TRIAL OF THE NEW JACKSON JET BOAT EVOLUTION.

The new boat of Dr. W. M. Jackson, called the Evolution, propelled in a peculiar manner, namely, by means of a very small water jet under a very high pressure, went on a trial trip on the 9th inst., in New York harbor, and is reported as operating very well, although on this occasion she came far short of attaining the great speed anticipated by her owners. The propulsion of vessels by means of the hydraulic or water jet is a very old system, dating back nearly to the year 1700, since which time it has been tried in various forms by different inventors, earliest among whom in the application of steam power to the system were Rumsey, 1787, who had a fifty-foot jet boat on the Potomac which made three to four miles an hour. Subsequently the celebrated James Watt was an experimenter in the same line. Many others have made essays, and a few vessels of considerable size have been tried, the same principle of propulsion being employed, namely, the drawing in of a water supply at any convenient part of the boat and the expulsion of the same in the form of a jet at the stern of the vessel.

By the use of the water jet the mechanism needed for the propulsion of vessels is considerably simplified, since all that is needed is a boiler and the simplest form of steam pump. The ordinary propellers and paddle wheels are dispensed with.

In most of the experiments heretofore tried with the hydraulic jet as a propeller, the endeavor has been to make use of as large a jet as possible, economy of power being obtained this way, as was believed.

Thus in the Hydromotor, Dr. Fleischer's jet boat, built in Germany in 1879, a vessel of 105 tons displacement, 110 feet long, 17 feet beam, 6 feet draught, engine of 100 horse power, the area of her jet was 0·29 of a square foot; her speed was 9 knots.

The Thornycroft jet boat for torpedo service, built in London in 1882, was 66 feet 4 inches in length, beam 7½ feet, draught 2½ feet, displacement 14½ tons. Driven by a turbine with a jet 9 inches in diameter. The engines developed 167 h. p. and the speed attained was 12½ knots per hour.

The steam jet-propelled lifeboat Duke of Northumberland, lately illustrated in the SCIENTIFIC AMERICAN, is 50 feet long, 12 feet beam, draught 3 feet 3 inches, displacement 21 tons, 170 horse power. Driven by a turbine. Speed 10 knots per hour.

When Dr. Jackson's attention was called to the subject, he instituted a series of hydraulic experiments by which he became satisfied that the previous experimenters had traveled on the wrong road, and that the correct plan was to use a very small jet of water under a very high pressure. To carry out this idea, in 1887 he fitted up a small boat named the Primavista, of 50½ feet length, 5½ feet width, and 3 feet draught, 11½ tons displacement. She was provided with a ten inch Worthington simple duplex pump, a Roberts tube boiler of about 50 h. p. The water jet, discharged at the stern, was only a quarter of an inch in diameter. The water was expelled under a pressure of 690 lb. to the square inch, and the boat is stated, by parties interested in selling the stock of the company, to have attained a velocity of ten miles per hour. The alleged success of the Primavista satisfied Dr. Jackson that he had "struck ile" in the matter of steam navigation, and under the guidance of an able Wall Street stock promoter a company was formed with a view to the building of a new vessel, large enough to demonstrate, beyond all question, the great superiority of the high pressure jet over all other methods of propulsion. Over one hundred thousand dollars in clean cash was contributed toward the new enterprise, among the subscribers being a number of our best business men.

They were given to understand that the new plan was likely to effect a complete revolution in the art of propelling ships, that rudders, paddle wheels, screw propellers, and at least one half of the other cubersome machinery now required, would be done away with, a great increase of speed would be attained, and the time-honored theories and studies of marine engineers would be upset and thrown overboard. It was on this basis the Evolution was evolved, and her speed was to be at least thirty miles an hour. She is a handsome boat of 106 ft. 6 in. length, 23 ft. beam, 3 ft. draught, and 100 tons displacement. She is propelled by a 44 inch Worthington steam engine and pump, a Roberts safety tube boiler, 1200 indicated horse power, water jet discharge 1000 gallons per minute, velocity of jet 609 ft. per second, diameter of jet ¾ of an inch, hydraulic pressure on the jet 2500 lb. to the square inch. These are figures that have been furnished to us by parties interested, but we have had no opportunity of verifying them, as scientific reporters cannot at present be admitted on board.

