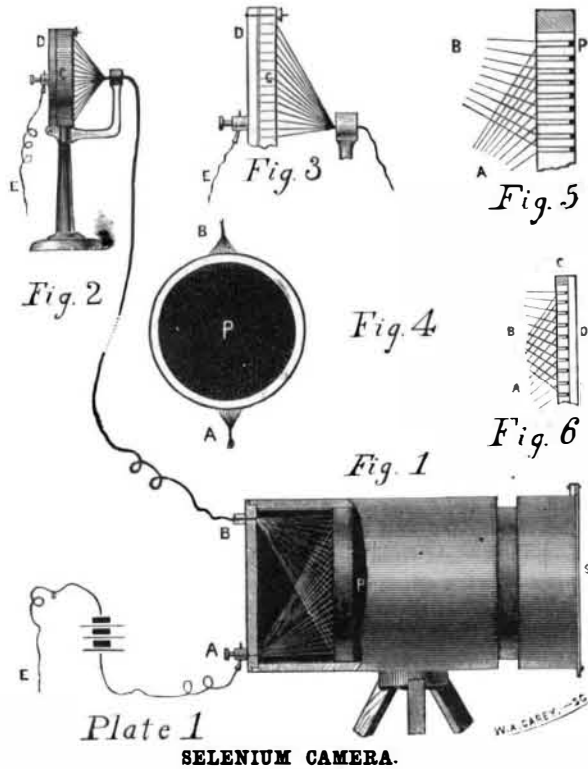


SEEING BY ELECTRICITY.

The art of transmitting images by means of electric currents is now in about the same state of advancement that the art of transmitting speech by telephone had attained in 1876, and it remains to be seen whether it will develop as rapidly and successfully as the art of telephony. Professor Bell's announcement that he had filed at the Franklin Institute a sealed description of a method of "seeing by telegraph" brings to mind an invention for a similar purpose, submitted

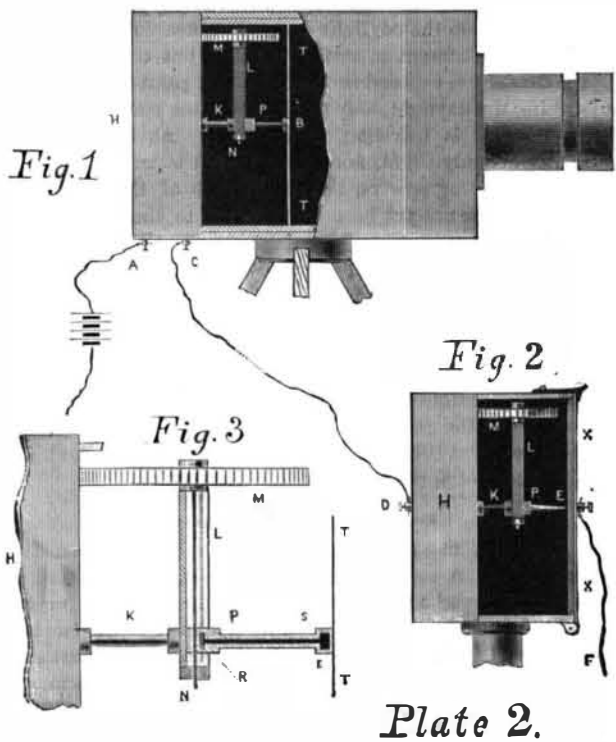


SELENIUM CAMERA.

to us some months since by the inventor, Mr. Geo. R. Carey, of the Surveyor's Office, City Hall, Boston, Mass. By consent of Mr. Carey we present herewith engravings and descriptions of his wonderful instruments.

Figs. 1 and 2, Plate 1, are instruments for transmitting and recording at long distances, permanently or otherwise, by means of electricity, the picture of any object that may be projected by the lens of camera, Fig. 1, upon its disk, P. The operation of this device depends upon the changes in electrical conductivity produced by the action of light in the metalloid selenium. The disk, P, is drilled through perpendicularly to its face, with numerous small holes, each of which is filled partly or entirely with selenium, the selenium forming part of an electrical circuit.

