Scientific American

NEW YORK, OCTOBER 27, 1849.

Labor Lost.

It is no uncommon thing for some men to spend years of earnest thought and earnest toil, to produce works of striking ingenuity, and after having, as they supposed, brought their works to perfection, discover that others have preceded them, and their labor is lost. And instead of receiving the plaudits of the multitude, and rich rewards for their sleepless nights of anxious thought, and days of ceaseless toil, meet only with the mortifying intelligence, *labor* lost. Many, many disappointed ingenious men have we known, but we must say, that in a great number of cases, the individuals were to blame themselves, because they had not made sufficient enquiries respecting the progress of invention.

It is not possible for a man to walk safely in the path of mechanical invention unless he reads attentively and enquires diligently at those repositories of useful information, "scientific periodicals." During the past two weeks we were forcibly impressed with the necessity of saying a few words on this subject. At the Fair of the American Institute, a very respectable and good natured gentleman exhibited the steam water wheel described on page 208 of our last volume, and he felt not a little mortified when we pointed out the erroneous principle upon which it was constructed.—Within the present month we were shown the model of a rotary engine, upon which the inventor had expended much thought and toil for four years, during intervals of business. He was sanguine respecting his achievement, but he had not read our history of the rotary engine in Vol. 4. He acknowledged that had he "been acquainted with the Scientific American two years ago, it would have saved him a great deal of money and trouble, but now all his *labor was lost*." When a person has his mind fixed upon constructing some new work of mechanism, he should first search for knowledge on the subject, in good standard books or sterling periodicals. He should then enquire, "is it useful ?" This is the grand criterian point. It is true that many inventions have been brought forward, which were at first looked lightly upon, but afterwards arose to great importance. This was the case with the steam engine and many other machines, and it is not always those engaged in occupations with which the invention is related, that are capable of judging correctly of its merits, because it is human nature to be wedded to what are called "settled opinions." It is not possible to give advice in many cases respecting what is *useful*, the inventor must rely, not stubbornly, but reasonably, upon his own judgment. If a machine has superior usefulness, it may take some time to find its way, against other interests and prejudice, into public use, but it will eventually occupy its proper place. The countless number of *perpetual motion* machines that have been brought forward, have all resulted in *labor lost*. Usefulness was not the main consideration in their construction, therefore, although many of them were ingenious and skillful mechanisms, yet after all they were but splendid toys —*labor lost*.

Stoves and Heating of Rooms.

The art of heating apartments by warm air, heated in a separate apartment, has been known since 1792. In this department of science, the names of two American philosophers stand pre-eminent, namely, Benjamin Franklin and Count Rumford. The best way to heat apartments, is from moderately heated surfaces. Highly heated surfaces are dangerous to health, and should be guarded against by every family. At one time, (and we do not know but it is done yet in some places) a number of public buildings, such as churches, &c., were heated by hot air raised to a high degree of heat by passing over plates raised to a high degree of temperature, and then distributed in pipes through the building. In one instance this plan had nearly proved fatal to most all the officers and clerks in the London Custom House. Care should be taken not to let the iron work of a stove get red hot, for in that case it absorbs the oxygen from the atmosphere, and vitiates the air of the room, rendering it unfit for the support of human life. Large surfaces, then, moderately heated, are the best means for heating apartments. A great number of heating apparatus have been patented in our country. With these we are not specially acquainted, to speak from experimental testing of their merits, but we examined one patent, after it was granted last year, belonging to a Mr. Hilson, of Albany, N. Y, which embraced some good new ideas, and was founded on scientific principles. It had a large heating surface, it fed in the air through a covered channel, thus preventing a low cold draft on the floor, and it had some other advantages which we now forget. There may be others embracing every economical and useful point, and we would gladly speak of them were they particularly known to us.

The patents on stoves are almost beyond counting. Every year displays new modifications and combinations, but many of these are not improvements. Some old kinds of stoves impress us with more favorable ideas of their good qualities than those of the most modern date. The stove plates are generally made now too thin, mere shells, *sweated* down to the utmost attenuity. They last but a short time to burn coal, at least those parts of them that are any way exposed to the fire, and in every case, the smaller the stove the thicker should be the plates, for a small stove requires to be heated to a greater degree of heat, to heat the same amount of air in an apartment, than a larger one. For merely heating apartments, the thinner the plates of the stoves and the greater the amount of heated surface, so much the better, for the surface may be kept at a very moderate heat, and warm as much air as a small stove at a higher temperature. Cooking stoves should always be plain, strong, and simple in their parts. They should have ovens heated alike on every side, easily cleaned, and their furnace easy of access to a shovel;—something which, so far as we have seen, and that is considerable, is overlooked in all coal stoves,—the grates need a radical reform.

