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Bulowville, Jan. 12th, 1832.

MY DEAR F.—In my letter from this place of the 31st December,* I gave you by way of Episode, an account of my adventures on the Halifax river, but I never told you when I got here, or how I got here from St. Augustine, both of which matters I know you are so desirous of being acquainted with, that I expect a good scolding in the very next letter I receive from you for my omission. In future, the understanding between us must be, that when I choose to write Episodes, you must let me write Episodes, confiding always in my intention to give you as regular an account of my movements as circumstances will admit of. I am aware that very few travellers have been in this part of the world with the views that have brought me here, and in the hope that the details I am about to give you will be acceptable, I shall now take my start from St. Augustine, from whence I wrote you Dec. 7†.

After remaining in this place about three weeks, we proceeded through the inlet that divides St. Anastasia's Island from the main, to the plantation of General Hernandez, about thirty-five miles from St. Augustine. On our way, we passed at Matanza Inlet, an old fort built by the Spaniards, now a ruin; here we turned into a creek, fed by the salt water tides, until we reached the landing place at the General's. Our hands took the baggage to the house, and when we dismissed them, they determined to return, although the night was dark, and the wind quite adverse.

* See March Number, 1832.
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† See February Number, 1832.
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General Hernandez was from home on our arrival, but his Lady received us very politely. I had soon the pleasure of shaking hands with my worthy host, and became established in his family for ten days. On Christmas day we left this delightful abode, and proceeded on foot fifteen miles to J. T. Bulow's, Esq. of Bulowsville, by invitation. A wagon was sent for our baggage, and horses for ourselves were offered at the same time, but it was not my desire to give unnecessary trouble, and above all upon an occasion when I was glad to see the country in as much detail as possible, and anxious to avail myself of every occasion to get new birds.

Mr. Bulow's house is large and good, and nothing could be more amiable than his reception of me. He placed every facility and convenience at my disposal that I could have occasion for. During my whole long stay with him, there was no abatement of his kindness, of his unremitted efforts to make me comfortable, and to promote my researches. I shall ever feel grateful to one of the most deserving and generous of men. I have already narrated to you the excursion down the Halifax river, and shall now give you an account of an interesting trip I made into the interior, to a place of some celebrity in this country, called Spring Garden.

I left my friend Bulow's plantation, with the intention of going westwardly towards the river St. John's; Mr. B. gave me a seat in his gig. Mr. M'Murtrie, a Scotchman in his employment as an Engineer was with us, and was in fact to be my guide to Spring Garden. We passed several plantations, but at none of these did we remain a longer time than just to quench our thirst.

A horse was lent me at Mr. M'Dermot's, a sugar planter, and I leapt on the saddle as freely as if the world was all my own. We arrived at a Mr. M'Craigh's, of course a Scotchman, whom I had seen at St. Augustines, and who received us with all imaginable kindness. He lives about 15 miles from Bulowville. I saw the whole of his new born plantation, the landing on his creek, his boats, &c. &c. We slept here, and at daylight on the 7th we left this plantation, to proceed westwardly through the wilderness towards the Spring and Garden, here so renowned, and of which I intend giving you a favourable description.

Nothing could be finer than the weather, not so the roads;

for no sooner had we left the King's Road,* than we entered first a thick scrub, succeeded by a still thicker mass of low palmettoes, extending about three miles, where we came in full view of what in this very interesting peninsula, goes by the expressive name of a *Pine Barren*.

I wish I had the talent to paint what a Pine Barren in the Floridas is. May God continue his blessings to me, and may he ever preserve you from having any thing to do with a Pine Barren in the southern part of the Floridas !

The sky was pure, the pine trees far apart, beneath our feet nothing but sand and tall grass. The general growth low palmettoes tangled together, and the mere Indian path we were following, was so narrow, and of so doubtful a character, that at every step which our Floridian poneys took, we felt as if we certainly had at length got into the vicinity of the far famed end of the world, and our expectations were of course screwed up accordingly.

