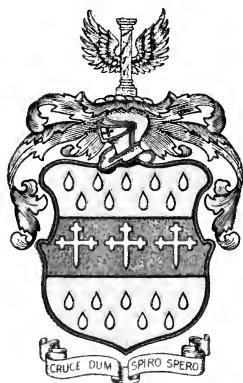


UNIVERSITY OF PITTSBURGH



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A
LIFE OF TRAVELS

AND
RESEARCHES

IN NORTH AMERICA AND SOUTH EUROPE,

OR
OUTLINES

OF
The Life, Travels and Researches

OF
C. S. RAFINESQUE, A. M. Ph. D.

Professor of historical and natural sciences, member of many learned Societies in Europe and America, author of many works, &c.

CONTAINING

His travels in **NORTH AMERICA** and the **SOUTH** of **EUROPE**; the Atlantic Ocean, Mediterranean, Sicily, Azores, &c. from 1802 to 1835—with sketches of his scientific and historical researches, &c.

*Un voyageur dès le berceau,
Je le serais jusqu' au tombeau*

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PREAMBLE.

These outlines of my life and travels, are abridged from my memoirs, and journals of travels, begun to be written since 1796. They are chiefly a translation from a sketch of my travels written in French in 1833 and sent to France, to my only sister Mrs. G. Lanthois of Bordeaux. The style therefore is rather familiar and neglected. I regret the egotic form of it, and should have wished to have changed it to a recital in the third person, but this would have caused another objection. Thus it is given nearly as a plain translation, with the addition of the travels of 1834 and 1835, and some trifling alterations.

The whole may be deemed an introduction to my works, particularly to any ulterior accounts of my travels, personal observations, and private memoirs. It is not a mere biographical sketch, but contains many facts, remarks and details chiefly in the latest travels—such sketches are dedicated to the small number of friends, who have been able to appreciate my zeal and labors, in the vast field of historical and natural knowledge.

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CHAPTER I.

Life and Travels till the first departure for America.

A short account of all my travels will be also a narrative of my whole life, since I began to travel in my cradle, and became afterwards a perpetual or periodical traveller, through inclination and need.

I opened the eyes in the fine grecian soil and climate, at the eastern end of Europe, and in sight of Asia, since I was born at *Galata*, a suburb of Constantinople, inhabited by christian merchants and traders. My father was G. F. Rafinesque, a French merchant of Marseilles, settled in the levant, being a branch of the firm of Lafleche and Rafinesque of Marseilles. My mother was M. Schmaltz a Grecian born, but of a German family from Saxony.

But I did not remain long in these oriental climes. I visited with my parents *Scutari* in Asia, before I was conscious of my existence; thus I may boast to have seen the four parts of the world; since I saw three times afterwards the shores of Africa, but without landing on them. Therefore my travels of personal observations are mostly confined to Europe and America.

I was yet in my cradle and at the breast of my mother, when my parents went with me to France by sea, by Smyrna and Mal-

ta, where we stopt in the way to Marseilles. This first and early voyage of mine, made me insensible or not liable ever after to the distressing sea sickness. By my observations ever since, it appears that whoever travels by sea in the cradle or very early, is never liable afterwards to this singular disorder. It seems also that whoever can ride backwards in a coach without difficulty, is not liable to it; but whoever cannot, will suffer sadly from it. Thus any one can tell beforehand whether he will be liable or not, and take the needful precautions. Having never read any where these two observations of mine, I venture to notice them here, that they may be confirmed by extensive experience.

I remained some years in Marseilles with my mother and paternal family, while my father went again to the Levant for two years. My first sensation of existence took place in one of the numerous country seats which surround and beautify the neighbourhood of Marseilles, where they are called *Bastides*. It was there among the flowers and fruits that I began to enjoy life, and I became a Botanist. Afterwards the first premium I received in a school was a book on Animals, and I am become a Zoologist and Naturalist. My early voyage made me a traveller. Thus some accidents or early events have an influence on our fate thro' life, or unfold our inclinations.

In 1789 my parents went from Marseilles to Leghorn by sea, to visit relations established there, a sister of my father's being married to Mr. Desmaretz an English merchant, I was taken along with them; this was my second voyage, and the third was the return to Marseilles. I recollect perfectly these voyages, and that we landed in the way to St. Florent in the Island of Corsica. My personal observations in travelling begin to date as early.

In 1791 my father went on a voyage to the Island of France and China, as part owner of the Ship *Argonaute*. He wished to take me along, but I was only seven years old, and was deemed too young for such a long voyage. If he had, I would have seen Madera, the Canary Islands, Cape of Good Hope, Island of France or Mauritius, Sumatra and Canton, where he went to trade or water. This voyage would have been very happy, without the maritime war of 1793. The Ship escaped with difficulty the English cruizers by coming to Philadelphia, where the Ship and Cargo were sold; but my father became there one of the victims of the awful yellow fever of 1793.

Before this sad event, my mother frightened by the excesses of the French revolution, and a mob which burnt the house of Mr. Lafleche, partner of our mercantile firm, and one of the *Echevins* or Aldermen

of the City, resolved to quit France for awhile. She went to Leghorn again with me, my brother and my sister. This was my fourth voyage, and second visit to Italy.

We remained at Leghorn from 1792 to 1796. I was taught by private teachers Geography, Geometry, History, Drawing, &c., as well as the English language. The Italian language became quite familiar to me by mere practice. I learnt many other things by myself, as I was greedy for reading any book that I could get; but I liked travels above all. Those of Leguat, Levaillant, Cook, &c., gave me infinite pleasure: I wanted to become a traveller like them and I became such. They increased also my taste for natural history, in which Pluche and Bomare became my guides and manuals. Before twelve years of age I had read the great Universal history, and 1000 volumes of books on many pleasing or interesting subjects.

I was taken to Pisa to see the great public games of St. Ranieri, the leaning tower &c. I often went to a country seat at Montenero, a fine hill South of Leghorn. I began there my regular herborisations in 1795, as well as a small herbal; altho' I had no proper guides for Botany, and did not know yet the Latin language; but I learnt it afterwards by myself in order to understand the botanical books. I never was in a regular College, nor lost my time

on dead languages ; but I spent it in learning alone and by mere reading ten times more than is taught in Schools. I have undertaken to learn the Latin and Greek, as well as the Hebrew, Sanscrit, Chinese and fifty other languages, as I felt the need or inclination to study them.

Without dwelling here on several domestic personal events, I went in 1796 to Genoa by land, which was my first journey by land. We went in a coach as far as Sarzana, and thence to Genoa by mules and Sedan chairs over the apennines; where I began to enjoy the mountains. I wrote the journal of this tour, it was my first essay of the kind. I did the same ever since by notes or journals.

After remaining some time in Genoa with my mother, I was sent to Pisa to live with my paternal grand mother. It was my first separation from my mother. I was put under the care of some travellers. We went by sea to *Sestri* and *Lerici* in a feluca, and afterwards by land thro' *Sarzana*, *Carrara*, *Viareggio*, &c. I studied Botany by collecting plants in the vicinity of Genoa and Pisa, the banks of the Arno, the mountains, &c.

In 1797 my grand mother returned to Marseilles, and sent me back to Genoa. I was to go to Switzerland, into a College to finish my education ; but this project was not fulfilled. I was taken to Genoa by a

trusty man, but sent from thence soon after to Marseilles by sea. There I remained till 1800 with my grand mother, and completed my education by myself. I read every kind of books, good or bad; but happily I knew how to distinguish them. My favourite studies were still travels and natural Sciences; but I added now natural and moral Philosophy, Chemistry, Medicine, &c. I could have thus embraced any profession I chose; but I was to become a merchant like my father, and I began the apprenticeship of it as a Clerk to a distant relation. This agreed with my views, as commerce and travels are linked. However a decided taste for Horticulture kept me in suspense, and invited me to become a Botanist and Gardener.

My botanical walks near Marseilles gave me much pleasure. I had made to myself a small garden in a wild remote place. I began the study of the Fishes and Birds, I drew them, and collected Shells and Crabs. Daudin of Paris who published then a natural history of Birds was my first correspondent among the learned, and I communicated to him some observations on birds. I drew maps, copied those of rare works, and took topographical surveys; these were my first essays in geography.

Even then I began to form plans of future travels and works. I collected a library of my own. I wanted to write the history of

Marseilles and my Biography. I had not decided where to travel, many distant countries appeared to invite me; but above all the Grecian and Oriental Regions of my birth, and where resided my maternal relatives.

Meantime my parental grandmother died at a very old age. The French revolution had exhausted or scattered the fortune of my paternal relations. It was needful to choose a profession. By a great neglect I never had a Guardian. The inheritance of my father and my uncle, who was a victim of the revolution, fell into the hands of Mr. Lafleche, who had taken refuge in Genoa, and has never settled with me nor my brother, pretending that the funds scattered in the Levant, Mauritius, Cayenne and Philadelphia, were lost or too difficult to recover, altho' he had realized many. Thus I was despoiled of my inheritance and have only depended on myself through life.

The *tribunal de famille* instead of appointing a Guardian, sent us back to Leghorn, to dwell with our mother; then married again to Mr. Lanthois, a merchant. This voyage took place in 1800, with my brother, upon a Genoese Tartane. Owing to the war, we followed the shore and landed in many places, Villefranche, Monaco, &c. We escaped one night with difficulty being taken by an English Frigate, that had chased us into a haven with many oth-

ers. Several of our neighbors were taken and carried to Mahon, but by running our Vessel aground we escaped that fate. In coming at night into another roadsted, we were fired upon as foes, and had a man killed on board.

Arrived at last in Genoo, Mr. Lafleche sent us forward to Leghorn by Sea; but at Sestri hearing of cruizers on the coast, we resolved to go by land. The passengers formed a Caravan or armed Company to pass the mountains on mules, at Sarzana we took coaches, and reached Leghorn when it was evacuated by the Austrians.

I remained two years in Leghorn, learning Commerce with Mr. Lanthois, studying Botany and other sciences. I began to hunt, but the first bird I shot was a poor *Parus* whose death appeared a cruelty to me, and I have never been able to become an unfeeling hunter. I sent accounts of rare birds to Daudin. We often visited in parties the woods near the City, when Botany was not forgotten. I often went to visit the gardens and museum of an English lady Mrs. Partridge, at *L'Ardenza* near *Montenero*. I took a journey to *Calci* in the Apenines of Tuscany, and rambled over all the neighbourhood of the City, taking the topographical map of it.

In 1802 it was resolved to send me with my brother to begin our travels. It was to the United States of America that we were

sent, upon several considerations superfluous to state here. This was the period of my real voyages and travels, on the score of importance and novelty, as well as those discoveries which followed my exertions. Before this all my excursions were mere youthful trials in countries well known. I was of course delighted, and eager to begin to see the world. We were provided with an adventure, many letters of introduction, and we departed to roam over the wide world.

CHAPTER II.

Travels in North America during three years.

In March 1802, myself and my younger brother, Anthony Augustus, left Leghorn in the American Ship Philadelphia, Capt. Razer, bound to Philadelphia, where we arrived in forty-two days, without landing any where in the way. We followed the Spanish shore from Cape Gates, and passed the strait of Gibraltar in a few days. I had the first view of Africa and afterwards of the great Ocean, this famous *Atlantic* Ocean, which after 4000 years bears yet the name of the first Nations who have crossed it, the *Atalas* and the *Antis*!

It afforded me a new study by its fishes and mollusca. I drew and described all those that we caught. It was more diffi-

cult to procure Birds, but Turtles could be taken while sleeping on the waves.

We had a favourable passage, without accidents nor storms. In forty days we obtained the first sight of America, the Capes May and Henlopen forming Delaware Bay. These shores are so low, that the trees are seen before the soil, and give a sylvan impression of this continent. In two days we run up the Bay and River to Philadelphia, where we landed on the 18th April 1802.

Here I was then upon a new Continent, where every thing was new to me. The first plant that I picked up was also a new plant, then called *Draba verna*, and that I called *Dr. Americana*, altho' the American Botanists would not believe me; but Decandole has even since made with it the new Genus *Erophila*! This is the emblem of many discoveries of mine, of which ignorance has doubted, till science has proved that I was right.

We were well received by those persons for whom we had letters, particularly the brothers Clifford, owners of the Ship that brought us, the brothers Tarascon formerly of Marseilles, Dr. Benjamin Rush, &c., and they took interest in our welfare. The celebrated Dr. Rush offered me to become his pupil, and Messrs. Clifford to enter their Counting house, as I preferred then commerce to medicine, I accepted this last offer. But the yellow fever having again

appeared in the Summer of 1802, it overthrew my views. Being much afraid of this disorder which had deprived me of a father, I left the City, and took refuge in Germantown; where I had the good luck to be invited by Col. Forrest a friend of Horticulture to dwell with him, and travel with him to collect Plants.

We took several excursions together in Pennsylvania, and had even intended to go over the Allegany mountains as far as Pittsburg; but instead undertook a journey through New Jersey to the Sea shore. We went in a cart through the Pine barrens to Tuckerton and Egg harbour. I made an ample collection of fine and new plants at Quaker bridge in the barrens, and at Tucker Island: I discovered many new Plants in this Island, such as *Drosera filiformis*, *Amaranthus pumilus*, *Gerardia maritima*, &c.

On our return to Germantown I studied all the plants of that locality, describing them all minutely. I went also fishing and hunting, and described the birds, reptiles, fishes, &c. An excursion to Westchester was taken with Col. F. to see Marshall's Botanic garden, and we returned by Norristown. We visited also Bartram's Botanic garden and several other places. In October the yellow fever having ceased, I returned to Philadelphia and to commercial toil.

In 1803 I became less partial to this toil, which did not promise to promote my travels. I was yet too young to be entrusted with a voyage. I then was desirous to go very far, and no distant expedition would have been unwelcome. Besides, the yellow fever came again this year, and disgusted me with the City. I had to go in Germantown a second time, with my brother who had returned from New York and Newark where he had spent last year without employment.

From Germantown I undertook several pedestrian excursions, chiefly botanical, into Pennsylvania and New Jersey; to Bristol, Woodbury, Westchester, and Lancaster to see Muhlenberg, to Trenton, Reading, Doylestown, &c., thus as far as the first range of mountains, or primitive hills. These botanical tours extended this year to 400 miles. My observations increased on all subjects: my studies and readings began to embrace all the travels in America, and the history of this Continent, as well as the inhabitants.

In 1802 I had seen the first Indians or ancient natives: I saw since many tribes of them. I adopted then the opinion that considers them of Tartar or Siberian origin; my studies have ever since confirmed this opinion respecting the Boreal Nations of America; but it is otherwise with the Mexicans and South Americans. These are

chiefly of oriental or atlantic origin; altho' I knew not then this important distinction; but neither are Jews, nor Phenicians, nor Chinese, nor Hindus:—rather the relations of the Celts, Cantabrians, Pelagians, Atlantes, Lybians, &c., who in fact were always their neighbors on the other side of the Atlantic.

My brother had become a Sportsman, and procured me many birds. I wanted to undertake the Ornithology of the United States, finding many of them new or unknown, or badly described. I continued also to study the Snakes and Reptiles, communicating some of them to Daudin for his work on Reptiles.

I became gradually acquainted with all the Botanists, Naturalists and Amateurs of that period, Pursh, Barton, Muhlenberg, Bartram, Marshall, Peale, Kin, Logan, Shultze, Gaissen, Vanvleck, Hamilton, Mease, &c., as well as the travellers Michaux jr., Turpin, Vanderschot, &c. I entered into a correspondence with Mitchell of New York, Cutler of Massachusetts and Brickell of Georgia.

But all these learned men were mostly strict Linneists, deeming the principles of Linneus, the *nec plus ultra* of natural science, as some do yet to this day. They blamed me for adopting the views of the French School of Science. My guides for Botany were already Jussieu, Ventenat,

Adanson, Neeker. &c., in Zoology I took already for guides Lamark, Daudin, Lacepede, Sonnini, Bruguiere, &c., who were nearly unknown then in England and America. When the flora of Michaux was published in 1803, it became my manual and I labored to write a Supplement to it.

After a last pedestrian journey in the hills of Bucks county to see Mr. Gaissen and Mr. Shultze, and their herbals, I returned to Philadelphia, and giving up my situation with Messrs. Clifford to my brother, I became during the winter, Secretary of Mr. Gernon; but as soon as the Spring of 1804 allowed me, I left that situation of no advantage, and gave myself up to Botany and travels during the whole year, foreseeing that I might have to leave America.

My pedestrian excursions of the last year had given me a relish for these rambles; I had become convinced that they were both easy, useful and full of pleasure, while they afforded me the means to study every thing at leisure. I never was happier than when alone in the woods with the blossoms, or resting near a limpid stream or spring, I enjoyed without control the gifts of Flora, and the beauties of nature. I therefore resolved to undertake this year longer journeys before I left America, where I foresaw that I could not remain to advantage, as I often threw my eyes towards Greece and Asia, as another field of exertions and discoveries.

My first journey in 1804 was in the State of Delaware, which I crossed lengthways from North to South, returning by the Western shore of Maryland. I travelled 300 miles on foot in May and June. My friend Col. Forrest had given me Letters for Mr. MacLane, Senator, and Dr. Tilton, both of Wilmington, who gave me a friendly reception, and furnished me with circulars for their friends through the State, whereby I was treated with great hospitality wherever I went, and began to experience the kind feelings of the Southern planters. I was even offered horses to ride, but I preferred my pedestrian mode, although I had often to wade through streams and swamps. I went through Dover, small borough, metropolis of this small State, and visited the Governor of the State at his plantation.

At Lewistown I was well received by the Rev Mr. Wilson, and went thence to Cape Henlopen, to visit the downs, the light house and the Sea shore, to collect Crabs, Shells and Sea plants. At Dagsborough Mr. Wells sent me with an Oxen wagon into the great Dismal Swamp, one of those singular Cypress Swamps of the Sea shore region. The *Cupressus thyoides* and *disticha*, two species of Cypress, are the chief trees found in it; but this is also the northern limit of many southern trees and plants, such as *Hopea tinctoria*, &c. These swamps are very different from others, the

waters are shallow, colored like beer yet clear. Roads are made into them with trees laid across.

Many geographical observations were made in this journey, where I began to study the soil, swamps, sands, downs, marls, islands, strata and fossils of those vast littoral atlantic plains which extend 2000 miles from New Jersey to Florida and Louisiana. The low sandy islands which skirt all the atlantic shores from Long Island to Yucatan, are a very peculiar feature of the physical geography of this continent, which has hardly been noticed; altho' it has scarcely any parallel elsewhere. These Islands become often peninsulas as it were under our own eyes.

On my return I went into East Maryland, visiting Easton and Chester. I dwelt awhile on the shores of the Chesapeak, and came back by Christianna and Wilmington in Delaware. This journey in the great peninsula of Chesapeak afforded me many rare and new plants with other natural objects. Delighted by this success and the hospitality of the planters, I resolved to travel again through Maryland to Virginia, which I did in July and August. I dwelt a few days at the mouth of the Susquehanah or *Havre de grace* with Major Adlum, and afterwards in Baltimore, where I became acquainted with Dr. Crawford, Dr. Smith, Mr. Dncatel, &c. I herborized with the

gardener Booth and discovered some new or rare plants. Dr. Crawford took me to his plantation and from thence I pursued my way to Washington City.

Mr. Law invited me to dwell with him. I was introduced to the President of the United States, Jefferson, for whom Mr. Logan, Senator of Pennsylvania, had given me a letter, and who invited me to visit him at Monticello, where I could not then go. I was also introduced to Gen. Dearborn, Secretary of war, Mr. Madison, Secretary of State and since President, Dr. Thornton, &c. There was then at Washington a deputation of Ozages, a native nation of Missouri, belonging to Louisiana which the United States had just acquired. They gave in public their national dances, which I witnessed with surprise and pleasure. *Pauska* or white head their chief, gave me a good vocabulary of their language by the help of the interpreter Mr. Chouteau, and he was desirous I should come to his country.

I collected many rare and new plants at the falls of the Potowmak. I went to Alexandria to visit the herbal of Hingston, who gave me several rare plants. The heat becoming oppressive I returned to Baltimore and Havre de grace by a different road. I studied the fishes of the Susquehanah and Chesapeak bay, by going to fish with Adlum. I returned to Philadel-

phia by the hilly road, visiting in the way Dr. Darlington and Mr. Jackson. There was no yellow fever in Philadelphia this year, yet I did not tarry there; but leaving my collections, I undertook a third journey to the west and north-west, in the Allegany mountains, still alone and on foot, by small stages of 10 to 20 miles a day. I only once tried my speed on a good road and went 32 miles. I often had to pass through unhealthy spots; but my sobriety and regular exercise kept me in good health.