The wires from the disk, P, are insulated and are wound into a cable after leaving binding screw, B. These wires pass through disk, C (Fig. 2), in the receiving instrument at a distant point, and are arranged in the same relative position as in disk, P (Fig. 1).



INSTRUMENT FOR TRANSMITTING AND RECORDING IMAGES.

A chemically prepared paper is placed between disks, C and D, for the image of any object projected upon disk, P (Fig. 1), to be printed upon.

Fig. 3 is a sectional view of Fig. 2, showing wires and the chemically prepared paper.

Fig. 5 is a sectional view of disk, P (Fig. 1), showing selenium points and conducting wires.

Fig. 6 is a sectional view of another receiving instrument with platinum or carbon points, covered with a glass cap, there being a vacuum between glass cap, D, and insulating plate or disk, C.

These points are rendered incandescent by the passage of

the electrical current, thereby giving a luminous image instead of printing the same. These platinum or carbon points are arranged relatively the same as the selenium points in Plate P (Figs. 1 and 4); each platinum or carbon point is connected with one of the wires from selenium point in disk, P (Fig. 1), and forms part of an electrical circuit.

The operation of the apparatus is as follows: If a white letter, A, upon a black ground be projected upon disk, P (Fig. 1), all parts of disk will be dark, excepting where the letter, A, is, when it will be light; and the selenium points in the light will allow the electric current to pass, and if the wires leading from disk, P (Fig. 1), are arranged in the same relative position when passing through disk, C (Fig. 2), the electricity will print upon the chemically prepared paper between C and D (Fig. 2), a copy of the letter, A, as projected upon disk, P (Fig. 1). By this means any object so projected and so transmitted will be reproduced in a manner similar to that by which the letter, A, was reproduced.

Figs. 1 and 2, Plate 2, are instruments for transmitting and recording by means of electricity the picture of any object that may be projected upon the glass plate at T T (Fig. 1), by the camera lens. The operation of these instruments depends upon the changes in electrical conductivity produced by the action of light on the metalloid selenium.

The clock-work revolves the shaft, K, causing the arm, L, and wheel, M, to describe a circle of revolution. The screw, N, being fastened firmly to wheel, M, turns as wheel, M, revolves on its axis, thus drawing the sliding piece, P, and selenium point, disk, or ring, B, towards the wheel, M—see Fig. 3. These two motions cause the point, disk, or ring, B, to describe a spiral line upon the glass, T T, thus passing over every part of the picture projected upon glass, T T.

The selenium point, disk, or ring will allow the electrical current to flow through it in proportion to the intensity of the lights and shades of the picture projected upon glass plate, T T.

The electric currents enter camera at A, and pass directly to the selenium point, disk, or ring, B; thence through the sliding piece, P, and shaft, K, by an insulated wire to binding screw, D (Fig. 2), through shaft, K, and sliding piece, P, to point, E (Fig. 2); then through the chemically prepared paper placed against the inner surface of the metallic plate, X X, by wire, F, to the ground, thus completing the circuit and leaving upon the above mentioned chemically prepared paper an image or permanent impression of any object projected upon the glass plate, T T, by the camera lens.

Fig. 2 is the receiving instrument, which has a clock movement similar to that of Fig. 1, with the exception of the metallic point, E, in place of the selenium point, disk, or ring (Fig. 1), at B.

Fig. 3 is an enlarged view of clock-work and machinery shown in Figs. 1 and 2.

Oil in Allegany County, New York.

The Albany Journal, of April 22, reports that oil in paying quantities is being developed near Wellsville, in Allegany County, about forty miles to the northeast of what is known as the Bradford district in Pennsylvania. On Monday, April 19, an undoubted forty-barrel well was struck at a point less than three miles from Wellsville. It is near the Triangle Well, which has been flowing moderately for two or three months, and about six miles from the Pennsylvania line. The event causes great excitement in that locality, as the fact is now placed beyond doubt that the Bradford belt, as it is called, extends indefinitely in a northeasterly direction into New York State. The region between Olean and Wellsville is now in fair way of being developed into first class oil territory.

