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RAIL-ROAD NEWS.

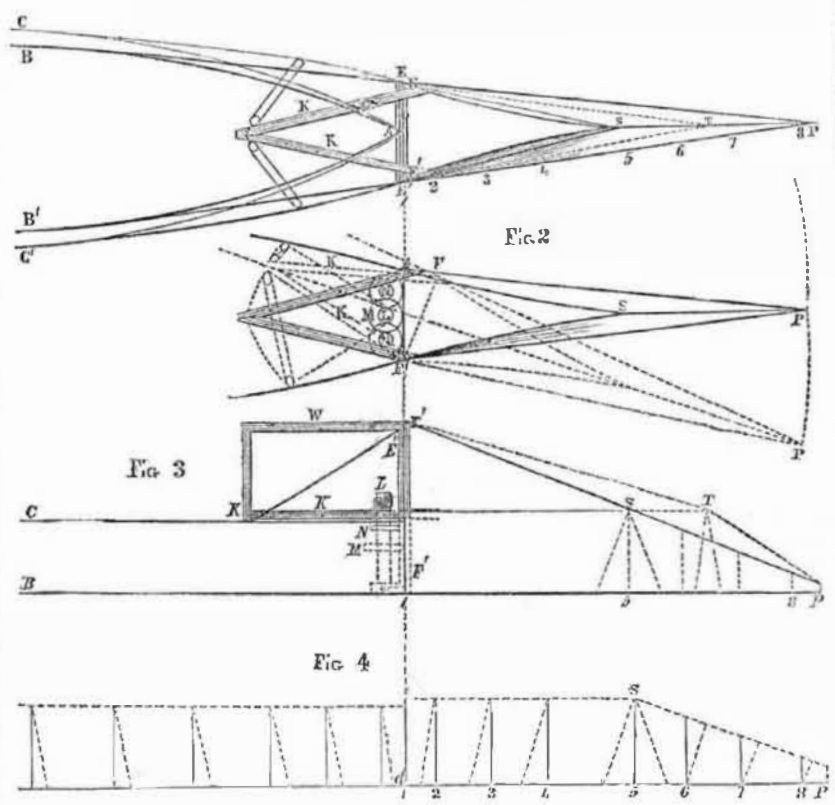
Pacific Railroad.

The Board of Directors of this railroad have presented their Second Annual Report. Thirty-seven miles of this road, from St. Louis to Franklin Co., Mo., are now in the course of construction, about 1,000 hands are employed. Three locomotives—two from Paterson, N. J., and one from Taunton, Mass.—will soon be ready, and five additional locomotives are to be added in two years. The rails to be used are of English T iron. The State of Missouri has voted $2,000,000 for the construction of this road. The State bonds of the road are now held above par. The benefits which railroads confer upon land-holders, perhaps above all others, have been exemplified in a most striking light by the Pacific Railroad; lands adjacent to the line have recently trebled in price: some which were valued at $1,50 per acre, have arisen to $10, and some which were held to be worth $30, have been sold for $100. It has infused a new spirit of energy in the people, and many new settlers have been attracted thither. The object of the people of St. Louis, in constructing this road at present, is a sagacious one, viz., "to hold St. Louis to her true destiny as the Central City of the Mississippi Valley." They have petitioned the General Government for a donation of lands, to construct the road to the boundary line of the State, but Congress coupled the grant with so many restrictions that they sent word to their Representatives they could not accept of it upon such burdensome conditions, but would rather take advantage of a pre-emption right to a limited number of acres. Missouri is yet destined to be a very great State; its climate is delightful; its soil is fertile; its natural products varied, and its mineral resources inexhaustible; and St. Louis is on the highway from the Atlantic to San Francisco.

Railroad Accidents.

