

by the Mayor and Common Council of New York, as a testimonial for his gallant conduct in the defence of Fort Sumter.

One of our painstaking city journals has carefully collated the aggregate loss on each side since the war began. The figures sum up as follows:—Federals, killed, 969; wounded, 2,041; prisoners, 2,374. Confederates, killed, 4,049; wounded, 1,604; prisoners, 2,808. These figures, however, do not include the killed and wounded of scouting parties, of which there is no official record.

Among the recent arrivals from Europe is General Charles F. Havelock, late of the British army, and brother of General Havelock, whose name is so honorably associated with the East Indian rebellion. It is rumored that he intends offering his services to our government in the present crisis.

Wood and coal have run up to a high figure in Washington, in consequence of the closing of the Potomac by the Confederate batteries, the opportunity furnishing the dealers with an excuse for the same. Thus pine wood stands at about \$7 a cord, oak wood at \$10, and coal at \$9 per ton. These are oppressive rates for the poor in the face of coming winter.

The workmen in the Portsmouth (N. H.) navy yard have resolved that each of the twelve hundred men present should give the amount received for one day's work to the Maine and New Hampshire soldiers now at the seat of war; the money to be appropriated to the purchase of blankets, stockings, &c., for those who have left all the comforts of home and gone forth to lay down their lives for their country's salvation.

Brigadier-General Kelly, at the battle of Romney, Va., noticed in our last number, took between 400 and 500 prisoners, among whom was Col. E. M. Armstrong, late member of the Richmond Convention, 200 horses, three wagon loads of new rifles, three cannon, a large quantity of corn, tents, and in fact every thing they had. The loss on the Union side was but one man killed and five wounded. The loss of the enemy is not known, but must have been considerable. The expedition was truly successful. Gen. Kelly still occupies Romney with a force of 2,500 men, consisting of two Ohio Regiments, six companies of the Seventh Virginia Regiment, one company of the Third Virginia Regiment, and two cavalry companies.

Unsinkable and Incombustible Ships.

A new British iron-crew steamer, called *The Briton*, intended for mail service at the Cape of Good Hope, is built upon a new principle called the "Lungley system" after its inventor, Mr. C. Lungley. It is described as follows in *Mitchell's Steam Shipping Journal*:—

Each deck of the vessel is distinct from the others, having no communication with them, but having its separate hatchway or entrance from the upper deck; and the result of this arrangement is, that whatever injury may be incurred, to either one or even to two decks, the others will float. Thus for instance, should the lower deck be knocked away, the two upper decks will float the ship; or should either from a collision, the starting of a plate under the water-line, or from a shot or a broadside penetrating the sheathing, one of the intermediate decks let in the water even to the extent of filling the compartment from stem to stern, the buoyant power would still remain, and the vessel would not only float, but be perfectly manageable, the water merely rising up the trunk hatchway of that particular deck to the level of the water-line outside. The same subdivision of decks which affords the security against entire submersion, ensures protection against total destruction by fire. In the event of a fire being discovered on either deck, the hatchway of that deck would be fastened down, and the supply of air being thus cut off the fire would die out of itself, or if the fire had got too much hold upon the ship to allow of this, then the entire deck in which the conflagration was raging, might be filled with water without risk of other inconvenience than that of having to pump it out again. Another advantage of this mode of building is the perfect ventilation it ensures to all parts of the vessel. Each deck has its own ventilating shaft or shafts in the hatchways, which are its means of communication from above. These separate shafts likewise afford facilities for loading and un-

loading. The engine room of the *Briton* is not only protected by the water-tight deck division, but longitudinal bulkheads or iron walls running fore and aft some feet within the outer shell or sides of the vessel protect it from the chance of injury from without. Thus a fracture in the outside plates occasioned by collision, stranding, or shot, although it might admit the water into the ship, would not affect the engines or the fires.

THE GEOLOGICAL HISTORY OF NORTH AMERICA.

BY DR. STEVENS.

At the meeting of the Polytechnic Association of the American Institute, Oct. 31st, Dr. Stevens said—I have been requested by several members of the Association to occupy the preliminary half hour before the regular business for a few evenings in giving a brief history of the geological formation of this continent. I shall not enter into all the minute details which have been so laboriously studied out, but shall present only the more prominent features in that grand march of events which constitute this history. Our continent contains all the rocks that are known, and an account of their formation embraces the whole science of geology. I purpose first to present the facts and then to explain the mode in which they have been ascertained.

A long time ago—how long we have no means of knowing, but certainly hundreds of thousands, and probably millions of years—the Adirondack Mountains in this state formed a rocky, and perfectly desert island, in the midst of the ocean. At that time there was no life, either animal or vegetable, upon the earth. The rocks had not gone through the change necessary to fit them for the growth of plants. Even the sea was destitute of inhabitants.

Cotemporary with the Adirondack Mountains were several other hills, then also just lifting their heads as islands amid the waste of waters. One of these was here [pointing to the map] south of Lake Superior, another west of Lake Superior, Iron Mountain in Missouri was another, the Ozark Mountains, in Missouri, formed another, there was another here in Lampasas county, Texas, and the peaks of the Appalachian formed a long archipelago. Labrador formed the principal continent, and the most of New England was a detached island.

