Weekly National Intelligencer.

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THE WEEKLY NATIONAL INTELLIGENCER.

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NATIONAL INTELLIGENCER.

MONDAY, FEBRUARY 23, 1852.

Since the day when COLUMBUS first set his foot on American soil, no event has occurred which has so materially influenced the destinies of this quarter of the globe, and especially of the Northern Continent, now chiefly occupied by the United States, as the Birth of WASHINGTON. It is fit, therefore, and it is no more than a becoming manifestation of the sense of his great virtues and services, that the day of its occurrence should be suitably commemorated when each revolving year brings it round.

We signalize the occasion by inserting at large in our columns this day the FAREWELL ADDRESS of that great man, patriot, and sage—who, among his recorded labors for his country's good, has left, in this noble testament, the last and greatest memorial at once of his wisdom, his paternal care for the people of the age in which he lived, his enduring patriotism, and his far-seeing sagacity. Of that political legacy there is not a line which ought not to carefully impress itself on the mind of every individual who has any sense of the share which, as a citizen and as a voter, he exercises in the direction and the conduct of this Government; and yet more deeply on the minds of those whom the citizens have, by their votes already cast, placed in the seats of power in both the General and the State Governments.

The next great event in our history after the Birth of WASHINGTON was the formation of THE CONSTITUTION, under which this country has, during sixty-three years, flourished and prospered to an extent which throws into the shade all preceding examples of the rapid rise of a people from infantine weakness and dependence to a greatness that already ranks it among the most stable and impregnable Nations of the Earth. It cannot but enhance the feeling with which the Anniversary of the Birth of WASHINGTON must inspire every true American heart, to reflect that it is very probable, if not morally certain, that, but for the ascendency of his popularity, this people would, for the want of a consolidated Union, have relapsed into the imbecility of the old Confederation, and thence into anarchy and comparative barbarism.

This Anniversary, which finds our Country so prosperous and happy, with that CONSTITUTION so recently "ratified anew" by the approving sense of the great body of this People, is greeted, on account of that renewed ratification, as every one must have observed, with an earnestness and fervor which leave no room to doubt that the country not only has passed unscathed through an important crisis, but that, instead of losing any thing of its just authority or rightful power, this Government has never stood so high in the general respect and admiration as it does at the present moment.

What reverence, indeed, ought not we, on the present day, to pay to the memory of WASHINGTON and his compeers in the Convention of 1787, to whose joint labors and self-sacrificing spirit we owe the institutions under whose protecting influence such great results have been realized!

Besides the Farewell Address there will be found on the succeeding page a highly interesting reminiscence of the Life of WASHINGTON, contributed by his venerable surviving relative, together with valuable Letters of his which beautifully illustrate his public and his private character and habits.

To these several articles, appropriate to the Anniversary which is by common consent to be celebrated to-day, we add another, which now for the first time appears in print; the original of which, in the familiar and peculiar hand of its great writer, has just been placed in our hands by a distinguished citizen of North Carolina. It was addressed, as will be perceived, to RICHARD DOBBS SPAIGHT, (subsequently Governor of that State,) who had been, with Gen. WASHINGTON, a Member of the General Convention which framed the Constitution, and bears date just before the meeting of the Convention of Virginia, which was, with the Conventions of other States, to determine the ultimate fate of that Constitution:

MOUNT VERNON, MAY 25, 1788.

The Hon. RICH'D DOBBS SPAIGHT.

SIR: I am sorry to find by your letter that the State of North Carolina is so much opposed to the proposed Government. If a better could be agreed upon, it might be well to reject this; but without such a prospect, (and I confess none appears to me,) policy, I think, must recommend the one that is submitted.

The sentiments of this State will soon be known. The second day of June the Convention is to meet. Since the election of Delegates to it, the prevailing opinion is that a majority of the members are in favor of the Constitution; but, as they are soon to speak their own sentiments, it would be imprudent to anticipate them, even if they were reduced to certainty. Maryland has ratified by a very large majority—sixty-three to eleven.

With great esteem and regard, I have the honor to be, sir, your most obedient humble servant,

GO. WASHINGTON.

BEAVERS IN THE SOUTH.—A correspondent of the Natchez Free Trader, writing from Copiah county, says:

"At the place from where I now write a comparatively new branch of business has sprung into existence, viz. beaver trapping. Large numbers of beaver exist all along the swamp of Bayou Pierre, and one or two gentlemen have taken them with success. Mr. Anderson, within a few days, caught thirty-five very fine beavers, one of them weighing about sixty pounds. These animals have dammed up an immense tract of land, and their work has been prepared with a care and strength peculiar only to themselves. They have not been hunted much of late years, and consequently their numbers have increased to such an extent as to reward the labors of enterprising trappers."