I went to see again Mr. Marshall at Westchester, and visited with him the singular magnesian rocks, where alone grows the *Phemeranthus* or *Talinunteretifolium*. Thence I visited Dr. Muhlenberg at Lancaster, perused his herbal and herborized with him. I pushed as far as Columbia on the Susquehanah to study the fishes, and shells of this river. After returning to Lancaster by the range of hills to the North, I went to the mountains Ccnewago a continuation of the Lehigh mountains and first range of the Allegany, altho' primitive. I went through Ephrata and Holmesburg, visited the Iron mines in the mountains, and then Harrisburg.

At the water gaps of the Susquehanah I entered the real Alleghanies: the river runs through four ranges of mountains after the mouth of the Juniata, as if it had cut through them, since it flows on rocks

in narrow glens which it fills entirely. Those mountains bear collectively the name of Kitaniny, but each range has besides its own name. The fourth and highest is called Peters mountain. I crossed them all to study their geology fossils and plants, but returned by the river road. Beyond, the mountains and country were then nearly desert, therefore I took an eastern road through the mountains, and went to Reading by New Lebanon.

At Reading I met Mr. Varderschot and came to Germantown by Norristown, crossing several ranges of mountains and hills. This journey of 300 miles, and the foregoing of 700 made already 1000 miles of pedestrian travels this year, and my fourth journey in the Alleghanies of the river Delaware in October increased it to 1200 miles. I went to Easton at the confluent of the Delaware and Lehigh, by Doylestown and across the hills and mountains.

The Lehigh mountains are primitive and a continuation of the blue Ridge, becoming the Schooley mountains in New Jersey, the Delaware runs through them in a water gap below Easton. From Easton where Mr. Sitgraves a friend of Horticulture received me well, I went to Bethlehem to visit Mr. Vanvleck and to Nazareth to visit the college, museum and herbal of the moravians. Passing afterwards into New Jersey, I crossed the mountains of that state

to visit *Hope* another moravian settlement, Mr. Kampmann and his herbal. From hence I went across the mountains to the great water gap of the Delaware, where the river cuts through the Kitaniny mountains, following those mountains westerly, I returned by the wind gap, and through Easton to Philadelphia by a different road.

My last excursion this year was a walk to Wilmington in Delaware to visit my friends there. But on my return I received letters from Europe which changed my plans, and induced me to leave America: although then several of my friends wished to detain me, and made me several offers of employment, not quite to my taste. I had once hesitated however when I was told that I might be admitted as Botanist in the expedition which Lewis & Clark were then preparing to survey the Missouri and cross the Oregon mountains. The dangers of this long journey would not have prevented me to join it; but the difficulty was to be admitted as Botanist or learned Surveyor: it appears that Wilson who wished to join the party as Ornithologist or Hunter, could not obtain the permission. The same might have have happened with me; but I did not apply: this journey did not promise any reward, while I had the offer of a lucrative situation in Sicily, a country new to me.

My brother who did not like America would follow me, although he had a steady

employment. We sailed in the Ship *Two Sisters*, Capt. Evans, going to Leghorn and thence to Calcuta. Our voyage began by an accident, being frozen over at the end of December at Newcastle, my brother in going ashore over the ice to shoot birds, broke through the ice, but was saved by his gun and a rope.

Cutting through the ice we reached the ocean the first January 1805; our voyage was short and prosperous, but so stormy that we often could not cook our food, or went before the wind without sails. We crossed the strait of Gibraltar thirty days afterwards, and in thirty-six days were on the shores of Italy. But there awaited us another misfortune and a kind a shipwreck. Our Captain not knowing the entrance to the Port of Leghorn, went to seek it too far north, when a south-west storm threw our Ship on the bank of Meloria which forms the outer harbor. We lost there our false keel, our rudder and boat; but by cutting a mast the Ship was lightened and the surf made us pass over the shoal without further damage.

A quarantine of forty days was put upon us without cause, which we ought to have spent in the roads of the outer harbor; but owing to our accident, we were allowed to ride at the end of the mole well watched, and to see there our friends or at the Lazaretto; where my mother and sister often

came to see us. I spent this time of leisure in arranging my plants, drawing the new species, writing my travels and letters. I had brought a fine collection of plants, seeds, shells, minerals, &c. My herbal contained nearly 2400 species and 10,000 specimens. I sent many to the Professors Savi of Pisa and Radi of Florence, who gave me Italian plants in exchange.

Landing at last in March I prepared myself for my new voyage to Sicily; but I hastened to herborize south of Leghorn at L'Ardenza and in Montenero, where I collected many fine plants, and even new ones, *Polygala flava*, &c. In May I sailed for Palermo in an Austrian Trabacolo; while my brother remained, and went soon after to France with our mother and sister. Mr. Lanthois was then at Lisbon, but soon after came to Sicily, and in a voyage to Cette was wrecked on the Island of Sardinia.

Our voyage to Sicily was happy, we coasted Tuscany, the Island of Elba, Pianaria, &c., were in sight of Corsica and Sardinia. The Island of Ustica near Sicily was next in sight, whence we sailed towards Mount Pelegrino north of Palermo, and arrived there eight days after our departure; but were compelled to ride a quarantine of twenty days in the mole, because there had been the yellow fever in Leghorn one year before!

CHAPTER III.

Ten years residence and travels in Sicily.

My first impressions of this lovely Island were delightful: arriving in the month of May, the air was embalmed by the emanations of orange blossoms, carried far at sea in the night by the land breeze. The mountains were smiling with flowers and verdure, they invited me to climb over them. The view of Palermo and the bay is very fine, although not quite equal to that of Naples with the smoking Vesuvius.

Here I was then, in Sicily the largest and finest of the Islands in the Mediterranean: a residence of ten years made me perfectly acquainted with it and its natural productions. Few learned travellers can boast to have so long studied Nature in that lovely spot. It was the best epoch of my life. The events of those ten years might afford materials for a romance: it will have partly that character in my private memoirs or biography. Here I must confine myself to my travels and learned researches.

Sicily might be described in a few words by saying that she offers a fruitful soil, delightful climate, excellent productions, perfidious men, deceitful women . . . such is the outline of her picture.

Mr. A. Gibbs, Consul of the United States received me well; he was also a

Banker and merchant: I became his Secretary and Chancellor. I dwelt with him in a palace till 1808, when I took a house of my own and became a merchant, having made a small fortune in his employ within three years, and giving up my situation to my brother who came to join me in 1807.

Shortly after my arrival, political events made Sicily the residence of the Court of Naples, and broke afterwards all our communications with Italy and France. This threw Sicily into an unusual position, and into the dependance of England. Our trade became confined to England, America, Spain, Barbary, Sardinia, Malta and the Levant. The produces of the Island fell to a low rate: it was by trading in them that I acquired my first personal fortune, as well as by discovering in the Island several new drugs and sources of trade.

Such were the squills, rosemary, wormwood, bay leaves, &c. I established a manufacture of prepared dry Squills on a large scale: the Sicilians were wondering at me for this, as they made no use of them, and fancied they were a new tinctorial article, which I let them believe. I procured the fresh Squills at one dollar for 100 lb. or even less, and I sold them prepared, cut up and dried to the Americans and English as high as ten dollars for 100 lb. I sent them also abroad on my own account and have sold some in England, America and Russia,

as high as twenty to thirty dollars the 100 lb. I manufactured nearly 200,000 lb. in a few years, until the Sicilians learned to imitate me and share my profits. It is then to me they owe this new branch of trade and many others.

In 1805 my first excursions were in the districts that produce the Manna, such as Capaci and Cinisi to the west, and Misilmeri to the east of Palermo. I visited also Monreale to the south and Termini, twenty-four miles east, two small cities joined to Palermo by good carriage roads. This capital having a population of 200,000 souls was always my central residence: its situation is delightful, being surrounded by gardens, country seats and mountains.

In 1806 I began to herborize in January when the first blossoms appear, and last till June: while the dry season from July to October is much less blooming. I visited the mountains and villages of the neighborhood, the palaces and gardens, above all the Botanic garden directed by the Professors Tineo and Bartolota. I collected many plants, minerals and fossils. The productions of the sea, fishes, mollusca, shells, &c., invited also my attention and I drew them all gradually as I procured them.

I became acquainted with the Botanist Bivona, the Conchologist Poli, the Naturalist Chiarelli, the Astronomer Piazzzi, and several other learned men. I found in the

public Library the famous work of Cupani, *Panphyton Siculum*, a work so rare that only three copies are said to exist: it has nearly 700 plates and 1500 figures of Sicilian plants with a few animals. I had a copy made of it for me on oil paper at great expence: I proposed to publish it again and had 120 selected plates of it engraved at my expence. I increased my library and procured all the works relating to Sicily even in manuscript.

The flora of Sicily is rich, it appears to form a link between Europe and Africa. I found many plants of the flora of mount Atlas of Desfontaines and of Numidia by Poiret, as well as Grecian and Spanish plants. Many new or rare plants fell also under my observation, which have since been described by myself or Bivona.

But the sea offered still greater wealth, nearly 400 species of fishes, with shells, molusca, zoophytes and sea plants without number, of which one third or one half were new or badly described. I was delighted to glean in such a rich and novel locality, and I neglected sometimes my concerns for this new study. At last I employed children to pick for me all what the waves threw on the shore, and fishermen to bring me the offals of their nets. Thus I procured a crowd of precious and rare objects, from microscopic shells to huge Pinnae two feet long. Many new species

of Cephalopods, Crabs, Tethyas, Medusas, &c., were added. I began to become convinced of the existence of polystome and porostome sea animals. As to large fishes from three to ten feet long, I paid the boys who came to tell me of their arrival in the fish market, where I hastened to go and draw them on the spot. It is thus that I saw some very rare fishes, or even some reserved for the king.

My first journey in the island was to Cefalu and Tusa 70 miles east of Palermo, which I performed on mules, as the carriage roads extend only from 24 to 40 miles. This was a commercial journey to load with oil an American ship; but I made it subservient to Botany and Mineralogy.

The second was to Termini, 24 miles in a carriage, to load two ships with wheat.

The third was to the west and longer, I went in a litter to *Marsala* and *Trapani* to purchase Barilla. Crossing the mountains of Palermo to *Partenico*, I went through *Alcamo* to the ruins of *Segesta*, and reached *Marsala* by a road nearly desert, altho' very fruitful. The wine factory of Messrs Woodhouse drew my attention; they have attempted to imitate Madeira wine and have succeeded, altho' I believe they spoil the good wines of Sicily instead of improving them; yet they have made a fortune by it.

Following the sea shore I reached Tra-

pani a city in a peninsula, distinguished by salt works, coral fisheries, cameos and alabaster manufactories. Thence I ascended mount Eryx or St. Giuliano once a famous shrine of Venus Erycine, and I returned by Segesta and Alcamo bringing many plants and minerals, the fragrant *Ornithogalum arabicum* which I introduced in gardens, &c.

In 1807 I went again to Trapani to load a ship with Barilla, going by Alcamo again in a litter, but I returned by the way of *Castellamare, Cinisi, Carini, &c.*, by the sea shore. Afterwards I undertook in company with Mr. Winn a journey to the south shore, also in a litter.

This was quite a scientific journey, we went for forty miles on the carriage road, and then over mountains, valleys and deserts to Girgenti, the ancient Agrigentum, where we remained some days, visiting the ruins, the sulfur mines, and the clay volcano of *Macaluba*, a remarkable site which convinced me of the past existence of many such volcanos in Sicily and elsewhere. We went afterwards to Palma and Licata, where Mr. Winn sailed for Malta, and I returned alone by a different road thro' the centre of the island.

Passing by the cities of *Castrogiorani* and *Caltanissetta*, I visited many sulfur mines and mountains, collecting many plants &c. I went unarmed as in all my journeys;

altho' travellers are frightened with stories of robbers, I never met any in a band, and they seldom attack those they know without money and weapons to defend it.

In 1808 my excursions were confined to *Cefalu*, the forrest and mountain of *Bu-sambra*, &c., where I went to herborize with Bivona. At the end of this year I established myself in trade and became independent. I applied myself then in earnest to write a Flora and Natural history of Sicily, buying all the curiosities brought to me.

Having been prevented in 1807 by the want of communication, to send to Paris my supplement to the Flora of North America of Michaux, which my friend Turpin had induced the publisher Levrault to publish: I sent an abridgement of it, or the N. G. and new species to Dr. Mitchell of New York, who published them in his medical repository, and this paper was afterwards translated in French by Desvaux for his Journal of Botany. I sent also to Dr. M. an essay on the plants naturalized in the United States which was published, and some other tracts which were not.

In 1809 I began to print at my expence my first work, which however, delayed by my journey to Etna and my subsequent sickness was only published in 1810. It was chiefly on many N. G. and new

species of animals and plants of Sicily with twenty plates, and above all on new fishes. I wrote it in Italian thro' prudence rather than in French. Prudent considerations had already induced me to add the name of *Schmaltz*, my mother's name, to my own and to pass for an American.

My great journey to mount Etna, which I had long wished to explore, took place this year in July and August. It had been in eruption in the Spring; the summit, the snows and the flames of this huge volcanoe were in sight from my house, altho' 120 miles in a direct line, and 150 by the roads. I departed after the great holydays of Santa Rosalia, with two mules, a muleteer and a servant. The whole costing 2 dollars a day.

I went towards the mountains Nebrodes or Madonie in the centre of the island and in full view from Palermo. I took two guides at a village to lead me to the summit. After crossing the woods, we entered the region of pasture, where Sheperds dwelt with many flocks. The highest summit was a vast funnel similar to the crater of a volcano, and with an abyss or cave. I deemed this one of the craters that have produced, in remote times, these calcaro magnesian mountains, as the macaluba has produced hills of clay, and mt. Etna Lavas and Basalts, Clays and Limes. I had already surmised the true theory of volcanos, which Etna, the Azores and N. America have

confirmed, which Patrin, Davy, Humboldt, &c., have announced: since the surface of the earth appears encrusted with volcanic or eruptive productions, or solid emanations born under the waters.

These mts. afforded me a rich harvest of rare plants. I should have wished to explore them further; but there was some danger. A solitary robber, but well armed and mounted on a mare as usual in Sicily, who levied contributions on the farms and sheep folds by the simple dread of his name, came to our Sheperd's cottage: he was called a *Santantoninaro* because he asked corn and cheese in the name of St. Ant-nine! It was needful to give him up the best place in the cottage. As I travelled as a Botanical Physician I could meet him without danger. He gave us an account of his pranks in the mt. of Devils as he called Etna. In the night wolves and foxes surrounded us, and took away some sheep and goats in spite of the dogs. The fear of robbers and wolves compelled me to descend the mts., but by the south side to *Pozizzi*, and *Pe'ralia* at the foot of the mts.

Many towns and villages were visited on my way to Etna. *Traina* which is said to be the oldest city of the island and has yet cyclopiian walls. *Nicosia* which has sepulchral grottos now inhabited like houses. It has also a remnant of a Catalan or provençial colony, that has preserved its language of which I took a vocabulary.

Many mines or quarries of Agath, Jasper, Metals, &c., invited my attention. I found some fine golden christsals shaped like flat crosses, a kind of golden mica, between thin leaves of black schist. Clays and marls of all colors abound in that mountainous and broken country, forming huge masses like those of Macaluba. I saw some large fossil bones found in marly hills which appeared to be the vertebra of some whale or cetaceous animal.

At last I reached the foot of Etna by the western side, and nearly went all around it to the N. E. by the south. I visited *Bronte* and several old craters near it containing specular iron. I began to sketch the views of Etna of which I completed forty, and to collect all its volcanic productions. I went thence to Catania by Aderno and dreadful roads over streams of Lava.

I remained some days in Catania to visit the curiosities, the antiquities, the museums of Biscari, Giceni and Recupero, the University and learned men. I became acquainted with Ferrara, Recupero (the nephew of the old one and Editor of his history of Etna) Malavigna, &c., who all made Etna their study. I went afterwards to *Jacireale* visiting on the way the Port of Ulysses, the basaltic rocks of the Cyclops, where I collected many Zeolites and African plants, I went to them in a boat.

From *Jaci* I ascended Etna, to *Nicolosi*,

where the brothers Gemmellaro received me well, furnishing me a guide for the desert region, the volcano of Montenuovo, and the summit, with the key of the azylum which they had built there, at the foot of the cone, a cottage of lavas.

It was the 2d August 1809 that I reached that cottage, after having crossed the woody region, that of plants, and the last naked region, covered with snow for ten months in the year: banks of it were yet visible then. A sudden and violent storm of hail assailed me in passing it.

Next day 3d of August before break of day, I was climbing the cone of the actual crater over loose stones and ashes, in order to enjoy the sublime view of sun rise, the burning crater, and the whole of Sicily at my feet! This sublime view has often been described, but it is difficult to express it properly. I enjoyed it entirely in spite of a gale of wind compelling me to use precautions. But the sight of the smoking crater, where there was another smaller cone at the bottom, in eruption and with boiling lava, produced a sentiment of horror rather than pleasure. I had to lay down on the brink of the crater to see well the inside. I saw afar the mts. of Calabria, Ids. of Lipari and Malta—the highest mts of Sicily appeared now as mere mole hills.

With some danger I descended the smoking cone with many fumaroles, and skirt-

ing to the east, I discovered the ancient vast crater of Etna, unnoticed by many travellers, which is now called the *Valle del Bove* (Ox valley); it is near circular 15 miles round, sloping and broken to the S. E. raised to the west against the actual smaller crater and cone. From Nicolosi when I returned I crossed the whole mountain, chiefly through the desert region, as far as Linguagrossa to the N. E. to see the last eruption. I visited in the way the famous gigantic Chesnut trees of Etna, they are 3 or 4 instead of a single one. I thus skirted part of the ancient crater and came within its eastern breach.

Near *Linguagrossa* I saw the last stream of Lava, yet burning hot, and hardly arrested, threatening as yet although nearly solid. It was only two months since the eruption of a new crater on this side. Afterwards I descended again the mt. along the calcareous hills, which covers older produces of the volcanoe, and appears to be also a production of it. The limy mud ejected by the volcanoe has run over Basalts and Lavas imbedding some marine shells before becoming a solid hill. One of my mules was already loaded with minerals from Etna. I had also bought in Catania a collection of 600 specimens to be sent by sea.

Leaving this sublime volcanoe of 150 miles in circuit and 12000 feet high, I

visited the antiquities of Taormina, the silver mine of Nisi, and a mineral spring on the sea shore. Following thus the N. E. shore of Sicily I reached Messina, where I rested awhile, became acquainted with Swainson, Arrosto, &c., assisted at the great festivals of the 15th August or Virgin, which lasts three days like those of Sta Rosalia of Palermo, and Sta Agatha of Catania. Messina was in possession of the English army, and the army of Murat opposite in Calabria; however I visited the Cape Peloro or Faro, and herborized there in the midst of the tramels of war.

From Messina I returned to Palermo by the coast road, instead of the mts. going first to Melazzo and next to the ruins of Tyndarus. At *Patti* instead of sleeping in the town I had the imprudence to lodge at a tavern or *fondaco* near the sea, unhealthy spot, where I think to have imbibed the gems of a violent fever, that declared itself on my reaching Palermo.

Fearing these unhealthy spots I left the shores after awhile and penetrating in the mts., I visited several places, but returned to the shores at *Cefalu*, whence I soon reached my home at Palermo, bringing a beautiful collection of minerals, volcanic objects and plants.

A dangerous disease appeared in a few days, a malignant bilious fever, of which I almost became the victim. Recovering

after a long convalescence, it appeared as if I was brought again to life. It is almost the only serious malady that I have experienced through my excursions, thanks to a good constitution, and a rigid sobriety.

My zeal for travels was rather checked by this misfortune, and the next year 1810, I merely undertook short excursions in the mts., near Palermo, and the mt. St. Calogero near Termini with Bivona, chiefly for plants.

Instead of long travels, I began to publish my observations on Sicily, my N. Genera and species, and the first part of a statistical description of Sicily, the physical statistics, a work written in common with Ortolani, a mineralogist, but printed at my expence. But the second part or moral statistic containing civil geography, the towns, &c., was suppressed; the Censors of the press not having permitted to print it, owing to the presumed danger of the threatened invasion of Sicily by the French.