NOVEL ANIMAL MOTOR.

Animals have always been used as a source of motive power, but the machinery for utilizing this power has generally been of such clumsy and imperfect construction that

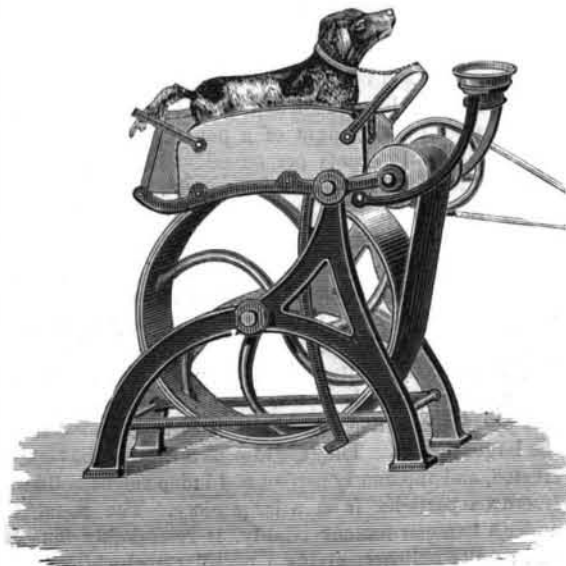


Fig. 1.—NEW ANIMAL MOTOR.

but a small percentage of the actual power was realized, besides making it extremely uncomfortable for an animal.

Mr. Richard, of Paris, has invented a very neat, practical, and useful motor, which was exhibited at the last Agricultu-

ral Exhibition and at the Exhibition of Sciences Applied to Industries. The annexed cuts—for which we are indebted to *La Nature*—give a very good illustration of this novel motor. The animal, in this case a dog, is placed in a box or crib resting upon a shaft supporting the entire upper part of the machine. In Fig. 1 the animal is represented at rest, and the weight of the animal, maintaining its center of gravity, does not act upon the main driving wheel. But as soon as the box is in the position indicated by dotted lines in Fig. 2, that is, as soon as the tangent forms an acute angle with the vertical, the weight of the animal is sufficient to turn the wheel in the direction indicated by the arrows. The animal will naturally try to advance up the inclined surface, and will rotate the wheel by this action, as its weight continually acts upon the wheel. A fixed platform, E, is arranged below

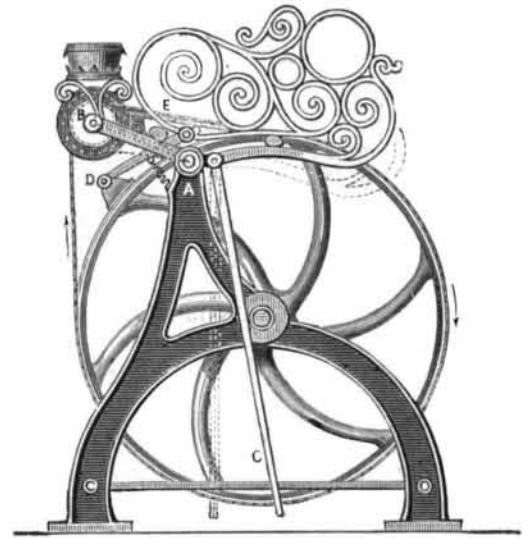
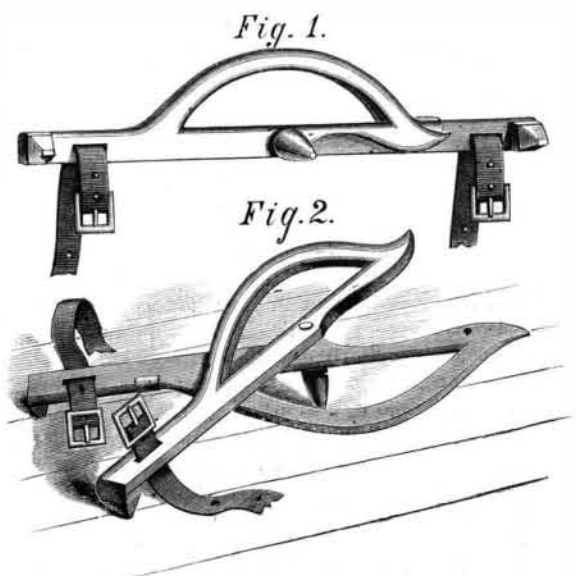


