Scientific American.

NEW YORK, OCTOBER, 11, 1856.

The New Theory of Heat.

Under the above caption our esteemed cotemporary, the London *Engineer*, of 12th September, quotes our article on page 405, Vol 11, entitled "Errors in Engineering," and makes a few comments thereon. It says :—

"We are of opinion that our trans-Atlantic cotemporary has not rightly understood the principles which have guided Mr. Siemens in the construction of his engine. So far from disparaging the dynamic theory of heat, which Mr. Siemens advocates as 'a mere term, out of which to raise a dust,' we look upon the same as one of the most important discoveries in physical science, and destined to lead inventive minds to great and practical results. The great difference between the old and new theory of heat is in this, that according to the old, heat and water are looked upon as the dynamic agents in producing motive force; whereas, according to the new theory, the water alone can be looked upon as the agent, whereas the heat is the material which is converted into power, and therefore gives up its very existence."

We did not disparage the dynamic theory of heat, but we stated that what was called "the dynamic theory" of heat, put forth as new by Mr. Siemens, was no discovery at all; that it was "a mere term out of which to raise a dust," and we are right, too, as we shall prove. Our cotemporary and Mr. Siemens entertain the idea that a new theory is a new discovery. This is a mistake; a new theory is simply a new way of explaining certain phenomena, but it is not a new discovery; it does not add a single new fact to the domain of science. Our cotemporary's explanation of the difference between the old and new theory of steam makes both *dynamic*, and the new one only a wrong explanation of the old theory; our cotemporary is our witness. The old theory is stated to be "heat and water are dynamical agents," that is, heat is an agent, and water an agent, and these two combined produce motive power in the form of steam in the engine. The new theory is "water is an agent and heat the *material* which is converted into power, and gives up its very existence."

Here it is asserted that heat is a material; but matter has the properties of indestructability, and yet we are told that this material "gives up its very existence." Matter has also the properties of inertia and gravity, but heat has not; it is, therefore, an imponderable agent.

Bacon says: "Heat is an expansive undulatory motion in the minute particles of a body." Descartes says: "Heat consists in certain motion or agitation of the parts of a body." Robert Boyle says: "Heat consists in that mechanical property of matter called motion." These philosophers held the dynamical theory of heat—for mechanical motion is dynamics—hence the new theory of Mr. Siemens is at least 200 years old.

The absurdity in his case appears to us to be that he simply calls an old theory *new*, and builds a steam engine upon this basis, to save fuel. Such conduct appears to be as sensible as would be that of a man who asserted that combustion was a new theory in illumination, and upon this idea molded a tallow candle to last longer, or give more light than the candle of any other person. If he effects the saving —50 per cent.—in fuel in his new steam engine, as asserted by the *Engineer*, it must be by some arrangement based upon old and well known principles, not the pretended new dynamic theory of heat.

Well, how does Mr. Siemens effect this great saving? Our cotemporary says: "In Siemens' engine the Respirator occupies the position of the heaters of the feed water of common high pressure engines, with this difference only, that it returns the *whole* waste heat to the engine, whereas the ordinary heater receives only 12 per cent." What has the new pretended dynamic theory to do with such claims. The Regenerators of Stirling and Ericsson were set up as effecting the very same objects, nothing more.

Our cotemporary states that there is one of Siemens' engines in Paris which consumes only about one half the fuel of the best expansive engines, and has no more back pressure on the pistons than common high pressure engines. If it consumes less fuel, we venture to assert it does less work. More extravagant claims were set up for the hot air engine, and as little back pressure, it was asserted, was exerted on its pistons. But it is impossible for steam to be exhausted into a close hot heater from the cylinder without exerting great back pressure on the pistons, it cannot be otherwise. Cold is as necessary as heat to produce reciprocating motion in a steam engine. Without a condenser of some kind there would be no steam engine. The atmosphere is the condenser of the high pressure engine, the vacuum condenser that of the low pressure engine. Many engines waste a great deal of heat, but that is owing to their bad construction, or not working the steam expansively, not for want of correct ideas respecting the old dynamic theory of heat.

American Machines Saving Money to England.

The Birmingham (Eng.) *Journal* of Sept. 6th, contains a description of the government new manufactory of small arms at Enfield. It originated from the inability of obtaining a sufficient supply of arms during the late war from private makers.