Parlor stoves may wisely be designed for ornament as well as use, but the virtue of large moderately heated surface should never be overlooked. There are some singular ideas spread abroad respecting stoves of this kind, especially what are termed air-tight stoves. Any stove can be rendered air-tight with a tight damper, and that can be completely closed up in front. The whole virtue of air-tight stoves is in the mode of regulating the supply of air to produce a low combustion. The old self-feeding stove of Dr. Arnot, embraces every principle desired in such stoves. Some air-tight stoves have exploded by the carbonic acid gas being confined in them. This never would happen if there was a small vent left for it to escape through the smoke-pipe, and this should never be neglected, and in every case good ventilation should never be overlooked. As it regards the best stoves to use, who can give advice? Not one. Opinions are as various as themselves. We have pointed out the principles that should govern their construction and use, and those who are acacquainted with the same, and those who are not, will see that the reasons advanced are not unsound, but the subject is far from being exhausted, and it may at some future time form the subject of another article.

Coal in New York.

The Albany Evening Journal states that a seam of coal, four feet in thickness, has been discovered by Mr. J. N. Cutler, of that city, in Coeymans—a few miles only from Albany, on the farm of a Mr. Vanduzee. It is believed to extend through Albany, Green and Schoharie Counties. If this information is positively correct, (for a four feet seam is a good one,) it will be a source of great value to the Northern parts of this State. We believe that the report of the Geological Survey, of this State, says, "there are no coal formations in it." This will be a contradiction of that assertion, but as that survey was not very minute, its general correctness will not be invalidated.

Great Fair of the American Institute. No. 3.

INVENTIONS AND THE SCIENTIFIC AMERICAN.

There are no less than ten valuable inventions of machines displayed at the Fair, for the first time, engravings of which, together with descriptions, have appeared in our columns.—First, Mr. Ransom Cook's Electro-Magnetic Ore Separator, which can separate the crushed ore from the greywacke, quartz, &c., with a rapidity that is astonishing. Mr. Cook resides in Saratoga, N. Y. There were also exhibited the Steering apparatus, and the Capstan and Windlas apparatus of Mr. Andrews, of Boston. Also Mr. H. Law's patent Planing machine. Mr. Law now resides in this city, and his large machine is in full operation. Messrs. Lerow & Blodgett exhibited their neat and useful Sewing Machine. Dr. Worster exhibited his unrivalled Diving Bell; and Mr. Willard Day, of Brooklyn, his Sub-Marine Examiner. Messrs. Roys & Wilcox, of Berlin, Conn., exhibited their improved Wiring Machine, and the one for making stove pipe. All these machines were the subjects of great attention. Many knew them at once, having seen them in the Scientific American. They are all machines of practical value and of no common merit.

H. W. Chamberlain's Drawing Board attracted considerable notice, especially from a few draughtsmen, who could judge of its merits; and Mr. Hovey's Straw Cutters were much admired.

A number of other machines were exhibited with which our readers are already acquainted. Their merits almost tempt us to say a second time something in their favor, but our space forbids us to do so.

WARREN'S PATENE SPRING.

The spring patented by Thomas E. Warren, of Troy, N. Y., so applicable to all varieties of chairs, sofas, piano stools, and carriages of all kinds, is a most excellent invention. It was patented on the 25th of last month, and was generally admired.

PAGE'S WINDOW FASTENER.

This is the most simple window fastener that has come under our notice, and it is the cheapest. It has been patented recently, and a *true* judge of such things can see its merits at a glance. In lifting the window the hand has to be applied, but it fastens itself and locks the window at the bottom. It is eccentric, and is fastened on the sash of the window, occupying but about the space of a 25 cent piece. A silver gilt one only costs 25 cents, and those for common windows, all complete, less. Mr. L. B. Page, resides at Hartford, Conn. His invention was not entered in time to compete for a premium.

COWLES' PATENT VICE.

We notice a small model of this beautiful invention, an engraving of which was published in the 4th No. of the present Vol. of this paper. There is nothing in the *vice* way that compares with it for simplicity and utility. We hope the Committee will not overlook it in awarding premiums.

LATHES.

Messrs. Scranton & Parshley exhibit some beautiful engine lathes, in the machine room. For durability and excellence they are not excelled by any on exhibition at the Fair. See advertisement.

