and send them
to your address
To morrow I go down
the coast and will for
several months be beyond
reach of mail matter
However I will direct mail
matter to be retained at
Manatee until my return.

Very truly
A. P. Garber.

Rec Apr 28 1879
An — 30

Ans a letter, dated Sept 2d
Punta Rassa Sept 23d
which was not answered
and can not be found

Manatee, Apr. 27, 1879.

Dr Geo Engelmann,

Dear Sir,—

I forward by mail a few plants on which would like your opinion,

Lemna — whether it is Lemna of Austin
Now Valdiviana or something else.
It grows plentifully on different ponds
a large hummock here,
collected March 1879.

Euphorbia, 1/2 to 1 foot in height as I saw it, erect — abundant at Cape Sable but have not seen it in any other locality. — There are some small and woolly leaved forms of hypericifolia as noticed in "S. Flora" but these I met and are distinct — Collected Oct. 1878.

Isoetes, small — collected on the wet borders of Lake Flirt, Aug. 1878. Lake Flirt is not far from Lake Okeechobee. The spores appear to leave the markings and size of the I. placida I send you from Manatee, but differs in the spores being of a bluish color, and perhaps pulverulent. — The plant of a dark green color, leaves 3-6 inch long only, and season being August.

The Manatee plant, leaves are yellowish green 1/2 - 1 1/2 ft long spores white, season April

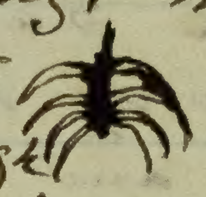
March and April. In a subsequent visit in May it had all disappeared – besides this same locality I visited previous in Sept and had not seen it.
This Spring in March I visited the locality again but saw no trace of it. This however I attribute to the dry season all ponds are perfectly dry. We had a good rain several days ago which may start it to grow. I will go to the locality soon and make another search.

Sept 2d

I wrote you from Punta Rassa last Fall and said that probably a new Agave grew along the Gulf coast of Florida but after further search and study of your excellent article on the genus I now believe that there are on the Florida Coast 2 varieties of A. rigida.

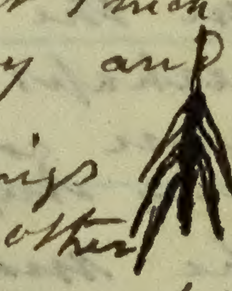
1st Trunk short 1–3 ft. lvs long, quite thick, glaucous – no marginal spines – terminal spine about 1 inch long, mature and older lvs recurved so

Sisalana



scape 20–30 ft high some proliferous others had mature pods with seeds of which I secured two and will send them to you. – This variety is common on Key West other Keys on the atlantic coast and at Ford Dade and opposite on the Miami River, but I have not seen it on the Gulf coast.

2nd Trunk long, 6–8 ft, ascending, lvs. long but perhaps little over half as thick as the preceding dark green short spines on the margins, terminal spine about 1 inch long – older lvs of the flowering stalk dry and reflexed or turned down abruptly so



These lvs have crescentic markings which I have not noticed on the other

Scape same height, & branching in the

same way as the 1st, also prolifferous
Fls of the former (1) are 2½-3 inches long
green outside and yellow inside — of the
latter (2) I saw only a few dead ones
in which the color was gone but the
size & form appeared the same as in 1,
I never saw the pods of the 2nd,
it was always prolifferous.
The 2nd is very common on the
shell formations along the Gulf Coast
from Manatee South. but I saw
only a few small plants of it on
the rocky shores of Biscayne Bay — on
the atlantic coast.
Pines — Elliott's & Spruce are the only
species here, I had intended to send
you cones & green branches of each by mail
but the latter is some 4 miles from here
and I have not been there yet.
Looking over your Monograph on the
oaks, — I dont think there are any in
my collection not well known to you.
Q. Myrtifolia, et prinoides et laurifolia I have
met in different localities, In Levy Co.
I saw considerable variety in species
and some hybrids — which I will see
again in the course of a few months.
The Yucca you mentioned I have
not seen altho' many times examined
the other species — with bus serrulata.
I will remain at this place perhaps
a month or longer and return to
Pennsylvania in July.

Very truly
A. P. Garber.

Dr A C Garber writes April 21 1879

Spores, small, collected on the wet borders of Lake Flirt, Aug 1878. Lake Flirt is not far from Lake Okeechobee. — It appears to differ from S. fluviatilis in the spores being of a bluish colour and perhaps pulverulent. Leaves dark green, 3–6 inches long only, and plant maturing in August!

The Manatee plant is yellowish green, leaves ½–1½ feet long, spores white, mature in March and April

Examined the Corality again in Summer and in September without finding a trace

Nor did I find it this present March though examining the same corality.

Rec May 14th 1879
Ans 20th

Manatee May 10, '79.

Dr Geo Engelmann.

Dear Sir —

I must defer answering your inquiries in yr letter more fully until I reach home July next, for my specimens are all there and I will then have more time and litterature to study. Now am busying in packing to leave here in a few days for Tampa — and in June for Levy Co. where will look up the hybrid oak. At Tampa will send you fresh of the same Dr Gray submitted to you labeled R. aquatica by me but not having then yr. description, recd from you since I crossed aquatica and wrote Nuttallii, Nicky, but you correct me if I am wrong.

If I did I knew D. laurifolia well — it is a mistake of mine — possibly might have had in mind at the time cinerea — laurifolia as I labeled it saw in one locality only — on high dry ground above Tampa 10 miles

but will wait for further study when can see specimens which are at my home Columbia, Pa.

To day walked out to cut a few sprigs of oaks for you and will send by mail.

I make the following memorandum in my note book.