Thus thwarted and compelled to silence for some years, I put in order my travels and discoveries. I had bought from the heirs of Minasi, his splendid Portfolio of colored views of Etna and Calabria, which had never been published, and that I proposed to send to England, with the *Panphyton Siculum* and my own drawings to be sold or published. I began a correspondence with Sir Joseph Banks and Sir J.

Smith, president of the Linnean Society: this last did encourage me; but when I sent him on trial the figure of my *N. G. Yalomus*, with some new fishes and botanical monographs, he could not insert them in the memoirs of the society, which again discouraged me. I never could make a bargain with the London printers, nor succeed to publish my works and travels in England.

Once partly disgusted with Sicily, or rather the Sicilians, I offered to Banks a plan to explore Australia in following all the shores and rivers by land, with boats carrying the provisions and collections. I asked to join such a distant voyage; but it was not deemed practicable, altho' it is evidently so, and much easier than the gradual explorations that have been made separately.

Swainson a botanist and naturalist, belonging to the Commissariat of the English army, came to Palermo when the army moved there, and became my friend and companion in excursions. He had in 1810 supervised the printing at Messina of my *Index of Sicilian Ichthyology*, with several *N. Sp.* and figures.

In 1811 I studied Archeology for which the ruins of Sicily had given me a taste, as well as Geology, Volcanology, and Mineralogy: I formed a pretty Cabinet and set my Herbarium in order. I wrote my *Plaxo-*

logy or history of Sicilian crabs and crustaceous animals, of which I only published fragments in 1814. My herborizations were confined near Palermo, I surveyed and took the plan of the neighborhood within 15 miles around. I employed a painter to sketch all the remarkable sites and buildings: I published some of them, such as the botanic garden.

In 1812 I visited the Greek or Albanian colonies near Palermo, *Fiamu de greci*, *Sta Cristina*, &c., in this last the Cottages are built of rough agath stones. Also the great Convent of Benedectines in the valley of St. Martino S. of Palermo, where dwelt Padre Russo a botanist. I consulted their library and museum, as well as all the public libraries of the city, to seek rare books on America and Sicily.

It was needful to be cautious, I was under the surveillance of the police like all the foreigners for awhile.

Swainson went often with me in the mts., he carried a butterfly net to catch insects and was taken for a crazy man or a wizard. As he hardly spoke Italian I had once to save him from being stoned out of a field, where he was thought to seek for a treasure buried by the Greeks.

Prof. Tineo died, the chair of Botany in the University became vacant. It was secretly devolved to his son, in spite of the rules which prescribed a concourse, and

that Botanical writers should be preferred. Bivona and I were candidates as authors; but by delays and subterfuges the examination took place only three years afterwards, when the young Tineo became of age and was preferred to Bivona, as I withdrew, disgusted with this obvious intrigue.

In 1814 I became also a candidate for the chair of Agriculture and Economy to see how the examination or concours were managed; but was not surprized to see that a Clerk of a Minister of state was preferred to me and others.

A peaceful revolution took place in Sicily in 1813 by English influence: the constitution was revised, improved and the authority of the parliament extended. One of the new boons was the liberty of the press, which induced me to project a scientific journal for 1814.

Meantime the plague was in Malta, and it was feared would reach Sicily. Many useless precautions were established, which added difficulties for travelling. I went however to Misilmeri, Marineo, Cutrano, &c., to seek for a suitable site to establish a Brandy Distillery, which I located at Misilmeri, for a society of gentlemen, introducing the use of improved stills and furnaces on the plan of Chaptal. Wines were then very cheap, and I made very good Brandy, equal to that of Cette and Spain, without ever tasting a drop of it,

since I hate all strong liquors. This prevented me from relishing this new employment, and after residing two months there, I gave up the management of it.

During 1814 I published monthly my Cyclopedical Journal of Sicily, which succeeded well, but drew upon me persecutions and displeasures. The last number was detained by the printer, altho' he was my debtor. I had to begin a law suit of which I never saw the end! I published also two other works in French, my principles of Somiology, and the outlines of my discoveries. My excursions went no further than Belmonte, Solanto and Monte Gallo.

This year 1814 had given peace to Europe, our communications were opened with Italy and Continental Europe. I availed myself of this to open an intercourse with Tenore of Naples, Viviani of Genoa, Bertoloni of Bologna, and the Professors of the museum of Paris. These last invited me to send them the fishes of Sicily. The Academy of Nat. sciences of Naples was the first to send me a Diploma of Honorary member. I began exchanges of plants with Tenore and others. I extended my commercial relations, and proposed to myself to travel again out of Sicily, where I had so long been detained.

It was in this view that I made preparations in 1815 to leave the Island, and that I published my *Analysis of Nature* in

French: a work intended to make me known in France, where I proposed to join my mother then in Paris. But the events of the hundred days made me fear new wars and troubles; as I am a peaceful man and was seeking a free scope, I had to put off my return into France. But as my preparations were made, and the disgusting injustice I experienced in Sicily, made me anxious to leave it, I threw again my eyes towards the United States, and undertook a commercial voyage there, with nearly all my fortune and collections.

Mr. Gibbs was sending a Ship to New York, the *Union of Malta*, Capt. Mifsud, I took passage in her, with a large parcel of drugs and merchandize, besides 50 boxes containing my herbal, cabinet, collections and part of my library. I took all my manuscripts with me, including 2000 maps and drawings, 300 copperplates, &c. My collection of shells was so large as to include 600,000 specimens large and small. My herbal was so large that I left a part of it.

Near the period of my departure, Recupero published in Catania the first volume of the history of Etna, where he added my *chloris Etnensis* or the four florulas of Etna written for him in 1813.

My travels in Sicily include nearly 1600 miles of excursions; but few were pedestrian, except in herborisations; since there beggars alone travel on foot, and travelling is cheap either in litters, or on mules.

CHAPTER IV.*My Shipwreck and travels till 1819.*

This voyage from Palermo to New York was long and unfortunate: our ship did not sail fast, and we were over 100 days on the way, including our stay in Gibraltar and the Azores. We sailed at the end of July, and only reached Gibraltar in 15 days, after having sailed along Sicily and Sardinia, gone near Bona in Africa on a tack, and followed the Spanish shores from Cape Gates to Malaga and the strait.

We often came close to several towns and the island Alboran, in our tacks. At last we entered the strait with a good easterly wind, which might have sent us 600 miles forward in three days, and spared perhaps our mishaps; but we spent these three days of fair wind in Gibraltar, where the Ship was to stop on some business. However this allowed me to land in Spain, to visit the famous mt. Calpe and to herborize on it.

Reaching the ocean, we had for awhile favourable weather with many calms, that allowed me to study again the fishes and molusca, to catch turtles, &c. But arrived near the Azores, we fell into one of those dreadful squalls frequent there. We nearly perished in it, a Brig in sight disappeared, our Ship was thrown on the beams ends, and merely escaped and righted by

losing two masts; but thus dismasted we had to seek a harbor in the Id. of St. Michael. Skirting the S. side we reached *Punta Delgado* the metropolis, where we were well received by the British and American Consuls. I landed with the passengers and remained ashore a few days; we were invited to several pleasure parties in the country, which allowed me to observe the volcanoes and plants of this island; it is entirely volcanic, recalling to my mind Etna with its numberless craters.

St. Michael is the largest of the Azores, which are the fragments of the Atlantic Id. according to Bory, therefore very interesting for historical and geological views. The best description is by Prof. Webster of Boston. But the Azores, Canary and Madera ids. formed only the little Atlantis, while the great Atlantis was America! and Otolum near Palenque the metropolis of it probably.

Mr. Reid, British Consul gave me his map of the island, and some fine corals, I collected many minerals, lavas, shells, and plants, drew some fishes, and was so delighted with these Ids. that I should have wished to stop a month there.

Having quickly repaired our damage as well as we could, we resumed our voyage; but were nearly two months on the way, being baffled by violent storms, in one we had to throw our guns overboard. We had

also to contend against the gulf stream which our Maltese sailors did not know, and crossed improperly. Thus when we reached soundings we were nearly out of provisions. But here a greater misfortune awaited us.

The first land in sight was Cape Montauk at the end of Long Id. Westerly winds baffling us yet, we resolved to go to Newport for food and water. We were near it having taken a pilot in the way, when a sudden N. E. wind repulsed us, and being favorable for New York, we turned back towards it through the sound. It was the 2d November 1815, a dreadful day for me. The weather was foggy, at 10 o'clock at night we ran anaware upon the Race rocks, which lay under water between Fisher Id. and Long Id. The wind and tide made us pass over, but we lost our keel. Our Ship filled fast and settled down on one side; but without sinking, being made buoyant by the air of the hold.

We had merely the time to escape in our boats, with some difficulty; the long boat was too heavy to be hoisted, but floated as the Ship fell, entangled in the rigging for awhile. Having left the wreck we rowed towards the light house of New London then in sight, and reached it at midnight: thus landing in America for a second time, but in a deplorable situation.

I had lost every thing, my fortune, my share

of the cargo, my collections and labors for 20 years past, my books, my manuscripts, my drawings, even my clothes . . . all that I possessed, except some scattered funds, and the Insurance ordered in England for one-third of the value of my goods.

For some days after I was in a state of utter despair. I walked to New London in Connecticut. I was flattered with the hope that the floating Ship could yet be saved; but as soon as the masts were cut to tow it easier, it righted and sunk, after throwing up the confined air of the hold by an explosion. Some hearts of stone have since dared to doubt of these facts or rejoice at my losses! Yes, I have found men, vile enough to laugh without shame at my misfortune, instead of condoling with me! But I have met also with friends who have deplored my loss, and helped me in need.

Deprived of my last hope, I went to New York thro' Newhaven, partly in the stage and partly on foot. I found there new friends. Dr. Mitchell took some interest in my behalf, and presented me to many learned men of New York, Bruce, Bogart, Pascalis, Clinton, Hosack, Eddy, &c. It was needful to do something until the recovery of the Insurance. I accepted the offer of Mr. Livingston, who induced me to pass the winter at his country seat near Clermont on the Hudson, as teacher of

Italian, drawing and botany for his three daughters.

I went there in December by the stage, crossing for the first time the mts. Mattawan or Highlands, passing thro' Peckskill, Fishkill, Poughkeepsie, Rhinebeck, &c. Clermont is a village over 100 mile N. of New York and 3 miles from the Hudson, while Mr. Livingston's seat is on the banks of the river. Snow was on the ground, I went from the village in a sledge. I found there a fine library which employed my leasure hours. I began also to write over again my travels and recollections. The Catskill or Kiskanom mts. were opposite in their snowy winter dress, yet I drew their views. I thought to be established in this retreat till the spring; but in the middle of winter, the health of Mrs. Livingston compelled the family to remove to Charlestown in S. Car. Not wishing then to go so far, I returned to New York partly in sledge, and soon after went to Philadelphia to see my former friends.

In the spring I began a new Herbal, and projected new travels, in which Collins encouraged me. In fact I returned to New York in the stage by a new road, thro' Newhope and the hills of New Jersey. I joined Dr. Mitchell and Capt. Partridge in their visit to measure the Neversink hills, S. of the Raritan bay in N. Jersey: we landed also at Sandyhook, a sandy peninsula,

where are the light houses of New York, and I found there many plants, shells and fishes.

Wishing to explore the Hudson, I went to Albany in the Steamboat, admiring the fine sites and shores of the river. In that city I became acquainted with Beck, Green, Dewitt, &c. I proceeded to Waterford and the Falls of the Mohawk at Cohos: thence again by stage to Sandyhill, where was then Mr. Milbert. Here I took up again my old method of botanizing on foot, and thus visited the four falls of the Hudson, Baker's falls, Glenn's falls, Hadley's falls, Jessup's falls, drawing their views and maps. I visited Lake George, and found there many new fishes and salamanders, shells and plants. I went also to Saratoga and Ballstown, to visit the mineral springs; at Saratoga the main spring has formed a volcanic cone and crater on a small scale.

Entering afterwards the Luzerne mts. W. of Lake George, or the south range of the Saranac mts. I went as far as the river Sacondago, west branch of the upper Hudson. These mts. are primitive, they form to the N. W. the boundary of the plains formerly a channel of the sea, uniting L. Champlain to the Bay of New York; the other boundaries are the Kiskatom mts. to the west, Mattawan mts. to the S. and Taconic to the east. I went next to Whitehall in the stage, thro' the old glen. There

I took the steamboat, landing in Vermont and visiting Ticonderaga, with the N. end of L. George.

Having thus surveyed, explored, drawn and mapped nearly the whole course of the Hudson, I returned by the east side of it to Troy in stage, and thence to New York by steamboat. I was well satisfied with this journey, which made me acquainted with a pittoresque part of the U. States, and afforded me many plants, shells, fossils and minerals.

Being returned to New York, I continued my herborizations on Long island and in N. Jersey. I became a member of the Philosophical society, I prepared my observations for the press, and took again courage, overcoming the despondency caused by my shipwreck. I had recovered my insurance, begun again some commercial undertakings, sent a cargoe to Sicily, and I had the intention to settle awhile in New York in trade; but several unfortunate events in 1817 compelled me to change my plans. A perfid Sicilian whom I thought my friend was chiefly the cause of these new losses; the bankruptcy of a house in New York, law suits and other troubles, combined to thwart my industry.

In a journey to Philadelphia on business, I met my old friend John D. Clifford, then settled in Kentucky, who induced me to visit the western states next spring. Mean-

time I was one of the original founders of the Lyceum of Natural history in New York, I published many fragments and discoveries in the monthly Magazine as a museum of Nat. Sciences. I translated the flora of Louisiana of Robin, as a supplement to Pursh's flora and published it with additions. I began many new manuscripts, communicated several Essays to the Philosophical society and the Lyceum, gave some lectures in it.

My travels this year, were 1st to new Rochelle and Mamaroneck E. of New York on the sound. 2d. To Fishkill where I met with Drs. Knevels and Torrey, with whom I herborized on the mts. Mattawan, ascending the highest on both sides of the Hudson. I went next with Knevels to the Kiskatom mts., landing at Catskill, and ascending the mts. by two sides the N. and N. E. I explored well these mts. and brought from this journey a large collection of new and rare plants. 3d. To Flatbush and Gravesend in Long Island. 4th. To Jamaica, Flushing, Rockaway and Oyster bay on the same Id. These excursions were made from Brooklyn where I lived awhile; but in winter came back to New York.

In 1818 I departed for my great western tour of 2000 miles. In May I went to Philadelphia and Lancaster, where I left the stage to cross the Alleghanies on foot

as every botanist ought. I went thro' Columbia, York, Chambersburg, Bedford and Greensburg to reach Pittsburg, crossing many successive ranges of mts. and hills, which form the Alleghanies of Pennsylvania. Their geology and botany was very interesting, and I was much surprized to find that these chains, are mere paralel branches of a great table land united in the north, and whose central axis is here the Backbone mt. I collected many rare plants, chiefly in the blooming valley of Loyalhanah, in spite of thunder storms and rains.

Near Pittsburg where I rested awhile, I visited the Coal mines, met by chance Mr. Aigster, collected plants and shells. Messrs. Cramer and Spear, Booksellers, contracted with me to make a new map of the River Ohio, with all the Islands, rapids, hills, villages, &c., at 4 miles per inch. They also signed a contract to publish my travels in America and to furnish me 500 copies for my copy-right; but they have never fulfilled this last contract to this day! which should have required a law suit to compel them.

In company with Mr. Malin and other French gentlemen going to Illinois, we bought an Ark or flat covered boat, and floated slowly down the river, stopping every night. I was then at leasure to survey and explore, we had a smaller boat to land where we pleased, botanize and buy provisions. We had for guide as far as

Gallipoli, a gentleman of that town, who was returning there with his family in another Ark, which was lashed to ours. Thus we avoided many accidents, and I began to study the fishes which we caught or bought, making drawings, &c.

We went by Steubenville, Wheeling, Marietta, &c., without stopping long; but we tarried two days in Gallipoli and two in Vevay, where I noticed the swiss vineyards and many fossils. We went over the rapids of Letart without danger, the waters being high; but near Neville, we hardly escaped grounding among willows where the stream threw us.

Arrived at Cincinnati, I went by land along the Ohio to Northbend to visit Mr. Short, his herbal and collection of fossils. I waited there for my Ark and proceeded to Louisville, where my old friends Messrs. Tarascon received me with open arms, and invited me to rest with them. I spent two weeks at their mills of Shippingsport at the falls of the Ohio, studying the fishes and shells of the river, of which I made a large collection, drawing them on the spot at the same time. I was surprized to find them nearly all new: this rendered my researches still more important and interesting.

After having explored the neighborhood of Louisville, I took passage in a keel boat, which was to go by day only, in order to

continue my survey of the valley and river Ohio. This was a trading boat, often stopping on the way, we visited Troy, Evansville, Yellow banks, &c.; but at Hendersonville in Kentucky I left this boat too slow, and spent some days with Mr. Audubon, Ornithologist, who showed me his fine collection of colored drawings, which he has since published in England. Thence I went to Mr. Alvis who lent me a horse to follow the Ohio by land. I made an excursion to new Harmony on the Wabash, where dwelt then the sect of Harmonists, and since famous by the vain efforts of messrs. Owen and Maclure to establish communities. I saw there Dr. Miller who had a fine herbal and gave me some fine plants: we went together to herborize in the meadows.

Crossing the Wabash, I entered Illinois and went to Shawaneetown on the Ohio; whence I made a rapid excursion to the mouth of the Ohio, returning to Hendersonville by Morgantown. Having found the horse too fatiguing, I undertook to walk back to Louisville across the barrens, which I effected in 10 days thro' Yellow bank and Hardinsburg, crossing Green R. near the mouth and Salt R. at the very mouth. This penible journey was very fruitful in plants and fossils. I crossed the high table land of Kentucky thro' barrens and deserts, meadows and knobs, I often

went 10 miles by narrow paths without meeting a house, and nearly lost myself.

Near Salt R. the table land of 300 feet is descended which with the silver hills N. of Ohio, was once one of the barriers of waters cut through by the Ohio. Two villages were springing on each side of the mouth of Salt R.: the swampy plains of Louisville begin here and are bounded east by knobby hills. I went again to my friends Tarascon, sent my fishes, fossils, shells and plants by water to Pittsburg, and went to Lexington to confer with my friend Clifford. I went thro' Middletown (where I called on my friend Bradbury) Sheperdville and Frankfort, part of the way in the coach of a pedlar of wooden clocks.

The fine museum of fossils and antiquities already collected by Clifford deserved all my attention, I spent many days in studying them and drawing the rarest. He wanted to increase it and he induced me to come and settle with him in Lexington, promising to procure me a Professorship in the University and to travel every year with me in the vacations to increase his museum and my collections. This project which allowed me to travel and explore all the vast regions of the Mississippi with a friend, and to settle in a healthy and pleasant town, met my approbation. But I had to return to Philadelphia to settle my concerns, and withdraw from trade.

As far as Washington I went in a common waggon, willing to try this new vehicle, which is too rough on bad roads. At Maysville finding the river low and the navigation impeded, I went on foot thro' the whole of Ohio by Chilicothe, Lancaster, Zanesville and Steubenville. It was near Chilicothe that I saw the first great monuments and pyramids or altars, of the ancient nations of N. America; they struck me with astonishment and induced me to study them.

At Steubenville I crossed the Ohio into Virginia, and went again to Pittsburg thro' the hills: whence I crossed the whole range of the Alleghanies for the second time, studying now chiefly their geology. I rested at Bedford to visit the mineral springs, and study the fossils. At Lancaster I took the stage for Philadelphia: where I spent the winter of 1818 to 1819, completing my large map of the Ohio R. writing my travels and discoveries, publishing a review of Nuttall's Genera, sending many fishes and fossils to my friend Swainson in England, who had returned from a voyage to Brazil and proposed exchanges to me.

With Lesueur I exchanged almost for nothing many of my fine new shells and fossils, of which I knew not the real value. Every body wanted them, but no one would pay for them, while I was since told that some specimens sold then from 5 to 20 guineas a piece in England. At this rate

I had collected 2000 guineas worth of shells alone, and 50 N. sp. of large fluvial unios. If I had been properly informed I could have realized a large sum by carrying or sending them to Europe. I sent to Cuvier and Blainville the description of 70 N. G. of animals and 50 N. G. of plants, which they have published in the *Journal de physique* in 1819.