In 1854 more than half a million of dollars were appropriated by the House of Commons to establish the new factory, and competent officers were sent to the United States to examine our government armories, purchase American superior labor-saving machines, and engage competent mechanics to superintend their operation. A great number of valuable machines were, therefore, purchased, and sent to England last year, and they are now in successful operation, under the general charge of Mr. Burton, first engineer—formerly master armorer at Harper's Ferry, Va.

About 430 men and boys are now employed at Enfield, but when the works are complete double this number will be employed, and 50,000 rifles per annum will be turned out.

All the machines for making the gun stocks were fabricated entire at the manufactory of the Ames Co., at Chicopee, Mass. They are the well-known invention of Thomas Blanchard, of Boston. This department at Enfield has twenty-seven machines, and is under the charge of Oramel Clark, of Massachusetts, another ingenious and intelligent countryman.

About 200 gun stocks are manufactured per diem, at a cost of about one shilling sterling each, for labor—about eleven-twelfths less than it cost the British government to make them previously by hand labor. The Birmingham *Journal* says :—

"In estimating the cost of making a gun stock at Enfield at one shilling, no allowance is made for the original cost of plant and tools, or their subsequent wear and tear; but at the same time there can be no doubt that the saving effected by machinery such as this, will, in a short time, repay its whole cost, if, indeed, it has not done so ere this."

This is what American machines are doing for England. Uncle John is not so blind to his interests as some have supposed. The factory at Enfield is a success; American machines and skill have made it so, and full credit is given to our country for this; Mr. Burton has got a first rate permanent engagement, and the American mechanics engaged there have received high praise and good pay.

It is stated that France, Austria, Portugal, Sweden, and Russia are about to follow in the wake of England, and have sent Commissioners to visit Enfield. The New World is now forging machines and ideas for the Old, and when we have fully brought the old nations up to the proper standard they may be allowed to annex themselves to the Confederacy.

Resignation of Commissioner Mason.

We announced two weeks ago that Judge Mason had sent in his resignation to the President, but that it had not been accepted, and we trusted he might be induced to withdraw his petition. Since that time we learn that the friends of Mr. Mason, and the inventors generally, have so importuned him to remain at his post, that he will yield to their wishes for the present. His withdrawal from the Office may therefore be considered as indefinitely postponed; probably until the Secretary of the Interior shall attempt some new interference, when all of us who have dealings with the Office will realize the loss of an efficient and just Commissioner.

Inventors, improve your time, and get your applications filed while you have a tried and capable officer to look after your interests and see that justice is done you.

Great Exhibition of the American Institute at the Crystal Palace, New York.

THIRD WEEK.

A marked change has taken place in the aspect of things at the Crystal Palace since our last report. The final day for the reception of goods for competition has passed, and the exhibition has fairly begun. It is a great exhibition. Never has there been witnessed so large and so splendid a display, so purely American in its character as that which is now inaugurated.

It is a magnificent sight to stand at some elevated position within the Palace, and gaze down upon the scene below. The broad floors of the edifice are filled with the noblest specimens of Industry, Science, and Art. The hum and clatter of a great array of novel moving machinery attracts and arrests the attention, in one direction, while, in another, the ear is entranced by sweet sounds of music, pouring forth from multitudes of instruments, of elegant forms and surpassing excellence. A constant throng of spectators circulating around and filling every nook and corner of unoccupied space, imparts a wonderful animation to the whole.

The general arrangement of the Exhibition is good. Everything seems to be in its right place, and bears a neat, cheerful, and attractive look. The arrangement of specimens and the allotment of space is under the charge of Wm. B. Leonard, Esq.; in him the Institute have a most valuable and efficient officer. Too much praise cannot be awarded him for the satisfactory manner in which he has placed the Exhibition before the public. Indeed, all the Managers of the Institute appear to have exerted themselves to render the Fair, this year, one of unwonted superiority. We rejoice to say that they have been highly successful.

Steam Fire Engines.

The only steam fire engine at present on exhibition is a large and splendid machine made by Silsby, Mynderse & Co., of the Island Works, Seneca Falls, N. Y. This engine was built for the city government of Chicago, Ill., but will not be delivered until the close of the Fair. The pumps, and the engine which drive them are of the rotary kind, made under Holly's patent. The boiler is of tubular internal construction. Weight of the whole, 9,100 lbs.; cost, $5,000. Patented in England and America 1855. We have in preparation a large and splendid engraving exhibiting the engine as it appears in the Fair, which we shall shortly publish, with further particulars. The engine is one of the most prominent and interesting objects in the Machine Arcade. Its powers are exhibited at frequent intervals during each day. At the sound of the steam whistle everybody rushes to its vicinity to witness the mighty outpouring of water which it occasions. Its capacities are so great that it is found difficult to obtain a full supply of water, and it cannot, therefore, be shown to the fullest advantage. It drinks up the supply of two hydrants with such rapidity as to collapse the hose

The same parties exhibit a large variety of rotary steam engines and pumps made under the same patent. They are chiefly remarkable for simplicity of construction, compactness, durability, and effectiveness. The pumps vary in size and price, from those costing $10, so small as almost to go in one's pocket, to larger ones costing $500, and capable of throwing 1200 gallons, 30 feet high per minute.—The engraving to which we have alluded will exhibit the interior construction.