Fig. 2.—VERTICAL SECTION OF MOTOR.

at the side of the endless belt as a resting place for the animal, and a cup containing water is arranged in front of the box, so that the animal can drink while resting. Mr. Richard is a manufacturer of military uniforms, and runs a large number of sewing machines with his improved quadruped motor.

A NOVEL COMBINATION.

Americans are famous for making novel combinations, and it would seem that the last combination that would naturally suggest itself would be a shawl strap handle and a bootjack. Nevertheless we are able to present our readers with an engraving of an exceedingly simple and practical device that is peculiarly adapted to the double duty it is intended to perform. The device will be understood by reference to the engraving. Two similar castings are pivoted together, so that they may be arranged as shown in Fig. 1, when the device answers as a shawl strap handle. By turning the parts on these pivots, as shown in Fig. 2, the device forms a complete bootjack.



MARDEN'S STRAP HANDLE AND BOOTJACK.

This novel combination is the invention of Mr. Mark W. Marsden, of Connersville, Pa.

New Brunswick Red Granite.

An inexhaustible supply of fine red granite, equal if not superior in quality to the famous "Scotch" granite of Aberdeen, exists in Charlotte County, New Brunswick. Several attempts to develop quarries have been made during the past decade, but, owing to lack of transportation facilities and other hinderances, they have generally resulted in failure. Latterly there has been a considerable revival of effort in the work of getting out and cutting the granite, and a still greater impetus is expected from the completion this summer of the railway from St. Johns to the frontier at St. Stephen and Calais, Maine.

MISCELLANEOUS INVENTIONS.

An improvement in the class of cheese cutters having a rotary table or platform and vertically-operating slicer or knife, has been patented by Mr. Walter R. Green, of Salt Lake, Utah Ter. The improvement consists in the construction and arrangement of parts whereby the rotating table or platform on which the cheese is placed is supported at the edge, instead of centrally, by means of a pivot, and thus rendered more firm and steady both when at rest and in motion.

Mr. Jacob G. Fletcher, of Washington, D. C., has patented for artists' use an improved canvas stretcher which shall have all the qualities experience has decided to be necessary or most desirable, and it consists in constructing the bars or pieces composing the stretcher proper with plain miter joints, which are opened by means of wedges, and in providing said bars with holes and grooves for the purpose of receiving the fastening device, which is constructed of metal and approximately U-shaped, and when applied to the stretcher frame is sunk or embedded in the wood flush with the surface thereof.

An improved handle for candlesticks, which may either be used for lifting the candlestick or for hanging the same up against the wall, has been patented by Mr. William Selkirk, of Galveston, Texas. It consists in forming the ordinary circular finger loop in one piece with an upward extension provided with a slot, which may be placed upon a nail on the wall.

Mr. Michael Posz, of Shelbyville, Ind., has patented a bill and letter file case provided with mechanism connecting with a treadle for operating the springs that press the papers being filed.

An improved commode, which is simple and convenient, has been patented by Mr. John Finsterer, of Philadelphia, Pa. It consists in the arrangement of arms attached to the lid of the commode in such a manner that when the lid is opened these arms rise with it and are secured automatically, so that the person that sits on the commode may rest comfortably and not be in danger of breaking the lid.