A friend of mine Mr. Michel wanted then to form a partnership with me in trade; but I gave up trade for Clifford and the west. I even refused the chair of Professor of Chemistry which he could have obtained for me, altho' many Professors of it are less Chemists than I, because I had a greater taste for botany, zoology and geology. Yet one was lucrative, while that which I chose was less so. I obtained thus the Professorship of botany and natural history, with the addition of modern languages, with lodgings, boarding and casual emoluments.

Preparing then for my departure from the atlantic states, I sent to Clifford my library and collections which were carried at great expences to Lexington. Proposing to cross the mts. by a new road, I went in May 1819 to Baltimore in steamboat. I herborized with my friend Hayden. Afterwards I undertook to cross the Alleghany mts. for the 3d time, as a pedestrian botanist. From Frederic I went to the Coctocon mts. forming the fluvial gap of the

Potowmak R. From Harper's ferry I nearly followed that river to Cumberland, over many hills and mts. where I met many fine plants.

After visiting the Coal mines of Cumberland, I ascended the central table land of the Alleghanies, where I discovered on a peak the rare *Clintonia parviflora* or N. G. *Onyxula*. Thence I went to Pittsburg thro' Brownsville. I delivered my map of Ohio R. to Messrs. Cramer and Spear, who paid me 100 dollars for this labor. I went down the Ohio in a keel boat to Maysville. At Marietta I went to survey the ruins of the ancients town and monuments of the *Talegawis*. At the rapids of Letart I left the boat awhile to cross on foot the Isthmus in Virginia, and thus collected many rare plants. At Parkersburg I joined the boat again.

CHAPTER V.

Seven years residence and travels in Kentucky.

Arrived at Maysville I was in Kentucky, where I remained nearly 7 years. I took the stage as far as Blue Licks (thro' Washington and Mayslick) where are mineral waters of a blue color, and many fine plants. I reached soon after Lexington in a private carriage thro' Paris. The University was then in vacation, and Clifford was in the hills for his health. I hastened to meet

him there, going over the R. Kentucky, by Lancaster to the Knob hills, where we began to collect and study together the fossils of those hills. We visited Button lick and Harman lick, next Irvine and Estil springs on the R. Kentucky in the Wasfoto hills or eastern knobs; whence we came back to Lexington in his carriage by Winchester.

Then began my lectures on Natural history to a class of ladies and students, and in the spring of 1820 those on botany. I had hardly concluded them, being at the eve of a journey with Clifford in west Kentucky and Arkanzas, when he was seized with a fit of gout in the stomach, which proved fatal in a few days. This loss of an intimate and zealous friend was blasting to all my hopes and views. I ought to have left the country directly; but finding myself with all my books and collections in a fine unexplored country, where there was much to glean, having this very spring discovered two N. G. of plants near Lexington *Enemion* and *Stylpus*, I thought that I ought to explore it by myself. But instead of traveling in a carriage with Clifford, I had to return to my pedestrian excursions.

Horses were offered to me; but I never liked riding them, and dismounting for every flower: horses do not suit botanists. My first excursion was again to the Knob hills, but to the N. E. instead of S. E. and

E. I went to mount Sterling, taking its name from an ancient altar or mound, and I surveyed all those in the neighborhood. I published their description in letters to Jefferson. I entered afterwards the hills as far as the Licking R. and Olympian springs, mineral waters, with many fine plants in the vicinity.

On my return I visited all the ancient monuments near Lexington, on the Elkhorn R. &c. Then I went to the mineral springs of Harodsburg, visiting in the way Mr. Meade at his country seat, called Chaumiere, by this venerable and hospitable gentleman, where I often went afterwards; next Nicholasville, mount Pleasant a Shaker village on the Kentucky. All these places became afterwards familiar to me.

Meantime I published my Ichthyology of the Ohio R. the first Nr. of my annals of nature, as well as many fragments in the Western Review and other journals of Lexington. I had began to publish essays in Silliman's Amer. journal of Science, and afterwards in some Cincinnati journals; but other tracts of greater importance were neglected or sent back as too learned! I had sent a florule of Ohio to Atwater of Circleville for his work on Ohio, and corresponded with him for antiquities; but he quarrelled with me when he found that I was likely to take up the subject. My es-

say on Kentucky botany was published in the *Western Review*.

Bory having invited me to send him tracts for his general annals of physical Sciences published at Bruxelles, I sent him my monograph of the Bivalve shells of the Ohio waters, which he has published as well as my monographs of Turbinolites, American Roses, *Houstonias*, &c. observations on Rubiaceae, Convolvulacea, *Lysimachia*, &c. But many other essays sent him in 1821 were not published, because these annals only lasted two years.

Now I began to study earnestly American history and Archeology, with the Ethnography and Philology of the American nations. I had seen within a few years the Oneidas, Mohigans, Lenaps, Chactas, Cherokees, &c. This study led me much further than I expected, it became needful to review the whole of comparative philology and primitive archeology, in order to obtain satisfactory results.

In 1821 I continued my lecture on botany, and had many scholars for the French, Italian and Spanish languages. I had acquired many friends; but none was a Clifford to me. I often visited Mr. Clay at his seat of Ashland. I went to survey the ancient monuments on Licking R. near Ruggles, and visited many other remarkable places.

Meantime Dr. Short, botanist of Hop-

kinsville and my correspondant since 1818, when he sent me some rare plants for examination, came to Lexington on his way to the mouth of Miami to see his brother at North bend, and invited me to join him. We went in his carriage towards Cincinnati by the Ridge road, which follows a ridge of hills; passing thro' Burlington, we crossed the Ohio near North bend. We visited the Miami R. and General Harrison; I went afterwards on horseback to Cincinnati and from thence to Bigbone lick, a famous muddy volcanoe like Macaluba in Sicily, with fossil bones and mineral springs. I remained some days there to survey the place and botanize. My account of this place was since published in the journal of Geology. Dr. Short having called for me, we returned together to Lexington.

In 1822 Bradbury came to see me: he had sold me in 1817 many new plants of Missouri, and I had written a *florula missurica*, which I sent to Swainson in England, whom I fear never received it. Having sent many plants, fossils and manuscripts to Europe without receiving any answers or adequate returns, I became shy of thus laboring in vain. Ever since 1820 a little before the death of Clifford, we had sent jointly many rare plants to Brongniart, Ferussac, Sowerby, &c. This last took no notice of them: the French Savans

were more polite, and sent us objects in exchange, which fell to my lot with heavy expences of conveyance. In fact the land carriage was so heavy then, that I had to leave unclaimed in New York and Philadelphia some boxes sent me by Decandole, Swainson, &c. I received however many things, exchanged plants with Decandole, Moricand, Haworth, Bory, &c., but was gradually compelled to abridge these toils and my correspondence.

Meanwhile I continued to write for the Journals, and published 20 numbers of the *Cosmonist* in the Kentucky Gazette, upon many interesting subjects: altho' I could not make Nat. history popular. My protector was dead. Mr. Holley, president of the University despised natural Sciences, and wished to exclude them. I asked the chair of materia medica then vacant, but could not obtain it because I was not a M. D. My medical flora of the United States has proved that I was well fitted for it, and the Prof. of Chemistry was not a M. D. . . .

The paper money introduced in Kentucky in spite of the Constitution, and which soon fell to 50 per cent, became another cause of displeasure, doubling all my expences, postages, carriage of goods, &c., preventing me to travel out of Kentucky where it had its only value, and increasing the price of every thing, without increasing my emoluments. My travels

were prepared for the press; but the booksellers of Pittsburg would not print them, in spite of their special contract, owing to the general distress, and I could not go to Pittsburg to compel them.

All this combined to disgust me, and I could not travel far this year. I had to confine myself to the villages near Lexington; Paris, Versailles, Frankford, Nicholasville, Boon's creek, the cliffs of the Kentucky R. &c. The longest of my excursions was to Danville and Knob-licks, visiting the venerable Gov. Shelby near there. The big Knob-lick is a very singular spot, a large barren volcanic hill of clay, of which I took maps and drawings. Here I found a new *Pachysandra* and many rare plants.

Ever since 1821 I had proposed to publish a literary and learned journal, the *Western Minerva*: subscribers were procured, the printer had also made a contract with me, and the first number was printed; when he dared to suppress it, at the request of some secret foes of mine, who probably paid him for it. I only saved three copies of it. This may prove that even in free countries there are means to control the press and crush knowledge. I could have begun a law suit; but it was vain to struggle against bad faith and powerful foes. The main cause of this persecution, was that I knew more than they, and could not cringe. A flatterer and syc-

phant would have done better. The intrigues of the University will be an episode of my memoirs: there was little subordination among the Students, and the Professors were far from being friendly to each other.

I was advised to go and give lectures in Nashville, and I had an offer of a situation in Pulaski Colledge; but I did not wish to go further inland with my collections, and I resolved to make an effort to establish a botanic garden, or leave Kentucky. But before this to employ the whole season of 1823 in exploring the whole of the State. Thus in fact in May 1823 I undertook a long journey of two months to the R. Tennessee. A friend Mr. Ficklin had the kindness to take me half way in his coach as far as Bowlinggreen.

We went through Harrodsburg and afterwards to the mineral waters of Rochester at the foot of the Knobs. Skirting those hills as far as Cedar lick, and at Muldraugh hill ascending the table land of those hills. Green R. flows thro' this table land of central Kentucky. Beyond both, we entered near Elk lick the Limestone plains of the Cumberland R. south of another range of Knob hills, which are in fact the mere broken edge of this table land on both sides.

In these limestone plains are scattered insulated conical hills, called Pilot Knobs, because they serve as guides through the

barrens or unwooded tracts, covering nearly all those plains: these Knobs are similar to the others in geological structure being of grit or sand stone. All over the plains are found hollow funnels or basins of all shapes and sizes, from 20 to 6000 feet in circuit, from 10 to 100 feet in depth, which are, as in other limestone regions, the former submarine springs or craters, that have thrown under the sea, the limy mud which has formed these limestone strata. They are now either dry or filled with water like ponds.

Here I found myself in a new botanical region, filled with vernal flowers which I never saw elsewhere. My *N. G. Vernasolis*, *Cauloma*, *Therolepta*, &c., many *N. sp.* of *Dodecatheon*, *Tradescantia*, &c. I was delighted; but my companion did not allow me to herborize at leisure, and when I came back there alone, they had mostly disappeared. It was also then that I found the true Oolite, white and granular with hollow grains, which had been denied to America; as well as many fine fossils.

Arrived at Bowling-green, I went to visit General Covington, who led me thro' boundless meadows or barrens, full of new and rare plants. Here I began again my pedestrian journeying; at Elkton I rested awhile with Mr. New, and visited a kind of natural bridge: next West Union a vil-

lage of Shakers, and Russelville, large town in the hills, which here form a Cape towards the south. Here I met the Surveyors of the new territory between the R. Tennessee and Mississippi, who furnished me many plans and details on that country, and the ancient monuments in it. Returning to the barrens I went to Hopkinsville by a devious route, to visit ancient monuments. Here I spent some time with my friends Mr. Campbell and Dr. Short, studying the plants, shells, fishes, fossils, &c., of this region. I made also an excursion to Mr. Clark, and to Clarksville on the Cumberland in Tennessee thro' the barrens.

Afterwards I went to survey the ruins of an ancient town at Canton on the R. Cumberland. Crossing it, I went as far as the Tennessee R. through hills of gravel and meadows full of fine plants. I wished to have crossed it and pushed as far as the Mississippi R.; but the country between was not yet settled, and besides similar to the region I had already explored.

Returning then to Hopkinsville and Russelville, I went from hence with Mr. Ch. Morehead one of my former students to his father's plantation on the verge of the knobs and barrens. Afterwards to West Union thro' the knobs, and next to Bowling-green. On my return I deviated from my former track going into the knob hills to the N. to visit the singular mineral waters

of Cameleon spring ; thus called because it changes color spontaneously from blue to rose, and from yellow to brown. Afterwards I visited with Mr. —, the famous mammoth Cave, in the same knobs, I spent one day to survey it, and found it very different from the printed exaggerated accounts, but yet wonderful enough.

In wading thro' Green R. I narrowly escaped drowning, but collected many fine shells. I skirted the knob hills on the N. side from Cedar lick to Knob lick, to complete my map of them. Resting awhile with Gov. Shelby and Col. Mead, I returned at last to Lexington in July, with a precious collection, most of which was received by waggons.

Having thus well explored Western Kentucky, I prepared to visit in August and September the eastern part of the State, and the Washto or Cumberland mts. separating it from Virginia, being the western range of the Apalachian mts. I again went by Danville and Shelby ; but took here the eastern road to Stanford, following the knobs as far as Hall's gap where I ascended them, to reach the table land at the source of Green R. Thence I went to Somerset thro' it.

After Somerset my way was thro' wild and hilly places, nearly unsettled, having some times to go 14 miles without meeting a Cottage. I crossed Rockcastle R. at

the mouth, and visited the two falls of the R. Cumberland, which few travellers have seen. The largest and easterly is 70 feet perpendicular. I had to take a hunter for a guide, and walk 24 miles with him in one day, out of the settlements, among Bears and Deer. But I was rewarded by many new and rare plants; I took also the maps and views of it.

Going afterwards to Barbourville, and to the water gap of the R. Cumberland, where it issues from the mts. here called Pine mts. to the N. and Poplar mts. to the S. I wished to penetrate those mts. to the N. E. but I was prevented by heavy rains and the unsettled country. Therefore I came back by the Virginia road, thro' Hazlepatch, mt. Vernon and Crab Orchard to Stanford again, &c. with a fine collection of plants, fossils and drawings.

The ancient society *Natura Curiosorum* of Bonn sent me this year a Diploma, granting me the title of Dr. Catesby. I have received before and after other Diplomas and scientific honors from Zurich, Vienna, Bruxelles, Paris, Philadelphia, Cincinnati, &c. which have all been expensive rather than profitable honors. I was refused for awhile in Lexington the Diploma of M. A. because I had not studied Greek in a College! altho' I knew more Languages than all the American Colleges united; but it was granted me at last:

altho' that of M. D. was never granted, because I would not assist to anatomical dissections for which I entertain a dislike; but rather because it would have been a step towards the chair of materia medica.

I went to Frankford to solicit from the Legislature, the establishment of a Botanic Garden, which the Senate granted me, but the House refused. My friends however succeeded in procuring the incorporation of a company for the purpose. Here I took the measles then prevailing, and was very sick on my return to Lexington; but I recovered in spite of the Physicians, by taking none of their poisons, antimony and opium, while many died in their hands. To divert me from the garden I was appointed Librarian of the University and keeper of the Museum, where Clifford's Cabinet was then deposited. I accepted, but without giving up the Botanic Garden, that I proposed to found. I never owned an acre of ground, this garden would have been my delight: I had traced the plan of it, with a retreat among the flowers, a Green house, Museum and Library; but I had to forsake it at last, and make again my garden of the woods and mountains.

We had formed in 1822 a literary Club, which was at last organized as the Kentucky Institute, I became the Secretary of it. We met weekly, to read Essays, discuss questions, &c. But trifles alone were

welcome as well as good suppers: my communications were too learned. I had to become a Poet, I read and published some light Poetry; but my Poems are mostly yet mpts. The most striking were the Instability of the world, Despondency, the Western flowers, &c. with the *Rives de l'Ohio* in French.

In 1823—24 I gave my first course of medical botany to the medical students, by exhibition of specimens. I had received many plants from Missouri, Illinois and Arkanzas from friends or pupils. I received plants and insects from the museum of Vienna, and became the correspondent of it, but the insects were all lost soon after. Swainson wanted all the Birds of Kentucky. I could not satisfy all my friends abroad not having funds to spend.

About this time began my great historical labors, and my collection of materials for TELLUS or the history of the earth and mankind, chiefly in America; which I have in 10 years increased to nearly 100 books, mpt. containing 5000 pages and 500 maps or figures. It is there I borrow for all my historical, ethnographical and philological works. I have since for that object explored all the public Libraries of Lexington, Washington, Philadelphia, New York and Boston. My first historical Essay or fruit of this labor, was my ancient history of Kentucky published in 1824 in Frank-

ford as an introduction to Marshall's history of Kentucky. This however was far from being perfect, as I was not yet then, sufficiently advanced in this difficult study; but my account of the ancient monuments of N. America annexed to it, is valuable, and has been translated into French. I had once applied to Jefferson for a situation in the new University of Virginia, offering to found there a Museum and Bot. Garden at my expence; but it was preferred to call Professors from England, who have done neither!

My travels this year were chiefly bent upon soliciting subscriptions for the Botanic Garden, within 40 miles around Lexington. I went to Frankfort, Harrodsburg, Danville, Cynthiana, Paris, &c. I visited again the small cabinet of fossils of Maj. Thompson at Shawanee Spring near Harrodsburg, that of Shells of Dr. Graham at Harrodsburg, and that of curiosities by Mrs. Mc'Dowell at Danville. I went on horseback with Dr. Graham to survey ancient monuments on Salt R. where we dug fossil teeth. I surveyed a stone fort on Dick R. and other remarkable sites. My friend Mr. Ward took me to Cynthiana in a gig, where I surveyed other ancient monuments, and found a fine locality for fossils.

At last I contrived to organize our company, the shares were 50 dollars to be paid in instalments of 10 dollars. I took myself

5 shares. We bought a fine spot of 10 acres in Lexington itself. I published the needful circulars and my *florula Kentukensis*. I sent many mpts. to Europe and elsewhere. In March 1825 I began to plant the garden, of which I was the Superintendent; but I soon became aware of a secret hostility to my undertaking, and several subscribers did not pay their instalments.

It became impossible to struggle against the influence of the foes of sciences. I became weary of it, and resolved to end these perpetual difficulties, by seeking elsewhere other resources or advantages, undertaking in that view a journey to Washington City, Baltimore and Philadelphia. I left the garden in the hands of Mr. Ficklin, and Lexington at the end of June after the visit of Lafayette.

CHAPTER VI.

Travels, &c. from 1825 to 1830, in Virginia, Ohio, New York, &c.

I took the stage to Maysville, Chilicothe, Zanesville, and Wheeling to the foot of the Alleghany mts. which I crossed on foot as usual, to observe them better, as far as Cumberland. There I crossed the Potomak at the forks into Virginia and the Apalachian mts. where I collected many fine plants. At Winchester I visited the cabinet of Mr. Barton, with rare fossils.

In the stage again to the R. Shenandoah, leaving it I went over the Cotocton or Blue mts. to Aldie and thence to Georgetown and Washington, remaining there over a month, partly with my old friends Adlum and Winn. I became acquainted with the Botanists, Drs. M'William and Brereton, and many other gentlemen. I was introduced to President Adams. I induced Maj. M'Kinney at the head of the Indian department, to print circulars to collect vocabularies of 100 words, in all the Languages spoken by the Indians of the United States.

Much of my time was spent at the vineyard of Adlum, who has been successful in making good American Wines. It was there that I began to study better our Vines, which has induced me to publish in 1830 my manual of American Vines.

My chief business in Washington was to take Patents and Caveats for several inventions. Mr. Clay's absence detained me awhile. Having concluded this business I went to Baltimore by stage; where Dr. James Smith invited me to stay with him, presented me to Dr. M'Culloh and other Savans. Here I published my patent and *Divitial Invention*, which has since been partly adopted without my leave and in spite of my patent. My dislike to law suits has compelled me to allow it till now.

This Invention consisted chiefly in ren-

dering Bank Stocks and Deposits or Savings circulable by divisible Certificates; which will one day be certainly adopted, and will be a great step to increase the prosperity of the industrious classes. It was then a philanthropic plan. Yet I have been despoiled of it! and never could put it into complete operation myself.

I went afterwards to Philadelphia by steamboat, where Collins and other friends highly approved of my views, I wanted also to go to New York and Boston; but Winter was near, it was in October, and it become needful to return to Kentucky to settle my affairs, before a removal to Philadelphia or elsewhere. I went then by stage to Lancaster, Harrisburg, Carlile and Chambersburg to the foot of the mts.; but I crossed the Alleghanies the fourth time again on foot and by a new road, thro' Berlin, Somerset, and Washington, to Wheeling. Here I took a returning carriage as far as Lebanon in Ohio, where I went rather slowly thro' Zanesville, Lancaster, Circleville, where I saw the magnificent ancient monuments giving name to it; afterwards by Washington and Wilmington, thro' hills, glades and swamps.

