American Association for the Advancement of Science.—No. 3.

GEOLOGY OF CALIFORNIA.—W. P. Blake read a paper on the Geology and Mineral Association of the Quicksilver Mine of New Almaden, California. He gave a general description of the mine and the character of the vein. The ore is a massive sulphuret or cinnabar, and is identical in composition with the vermillion of commerce. It is found in a series of beds interlaminated with the slaty rocks, some of the hard shales being highly charged with the ore. It also occurs in long, irregular veins, traversing the rocks at right angles to the bedding, forming beautiful specimens for the cabinet. Some of the beds of ore reach a thickness of eight feet, but the thickness of the series has not been ascertained. Veins of carbonate of lime traverse the beds of ore and fault all the small veins, being more recent in its formation. The only minerals yet observed are iron and copper pyrites, arsenical pyrytes, talc spar and bitumen. Gold has also been reported. The rocks in which this ore occurs are similar to those of San Francisco, and like them have the peculiar flinty metamorphic character. They are probably of tertiary age, and are associated with trappean and serpentine rocks. Mr. Blake made further observations on this ore, and exhibited numerous specimens. The mercury is very pure, and is obtained from the ore by distillation in close brick chambers.

Mr. Blake exhibited some beautiful specimens of crystallized and arborescent gold—some of them found in the neighborhood of Sutter's Fort. The arborescence was perfect, and some of the crystals an inch in diameter.

GEOLOGY OF NEW ENGLAND.—Prof. Guyot spoke on the configuration of the soil in New England. He said that our one great want was reliable maps. Except those of the Coast Survey we have no reliable maps. But there are features of country that no ordinary maps can give. New England is a part of a mass o land cut off from the rest of North America by the low valleys of the Hudson and Lake Champlain, and the river and Gulf of St. Lawrence. The highest point in this demarkation is at the south of Lake Champlain, where it is only 140 feet high. The mountains are a continuation of the Appalachian chain. A section west from Boston rises gradually with an undulating character and elongated hills to Worcester. Beyond Worcester is a terrace about 1000 feet high and 40 miles wide—a broad, undulating plateau that extends down to the State of Connecticut. The low lands have the Blue Hills near Boston, and in the plateau are more hills of some 1,200 feet, and some higher peaks of 3,000 feet. We come now to the Connecticut, and go down nearly to the sea level at Springfield, only 40 feet above. Here are trap-rocks of some 1,200 feet high. On west we have 20 miles high of rolling plateau. Then we come to greater elevations. The railroad passes at 1,475. Passing still higher peaks we come to the elevated valley of Pittsfield, with peaks of 3,500 feet, and after that we descend to tide water. Thus the Connecticut river divides a plateau. The rise is to the west, and this rise extends to a plateau of 1,500 to 2,000 feet, where rises the Susquehannah. Further north the country rises, and the Connecticut river in Vermont is 800 feet high. Still further north is an immense and very high plateau, and here the character of the swells below is broken up but still traceable. This is the great valley of the St. Johns, where the streams run parallel to the coast till they find a chance to break over the edge. So there are two great chains that continue from the Sound to the Bay of Chaleurs. These chains have a bend at the White Mountains. The peaks though not so high, are still quite high, 4,000 feet, and Mount Kladhna, is said to rise to even 5,000. The Eastern mountains are peaks on a swelled base—the west are a continuous chain. They are upheavals of a different age. The White Mountains are high peaks on a high swell, but not on the highest swell, which is still further north. The White Mountains are not in accordance with the chain. There are two systems crossing each other, and Mount Washington is at the intersection of the two. We may find three or four upheavals in the whole tract east of the Hudson, but a common law seems to pervade them all.

Prof. Hall said that what was called the granite of the Green Mountains was but beds of the Lower Silurian group, and that the eastern ridge consisted of the Niagara group and limestone identical with the Hilderberg. The continuation of the western range towards Gaspe belonged to the Upper Silurian and continuation of the eastern range to the Baie des Chaleurs consisted of carboniferous strata. The carboniferous rocks in New Brunswick were 18,000 feet thick, and it was well known that causes connected with the thickest strata produced the highest mountains.