We have met people actually entertaining a horrible dread of railroad travelling: some willing to stay at home mainly because afraid to ride after the energetic tread of the iron-horse; while, on the other hand, there are many who complain of five minutes' delay, and are willing to risk every thing for extra speed gained by its employment. We believe it is true that the accidents on railways are one hundred per cent. less than those incurred by coach travelling—take the average, and we shall find the number of deaths below that of the old coaching system. We think that the railway proprietors use all wholesome precautions, and as the public have demanded high speed, it is not altogether right or justifiable to blame officers of roads, as casualties are unavoidable many times. A celebrated Englishman once properly remarked that a traveller was disappointed that he had not arrived at Exeter from London in three hours, and yet complained of the R.R. Co., because a tyre flew off. If the public demand improvements, a few casualties—and few they are compared with the traffic—must necessarily occur. There is nothing without risk; "if you prick your finger, why there's danger in it," says Shakspeare.

THE PLOWSHARE PROW.---Fig. 1.



Explanation of the Engravings.—To a flat-bottomed river steamer of 300 feet length, 40 feet beam on deck, and 35 feet at the bottom, it is proposed to add a Wave-line Prow of one-fourth the length of the boat, with a base of one half of the boat's medium beam, say 18 3-4 feet.

In fig. 1, A is the original cut-water; A B, A B′ is the bottom, and A C, A C′ the top of the original bows. In adding the Plowshare Prow to such a boat, a strong bulkhead is built across the cut-water (seen in the plan view at E E′, fig. 1, and in the elevation view, figs. 3 and 6); the sides of this bulkhead are vertical and parallel. The Prow is a double plowshare,

Fig. 5.

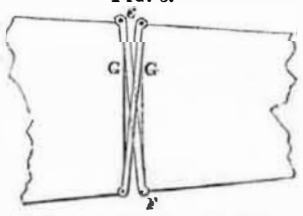
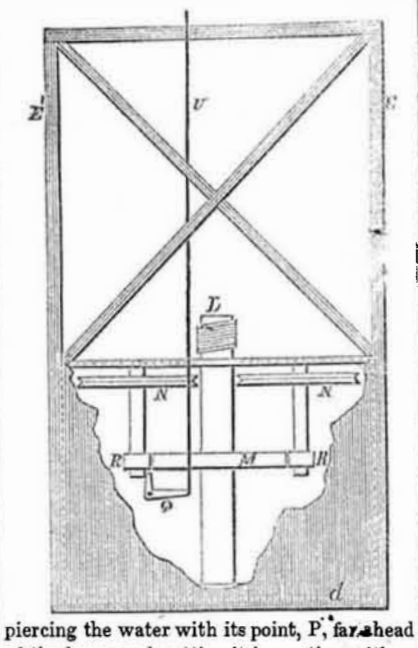
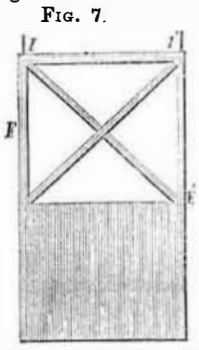


Fig. 6.



piercing the water with its point, P, far ahead of the bows, and putting it in motion with a gradually increasing force. Fig. 3 shows the Prow to be a prolongation of the boat's bottom; the long line, P A B, fig. 3, is the same as P E B, fig. 1; and S K C, fig. 3, is the same as S E C, fig. 1. Fig. 2 shows the Prow thrown to

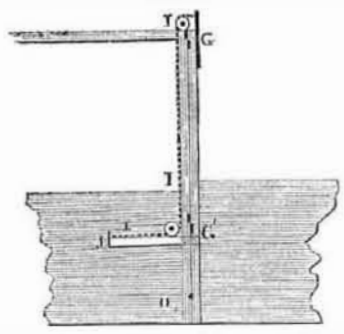
Fig. 7.



one side in steering. Fig. 5 shows the manner of hinging the Prow to the hull; the double hinges being represented as strained out of their true position, that their mode of construction may be the better illustrated. Fig. 7 is an end view (elevation) of the base or after-part of the Prow, with its bulkhead, and strongly braced posts. Fig. 8 shows how the tops of the prow-posts are securely fastened, by two iron chains, to the top of the hull-posts,—and these are also braced from the hog-chain of the boat. Fig. 6 is an end view, looking backward through the fore bulkhead of the hull, part of the bulkhead being torn away to show the steering apparatus under the deck of the forecastle. This figure is on a scale as large again as the others.