At Lebanon I took the stage for Cincinnati, where I gave public lectures on my discoveries in the Museum of Mr. Dorfeuille, and visited at Newport General Taylor and Symes, famous for his system on

Concentric spheres and the Polar openings. I returned to Lexington by the Ridge road, and proceeded to Frankford, when I found how the President of the University had behaved in my absence.

To evince his hatred against sciences and discoveries, he had broken open my rooms, given one to the students, and thrown all my effects, books and collections in a heap in the other. He had also deprived me of my situation as Librarian and my board in the College. I had to put up with all this to avoid beginning law suits. I took lodgings in town and carried there all my effects: thus leaving the College with curses on it and Holley; who were both reached by them soon after, since he died next year at sea of the Yellow fever, caught at New Orleans, having been driven from Lexington by public opinion: and the College has been burnt in 1828 with all its contents. But Clifford's cabinet was saved (like mine) by being removed previously like mine, and is now partly in Cincinnati and partly in Philadelphia. This was a lucky escape.

However I never was deprived of my Professorship and have never resigned it! but in the Winter of 1825—26 I gave my last course of lectures on medical Botany. I published my *Neogenyton* and other pamphlets. I left the botanic garden to its fate, since the company would not support it

properly, and thus it has been destroyed. I had some intention to join Mr. Maclure at New Harmony, but he had friends jealous of me also: it was well for me, since his views and fine College have been abortive.

All my collections and books were then sent to Philadelphia, they filled 40 boxes, I had doubled them during my residence in Kentucky: my collection of fossils and my western herbals were above all valuable. Any where else they would have procured me friends, here no one cared for them; in Philadelphia no one would buy such as I wished to sell. Most of them remained for a while in store and under a mortgage. I should have wished to offer them to some liberal Institution that might have adopted me; but I have found none such in America as yet. They are yet, rich or poor, quite selfish like individuals, begging from all, seldom buying, never giving.

Before leaving Kentucky altogether, I went to see some friends in the neighborhood and take leave of them. I even went as far as Harrodsburg to see my friend Dr. Graham. I left Lexington in the stage, without regret, altho' I had yet several good friends there; but none was a Clifford, who shared my taste and views. It was to Cincinnati that I went, meaning to visit Lake Erie, Niagara and the great Canal of New York just finished.

After giving another Lecture in Cincinnati, I went as far as mt. Vernon in the stage, about 2-3 of the way to Lake Erie; but I rested twice on the way. My rout was by no means direct, since I went to Hamilton on the Miami; followed the river banks to Dayton, visiting ancient monuments and the Canal then digging. At Springfield I left the stage and walked to Yellow springs to visit the Community established by the philanthropic Lownes, the mineral spring which has deposited a mound of yellow sediment, and the sinking Creek which flows in a rocky chasm, turn mills and disappears. Lownes sent me back to Springfield in a carriage, where I retook the stage for Columbus, metropolis of Ohio on the R. Scioto.

After resting there one day, instead of going direct N. to Portland, I went to mt. Vernon in the N. E., but in the vicinity of the gritty hills which surround as in Kentucky, the Limestone basin. To observe those hills more accurately, I walked over them thro' Belville, Mansfield and Newhaven, where I took again the stage, and went by Milan to Portland. This journey thro' Ohio from S. to N. afforded me many observations and plants.

At Portland formerly called Sandusky, on the Sandusky bay of L. Erie, I waited three days for the steamboat from Detroit, visiting the neighborhood, studying the

fossils of this Limestone region, and the fishes of the Lake. The steamboat took me to Buffaloe by coasting the south shore of L. Erie, stopping on the way to many places, Cleveland, Fairport, Erie in Pennsylvania, near which begin to appear in sight the Chataugue mts. or the N. W. end of the mts. Alleghanies, omitted in all the maps. I took views on the Lake and noticed the shores as we went along.

At Buffaloe I saw many Seneca Indians, and crossed into Canada at Blackrock, wishing to examine well on both sides the river and falls of Niagara. This phenomenon of nature excited my admiration instead of horror caused by Etna. Few naturalists have seen these two great phenomena in their travels, and compared the sublime effects of water and fire. I spent one day on each side of the falls, studying Geology and Botany, taking maps and views. I went in stage to Queenstown in Canada and there crossed back to Lewistown opposite, thence to Manchester new village at the east side of the falls. A table land extends on both sides, with a chasm formed by the Niagara R. The rapids above the falls are quite as beautiful as them.

From Manchester I went to Lockport in stage; but I stopt one day at the Tuscorora village to converse with Cusick the historian of the Iroquois. From Lockport to

Rochester I went by the packet on the Canal. Here by a happy chance I met with Prof. Eaton of Troy, who was coming back from a Scientific tour on the Canal with his pupils, as far as Buffaloe, in a boat of their own going by day only and easy stages. He invited me to join them, and I accepted with pleasure: it was exactly what I delight in while travelling, since I hate to be in haste on roads and canals, which does not allow time for observations, and to study at leasure the productions of nature.

This was one of the most agreeable journeys I ever performed. We went before to visit together the falls of the R. Genessee, taking their views, &c., and afterwards travelled at leasure towards Albany, stopping at many towns and interesting sites to collect fossils, plants and minerals: the salines of Montezuma and Syracuse, at Rome, Palmyra, Utica, Schenectady, &c. : at the L. Onondago, and a small singular nameless Lake, an ancient volcanic Crater, without outlet. I had full time to collect and carry numerous specimens, but unfortunately I lost most of them afterwards.

From Utica some of our party went to visit the falls of Trenton, and myself with Eaton another fall S. of Utica in the mountains, which here as well as at the falls of the Mohawk came near the canal. The

granite mts. of Saranac in the N. shoot, here a spur to join the first step of the Alleghanies.

From the Cohos falls we went to west Troy and thence across the Hudson to Troy, where I rested awhile with Prof. Eaton, at his school for teachers, founded by Mr. Van Rensalaer to instruct young men in practical natural Sciences, &c., which they learn by giving themselves lessons to each other, admirable plan not yet sufficiently known and adopted elsewhere.

From hence I went by steamboat to West Point, to visit my friend Dr. Torrey, who was then Professor in the Military Academy of this picturesque site in the Mattawan mts. Afterwards I went to New York and Philadelphia by the usual way. Hastening to go to Germantown to see my friends Dr. Betton and Mr. Haines, this last took me in his gig to Valley forge on the R. Schuylkill, to visit a new Community established by a company; but which I found disorganized as the others.

During the remainder of the Summer I made many excursions from Philadelphia to Norristown, Gulf gap, Valley forge, Phenixville, Manayunk, Germantown, the Copper mines of Perkiomen, the mineral waters near Kimberton called Yellow spring. In September I settled in Philadelphia, giving in the Winter of 1826—27 a course of natural history on the earth and

mankind to a large class in the Franklin Institute. I became afterwards during 1827 Prof. of Geography and Drawing in the High school of the same Institution.

These occupations took all my time. I had no place to display my collections: most of them were left in stores and boxes. The transportation from Kentucky had been expensive. My friend Collins advised me to carry them to Europe where they might sell better or be published; but I was prevented by the uncertainty of success, the expences and perils of the voyage. I continued my researches on the history of the Nations and Languages of America in the Libraries of Philadelphia, Mr. Duponceau lent me his manuscript collection of Vocabularies, I resolved to go to Boston on purpose to consult the Libraries there, which I effected in August 1827 during the vacation, altho' my health was impaired.

I went to Bordentown in steamboat, and thence by the stage to Longbranch, a place on the sea shore of New Jersey, frequented for bathing: afterwards by a coach to Shrewsbury inlet, a place more suitable for my researches, where I remained some days. Thence I went to New York by steamboat thro' the 3 bays of Shrewsbury, Raritan and New York. I hastened hence to Troy to see Eaton, and there took the stage to Boston, which I reached in two

days, by the northern route, through Williamsville, Greensfield, Lancaster, &c. crossing the mts. Taconick and the R. Connecticut. I arrived at Boston in the night while a splendid aurora borealis was visible.

Next day was the commencement day at Cambridge, to which I assisted, remaining a week partly there and partly in Boston, consulting the Library of the Atheneum, and the Ebeling Library united to that of Cambridge, which has books on America found no where else in the United States. I herborized also around Boston, saw Dr. Bigelow, Mr. Harris and other savans. I regretted to be unable to accept the invitation of Mr. Harris to visit him at Dorchester.

On my return to Troy I took the southern route, stopping at Worchester to visit the Library of the Antiquarian Society, founded by the venerable Thomas, of which I was a member. I stopped also at Northampton to botanize on the hills, and at Pittsfield where is a medical school and a picturesque Lake: crossing the Taconick mts. I went to New Lebanon to visit the mineral waters, and the village of the Shakers. This is the central settlement of these modern Essenians. I became acquainted with their botanist and gardener Lawrence. Returning afterwards to Troy and Albany, I took the steamboat for New

York, rested awhile, and returned to Philadelphia in September.

The weak state of my health, compelled me to leave the arduous teaching at the High school and to dedicate myself for a while to my health and my studies. I made a bargain with a printer to publish my medical flora of the United States, the first volume appeared in 1828 and the second in 1830. I wrote also for Journals and published the series of my School of flora, fragments of my travels, &c. But I could not publish all my travels, nor my National history of both Americas.

I ought to have made another fortune by my Inventions, which comprized so many useful things, such as a Steam Plongh, an aquatic Rail road, the Divitial Invention, &c.; but I could not meet with co-operators. Meantime my useful Divitial Invention, was stolen or modified in Baltimore by establishing new Savings Banks partly on my plan, without consulting me nor asking my leave. A dozen have since been established; many are making money by it; while I the Inventor who have spent \$300 in travels, patents, advertisements, lectures, &c. to make it known, have never realized a cent from it, for my expences and troubles!

Happily I had kept secret and in reserve, several other discoveries of mine. Perceiving this disposition to appropriate my

labors and knowledge. I was compelled to foil this kind of swindling or knavery by not taking any more patents; but using secretly my Inventions. Some envious hearts may have blamed me for it: they are probably those who would have been the first to steal them if published.

Having cured myself completely in 1828 of my chronic complaint, which was the fatal Phthisis, caused by my disappointments, fatigues, and the unsteady climate; which my knowledge in medical botany enabled me to subdue and effect a radical cure: I entered into arrangements for establishing a Chemical manufacture of vegetable remedies against the different kinds of Consumption. This succeeded well. I introduced also a new branch of medical knowledge and art. I became a Pulmist, who attended only to diseases of the lungs, as a Dentist attends only to the teeth. Being thus the first Pulmist, and perhaps the only one here or elsewhere. This new Profession changed my business for awhile; yet enabling me to travel again in search of plants or to spread my practice, and to put my collections in better order, publishing many pamphlets, &c.

In 1829 I gave a public proof of my art, in printing a small book called the *Pulmist or the art to cure the Consumption*, and many hundreds of individuals, whom I have cured or relieved are another striking

proof of the beneficial results of my new practice.

Thus in 1828 I undertook a long journey in the Alleghany mts. and other places where I had never been, chiefly to collect plants and to draw landscapes. I went by stage to Easton, following the banks of the Delaware from Wells falls near Newhope, through several ranges of mts. and hills crossed by the river. Thence entering the mts. Kitaniny by Lehigh water gap, I went to Lehigh town and Maunchunk to visit the inexhaustible mines of Anthracite; becoming confirmed in the opinion of their eruptive origine under the Ocean. I came back thro' Bethlehem to visit Mr. Schweinitz and his fine Herbarium.

Returning thro' Easton, I went to the Schooley (or Skuleh) mts. in New Jersey, which are the continuation of the primitive Mattawan of the N. and Lehigh of Pennsylvania. I spent a week at the mineral chalybate waters of those mts. which were useful to my health. Thence I went to Newark thro' the hills, always in stage; but there I took the steamboat for New York, resting in the City, taking several excursions on Staten Id. and Long Id. Afterwards I went to Fishkill to see some friends, and ascended again the summit of the Mattawan mts. From Newburg I returned to New York by steamboat, and thence to New Brunswick where I undertook a Bo-

tanical walk accross New Jersey to Burlington, and came back to my concerns in Philadelphia.

In 1829 I was so busy, that I could only undertake two small journeys. The first in the Spring was in the Pine barrens of New Jersey, by Bristol, Burlington, Mount Holly, Taunton, &c.; it was a pedestrian botanical excursion. The second in Summer by steamboat, was to New York and thence to Norwalk in Connecticut and Hempstead on Long Id. both in the sound. However I studied much this year, and was maturing my views on Ethnology, Philology and American History.

In 1830 I took again a botanical excursion in New Jersey to Woodbury, &c., in the Spring; but my Summer travels were more extensive, chiefly to the mts. Kiskatom or Catsberg, the N. E. end of the Alleghanies: it was my second journey to those mts. rich in boreal and Canada plants, &c. I went by stage and steamboat thro' New Brunswick, New York and Catskill. But here I undertook to walk up the mts., resting three days at the mountain house of Pine Orchard, visiting the Lakes, falls, &c. collecting many plants and minerals. Walking again down the mts. I took the stage at the foot, for Catskill, and there the steamboat for Albany, where I visited Drs. Beck, Eights, &c. and at Troy

my friends Eaton and Hales: giving some lectures in the Rensselaer school.

At New York where I returned by steamboat, I visited my friend Torey and his fine Herbal. I met here Mr. Ismar lately from Mexico, who furnished me some materials on this interesting Country, by the help of which and others, I published afterwards in February 1831 my Pamphlet on Mexico, called the Mexicans in 1830.

My return to Philadelphia was by the usual road. I renewed this year my correspondance with many learned friends in Europe, Decandole, Cuvier, Swainson, Balbi, Ferussac, &c. I went on with my historical researches and advanced very far in them. I began to put in order my collection of Drawings and Engravings relating to America, now much increased.

CHAPTER VII.

Travels and researches in 1831, 32 and 33.

The sources of the R. Delaware and Susquehana.

In 1826 I had lost my only brother who died at Havre. This year 1831 I lost my mother at Bordeaux where she had removed from Paris. She wished to see me again in France. I was inclined to gratify her, and to carry there my discoveries and collections, hoping to publish my works there. Audubon would never have been able to publish his Birds, if he had not

gone to England. I foresaw that I never could publish in America, my great works on the ancient monuments of North America, the Fishes of this Continent, my large historical works, nor my numerous travels and drawings, unless I went to Paris, at the Central focus of Sciences. But the events of 1830 made me fear new troubles in Europe. I prefer the calm and security of this country, improving every year by wise institutions and entire freedom of action and industry. These advantages keep me here and probably will ever keep me in this field of action and travels; where so much is yet to be done and explored by science.

Meantime wishing to spread some of my late labors, I issued this year two pamphlets, on the rare objects of my Cabinet, and a supplement to my shells of Ohio. I prepared also to publish next year a literary journal. I sent plants, minerals, fossils, &c., to Decandole, Cuvier, Vandermalen, Agardh, &c. I sent a deposit of my works to Bailhere at Paris, by the advice and thro' the hands of Baron Cuvier. Lastly I sent to the Society of Geography two memoirs on the primitive Negroes of Asia and America: this Society has done me the honor to crown these memoirs in 1832 by a gold medal. This is the first reward of the kind which I have received. I have been encouraged by it to pursue my his-

torical labors. I have not been treated as well in America, where prizes are often offered never to be awarded.

In 1825 I had sent two memoirs for prizes offered. One to Washington for a prize of \$1,000 for the best means to clear the R. Ohio of snags and trees. The prize was awarded thro' political influence to a Contractor who has not cleared the river! but my memoir was returned with all the plates. The other was sent to Boston for a prize of \$100 offered by the Academy of Sciences for the best account of the materials existing on the history of the native tribes of America: altho' my memoir was the best, as appears by the report of a Committee communicated to me by Mr. Everett, yet the prize was not awarded, because my memoir was too long, &c., if it had been shorter, it would have been too short! but the worse was that my memoir was never returned; but stolen or mislaid by Mr. Holmes, the writer of pretended annals of N. America. It is thus that learned men are often served here. Prizes are sometimes offered merely to help a favorite to fulfil his part. I have since again written a memoir for another prize, which has been postponed from year to year. I do not state names as the subject is not yet decided; but if I am served there as I was in Boston, I never mean to write again for prizes offered by public Societies thro' the doubtful

motives of inducing learned men to labor for nothing.

When my collections were again at my disposal I sold or exchanged several objects; but beginning to know their value I have sold for \$50, or one dollar each, 50 fine Bivalve shells of Ohio, of which in 1818, no one offered me the 10th part. Thus I hope in 10 years hence to sell well what I now describe and offer in vain for sale, fossils, plants, &c., almost all new. Mr. Poulson published this year an English translation of my Bivalve shells of the west, which Barnes, Hildreth, Lea, Say. &c. had often published since under different names, and giving me no credit for my previous labors; a shameful conduct too much practiced by illiberal vain writers, and from which I have suffered much both in Botany and Zoology. But time renders justice to all at last.

My first journey this year was to Wilmington in Delaware by steamboat, and thence to the mineral vitriolic spring of Brandywine, where I botanized at leisure. My second was a journey to the Taconick mts. &c. I went to botanize at the falls of the Delaware at Trenton, and next to Princeton, where I herborized with Torrey, then giving a course of Chemistry there. Afterwards I went to New York and Hudson, where I took the stage for New Lebanon thro' Canaan, &c. I staid three days

with the Shakers and botanized with Laurence over the mts. and near their Lakes; going afterwards by stage to Troy and Albany, and returning to New York and Philadelphia by the common route.

Several excursions on the Schuylkill from the mouth to Norristown were made on my return. The Botanical Garden of Bartram, now occupied by Messrs. Carr, father and son, was the first garden of the kind established in N America. Since 1828 it had become one of my favorite rambles. I visit it regularly 5 or 6 times every year, and always find something new, that the liberal owners allow me to study in liberty.

In the Spring of 1832 I published the first number of my *Atlantic Journal*, which I continued for two years, publishing a number each season. It contains many fragments on all the historical and natural sciences. It has not succeeded well, because it is too learned and too liberal. A crowd of literary journals are published in the United States, which contain hardly any thing beyond plagiarisms and vapid trash, yet they often succeed much better. I ought to have copied them to insure success; but I would not thus degrade myself. All my articles are written on purpose, and all may be consulted to advantage now and hereafter.

It appears that I ought to give up journalism, since all the periodicals which I have

undertaken, have produced difficulties. Those of my Sicilian journal and Western Minerva have been seen already. The Atlantic journal procured me the enmity of Featherstonaugh and Harlan, who published a journal of Geology, fancying that I would interfere with them, and because I belonged to the French school of natural Sciences and Geology, instead of praising like them the English system of Geology based exclusively upon their Island. They picked up a quarrel with me, and I had to expose their blunders in my journal upon a rolled stone, puffed up into a *Rhinoceros* jawbone! Harlan could not forgive me to have seen the fossils of Clifford before him!

The petty quarrels and jealousies of our few learned men are disgusting and deplorable. It is worse still to see some trying to steal names and new objects from each other. I have thus lost some friends or been prevented from getting friends among those who have served me so. I have much to complain of on that score, as well as of neglect of my discoveries by Nuttall, Bigelow, and others in Botany, Godman, Barnes, Say, Lesueur, &c., in Zoology.

The Scientific Institutions and Societies of Philadelphia are often disgraced by their tenacious learned errors, and by admitting unworthy members for sake of mere fees!

This has induced me to keep aloof from them; but I cultivated chiefly the friendship of old friends or liberal Savans, such as Dr. Mease, Duponceau, Prof. Green, Conrad, Johnson, Tanner, Durand, Hembel, P. A. Browne, Poulson, &c. I have often thought of establishing a Society of Savans and Authors, to meet without paying any thing, and admittance among whom would be a real honor; but proposed it in vain. Mr. Poulson had once a kind of Club of the kind, but it lasted but a short time altho' graced by suppers. I have also in vain proposed an annual meeting of Scientific men as in Germany and England: they are too selfish here to be on friendly terms.