IMPROVEMENTS IN THE ELECTRIC TELEGRAPHING.—M. G. Farmer, of Boston, read an interesting paper on this subject. He said, by a very simple combination and arrangement of the two systems of House and Morse, from two to twenty-eight messages might be in the process of transmission over the same wire at one and the same time. Thus: suppose we have two letter-printing telegraphs, one situated in Boston, the other in New York, and connected as usual for the purpose of transmitting messages; suppose, further, that the axis of the type-wheel in the Boston machine was connected by a wire with one pole of a suitable galvanic battery, while the other pole of this battery was connected by an extended wire with the axis of the type-wheel of the machine in New York; further, let us remove the two type-wheels from their axis and substitute therefor a slender spring on each, at right angles to the axes, and which in the course of a revolution of the shafts shall make contact with the twenty-eight circular segments arranged concentrically around the axis of the type-wheel and insulated from it and from one another; still further, let each of the twenty-eight segments in the Boston instrument be connected severally with one pole of a complete "Morse" machine, which is, at the other pole, in connection with the earth; there will then be twenty-eight "Morse" machines at Boston attached to the "House" machine, and by the revolution of the type-wheel axis these twenty-eight machines will be successively put into connection with the common communicating wire. Suppose twenty-eight "Morse" machines similarly connected with the "House" machine at New-York; if now the slender spring in each "House" machine presses on the "A" segment and the two type-wheel shafts be made to rotate rapidly in the usual manner, at every revolution of the type-wheels the "A" machines at Boston and New York will be at once in connection with each other by means of the slender springs, the segments, and the common wire. If the type-wheels should make twenty revolutions per second, the dots or impulses would succeed each other so rapidly as to make nearly a continuous line, which could be broken up into short and long lines by means of the key in the usual manner. He had operated with this arrangement on a circuit of several miles in length at Boston.

Recent Foreign Inventions.

TO MAKE GLUE FROM OLD LEATHER—J. H. Johnson, of London, has obtained a patent for preparing old leather scraps to render them fit to be made into glue. The leather is first chopped into small pieces and thoroughly washed, then placed in vats where it is digested with a potash or soda. It is taken out, after a few hours, and subjected to pressure, and again immersed in a stronger alkaline solution for some hours, which processes remove all the tannic acid. It is now taken out and washed well with water, and submitted to a steep of a very weak sulphuric acid for twenty-four hours, to remove all the coloring matter. This being accomplished, it is again submitted to a weak alkaline solution of the carbonate of soda, then washed in water, and is fit to be made into glue by the common process.

ORNAMENTING GLASS—James Wood, of London, has taken out a patent for lettering and ornamenting glass in the following manner:—He prints letters or devices on paper gold leaf, or other suitable thin material, then cuts them out and attaches them to the back of a piece of glass, and afterwards coats the back of both letters, devices, and glass with an opaque paint.

[This process is not new here. It has long been in use.

MARBLEIZING THE SURFACE OF STONE—J. Claudot, of Paris, has obtained a patent for covering the suface of common stone or plaster of Paris figures with a coating of marble, as follows: He lays upon the surface of the stone successive coats of milk of lime, allowing each to dry before the other is put on. When these coats have attained to a proper thickness, he smooths them down and polishes them until the surface resembles marble in brilliancy. Carbonic acid is then thrown upon the outer surfaces, when it becomes real marble. The milk of lime may be colored so as to produce the exact appearance of variegated marble.

LIQUID FOR PREVENTING SEA SICKNESS—Jean A. F. V. Oudin, a French priest, has obtained a patent for the following liquid for the prevention of sea sickness: "I distil," says the inventor "one-third of an ounce (troy weight) of hydrochloric acid in five ounces of alcohol, and mix the product in 32 ounces of water, sweetened with a little sugar or syrup. I, however, prefer to compose the liquid of 2 2-3 ounces of dry chloride of lime mixed with 8 ounces of water and 10 2-3 ounces of alcohol. This is distilled in a common still, and the product mixed with 32 ounces of sweetened water, to which are added a few drops of the essence of mint, and a few grains of cochineal to give it a pink color." A few drops of this are to be taken at sea, to prevent and allay sea sickness, and if it accomplishes this object priest Oudin will deserve great credit for his discovery. As this liquid, however, is of the same composition as chloroform, the latter may answer equally as well.

AIMING WITH CANNON.—Capt. D. Davidson, of Stirling, Britain, has obtained a patent for applying to cannons, with a plain or telescopic sight, cross wires, so that by means of them and a collimator, the piece of ordnance may be brought into its proper position by day or night, after every discharge, without the necessity of observing the object aimed at, after the proper range and aim have been first obtained. For breaching walls this appears to be a good improvement.

ARTIFICIAL CORAL—S. Isaacs, of London, has taken out a patent for making artificial coral, by causing alabaster to be impregnated with oil containing red coloring matter, such as madder, after the alabaster has been treated with a very weak solution of sulphuric acid.

ROTARY STEAM ENGINE—J. Webster, of York, England, a miller, has taken out a patent for a rotary steam engine consisting of a hollow shaft mounted on a wheel, and having a number of elbow pipes branching off from it. The steam passes through the hollow central shaft, and flows out of the elbow pipes, where it strikes against apertures, on a wheel secured to another shaft, and gives the said wheel and shaft motion. This invention is not complex, still it is not quite so simple as old Hero's engine, and hardly so effective. It is one of those rotary improvements which revolve in the wrong direction.