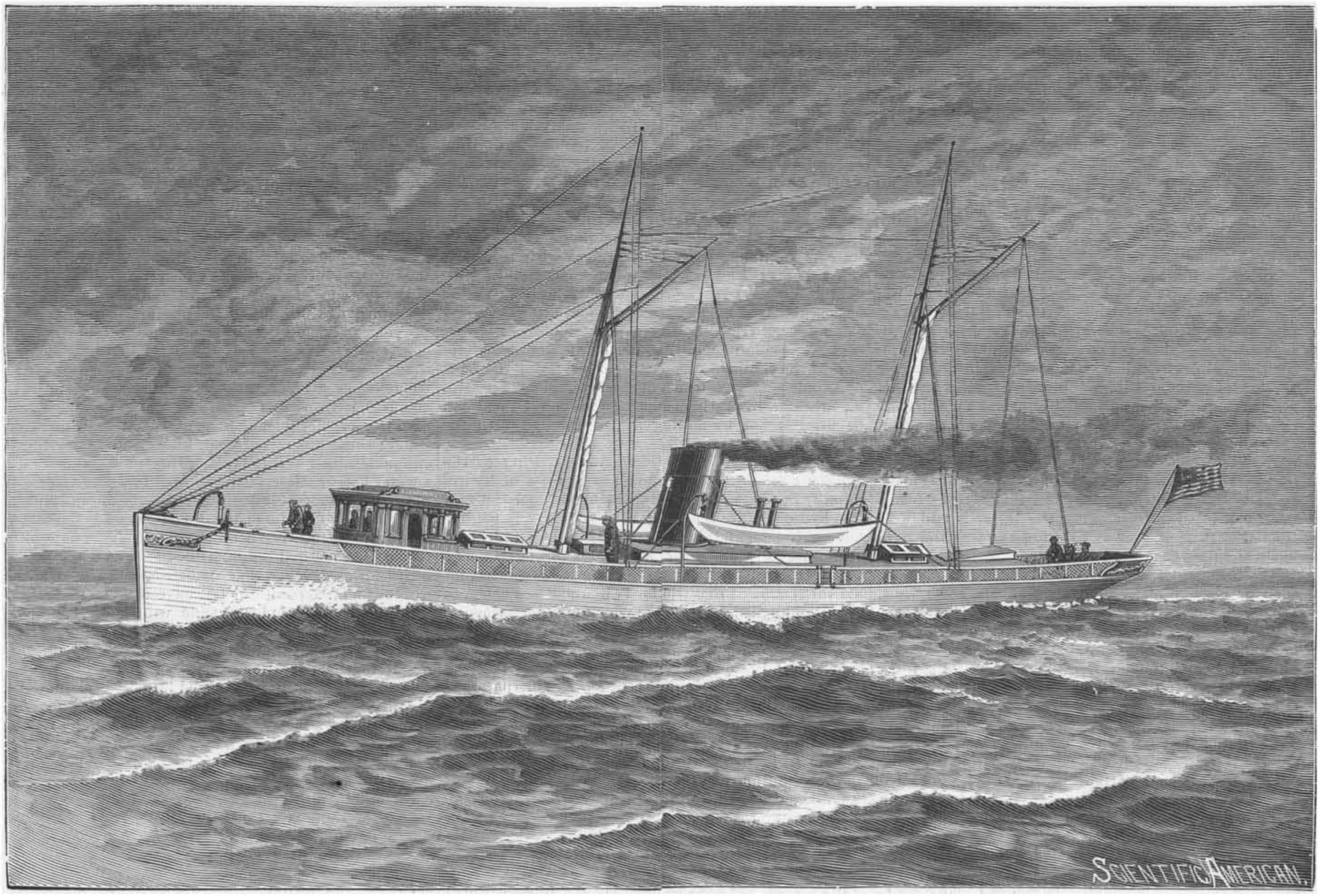
The man who expects to beat the best types of propeller boats by means of a ¾ inch jet of water has a hard row to hoe. The indications are that the Evolution cannot come up to the scratch. She has had a preliminary trial under low pressure. She has made a voyage down the harbor and back from Tabor's wharf, Brooklyn, to Hoffman Island, say 25 miles, and has achieved, as we are informed, a velocity of ten miles an hour, with a hydrostatic pressure of 500 pounds per square inch on the propelling jet. The horse power used on this trial we have not learned, but suppose it to have been about 250 horse power, and if so the boat will not, when running under full pressure, have any such high speed as her owners have claimed and expected. So far as tried she seems to have done as well, perhaps better than other jet boats, considering the smallness of the jet of the Evolution.

Like the jet-propelled lifeboat Northumberland, illustrated in the SCIENTIFIC AMERICAN of September 6, the Evolution can be easily steered without using her rudder, simply by turning the jet pipe. She can also be quickly backed, turned on her own center as a pivot or moved broadside on. It is to accomplish important movements like this that we have heretofore urged our naval authorities to put jet pipes into our war ships. So obvious an improvement should not be longer delayed or neglected.