THE CONGRESSIONAL BANQUET ON THE TWENTY-SECOND INSTANT.

Not being able to give our readers full and authorized reports of the several able Speeches made at the Congressional Banquet of Saturday night last, in honor of the Birthday of WASHINGTON, we are fain to content ourselves with publishing the Toasts given on the occasion, as we gather them from the columns of our contemporaries.

We perceive that Messrs. STUART, HALL, and CRITTENDEN, members of the President's Cabinet, were present as invited guests, in addition to those gentlemen heretofore mentioned.

The Hon. ROBERT F. STOCKTON, of the Senate, presided, assisted by the Hon. ABRAM W. VENABLE and Hon. JOHN L. TAYLOR, both of the House of Representatives, as Vice Presidents.

The intellectual part of the entertainment was opened by Mr. Senator STOCKTON, previous to announcing the first toast, which was responded to by Mr. Attorney General CRITTENDEN in a highly animated and patriotic speech, which, together with the other addresses, we should take pleasure in giving to our readers, if we could command reports of them.

Speeches were also made, in reply to toasts, by the Hon. THOS. H. BAYLY, of Virginia; Judge WAYNE, of the Supreme Court; Major Gen. SCOTT, of the Army; Hon. ROBERT TOOMBS, of the House of Representatives; Senator DAWSON, of Georgia; THOMAS RITCHIE and GEO. W. P. CUSTIS, Esqs.

The following are the Regular Toasts given at this Banquet:

1. *The Day we celebrate:* Auspicious to the cause of rational freedom. It gave to Liberty its ablest defender, and to Republican institutions their truest expounder.

2. *The President of the United States.*

3. *The Signers of the Declaration of Independence and the Framers of the Constitution of the United States:* They had the resolution to assert the true principles of government, and the valor and wisdom to establish them.

4. *The Constitution of the United States and the Union of the States:* The faithful disharge of the obligations of the former essential to the preservation of the latter.

5. *The Mission of the United States:* To secure peace, prosperity, and happiness at home, and, by the influence of example, to establish the great truth abroad that man is capable of self-government.

6. *The Judiciary:* The surest safeguard of constitutional liberty.

7. *The Army of the United States:* May it ever be actuated by the spirit and governed by the principles of him who was first in peace, first in war, and first in the hearts of his countrymen.

8. *The Navy:* It has a Christian errand—peace on earth, good will towards men; commerce with all nations, interference with none.

9. *Intervention:* We are not to be deceived by artful definitions. Our true policy is "friendship with all nations, entangling alliances with none."

10. *Our Country:* A safe retreat for the Exile, and a quiet home for the Emigrant, but not a theatre for foreign propagandism.

11. *The Press:* A necessary auxiliary to popular intelligence, it needs no censor but public virtue.

12. *American Women:* Celebrated for beauty, admired for virtue, and distinguished for intelligence and patriotism; they have a noble example in the character of the mother of Washington.

13. *The Memory of Washington:* May it "moderate the fury of party spirit, and guard against the spirit of foreign intrigue."

The annexed were the volunteer toasts with which some of the Speakers concluded their remarks, viz:

By Judge WAYNE—

"The Congressional Banquet of 1852, in celebration of the Birthday of Washington: It will aid to make in the hearts of the American people a sanctuary and a fortress for his virtues, from which native and naturalized citizens may combat for his principles, against the sophism of 'intervention for non-intervention.'"

By Gen. SCOTT: The Memory of Washington: Do we ask for his Monument? Behold this capital and the thirty-one sovereign States which this capital represents.

By Mr. RITCHIE: True Ambition: Not the vulgar and mischievous passion which has filled the page of history with upstart usurpers, but the noble ambition of Washington, which devotes itself to the liberty and glory of its country.

Towards the close of the proceedings Mr. CRITTENDEN rose, and, after stating that this was the anniversary of the battle of Buena Vista, and making a few remarks appropriate to the subject, proposed as a sentiment the name of that brave, good, and patriotic man—

General ZACHARY TAYLOR, late President of the United States.

This being drank, other informal proceedings ensued, and the company separated, evidently gratified with the manner in which they had celebrated the Anniversary of the Birthday of WASHINGTON.

A CORRECTION.