These Pine Barrens differ from all those I had seen before. The sand is thinly covered with a very poor kind of yellow pine, growing from amongst tall rank grass as far as the eye can reach on all sides. The country is perfectly flat, and subject to general inundations after the constant rains that fall in this latitude, in early spring. At such times it is impossible to cross these barrens, and even now, after a period of extremely dry weather, we were frequently in mud and water up to the girths of the horses. Large patches of grass presented themselves here and there, like so many worn out meadows or prairies, then again came the pine barrens. Whenever the surface became hollower, it was covered with cypress trees hung with Spanish moss, growing out of the deep black mud, and overgrown with all sorts of scrubby bushes of the magnolia family.

We crossed in succession the heads of three branches of Haw Creek, from a quarter to half a mile in width : we got through them with some difficulty. After traveling about twenty miles, at the rate of two and a half miles an hour, a great change took place ; the country became suddenly more elevated and undulating. The timber also changed to red oaks, magnolias, a few live oaks and pines, millions of molehills, called here sala-

* This road, which runs parallel with the coast, was opened when East Florida belonged to the Crown of Spain.

mander and gopher (*geomys bursarius*) burrows, offered themselves to our eyes. Our horses occasionally trod in them, and stumbled at the risk of our necks. We now saw beautiful lakes of the most transparent water, and passed through a series of them on each side of us. As we proceeded, these lakes increased in number and in dimensions. Some of them are several miles in length and breadth, and have from seven to twenty feet in depth of the purest water, and abound with excellent fish. *No birds about them*, at this season at least, their banks being entirely destitute of grasses bearing food.

Many tortoises were seen basking in the sunshine, all of which plunged into the water at our approach. Not a sign of man did we see during our whole day's journey; scarcely a bird, and not a quadruped—nay, not even a rat (*geomys bursarius*). A more destitute and poor country is scarcely to be conceived of, than the section we crossed this day between the Halifax river and the sources of the St. John. The distance about thirty miles, and from Mr. Bulow's about forty.

We at last perceived the track of living beings, and soon after saw the negro huts of the plantation now owned by Col. Rees. Never did traveller approach Timbuctoo in Africa, with greater satisfaction and more curiosity, than I did the plantation of Col. Rees. Even our Indian horses seemed to have the same feelings, for they trotted on towards the principal dwelling with great alacrity.

We found the Colonel at home, and were kindly received, refreshments were presented to us, and our horses taken to the stable. The proprietor purchased this estate a few years ago, and is now only beginning to plant sugar cane upon it. The soil is much the same as that on Mr. Bulow's plantation, and is that which substantially constitutes the swamp land in Florida. The plantation is spread on the margin of a lake, now called *Rees's Lake*; of which I shall speak hereafter, and the whole appears under the best of treatment.

Dinner over, the Col. took us to the spring, and when I reached it, I was certainly surprised, but I must try to describe it, and to give you my own ideas of the nature of this curious outlet of subterranean waters.

The spring itself forms a circular cove of about sixty feet in diameter, from the centre of which it throws its water with so

much force, as to prevent any swimming object from approaching it, except fish. The head of the jet rises about an inch and a half above the common surface, forcing the water away all around, after the manner of a whirlpool, yielding meantime millions of dead periwinkle (*Lymnea*,) shells, pieces of stone, of wood, gravel, &c. &c.; all of which are forced on the surrounding shore, where they have accumulated perhaps for many centuries, and where they are concreted into curious solid masses. The water is beautifully transparent, of a sea green colour, but strongly impregnated with sulphur, which gives it a nauseous smell, particularly disagreeable to myself.

The same shells which are thrown up at the spring, are found in each of the lakes of which I have spoken. These lakes seem to be formed from atmospheric waters, which in the rainy seasons flow into these reservoirs or basins, which ultimately communicate with St. John's river. I procured a bottle full of the water of this curious spring for analysis. The waters of the spring, after running about two hundred yards through the woods, flow into Rees's Lake; the stream thus formed is called Spring Garden Creek. The depth of the water at the spring, when low, is near seventeen feet; the channel of the creek immediately below it is said to be sixty feet deep, but becomes shallower as you advance towards the entrance of Rees's Lake, and so very rapidly, that on reaching this lake the bed becomes suddenly an extensive mud flat over the whole floor of the lake, with, at this moment, not more than fifteen inches of water; beneath which are deposits from the discharges of the spring, and a soft silt or thin mud to the depth of four and a half feet, lying upon hard white sand. When this silt is stirred up by the oars or otherwise, it is of a dark green colour, smells powerfully of wet gunpowder, and effervesces constantly, even when untouched. Our boat was hauled across this mud flat lake into the continuation of the creek.