Probably the boats that at present come nearest to the Evolution in size and power are the standard English torpedo boats and our government torpedo boat Cushing. The latter has a length of 138 feet, depth 10 feet, draught 5 feet 3 inches, displacement 117 tons. Maximum speed, 22½ knots per hour. Her engines have developed 1,700 horse power, driving the ordinary propeller. She carries, in addition, powerful pumps, capable of throwing 14½ tons of water per minute, by which it is supposed she could be kept afloat even if an enemy's shot were to make a 9 inch hole in the hull.

Pipe connections should be made with the pumps so that the water jet could be used to assist the quick turning of the vessel. And the experiment might also be tried on the Cushing by using the jet as an auxiliary in the propulsion of the boat.

The standard English torpedo boats are 130 feet long, 13½ feet beam, 1,150 horse power, speed over 23 knots. Some of the German torpedo boats exceed this speed. One of them, the Adler, a boat built for the Russian government, has a speed of 26·55 knots, or about 30 miles per hour. She is 150 feet long, 17 feet beam, displacement 150 tons.



THE NEW JET-PROPELLED BOAT EVOLUTION.

To cure a felon, says a correspondent, mix equal parts of strong ammonia and water, and hold your finger in it for fifteen minutes. After that withdraw it and tie a piece of cloth completely saturated with the mixture around it and keep it there till dry. If this treatment is adopted when the ailment is at first realized, the pains will cease at once.

Notes on Dyeing and Bleaching.

Bleaching by Electricity.—In Carl Kellner's new method of bleaching by electricity, he does not prepare a bleaching solution, and then treat with it the fiber to be bleached, but he impregnates the fiber with a solution which will, on electrolysis, give a bleaching agent, and then passes the moist fiber between the poles of an electrolytic apparatus, which, as a matter of convenience, is made in the form of revolving cylinders, several pairs of which are arranged in a horizontal line, and the fiber is passed successively between them.

Coal Tar Colors.—In a recent issue of "Notes on Indian Economic Products," published by the Indian government, Dr. George Watt, the reporter on economic products, has something to say about the increasing use of alizarine and other coal-tar dyes in India; and, like a good many other writers nearer home, he condemns them unsparingly. He is wholly in favor of the native Indian dyes and dyestuffs, and speaks admiringly of "the soft delicacy and harmony of color which formerly characterized the Indian fabrics," a feature we must confess we have failed to discover in those specimens of Indian fabrics that we have seen. We consider the colors, although in a few instances very fine, as a rule crude and not very harmoniously blended, while the design and its execution have usually been far from satisfactory. It seems like thrashing a dead horse to repeat that the coal-tar colors of to-day are quite as fast as, and much more brilliant and more easy of application than, the old-fashioned natural dyes. Dr. Watt gives a list of 193 dyestuffs indigenous to India; we wonder how many of these are fast.

Both the Rouen and Mulhouse societies have for many years past offered a prize for a new binding material to act as a substitute for albumen in calico printing. Mr. Richard Leigh's invention of a fixing size consists of two parts. The first relates to a size or vehicle for fixing colors on to cloth, which is made by dissolving resin in alkali, adding to this a solution of casein in alkali; or, instead of this, a solution of gum and a chrome salt; this, with the requisite color, is printed on the fabric. The second part is rather novel; a size is made by using gum, glue, or starch, mixing this with a chrome salt, and powdered resin or other resinous substance not soluble in water. This mixture is ground together with the requisite coloring matter, and, after printing, the fabric is passed over hot drying plates, when the resin is melted and fixes the color on the fabric. Or, instead, the printing color is made without the powdered resin, and this latter is dusted on the printed surface while the latter is still wet; then after passing over hot drying surfaces the resin melts and fixes the color as before.

Azo Colors.—Of late several azo-coloring matters, such as cloth orange, cloth reds, anthracene yellow, azo-green, etc., have been placed on the market, the makers of which recommend them to be dyed on wool mordanted with chrome and oxalic acid; the shades obtained being much faster to soaping and milling than if they were dyed in the usual way in a bath of Glauber's salt and acid. Lepetit now recommends the reversal of this practice, namely, that the wool be first dyed in the usual way in a bath of oxalic acid and Glauber's salt, and then the latter fixed in a boiling bath of bichromate of potash. The shades obtained are, if anything, slightly darker than if dyed on chrome-mordanted wool, but they are decidedly faster to soap, acids, etc.