To Dr Geo. Engelmann
from Manatee, May 10, 1879.

Gaffs

No 1. 2. aquatica, Catesby { Ordinary form. Hummock.

No 2. 2. aquatica, Catesby { Smaller leaf form Road end of Lee's Canal. Drier ground. Tree about 15 ft high

No 3. 2. dont Know { Hummock Characters of aquatica and Phellos.

No 4. 2. dont Know { Lee's lot S.W from house near a Pine Characters of aquatica and myrtifolia Tree about 20 ft high trunk 27 in. in circum.

No 5 2. virens { Hummock One of the less common forms.

Have also included terminal spine and edge of lf. of the Agave of the Gulf coast and two pods of the one on the Atlantic coast.

Lf of Gulf coast form and the one that has 6-8 ft trunk
about 3-4 ft long, 2-ft - 3 1/2 inches wide 1/2 inch thick

Lf of Atlantic coast form and the that has 1-2 ft trunk
about 4-5 ft long - 3-5 inch wide, 1 in thick.

This is a guess. and of course not as accurate as a measurement.

I will remember P. glabra and secure it if I can.

Very truly
A. P. Garber.

Ans. Lambiye Sept 24
Ans Oct 28

Isoetes

Columbia Penna
Sept. 11. 1878.

Dr Rev. Engelmann.

Dear Sir.—

Yr letter of June was forwarded. My health has not at all been good this summer. I have only for the last few weeks commenced to look over my plants. I enclose a few specimens of Isoetes, the large from Manatee Apr. 78, the small from Lake Flirt, Aug. 78, leaving the microspores which did not appear in the specimens sent you before.

I visited the manatee locality 4 times in the spring of '78 but failed to find even a trace of the plant

excessive drought was the cause the pond was completely dried up.

The Oak Dr Gray sent you and the one I sent you from Tampa last spring may they not be the same species Q. myrtifolia of Walter both biennial.

The apparent new wood of the former having been made the year previous to the formation of the fruit.

This appears to me probable on account of the abundance of Dr this particular shrubbery from which I cut the first specimen and also on account of its dwarfed character, growing near wet ground which this oak does not like. These barren sand ridges on which this oak grows

are higher and dries towards the center and there the shrub is taller 6-8 feet high and sometimes becomes 10-14 ft high but along the lower and outer margins of these sand ridges the surface becomes low and merges in the low pine barrens - the soil though great part of the year is more or less saturated with water - here the oak is dwarfed 3-4 ft high. and does not make wood like on the drier soil.

The importance of having specimens from the same tree or shrub ~~of the~~ at different seasons of the year has always made the study of the oaks unsatisfactory to me

for I could hardly count on a whole year at a place when engaged in collecting specimens.

Yours Respectfully
A. P. Garber.

Just now I do not know where I will be next winter but probably in California for I have to seek a milder climate than we have here in winter.

Rec Nov. 8th
Ans Nov 17

Columbia, Penna.
Nov 4. 1878.

Dr Geo Engelmann,

Dear Sir. — I rec'd your favor of 28th ultimo and will cheerfully give what information I can but what you need is more material and in different states of growth — which unfortunately I have not at my disposal now. I looked at my herbarium specimens of the Oaks referred to, the one which I had originally labelled <u>Q. aquatica</u>, and in my own set changed to Q. myrtifolia, Willd. is represented by three sprigs with pr on what appears the younger branches therefore annual. Query, may not this apparent annual growth be of the preceding year's development, so that then the pr. would be biennial? Engelmann's Monograph on the Oaks Page 8 1st sentence. For in all other respects it is so like the specimens sent you from Tampa last Spring which you say were true Q. myrtifolia Willd. and which were collected on the same sandy ridge not two stones throws apart. you thinking on account of biennial pr. might be a form of Q. Pumila which in fl. would be necessary. unfortunately in that state I did not collect it, But in habit, form of growth as well as leaf and pr. in nature seemed to me so widely different — Pumila in dense mats of one to two feet high in low pine barrens — whereas the one in question on on dry barren sand knolls or ridges appearing sporadically or in broken thickets — more like <u>Ilicifolia</u> in the north. I am glad you have kept my mind on this oak for at the first opportunity I shall ~~shall~~ secure more material, and in the flowering state.

<u>Q. virens var dentata</u> yes so labelled but never satisfactory it is not dentata as I commonly meet nor had it the same habit. — The two specimens belong together — an additional label with its height written on simply "3-4 ft high" was thrown in afterwards. The specimens were made at Rosewood Fla. Nov. 1877. But I had also seen it and collected some at Tampa Oct. 1877. Habit open dry sand ridges.

But of this likewise I have no specimens in the flowering state. It is, to the extent of my observation not a common oak - I have not seen any take a tree form. Last spring at Tampa I saw some specimens of the shrub which had attained a height of 4-5 ft. Altho' abundant enough in the two circumscribed localities seen it did not appear to me to vary any except in the two in the young state which are smooth-colored and have a dense brown stellate pubescence while in the old state they are nearly or wholly smooth - entire and dark shining green above of a leathery character. The knotty character of the cups made an impression on my mind at the time of collecting for I had not seen anything like it on the fr. of other oaks.

I wish I could send you sufficient material and in different states of growth to enable you to study them satisfactorily. But what I have remaining is the same in quality and quantity that you have in Martindale's Cabs. in my 3 specimens acorns too are sessile.

I am not as strong for California now as I had been in the Spring for there are drawbacks in that country too I learn.

Just where I may go this winter is yet undecided. Should however I get to Florida again I would secure of the oaks in question.

I will remain here until sometime next month and will be glad to give any information upon the plants I collected that I can

Yours Very truly
A. P. Garber,