HYDRAULIC RAM.

D. M. Smith, of Meridith, Delaware Co., N. Y., exhibits a model of a Hydraulic Ram. We remember that Mr. S. received the first premium at the State Fair, Syracuse, last month. We have examined the principle of his invention, and believe it good.

STAFFORD'S FLOUR AND MEAL.

Some barrels of flour and meal were exhibited, as dried by a process invented by Mr. J. R. Stafford, of Cleveland, Ohio. The meal relieved of water, is perfeclly dry and sweet, and the difference in its swell, from even freshly ground meal which has not been kiln-dried, is very perceptible. Meal thus prepared will keep sweet for years, and (being guarded from external moisture,) may be carried round the world. The manufacturer is Mr. T. C. Floyd.

SPRING MATTRASS.

We believe that the benefits of sleeping on good mattrasses are beginning to be more generally appreciated. Those exhibited at the Fair by Mr. O'Neil, of 133 South Second street, Philadelphia, denominated "O'Neal's Patent Spring Mattrass," possess every essential quality.

Testimonial to the late Chief Engineer of the U. S. Dry Dock, Brooklyn.

On Tuesday of last week, Mr. W. J. MacAlpine, C. E., was presented with a splendid testimonial by the workmen who were employed under him. It consisted of a gorgeous salver, two pitchers and goblets of silver, richly chased, and of the value of $350.

The ceremony took place on the Masonry at the head of the Dock. The presentation was made on behalf of the workmen by Mr. Robert White, the Master Pile-Driver, an old man who has been employed during the whole progress of the work, commencing as a journeyman and gradually working up to his present position. We cannot give the address delivered on the occasion, as it is too long for our columns, but will give an extract to show what Mr. McAlpine has done:

"We have, guided by you for many years, been enabled to achieve a triumph over obstacles by many deemed insurmountable, and to found and complete a structure that will stand ever as a monument of your fame, and of which we all feel justly proud.

You have battled with the mighty sea and driven it back from its bed: deep amid the treacherous quicksands have you triumphantly gained a footing—and on this spot, thus wrested from old Ocean, reared this work of surpassing durability and beauty."

Let the quarrels of political leaders be fierce and selfish as they may, or cunning and grasping, as they eye the spoils which are to be their rewards—with them we have nothing to do, and to them, nothing to say, but in the matter of scientific honor, we must denounce the spirit which dictated the removal of an officer who has triumphantly overcome great difficulties, and founded and *nearly* completed a national work, of which we all may be proud. He should have had the honor of laying down "the top stone with rejoicings."

Copper of Lake Superior.

Dr. Jackson, U. S. Geologist, has written a letter to the U. S. Gazette, contradicting the report circulated, that he had said at the meeting of the American Association for the advancement of Science, that "the copper mines could not be worked properly for the want of sufficient means to cut and handle the huge masses of copper, at a cheap enough rate." He says:

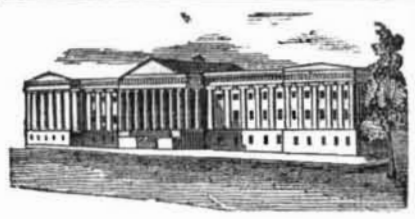
"I stated thatthe working of native copper mines was a new business, not only in this country, but for Europe; and that it was impossible to predict with certainity the result of deep working; but that so far as experience had gone on Lake Superior, it had proved that for the depth of at least 536 feet, the vein at the Cliff Mine, on Eagle River, had enriched, and that huge masses of copper were extracted from that mine, and were cut up into pieces of a ton or more in weight, at the moderate cost of $7 per square foot of cut surface, and that the miners have acquired great dexterity in the management of these immense masses of copper.

Furthermore, I stated that the Pittsburg and Boston Company, working the Cliff Mine on the west branch of Eagle River, had declared a dividend of $10 per share to their stockholders, while the capital paid in was estimated at about $20 per share."

This is something like what Dr. Jackson would say. We confess that we had always our doubts about the other statements attributed to him.

New Jersey Zinc.

At a meeting of the Society for the Developement of the Mineral Resources of the United States, recently held at Philadelphia, the New Jersey Zinc Company presented some specimens of their ores, and several articles made from the metal. The zinc ore (oxide) of New Jersey is combined with iron ore called Franklinite, and the two are separated by roasting, pounding and sifting. The combination is mechanical, but there is some dispute about whether the Franklinite is magnetic or not.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending October 17, 1849.

