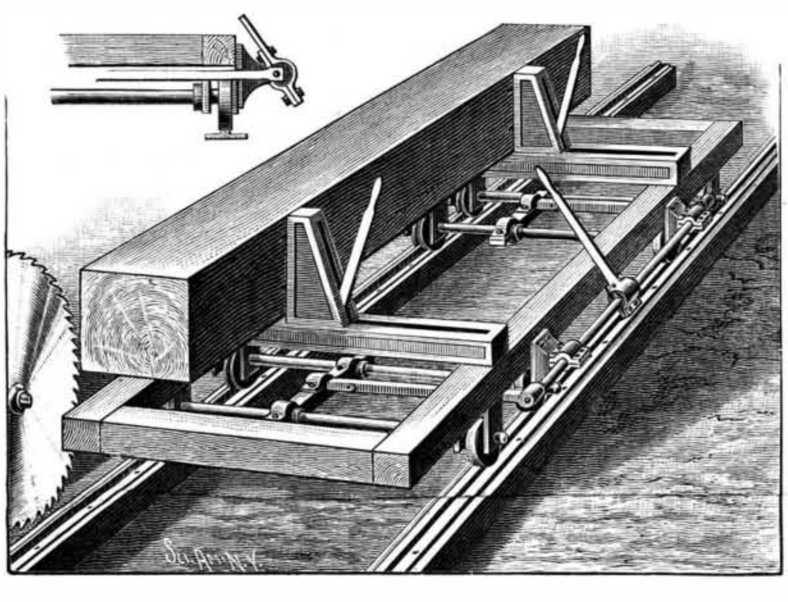
the center of the lever arms has a crank arm at each end for rotating the shaft, upon which are pinions, one pinion adapted to engage and reciprocate the approaching racks on each side of the ladder frame, while upon one extremity of the shaft a ratchet wheel is secured, adapted to be engaged by a pawl pivoted to the outer face of one of the lever arms. The ladder proper is made up of a series of rectangular frames arranged to form lazy-tongs, each frame having near its



ROSENBERG'S OFFSET FOR SAWMILL CARRIAGES.

forward ends a round, the rounds being in vertical alignment when the ladder is extended or elevated. The ladder is elevated by means of the crank handles on the transverse shaft, when the sliding rack operates to extend the several sets of lazy-tongs, the lever arms affording the means of inclining the entire ladder to the rear as far as desired. A platform is usually provided for the top of the ladder, the platform having hooks adapted to encircle one of the upper rounds. From the lower set of lazy-tongs are projected legs, provided with wheels, these legs being drawn from the ground when the ladder is elevated, and the ladder then resting upon its fixed frame, but when the ladder is folded down these legs assume an essentially perpendicular position, and form supports whereby the ladder may be guided on its wheels in any direction.

Eels that Scale Precipices.

One of the most novel sights in the spring of the year, at the rocks of the Willamette Falls, is the swarms of gyrating eels. They are friskiness itself, and show a low order of intelligence. If you put your hand in the water over the eels, or spit on it, instantly they are gone. But poke a stick down among the snaky things, and they do not notice it. The sense of smell seems to be their main guard against danger. Like salmon, they do their level best to dart up the rocks in order to ascend the river, and with good success. Says a fisherman:

"I have seen as many as a hundred bushels of eels hanging on the rocks at one time by the suckers of the mouth. They would wiggle and flutter their tails, and by the momentum thus obtained, letting go with their suckers, jump up about six inches higher. I caught about forty barrels last season that I salted and sold to the Columbia fishermen for bait. I picked them off the rocks with a fish hook tied to a pole. I started at the bottom row of hanging eels, and would silently pick off barrel after barrel. The upper rows hadn't sense enough to perceive the enemy. I have caught eels in the headwaters of the Santiam, in the Cascade Mountains. Suppose they had swum up from the Willamette."—*Oregon City Courier.*

MANY a man has ruined his eyesight by sitting in the bar room looking for work.

OFFSET MECHANISM FOR SAWMILL CARRIAGES.