A paragraph is going the round of the newspapers stating that the answer of Gen. LAFAYETTE to the address which, as Speaker of the House of Representatives, I made to him upon the occasion of his last visit to this country, was prepared by me, though pronounced by him. This is a mistake, which, in justice both to his memory and to myself, ought to be corrected. It was composed by himself, as the style abundantly shows. On the morning of his reception by the House of Representatives he breakfasted with me alone, and I stated or read to him the address which I intended to make to him on that day. The expression occurs in it, that he was in the midst of posterity: on reading which I remarked to him that it would afford him a fine opportunity to pay us a handsome compliment, which he might do by saying: No, and that he found himself surrounded by the same patriotic men, attached to liberty, devoted to free institutions, and with all the high attributes which distinguished his Revolutionary compatriots. The General seemed pleased with the idea, adopted it, and incorporated it in his answer. This trivial incident could have been the only foundation of the paragraph.

WASHINGTON, FEBRUARY 20. H. CLAY.

AFFLICTING OCCURRENCE.—The residence of Mr. WILLIAM GIBSON, near the village of Lockport, New York, took fire and was reduced to ashes on Saturday afternoon, causing the death of his three children by suffocation. A short time before the fire was discovered Mr. GIBSON and his wife left the house for their barn a few rods distant, leaving the children in bed. Their ages were from one to six years. The mother on returning opened the door leading to the basement, when the flames burst forth, revealing the fact that the inside of the house was all on fire. Her frantic shrieks immediately summoned to the spot the neighbors and her husband, who, on rushing to the rescue of the children, at great risk to his own life, found that they had all died from suffocation.

The Legislature of LOUISIANA has passed the bill for the annexation of Lafayette to New Orleans.

SMITHSONIAN LECTURES.

We make room in this paper for the following synopsis of two of the series of Lectures on Geology now in course of delivery at the Smithsonian Institute in this city by Professor SILLIMAN, with which we have been favored by a competent hand:

The section of the strata beneath the city of Paris, which had been described in a former lecture, was again presented for the sake of those persons now present that were not then in attendance. The section represents 1,800 feet in depth, with the fountain of water at the bottom, and the jet d'eau gushing out at the top of the tube.

Remarks were made upon the evidence of progress in the arrangement of the globe which we derive from fossils. The earth is a vast cemetery of departed beings, and only a very small portion of them has been uncovered.

Instead, therefore, of supposing that the evidence from this source has been exaggerated, we may be sure that we have fallen very far short of receiving the full impression which it may fairly produce; it will no doubt constantly increase in extent and value, with the progress of observation and research.

The fresh water hydra, described at the close of the last lecture, affords a prelude to the great family of zoophytes called corals, inasmuch as both are polyps—that is, the living animal is susceptible of division without destruction, and parts removed are soon replaced by the inherent powers of life possessed by these extraordinary animals. The corals frequent chiefly the tropical seas: the reef-building corals cannot live in water colder than 66° of Fahrenheit, and they flourish best in that of 78° to 80°. Their most affluent region is in the Pacific, between 28° of latitude on both sides of the equator.

Probably currents of cold water prevent their appearance on the western coast of South America, and even around the Gallipagos islands, situated under the equator. They are abundant around some of the East and West India islands, especially near the coast of Florida and the Bermudas, although several degrees further north than their limit in the Pacific are rich in corals.

The reef-building corals do not work in very deep water, usually not deeper than 120 to 150 or 180 feet.

There are other species of corals that work at profound depths and in all latitudes, but they are comparatively solitary, and do not congregate in immense colonies, building up a vast world of their own.

The coral animals multiply like the hydra, by offsets from the parent animal. The germ thus produced becomes detached, and floats about in the water until it attaches itself to some fixed object, and then it begins to grow, and becomes a complex individual or a colony.

It is a mistake to suppose that the little coral animals live in, and issue out of, and return to the interior of the cells that are observed in their beautiful structures; those cells and the entire stony structure are composed of lime, (carbonate,) secreted* from the water by the little animals, and disposed of by them in consequence of vital power, so as to produce those beautiful structures which we see and admire. We cannot say why they build in such forms, nor can we assign any reason why they should not build in this manner. The entire animal material pervades and encloses the coral structure forming a colony, which may be regarded as a unity, or as a collection of individuals having a Siamese connexion. If an injury is inflicted upon any portion of a living coral structure, it is felt by the whole family. If a piece of a living coral mass is broken off, the whole colony recoils by a movement of their delicate expanded members, showing that they are not insensible to pain; but immediately the work goes on as before, and the amputated or mutilated parts are replaced by new living members. Thus there is perpetuity as long as salt water temperature and food are supplied.