An improved grate for fireplaces has been patented by Mr. Joseph Bunford Samuel, of Philadelphia, Pa. The object of this invention is to furnish grates for fireplaces so constructed that the top bar of the grate may be adjusted to serve as andirons when a wood fire is to be used.

Messrs. James Skidmore, Joseph M. Liston, and Orestes Skidmore, of Charleston, Ill., have patented an improvement in hame tugs for connecting the hames with the traces in the ordinary form of harness. It consists in the peculiar construction and arrangement of the metal clip or plate in connection with the leather tug.

Mr. James C. Stanley, of New Hartford, Conn., has patented certain improvements in the thread boards and thread guides of spinning and twisting machines, whereby the thread guide can be adjusted so that the threads, when delivered from the rolls, will run through the guide centrally with the spindle tip, and thereby escape the usual stretching and breaking.

An improvement in spring vehicles, patented by Mr. William B. Thomas, of Elmira, N. Y., is designed to keep the back springs of a spring wagon under a slight strain when there is no load in the rear part of the wagon, to prevent the rattling and undue wear of the spring joints, and to cause the wagon to ride easier.

An improved ticket holder has been patented by Mr. Samuel Herzberg, of Pontiac, Ill. It is designed for holding the tickets on which are marked the sizes and other particulars of goods, such as pantaloons and other clothing.

Mr. Emile F. Espérandieu, of Nashville, Tenn., has invented a velocipede of the tricycle class which is adapted for carrying packages, merchandise, or any articles of light weight, and which may be propelled by working swinging treadles having springs that aid in moving them backward.

Mr. Lewis B. Morgan, of West Liberty, West Va., has patented an improvement in plow and cultivator handles, which consists in a construction and arrangement of parts, which cannot be clearly described without an engraving.

An improved implement or machine for running slight furrows in plowed land as marks for planting corn or other seed, or for crossing out land for planting an orchard, etc., has been patented by Mr. Washington Barron, of Summit Bridge, Del.

Mr. Archibald H. Kerr, of Midway, Texas, has patented a composition for whitewashing houses, walls, fences, out-buildings, etc., designed for great smoothness, brilliancy, and durability; and it consists in a compound of lime, whiting, plaster of Paris, glue, carbonate of soda, bichloride of soda or borax, and sulphate of soda, in certain specific proportions.

Messrs. Ebenezer Fisher and John Watson, of Kincardine, Ontario, Canada, has patented an improved die for forging metallic horse collar frames. This die has been developed after a long series of experiments. With it the desired perfection of operation and result may be obtained with certainty and precision, and a collar frame produced having the desired form, proportions, and lines of curvature required for greatest strength and lightness combined.

Mr. John B. Fogt, of Anna, O., has patented an improvement in that class of riding rakes in which the wire teeth are attached to the axle and the driver's seat attached to the hinged thills or shafts, so that upon releasing a locking lever the rake will be dumped automatically by the weight of the driver.

An improved adjustable seat for mowers, reapers, wheeled

horse hay rakes, and various other agricultural machines, for farm wagons and other vehicles, or for use in any other situation in which it may be applicable, has been patented by Messrs. Samuel Hedges, of Wheeling, and Lewis B. Morgan, of West Liberty, West Virginia. It is capable of oscillation or adjustment laterally on a fixed point of support, so that it may be kept in horizontal position despite the lateral inclination of the body of the machine or vehicle while passing along a hill side or other inclined surface.

Mr. Talbot C. Key, of White Sulphur Springs, Ga., has patented a portable hay and cotton press, an improvement in the class of portable presses which are mounted on wheels and thus adapted to be conveniently transported from one locality to another without requiring a separate vehicle therefor. The invention consists in hinging the press box to the beams of the truck, so that it can be laid down on its side, for the purpose of transportation, etc., and in the means for securing the press box in the vertical position when required for work.