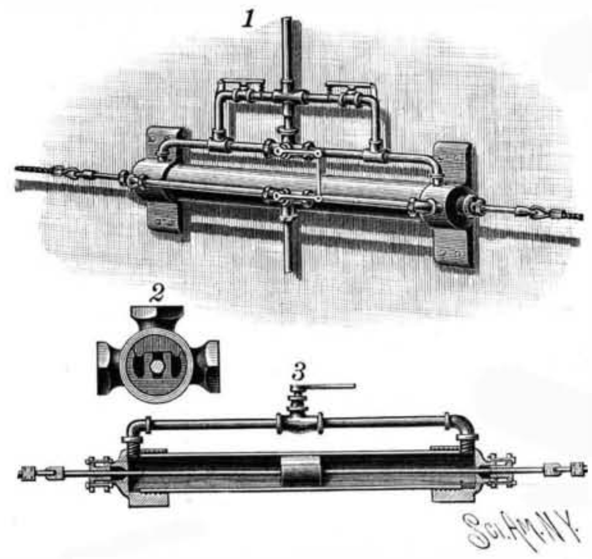
A simple and conveniently manipulated device, whereby the log frame and mechanism carried thereby on sawmill carriages may be shifted bodily in a line at right angles to the line of travel by the carriage, preparatory to "jigging back," is illustrated herewith, and has been patented by Mr. George Rosenberg, of Muskegon, Mich. The carriage is supported upon axles journaled in hangers, and upon the axles are keyed collars, each pair of axles being connected by a cross bar, the ends of the bars encircling the axles between the collars. Upon the side of the longitudinal beam of the carriage farthest from the saw a rock shaft is journaled, an eccentric or short crank being formed on each end of the rock shaft, the eccentric faces being turned down when the carriage is carried back for a cut. The rock shaft is manipulated by a lever secured thereto at or near its center. A short rod is passed centrally through the cross bars, uniting each pair of axles, the rod being provided at each side of the cross bars with a lock nut, and having a slot in the end facing the rock shaft, with which the rod is united by a link pivoted in the slotted end of the rod, the outer end having an integral sleeve in which the eccentric surface of the rock shaft is held to revolve. When the carriage is to be jigged back, the lever manipulating the rock shaft is moved from the saw, causing a tension to be exerted on the cross bar held between the central collars on the axles, so that the frame and its appurtenances are drawn away from the saw, while to throw the log into contact with the saw, the lever on the rock shaft is turned toward the saw, as shown in the illustration. The rock shaft may, if desired, be journaled inside the carriage frame, either above or below the axle.

A Great Steel Plant.

The steel plant of the Phœnix Iron Company, of Philadelphia, which has been in course of erection for the last four months, is now reported as completed. The engines weigh 370,000 pounds, and the roll train weighs 400,000 pounds. This is the largest plant in the country, not excepting that at Pottsville. The engines have a capacity of 2,000 pounds pressure, and the plant is expected to turn out steel suitable for armoring cruisers for the government and for making steel guns of any caliber.

AN IMPROVED STEAM STEERING-GEAR.

The steam steering-gear herewith illustrated, which has been patented by Mr. Frank B. Turner, of Portland, Oregon, consists in a long steam cylinder, with a piston whose rods reach through opposite ends of the cylinder, and are connected with the tiller ropes, Fig. 1 showing a side elevation, Fig. 2 a transverse section of one of the valves, and Fig. 3 a longitudinal section. The pipes entering opposite ends of the cylinder, as shown in Fig. 3, communicate with a central three-way valve, one of whose openings receives the steam



TURNER'S STEAM STEERING-GEAR.

supply-pipe. Similar pipes, also entering opposite ends of the cylinder, are likewise connected with a similar three-way valve, which receives the exhaust pipe, T's in the latter pipes communicating with safety valves arranged to resist the highest pressure the cylinder is obliged to bear in the regular working of the apparatus. The arms of the exhaust and live steam valves are connected by a link, so that the two valves will be moved simultaneously, and when steam is admitted into either end of the cylinder by the live steam valve, it is exhausted from the other end. By admitting steam to both ends of the cylinder at the same time, and closing it in, the piston will be held in any desired position along the length of the cylinder, the exhaust closing before the feed-valve, which may be left open just enough to give the required pressure on both ends.

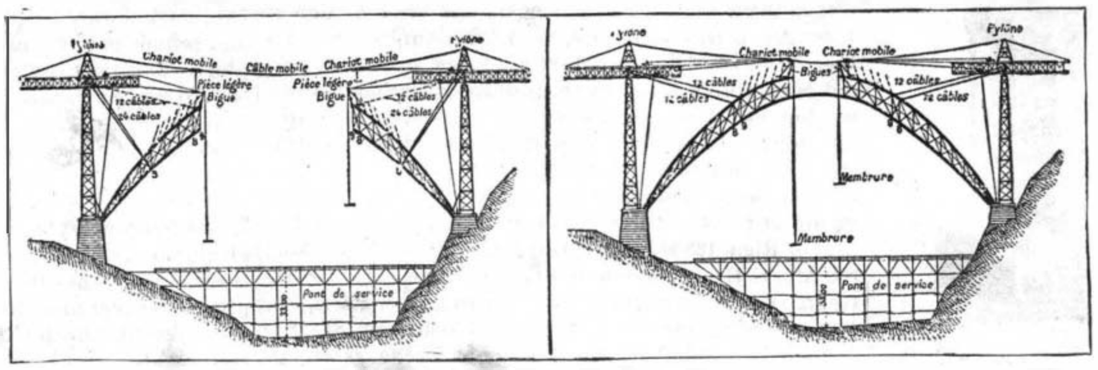
THE GARABIT VIADUCT.