Nothing can exceed the beauty of the coral groves as seen beneath the clear sea; the expanded petal-like parts of the living animals present innumerable feeding mouths, surrounded by delicate movable parts colored green or red, or variously marked, and thus, being seen on an extended scale, they show all the beauty of a flower garden, and justify the pictures painted by the poets when they have described coral groves beneath the ocean wave. Among their branches also may be seen fishes of the most splendid colors, swimming about as in a marine fairy-land. Some fishes, certain sharks for example, feed upon the coral banks, and may be seen browsing upon the living coral, swallowing, of course, the stony portion along with the animal matter, and the exuviæ deposited from these repasts forms no inconsiderable portion of the calcareous mud, which subsides and aids in filling up the interstices among the corals, thus tending to produce a firm and solid rock.

It was recommended to the audience to visit the Patent Office to see the splendid collection of corals (dead corals, as the animals cannot live out of the salt water) brought home by the great expedition, among many other interesting objects of natural history.

The coral animals build sometimes upon the border of the shore of the islands; the structure forms a shelving beach, and is called *fringing coral.*

The *barrier reef* is constructed at some distance from the shore; it also rises from the sloping declivity, but is commenced in deeper water, although not below the normal limit of the reef-building zoophytes. The structure rises gradually to the surface, and as it surrounds the island, more or less completely, it produces a natural breakwater, on the outer rim of which the breakers form a white line of sea foam, while the water within the barrier is calm and undisturbed. A harbor is thus formed for the ships, which enter at certain natural openings which are preserved by the streams of fresh water that run down from the mountains and pass into the sea; and in these sluices the corals do not build, as they cannot live in fresh or even brackish water. The coral reefs are sometimes very extensive; along the coast of New Holland a reef extends 1,100 miles, and there are many others, all of great although inferior dimensions. The *coral lagoons* are very remarkable structures; they generally enclose areas of the sea of various diameters, from a mile to forty or fifty miles. Often a circular rim or narrow strand forms a perfect harbor, whose entrance lies usually to leeward. Into these natural havens the ships enter and ride in security, while the storm-billows break against the barrier—a barrier built up in the ocean by the humble animals whose masonry surpasses in firmness the strongest artificial breakwaters built by the hand of man; for granite and marble in these structures often yield to the violence of the winds and waves while the coral walls remain. Beautiful and accurate drawings and pictures illustrated this subject, and a theory of Mr. Darwin, supported also by Mr. Dana, was stated to account for the coral lagoons; but it would be hardly intelligible without the drawing by which it was illustrated.

The coral islands and lagoons increase in height, by the accumulation of materials thrown up by the violence of the waves; large blocks of coral, more or less cemented by mollusca, are thrown up upon and over the barrier by the waves, and these masses gradually crumble down and form a soil, in which seeds of tropical plants and trees take root—being transported by the birds, the winds, and the waves—and thus a green circlet crowns the narrow land, which is generally not more than a quarter of a mile wide; and soon the natives of other islands arrive in their slightly-built but admirably managed vessels, and take possession of an abode which, although it does not abound with comforts, affords them a home; their's, at least, until their humble domain is invaded by some civilized navigator, who plants his flag on the coral strand and claims it for his sovereign.

* As the material of our bones is secreted by our organs.

Coral islands are, in various instances, elevated by the internal forces of the earth. They not unfrequently rise seventy or eighty feet above the waves, and instances are known of an elevation to the height of two hundred to two hundred and fifty feet. We may presume that coralline lands, formed in the vast Pacific and other coral regions, may hereafter become the abode of civilized and christian nations, and, along with other lands to be elevated by geological powers from the wild waste of the ocean, may in future time afford a larger area for the human family, which may receive an unprecedented increase when wars shall cease and good impulses instead of bad passions shall govern men.

The corals began very early in the earth's history; we find them in almost the deepest fossiliferous rocks, and they have continued, although with change of species, to the present time.

Reefs of fossil coral are found in the interior of continents far removed from existing seas. There is a coral reef, called coral rag, running through England. An extensive coral reef is found in Indiana, opposite to Louisville, Kentucky coral is found also in Illinois, in Iowa, in Vermont, near Lake Champlain, in Mellville Island, within the polar circle, and in many other places; thus proving the early submergence of the continents beneath a salt ocean of a mild temperature, and consequently the subsequent redemption of the land from the waves is also proved.