Baron Cuvier had written me to send him all the fresh water fishes of this Country. This commission was agreeable to me; but altho' he had stated that the administration of the museum of Paris, would pay all the expences, he had not added how and when, nor sent any funds or letter of credit. I was then prevented as formerly in Sicily to send expensive objects. To visit the various Regions, Lakes and Rivers of N. America would have been attended with expenses, and still more to buy, fish, preserve and convey the fishes. Some large *Pimelodus* or Catfish, might have costed \$10 conveyed to Philadelphia from Tennessee or Alabama: a large *Planirostra*

sent from Kentucky to the museum of Vienna costed me nearly as much, altho' salted instead of being barrelled in liquor. I had proposed to Cuvier a plan to gratify him and myself; but his death happened about this time, and the museum has not yet renewed nor confirmed his demands. I did well then to spend but little for small fishes and reptiles on that score.

My first journey in 1832 was to Baltimore by the New Castle rail road. I remained there two weeks to see if the institutions partly based on my patent, were likely to render me justice; but I soon perceived that they would not acknowledge my rights; and that it was needful to begin law suits with avid and powerful men or corporations, which might have united to baffle me for years: thus I put off my claims to better times. I saw my former friends Hayden, Cohen, Smith and Maculoh, became acquainted with Dr. Powels Geologist, and Dr. Fisher Botanist, &c. I herborized with this last.

Returned to Philadelphia I went to the mineral waters of Willowgrove 20 miles to the N. where I herborized some days. Meantime the Spasmodic Cholera had appeared in Canada and New York, brought it is said from England or Ireland. This Epidemy alarmed me as much as the Yellow fever, to which it appears likely to succeed. I left Philadelphia with the Chol-

erive at the period of the explosion. I went again to Baltimore and without stopping hastened towards the mts. by the rail road of Fredericktown thro' Patapsco hills, studying their Geology. I went direct to the point of rocks of the Cotocton mts. on the Potomac, across the curious vein of Conglomerate Breccia bordering them.

Here not finding any conveyance into Virginia and the Apalachian mts. I had to go to Frederic, to take the western stage as far as Boonsborough over the Cotocton mts. forming here two ridges, with a broad valley between, where is situated Middletown, but to the S. it forks into 3 ridges.

I went to Sharpsburg, the mineral waters of Belinda, to the Antictan Iron works, the banks of the Potowmak, &c. Returning to Boonsborough I remained there a week to herborize in the mountains. The cholérine only left me here. Well reestablished I returned to Frederic over the mts. in a coach, and there took the stage for Emmittsburg to the N. in order to follow the foot of the mts. I rested there again, visiting the mts. and mineral waters, with the two Catholic institutions, the Monastic College of St. Mary; and St. Joseph Chief Nunnery of the Sisters of charity in America. They are the only Nuns who claim the good will of all men, they attended the sick during the Cholera in our Cities, with a religious zeal quite praise worthy.

Emmitsburg altho' in Maryland is close to Pennsylvania. I took a coach to reach mineral waters of a chalybate nature at the summit of the mts. which here form only one range or table land 10 miles wide, the forks of Cotocton being united here. I remained there one week, rambling over the mts. and collecting many fine plants. Afterwards I went in the stage to Gettysburg, to reach again the mts. to the N. on the road to Carlisle. Here I left the stage in the mts. to visit the Iron mines, herborize at leasure, and over the mts.

From Carlisle I went to visit the singular cave one mile from it, as well as the mineral waters 4 miles: whence I walked up the mts. Kitaniny by Skeret gap, and ascending Sherman valley, rested a week at the mineral waters there. I discovered this valley to be a new locality for beautiful fossils of the most ancient formations. quite new to the science of Oryctography. Many were collected and sent to Philadelphia.

Wishing to examine still further these mts. I walked from hence all the way to Harrisburg, by the mouth of the R. Juniata, Clack's ferry, &c. I visited the mouth of Sherman Creek and the diggings for Coal in the mts. the Pennsylvania Canal, the great Bridge on the Susquehanah, Peters mt. &c. I studied there the fishes of this river, drawing many of them. The

picturesque views of the various water gaps invited me to draw them. I followed the banks of the R. as far as Harrisburg, thro' the 4 ranges of mts. I found the country much changed since my visit of 1804. with a Canal and new villages; but physical geography and the natural features are still the same, and will ever be; although it is what our geographers often disdain to notice.

The Cholera having ceased in Philadelphia, I returned there in the stage, after some rest in Harrisburg, seat of government of Pennsylvania: where I visited Gov. Wolf. But it was by a peculiar route, thro' Hummelstown, Ephrata, Waynesburg and Westchester, crossing the Conewago mts. the Welsh hills and several other ranges of hills.

Returned to my city labors, with a fine collection of plants, fossils, minerals and observations obtained in this journey, I pursued my journal, my studies and trade. I then proposed again a Savings Bank to give 6 per cent and to circulate the certificates as in Baltimore; but the Banks and Capitalists still oppose such a benevolent plan, which might curtail their profits and deposits, and show how gambling in Stocks can be prevented.

Ever since 1830 I had begun to write a series of Botanical Letters to Decandole, with many new observations, a series of

similar Letters on Zoology to Cuvier, and now I began a third series on Geology sent to Brongniart. I reopened a correspondence with English and Swedish Botanists. I had furnished to Tanner essential corrections to the physical Geography of the United States, which he inserted in a new edition of his great map. I put in order my Herbarium, as well as my *Autikon Botanikon* or series of new and rare plants, illustrated by specimens instead of figures. I began an Autography and Iconography of learned men, my friends or correspondants. I was also engaged on my great manuscript work of Illustrations to all my travels and researches, containing 3000 figures and maps in 30 volumes or Portfolios, with notes and remarks.

At last I have reached this year 1833, when I write these outlines of my travels, out of my journals, memoirs and mpts. I have sent many plants to Mexico, England and France, many shells and minerals to Ferussac and Brongniart. I have sent a third memoir or supplement on the primitive Negros of Asia and America to the Society of Geography of Paris, as well as other tracts relating to geography. I continue my Atlantic journal. I prepare for the press the first part of my National History of both Americas, containing Austral America, S. of the tropic, Chili, Tucuman, &c., without knowing yet where I shall publish

it. Lastly I prepare a third volume or supplement to my medical flora. I continue to labor on my *Autikon*, Iconography, Autography, &c.

My first journey was to the Pine barrens and marl pits of New Jersey with fossils. I opened a pit at my expence to collect these fossils, and I discovered some new ones. I went through Burlington. Slabtown, Jobtown, Juliatown, &c., and visited the insulated hills of these atlantic plains.

On my return I published the first part of my *Herbarium Rafinesquianum* or Prodromus of the new plants of my Herbal. Next I prepared for a long journey in the Apalachian mts. south from Virginia to Alabama. My intention was to go at least as far as the mts. Unaka of Carolina and the gold mines; but a fatality appears to prevent me from penetrating in the Southern States, the Carolinas, Georgia, and above all Florida, regions rich and interesting, that I have long wished to visit and explore. Elliott had long ago endeavoured to call me there, but I preferred the healthy regions of the West. The dreadful roads, unhealthy climate, dear travelling and other obvious evils have always prevented me from exploring them. This time I experienced another difficulty, heavy rains which have lasted 40 days, flooded the roads and caused much damage. I only had 3 days without rain in my journey, and was there-

fore compelled to come back; I had besides a fall among rocks, which lamed me for some days.

At first I went to Baltimore by a new way, thro' the Delaware and Chesapeake Canal, a fine work navigable by Sloops. Afterwards to Ellicot mills, where the rain detained me 3 days; next to Frederic by the rail road. There I took the Washington stage to reach the foot of the Sugar-loaf, a singular insulated mt. 15 miles around and 500 feet high, (Long says 800), it is primitive, an avant post of the Cotocton mts. yet omitted in nearly all the maps. I herborized there and went afterwards to the Point of rocks or lower water gap of R. Potowmak, in the Cotocton mts.

Crossing the river here into Virginia, I began my pedestrian rambles; but had to contend against muddy roads and repeated showers. I followed the Cotocton mts. as far as Leesburg, finding again here in Virginia the curious dyke of Breccia, &c. The rain detained me in Leesburg and finding impossible to proceed south, I took the Harper's ferry stage for 15 miles to be left in the mts.; thus surveying them well, and botanizing in the mts., the banks of the Potowmak and Shenandoah rivers.

From Harper's ferry I went up the Cotocton valley of the N. to Middleton in Maryland, and thence by stage to Frederic owing to my lameness. Taking the rail

road as far as Sykesville, I remained there two days herborizing in the Monocasy hills. Thence I returned to Baltimore, where I rested again, seeing my friends M'Culloh, Dr. Powells, Dr. Fisher, &c. And I returned again to Philadelphia through the Delaware Canal, with many fine plants, some new, such as *Jeffersonia peltata*, *Cypripedium truncatum*, *Heuchera foliosa*, &c.

I went to herborize to Manayunk and Springmill on the Schuylkill soon after, also to Kingsessing and in New Jersey, &c. I prepared to extend my Chemical manuf. I had already adopted the new mode of preserving medical plants under a heavy press, and undertook to prepare chemical paints, &c. that would make wood combustible.

In July I took an excursion of 15 days thro' New Jersey to the sea shore and sea islands, to study them better still. I went by Burlington, Mount Holly, Vincenton and Budeltown to the Pine barrens, which extend here about 30 miles to near the sea, intermingled with Cedar swamps of *Cupressus thyoides*. I passed thro' the Grouse plains, without trees; the soil is gravelly, covered with bushes, and has no value, altho' healthy and with good water. There is no village in these sandy Pine woods and gravelly plains. I stopped at Cedarbridge to botanize and found many

plants. This spot is 9 miles from Barnegat and 10 from Manahawkin, villages near the sea. I went to the last who has 60 houses and a fine pond of clear water 3 miles around, but colored like all the waters here. I remained 5 days in the neighborhood to explore the woods, swamps, salt marshes, meadows, &c., and 6 days on the great Id. of Long beach 24 miles long, but often cut up by the sea in storms. It is frequented for the sea air and the sea baths, and has a whale fishery in the Spring, for whales coming near the coast.

Like all the other litoral Ids., it is a mere narrow band of sand mixed with shells, downs, bushes, holly groves, salt marshes and ponds, &c. I collected 25 kinds of sea shells, some very rare, such as 3 Sp. of golden anomias, grooved, smooth and dilatated. I returned in stage by the same road. This small journey of 150 miles has furnished me many materials that are needful to distinguish well the different physical and botanical regions of the Atlantic plains.

Having left in Philadelphia my shells and plants, I hastened to undertake a kind of scientific pilgrimage long ago contemplated to the sources of the rivers Delaware and Susquehanah. I went to New York thro' Trenton and New Brunswick, afterwards to Troy by the Hudson; remaining

a few days, at the Rensselaer scholl to give some lectures.

The confluent of the Hudson and Mohawk R. with the Erie and Champlain canals, rail roads, &c., is now become a site of great population and activity. There are 3 cities and 20 villages within a circle of 12 miles radius, Albany has already 25000 population, Troy 15000, Schenectady 8000. I gave a public Lecture in the Court House of Troy on a novel subject, the Instability of Nature, in Lansingburg and Waterford on other natural subjects. I became acquainted with Messrs. A. Walsh, Dr. Wiley, &c. of Lansingburg, but I found my friend Dr. Spafford had become the victim of the Cholera. I visited my friends in Albany and went to see Judge Buel on his agricultural farm near it, where I saw some fine plants from Oregon. I visited several Herbals in Troy, Albany, &c. Dr. Eights showed me his 2 N. G. of Crustacea from the Austral seas, for which I suggested the names of *Lomops* and *Decatelopus*, but could not approve his name of *Brongniartia* for a living austral trilobite, as this name is employed and disputed. *Trilobalis* would have been better.

From Lansingburg where I remained some days with Mr. Walsh, a great friend of Horticulture, I went to visit many remarkable places near it and botanize with

him. With the Rev. Mr. Wiley I ascended the Bald mt. 4 miles east of it, which is not in the maps altho' 1030 feet high; I surveyed it, and explored the plants and minerals of it. As there are many mts. of that name, Mr. W. proposed to change it to *mt. Rafinesque*. It is an insulated mt. wild and wooded except on the summit. It is primitive and transitive like the mts. Taconick in the neighborhood. It is visible afar, and 10 or 12 miles in circuit.

Departing at last for my proposed pilgrimage, I went again to Albany and from hence towards the S. W. and the Heidelberg mts. 12 miles from it. I was in a cart as far as the foot of the mts.; at 8 miles from Albany ends the plain of clay and sand where it is situated, and begin the stony hills 400 feet high of clysmian formation, filled with boulders and gravel. At 10 miles begins the region of the cnbocal limestone, and the roots of the Heidelberg mts.

At Clarkville village on their slope I remained one day to study geology and fossils, I visited the Caves, a natural bridge on the brook *Boskill*, and I climbed to the top of Chapman hill. These mts. are from 1200 to 1500 feet high; they form an apron or table land N. of the Catsberg. The base is calcareous to 800 feet high, next Schistose to 1000 with clay slate, and above all comes the rough grits of many kinds

forming the roof of the table land. Fossils are found in many parts of the Limestone, fewer above it.

These mts. are hardly noticed in maps; to study them better, I walked across the hilly and broken table land as far as Middleburg on the R. Skohari, 24 miles from Clarksville. Rensalaerville is about middle way in a deep hollow. The whole table land is fertile and cultivated, with many Lakes and ponds, smiling valleys and hills. Skohari R. comes from the Catsberg, its valley is deep, often a mile wide, Limestone and fossils reappear in it.

Here I took the stage up the valley and to reach the source of the Delaware 23 miles distant. We crossed the R. several times, and ascended afterwards another table land. I saw many picturesque sites, little falls, &c. From the top the Catsberg or Kiskatom mts. 3000 feet high are in full sight, this apron of 1800 feet is one of their steps.

Arrived at Stamford, I was only one mile distant from the little Lake *Utsyantha* source of the Delaware, I remained here 2 days, visiting the whole neighborhood, surveying and drawing. This Lake is 2000 feet above the sea, it is now only one mile around, but was once 5, being surrounded by hills 500 or 600 feet above it forming a circular bassin. There are floating islands in the Lake, which is rather shallow.

To the S. E. are the mts. Oquago, the western or N. W. end of the Kiskatom or Catsberg, the highest summit is 3300 feet above the sea. They run to the S. W. forming the valley of Oquago, name of the main branch of the Delaware. The mts., valley and table land are here of grit and wake, brown, blackish, grey, redish, &c. with few fossils, some milleporites and productus. There are 25 small Lakes in the neighborhood and the county of Delaware, which appear to be as many geological springs, or ancient craters of these mts. when under the ocean. Boulders and debris are common, but none are of different materials.

Walking over the hills 2500 feet high, separating the waters of the Susquehanah and Delaware, I went to Harpersfield, where I took a waggon stage as far as Onionta 23 miles on the Susquehanah, by the valley of Charlote R. and the Rattlesnake hills. Onionta is a new village of 40 houses not in the maps. Fossils begin to be found. From hence I took the stage for Cooperstown 22 miles N. ascending thus the Susquehanah to the source in Lake Otsego, and passing thro' several villages. I saw here in a storm a beautiful ground Iris or Rainbow on the ground, a very rare phenomenon.

Cooperstown is a pretty village of 200 houses at the end of Lake Otsego, exactly

at the source or discharge of the Susquehanah. This pretty Lake is 9 miles long and 2 broad, raised 1200 feet above the sea, and the hills around 1700 feet. It is very deep, over 300 feet. I visited the quarries, found many fossils in the grit or grau-wacke, gave a public Lecture in the Court house on natural sciences, and became acquainted with Judges Nelson and Brown.

Leaving the place, I walked along the Lake on the east side: towards the N. E. the hills sink and the limestone begin to appear. I went to Cherry valley, pretty village 1336 feet above the sea, where all the formations appear to be mingled or reproduced. I became acquainted with Dr. White, Mr. Campbell, &c. and gave another Lecture on natural science. I visited with Mr. Joseph White the pretty Brimstone fall 150 feet high, thus called from Sulfur springs near it, many pretty fossils are found there. I discovered an unnoticed natural curiosity, a very singular Limestone flat rock which has the appearance of a geographical map.

Here also begin to appear thin filmy strata of a slaty coal, as near to slate as to Bitumite. Also huge granitic boulders out of place, thrown by ancient volcanoes in the Saranac mts. of the N and now 1200 feet above the valleys which separate them, where they would have sunk if rolled and

not ejected by volcanic agency; thus evidently not clysmian nor diluvial.

Taking another wagon stage to Canajohari on the canal, I descended the table land into the valley of the Mohawk R. The soil is clysmian covering limestone. It is a flourishing village of 100 houses 69 miles from Albany. I took the canal with my collections, going only by day. Thus I observed again the granite mts. of 1200 feet, which are divided by the Mohawk at a water gap, sending S. a spur towards the Limestone mts. but far to the E. of L. Otsego and its boulders. This water gap is west of the Skohari valley.

Afterwards came the towns of Amsterdam, Fultonville, and Canawaga: between this last and Schenectady, the Heidelberg mts. reach the Mohawk, and form a defile 5 miles long, joining to the N. with the mts. of Saranac, here Secondary. All this is omitted in our maps, as well as all that I noticed on physical geography in this journey.

Resting one day at Schenectady to see the College, I went afterwards to Troy direct by the stage, and after seeing again Prof. Eaton, Prof. Hall, &c., I returned to Albany and New York by steamboat. I remained 10 days in New York on business, and saw Dr. S. Akerly. Afterwards I went to New Brunswick for one day to visit the ample quarry now open to make a cause-

way for the Raritan canal, that will soon unite this city to Trenton. This examination was instructive, I saw a peculiar series of rocks, among which a primitive or volcanic Wacke, with prismatic rhomboidal pillars of a redish color, intermediate between red sandstone and the greenstone of the Palissadoes.

I returned to Philadelphia in September by Trenton and Bordentown with my fine collections of plants and fossils to attend to my advocations, my journals, &c. I concluded this little work, went on with my other works, and attended to my profitable business; which my travels during the fine season, induce me often to neglect for the beauties of natural sciences. Their study and my travels are never profitable in a pecuniary point of view, since they employ my time and money: my Lectures hitherto being chiefly gratuitous. But I accumulate knowledge and collections.

Whether I will ever be able to turn them to some profitable account, either for myself or the public, is a matter of uncertainty. It is time however that I should spread before the public of both hemispheres, the results of so many years labors and exertions. What I have already published are mere fragments, compared to what I may do yet, if allowed to or able to give the fruits of my historical researches and discoveries in natural sciences.

CONCLUSION.

In this life of travels, I have also displayed the exertions of my activity and industry, with my zeal for learned labors and researches. The whole is but a mere sketch, since each of the chapters might form a volume or more, if I ever can publish the details and observations now omitted. My personal adventures might of themselves make a romantic work. My memoirs will be such also, with numberless anecdotes upon the men and things that have fallen in my way.

Even my travels are not ended, since I am perhaps to travel as long as I live. Altho' sedentary during the seasons of snows and storms, the flowering season recalls me to periodical excursions, and to enjoy the pleasures of a bountiful nature. My health now firmly improved allows me to hope for 20 years longer of similar exertions, or in structive travels; since as I advance in my career, greater experientiae is helping me in my researches.

Whatever may yet be my fate, inaction does not suit me. Resigned to the Divine will, I ever act as a Philosopher in doing the best I can. I have already experienced many misfortunes, shipwrecks and losses; I have often been discouraged, but have never dispaired long. I have tryed to serve

mankind; but have often met with ungrateful returns. I have tried to enlarge the limits of knowledge; but have often met with jealous rivals instead of friends. I have tried to instruct and enlighten by my writings; but my pen has often been snatched or compelled to be idle for awhile.

With a greater fortune, or if I had not lost my estate several times by revolutions and shipwreck, I might have imitated the Humboldt, Linneus, Pallas, Klaproth If Clifford had lived longer, he might have become for me the Cliffort of Linneus. But I have had friends and I have several yet: they know my zeal and steady efforts; they may yet encourage me or help me to pursue the laborious career I have traced to myself. Why should I not find protectors or enlightened patrons, as were found by Audubon and so many others.

I think to have already gone over nearly 25,000 miles, on the surface of the earth, half by sea, and half by land, or on rivers, canals, &c. Nearly the fourth or 6,000 miles have been pedestrian journeys, the most arduous, but the most useful of all. These travels have not been performed by racing; but at leisure, always observing, collecting, surveying, mapping, drawing, and accumulating treasures of knowledge, if not of metals.