We have already spoken several times of the Garabit viaduct—that colossal work which does so much honor to French engineers—and we have given the dimensions and principal arrangements of it, and have described the placing of a part of the superstructure. We shall now complete what we have already published by a description of the placing in position of the large central arch and the process employed for mounting this huge mass. We shall give a few details in regard to this point, as well as to the tests that have been made this year, and which are borrowed from the interesting book in which the lamented Beyer has given all the calculations relating to the viaduct.

The central arch of the viaduct, constructed by Mr. Eiffel, is, as is well known, of 540 feet span and rests upon two large piers, the metallic part of which is 195 feet in height. The total weight of this arch is 2,608,540 pounds.

The piers were first constructed, and then the two lateral parts of the superstructure were set up upon mounds of earth arranged as platforms. Next, these parts were swung into position on the large piers, and were made to project about 70 feet on the side toward the arch. Each, thus placed, was held very firmly by means of 28 steel wire cables fixed to the rear end and anchored to the abutments of the approaches.

This done, two scaffolds were erected in front of the



Figs. 1 and 2.—ANCHORAGE OF THE ARCH AND SUPERSTRUCTURE OF THE GARABIT VIADUCT.

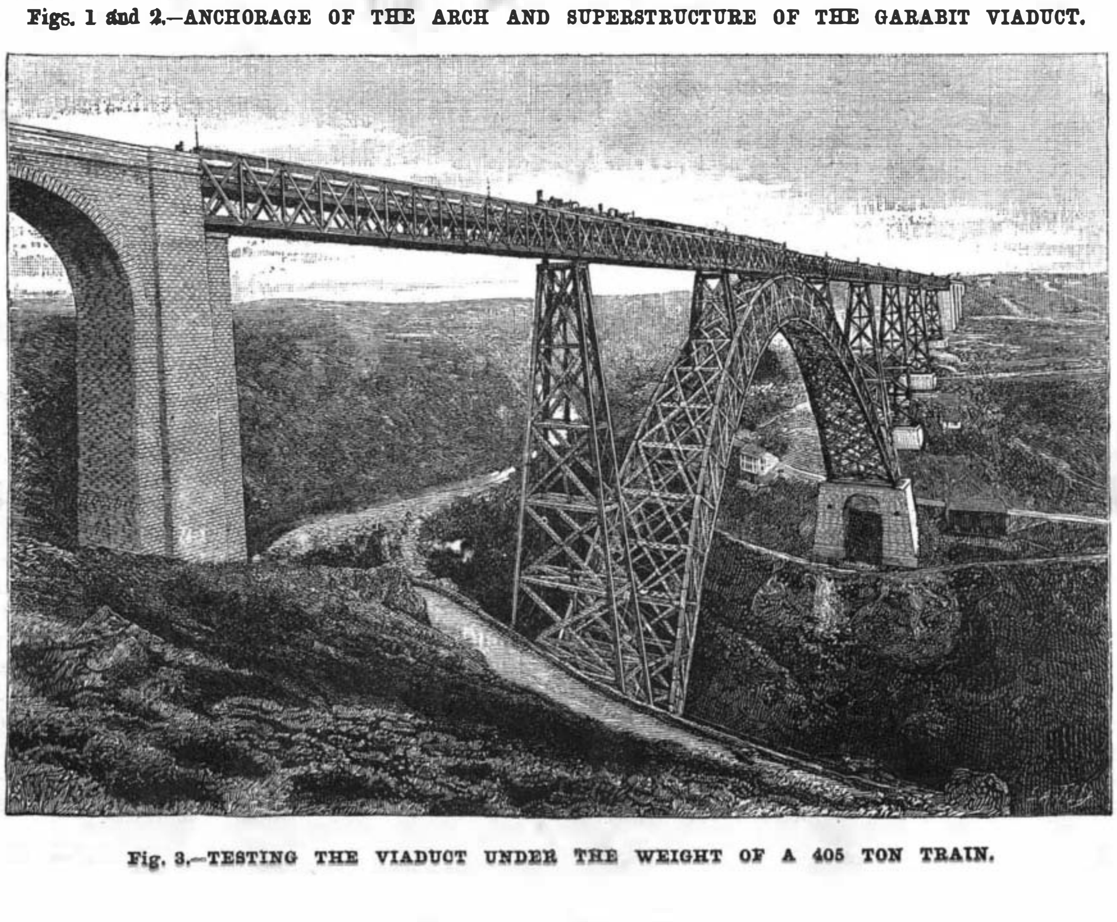


Fig. 3.—TESTING THE VIADUCT UNDER THE WEIGHT OF A 405 TON TRAIN.