New Indigo Vat.—Mr. Ashworth, of Manchester, has produced a new vat for dissolving indigo. He says the ordinary system of dissolving indigo has many drawbacks, which make it inconvenient and expensive. Schutzenberger's hydrosulphite vat also possesses some disadvantages, chief among which one infers that on adding lime it gives a precipitate of hydrate of zinc which makes the vat muddy, and then any reoxidized indigo cannot be recovered from it. Mr. Ashworth gets rid of these disadvantages by taking 150 lb. of bisulphite of soda, containing about 33 per cent of actual sodium bisulphite, $NaHSO_3$, and treats it with 8 lb. of zinc dust; when the solution is complete, the precipitate is allowed to settle and the clear liquor is decanted. To this sufficient sulphide of soda is added to precipitate all the zinc as zinc sulphide, thus leaving a solution containing only hydrosulphite of soda, which may be used to dissolve indigo. There is no doubt this new vat, by its freedom from zinc, will possess some advantages over the old hydrosulphite vat.

Ozonin, a New Bleaching Agent, by Dr. Ludwig Schreiner, of Stuttgart, seems to possess wonderful properties. The doctor takes 22 parts of hydrate of potash and dissolves them in 126½ parts of water, boils, and adds 125 parts of resin; when this is dissolved, 150 parts of oil of turpentine are added, and after stirring, this is dissolved; then 126½ parts of peroxide of hydrogen are added; the product is ozonin. If the peroxide is replaced by water, a solution possessing bleaching or oxidizing properties is produced. Ozonin, according to the patentee, possesses greater oxidizing powers than either turpentine alone or peroxide of hydrogen alone. Thus he says that if a solution of indigo oxide (whatever that may be) and caustic soda with sulphuric acid be taken, 5 drops of ozonin will destroy the color in half an hour, while peroxide of hydrogen takes 10 drops and requires 48 hours, and the resin-soap-turpentine solution takes 5 drops and 12 hours. Evidently ozonin has 24 times the strength of the latter mixture and 192 times that of the peroxide of hydrogen. A solution of 1 grm. of ozonin in 1,000 grm. of water is said to powerfully bleach textile materials; it is claimed to have disinfecting and antiseptic properties. The same patentee says that a bleaching agent can be made by agitating together 1 part of turpentine with 1,000 parts of water, soaking the materials to be bleached in this emulsion, exposing them to the air, and repeating these operations as often as necessary.

A New Mordant.—M. Chevallot purposes to use the resinates of alumina and zinc, the first for basic colors, the second for acid colors. These he produces direct on the tissue by first impregnating it with a 1 per cent solution of resin in caustic potash; then immersing the tissue in a solution of acetate of sulphate of zinc. By double decomposition, resinate of alumina or of zinc, as the case may be, is formed on the tissue, which is then ready to be dyed. Chevallot speaks of the resinate of alumina as giving water-resisting properties to the tissue; this has long been known, but is not used in practice.

New Yellow Colors.—The Clayton Aniline Company have commenced the production of new fast yellow coloring matters capable of dyeing unmordanted cotton. When sulphur is heated with paratoluidine, two bodies are produced, named respectively dehydrothioparatoluidine and primuline base, the properties of which have been described by A. G. Green in the *Journal* of the Chemical Society. These bodies are capable of being converted into coloring matters; in this way the dehydrothioparatoluidine is converted into its sulphonic acid by treatment with sulphuric acid; this is then diazotized and then combined with another quantity of the same sulphonic acid; or the base is dissolved in sulphuric acid, and after azotizing, combined with the dehydrothioparatoluidine sulphonic acid. The coloring matters, as sent out, are the sodium salts of the sulphonic acids so formed; and they will dye unmordanted cotton a fast yellow. They are soluble in water, from which the free sulphonic acid can be precipitated by adding acids. Alkalies turn the yellow color to red.

Hyposulphite Bleach.—Dommerque, writing to the *Moniteur Scientifique*, recommends the use of hydrosulphite of soda as a bleaching agent for wool and silk. The hydrosulphite is already used very largely for dissolving indigo, and it is made by taking 300 lit. of bisulphite of soda of 35° Bé., and throwing in zinc dust. In about an hour the reaction is completed, but the vat is allowed to settle for 12 hours before using, to permit of any sulphite of zinc which may be formed to settle out. The liquor is used as the bleaching agent. The wool or silk is first scoured in the usual way, then immersed in the new bleaching liquor and left there for six hours; the bleaching is at the end of that time usually finished. The bleached goods require to be well washed, so as to free them from any unaltered hydrosulphite, as this would on subsequent exposure become oxidized, and the oxidation is usually attended by the evolution of sufficient heat to seriously impair the fiber. A washing in weak hydrochloric acid removes any stains which are sometimes caused by the sulphite of zinc not having been allowed to settle out. The process has been in use for some time with, it is said, satisfactory results, not only as to the character of the bleach, but as to economy of the process, which does not exceed that of any other bleaching process, while it is much easier and more convenient to work.