Before we proceed farther, I would observe that the inspection of the ground around the spring brought me acquainted with a very curious set of phenomena, from which it would appear that the present spring is comparatively recent, and only one of a long succession of jets that have once been in activity, but which are now filled up with the fragments of shells, wood, gravel, &c. they have ejected. During the rainy season, when

the ground is saturated with water, it issues from various vents, distant from one to three hundred yards from each other; the intervening distances appear to be filled up with the fragments I have before alluded to, and with silt. The fragments now accumulated by the jet in activity, are evidently approaching it, in time it will be choked up, and then, I suppose, the pressure operating upon the general filtration from all these lakes and the surface, will force a new jet up in some weak place. The orifice of the present one is about two and a half feet square; its velocity in the rainy season is about three feet per second, which gives near 500,000 gallons per hour. The cove, from which this jet rises, is, as I have before stated, about sixty feet in diameter.

We found the creek covered with the common *nymphæa*, in a depth varying from fifteen inches to five feet of water. On the north east side is a great cypress swamp, and on the opposite side marshes, and islands covered with pines, live oaks, and sour orange trees. Alligators in abundance, many water fowls, such as ibis, hanningas or snake birds, galinules, coots, ducks, cormorants, fish-hawks, &c. &c. We proceeded down this Spring Garden Creek, with much difficulty, for about two miles and a quarter, and reached Dexter's lake, but passed a mud flat at its entrance so very shallow, that I doubted. at one time, if we should be able to effect a passage. Here the mud was literally filled with muscles (*Unio*.) resembling those of the Ohio river. Our negroes brought up from eight to ten each time they put their hands into the mud, so that I collected a great many, out of which I selected about sixty. Two other kind of shells were found here, and of these also I preserved a sufficient quantity; but mark! the water was now of a different colour; from a transparent sea green, it had become a dark chestnut, although still limpid. The lake had an uniform depth of about five feet, and we proceeded across its north east corner without difficulty; it is about eight miles long, and about three miles broad, without islands, and bordered like the rest with ample marshes. The continuation of the creek which we now entered leads to the opening of Woodruff's Lake, which itself empties its own dark waters into the St. John's. We could not reach the bottom of the mud of this creek; we pushed our oars into it, up to the very ends with great ease. This was a cause of great sorrow and disappointment to me, for I shot the male and female of a

new species of ibis; they fell not far from us upon the tangled nymphæ, but such was the state of the mud, that it was impossible to recover them. Being only a few yards distant from us, and quite near enough to ascertain the extent of my loss—I submitted to lose a fine pair of a new species, the which if I ever fall in with it again, I shall call *Tantalus fuscus*.

The chain of creeks and lakes I am now describing empties itself into the St. John's, about sixteen miles south of and above Lake George. We reached the borders of Woodruff's Lake about one P. M., and being fatigued and hungry, we landed on a small island of a few acres, covered with a grove of sour orange trees, intermixed with a few live oaks. The oranges were in great profusion on the trees—every thing about us was calm and beautiful and motionless, as if it had just come from the hand of the Creator. It would have been a perfect Paradise for a poet, but I was not fit to be in Paradise; the loss of my ibis made me as sour as the oranges that hung about me. I felt unquiet, too, in this singular scene, as if I was almost upon the verge of creation, where realities were tapering off into nothing. The general wildness, the eternal labyrinths of waters and marshes, interlocked and apparently never ending; the whole surrounded by interminable swamps—all these things had a tendency to oppress my spirits, notwithstanding some beautiful flowers, rich looking fruits, a pure sky, and the ample sheets of water at my feet. Here I am then in the Floridas, thought I, a country that received its romantic name from the fragrant odours wafted from the orange groves, to the boats of the first discoverers, and which from my childhood I have consecrated in my imagination as the garden of the United States. A garden where all that is not mud, mud, mud, is sand, sand, sand; where the fruit is so sour that it is not eatable, and where in place of singing birds and golden fishes, you have a species of ibis that you cannot get when you have shot it, and alligators, snakes and scorpions.