Fishes were next considered. The existing known species of living fishes are about eight thousand in number; and the eminent naturalist, Agassiz, has described more than two thousand fossil fishes, while there are several hundred species more that have not yet been described. Fishes were the earliest created vertebrated animals. They begin deep down in the early fossiliferous strata, and they continue through all geological ages to the existing time. Agassiz has arranged them by their scales, which are generally very imperishable, into four classes—placoids, ganoids, cycloids, and ctenoids.

Most of the early fishes had unequal lobed tails, the upper branch being long in proportion to the lower. Few species having this peculiarity are found in the present seas. Sharks are examples; and they were in ancient, as they continue to be in modern times, destructive executioners, being, by the very necessities of their existence, robbers and murderers. The jaw of a shark of enormous dimensions, spreading wide enough to receive the body of a middle-sized man, was exhibited. It was caught by the Expedition, and had in its stomach a kid, which had been thrown overboard. There were five rows of teeth of large size, moveable by muscles, so as to lie flat or stand erect, at pleasure; and the fish was said to have been fourteen feet long. By comparing certain very large fossil teeth, which were exhibited, with those of this recent shark, it was inferred that the ancient sharks were seventy to eighty, and perhaps, in some cases, even ninety feet long.

The sauroid fishes, having teeth like those of the crocodile or alligator, were mentioned. Some of them were of great dimensions; the teeth of the megalycthis, found in the carbiniferous limestone near Edinburgh, had teeth some of which were five or six inches long.

The warrior fishes of the Ancient seas held in check, as they do now, the excessive population of the herbivorous races; a regimen which was, from the beginning, adopted by the Creator, in all the orders of animals, as otherwise they must, from excessive multiplication, die of starvation. Fishes, from their high powers of locomotion, have the ability to travel far and wide, and therefore are excellent guides to ascertain the equivalent geological formations; for they are the same in similar strata; but no family of fishes passes either up or down into other strata than those to which they belong.

A beautiful specimen of a fossil fish, from Mount Bolca, near Verona, in Northern Italy, was exhibited. The skeleton was quite perfect, and its impress or its bones appeared on both parts of the stone, which, when split, was divided, and divided the fish equally lengthwise. This fine specimen was brought by the lecturer from the quarry of Mount Bolca, which is in a mountain seventy or eighty miles from the Adriatic sea, and elevated probably half a mile above it. The fish rocks alternate twice with igneous rocks. This quarry has afforded thousands of specimens. Most of the cabinets of Europe are enriched by them; and the speaker saw many splendid specimens in numerous cabinets, from two or three inches to a yard or more in length. More than one hundred species of fishes have been found in this locality.

Views were presented as to the mode in which the Bolca fishes may have been entombed and covered, first with calcareous mud, and then with submarine lava.

Drawings of fine ichthyolites, from Connecticut, were exhibited, and various localities were named in this country.

The species of fossil fishes are none of them found among the living fishes of our era.

Drawings were shown of some beautiful ichthyolites from England—from the chalk and the lias; and also the fishes discovered in the old red sandstone of Caithness, in Scotland, by Hugh Miller, the quarryman, who went to work among the strata of the old red sondstone, (now called the Devonian system,) hammer in hand, and apron upon his loins—a working man—and he soon brought out treasures in fossils before unsuspected to exist; and now, by his various writings, the quarryman takes rank with the men of science and of literature; for his works are among the most instructive and delightful productions of the present age.

Coal and the vegetation which gave origin to it were now spoken of.

Allusion was made to the marine vegetation which prevailed below the coal, and which was mentioned in earlier lectures, as there were only marine beings until in the ascending series, we approach the era of the coal.

Until near that period it is probable there was very little dry land; and we shall find reason to conclude that the emergence of land began, or at least that some land was above water, at the era of the old red sandstone, (the Devonian of the English geologists,) which lies next below the coal formation. At the era of the coal we are certain that there was an extensive emergence, not equivalent by any means to the existing continents, but sufficient to form the basis of the present coal fields.

It is a matter of fact, independent of all hypothesis and conjecture, that at that era there was a sudden and very great creation of terrestrial vegetation. There could have been no land vegetables at an earlier era; it would have been a superfluous exertion of omnipotent power to call them into being, when, as yet, there was no proper basis of dry land on which they could grow.

Now, in whatever manner the dry land was extricated from the waves, we are certain that it was in some manner elevated, because we find entombed in the coal strata the exuberant and beautiful vegetation which then first made its appearance on earth.

That coal is a vegetable substance is easily proved by chemical decomposition.

