Scientific American.

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NEW YORK, MARCH 8, 1851.

Remarks on Light and Watered Silk. Long before the daguerreotype art was discovered, and long before Hunt had written his it will be found that the two inside surfaces of able work on the "Researches of Light," many phenomena of light were known. Chapi- tered)-the wave lines of light are thus datal, in the last century, made the discovery, that when the rays of light were particularly directed upon certain parts of glasses containing solutions of certain salts, the solutions crystalized upon the sides of the glasses which were in contact with the light, and no others. Beccari, Scheele, and others, found that horned silver, which is a beautiful white, changed in a few minutes to violet, then black, when exposed to the sun's rays in a transparent glass. Sennibeir made the discovery as early as 1790, that the muriate of silver, when exposed to the violet rays of light became black in 15 seconds; exposed to the purple, 23; to the blue, 29; to the green, 37; the yellow, 5 minutes 30 seconds; the orange 12 minutes, and the red 20. He says, "the rays of the three last colors would not produce such a dark violet color in any length of time, as the more refrangible rays." This able French chemist came very near discovering actinism. Bertholett, however, took the ground that light produced changes in color by an effect similar to combustion. There can be no doubt but that all the colors we perceive are the reflections of very minute crystals, and these crystals are the result of a great chemical resolving law in nature, and that law is actinism, as set forth in an article in our columns last week.

In connection with light and photography, there is still a difference of opinion among philosophers respecting light as a distinct matter of itself. Some at once say, "light is an imponderable subtle fluid, or matter of itself;" others more cautious say, "light is conveyed to us by vibrations," and this is all the length they go, but afford no very good argument even for this theory, and although it does not at all militate against or conflict with the theory that light is a subtle fluid, it only relates to its mode of action. Light may be a subtle, imponderable fluid, and its mode of action may be by vibrations, and these vibrations caused by resisting media, or the shooting from angle to angle like lightning in a resisting cloud. The vibrations of light are wave lines, and these can be daguerreotyped by mechanical pressure. We will now allude to a process of main macture in proof of this-a proof which no philosophical work that we know of mentions, and a fact with which philosophic authors seem not to be acquainted.

If we take a number of fine threads, say Atlantic steamships. the people of France have arrived at a decent All this may be a valuable discovery, espe-1,000, and hang them up against the window sense of liberty until the notorious passport The Cheap Postage Bill. cially for travellers across the Western Delight, perpendicularly, like weaver's heddles, system is abolished, and more personal free-This Bill has now become a law. We are serts, and for troops stationed in quarters rethen by taking another set and hanging them dom secured to the humblest of Old Gaul. In soon to have three cent pieces coined, for the mote from sources of supply. And it may alup the same way, so as to have a double tier respect to the Telegraph, we perceive that a purpose of meeting the demands of this Bill. so be a valuable discovery for shipping, espeof threads, we will perceive by looking step has been taken in the right direction, by Three cents on letters—good; there is nothing through them, fine waving lines. The warps cially on long voyages, in furnishing a porta-M. Le Verrier, in the name of a committee aplike pushing along those reforms which benefit ble, agreeable, and nutritious article of food for webs, when passing vertically between two pointed to examine a Bill authorizing the use the millions. The next movement must be But we beg leave to protest against the geneparallel rollers on a dressing-frame in a cotof the Electric Telegraph for private corresfor a cheap ocean postage ;--twenty-four cents ral novelty of the discovery, however novel it ton factory, show this phenomena in a pecupondence. He pays a decided compliment to for a letter to Liverpool, and vice versa, is not may be in Texas. This discovery was made liar manner. It is also exhibited in double the enterprise of the United States, in the ra- only bad policy, but it is an unjust charge for in France, as early as 1830, ifnot earlier; and screens of fine wire placed in the windows of pid spread and extent of our telegraph lines. the service rendered. Ten cents would bring the article was then described as "animalized some houses. It does not merely require the and he enforces the reasonableness of opening in more money to the Treasury. threads (which are resisting lines) to be paralbread." The French journals described it, and the French lines to the public, saying "this stated that it had been ordered by the governlel and perpendicular, they may also run hori-Pavements. example may, in some respects, be turned to zontal and at right angles to the perpendicular ment for the armies in Algiers. In the French Mr. Davis, of this city, whose pamphlet we advantage in France." lines. Let any person take a plain woven silk | mode of manufacturing it, all parts of an ox, noticed, has called upon us and directed our handkerchief, fold the two selvages together, excepting the hair, were reduced to their ele-Low Railroad Fares. attention to the iron plates in Broadway. and hold it up double before the eyes against ments, and the jelly or gluten extracted. The We believe that nothing will so much which have been down for nine years. He a window light, and all the phenomena of the bones, the hide, the hoofs, horns, intestines tend to the advantage of railroads as low paywishes us to give his pavement a fuller inveswave lines are plainly revealed. These wave and muscular fibre, were decomposed by heat, ing fares. It is large numbers in the aggretigation, as he is confident it is superior to all lines are of a form exactly like the matered and their gluten separated from the lime and gate which tell best on the receipts after all. others. We will give the subject a fuller insilk worn as an article of apparel. Well, how all other substances. And this was described When our present postage law was reformed vestigation, and speak honestly our convicfrom 25 to 10 cents on letters for whatever as economical, the hoofs, and horns, and bones many know the way watering is produced on tions, as we do upon every subject, and we containing much gluten, and being more va- distance, many predicted that the expense silk? It is not weven in, for the silk is wowill freely point out wherein we may have ven quite plain. Hard, plain, worsted fabrics, luable for this purpose than any other. To would far overtop the revenue. This has been been mistaken. our unsophisticated Anglo-Saxon tastes, the tried and found to result in quite a different such as "marine curtains," are also watered; this is not woven either. We suppose that Texan mode, in which good minced meat, fit ballance-it being in favor of the low postage. A Brother Gone. most people think the watering is produced by for a change at breakfast, is alone used, may There is a minimum point in low fares, but in Mr. F. J. Brognard, Editor of the New seem the most acceptable. And the very many railroads they have not descended to York Organ, departed this life on the 20th ult., machinery, such as rollers with waving surfaafter a short and severe illness of only 24 ces cut on them, or by some such process; this thought of eating bread made from hides, hoofs, that point, although if they would, we have hours. We knew him to be a kind and amiais not so, the watering is produced in the most and horns, or the raw material for shoes, but. | no doubt, but, as in the case of letter postage, simple manner, by the simple pressure of the tons, hair combs and powder horns, might oc- the results would be beneficial. We like to ble man, and an Editor of no ordinary abili-silk between plain surfaces. Take some pie. casionally put a fastidious appetite to flight. see cheap means for the many to travel. It ties. CT I