Nitroso-dioxynaphthalenes are the subject of a patent of Fr. Bayer & Co. These are produced by treating 1—8 dioxynaphthalene and its isomers, of which we believe some 13 are known, with nitrous acid made from sodium nitrite and acetic acid. These bodies are obtained in the form of pastes, and they can be used for printing cotton and dyeing wool. For printing, they are mixed with thickening, acetic acid, and acetate of chrome, iron, or alumina; printed, steamed, soaped, and washed in the usual way. For dyeing wool, the latter fiber is first mordanted with bichrome or alum as usual, then dyed with the nitroso product. The specification gives no particulars as to the shade obtained; probably this varies with the mordant, and with the particular isomer of the dioxy compound used. Brown and black will be the shades principally produced. Dioxine, of Messrs. Leonhardt & Co., is a similar compound, and, although not quite sure, we think that Gambine B of Messrs. Read Holliday & Sons belongs to the same series.

Weighting silk for dark shades is done by alternately working the silk in solutions of tannin substances, such as catechu and sumac, and then in solutions of tin, when there is formed on the silk a tannate of tin. This method has been practiced for years, and is described as the general method in all text books on dyeing; yet we find a Lyons firm, in taking out a German patent, calmly saying that the general rule is to mix all the ingredients together and take the silk through this. Now, under these circumstances, the silk could not be weighted, and, what is more, as the tin and tannin would combine to form a tannate of tin which would be precipitated to the bottom of the bath, there would be a direct loss of valuable material, a circumstance pointed out by the patentees. These gentlemen, then, propose that, to avoid this, the silk be first passed through a solution of lead, bismuth, nickel, copper, manganese, or antimony salts, which mix and agree with chloride of tin. In this there is no particular novelty, it having been done before; the patentees, however, allude to an addition of magnesium chloride to the bath, which is rather a novel addition, and as it is claimed that there is no loss of material from precipitation, it is evident that it must act as a solvent, and keep the various agents in more perfect solution than is commonly the case. Whether this is so or not we are not in a position to say; but it is curious that in the claim to the patent no mention is made of this addition of magnesium chloride. It is claimed that while the weighting of the silk is well and efficiently done, there is considerable economy in the use of the weighting agents.

Dissolving Aniline Colors.—Jules Persoz, in the *Moniteur de la Teinture*, describes a method for rendering soluble, in benzine, bisulphide of carbon, and similar solvents, the basic aniline colors. As a rule, these bodies, such as magenta, methylene blue, green, etc., are salts, chloride, or oxalate, of a color base. Persoz's method consists essentially in converting the color base into a fatty salt of an oleate, and these fatty salts are soluble in the liquids named. It is a well known fact to candle makers that the aniline colors are not soluble in paraffin and petroleum products of any kind, but that most of them are readily soluble in stearic or oleic acid, and then they can be mixed with the paraffin in any proportion. Persoz has two methods. First, he isolates in any suitable way the base of the color, dissolves this in the oleic acid of commerce in the presence of a small quantity of alcohol, which is afterward distilled off. The product is an oleate of the color base, and is soluble in benzine. The second method he gives the preference; in this he prepares the color oleate by double decomposition from soap. He takes 32 grm. of white Marseilles soap, air-dried, dissolves it in about 2 liters of water, and a similar quantity of methylene blue dissolved in 2 liters of water; these are mixed cold, then heated to the boil, and maintained at this temperature for 30 minutes on a water bath. After being allowed to cool, the oleate of the blue is found in suspension in the liquid and is separated by filtration; the precipitation is complete, the filtrate being very little colored. With slight difference, the method is applicable to all basic colors.

Bleaching Powder and Soda.—Messrs. Pennock & Bradburn, of Syracuse, N. Y., have a new process for making bleaching powder and caustic soda in one series of operations. They treat salt with nitric acid, and so convert it into nitrate of soda, the gases resulting from the operation, consisting chiefly of nitrosyl chloride and chlorine, are passed into a vessel containing nitric acid and manganese dioxide, whereby nitrate of manganese and chlorine are formed; this chlorine is converted into bleaching powder in the usual way. It is claimed for this new process that all the chlorine is converted into bleaching powder, whereas there is a considerable loss in the methods now in use. The nitrate of soda is mixed with two or three times its weight of oxide of iron, and furnaced at a red heat in an oxidizing furnace. The nitrate of soda is completely decomposed, the gases are oxidized by passing over oxidizing substances, and are condensed into nitric acid to be used over again. The residue in the furnace is lixiviated and yields caustic soda of good strength and quality. The nitrate of manganese is heated, and the nitric acid and oxide of manganese thereby recovered.—*Dyer and Calico Printer.*

Aerating Milk.