Power Looms.

There are only four power looms on exhibition; these are for plain weaving, and were made at the Empire Works, Stockport, Columbia, N. Y.—Messrs Benjamin & Reynold's. They are made with all the latest improvements, and can be driven at the high velocity of 240 picks per minute—60 to the inch. The picker staffs have curved rockers at the foot, and a parallel motion. The shuttle is arrested at the end of each shot by a keeper spring, so set that its pressure is graduated, increasing towards the end of the stroke, and releasing the shuttle more easily as it leaves the box—a good arrangement. Connected with the stop-motion there is a compensating device, which prevents *fell* being formed in the cloth. A self-acting friction brake stops the loom at once if the shuttle should be arrested in its race, and thus breakage of the warp is prevented. The driving pulley is boxed and coupled by a very ingenious arrangement of three sector arms set on knuckle joints at the center, and actuated by centrifugal action—they are forced out to couple by friction with the interior rim of the pulley. The web or cloth is kept stretched to its proper width by two small fixed roller *temples*—one at each selvedge. What an immense amount of labor is saved by the fixed temples alone; they require no attention from the weaver; whereas the old temples had to be shifted by hand every two minutes. One girl can attend four looms (if the weft is good) as easily as she can two with the old temples attached. The price of such looms is $70 each.

Printing Presses.

A Poly-chromatic, or press for simultaneous printing with several different- colored inks, is exhibited by Messrs. A. M. & G. H. Babcock, of Westerly, R. I. The machine shown consists of a central block having four level surfaces or beds, each of which receives a sheet of paper for printing. The block revolves, bringing each of its surfaces opposite to a platten, to which a portion of the types or engraving are secured. There are as many plattens as beds. As the sheets come in front of the plattens the latter advance and leave an impression of their types upon the paper. Each platten is inked by a different set of rollers, and thus a variety of colors are stamped upon each sheet of paper. Colored engravings, having almost the richness and elegance of oil paintings can be readily produced by machines of this kind. They may be made to print as many colors as are desired. Price $800 and up, according to size. The operations of this press are regarded with much interest by spectators at the Fair.

Windmills.

Mr. A. P. Brown, of Brattleboro', Vt., exhibits one of his self-regulating windmills, which appears to be of a very substantial and serviceable character. This invention was illustrated and described on page 361, Vol X, SCIENTIFIC AMERICAN. Fowlers & Wells, agents, Broadway, N. Y. Patented July, 1855.

Dr. F. G. Johnson, of Brooklyn, N. Y., is on hand, as usual, and exhibits a fine specimen of his self-regulating windmill. For engraving and description see SCIENTIFIC AMERICAN, Vol. XI, page 236. Patented Jan. 1856.

Messrs. Chambers & Hargraves exhibit a new windmill, patented Aug. 1856. One feature of novelty is an upright tail-board, which controls the angle of the wings. When the wind exceeds a certain force, the tail-board gives before the pressure, and causes the wings to move and present their edges to the current.

Thrashing Machine.

One of Holmes' Patent Thrashers is exhibited by Bonnell & Co., 211 Center street, New York. It is of small size, to be used by hand or power, as desired. It consists of a a few wooden, bars pivoted at one end, and caused to fall upon a platform. The bars are lifted by cams arranged on a rotating shaft. The straw is carried along under the bars by an endless apron. It is alleged that this machine thrashes out the grain, but does not injure the straw, like the common machine. It is claimed that two men, with one machine will do the work of six men with common flails.

Water Heater for Locomotives.

Magoon & Co., of St. Johnsbury, Vt., exhibit one of their patent smoke stacks for locomotives, by which the heat of the exhaust steam, and all the escape caloric is made to heat the water in the tender, and an important economy in fuel is thus obtained. We have

seen a number of recommendations of the invention, from practical railroad engineers, who are using it. They speak of it in the highest terms, and say that it heats the water in the tender to 110°, and higher, with a saving of 25 per cent. in fuel. It adds but little to the weight of the locomotive, and the expense of construction is quite small.