Construction—The bulkhead, E E′ fig. 1, is first to built up on the strong timber, D, notch-

Fig. 8.



ed into the bottom end of the cut-water. A new bottom, and new sides for the bows, are to be extended from the new bulkhead. On the ends of D, the posts, E E′, are set up and strongly braced, forming part of the supports for the pilot-house, the floor of which is seen at W, fig. 3. In front of this bulkhead the new Prow is hinged, having a base of just the same dimensions, although the base on which it turns may be shorter. The bottom side-edges of the Prow may be straight lines (as drawn here) for better resisting snags and stumps, or they, like the other parts of the Prow, may take the wave-line. Fig. 3 shows sections of the Prow, indicating the varying inclination of its sides. As here shown, these sides, measured vertically, are straight lines, but they may take any curve desired for them.

The Prow is to be securely planked up on its sides, top, bottom, and after-end or base. A small pump should be placed on the top. The strength of the Prow should be less than that of the bows, so that, in a collision, the Prow may certainly be broken to pieces rather than endanger the sinking of the boat.

The posts of the Prow, F F′, are attached to those of the hull, chiefly by the double hinges, G G′, figs. 5 and 8, so that it may turn to the right or left, in the horizontal plane. To keep the upper pair of hinges from ever being drawn out of shape, as in fig. 5, a strong chain, I I, fig. 8, starting from the top of each prow-post and passing over a pulley in the top of the hull-post, and around another pulley toward its bottom, is fastened to the end of the brace, J, fig. 8, which projects backwards from the bulkhead of the Prow, and enters a suitable recess in the bulkhead of the hull. When piercing the water, the Prow is strongly pressed downwards; this brace, then, attached to the Prow, draws hard upon its iron chain, binding the top of each prow-post firmly to its hull-post. A projection from each prow-post fits into a corresponding notch in its hull-post, as at O, fig. 8, so that the two sets of posts must always keep a true adjustment.

The timbers, K K, are of such strength as to turn the Prow just as the pilot may wish to steer. They have pulley-blocks at the end where they are bound together, the ropes from which, after passing through blocks at the sides of the boat, are wound around the upright barrel, L, which is turned by the large wheel, M. At N N′ are seen two wheels with a notched edge, for receiving endless ropes, which pass around similar wheels on the shafts of the paddle-wheels. While the boat is running, N N′ are always in motion, but in opposite directions. The pinions, R R′ are on the same shafts with N N′; so that if either pinion be pressed hard against the large wheel, M, the axis-barrel, L, will haul in upon one of the pulley ropes and pay out the other. If either engine is out of order, and not running, an endless rope must be passed around the two wheels, N N′, and crossed, so that the pilot's power over the prow may never be interrupted. The pinions, R R′, should act upon M rather by friction than by gearing. They are pressed hard against M (whenever the helmsman would alter the direction of the prow) by some such means as ropes or the bent lever, Q, and rod, U, shown in fig. 6—the bent lever controlling the position of its pinion. The rod, U, and its mate, should be brought within reach of the helmsman's feet, so that by pressure above, he may command the direction of the prow. A break should also act on the wheel, M, by pressure, upon which the prow may be steadily held at any angle of deflection. The wheel for working the rudder should be removed to the new stand for the pilot—its ropes being retained so that, when necessary, it can be worked by hand, while a new set of ropes from it are coiled around a suitable barrel on the axis, L.

The timbers, K K, instead of being framed into the base of the prow, must be fastened to it by iron pins, which can easily be drawn out by the helmsman (by means of a properly adjusted rope) without leaving his station. The

pins on which the double-hinges turn are to be arranged the same way, and also one end of each iron chain. For passing a canal lock, one side of the prow may be disengaged, and the prow swung around to the side of the hull. In case of fire, or of dangerous snagging, the pilot may run the prow with full force into the bank, or into a sand-bar, and thus securely anchor the boat—and the fastenings on the up-stream side of the prow being disengaged, the current will swing the boat against the bank or the bar, and the prow will hold it fast.

This Prow will greatly diminish the danger of running upon sand-banks and bars. It may plow its way through where the common boat would be stuck fast; and even if stopped by the plowshare turning too deep a furrow in the sand, we have only to back out instead of backing off.