large piers, and the upper part of these, in the form of an arch, was so arranged as to follow accurately the curve of the inner surface of the proposed arch (that is to say, the intrados) at its springing. Upon these centers were placed the corresponding metallic pieces, and, after this part of the arch had been constructed, it was connected by means of twenty steel cables with the straight superstructure to the right. From this moment, it was possible to begin the mounting of the projecting arch according to the method previously applied by Mr. Eiffel to the Douro bridge. The operation of joining the pieces proceeded by degrees, care being taken, when the weight of the overhanging part became too great, to put a new series of anchoring cables in position, connecting the pier extremity with the upper superstructure. Figs. 1 and 2 well show in what the process consists. The placing of these cables permitted of raising or lowering the parts of the arch in process of being mounted, in every stage of advancement. The special arrangements made to this effect were as follows: The ends of the cables rested upon iron girders through the intermedium of wedges that could be disengaged by means of hydraulic presses. It was then easy to give each cable the desired tension and length. The cables, as a whole, really constituted a totalizing apparatus that permitted of moving million-pound masses by means of a series of successive stresses never exceeding 15 tons.

In fact, Mr. Eiffel had found by preliminary experiment that an increase of half an inch in the length of a cable corresponds to an increase of 2,200 pounds in its tension. By introducing a half-inch wedge under the end of one of the cables, the neighboring cables were decreased in tension 2,200 pounds, distributed over the other cables as a whole. These latter, therefore, were contracted to an extent corresponding to such diminution of tension, and they consequently raised the arch. The totalisation of the slight liftings due to the repetition of this maneuver on each of the cables finally effected a general lifting of four inches. When it was desired to lower the arch, the operation was just the contrary, that is to say, the wedges were removed in succession. A mastery over the position of the projecting parts was had at every instant.

After the two halves of the arch had been brought so close together that there was room only for the insertion of the center piece, the process of keying was begun. As the two halves had, during the mounting, been held a little above their final position, there was a few inches more space between them than was necessary for the insertion of the key, and it was only necessary to remove progressively a few wedges to bring the pieces gradually into complete contact.