Gear Cutter.

G. W. Bigelow, of New Haven, Conn., exhibits one of his machines for cutting gear wheels. All machinists should give it a careful examination. The blank wheel is placed on a spindle, the parts adjusted, and the machine started. It then goes on and performs the whole work without being touched by the attendant. In all other machines we believe it is necessary for the attendant to stop the machine for each tooth that is cut, and adjust it by hand for a new one. Mr. Bigelow's invention is wholly self-acting, works with mathematical accuracy, &c. Price $400, and up, according to size. Patented 1855.

Works of Art.

The Palace is adorned with many of the noble pieces of statuary which beautified the World's Exhibition of 1853. But the present exhibition is enriched by a novelty, now for the first time shown, which is worth more than the price of admission to see. We allude to the "Descent of Christ from the Cross," by Carew, a celebrated artist of London. It is executed in alto-relievo, and its proportions are quite imposing. Nicodemus is supporting the body as it is being taken down from the cross, and near him are figures of persons sent by Pontius Pilate to superintend its delivery to Joseph of Arimathea. Joseph is represented holding the feet of the Savior. Near him, with head reclining upon the cross is John the Evangelist, and Mary the mother of Jesus. The two other Marys—Mary Magdalene and Mary the Mother of James,—sorrowful and weeping, complete the group. The drapery, postures, effect and execution are magnificent.

The circumstances under which this remarkable work is now presented to the public, are peculiar. The composition was originally executed, by Carew, under a contract with the late Bishop Murray, of Ireland, who ordered it for a cathedral, in Dublin. The price agreed upon was $70,000. But the decease of the Bishop, and the inability of his successor to pay the money, left the work upon the artist's hands. It was then exhibited at the great World's Exhibition, in London, 1851, where it rivalled the best of the multitudinous collection there shown.

Subsequently it was taken down and forwarded for display at the great Exhibition here, in 1853, but when the boxes arrived, many of the pieces were found to be sadly broken, and the directors refused to receive it. So sadly was it marred that no artist could be found here who could restore it, although many essayed. At length Mr. Charles Innis, of this city, an American sculptor of considerable note, happened to come across the wreck, and immediately recognized it, to his unbounded surprise, as the work of his former master. Mr. Innis had been a pupil of Carew, and had, in fact, assisted in the construction of the work in London. He at once set about its restoration. Success has crowned its efforts, and the great sculpture now stands before us in all its original perfection. No copy has ever been made.

Apple Parer and Slicer.

We refer the reader to the advertisement of Smith's patent Parer, which appears in another column. It is on exhibition at the Palace and attracts a crowd by its rapid and curious movements.

Tobacco Pulp Segars.

A patent has been taken out in England by W. V. Wallace and B. L. Lowell, of London, for reducing those parts of tobacco leaves left —after the finest portions are stripped off for segars—into pulp, by cutting them up in a machine, then submitting them to the action of steam in a close vessel. After this the pulp is made into sheets, by passing it through rollers from the pulp engine, or else through fine hair sieves, in the same manner that paper is made. The sheets of tobacco thus made from pulp are formed into segars and cheroots. Our segar makers can take the hint.

Recent American Patents.

Brick Press.—By Joseph A. Hill, of Greencastle, Ind.—Consists in a peculiar means of pressing the clay into the molds. Also in a new manner of feeding the molds underneath the pug mill, and discharging them therefrom, and in a peculiar shut-off board, whereby the descent of the clay into the molds is prevented until the clay is properly tempered and ground. Drawings would be required to explain the construction.

Benzole Light.—By Thomas Varney, San Francisco, Cal.—Refers to the burning of benzole for illuminating purposes, and consists in a vaporizing apparatus of a novel construction, by which all moving parts are dispensed with and simplicity attained. A very large evaporating surface is also obtained, by which the hydro-carbon and air become evenly mixed.

Pulley Blocks.—By J. M. Riley, of Newark, N. J.—Relates to a method of reducing the friction, by interposing metallic rings between the eye of the pulley wheel, and the bolt on which it turns. The rings revolve independent of each other, and greatly diminish the friction. The invention is applicable to all kinds of blocks.

Seed Planter.—By John F. Seaman, Walcott, Wayne Co., N. Y.—Consists of certain novel arrangements of shares, which open the furrow, the seed being dropped by the attendant, who touches a lever for that purpose, as the machine advances. The hills may be planted at any desired distance apart. The seed is covered by rotating shares, which are so operated and arranged as to clear themselves from weeds, etc. The seed is planted in a very uniform manner, is not scattered, &c.