The front edge of the Prow, from P to S, fig. 3, may be variously modified. The drawings represent two iron braces, F S, F′ S, fig. 1, coming down from the tops of the prow-posts to S, and there firmly attached to the angle of the prow; but that angle may be put further forward, say at T, figs. 1 and 3, which would cause the faces of the prow to exert a much smaller downward pressure by the re-action of the water. The true theory of this prow is,—let the inclination of its sides be so proportioned to the inclination of the bows, that the downward tendency of the one shall be counterbalanced by the upward force of the other. The new boat should run upon an even keel—opening its double furrow through the water without any tendency to throw its prow above or below the line of the level of the boat's bottom.

The small quantity of water that will rise between the hull and prow bulkheads, when the prow is deflected in steering, will not interfere at all with the good behavior of the boat. The loss of power is too trifling for consideration.

The new boat will studiously avoid collisions; if, by any accident, her prow is broken, a jury-prow, made of the wide planks always kept on board, will enable her to make a port for repairs.

The increased speed to be gained by the plowshare Prow will invite to a new construction of all the forward part of the boat's upper works, for avoiding the resistance of the air, especially in head winds, as also to a substitute for our enormous chimneys. The question of a rough or smooth bottom and sides, will also soon become of very great importance. For our western steamers, coppering is out of the question; but is it not possible to have all the planking so sawed that the surface touching the water shall necessarily be smooth—be incapable of being roughened and splintered by the hard usage our boats are exposed to? The grain of the wood, as the plank is planed, should be seen to come to the surface in successive layers, from the forward end of the plank to its after end, so that the older the hull the higher polish should be seen on all its planking touched by the water.

Arrangements are in progress for securing letters patent for this invention. Persons desiring further information will please address John H. Ewin, Esq., Nashville, Tenn.

MISCELLANEOUS.

Animal Electricity.

M. Beckeinster, of Lyons, France, says the *Courrier des Etats Unis*, has obtained some singular electric results, by operating upon certain animals. The following is one which he states to have made upon a cat:—

When the weather is cool and the wind from the north dry, if the cat feels cool, a thing which can be perceived by the partially greasy appearance of the cat's hair—if the experimenter has cool hands, he will take the cat on his knees, will place his left finger on its breast, and will pass his hands, from the neck to tail, along the spinal column. After a few passes the electric shock will be produced. The shock seems to come from the breast of the cat, across the body of the experimenter and terminates in his other hand placed upon the back of the cat.

Though experiencing much pleasure at these passes, the cat runs off at full speed after the shock, and will hardly suffer the experiment to be repeated until the following day, when the disagreeable sensation will be partially forgotten.

One day I have obtained, with much trouble, three commotions from a cat. The last one was very weak. After each discharge the cat seems fatigued, and exhausted; he lays down, in an outstretched attitude. A few days after it loses its appetite—becomes sad and seems to avoid the place it was formerly attached to; it withdraws from the persons to whom it had been attached, and after refusing nourishment, it still drinks water from time to time, languishes more and more, foams at the mouth, and generally dies within the first fortnight which follows the first commotion.

I have repeated these experiments during various years, when the season was propitious, upon tame cats in my possession, and also upon those of my neighbors, who believed that I was merely caressing their cats. Some time after, I have always learned, these animals had perished without any apparent cause.

Emerald.

This precious stone, which ranks next to the diamond, and is equal to oriental ruby and sapphire, is of a beautiful green color. It occurs in prisms, with a regular hexagonal base; sp. gr. 2 7; it scratches quartz with difficulty, and is scratched by topaz, and fuses before the blow pipe into a frothy bead. Its analysis has been differently stated by different chemists; but it appears to contain about 14 per cent. of glucina, (which is its characteristic constituent,) 68 of silica, 16 of alumina, and a very small portion of lime and iron; it also contains 1 per cent. of oxide of chromium, to which it owes its color. The paler varieties of this stone are known under the name of beryl; they are colored by the oxide of iron. Aquamarine includes clear beryls of a sea-green, or pale bluish, or bluish green tint.