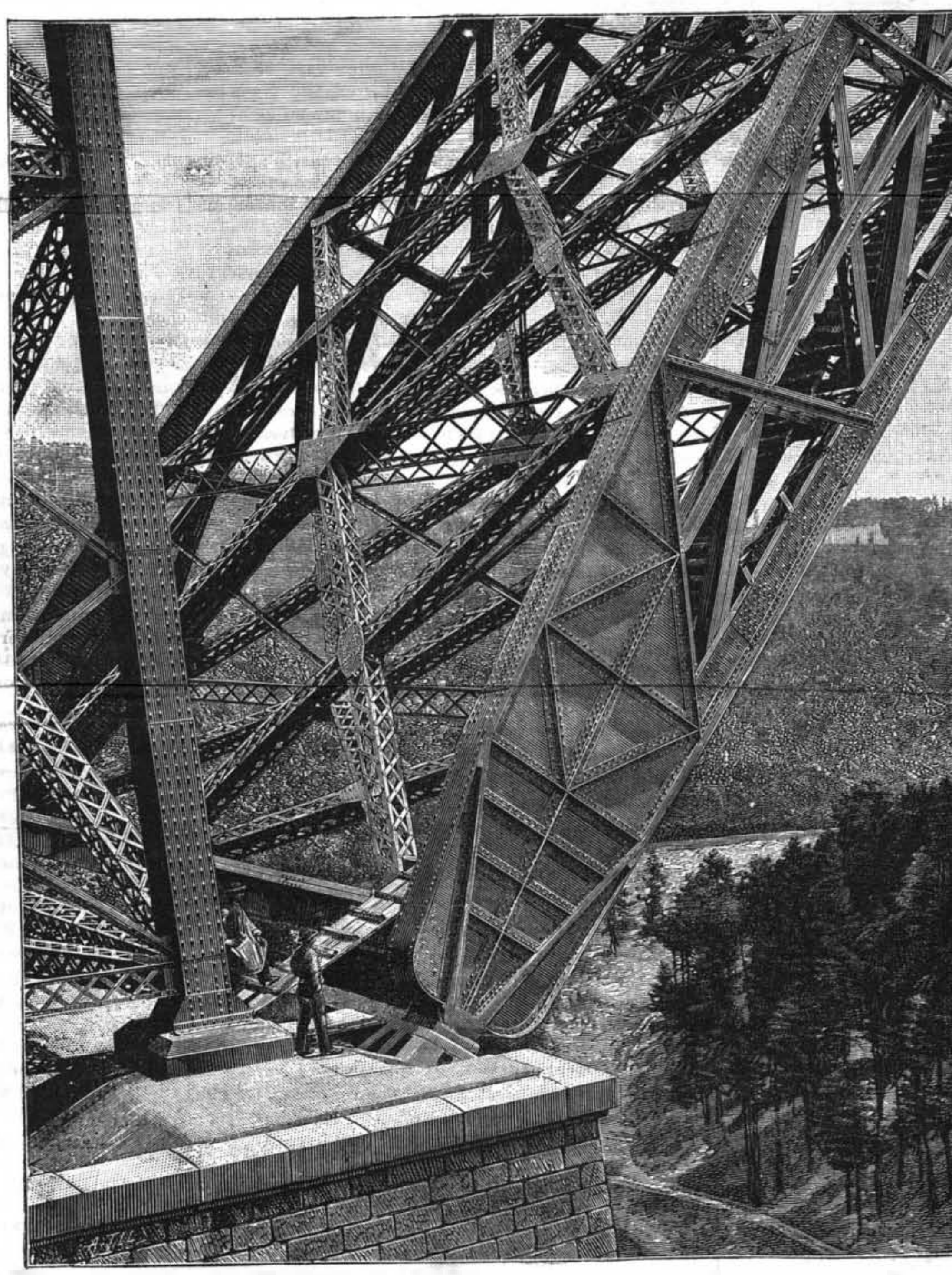


Fig. 4.—SPRINGING OF THE ARCH OF THE GARABIT VIADUCT.

The closing of the intrados was effected on the 20th of April, 1884, and haste was at once made to ease all the cables in order to prevent a fall in the temperature from producing an increase of abnormal stresses, either upon the cables or the arch itself. This quick easement was effected by means of sand boxes that care had been taken to interpose between the superstructures and the large piers.

On the 25th of April, the few stanchions and uprights that remained to be put in place at the top of the arch were inserted, and on the 26th all was ready for mounting the key of the extrados. This was hoisted at 3 o'clock, and at 7 o'clock in the evening it was definitively placed. It was only necessary to use hammers to cause it to gradually enter the space that it was to fill.

The operation succeeded with a precision that may be qualified as mathematical, seeing the large dimensions of the work and the circumstances under which so delicate a mounting was effected.

It only remains to say a word regarding the tests that were made last April, before the viaduct was opened for travel. These tests were of two kinds. In one the loads remained stationary, in the other they were rolling. The test loads consisted of a 75 ton locomotive hauling 15 ton cars, and the results obtained are worthy of being cited, as they demonstrate the surprising fixedness of the structure.

The arch, loaded for its entire length by a train of 22 cars (Fig. 3), exhibited under this enormous weight of 405 tons a deflection of 0·27 inch. The same train, placed upon one of the halves of the arch, produced a deflection at the key of but 0·15 inch. Finally, under the action of the rolling weight, the deflection was but 0·46 inch.

These figures are significant. They constitute, perhaps, for people who are informed, the finest eulogy that can be addressed to the eminent constructor, Mr. Eiffel, who, after the Garabit viaduct, will astonish the world with his 984 foot tower.—*La Nature.*

Printing of Photographs in Colors.

Mr. Fred. E. Ives lately read before the Franklin Institute a paper on heliochromy, which was an addition to a communication made to the Institute last February, and in which he explained his method of producing photographs in natural colors.

According to the *Ledger* report, Mr. Ives said: "I assumed that we might counterfeit all the colors of nature in a photographic picture by making each ray of simple color select automatically, in the operation of the picture-making process, such a type color or mixture of type colors as will counterfeit it to the eye, and showed how this can be accomplished by means of photographic plates made sensitive to all colors, and exposed through compound light filters, which are suitably adjusted by experiment upon the spectrum itself."

He quoted from a recently published work on color to show that his plan of operation was in accordance with what is now recognized as the true theory of the nature of light and color sensation. Continuing, he said: "Although I originally worked out my process on the simple plan of making each primary ray of spectrum color select from and combine three pigment colors to counterfeit it, it becomes evident that in accomplishing this I might have produced one negative by the action of solar rays nearly in proportion as they excite the 'red nerve fibrils' of the eye, another in proportion as they excite the 'green fibrils,' and another in proportion as they excite the 'blue fibrils.' I did not do this at once, but after experimenting with several sets of reproduction pigments, adjusting color screens so that I could make the process counterfeit the spectrum with either set of pigments. I finally adopted reproduction colors which call for negatives of the spectrum showing curves of intensity approximating to the curves in Maxwell's diagram, illustrating the action of the spectrum upon the different sets of nerve fibrils. These colors are certain shades of red, green, and blue light, or their complementary colors in pigments, which approximate to Prussian blue, magenta red and aniline yellow, the first two of so light a shade that it is necessary to superimpose one upon the other to obtain a full violet blue, the blue upon the yellow to obtain green, and the magenta upon yellow to obtain red.