I have travelled by nearly all the possible manners, except by Camels and in Bal-

loons. By land I have travelled on foot, and on horse back, with mules and asses, in stages, coaches, carts, waggons, litters, sedan chairs, sledges, rail road cars, &c., and even on men's back By water I have tryed canoes, boats, felucas, tartans, sloops, schooners, brigs, ships, ships of war, rafts, barges, tow boats, canal boats, steam boats, keel boats, arks, scows, &c.

These travels have costed me between \$8,000 to \$10,000, which with the interest would now be a fortune. Since I have seldom travelled except at my own expence, altho' sometimes on business. I have never been sent nor paid by amateurs, societies or governments, like so many other learned travellers.

Such is then the picture of my life, my labors and my travels. I give it to the public, or rather to the learned, as an uncommon instance of perseverance and industry. May this inspire youthful minds with a wish to do as well; and the friends of sciences with the wish to know me, or patronize the labors of my old age: permit me at last to produce under their shield, those works, fruits of my travels and researches, which I desire to leave as monuments of my life and exertions.

If I have often 'gone beyond the actual state of knowledge in my views and opinions, or anticipated on future knowledge, it was with the noble aim of adding my mite

to the mental improvement of mankind. If my discoveries and projects have not been speedily admitted, I leave them as a Legacy to those superior minds who will be able to appreciate them, and bestow me the justice often denied in my days: to the friends of useful sciences, of virtue and peace, to the wise Philanthropists, to the enlightened liberal and impartial men of both hemispheres.

Philadelphia, 1st January, 1834.

CHAPTER VIII.

SUPPLEMENT.—*Travels and researches in 1834 and 1835, sources of the Schuylkill, central Alleghanies of Pennsylvania, Savings Banks, &c.*

This work was to have been published in 1834; it has been delayed for two years: whereby I am enabled to add the outlines of two other years of travels and researches.

Early in 1834 I continued my historical and botanical labors, preparing many for the press: and concluded my Atlantic journal, which did not pay the cost, owing to the difficulty of collecting the small subscriptions. It forms however a volume 8 vo. and a complete work by itself, containing 160 original articles on natural and historical sciences.

At the opening of the spring, I made several botanical excursions to Manayunk, Germantown, Kingsessing, &c. My first journey was only as far as Easton. Having determined to visit the source of the R. Schuylkill (or rather Manayunk and Tamaqua), and explore the Coal mines of that region, I went to Bordentown in steamboat, and not finding a conveyance to the Pine barrens, nor the Schooley mts., I resolved to ascend the river Delaware by canal. At Trenton I crossed to Morristown, hoping to find a conveyance on the Easton canal;

but no regular packets nor lines was yet established. Therefore I concluded to follow the banks of the Delaware on foot as far as Easton at least.

When I had gone on that road in the stage, I had noticed many remarkable places worth visiting, which I now did at leisure. This river road is beautiful and romantic, as it crosses all the ranges of hills and mountains, broken by the Delaware. Several small villages are found before Newhope, where is the main bridge and crossing place. I rested 3 days there, in order to explore the Well's falls or rapids, below it, formed by the Goat hills, which are called Bowman's hills on the west side of the falls. They are of Paleopsamite or old sandstone, strata cubical or columnar, dip 40 to 85 degrees W. Lambertsville in New Jersey (opposite Newhope) is much larger, and a fine village of 120 houses. A fine chalybate spring similar to that of Brandywine near Wilmington, hardly half a mile from it, is not yet known nor frequented, but deserves to be, and two fine villages offer accommodations for boarders. Dr. Corson of Newhope, whom I met by chance in my exploration, was kind to me; but he was so busy, that he could not join me as he wished, in my explorations.

Beyond Newhope, the Delaware flows thro' various pretty hills of sandstone and

lime stone, until the primitive Lehigh hills. In some places, there are level expansions with a sandy soil, which appear to have been Lakes formerly. The largest is that of Tinicum above the creek of that name, about 10 miles long and 2 wide. There is another covered bridge not far from Newhope, and several hamlets, Lumberville being the main.

But the greatest natural curiosity on the Delaware, are the Nickamixon rocks, in Pennsylvania, where they give name to a township. This ledge is nearly perpendicular, 2 1-2 miles long 400 feet high. The base is red Shale or Paleopsamite; but over capped by a brown trap: they front the south, and have a level top, with only two fissures, made by rains falling in cascades. The road and canal have been made by cutting and banking. The river is full of little islands; opposite in N. Jersey are the gravel hills, the highest 700 feet high. It is a beautiful and romantic place. I found here the *Adlumia* and many other rare plants.

Durham cave once called the Devil's den, is another natural curiosity beyond those rocks, in a limestone valley. The entrance to the cave is ample and shelving 30 feet wide, 10 high. It has often been described, and is not remarkable for any great wonder, nor has it any fossils. I only went a little way in it; but it extends 300

yards. Limestone caves are pretty much alike, unless they offer great size, stalactites and fossils. They all are the volcanic vents or outlets of the fluid limy matter that formed the lime strata, or the rents and fissures formed on cooling and becoming solid limestone; here the limestone is blue and vertical.

Soon after, appears the Muskotenong hills and gap, with the passage of the Delaware thro' this primitive range, continuation of Schooley and Conewago hills; there called Lehigh (pronounced *Lihay* and called 100 years ago Lechay) because the river of that name, borders them on the north side. They are about 6 miles broad, and 800 feet high; but have a limestone valley in the middle: Here is found the pretty marble, spotted green and pink, and other fine minerals. In some spots, the road and canal have been made by cutting the hills, and throwing the stones in the river, to form a causeway for the canal.

When I arrived at Easton, I had collected already so many plants and minerals, that I could not proceed with them any further towards the Schuylkill gap. Finding the stages running to Philadelphia, 60 miles for one dollar by opposition, I took one of them, which went by another road, crossing the Lehigh at Flemingsburg or Freemansburg. This road crosses the Lehigh hills by the fine Shoking valley, three

miles wide, with a very gradual ascent, nearly cutting the mts. through. Many small villages, chiefly inhabited by a German population, are met with. The Nickamixon trap rocks form here a broad dyke of 2 or 3 miles, very rough. The high hilly region extends till the valley of Nishaminy. Beyond it begins a kind of table land, extending till Chesnut hill and Germantown; it is fruitful, well cultivated and with many hamlets.

In August I resumed my intended journey to the head of Schuylkill, taking now quite a different direction. Duly west at first as far as Doylestown, by the Columbia rail road. But stopping at Oakland hills some miles this side, in order to explore them. Next day leaving the rail road, I took on foot the Harrisburg turnpike for a while, ascending the Brandywine hills to the north, and afterwards crossing the Welsh mts. of a quartzose formation. They are here 4 miles wide and 800 feet high, 1000 at least over sea. On the banks of a Lake I found the *Morea chinensis* growing wild, and on the mts. a fine new plant *Mentha cinerea*.

Beyond those mountains is the Conewago valley, here near its head, but still of limestone. I tarried at Morgantown, where I luckily met a German of Hamburg returning there in a light wagon, who gave me a seat for one dollar the next day all the way

30 miles. The primitive Blue ridge is here 14 miles wide, and broken into hills, called the Chesnut hills near Morgantown, and the Flying hills near Reading. They are of paleo-psamite, shales and granite, with Iron mines and forges.

Reading is now a fine town of 5,000 population, at the northern edge of the hills; but on the limestone, on the east side of the Schuylkill, where there are 2 gaps, the Neversink hill standing between the Reading gap and the water gap. The real name of the range is Manatony, east of the river.

Hamburg is 16 miles from hence at the other end of the great valley. The limestone extends 10 miles and then begins the slate. There are many taverns, but no towns on this turnpike road. The limestone region has sinking creeks as usual, one near Maiden creek, rises and sinks twice. Hamburg is quite a German village on a long street with 120 houses: it is within one mile of the Alleghanies, here called Albany mt. and 1200 feet high, of vertical red sand stone or psamite, forming the Schuylkill water gap, a very romantic place; but now bustling with the canal, roads, furnaces, &c.

Here I resolved to walk over the mts., and began to collect many fine plants. A long artificial pond formed by a dam on the Schuylkill fills the gap, one mile long; beyond it, is Port Clinton at the mouth of

the Tamaqua R. or little Schuylkill, and Tamaqua rail road 20 miles long to the mines. The whole region becomes interesting. Rumbling run is a good spot for Botanists. Instead of following the river or canal, I went across the hills and Pine creek valley to Orwisburg, county seat of the mining county of Schuylkill. It is in a valley at the foot of the second mountain, and has 150 houses.

Hence I returned to the river and Schuylkill haven new village of 40 houses 5 miles off, at the end of Minersville rail road, extending 9 miles to the west.

Thin slate prevails in all the valleys. One mile from hence is the third range of mountains, called Sharp mt. which bounds south the Coal region. A beautiful romantic glen and water gap two miles long, leads thro' it to mt. Carbon. This is quite narrow, and with many ravines, but now full of life and houses, road and canal. Lewisport with 6 houses claims to be a village. But I admired as much the beautiful vegetation, rocks, cascades, bridges, and broken hills. The last is the real Sharp mt., being very narrow on the top; no coal has been found south of it. The strata are of vertical red sandstone or psamite, changing north to conglomerate of various dip, that supports the coal fields and strata.

Mt. Carbon is on the west side, being the continuation of this mountain; the vil-

lage of 100 houses is at the very gap, and extends towards Pottsville, almost joining it. I remained 3 days at Pottsvillve and the neighborhood, visiting the most curious mines and localities. Having no acquaintance there, I was at first at a loss where to find the fossil plants that I chiefly sought; the miners telling me they threw them away. At last I was directed to Mr. Thomas, Cashier of the Bank, who had a small collection, and pointed out some spots, where many could be taken out of the slate.

Pottsville, quite a new town, sprung out of the mining mania, has already a population of 3000, and is surrounded by villages, mines and rail roads. Altho' the Coal trade was very depressed and many mines unworked, 5000 tons were shipped weekly. Speculation had for years run wild in this section of country, but sober sense was beginning to control the prices of land. Mining is no easy sport here, as it is at Pittsburg: it requires capital, time and labor, for boring, drifting, timbering, drawing, railing, &c. The mining strata are from 9 to 5 feet thick, those thinner are nearly useless. A miner gets \$5 per week; the ton was only worth \$2 for the very best kind. This Coal is the anthracite, the strata are alternating with carbonic slate: they are nearly vertical near the Sharp mt. and dip north. Near the Locust

mt. bounding the bason to the N. they dip south, and the middle are nearly flat. No fossil plants are found in the coal; but only in the slate, also the grit or conglomerate. Many superposed strata exist, but the number not yet ascertained.

I walked over the whole neighborhood, collecting many mountain plants, and fossil specimens. These last were chiefly impressions and casts of Ferns with a rare *Marsilites* often mistaken for a flower, &c. At Laurencetown village of 60 houses two miles E. (only divided by Lumber creek from Port Carbon nearly equal in size), I visited a new mine of Mr. Lawton, open by a perpendicular shaft of 70 feet, wherein the coal is raised by horse wheels, some fine fossils were found there.

From Port Carbon where begins the canal, a rail road of 10 miles leads to Tuscorora, and the source of the Schuylkill, or Tuscorora branch of it; which has been deemed the main; altho' the Tamaqua branch comes from further off, but with less water. I went on that rail road along the valley, where are many mines, 3 hamlets and many lateral creeks or brooks.

At Tuscorora the valley between Sharp and Locust mts. become very narrow: this village has only 15 houses, the company that bought the land for \$17 to \$50 per acre, had failed. It stands on a fine hill, between two rills, that are the sources of

the Schuylkill. The maps erroneously show there a Lake as the source, which has no existence; but is merely a small mill pond often dry. These rills do not even rise from large springs, but have many small springs all along. From hence to its mouth the Schuylkill has a course of 200 miles.

A real pleasure is felt by refined minds, in attaining and viewing the very source, of a large stream of which the broad mouth or outlet has been seen. It is the same kind of delight proved when we can trace nations to their origin, and living beings to their fossil types.

South of Tuscorora in the Sharp mt. is a singular valley 3 miles long from N. to S. and 2 miles wide, called the Devil's hole. It is a gloomy den surrounded by mountains, open to the south by a dreadful rent or gap, where a brook escapes. This valley has now 12 farms. It was certainly once a mountain Lake; and perhaps a volcanic outlet of these mts. and formations, when submerged under the ocean.

I walked to Tamaqua 4 miles E. and remained there two days to explore and collect. Many fine plants were met in this wild road, *Trichostema rosea*, *Harpalyce* Sp. Tamaqua village of 36 houses is on Tamaqua creek, where Wabash creek comes in from the W. and Panther creek from the east. Here begins the rail road to Port Clinton, and all the mines belong

to a company. Mr. Keating of Philadelphia, president of it, was then on the spot, and helped my researches. Mr. Keller superintendant of the mines, had made a fine map and section of them. There are 32 strata of coal between the Locust and Sharp mts. here only a mile apart, which form of course 16 layers, as they incline to each other and must meet below. The southern strata are nearly vertical, the northern incline S. 40 to 75 degrees, the central much less. The thickest bed is 25 feet thick. The mines require no drifting nor draining; but much proping and fanning as they are worked upwards. A grey sandstone and conglomerate divides the strata, one bed is of black sandstone holding silver mica. I collected many fossils, ferns and plants in the slate and sand stone, of which I made up a box, with those of Pottsville, and sent them to Philadelphia.

The Tamaqua is a beautiful mountain stream, tumbling from rock to rock, and breaking thro' several mts. by water gaps, Locust, Sharp and Second. I went up and down for several miles. The mts. are 1750 feet above the sea, their base at the rail road is 800 feet above the sea, thus they appear only as hills. East of the stream they become the Manchunk mt. I walked to the mines on the summit hill, by a very

wild road of 5 miles, near the Panther valley.

I met there my old friend Dr. McConnell of Manchunk, and Mr. Gowen of Philadelphia, who invited me to visit also the Beaver meadow mines, on Broad mountain. At the summit hill 200 miners and 100 mules were employed to mine 3000 tons weekly. The air felt warm at 68 d. and the water of wells was cold at 50 d. Here the coal is nearly horizontal and mined as a quarry being 60 feet thick: it is the eastern end of the great coal region.

From the town of Manchunk, where I went by the rail road slope of 9 miles, I proceeded by a new rail road to visit the new mines of Nesquehoning 5 miles N. W. The valley and creek of that name separate the Broad mountain, from Manchunk mt. This new village begun only 3 years before, had already 50 houses and 120 miners. Six mines have been opened by the Lehigh Company on Room run and Kitten run (once called Hell run) in a ravine of Manchunk mt. Some are uncovered, others dip in the hills. The largest bed is curved and 50 feet thick, worked by an inclined shaft. In a vertical uncovered mine I found and took out a fossil tree (*Cactites* or *Cereus*) from the solid schistic wall dipping 85 d. N. I saw a specimen of *Selagite* or *Lycopodite* impression 3 feet long. Some beautiful conglomerate green, red

and white is found near the rail road, which might be quarried and used as marble, altho' much harder.

The Broad mountain was here close by; but I had not time to go there. It forms a high table land with another field of coal. I had collected so many fossil plants that I made up another box at Manchunk. This town has now 150 houses. Mahoning mt. is east and south: it forms with the Broad and Manchunk a deep hollow valley, called the Kettle, another ancient Lake and Crater. I had collected 32 species of fossil plants in this coal region, 12 *Lignites*, 2 *Cactites*, 3 *Graminites*, 2 *Selagites*, 10 *Filicites*, 3 *Marsilites*. I now resolved to visit another very remarkable locality for fossils, lower down on the Lehigh, which I found with difficulty at Weisstown. Here in flinty slate I collected 12 kinds of fossils, 1 *Trilobite*, 5 *Productus*, 3 *Milleporite*, 2 *Encrinites* and 1 *Phlyctilites*.

Here ended my walks and explorations of these mountains. Meeting a return carriage going to Allentown, I took a seat in it. We entered the great valley by the Lehigh water gap, crossed the river on a bridge, and the valley by a road new to me, without towns, thro' high slaty hills and next the usual limestone tract, with dry streams.

Allentown is near the Blue ridge, here reduced to the size of hills; but in a lime-

stone hill one mile from the Lehigh bent; it is nearly as large as Reading, population 4000, chiefly German. Here I took the stage, by the Bethlehem and Flemingsburg road, the same I had followed from Easton. It passes by Shimerville, Hellersburg, the trap rocks, Lexington, Headstown, Montgomery, Flourtown, Chesnut hill, Mount Airy, Checocton, Germantown, &c.

Returned to Philadelphia I resumed my literary labors; sending some mpts. to Europe, with specimens, &c., and writing several essays for literary journals. One of them on the Chinese Nations and Languages was published in the Knickerboker. Becoming acquainted with a Mexican Philologist, Naxera, he communicated some facts on Mexican Languages.

I renewed my exchanges of plants with Dr. Short of Lexington, and Dr. Torrey of New York. I prepared my supplemental flora for the press, continued to print my Herbarium, and to think of beginning a fossil flora of the United States.

In 1835 my former plan of a Six per Cent Savings-Bank was resumed, matured and accomplished. As early as February I ventured to ask again the help of Capitalists or Philanthropists; but neither would help me! Instead of which many new Banks of discount, disguised under the name of Savings Institution, were projected by speculators, (secretly and by combi-

nations) who proposed to give only 4 or 5 per cent interest to depositors. Seeing this perverse disposition, I invited in May the whole public to join me in founding a beneficial Institution, which I called *Divital Institution* (meaning Institution of wealth) and *Six per Cent Savings-Bank*, dividing a first Stock of \$50,000, in 5000 shares of \$10, whereon from 7 to 10 per cent could be made per annum; while depositors were to be allowed 6 per cent, and to become stockholders after awhile.

This plan succeeded at last. About 50 subscribers took nearly all the shares, and on the 1st of June we began to organize and manage the Institution; which has given regular quarterly dividends ever since of 2 or 2 1-2 per cent, being 9 per cent for the first year. But I had many difficulties and delinquencies to contend with. The speculators instead of joining us, gave us much trouble, by enquiries, prying, forming a dozen other Savings Institutions, dividing the stock secretly among themselves, bribing some of our subscribers and trustees to abandon us, in order to join them Which has lessened our useful exertions, and beneficial intent; but in spite of all opposition or competition, I have contrived with the help of some steady and conscientious colleagues to carry the Institution into successful operation.

My anxiety and exertions for that pur-

pose were such in June, that I fell sick of a fever, and after my recovery, was induced to visit again the Alleghanies, both to improve my health and continue my researches, visiting the western end of the coal fields.

I left the city by the Columbia rail road on the 4th July, and arrived there the same day, distance 82 miles. Beyond Downingtown after crossing the Brandywine, this road goes up a fine valley, where is Coatesville, pretty village of 40 houses; and after crossing the hills. enters the Piqua and Conestoga valleys. It runs on a summit level 78 miles long, with occasional causeways and deep cuts; the deepest near Lancaster is 40 feet, in Clysmian soil resting on white limestone.

At the Susquehanah a long inclined plane, leads to Columbia and the canal. This town has now 200 houses, Wrightsville at the west end of the long bridge has 50 or more. Wishing to go by day light on the canal, I took the Susquehanah packet line. The first hills, continuation of the Welsh mts. are close by Columbia to the N. 2 miles wide, 500 feet high, and primitive, the gneiss in vertical strata. West of the river they are broader and higher, 5 miles broad, the highest summit round top is 700 feet high.

Many towns and villages are met with between Columbia and Harrisburg, on the

canal and river. Marietta, is the largest; beyond it, is the Conewago valley, river, and Falmouth or Bainbridge. The Susquehanah is full of Islands and very picturesque throughout. The geological features are striking.

The Conewago hills (Blue ridge) are here removed from the river on the east only 5 miles broad; but near it on the west, and 8 miles broad, 6 or 700 feet high. Portsmouth at the mouth of the Swatara, is the port of Middleton one mile inland. Here begins the big valley and the limestone. Highspire is the only village before Harrisburg. I did not tarry there now, but proceeded with the same boat till Port Patrick above the Juniata. The water gaps of the Susquehanah below it, offer charming sites that I always like to visit again. The mountains were now speckled with the yellow blooms of the Chesnut trees. Beyond the Juniata junction, night overtook us, I felt unwell, and was glad to land at Port Patrick 12 miles distant, in order to go immediately to bed.