Interesting Lawsuit,—Process of Galvanizing Iron.

A case was tried at the recent Assizes for Staffordshire, England, in which a question arose as to the effects produced on land and cattle from the manufacture of galvanized iron. It was an action brought by Benjamin Smith, a farmer, against Messrs. Walker, iron manufacturers, in that county. The plaintiff's land had been in the occupation of his ancestors, and in his own, for upwards of a century; and it appeared that there ran a brook through it, which had been formerly sufficiently pure for cows and cattle to drink of, but, before entering his land, it flowed down to the defendant's iron-works. About three years ago, the defendants adopted a new process of galvanizing iron; and the plaintiff now complained of having lost several of his cattle by reason of the impurity of the water, and also that he had, in his farming operations, by deterioration of his land, sustained other damage.

A variety of evidence was given on the part of the plaintiff, in order to establish that he had lost at least $375 a year upon his cows and calves for the last three years, and that he was, therefore, entitled to at least $1125 damages on that head; that $525 would be but a small compensation for his loss in the supply of milk; and that there was then the value of his land which had been destroyed. Mr. John Walker, one of the defendants, was examined, and he described the process of galvanizing iron. They cleaned the iron plates with dilute sulphuric acid, there being one part of acid to nine parts of water. After some time, this mixture became sulphate of iron, and, thus losing its peculiar property, had to be let off into the brook. There was also zinc used in the process; it was placed in a molten state on the plates. The sulphuric acid was kept in vats. They let off generally about a vat per day. In the process there was also consumption of zinc, and, after draining the plates from the zinc bath, they were dipped in water, which water afterwards ran off into the brook. Evidence was then given to show that the injuries to plaintiff's land and cattle, were generally exaggerated; and scientific witnesses, who had analyzed the water, were also examined. Some of the water, after it had passed the works, was found to contain neither tin nor zinc, but merely a little iron; but both tin and zinc were found, in very small quantities, in a specimen of the deposit from the brook which was examined. Mr. James Simmons, Professor of the Royal Veterinary College, was of opinion that water containing sulphate of zinc in the minute proportion stated, would not only not be injurious to cows, but would be beneficial to them, by acting as a tonic. The same proportion of chloride of zinc would have precisely the same effect. In his cross-examination, he stated that 10 grains of chloride of zinc might be given to a cow without injury.

In directing attention to the question of damages, the learned Judge commented with much severity on the fact that, the plaintiff had allowed the evil to go on year after year, and then came forward with a heavy claim. He thought that there was not any discrepancy in the medical and scientific evidence, for it showed that zinc was found in the deposits taken from the brook, and that, if the cattle drank continuously from that water, injurious consequences would result. The defendants had previously paid $250 into court, acknowledging the plaintiff's claim to that extent, and the jury refused to add any further damages. So farmer Smith only received $250 out of his cash claim of $2025, and lost his land damage claim altogether. The testimony of Professor Simmons, to the effect that the zinc impregnation of the water was beneficial to the cows, than otherwise, is rather rich. Some persons appear to think that Providence made a mistake in creating pure water—it is so much superior when mixed with some poisonous drug or other compound.

Telegraph from England to Australia.

While American capitalists are busy in laying down the wires for a telegraph between New York and London, our transatlantic friends are occupied in doing their share towards the complete encircling of the world. The far-off regions of Australia have been put down upon the telegraphic chart as the eastern terminus of the great Mediterranean Electric Telegraph Company.

This company is formed for establishing a communication between Europe, Africa, Malta, the Ionian Islands, Greece, Constantinople, India, and Australia. They have a concession, with exclusive privileges, for fifty years, from France and Sardinia, and interest at the rate of five per cent. per annum guaranteed for the same period by the French and Sardinian Governments. Mr. John W. Brett, the telegraph engineer, states that the lines have been in active and successful operation from Cagliari to Spezzia, Italy, about six hundred miles, since the 15th of August last, and the messages transmitted have already far exceeded the number originally anticipated. The remaining portion of the present lines will be completed within a few weeks, as the third cable, one hundred and sixty-two miles in length, is now on board the *Result*, at Greenwich, and was to leave England in a few days. This important complement of the line will unite the southernmost point of Sardinia with Algiers, Africa, when the guarantee of five per cent. interest from the French Government will come into force, as is already the case with the Sardinian Government. The Mediterranean submarine cable is the largest and strongest which has yet been laid down; it consists of six electric wires throughout, weighing eight tuns per mile, or over two thousand tuns.