We decompose bituminous coal in close vessels in the gas-works, and obtain results in perfect harmony with a vegetable constitution. The gas itself, as well as several other products obtained at the same time, is composed of carbon and hydrogen; its peculiar combustibility is due to the latter, and its high illuminating power to the former. The particles of carbon, although they also are combustible, have a transient development *as carbon* before they also are burnt, because the hydrogen is by far the more combustible element of the two, and therefore it is that we see minute brilliant points of ignited carbon dancing about in the gas flame; and it is from the particles of carbon that the brilliant light is projected to the eye.

These two elements belong to the organic kingdoms, and primarily to vegetables, as being the basis of both. There remains in the retort the carbon of the bituminous coal, in the former of coke, analogous to charcoal, but more condensed, and capable of burning longer and with a more intense heat. Tar also distils over, and naptha, and carbonic acid gas, and ammonia, including collectively the elements, carbon, hydrogen, oxygen, and nitrogen—all of them organic elements; and the nitrogen is now known to be derived from the albumen, (a principle analogous to the white of an egg,) which is found to be extensively diffused through the vegetable kingdom.

But the vegetable origin of coal is proved also by its structure, and by the accompanying plants and trees.

We will first mention the principal varieties of carbonaceous substances found in the mineral kingdom.

Lignite is merely altered wood. It does not belong to the coal formation, having derived its origin from the trees of the tertiary period, a much later era. The structura of woody-fibre knots, &c. is frequently seen in the lignite, although it is of a black or brown color, and it burns, not with the tar-like odor of bituminous coal, but with the acrid sharp smell of smoke of wood, and it affects the eyes in a similar manner. In the lignite amber is often found, having been only the turpentine of the ancient trees condensed into a solid form by the escape of its volatile oil. Lignite is sometimes found in thick beds, and is a valuable combustible, although its discovery is not a prelude to coal, and has no connexion with its proper beds.

Great sums of money have been expended in England, and to some extent in this country, in vain explorations for coal in beds of lignite and brown coal, which, as well as jet, is only a variety of lignite.

The diamond itself is now believed by Sir David Brewster and other highly qualified judges to be of vegetable origin.

We do not know of any carbon which is properly a mineral element, unless it may be found in plumbago, (black *lead*—a misnomer, since it contains no lead.)

Anthracite differs from bituminous coal only in the absence of bitumen, which is the altered turpentine of the ancient forests.

Bitumen in the form of a liquid is called petroleum, or, in this country, Seneca oil, and appears to have resulted chiefly from the vegetables of the coal formation; and in our Western States it frequently rises, along with inflammable gas, from the deep borings for salt water, which, as we may presume, pierce the coal formation or its equivalent strata.

The gas is the same that produces explosions in the coal mines; it arises from the slow fermentation of the vegetable beds, lying under immense pressure, and secluded from the air. The combustible gas (carburetted hydrogen) when mixed with the atmospherical air is rendered explosive, and, being kindled by a naked burning lamp, produces destruction to the miners, by concussion, by flame, and by a resulting atmosphere which is irrespirable. It is not uncommon that fifty lives are destroyed at once; and our own mines, even of the anthracite, have not been exempt from this calamity. The safety-lamp of Sir Humphrey Davy, if properly constructed and used, affords great protection, but still, destructive explosions do occasionally occur. The anthracite has probably lost its bitumen from the effect of internal heat. The mines of Pennsylvania show many marks of violent internal movements, very possibly connected with the operations of fire.

Coal like that of Pittsburgh, Richmond, and Liverpool is bituminous, retaining its tar, and to a great extent its gas, and is therefore highly combustible, with abundant bright flame; while the anthracite kindles more slowly, and burns with little flame and feeble light.

The geological arrangements of the coal formation are generally very simple, and similar in all countries where coal is found.

At the bottom there is commonly a stiff tenacious clay, much valued as a fire clay; then the proper coal; then above it shale, (a soft imperfect slate, formed evidently from the ancient mud,) and then a sand-stone. It presents in different cases the varieties of sand-stone, pudding-stone, and conglomerate, this stratum having evidently arisen from the disintegration of higher lands.

Beds of limestone and of clay iron ore are not uncommon among the coal strata, and beneath the entire formation there is usually a powerful bed of limestone called the carboniferous.

In the clay which forms the basis of the proper coal measures, both the roots and stumps of trees are often found, which, from certain markings upon their roots, have been called stigmaria.

There are also found frequently among the coal strata distinct impressions upon shales and sand-stones, and even upon the coal itself, to which the name of sigillaria has been given; and the stigmaria and sigillaria were supposed to be distinct, but they have been found in connexion, and the former is the root of the latter. Other vegetables which attained the height of trees are found in and with the coal. The ferns were sometimes trees of twenty to thirty feet high; the equisetaceæ (calamites) were thirty or forty feet high, and six inches in diameter; club-mosses, (ground pine,) (lepidodendra,) sixty or seventy feet high. But the greater part of the beds of coal was made up of smaller vegetables, leaves, branches, &c.