Concluding, he said: "Admitting the theoretical soundness of my mode of procedure, which I believe I have fairly demonstrated, there remains only the question of practicability and commercial value to be considered. The process is practicable if the same operations repeated in the same manner can be relied upon to produce pictures which counterfeit the light and shade and color of all objects. Three subjects which I shall show to-night, a delicate oil painting, a brilliant Prang chromo, and a beautiful sea shell, were made with the same light, same camera, same preparation of sensitive plates, same set of color screens, same relative exposures, and same development. They show a very great variety of colors, mostly compound in the painting and chromo, but pure spectrum colors in the sea shell, yet the colors of all are alike faithfully counterfeited to the eye."

The pictures thrown upon the screen by Mr. Ives seemed to fully confirm his claims as to the efficiency of his mode of reproducing the colors in a picture or in nature.

Mr. Ives also exhibited a camera contrived by himself, in which the lenses and color screens are adjusted so as to produce simultaneously the three negatives required by the above mentioned heliochromic process.

The New Railway Bridge at New London, Conn.

A large swing bridge, with two spans of 250 ft. each, is to be erected over the Thames river at Winthrops Point, near New London, to carry the lines of the New York, Providence, and Boston Railroad. The principal peculiarity about the work is the method by which the three deep foundations are to be sunk, the total depth of mud and water to be passed through being 130 ft., 128 ft., and 103 ft. in the different cases. To avoid the expense of the pneumatic system the following plan has been adopted: An immense timber crib in one case, 71 ft. square, is to be sunk to the bottom of the river, and the mud dredged out inside it to the depth of 20 ft. In the space thus prepared piles will be driven. The spaces round the heads of the piles will be filled with concrete, and the masonry of the piers will be built on this.

Christmas Trees.

New York buys thousands of Christmas trees in Maine during the first half of December, and large crews of men are employed in various parts of the State cutting the big town's supply. A Christmas tree is valued first according to its symmetry, second as to its size. The ideal tree is anywhere from ten to fifteen feet in height, with stout branches at regular intervals. Some trees have too few branches, while others have so many as to hide the articles hung upon them. Whole steamer loads of Christmas trees, cut in the western part of the State, are shipped from Portland to Bay, York, and one man in Camden, on Penobscot Bay, is getting out 30,000 trees for the metropolitan market.

The Working Steam Engineer.

While it is true that in every line of manual labor, whether skilled or unskilled, genius and thought are recognizable, and the service of one man is enhanced beyond that of another, still the divergence from the plane of a general average, in most trades, is so slight as to make a standard of wages possible. The working steam engineer is an exception to this condition.

The street laborer may, by care and thoughtfulness, make himself of more intrinsic value to his employer, yet in a general sense his superiority is not materially felt, and a standard of wages for him is possible. Thus, also, in those branches of skilled employment where the labor becomes of a routine character, and where slight variation of subject is necessary, the same conditions exist.

This being the case, it is easy for combinations of tradesmen or labor to establish, by general consent, a code of wages for the guidance of its members. The further removed from that class of labor where bone and muscle are the only elements necessary for success, the more difficult it is to set any standard by which to estimate excellence or make an equalization of payment.

The medical profession may set a standard of payment, the mere physical act of making a visit being the basis from which payment is estimated; but if the absolute service rendered a patient were to enter into a discussion, the question of remuneration would be somewhat difficult to settle.

The mere fact that a man enters a shop and there toils for the allotted number of hours makes it possible to settle his wages by the standard of another man performing a like service; but when the service rendered is the product of thought and study, when the results of mental activity are thrown into the balance against muscular exertion, then the reward can only be measured by the profit given to the employer.

The greater and more varied the knowledge necessary to perform a certain line of duty, the greater the extreme from the inferior to superior talents; hence in proportion is the service rendered increased or decreased in value.

One of the leading English steamship lines, while having one established code of payment for its chief engineers, has a bonus fund, payable monthly to each chief engineer, which payment is determined by the success of the engineer and the absence of neglect on his part in the fulfilling of his duties. Thus each engineer becomes a competitor for this extra emolument. As the business of steam engineering takes to itself certain qualities of the professions, it becomes necessary to gauge the [illegible] by the same standard—that of especial fitness. To set a standard by which all attorneys were to be paid would at once close the doors to the chamber eminence, and no member of the legal profession would consider the incentive sufficient to warrant him in putting forth the energy necessary to advance beyond mediocrity.

In the employment of men, that class of labor that is purely mental commands higher price than does that class where only physical strength is wanted. One brain may design a steam engine, but more than one is necessary to build it. Hence, then, among brain workers, experience and originality are factors of success. Neither can we gauge a man's worth—commercially speaking—by lapse of time, for one man with frosty locks may have traveled a shorter distance along the highway of observation than his neighbor with half his years.