The New York Dairy Commissioner says that milk can be sent further and will be in a better state for use when aerated down to the temperature of the atmosphere than when chilled and sent on ice.

The process is very simple, and consists in allowing the milk to run from one receptacle to another in fine streams, so as to come thoroughly in contact with pure air. It should not be done in the barn or stable, but out of doors where the air is purest. If nothing better is at hand, let it run through an old colander two or three times. A better arrangement is a set of perforated pans one above the other, through which the milk may run in fine streams. It is held that tyrotoxicon poison is generated in cream for the want of proper aeration, and that unaerated milk is the great enemy of infants and the great cause of cholera infantum.

Mucilage of Gum Arabic.—To make a clear, almost odorless, and permanent mucilage, Francke neutralizes the free acid present in the gum with lime water. Instead of water he uses a mixture 20 per cent lime water and 80 per cent distilled water.

Grain Elevators in the Argentine Republic.

Consul Baker, of Buenos Ayres, reports that the elevator and grain deposit in that city, which goes by the name of the Buenos Ayres Central Produce Market, is a very large and imposing structure. The building covers an area of 47,000 square meters under roof and is three stories high, with capacity for the storage of 238,000 cubic meters. It fronts upon the Boca or Riachuelo port, with a fine dock along the landing. The total area of the premises embraces over 30 acres, or 127,478 square meters. Besides being a deposit, it is also a general market for all kinds of grain, wool, hides, and other varieties of the produce of the country. This market is not only a center for all the different railway companies, each one having its tracks running into the deposit, but it is also arranged, by separate entrances, to receive bullock carts coming with produce from the interior. Vessels for foreign ports are loaded directly from the elevator, and its machinery for handling grain is of the first order, the greater portion having been brought from the United States. This immense edifice, although already partially in use, is not yet completed, and its total cost, it is estimated, will be in the neighborhood of $5,000,000.

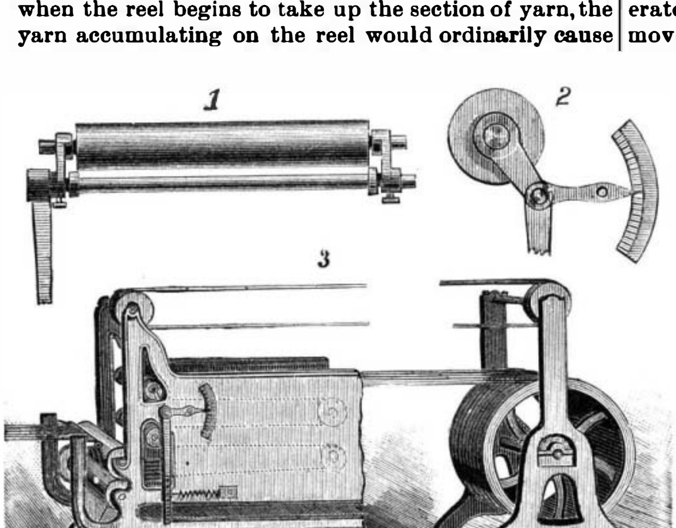
The elevator in Rosario, province of Santa Fe, is called the "Graneros de Rosario" (Rosario granary), and has been in operation several years. It is situated opposite the depots of the Central Argentine Railway, thus making it very convenient for handling grain arriving by that road from the richest agricultural districts of the province. It is eight stories in height, and in most of its details is constructed like many of the elevators of Chicago. Capacity upward of 300,000 bushels.

Besides this, there are now almost completed in Rosario an elevator for the Buenos Ayres and Rosario Railway and another for the Argentine Central Railway. The contractor for these is Mr. J. C. McLennan, of Chicago. The capacity of these is 250,000 bushels each. The machinery is all from the United States, and mostly furnished by the Buckeye Company, Salem, Ohio, and Poole & Hunt, of Baltimore. The cleaning apparatus is from Moline, Ill., the belting from the Boston Rubber Company, and the steam pumps from George Worthington, New York. They will each cost in the neighborhood of $300,000, and everything in connection with them is of the most modern style.

A TENSION INDICATOR FOR YARN DRESSERS.

The device shown in the accompanying illustration is designed to enable the operator to see at a glance how much tension is required on the winding reel. It has been patented by Mr. Thomas J. Sands, of No. 27 Orchard Street, Utica, N. Y.