Seed Planting Prairie Plow.—By Luther Robinson, of Cambridge, Massachusetts.—The sod is cut into strips by two knives, which project down from an oblong frame. Another knife, placed horizontally, cuts the strip underneath and loosens it from the ground. A corn planting contrivance now deposits seed upon the strip of sod, in its center. Two other knives now divide the sod again, and it is cut into three strips, the corn lying upon the central strip. Two mold boards invert the two side strips and throw them over upon the central strip, thus covering the seed between the grass surfaces of the sod. The grass soon decays and serves as manure for the seed. For breaking up the tough prairie soil this improvement appears to be well adapted.

Farm Locomotive.—By John Percy, Albany, N. Y.—This is a steam wagon or locomotive, for drawing plows, and doing all sorts of drudgery on farms. The improvement consists in certain novel means of turning the vehicle around, so that it may be guided and handled easily by one man. Also in a peculiar method of balancing the weight of the machine on the supporting wheels. It is intended to travel about on common roads and over uneven surfaces of ground like any other vehicle.

Hubs and Axles.—By John M. Riley, Newark, N. J.—This is an improvement in vehicles, relating to the attachment of the wheels to the axles. It consists of an anti-friction arrangement, composed of movable sleeves placed on the axle and interposed between it and the hub. There is a spring combined with these parts, which gives a certain degree of lateral elasticity to the hub, and thus prevents all injury from side jars and concussions. The improvement is simple, and not liable to get out of order.

Tri-wick Candles.—By B. D. Sanders, of Holliday's Cove, Va.—This improvement consists in forming a candle with three small wicks, placed at equal distances apart, forming a triangle, by which arrangement their flames form a hollow cone on the argand principle. A current of oxygen, is thus supplied to the center of the flame, perfect combustion insured, and a more brilliant light is obtained, as no smoke escapes, all the carbon being consumed. The flame of a common candle has a dark center, because the air which supports combustion, is only supplied at the outside, therefore there is considerable loss of combustible matter which passes off as smoke, or carbonic oxyd. This improvement in candles is designed to remedy this evil and effect the benefits described.

New Lock Joint for Railroad Rails.—By J. R. Hilliard, of Paterson, N. J.—One of the principal causes of damage to rails, is the unevenness with which their ends come together. It is usual to employ a metallic seat, in which the ends of the rails rest, but this only in part overcomes the difficulty.

The object of the improvement herewith illustrated is to form the ends of the rails in such a manner that they will lock together, and present a continuous rail for the car wheels to roll upon. With this view they are made with tongue and groove, as shown in our cut.

Fig. 1

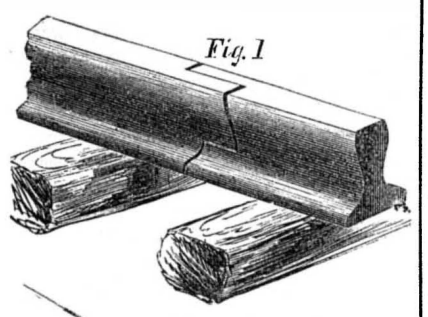
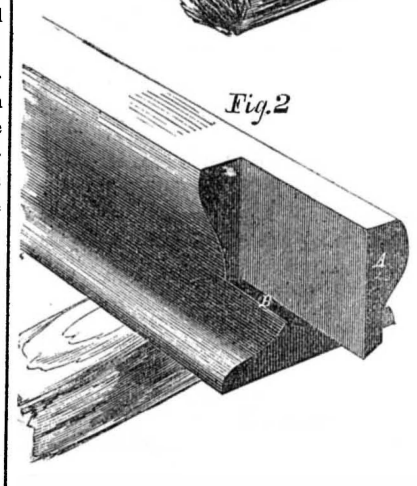


Fig. 2



Two ends thus formed being put together endwise, the tongue, A, of each will slide into the recess or groove, B, of the other, in such a manner that neither can be disconnected from the other by any downward pressure or by lateral pressure, and therefore when a number of rails are laid together in this way, they will form a perfectly continuous track for the support of which chairs, or other fastenings except spikes, are altogether unnecessary. Though this joint does not admit of the downward or lateral movement of either part without the other, it admits of a length of rail being taken up from or put in the track with as much facility as is afforded in any other track This is done by simply removing the spikes from both sides of the joint, and prying it up. This joint admits of the expansion and contraction of the rails lengthwise without its security being in any degree impaired, and without making a complete break in the track at every joint.