Certain qualities are always necessary to enable any man to succeed in his vocation, and a man's advancement above his competitor depends upon the magnitude of these qualities.

The working steam engineer is a man in whom must be found executive ability, and in proportion to his ability to execute is his service as an engineer enhanced.

Twin sister to executive ability is self-reliance. The working steam engineer must be endowed with keen perspicuity, so that he may be able to absorb generalities at a glance, and sufficient executive powers to carry out details with correctness and precision. One of the best and most reliable second engineers that we ever met—in marine service—was one of the most inglorious failures as a chief. He lacked completely the attribute necessary to execute. He was so devoid of self-reliance as to hesitate to back out into the stream at the beginning of a new trip any steamer upon which he was chief engineer. A thorough mechanic, and of more than ordinary education, he was in every way a first class man to carry out the details under the general planning of another.

Originality is the cradle in which eminence is nursed, for originality lifts men from the beaten track of the past into unexplored fields, giving the world new productions in science, literature, and art. To succeed, the engineer must be original, and his performing a certain act must not be because some one else did it, but because from his own observation he knows it to be proper and correct.

Not only must the engineer be able to do for himself, but he must plan for others to do; he must be able to direct generalities and execute details; in fact, he must combine the practical and scientific to such an extent as to make it difficult to establish a general standard of payment for his services.—*American Engineer.*

How to Invest Wisely.

The remittance of $3 for one year's subscription to the SCIENTIFIC AMERICAN for the coming year will be a good investment; but there is one that will pay better, and that is to send $7 and receive both the SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT during 1889; and yet another that will pay still better, and that is to remit $9 and have the ARCHITECT AND BUILDERS EDITION of the SCIENTIFIC AMERICAN included with the above. With the weekly receipt of the two weekly papers, and the monthly ARCHITECT AND BUILDER, the subscriber will have placed before him all the scientific, engineering, and mechanical news of the day, and enough architectural designs and building news to meet the ordinary wants of a person contemplating building for himself, or a contractor who makes estimates of the cost of construction for others.

Energy and Vision.

In a paper on this subject read before the National Academy of Sciences, Prof. S. P. Langley summarizes the paper as follows:

The time required for the distinct perception of an excessively faint light is about one-half second. A relatively very long time is, however, needed for the recovery of sensitiveness after exposure to a bright light, and the time demanded for this restoration of complete visual power appears to be greatest when the light to be perceived is of a violet color.

The visual effect produced by any given, constant amount of energy varies enormously, according to the color of the light in question. It varies considerably between eyes which may ordinarily be called normal ones, but an average gives the following proportionate result for seven points in the normal spectrum, whose wave lengths correspond approximately with those of the ordinary color divisions, where unity is the amount of energy (about $\frac{1}{1000}$ erg) required to make us see light in the crimson of the spectrum near A, and where the six preceding wave lengths given correspond approximately to the six colors—violet, blue, green, yellow, orange, red.

Color.	Violet.	Blue.	Green.
Wave length,	μ ·40	μ ·47	μ ·53
Luminosity, (Visual effect.)	1,600	62,000	100,000

Color.	Yellow.	Orange.	Red.	Crimson.
Wave length,	μ ·58	μ ·60	μ ·65	μ ·75
Luminosity, (Visual effect.)	28,000	14,000	1,200	1

Since we can recognize color still deeper than this crimson, it appears that the same amount of energy may produce *at least* 100,000 times the visual effect in one color of the spectrum that it does in another, and that the *vis viva* of the waves whose length is 0^{μ}·75, arrested by the ordinary retina, represents work done in giving rise to the sensation of crimson light of 0·0000000000003 horse power, or about 0·001 of an erg, while the sensation of green can be produced by 0·000000,01 of an erg.

Reproduction of Negatives.

It very often happens that just the very negative one wants for a special occasion or print is either broken or mislaid, much to the annoyance of the serenely unruffled temper of the possessor, more especially if it happens to be a favorite one or if a copy is wanted as a great favor. It is not always convenient to copy a print, supposing you have one from a broken or cracked negative, and every one is the possessor of a copying camera, even of the simplest kind, so that an easy way, if it be an old or an odd one, of reproducing a negative from a print without a camera may prove useful to many who have not all the appliances at hand to do this in the orthodox improved manner.

The print must be an unmounted one, or be dismounted, after which it must be passed through a rolling press on a steel plate, taking great care that it does not cockle, wrinkle, or crease in the process. It may then be gone over and touched up and made as perfect as possible. For the negative get a piece, if possible, of the thin albumenized paper, called long ago negative paper, but if that cannot be got easily, use the ordinary Saxe or Rives paper, the latter by preference. Prepare it by silvering on a strong bath, say of, at least, sixty grains nitrate of silver to one ounce of distilled water, the usual printing bath, in fact. When dry pass it through the rolling press in a similar way to the print, and give it as much pressure as can be given, and be especially careful that no flaw appears on the surface of the paper after it has been pressed, which latter operation, it need hardly be said, must be done in the shade or under yellow light.