ces of coarse plain silk, fold them double, with But this is mere prejudice; for chemistry can tween sheets of pasteboard and place them [Philadelphia Ledger. flat in a press, such as a bookbinder's, and

hours. When this is done, take them out and the pieces of silk, are finely wavelined (waguerreotyped by simple mechanical pressure It makes no matter what the color of the silk may be, black, red, yellow, blue, and white, -the primary, union, and nullified ray colors, all show the wave lines alike, when submitted to the same process. There are no sun rays required to produce this effect, but the sun light enables us to see into the philosophy of the matter, by holding up the doubled silk handkerchief.

Light is a subtle, imponderable fluid contained, perhaps, in every substance; it is highly developed in the sun beam, and by the combustion of various substances. It is given out in minute rays (so is electricity, we believe), which, when resisted by any medium, exhibit vibratory phenomena, like the watering of the silk. The fine lines of the silk are the resisting media, for plain surfaces like paper, cannot be watered. Twilled fabrics show exceedingly minute water lines, like the mingled wave lines from a number of centres, produwater. Fine silk also shows minute wave lines, because the deflecting lines are more numerous and less prominent. The phenomena of watering silk is well worthy of a place in all works on optics and natural philosophy. We hope that no elementary work of natural philosophy will hereafter be published without embracing an account of this beautiful developement of a law of nature in the production of a fabric esteemed as an article of dress by the rich, the fair, and gay.

Meat Biscuit.

The Galveston Civilian states that a factory with proper machinery for manufacturing Meat Biscuit, has been established in Galveston, Texas, by G. Borden, jr., and is called the Meat Biscuit Factory. According to the description, the meat is minced, then boiled till all the jelly or gluten is extracted; two pounds of our soups. of this jelly, containing the nutriment of eleven pounds of meat, is then mixed with three pounds of flour, and baked till the five pounds are reduced to four. Each biscuit is then packed in pulverized biscuit of the same kind, in an air-tight case. The same journal says that the War Department have ordered a large quantity of this biscuit for the troops on the frontier; and it pronounces the article and the ocess of making it—a new discovery.

the one selvage upon the other; lay them be- easily convert any thing into anything else.-