Next day feeling better, I began to herborize on the Buffaloe mt. (now mt. Patrick) and visited an attempted mine, where fossils were found, but only a thin layer of coal, being west of the river. Opposite in the east side is Berry mt. and Millersburg, where I crossed in the coal boats. This village has 100 houses. I tarried here two

days, not feeling yet strong enough to attempt the mts. Yet I took many walks on the Wiconisco creek, and to the foot of Berry mt., the gap and the Island joined by a dam, studying their geology and botany. Berry mt. has vertical strata of grit and sandstone.

The soil of Wiconisco or Lykens valley lays over thin red shale, without fossils, dipping N. 40 d.. It is 20 miles long and 4 broad. Mahantango mt. is on the north side. The coal mines at the eastern head 15 miles from the river, are in Short mt. dividing the valley in two others; while Berry and Peter mts. unite at an angle by the Rattling mt.

I went to the Wiconisco mines in the return coal cars, by the rail road, and tarried there 3 days. A village has been formed of 25 houses; 15 miners, 20 mules and 70 cars are employed: the miners get 50 cents per ton. The village is on the south slope of Short mt. in Williams valley, at Bear gap, of Bear creek.

Short mt. is 800 feet high above the valley, 10 or 12 miles long and 2 wide. It has on the top a hollow valley with a long shallow swampy Lake in the centre, 3 miles long from E. to W. and 300 yards wide, from whence flow W. Bear creek, and E. Routh creek that falls N. into Pine creek branch of Mahantango creek. This interesting feature is not in the maps. This

was surely once a submarine mountain crater of coal or slate.

I took maps and views of these places, and obtained much information too long to repeat. Mr. Scheffer director of the mines helped my enquiries. This is the real western end of the great coal field extending to the Lehigh easterly; but reduced in breadth to less than 2 miles. The strata of coal are from 2 to 12 feet thick, dipping inside: N. at the south, and S. at the north side of the mountain. Conglomerate and grit, with slate near the coal, divide the strata. The Pinegrove mines 20 miles east connect this field with the Pottsville fields. The Moconoy mines 20 miles north, are the west end of the Broad mt. coal field, distinct from this. Here the coal is only accessible at the gaps, and even there covered by rubbish and debris of grit and slate from 50 to 150 feet thick. Horizontal shafts have been made on each side of the gap, with drifts from 30 to 200 yards deep. Fossil plants are found in the slaty roofs, and I collected several *Calamites*, *Striatulites*, *Selagoites*, &c.

Having hired a light wagon to take me to the Mahantango ferry, 18 miles, I went there thro' the whole valley, by Fenders-town. Many other towns are in Lykens valley, Gratztown, Hellerstown, &c. The great mt. Mahantango is cut in 4 by 2 water gaps, Pine creek gap, and Haines gap,

a third Dirley gap is a dry one. I tarried at the ferry and explored this mountain, finding many rare plants. It is 2 miles broad here, opposite west of the river is Wild-cat mt., between them the Susquehanah is full of rocks and rapids. Mahanango is a west spur of the Broad mt., or rather its real ancient name. The rocks are grit, nearly vertical, of many colors, often rusty. The river side is full of large stony avalanches or slides. From hence the Moconoy mts. are in sight, another spur of the Broad mt.

Liverpool a town of 50 houses is on the west side and the canal. I crossed there, to get into a canal boat, and went as far as Duncan Island at the mouth of Juniata, passing again by Port Patrick and Buffaloe village of 24 houses. The half-fall mt. S. of Buffaloe mt. has curious schistic formations, vertical and contorted. Next day I took passage in a line of packets as far as Mifflin, 34 miles up the canal and Juniata.

The canal abounds here with water snakes, and has a curious water plant, an aquatic Lichen, rather than Tremella; that I called *Epidrolithus*. The first hills and water gap are at the Half-fall mts. Caroline furnace is the first village, next Newport 11 miles from the mouth. One mile above, the canal leaves the S. for the N. side of the Juniata, and boats are wafted

across by a rolling machinery. This is beyond the water gap of the Buffalo mts. The next gap is that of Mahantango mts. Beyond is Millerstown with 40 houses.

Soon after begin South of the river the Tuscorora mts. a continuation of the Mahantango range, which extends in a long ridge till the Potowmak in Maryland. It is here 10 miles on the river, and about 2000 feet high. Afterwards come slaty hills with distorted strata. Mexico is a village on the N. bank of the Juniatta, and Perryville on the south side, with a bridge at the end of the Tuscorora mt., Mifflin 3 miles further has another bridge, and over 50 houses.

Next day, I took here, the stage for Lewistown, 12 miles further up; the road skirts the river, canal and Shade mt. which forms a long and narrow water gap 5 miles long. I tarried many days in Lewistown, a fine town of 300 houses, the largest borough on the Juniata. It is seated amidst mts. and hills, rivers and creeks. There is a good mineral spring, a mild chalybate like Bedford and Brandywine, of which I made use with advantage. Becoming acquainted with Mr. Fisher, and Dr. Cuthbertson, men of intelligence, they imparted much information, and Dr. C. gave me some fossils. This is a locality for them, particularly for *Fucolites*, and many formations meet.

In a crumbling white quartz sandstone, are found many casts and impressions of *Terebratulites*, *Spirifer*, *Turbinolites*, &c. Many fine plants were found and a new sp. *Napea tomentosa*. I visited the Shade mt. gap, and the Cold spring there for plants and *Fucolites*.

Feeling strong enough to walk again, I undertook a pedestrian exploration of the mountains, north of this. First to the Jack mt. gap, cut by the Kishacoquilla creek; a village of that name, also called Brown's mill, is beyond it in the valley. Next across the valley of Kishacoquilla to the Turkey mts., here called the seven mts. This fine valley is 30 miles long from E. to W. 4 miles wide in the middle, but very narrow at both ends. It was once a mountain Lake, now drained by the water gap of Jack mt. 2 miles long, of redish sandstone with *Fucolites*; but the valley is of transitive limestone, with some minerals and rare fossils. It has caves and knobs. At the west end Mastodon bones were found in clay. Near the northern mts. the formation changes to crumbling slate.

Resting one day at Perryville, 9 miles from Lewistown, I explored Laurel run and Hall's knob, where I found the new *Brunella rosea*. They are at the entrance of the Seven mts. These are 8 miles across, the ascent being 3 miles long, and the hills summit also 3 miles wide. Here I met a

rich display of mountain vegetation, collecting many rare and even new plants. While near the top of the mountain I met some beautiful huge specimens of *Fucolites* in a new locality, at least 2000 feet above the sea, in various colored grits, which I called *F. dilatata*, *F. moniliformis*, &c. besides *Cladorytes verrusosa* in black grit. This mountain has vertical strata of psamite to the south, becoming to the north horizontal strata of shale and sandstone. The woods and glades offered me a crowd of beautiful and rare mountain plants and shrubs.

At the northern foot of the mountains, in Penn's valley, is the village of Potters mills with 24 houses. This valley extends to the Nittany mt., it is 5 miles broad and nearly 30 long. It has 3 other towns, the largest Herrington of 40 houses is 12 miles east. A slate formation prevails to the S. but beyond a hard transition limestone, dark blue, often flinty, with veins of white spar and quartz, dip 45 d. south. It contains but few fossils of a very early age. I discovered here a N. G. of Trilobites, *Penteurya paradoxa*. A tract a mile wide called the *Barrens*, with bushes, and another the *Plains* 2 miles wide, with only grass, rest on flinty limestone; but have no water, yet are now well cultivated. Sinking creek sinks in Summer 5 miles before reaching Penn's creek: that flows by a water gap thro' the Nittany mt. Beyond which are

the Bald Eagle mt. and Backbone mt. main table land of the northern Alleghanies.

Here having already a full load of plants and fossils, I came back, to the Seven mts. and on the top collected large specimens of *Fucolites*, which I sent by a wagon to Perryville, and next day I returned with them to Lewistown by the stage, in order to carry them. After resting there again, and collecting other fossils, I made up a box of the whole, and sent it by canal. I had a fall in one of my rambles, and felt unable to undertake long excursions: therefore I took the stage as far as the mouth of Juniata, passing thro' Shade mt. gap, Mifflin, Mexico, Thompsonville, and Millerstown. This last town has *Fucolites* in the pavements as in Lewistown, I noticed 2 species; they come from the Tuscorora mts. Thus I had visited already 4 localities of these early fossils, and they are not confined to the bottom of the Shade mt. 1. Sherman valley, 2. Tuscorora mt. 3. Shade mt. near Lewistown, 4. top of Turkey or seven mts. This evinces a wide range and region, from 200 to 2000 feet above the sea, and I have collected 12 species of them.

I rested 2 days at Duncan Id. a charming spot, surrounded by the Juniata and Susquehanah, canals, roads, bridges, hills and mountains, falls, dams and rapids. It was once the site of an Indian town, and

antiquities similar to those of Ohio have been dug. There was a conical mound 30 feet high and 200 around, which has been destroyed to make the bason. Haldeman Id. next to it, has yet traces of an Indian fortified village.

After many walks and herborizations on the banks of the Juniata, Susquehanah, Peters mt., &c. I went to Harrisburg by canal, rested another day: next to Columbia, where I took the rail road to Lancaster, and Philadelphia. I arrived perfectly restored to health, and began to toil in a different way.

The Six per Cent Savings Bank was resumed, well organized, and proceeded in spite of opposition and delinquencies. I became the Actuary of it. In September we began to receive Deposits. Meantime a dozen Savings Insitutions were established in the city or county of Philadelphia, by the speculators, who hoped to obtain charters, in order to gamble in their own stocks, divided in the dark, among them. The contrast between these Institutions and ours is striking: I had once a wish to give public lectures on the subject, but was dissuaded, as it might have made me many enemies, among those whose conduct I should have exposed.

However, the public will be able to judge by the following simple statement and contrast of facts.

The *Divital Institution and Six per Cent Savings Bank*, was proposed since 1825, it was established in 1835 by inviting *every body* to subscribe. The stockholders elect the officers. Six per cent is secured to Depositors of even one dollar: and they may become stockholders if they like. The funds are invested in any safe way, never liable to losses nor delays. Loans are made at 6 per cent, on deposited stocks and available property. Extra profits arise from commissions, fines and casualties. Nine per cent has been divided to the stockholders from June 1835 to June 1836. Therefore this is a safe, beneficial and patriotic Institution.

But the *Savings Institutions*, have been formed in Philadelphia as in Baltimore, by stealing, disguising and perverting my plans, *after they had been published*, so as to become *disguised Banks* of deposit and discount. Stock jobbers and speculators in stocks and loans have contrived them, never inviting the public at large to obtain stock at par, nor allowing the depositors to elect the officers. They only give them 4 or 5 per cent, and impose many restrictions. They loan money on promisory notes, discounting like Banks, and are liable to losses, delays and law suits. The very first contrived in Baltimore has failed. Those of Philadelphia have given no dividends in 1835, and rely upon charters to sell the

stock above par, by gambling. They are therefore unsafe, deceptive and useless.

Meantime another kind of Deceptive Institutions were contrived, and called *Loan Companies*, which have all the bad features of these, adding thereto *usury* as a source of profit! In fact they are *Lombard Banks* of combined *usurious pawn brokers*, lending at *36 per cent per annum*. Some of them have adopted my plan of giving 6 per cent on deposits, which was not believed possible formerly. Yet they also ask and hope to obtain charters to carry on legal usury.

It is abominable, that a rich man, or a speculator, can obtain loans at 6 per cent from Banks, *without pledge*, and that a poor or industrious man cannot obtain (in the United States) a small loan at 6 per cent *on a pledge*. My friend Dr. Mease, has long labored in vain to induce the cities and towns authorities, to open that facility to all. Our Institution meantime lends sometimes as low as \$10 *at 6 per cent per annum!* on articles left for sale or to be bought in.

Is it not shameful also that a rich man can get 6 per cent or more for his large capital, while an industrious saving man, who may save a few dollars monthly, cannot get as much for it? but is only offered 4 or 5 per cent by the pseudo-philanthropists, who

manage the common Savings Banks for their own benefit, and not for the poor.

To give full legal interest on savings, and to loan back at the same legal interest, is the beneficial principle to which I lay claim to—which few would believe possible; but when I proved that it was possible; it is stolen, abused and perverted.

Several persons have lately (1836) adopted my beneficial plan of granting 6 per cent to depositors; but instead of joinining our Institution, to give it their support, they are become private Bankers; proving that I was right ever since 1825 in my philanthropic views. Dr. Dyott's Manual Labor Bank is also based on my published plans. Thus my sole reward is to be despoiled of my beneficial attempts to be useful.

My new labors now keep me confined; yet in October, I made a Botanical excursion of 4 days to the Pine barrens, and Cedar hills of New Jersey, between Allentown and Monmouth, where I collected many rare plants, *Polygonum articulatum*, *Gentiana trachiloma*, N. Sp. &c.

Afterwards I applied myself to my proposed works, and began to print my history of the American Nations, proposing to continue it and conclude it in 10 or 12 volumes. I shall probably continue and extend, my dealings in books, minerals, fossils, and botanical specimens. I have many rare books for sale, and unique specimens

of Natural history. I mean to buy, sell or exchange such objects, to publish my travels, my new Flora of North America, and other works, if I enjoy life, health, leasure and means, never ceasing to toil and collect the treasures of nature and science.

The geological and scientific explorations begun by the States of Massachusetts, Maryland and Tennessee, now proposed in New York, Pennsylvania, Virginia, &c., may perhaps call me to another field of utility, if I am thought of for these laborious surveys.

A great field of usefulness is now opening by these surveys, the manyfold Colleges beginning to value natural sciences, the manual labor Institutions, public lectures, &c. But as soon as any emolument is offered, a crowd of young, unskilled, unexperienced or incompetent candidates push themselves forward, and are preferred to the modest and able men who have labored for years with skill and zeal.

Girard had endeavored to prevent this in his College plan; but it is much to be feared that his views will be defeated; since crowds of applicants have entered their names years before the time, preventing applications from many real able men, who do not wish to intrigue beforehand. Nor is it ascertained how the choice of the best, will be made.

If experience, zeal and long labors will command attention and respect, in science,

education and public labors, we may hope to see them improve faster, and steadily pursue the great aim of benevolence and utility.

Whatever be my future fate and field of exertions, I shall not have lived in vain, even if they should be curtailed, or their expansion prevented by neglect. My works, researches, travels, collections, &c., will remain as a proof of uncommon zeal, altho' unrequited and unrewarded.

To do good to mankind has always been an ungrateful task, except in some very favorable circumstances. The endeavors to enlighten, instruct, improve . . . are often unavailing. Truth and knowledge are not always welcome. It has been proved by me and others that *Houses* and *Ships* may be built *incombustible* and *unsinkable*, as cheap as those in use: yet it is preferred to burn alive or sink at sea . . . millions are burnt monthly in New York and elsewhere; but a paltry sum will be grudged to reward him, who could save 100 millions of dollars and 10,000 lives, from fire or wreck!

Every endeavor to do good is blamed or thwarted, by interest, apathy, or worse motives still. Genius is compelled to slumber, or crawl, few friendly hands help him on. If I had \$100,000, I could make 1000 families happy and rich, on 10,000 acres of land, by useful plans of peculiar economy and partitions. How many wealthy men

possess that much, and make no good use of their property!

I wished to have added here this new beneficial plan, as well as my will, wherein I mean to do what I can towards some useful branch of it; but these additions would enlarge too much this little work, and perhaps be deemed foreign to it. However they may appear in print elsewhere.

If any man who unites wealth with the heavenly wish to benefit and improve his fellow beings, may read this, lacking the knowledge of doing good to many; he may learn how to make 100 or 1000 worthy families happy for life and all the following generations besides, without even impairing his Capital, nor leaving his children destitute, should he have any.

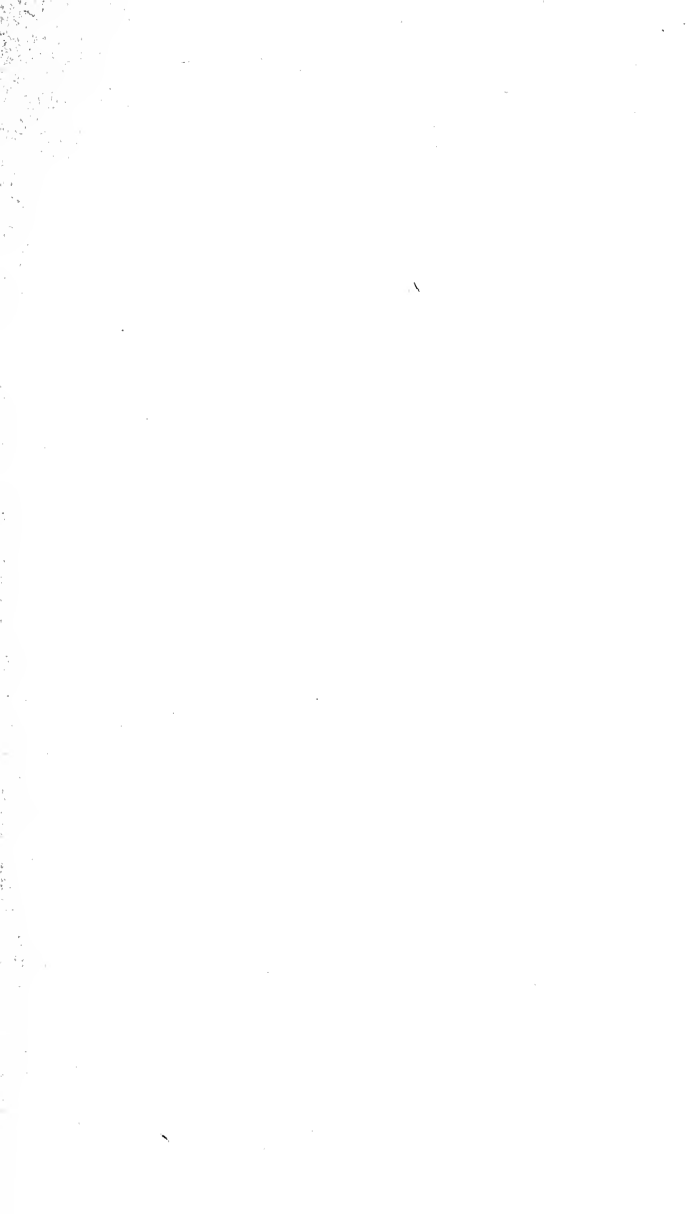
If ever mankind is to be further bettered and benefited, it must be thro' the united agency of WISDOM, WEALTH and CHARITY. Those deprived of either, are unable to effect it. Ignorance, poverty and selfishness, are the three opposite tendencies, (real banes of all improvements), that are quite prevailing as yet; and produce apathy, cares, and ungratefulness. When property, rewards and happiness shall be offered to all willing to be wise, good and grateful, few will continue to be otherwise. But universal tolerance of opinions, and unlimited scope of industry, must be added to secure mutual happiness, and unrestrained exertions of skill.

Versality of talents and of professions, is not uncommon in America; but those which I have exhibited in these few pages, may appear to exceed belief: and yet it is a positive fact that in knowledge I have been a Botanist, Naturalist, Geologist, Geographer, Historian, Poet, Philosopher, Philologist, Economist, Philanthropist By profession a Traveller, Merchant, Manufacturer, Collector, Improver, Professor, Teacher, Surveyor, Draftsman, Architect, Engineer, Pulmist, Author, Editor, Bookseller, Librarian, Secretary and I hardly know myself what I may not become as yet: since whenever I apply myself to any thing, *which I like*, I never fail to succeed if depending on me alone, unless impeded and prevented by lack of means, or the hostility of the foes of mankind.

Let me hope that they will not prevent me from completing my works, and establishing or promoting several other useful Institutions, proposed long ago. 1. Societies of united learned men, 2. mutual libraries, 3, exploring whaling companies, 4. wine, oil and silk companies, 5. steam ploughing, 6. incombustible houses and ships, 7. asylums for old age, 8. societies of industry, 9. female orphans asylums, 10. societies of happiness all practicable projects for others, if not for me, as have been the penny Gazettes, and cheap or gratuitous instruction, also proposed by me long ago, and now beginning to be adopted.

THE END.





Preservation Technologies

111 Thomson Park Drive
Cranberry Township, PA 15066
(724) 779-2111