Mr. Bartram was the first to call this a garden, but he is to be forgiven, he was an enthusiastic botanist, and rare plants, in the eyes of such a man, convert a wilderness at once into a garden. Another traveller, however, who was in the government employ, has written in a manner that cannot fail to mislead those who have never visited the country. He says that the Pine Bar-

rens of which I have spoken, would make superb sugar plantations, and has given a list of fruits and plants that grow in the Floridas; but he has not stated at how great a sacrifice of labour, property, and comfort, any cultivation of this kind can be carried on, except in a few well selected situations. On the great scale, this kind of cultivation cannot be applied, for the pine barrens are so very flat, that the only drainage to which they can be submitted—at least for the twenty-five miles I observed them,—is natural evaporation.

Of the climate, too, it may be remarked, that, notwithstanding its average mildness during winter, it is far from being as pleasant as the winter climate of the northern States. The steady, dry, bracing frosts of the north, are congenial to health and good spirits, and all that is required, is to keep the body warm by exercise and clothing. Here, in the winter season, we have the blossoms open at mid-day, butterflies on the wing, alligators out of their holes, birds singing and disporting, snakes sliding through the woods, tortoises basking in the sun, the thermometer at summer heat, and yet when night comes, frost sets in, and frequently before morning almost every thing is enclosed in an icy garment. During the summer,—I am told,—that in the interior, from whence I am now returned, the heat is excessive, and the pestilential miasma of the stagnant marshes, lakes, and torpid pools with which the country abounds, renders a residence here dangerous to the most hardy constitutions. I am afraid that those who had the good luck to sell the country to our government for hard money, have made more by it, than will ever be made again. I wish it were otherwise for the sake of the excellent and most hospitable men I had the good fortune to become acquainted with here, and the parting with whom was the only cause for regret which I had on leaving East Florida.

I was greatly surprised to hear the accounts of those gales that desolate the peninsula during spring, summer and autumn. I have been assured that at times the plantations have been almost destroyed, together with the greatest part of the crops. I have seen on Mr. Bulow's plantation, the remains of twenty of his houses thrown down last June, and his own mansion was so much endangered, that he found it expedient to leave it, and remove to his kitchen, which is a low building contiguous to it. During the summer, the country bordering the ocean, is refresh-

ed by the sea breezes usually called the trade winds, from ten A. M. until sunset; this is a great blessing in a flat country, when the thermometer stands at 88° Fahr.: but it does not penetrate the interior of the peninsula; the heat there is as intolerable as the Miasma.

When we had eaten our humble repast at the sweet little Orange Grove Island, we left it "alone with its glory," but not without a name. It was determined, nolens volens, that it should be called Audubon's Island, on the St. John's river. Lat. 29° 42'.

On going and returning from Spring Garden, I observed many plants new to me, especially a parasite, of which I collected some fine specimens, somewhat resembling the pineapple plant, growing in some instances forty feet high on the east side of cypress trees, of which the roots were in the water. I saw many daisies resembling the common European daisies, and large patches of heath, the first I have observed in the United States. The excursion out and home, occupied four days.

I am now going to prepare for my return to St. Augustine: the schooner Spark is there, bound for the heads of St. John's river, and as I am furnished with an excellent letter to the Commander from the Secretary of the Treasury, I shall hope to be permitted to embark on board of her. Adieu, my dear F. until I give you an account of this new expedition.

J. J. AUDUBON.

REMARKS ON THE ARTICLE CONTAINED IN SILLIMAN'S JOURNAL FOR APRIL 1832, ENTITLED "MR. LEA ON THE NAIADES."

SIR—I venture to offer to you some observations on the very encomiastic review of "Mr. Lea on the Naiades," in the American Journal of Science and Arts for April 1832. Mr. Isaac Lea's papers were published in the transactions of the American Philosophical Society. That institution had been at a great expense to get up these papers, which, on account of their numerous showy plates, have attracted much attention. The liberality which the society thus exercised, imposed upon the author the duty of making his papers as perfect as possible, and at any rate free from all reproach. It was alike due from him to do