The finest emeralds come from Grenada, where they occur in dolomite. A crystal from this locality, in the cabinet of the Duke of Devonshire, measures in its greatest diameter 2 3-8ths inches nearly; its lesser diameter barely 2 in.; its third diameter 2 1-8th in.; the extreme length of the prism is 2 inches. It contains several flaws, and therefore only partially fit for jewelry; it has been valued at more than $2,500. A more splendid specimen, weighing 6 ounces, belonging to Mr. Hope, cost $2,500. Both these specimens were exhibited in the Great Exhibition.—Emeralds of less beauty, but of very large size, occur in Siberia. One specimen in the imperial collection of Russia measures 4½ inches in length and 12 in breadth. Another is 7 inches long and 4 broad, and weighing 6 lbs.

The finest beryls (aquamarines) come from Siberia, Hindostan, and Brazil. In the United States very large beryls have been obtained, but seldom transparent crystals; they occur in granite or gneiss.

Night Air.

It is a prevalent idea that *night air* is not so healthy as the atmosphere when under the influence of light. This opinion must have originated from some cause, or else it must be set down among old wives' fables. No one ever had an opinion that the composition of *air* was changed during the night hours, but certainly it is well known, that air and the atmosphere are two different things. The atmosphere may become perfectly corrupt, and in many places it becomes so, but air is a fixed composition, therefore, when it becomes mixed with a superabundance of carbonic acid or any other gas, it is no longer air.—The atmosphere—that ocean in which we continually bathe, and on which we continually feed, often becomes unfit for respiration by extraneous matter floating in it, under the different names of miasma, infection, &c. It has been said, "the belief of night air being injurious, is an error, which has hindered the introduction of ventilation more than all others." This we do not believe, for it is well known that the effluvia of marshes is the most dangerous during night hours, and those who are exposed to the *night air* in any country, except upon the ocean, never enjoy such good health as those who are protected from its influence. The domestic animals, such as cows and horses, which are housed every night in summer, "do better," as the farmers say, than those which are exposed to the free ventilation of chilling damps, and the extraneous gases which sluggishly float near the earth's surface at night, owing to the absence of the sun, which, during the day, carries them up like the dew, above the stratum in which we live and walk. No one ever supposed that the pure atmosphere had anything to do with causing the death of persons exposed at night within the tropics; nor does it produce the cough of the consumptive and asthmatic, nor the langour and misery which the sick so frequently experience.

These and other sufferings experienced more particularly at night, are caused by carbonic acid, absence of sun-light, rapid reduction of temperature, the air being saturated with moisture, &c., and not by that air without which we cannot live three minutes. It is absurd to suppose that fresh air supports our life and destroys our health at one and the same time. The same thing cannot possess the utterly incompatible character of good and evil, of supporting life and destroying it. It is all nonsense to talk about pure air being hurtful to life and health, at any season by night or day, but while carbonic acid, absence of sun light, rapid reduction of temperature, the atmosphere saturated with moisture, &c., at night, are the causes of sickness and suffering, it is no error to believe that the night atmosphere is oftentimes injurious to health. A belief in this need not prevent good ventilation, for if cotton cloth screens are placed in windows during night hours, a free ventilation is obtained, and the air is somewhat rarified, before it enters the apartment; this meets all the necessary conditions of freedom from exposure, and a plentiful supply of as good air as can be obtained. Those who believe that constant exposure to night air is not injurious, have never had the good fortune of trusting to that notable appendage, placed so prominently on man's front for a detector, viz., a good olfactory explorer.

Variola and Vaccination.

A committee appointed by the Medical Society of the State of Pennsylvania, has lately made a report, through Dr. Emerson, respecting the effects of vaccination. The committee was appointed to examine into the statements which had been put forth by Dr. Gregory, of London, and Dr. Caznave, of Paris, who had written and published statements respecting the growing insufficiency of vaccination as a preventive for dangerous small pox. The opinions set forth by these eminent foreign physicians were calculated to unsettle the views of physicians, and shake their confidence in the protective powers of vaccination. If correct, the sooner this was generally known so much the better; if erroneous, the sooner this was settled it would be to the advantage of all persons. The appointment of the Pennsylvania committee to examine into the subject was judicious. The principal points to be considered were, first, whether persons vaccinated lose, through lapse of time, any protective power once afforded against small pox; second, whether the prophylactic powers of vaccination, performed during infancy, are restricted to the first fifteen years of life, and of no avail afterwards; third, whether the accumulated evidence of the present day is calculated to sustain Dr. Gregory in his belief that the efficacy of cow pox as a protection against small pox, has diminished, and a large increase of small pox resulted from the extension of vaccination; fourth, whether, as asserted by Drs. Gregory and Caznave, inoculation, after the fifteenth year of age, of persons previously vaccinated, produces a specific papular eruptive disease, of a non-contagious character, unattended with danger, and giving protection in after life against small pox; fifth, whether circumstances exist which render it most advantageous to substitute inoculation for vaccination, after the fifteenth year of age, as proposed by Dr. Gregory.