Mr. David C. Williams, of Florence, Ala., has invented a fruit picker, which consists in a ring fixed on the end of the staff, and having wire fingers projecting from its top portion for the purpose of detaching fruit; also, a basket or fruit receptacle pivoted to and within said ring, so that when the picker is put in use the inclination of the staff or pole will cause the basket to tilt and one edge thereof to approach the wire fingers, which are holding and pulling the fruit, and hence when the latter falls it is sure to pass into the basket or receptacle.

What they Knew Four Thousand Years Ago.

The *Popular Science Monthly* for June publishes abstracts from the address of Chief Justice Daly before the Geographical Society, in which he says:

From one of these books, compiled after the manner of our modern encyclopædias, and the compilation of which is shown to have been made more than 2,000 years B. C., it has been ascertained, what has long been supposed, that Chaldea was the parent land of astronomy; for it is found, from this compilation and from other bricks, that the Babylonians catalogued the stars, and distinguished and named the constellations; that they arranged the twelve constellations that form our present zodiac to show the course of the sun's path in the heavens; divided time into weeks, months, and years; that they divided the week, as we now have it, into seven days, six being days of labor and the seventh a day of rest, to which they gave a name from which we have derived our word "sabbath," and which day, as a day of rest from all labor of every kind, they observed as rigorously as the Jew or the Puritan. The motion of the heavenly bodies and the phenomena of the weather were noted down, and a connection, as I have before stated, detected, as M. de Perville claims to have discovered, between the weather and the changes of the moon. They invented the sun dial to mark the movements of the heavenly bodies, the water clock to measure time, and they speak in this work of the spots on the sun, a fact they could only have known by the aid of telescopes, which it is supposed they possessed, from observations that they have noted down of the rising of Venus and the fact that Layard found a crystal lens in the ruins of Nineveh. These "bricks" contain an account of the Deluge, substantially the same as the narrative in the Bible, except that the names are different. They disclose that houses and land were then sold, leased, and mortgaged, that money was loaned at interest, and that the market gardeners, to use an American phrase, "worked on shares," that the farmer, when plowing with his oxen, beguiled his labor with short and homely songs, two of which have been found, and connect this very remote civilization with the usages of to-day.

More about the Iowa Meteor.

At the time of the fall of the Estherville Meteor, May 10, 1879, some boys, who were herding cattle near a lake five or six miles from where the larger fragments fell, reported that just after the passage of the great body over their heads they saw and heard a shower as of hailstones falling on the water near by. In April last, people began to pick up near the borders of that lake small pieces of meteor from the size of a pea to the weight of a pound. These soon found ready buyers at 25 cents per ounce by local traders. People left their farms—men, women, and children—and went out to the meteor ground, now freshly burned over, the belt being a strip of country commencing at or near Four Mile Lake, in the western part of Emmett County, and running southwesterly about eight miles, the width being from one-half to one mile. Upon this belt many thousands of small pieces were found. They are most generally metallic, very little stony matter about them, though some of the larger ones are of the same general appearance, and contain chrysolite in about the same relative proportion as in the larger masses. They are also, as a rule, very black, well crusted, and apparently perfect and independent bolides, not fractured particles from a large piece. The metal, cold, under a hammer flattens readily, is remarkably tenacious, and readily polishes, giving a peculiar steel-white or silver gray.

Mr. Charles P. Birge, of Keokuk, who furnishes these facts in a letter to the *New York Times*, estimates the weight of matter thus recovered at 75 lb., and thinks it highly probable that much of the iron had penetrated the ground and water, and is thereby wholly lost. So the inference is fair that the total weight of the fall is greatly in

excess of the 800 lb thus far recovered. The larger masses weighing 437, 170, and 92½ lb., and minor fragments about 50 lb.

A Ship Railway Wanted in Oregon.

The *Alta California* suggests that there is no better place on the continent for testing a ship railway than at the Cascades in Oregon, to transport laden steamboats past the lower rapids of the Columbia River. The rapids there are only six miles long; the grade of the road need not exceed 15 feet to the mile anywhere; the boats to be carried are not near so heavy as those that demand transportation at Panama, and a large traffic demands greatly increased facilities for passing the rapids.