A roller is mounted in bearings in arms secured by binding screws to an oscillating shaft, as shown in Fig. 1, the latter shaft being mounted in suitable bearings attached to the side frames of the yarn dresser. On one end of the oscillating shaft is a downwardly extending arm having at its outer end a series of apertures, to one of which is secured one end of a spring, attached by its other end to the side frame, as shown in Fig. 3, this arm having a pointer, shown also in Fig. 2, to indicate measurements on a graduated scale. The yarn dresser is in direct connection with the winder, and when the reel begins to take up the section of yarn, the yarn accumulating on the reel would ordinarily cause

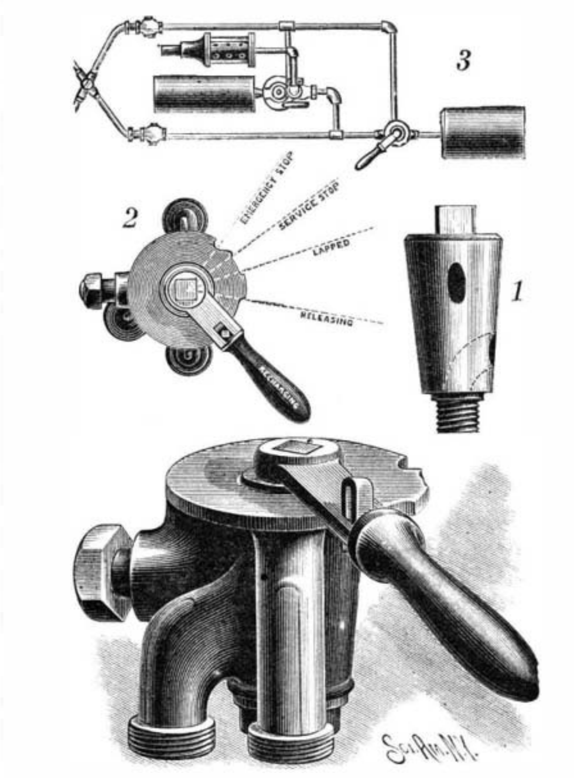


SANDS' TENSION INDICATOR FOR YARN DRESSERS.

the latter to tend to take up more yarn than would be delivered by the dresser, producing a strain on the yarn. This is avoided by adjusting the tension device on the belts operating the reel of the winder, causing the belts of the reel to slip as the diameter of the reel is increased, the slightest abnormal strain on the yarn in the direction toward the reel causing the roller to swing and the shaft supporting it to oscillate, whereby the pointer changes its position on the scale, and the operator can see at a glance how to adjust the tension to cause the roller to assume its natural position. This adjustment is effected by means of the spring in connection with the series of apertures on the arm extending downwardly from the oscillating shaft.

AN ENGINEER'S VALVE FOR AIR BRAKES.

A valve for automatic air brakes, designed to allow the recharging of the auxiliary reservoir under each car without releasing the brakes, and adapted to regu-



LEEMAN & JONES' VALVE FOR AIR BRAKES.

late the force of the brakes by releasing or reapplying at any time without fully releasing, is shown in the accompanying illustration, and has been patented by Messrs. Charles E. Leeman and Albert W. Jones, of Salida, Col. Fig. 1 is a side view of the valve plug, Fig. 2 being a plan view of the improvement applied, while Fig. 3 shows its application to the Westinghouse system. The valve body has opposite pipes connected with the main air reservoir and the train pipe respectively, with a third pipe also connected with the train pipe and with the exhaust opening of a triple valve, by which communication is established between the main air reservoir and an auxiliary reservoir. The valve plug has a transversely extending opening adapted to connect the inner end of the pipe from the main air reservoir with the upper end of the pipe connecting with the train pipe, and in the plug is also arranged an opening which leads from one side of the plug to the center and through its lower end to the outside. The latter opening has one side angular, with the other side curved, the angular side gradually permitting the air to escape, to prevent all jerks in applying the brakes. This opening is adapted to register with the pipe connected with the triple valve and with an extension of the pipe connected with the train pipe. When the operator desires to recharge the auxiliary reservoir, he moves the lever to the position shown in Fig. 2, moving it to the second position to release the brakes, and to "service stop" to apply them, etc. By the use of this valve it is designed to place the control of the brakes and train entirely in the hands of the engineer, without necessity for adjustment by the trainmen, to use as small or great amount of pressure as desired on the brakes of each car, while the brakes may be applied gradually without jerking of the train.

Experiments with Fibrous Plants.