It was stated that the agent for producing small pox had for a long time been kept in check, and its total extermination nearly completed, but that within a few years a new form of disease "varioloid," had arisen, and Dr. Gregory promulgated statements to show that vaccination was diminished in potency by lapse of time, and that this small pox of late years had greatly increased.

In England the Epidemiological Society were startled by Dr. Gregory's views, and it also appointed a committee to examine into the subject; that society has received 430 replies from practicing physicians in different parts of England, and only one expressed a doubt about the efficacy of the cow pox; they were adverse to Dr. Gregory's views. He took his cases from hospitals, where other causes were, no doubt, in operation to produce the sad results he sets forth. Previous to the introduction of vaccination in England, the annual mortality from small pox was 40,000, or one tenth of all the deaths from every other source. In 1850 the number of deaths in London by small pox was only 498, while the population was four times more than it was in 1750, when the deaths by small pox numbered 2,036.

This confutes Dr. Gregory's views entirely. In Prussia the number of deaths by small pox, in 1803, were 40,000, in a population of 10,000,000; at that time inoculation was the only protection relied on. In 1849, when the population had increased to 16,000,000, the mortality from small pox was only 1,760, thus showing how the mortality had decreased, vaccination having come nearly into general use within the past ten years. One hundred and eighty-two practicing physicians in England, state, they have never known a death from small pox after vaccination. Some deaths have taken place by small pox after vaccination, but not many, and very peculiar causes apart from the disease might have caused the mortality. In the London Small Pox Hospital, 40,000 persons were vaccinated during the past 16 years, and not one of whom had ever returned with small pox.

The committee of the Pennsylvania State Medical Society have reported against every point advanced by Drs. Gregory and Caznave, and thus conclude their report:

"Your committee have no hesitation in expressing it as their belief, that no circumtances exist to justify the general substitution of inoculation after the 15th year of age, as proposed by Dr. Gregory; and they regret that at the present time, whilst strenuous efforts are making, through individual exertions, occasionally helped forward by judicious legislation, statements calculated to lessen confidence in the protecting power of vaccination should have been promulgated by Dr. Gregory. Happily, however, abundant evidence exists to show that although the hopes of complete exemption from small pox, once fondly indulged, have not been fully realized, vaccination still offers the only dependence for protection against a disease, the fearful ravages of which have tended so much to darken the pages of history, previous to the precious discovery made by Jenner.

Patent Matters.

Senator Dawson has reported a bill giving the Chief Clerk of the Patent Office all the powers and functions of the Commissioner, and ratifying and confirming all his acts as Acting Commissioner during the temporary absence of the Commissioner of Patents. The bill was considered, and ordered to be engrossed on Wednesday last week.

This scarcely required a bill, as it has been always customary for the said clerk to exercise the very powers which this bill designs to confer upon him, and the U. S. Courts have always recognized the signature of the Chief Clerk as *legal*—full authority on a patent.—The re-issued Woodworth patent is not signed by Mr. Burke, the then Commissioner of Patents, but his Chief Clerk.

Mills for Grinding.

John Todd, of Potter's Mills, Pa., has invented an improvement in mills for grinding, the nature of which consists in a peculiar manner of feeding the grain, or other substance to be ground between the stones; also an arrangement to allow the runner stone to have an equal play, also a peculiar manner of elevating and depressing the lower stone or runner by means of inclines cut in cylinders. Measures have been taken to secure a patent.