A luxuriant and perennial vegetation must have covered the coal fields, constituting a matted and interwoven undergrowth. Many hundred species of coal plants have been identified, and most of them are vascular cryptogamiæ, and the most abundant plants were ferns. The coal vegetation has been ascertained to be substantially the same in all countries where coal is found. It would require an equal and tropical temperature; and 50° added to that at the polar circles would give them the climate of the equator. The most probable cause of the warmth of the coal climate would appear to be that the internal heat of the earth had not yet declined to its present temperature. Many facts are to be mentioned hereafter, tending to show that the early terrestrial animals enjoyed a higher temperature than that now prevailing A vegetable structure is often observed in the coal itself; fibres between its layers are often seen in its fracture; and coal sliced very thin, and viewed through the microscope, exhibits a vegetable structure, and sometimes its cells are filled with the primeval turpentine concreted in the manner of amber or copal. The coal vegetation was not fitted to support the life of terrestrial animals, and none had as yet been created; only some reptiles and amphibia had begun to appear, thus foreshadowing the great change that was about to take place in the animal world.

The covering of earthy matter, which reposes upon the coal in the form of shale and sandstone, must have been brought on by water, sometimes perhaps by flooding; but that would seem not to have been often the fact, as the leaves of ferns and other plants, which, in the greatest profusion, are often entombed in the shales, and sometimes in the sandstones, would imply, from their regularity and the great perfection in which they are found, that they were gently covered, as plants are laid away in the books of the botanists. It seems probable, however, that the vegetable matter was sometimes accumulated by floating, or the sweeping of currents; but probably for the greater part it was entombed where it grew.

There is no time on the present occasion to discuss the mode of sepulture; but it seems most probable that the mud to form the shale and the sand, pebbles to form the sandstone, were accumulated in consequence of the gradual subsidence of the land.

In whatever manner the vegetation of that day was covered, it is certain that the mud or sedimentary matter to form the shale and the sand or pebbles for the sandstone were brought over it by water to form the accompanying strata, and the upper surface became again and again covered by the plants and trees, and again and again they were entombed to form successive beds of coal. This succession was repeated in some cases fifty times or more. In Nova Scotia* there are ten successive platforms, occupying nearly half a mile in thickness, in which not only the smaller plants are entombed, but trees standing erect are numerous; they grew on successive soils, the then upper surface; one of them is believed to be twenty-five feet long; but in general, not only in this case but in other similar instances, only stumps of trees of a few feet in height are found, that is when they remain where they grew. When they are prostrate, they are often in trunks twenty to seventy feet long, as trees lie in our modern forests. We may presume, then, that in those cases in which they remained in place, their trunks rising into the air gradually decayed, so far as they were above the water and above the investing materials brought around them by its agency. As to the general condition of things, there can be no doubt, although the exact manner of the proceeding may involve a degree of uncertainty.

As to the moral object, we can form no other conclusion than that a beneficent Providence, in which prescience and power and goodness are equally conspicuous, did, at this early period, before the emerged land was trodden by a solitary air-breathing, warm-blooded quadruped, cover it with a dense and perennial vegetation of a peculiar kind, in general less firm than that of modern forests; so that it readily yielded to the enormous pressure progressively superimposed by earthy materials, sometimes with large deposites of clay-iron ores; and thus it was both compacted into a dense mass to form the coal strata, prevented from atmospheric decomposition, and subjected to a peculiar fermentation which in a great measure obscured or destroyed the organic structure of the more delicate plants, while the bitumen and gas were preserved, except where from peculiar causes they were decomposed, or expelled to form anthracite.

To what extent the coal plants were transported cannot perhaps be exactly determined; but it appears certain that the greater part of them were interred where they grew and flourished in appropriate situations, which appear to have been generally in the low lands, plains, estuaries, lakes, &c.; and when we find the coal beds in mountains (Wilkesbarre, Mauch Chunk, Frostburg, Pittsburgh, &c.) we must conclude that the strata have been elevated to the positions where we now find them. The coal of the United States is exceedingly abundant, existing in vast fields, unequalled for extent in any other country; and there are many parts of the world where the coal exists and has not been opened, or only partially. The store of coal in the globe is therefore immense; but in those countries where it is not found, or where there is any danger of its exhaustion, planting is wisely resorted to, as is done in England, France, Germany, Prussia, Saxony, and other countries of Europe.