To Nelson Goodyear, of New York, N. Y., for improvement in Elastic Cords for Suspenders. Patented Oct. 16, 1849.

To Hannibal Mathews, of Cincinnati, Ohio, for improvement in Cooking Stoves. Patented Oct. 16, 1849.

To Benjamin Scyler, of Franklin Co., Pa., for improvement in Plows.

To Charles P. Carter, of Ware, Mass., for improvement in Apple Pearers. Patented Oct. 16, 1849.

To Harmon Hibbard, of Henrietta, N. Y., for improvement in Tanning Leather by Tannin and Acids. Patented Oct. 16, 1849.

To Peter Von Schmidt, of New York, N. Y., for improvement in Ore Washers. Patented Oct. 16, 1849.

To Henry Burden, of Troy, N. Y., for improved machinery for drawing out and compressing heated iron. Patented Oct. 16, 1849.

To Matthew A. Crooker, of New York, N. Y., for improved journals for oscillating propellers. Patented Oct. 16, 1849.

To Benjamin Livermore, of Hartland, Vt., for improvement in Boot Crimps. Patented Oct. 16, 1849.

To Newman W. Smith, of Shutesbury, Mass., for improvement in Accoucheur's Chairs. Patented Oct. 16, 1849.

To Ashbel B. Haile, of Norwich, Conn., for improvement in instruments for arresting hemorrhage from internal organs or cavities. Patented Oct. 16, 1849.

To Joseph Reynolds, of Providence, R. I., for improvements in Looms for figured fabrics. Patented Oct. 16, 1849.

To Thos. G. Clinton, Geo. H. Knight, and Edward H. Knight, of Cincinnati, Ohio, for improvement in Cooking Stoves. Patented Oct. 16, 1849.

To Cornelius Kingsland, of Allegheny, Pa., for improvement in Grate Bars. Patented Oct. 16, 1849.

To James A. Crever, of Pittsburgh, Pa., for improved method of attaching knobs to doors. Patented Oct. 16, 1849.

To Thomas J. Green, of Jamaica Plains, Mass., for improvement in the Rockers of Gold Washers. Patented Oct. 16, 1849.

To Abner Follet, of Windham, Conn., for improvement in Bog-cutting Machines. Patented Oct. 16, 1849.

To Edwin B. White, of Nashua, N. H., for improved double cylinder Spike Machine. Patented Oct. 16, 1849.

To William Criswell, of Butler, Pa., for improvement in machines to manufacture Horse Collars. Patented Oct. 16, 1849.

To John C. Parry, of Pittsburgh. Pa., for improved method of giving a rotary motion to the milled iron in casting chilled rolls. Patented Oct. 16, 1849.

DESIGNS.

To Edward B. Finch, of Peekskill, N. Y., for Design for Stoves. Patented Oct. 16, 1849.

Great Patent Case.

We see it stated in the Boston papars that the great case on the infringement of Blanchard's patent has been decided for the present. The parties were Blanchards vs. Kimball. The most eminent counsel were employed, for plaintiffs, C. G. Loring and M. S. Clark; for defendant, R. Choate and B. R. Curtis. The case occupied the Court ten days and much evidence was produced upon both sides touching the capacity of the respective machines, to make irregular forms, such at lasts, &c., in exact conformity in all respects to a given model and the time occupied by each machine in doing so.

The defendant has built a machine for the same purpose, in many aspects, as the plaintiff's, and which the plaintiff alleged embodied the spirit and substance of his invention, under a mere change of form. The defendant admitted the building of the machine, and the use of it, but denied that it infringed upon the plaintiff's patent. Under this issue many subordinate questions of the fact and law were raised, respecting the true limits of the plaintiff's invention, and whether the defendant had infringed upon them.

Judge Woodbury after explaining to the jury the principles of the plaintiff's patent, instructed the jury generally, that if the defendant's machine embodied the substance and principle of the plaintiff's invention, as described in his specification, however much it might be changed in form, it was a violation of the plaintiff's patent. The jury were not able to agree, the foreman stated that the jury were very nearly agreed upon all points, except the amount of damages, and were discharged. It would appear then that they had agreed in regard to the infringement of the patent.

Trial by Jury in Patent Cases.--No. 6.

(Concluded from page 38.)