Many thousand tons of wheat were detained in Eastern Washington through the winter because transportation was impossible. The president of the Astoria Chamber of Commerce, Mr. Bowlby, in a report made in January last said:

"Last season it cost \$10.50 per ton to carry wheat from Walla Walla to Portland, and \$11.50 to Astoria. Thirty miles of that distance is by rail, and cost \$4.50 per ton, while the remainder, 235 miles to Portland, by boat, over two portages, cost only \$6, and the 323 miles to Astoria, over the same portages, cost but \$7 per ton.

"The Columbia River is the natural highway and outlet for the country drained by it, and unless navigated and improved that section of country will soon be choked by its own great growth. The portage road at the Cascades was run night and day from August till the upper rivers were closed with ice, and with great difficulty was it possible to keep the freight from being blocked. This portage, a distance of seven miles, with rolling stock, is maintained, and freight is taken from the boat on to the cars, and from the cars to the boat, provided the boats and cars await each other; otherwise, the grain is moved from the boat to the warehouse, and fourthly, to the boat below.

"We estimate the freight passing over the road at 1,000 tons per day for the past six months, which, counting 300 days in the year, would be 225,000 tons last year, which, at 50 cents per ton, cost the farmers of the upper country the sum of \$112,500 for a portage ride of seven miles."

The federal government has announced the intention of constructing canals around the obstacles to commerce, and has begun work in a slow way at the Cascades. The *Alta* insists that it is the duty of Congress either to push the canals at both rapids, or to make a contract with Eads to authorize him to finish a ship railway this summer at the Cascades, with the intention of supplying the upper rapids at the Dalles in the same manner in 1881, if the experiment at the Cascades should be successful.

The ship railway has immense possibilities. It should be tried without delay; the idea is American in its origin, and its value should be tested here; and the best place and the best man for it are the Cascades and Eads.

Luminous Paint in Railway Cars.

The experiment of coating the interior of a railway carriage with Belmain's luminous paint has been tried in England with considerable success. The English *Railway News* says that a first-class carriage was chosen for the experiment, and in the daylight its appearance is very little, if any at all, different to ordinary paint, but during the time the carriage is exposed to the light the paint is rapidly absorbing the daylight, only to give forth the same the moment the carriage is traveling in the dark. At first the light emitted is only slight, not that the paint is any different in its illuminating powers, but the pupils of the eyes of the traveler have not yet been accustomed to the light, for, as the journey proceeds, the carriage appears to be completely lighted up, so much so that the passengers are enabled easily to recognize the features of their fellow travelers, while the time by a watch is clearly discernible.

It is thought that for trains running long journeys, with tunnels occasionally intervening, the paint will be very valuable, inasmuch as the oil and gas can be entirely abandoned, and the great waste at present experienced avoided. How the paint illumination would work on dark, cloudy days does not appear.

Butter, Eggs, and Cheese.

At the recent annual session of the National Butter, Egg, and Cheese Association at Indianapolis, Mayor Lord, of Elgin, Ill., read a paper on the milk industry. The magnitude of the industry was shown by reference to the fact that there are 13,000,000 milch cows in the country, requiring the annual product of 52,000,000 acres of land to feed them, and giving employment to 650,000 men. Estimating the cows at \$30 each, the horses at \$80, and land at \$30 per acre, together with \$200,000,000 for agricultural and dairy implements, and the total amount invested in the industry is \$2,219,280,000. This is considerably more than the amount invested in banking and the commercial and manufacturing interests of the country, which is \$1,800,964,586.

Effects of Heat on Granites.

Mr. Hiram A. Cutting, State Geologist, of Vermont, has been testing the capacity of different sorts of granite to withstand heat. He tested twenty two specimens of the best known quarries, and found that while all were unaffected by 500° Fah., damage usually began at 600°. was serious and frequent at 800°, and at 1,000° all the specimens were ruined, the stone from Mount Desert standing the test perhaps better than any other. He gives it as his opinion that the effect of water on heated granite is rather apparent than real.