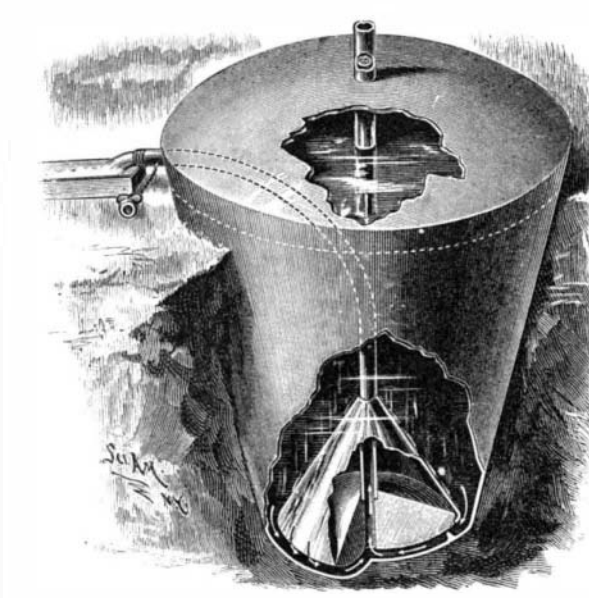
At London, in the Lambeth district, a factory in charge of Mr. Taylor Burrows has been started for the treatment of various kinds of fibrous plants. If the work prospers, textile manufacturers in all other countries must be greatly interested. There have been many attempts to substitute different fibers in the manufacture of textiles for silk or wool, and occasionally they have been successful, but oftener have failed, and this new factory has been established with a view to testing these sundry fiber-bearing plants by existing machinery and processes, and to discover wherein the treatment has hitherto been defective, and, if possible, to meet it.

A London journal writes of the new enterprise as follows:

"For want of time, money or knowledge, or of all three, a useful or even valuable addition to our stock of fibers may so far have been lost. Samples of fibrous plants of every species can now be submitted for carefully supervised trial, and if the present machines or processes prove unsuitable in some little detail or other, the defect will be discovered and remedied. In like manner advice will be given as to the best machines and methods of treating fibrous plants, and the opportunity will be afforded of studying the various processes of production and of acquiring a knowledge of the most scientific methods of preparing fibers. In fact, the present enterprise promises to develop into an important public technical school, for it is proposed to establish branches in textile manufacturing and cognate centers. The various processes to be carried out at the model fiber factory comprise the rapid retting and ungumming of fibrous plants; automatic breaking, scutching, combing and hackling; spinning into simple or mixed yarns; cottonizing and woolenizing fibers to imitate fine cotton or wool, suitable for the manufacture of various mixed and cheap fabrics, as well as for fine and costly goods; bleaching and dyeing the same, and the rapid drying of fibers by means of cold air. The factory consists of a spacious warehouse and storeroom for machines and samples, with offices annexed, and a large machinery and operating room, with a laboratory and an engine and boiler room. There is also a spinning machine in order to test the various fibers in this respect, and to see how they are likely to meet the requirements of a commercial article. Another important improvement is also being introduced at this factory, and that is the rapid retting of flax. The usual method of retting is to soak the flax in water for about three weeks. By the new process this will be effected in about a couple of hours. This quick action is brought about by submitting the flax to the influence of heat and moisture."—*Bradstreets.*

AN IMPROVED CISTERN.

The accompanying illustration represents a cistern designed to be self-cleaning at each rainfall, and provides for the flowing off of the water from the bottom of the cistern as the fresh water enters at the top. It has been patented by Mr. Caleb S. Johnson, of Beaufort, S. C. The supply tube or rainwater pipe extends a short distance below the cover and is provided with a strainer, while through one side of the body, near the cover, is projected a curved tube to the lower end of which is secured a block having a vertical bore. A


JOHNSON'S CISTERN.

conical deflector is attached to the block and to the lower end of the curved tube, the block being supported by suitable feet upon the bottom, whereby a space is obtained for the reception of sediment. The deflector has apertures near its base and apex, intersections within governing the current thus produced, and is designed to cause any sediment in the water to pass downwardly in contact with its sides as it falls to the bottom, to be thence forced out upwardly through the central curved pipe when the cistern fills, or is to be flushed for cleansing purposes.

Steel Car Wheels.

The following test of steel car wheels made by the American Steel Car Wheel Co. took place recently at Boston, in the presence of several prominent railway superintendents: A 33 inch car wheel was placed on two solid iron blocks, rim resting on each block. A weight of 525 lb., falling at a height of 17 feet, struck the hub 25 times without any effect except battering the metal. It was then dropped 10 times on the rim without a fracture. Then a weight of 1,400 lb. was tried, falling at a height of 17 feet, struck the wheel 11 times, but failed to break it, showing it to be practically indestructible. At another exhibit, in order to test the expansion and contraction of the metal, a wheel was buried in sand and a charcoal fire built around the tread until it was brought to a red heat. Then it was taken out and exposed to the atmosphere, which had no effect on it whatever. This demonstrates that the wheel is a safe one. These wheels are in extensive service.