The printing frame must have a plate glass, and of a size larger than the size of the print operated upon. Then place the print with the paper side to the glass, the printed side toward the operator; then place the newly prepared paper, which must of course be dry, on the face of the print, close the frame, and see that the contact between the two paper surfaces is perfect, and put as much pressure on as the frame will admit of. Print in the usual manner *through* the back of the print. The time will necessarily be longer than with a negative, or rather with most negatives. Get a good, rich, deep print, which will be negative from the positive print, and if the instructions are attended to, the negative will be as sharp as a film or glass negative, the two smooth glazed surfaces being in intimate—I had almost said optical—contact.

To finish and complete the operation, wash in a flat tray, as if a print in three or four changes of water, and do not tone the negative. The rich brown color of the silver is not only quite sufficient, but far better for printing from than if it be toned. Fix in a strong new bath of hyposulphite of soda, and when thoroughly fixed wash in the usual way, and dry between sheets of blotting paper kept flat. In all the operations be very careful to allow no fold, crack, or imperfection to appear on the resulting negative, as they show in every print taken from it afterward. If the negative is not quite satisfactory, it can now be touched up, worked upon, or improved to any extent. After being quite finished, it is well to pass it again through the press, with the same precautions as before, and then proceed to render it more transparent, durable, and useful, by varnishing. To do this properly it will be necessary to prepare the varnish some hours before it is wanted. Take any clear, transparent, negative spirit varnish—the less color it has the better; see that it is not too thick, and add in the proportion of three drops of castor oil to the ounce of varnish; give it a thorough good shake to mix the oil and varnish together—this confers toughness and elasticity to the varnish, which is invaluable for paper. To varnish the negative, place the albumen side down on a glass, and either with a flat camel hair brush, or by pouring over it, saturate the paper side of the negative first; rapidly dry without cockling, and coat the albumenized side, which takes less care, being more resistant to the penetrating action of the varnish. When *about* dry, place it in a book of clean glazed or writing paper (not printed or printing) with a weight upon it to keep it perfectly flat, and allow it to dry thoroughly, when it will be ready for use.

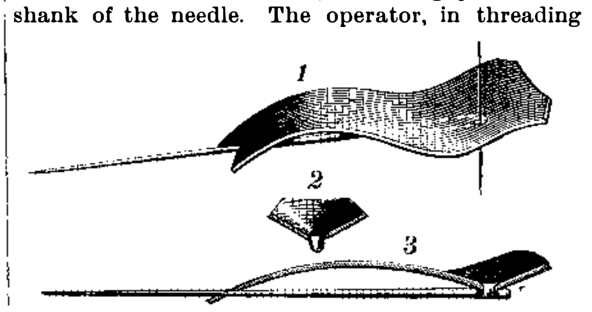
If the thin negative paper has been taken, it may be printed from either side with indifference, the grain of the paper being hardly distinguishable, and for single transfer carbon work does almost, if not quite, as well as a transferred negative with all its attendant risks not only of removal but in handling, the thin paper being much easier manipulated.—*Br. Jour. of Photo.*

A New Floating Exposition.

The Export Society of Germany has decided to build the "Floating Exhibition Palace of Germany," having raised 5,000,000 marks for the purpose. It proposes to build a ship to be called the Kaiser Wilhelm, which will be the work of German shipyards. According to plans, the ship will be 564 feet long, 65½ feet wide, and 46 feet deep. It will have four engines propelling as many screws. The material will be principally German steel. The cost of a two years' tour is estimated at 3,150,000 marks. The income from the rented space —1,000 to 1,200 marks for each booth—and from sales will be, it is thought, at least 7,260,800 marks, leaving a balance of 4,110,800, or over 2,000,000 marks annually —a pretty sum on the pages of the ledger. Emperor William it is said has promised his aid to the enterprise, and it is hoped that the vessel will sail from Hamburg on her first voyage in the spring of 1890.

A SIMPLE DEVICE FOR THREADING NEEDLES.

The accompanying illustration represents a device designed to facilitate the threading of a needle, which has been patented by Mr. August Scherkenbach, of Shakopee, Minn. The device consists of a spoon-shaped plate provided in its bowl end with a central aperture, flanked at the bottom by two projections fitting into the eye of the needle, and having at its other end a notch forming a resting place for the shank of the needle. The operator, in threading a



SCHERKENBACH'S NEEDLE-THREADER.

needle, places it on the under side of the plate, so that the projections, as shown in Figs. 2 and 3, fit into the eye of the needle, when the end of the thread, being passed into the bowl, finds its way readily through the central aperture and through the eye of the needle.