The Constitution vests Congress with power to make laws for the encouragement of Science and Art. The Patent Laws, as they now exist, are legislative enactments, to protect an inventor or discoverer in the exclusive right to make, use and sell his invention or discovery, in these United States, for the space of fourteen years, upon condition that the public shall enjoy the full benefit of the same after that period. The fundamental doctrines of our Patent Laws are derived from the famous Statute of Monopolies of James the First. The said Act states that "the validity of letters patent shall be examined, heard, tried and determined by and according to the common laws of the realm, and not otherwise." After a patent is secured for any invention, and a patentee believes that a certain person or persons is infringing his patent, he generally applies to one of the Judges of the U. S. Courts to grant an injunction to restrain the person from making, using or selling what he believes to be his invention. If the validity of the plaintiff's patent is questioned (the first case,) no injunction should be granted, but the plaintiff ordered to prove the validity of his patent before a competent jury, and the defendants ordered to keep an account of his manufacture, and give security to that effect. If the plaintiff proves the validity of his patent, another point has to be settled, viz., the real identity of the defendant's to the plaintiff's machine—the infringements of the patent. If this is proven also, the jury decides the amount of damages. According to our custom the validity of a plaintiff's patent may be questioned, and form one part of the defence, in every court of law. This is not right. If in one trial the validity of the plaintiff's patent has been established, a certificate should be given by the Court to the plaintiff, and no defendant allowed to contest its validity afterwards. If there are men who still believe it to be invalid, although once established, let them be the plaintiffs, and let the 16th section of the Patent Laws be altered, so as to remove all ambiguity, and allow patents to be repealed by special suit, before a competent jury (one trial) —not otherwise. The defence to prove the invalidity of a patent, takes up far more time and is the cause of more trouble and expense to the patentee and the defendant also, than to prove or defend the plea of infringement.

The greatest trouble with patents in our country, has been among patentees—one sueing the other for infringement. As we stated in our last, there should be no injunction granted on application, nor common trial at common law had upon the petition of one patentee against another. The first thing should be a motion for repeal of the invalid patent, by a trial by jury, to decide upon the matter, "whether it embraces the real principles of the plaintiff's invention, or not." This course would soon bring matters to a conclusion.

When infringement of a patent is denied, no decision appears to us so just, or will give such satisfaction, as that of a jury; therefore, when a patentee believes that his patent is infringed, the best way of protecting his rights and the defendant's, would be an application for trial, upon the usual forms, when the judge should grant the same, demanding of the defendant to keep a correct account of his manufacture, and give security to the faithful keeping of the same. There will always be difficulties about patent rights, infringements, &c., just as there will be difficulties about other things. All that the law or country can do, is to provide a fair way to test the rights of both parties, and we sincerely desire to see a good and cheap way provided for a poor patentee to defend his rights against all that selfishly oppose them. At present this cannot be done. Able counsel is necessary, for there is a mass of knowledge to be acquired, before a lawyer can be good counsel in patent cases. There are very few attorneys who attain to eminence in managing patent cases. It is very easy for a well learned patent lawyer to discomfit his more ignorant opponent. To be a good counsel it requires skill and knowledge in scientific matters, to read the combinations of machinery and the different effects of different machines. Two machines may be nearly identical in their appearance, yet they may effect totally different objects, or produce quite different results; and two machines may present a very different appearance, and yet embrace the same fundamental principle in their action. The judges of our courts have a great weight of responsibility resting upon them, and if one makes a decision respecting one case, it too often happens that others strike the same keynote, when a similar case comes up before them, although the first may be wrong. Great wisdom, caution, and real upright, unbiassed feeling, is required in deciding upon patent cases, but we know all these qualities are not easily found united in any one body of men, assembled to decide upon any question.

Depth of the Ocean.

Messrs Editors—A statement said to be from the Officers of the Coast Survey, has been going the rounds of the papers to the effect that the water of Cape Hatteras was between nineteen and twenty thousand feet deep. If I am not much mistaken it was copied into the columns of the Scientific American. I wish to ask, in what way was the *fact* ascertained? My own impressien is that the heaviest "deep-sea-lead" would not sink to such a depth. Sir Charles Lyell in his late work says; "In fact these great ice-islands coming from Greenland seas are not stopped by the gulf stream which is a mere superficial current of warmer water flowing in an opposite direction, but are borne along from N. E. to S. W. by the force of the Arctic under-current, consisting of colder water, into which the ice-bergs descend to a great depth."—Vol. 1, page 17. Now if a "lead" could be sunk to such a depth what length of line would it-require making due allowance for these contrary currents? And would not a "lead" find its own density at less than that distance from the surface and float off at that level? I ask for information.