These were truly the primitive rocks. Twenty years ago all granite rocks, trap, &c., were called primitive, but we now know that granite has been found in all geologic periods. Professor Hutton, of Edinburgh, who first studied the geology of Scotland, finding that nearly all the rocks of that country bore traces of fire, came to the conclusion that all rocks had been formed by heat, and published the Plutonic theory of geology. At about the same time Prof. Werner, in investigating the geology of Germany, the rocks of which country have nearly all been deposited at the bottom of the seas, came to the conclusion that all of the rocks of the earth had been formed in this way, and he published the Aqueous theory. For many years in the world of science a war was waged between the partisans of these two theories. During this time a very humble individual in England, a land surveyor, William Smith, while pursuing his vocation, traveling from one country to another, perceived that certain rocks always contained the same kinds of shells and other fossil remains; and he finally discovered that he could identify rocks, though separated and in different counties, by the fossils which they contained. After prosecuting his investigations for twenty years, and establishing the identity of certain formations which came to the surface in widely-separated localities, he published the result of his labors in a geological map of England. Then a number of young men (they were young then), Charles Lyell, Roderick Murchison, Prof. Sedgwick, De la Beche, Sir William Logan and others, formed the London Geological Society, and resolved that they would have no theory, but would go out into the fields and examine the rocks, and when they had collected a sufficient number of facts, they would then endeavor to interpret them. The result of their labors, and that of other geologists all over the world, has been to confirm the conclusions of William Smith, and the history of geology is now read in fossil remains. We find that certain species of plants and animals lived and multiplied on the earth through

long periods of time, and then became extinct, and have never made their appearance since. To give you some faint idea of the labor that has been performed by geologists, more than 25,000 species of fossils have already been described and named.

The solid rocks of the earth form but a very thin crust when compared with the molten mass of the interior, and as the globe cools and shrinks, the crust settles down in some places, raising up other portions or drawing off the water from them. It is moving up and down in constant though exceedingly slow oscillations. A great many times the principal portion of the continent of North America has been raised above the level of the sea and again submerged. At the present time New Jersey and Long Island are settling down, while Newfoundland is rising up. New Jersey has settled about five feet since Count d'Estang anchored his fleet on the coast in 1778.

When rocks are above the sea, they are being constantly worn by the waves, frosts, rains and other denuding agencies, and the matter of which they are composed is being carried into the ocean. When they are beneath the waves, deposits of new rocks are being formed upon them. Hence the lower rocks are, of course, the older. We find always in the lowest and oldest rocks the simplest and lowest forms of both animal and vegetable life. Though the very oldest, the rocks which I have been describing, the Adirondack Mountains and their cotemporaries contain no organic remains. They were formed before the creation of animal life upon our planet. But the rocks which have been formed since their day are composed mostly of organic remains. These have been deposited during successive periods of submergence, to a depth, in some places, as shown by actual and accurate measurement, of more than twenty-five miles! From the fact of their containing no animal remains, the earliest rocks which I have been describing are called the azoic rocks, from the Greek negative, *a*, and *zoe*, life.

What I wish to accomplish this evening is to present a distinct and impressive idea of the condition of the North American continent at the beginning of the geologic record. Labrador and the islands that I have described then raised their rocky and barren heads but a few hundred feet at most above the waves. There were no trees, nor plants, nor birds, nor any signs of life, but the world was a desolate waste. I purpose, in subsequent evenings, to describe the process by which all the other rocks that have been added to the azoic to form this continent have been first laid down on the bottom of the sea and then raised into their present position; accompanying the description with an account of the gradual coming forth of animal and vegetable life upon the earth.

A HIGH COMPLIMENT TO A BOSTON ARTIST.—A gentleman of much learning and taste, who lived many years in Boston and now resides in Europe, having received photographs from several friends here taken by Mr. J. A. Whipple, No. 96 Washington street, Boston, writes that in all Europe there cannot be found any photographs so excellent as those taken by the above named artist, and that all the Europeans to whom he had shown these specimens concurred in the same opinion. Mr. Whipple is unsurpassed in his profession even in this country. We have frequently received specimens from him showing that his skill in the art photographic is justly the subject of high encomium.

THOUSANDS of tons of coal dust are lying at Pennsylvania coal mines, which are now useless for the want of some mode of reducing it to a state in which it might be rendered valuable as fuel. Such coal dust might be mixed with a small quantity of asphalt, and pressed into square blocks, by which it would become excellent fuel for steamships. Anthracite coal dust can be and is now burned in the furnaces of some of our river steamboats, and when fed in thin layers to the fires, it is found to be as good for generating steam as coal in large lumps. This dust is obtained from coal yards, but that which is lying at the mines may be employed in the same way.

In Southern Illinois, considerable quantities of cotton have been raised this season, and sold to the cotton factory in Chicago. This cotton is pronounced by competent judges to be equal to a good quality of some of southern production.