There is no reason to suppose that the proper era of the formation of coal will ever return; only peat and buried wood, and possibly lignite, belong to the present order of things.

A rapid sketch was then given of the vegetation between the eras of the coal and the chalk.

The coniferæ (evergreens bearing cones) began at the coal era. Trees of that general character were first introduced at that epoch, and along with them palms, members of both of which families are found in the coal strata. From that time onward the coniferæ and palms, in numerous species, were very much multiplied, and the proper coal vegetation either ceased or its members became of diminutive size. Cicadeæ also, and zamias and yuccas, and other trees now known in warm climates were introduced, but the formation of coal had in a great measure ceased; only in the oolite, a peculiar limestone which lies between the upped red sandstone and the chalk, there is in some countries a partial coal formation.

The vegetation of the world at that period was very stately and beautiful. The tall and graceful palms and pines rose in majestic forests, and the minor trees and plants, chiefly tropical, filled up this picture of vegetable nature, of which the coal vegetation was the prelude, and these groves, in turn, formed the transition to the still grander trees of the tertiary era, ere long to be described. Among the trees of all periods after the coal era, petrified wood and petrified forests are not uncommon. Silex, or flint and lime, are the materials that are most usual in the petrified wood; their quiet and prolonged introduction by watery submersion has copied the vegetable structure, often very perfectly; so that a tree in structure gives fire with steel, or dissolves in acids with effervescence, or burns to quick lime. Numerous instances were mentioned of fossil forests, and that of Portland, (England,) consisting of tropical trees, grew at a period anterior to that of the chalk, and is covered by a vast fresh-water formation, the wealden, and this by the chalk, which is of marine origin; and this again by the tertiary, which is both of marine and fresh-water origin.

A brief notice was given of the peat swamps; and they were spoken of as presenting some analogy to the coal formations, inasmuch as the plants are perennial, and trees grow among them; and were they covered by strata similar to those of the coal, they might approach to it in character, although the vegetation is quite different, and no such event on a considerable scale can, in this era of the world, be expected.

* Described by Sir Charles Lyell.

THE INDIANS OF THE PLAINS.

The Missouri Republican publishes the following extract from a letter received by Col. ROBERT CAMPBELL, from his correspondent at Fort Laramie. It is dated at the Fort, January 16:

"A deputation from the Crows have been here, and afterwards visited the Cheyennes, Sioux, and Arrapahoes. They were kindly received and hospitably treated whilst they were here by Capt. Ketchum, of this post, and went away well pleased. The principal part of the Cheyennes and Sioux are on the Platte, about one hundred and twenty miles above this, near the Crossing. The peace commenced at the Fort Laramie treaty ground has since been well cemented by intermarriages between the Crows on the one part, and all the other tribes on the other. The Cheyennes have taken this winter two prisoners and nine scalps from the Pawnees. The Arrapahoes are on the Chug water. The Min-ee-cow-jus (a band of the Sioux) are on the head of Laramie river.

"It is said by the Indians that about four hundred lodges of the Missouri tribes are on their way to meet the Crows above this on the Platte. There has not been a lodge within the ten-miles reservation this winter. The family of Red Plum wish me to say to Major Fitzpatrick that they are well.

"All the letters and information we have from Fort Laramie and the trading posts concur in the fact that the treaty made at Fort Laramie last fall, and the friendships then brought about, between the different tribes who were parties to the treaty, have been observed and strengthened since then by intercourse of the tribes with each other, marriages, &c. The Pawnees could not be induced to attend the treaty. Col. Mitchell made every effort to induce them to take a part, but their fears prevented them. They, consequently, were not included in the treaty, nor was peace made between them and the other tribes. They are now almost the only tribe upon which the Sioux, Cheyennes, and Arrapahoes make war. It is probable they will suffer very much this winter, and many of them be killed. A short time since two Pawnee women were killed and scalped in sight of Fort Kearny by a party of Sioux. Capt. Wharton, the vigilant commander of the post, immediately dispatched a body of troops, 'flying infantry,' (that is, infantry in wagons,) in pursuit, but they could not overtake them. Something ought to be done by Government for the protection of the Pawnees. If they are not protected in some way, the tribe will soon be extinct; for, under existing circumstances, they dare not hunt, and many must starve; and many of them will be destroyed by the other tribes."

A HUGE THROAT.—A letter written from Naples says: "Standing on the Castle of St. Elmo, I drank in the whole sweep of the bay."