Very respectfully, J. Boardman.

Macon, Geo.

[We have no Report of the U. S. Coast Survey in our possession except one sent to us by J. W. Wampler Esq., which has nothing about the subject mentioned above in it. It would be well if the Officers of the government were a little more mindful of us, as all information of a Scientific nature, finds its way through our columns to the houses and homes of more of our people, than by any other source, so as regards the first enquiry we must remain silent.

But then *we* have a question to ask, "How could a sea lead not sink to that depth? It is a common opinion that water at a certain depth is very dense—that there are stratas of water at various depths of the ocean, where the "dead float about," where stones swim, and all such notions, and friend Boardman is possessed with the idea that there is a strata of water in the ocean as dense as lead. Such opinions are incorrect. What kind of substance would water be, compressed to the density of a metal like lead? If there was no bottom to the Atlantic Ocean, a piece of lead dropped into it would descend to the centre of our globe. This is self-evident to us. Suppose that a cubic foot of lead is one hundred times heavier than a cubic foot of water, it will occupy 100 times less space. Now if at the depth of 1000 feet beneath the surface of the ocean, a cubic foot of water would be reduced to double its density, (six cubic inches,) would not a cubic foot of lead be compressed in the same ratio, and from the superincumbent weight of water alone, it would possess the same qualities (100 times the gravity,) to pass through every foot of water below it, that it had to pass through the first 1000 feet. But people greatly err, in comparing water to the atmosphere, as it regards compressibility, and a more general acquaintance with the elements of mechanics, would remove the common opinions to which we have already referred. Water is almost incompressible, and this quality is most admirably taken advantage of in the application of it to press cotton, &c., in the well known Bramah Press, where the water is submitted to a pressure of many tons, without compressing it in the least. There is one instance on record where a weight of 1,100 tons was raised 100 feet high by two Bramah Presses, the water bore of each pipe being only one half inch in diameter. This will give us some idea of the incompressible nature of water. At the depth of 100 feet the pressure on a cubic foot of water is 6,250 lbs., and the same upon a cubic foot of lead, but the difference in favor of the lead is still a superior gravity of 647 lbs., for lead weighs 709.5 lbs. per cubic foot, water only 62½ lbs.

This much we have said, treating the subject scientifically, to remove wrong opinions and spread abroad true knowledge. Now for the proof fact—Sir James Ross, the great navigator, in his voyage to the Southern seas, obtained soundings with a line of 4,600 fathoms, 27,600 feet.

For the Scientific American.

Soils.

All soils are made from the disintegration and decomposition of the rocks into earth, and then united with decayed organic matter. The inorganic portions of soil consists of what are called the primitive earths: clay, silex, lime and magnesia; and of certain saline and metallic compounds such as common salt, gypsum soda, potash, and the oxides of iron and manganese. The organic constituents are decomposed vegetable and animal matters, the progressive docomposition of which, in conjunction with inorganic substances, air, and water, furnish chemical compounds of humus, carbon, ammonia, etc., all of which are essential to the perfection of vegetable growth; sand, clay, and lime, are the three principal ingredients of all soils, and on the proper proportions and intermixture of these, the qualities of all cultivated lands, may be said to be depending. A soil is said to be sandy when it contains no more than ten per cent. of clay; a sandy loam it from ten to forty per cent of clay; and loam is from forty to seventy per cent. Should the clay average from seventy to eighty-five per cent. it is denominated a clay loam; from 85 to 95, a strong clay; and if no sand be present, it is pure agricultural clay. The same distinctions are made when lime is present in considerable abundance, five per cent. of carbonate of lime constituting a marl, and twenty a calcareous soil. A soil fitted for the growth of plants, must contain in a soluble form all the salts and mineral constituents which they require. These vary in different plants; their nature and quantity are determined by minute analyses of the ashes of each vegetable. The most important are: lime potash, magnesia, and iron, combined with sulphuric, phosphoric, and silicic acids, and chlorine. These salts, plants have the power to decompose and absorb. J. W. O.

Camphene.

Camphine and Pine Oil are synonymous terms, both preparations being highly rectified spirits of oil of turpetine. A new oil called the American Oil, has been patented and from the specimen afforded, it must answer the purpose of lubrication in the place of fatty oils.—It is obtained by the dry distillation of resin. Oil of a certain character has been before obtained from the destructive distillation of resin, but the inventors claimed that they have discovered a new hydrocarbon, not before known to chemists.—[Ex.] Who are the inventors?