Among other advantages are the following:

First, No movement of any rail in a downward or lateral direction can possibly take place. Second, evil disposed persons cannot take it apart or remove a rail unless previously shown the manner of its construction and of laying the rail. Third, The weight and lateral pressure of the engine and train confine both the ends of the rails which form the joint at the same time. Fourth, The disagreeable noise of clicking at the joints is entirely obviated. 5th, There is no battering down of the rails at the end, as each rail must remain in its own lock. Sixth, a great saving in labor for repairs will be effected, independently of the cost of broken chairs, or the wear and tear and breakage of engines and cars, caused by passing over sunken joints. Seventh, the working or settling of the sleepers under the joints will be effectually prevented, as there is no more tendency of the rail to settle or spread at the joint than at the center or other portions of the rail. Eighth, it renders the running of trains far more safe, by furnishing a permanent and well secured track which is equally as strong, substantial, and durable at the joints, as in other portions of the rail, and will not be improved by expansion and contraction. Ninth, when a rail is worn on one side, it can be changed end for end, as all the ends are formed alike.

Address the inventor, as above, for further information. Patented in the United States May 13, 1856. Also patented in England through the Scientific American Agency. Now on exhibition at the Crystal Palace.

Steam Horse, or Farm Locomotive.—By John Robingson, of New Brighton, Pa.—This is a steam wagon or locomotive of peculiar construction, so arranged that it will travel about on common roads, over fields and meadows, at the will of the farmer, dragging his plows harrows, seeding machines, etc. In short, doing all the hardest labor of the farm, besides sawing wood, driving the thrashers, straw cutters, churns, &c. The genius of the inventor of this improvement is very prolific. Several patents for other inventions have been granted to him within a few weeks past, and within a year we have prosecuted for him nine distinct applications.

Colonization of Mexico.

This Republic appears now to be under an able and patriotic government, from President Commonfort down to the humblest officer. The old tyrannic laws against all religions but that of the State church, have been abolished, and every man is allowed the freedom to worship according to his own faith. A law was also passed on the 10th of May last, to encourage colonists to settle in the most fertile and pleasant parts of that country, and agents have been appointed by the government in this city, to give immigrants all the necessary information and free passports. A territory has been established between Vera Cruz and Jalappa, where the soil is fertile, and the climate healthy, for four colonies. Each colony is to have 11,000 acres of land,—1000 for a village, and 10,000 for cultivation. Each colonist is to receive 100 acres, and a building lot. For the first three years, the colonist pays no duty, nor contributions of any kind; and he can introduce, free of duty, all kinds of grain and agricultural implements. From Vera Cruz, all colonists will also be transported, free of expense, to the colony, and each family will receive a milch cow, on arriving at their destination.

These are very liberal provisions for inviting colonists to settle in that country, and afford evidence of very enlightened views on the part of the present powers in authority. The great mineral wealth and natural resources of Mexico, under a wise, liberal and enterprising government, and a free, intelligent, and industrious population, would soon elevate that Republic to a high position. It has hitherto been the sad fate of Mexico to be torn by intestine factions, and the contests of contending chieftains for power and spoils. We hope these contests are gone forever, and that the people will labor in union and harmony to develope the exhaustless resources of this ancient center of inexhaustible wealth. The provisions made for colonization, are liberal and politic. A colony of industrious emigrants, always proves a benefit to any country, and those from the United States would introduce improvements of the very kind most required,—such as public schools, an improved agriculture, new inventions, &c.

Three crops of Indian corn are raised around Jalapa in one season; all kinds of grain and fruit are raised. Cattle are abundant and cheap; the forests are filled with valuable timber,—the copal, the india rubber, the rosewood and mahogany trees grow there, as well as the pine and the hickory. The cochineal insect which yields the crimson dye for fine woolen shawls, is found there. Silver, gold, copper, iron, mercury, lead, zinc, sulphur, and coal are abundant, but for want of skillful labor, are mostly lying dormant. We hope Mexico is destined to see better days than it has done heretofore.

Boiler Explosions

On the 1st. inst. a locomotive exploded at the Bolton depot on the Northern Central R. R. Md. The fireman was killed and the engine thrown 30 feet from the track.

The boiler of a portable engine exploded on the 2nd inst. at the Ohio State Fair, killing fourteen persons and wounding several others.

No less than 85,792,030 pounds of tea were exported from China in 1855.