[So far as we have been able to gather insubmit them to a severe pressure, taking care formation on the subject, we believe, that the to let them remain in such a situation for a few | French animalized bread was merely portable soup or gluten cakes. Mr. Borden's soupbread is a different preparation, and he was granted a patent in 1851 for the same. He takes the very best quality of beef which can be found in Texas, and extracts the gelatine from it by a low steam heat. This is afterwards-in a state of spissatude-kneaded with flour or any kind of vegetable meat, into cakes, and baked slowly in an oven heated by steam. By using a high heat to extract the gelatine from the meat, a very unpleasant flavor is communicated to it, for the high heat sets a portion of the phosphorus contained in the bones free, and this gives an unpleasant odor to the extract. Mr. Borden carefully avoids this-his extract is of as fine a flavor as Liebig's portable soup, and the baking of it into cakes, along with vegetable substances, enables it to be carried with ease over mountain and sea, and tends to preserve it from atmospheric influence, so as to prevent putrefaction. In Texas beef is very cheap, so are haps farther, representing himself as his son, fowls, such as turkeys, chickens, &c. Of this kind of meat, the very best alone is used by Mr. Borden. The patent claim is for the combination of the condensed extract of meat flour or crushed crackers, and the whole baked by far. into biscuits. We have eaten some of Mr. Borden's biscuit, made into soup, and liked it very well; an ounce of it made a good hearty meal. The great object of Mr. Borden is to use the best and most healthy substances to make an unexceptionable animal bread. He thought at one time of locating himself in New York, but the cheapness of cattle in Texas presented a field for securing the best materials at a low price. It is the quality of this bread which constitutes its essential value, and it is the ambition of Mr. Borden to make this a new and useful article of American commerce. For sea voyages and long overland journeys, we believe it to be a grand compact article of food, and the time may come, when it will be found in every house in our land, as a most excellent and cheap basis

The Telegraph in France.

In France the Telegraph has been a government concern entirely—the public not being permitted to use it. What a blessed lot of liberty such a people as the French must have, when they are prohibited by the government from using all the best means of communicating intelligence, either to friends or upon business matters. We willnever believe that

makes man more buman to see the world run round in a railroad car. Railroads are grand means for facilitating travel and brushing away the rust from drowsy swains, and nothing can tend more to this than cheap trains.

Twenty-five Dollars Reward

Calvin Waldo, Jailor, and B. F. Dickinson Deputy Sheriff, offer the above reward for the arrest of John W. Ross, who broke from the Orange Co. Jail, Chelsea, Vt., on the night of the 22d Feb. He is described as being about 5 feet 6 inches in height, about 18 yeaes old, had on a tweed sack coat of redish color, with black cotton velvet on the collar and cuffsvest of the same kind of cloth with gilt buttons. dark grey pantaloons, redish colored silk plush cap, whiskers of about ten days growth and of sandy complexion.

Mr. Otis Brewer, publisher of the Boston Cultivator, says that the above described Ross was arrested on his account as an impostor, and was to have had his trial on the 25th ult. He had been operating as an agent for the Cultivator, New York Scientific American, and perhaps other papers, and his line of trade was from Burlington, Vt., through Montpelier, and down as far south as Randolph, and perand signing his name as Charles Brewer. We suppose that this is the same impostor noticed by us in No. 20, and we sincerely hope he will be arrested and that justice may be meted ced by throwing stones into a smooth pool of mixed with vegetable flour, either unbaked out to him; such scoundrels are too numerous

The Promethus Steamship.

Mr. C. Vanderbilt has published a letter giving some account of the performance of this steamship. He says he built the Promethus upon principles which he thought correct for a sea steamer, and that she has run 5,590 miles consuming only 450 tons of coal. She ran 2,150 miles in eight days and nine hours. He concludes as follows :-

I consider the Promethus, in her combination of qualities, far superior to anything afloat. I will venture a large wager that there is no ship afloat, and none that can be built within twelve months, having any other plan of engines of the same size in proportion to the capacity of the ship, that can make a winter passage in the same time, with the same quantity of fuel.

Our Atlantic Steamers.

E.K. Collins, Esq., has presented a petition to Congress requesting a larger appropriation for his steamships. The reasons set forth are the great expense to which the projectors have gone to have a class of American steamships second to none in the world. The Committee of Ways and Means are favorable to the granting of an additional sum in aid of these our

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C Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office. FOR THE WEEK ENDING FEBRUARY 26, 1851. To John Pepper of Portsmouth, N. H., (assignor to Charles Warren and H.G. Sanford, of Boston, Mass.,) for improvements in Knitting Machines. Ante-dated

Aug. 25, 1850. I claim the half jack vibrating on the comb bar, connected with the sinker frame, and with the movable cross bar and springs, for the purpose of depressing the tail ends of the jack, and thereby raising their forward ends with the jack sinkers, as aforesaid.

I also claim the movable cross bar, containing the springs, connected as aforesaid, and for the purpose aforesaid.

I claim the cams in combination with the cross bar, with the projections thereon, hanging bars, vibrating pivots, the cam bar, and the half jack, connected with the sinker frame, and for the purposes aforesaid.

I claim the combination of the cam, and the shoe and shoe plate, for the purposes aforesaid.

I also claim the combination of the cam with the shoe, the movable shoe plate, the chains, the semicircles and hub, or wheel and and the slur knob, and the horizontal bar, the carriage connected with the carrier needle, for the purposes aforesaid.

I also claim the combination of the cams, with the levers connected with the frame, and with the ribbed needle bar, for the purposes aforesaid, also the same in combination with the presses, connected, moved, and operating and for the purpose aforesaid.

To Moses Pond, of Boston, Mass., for improvement in Cooking Ranges.

I claim the improvements by which the hot water back is connected with the plate, and by means of which said hot water back may be either readily removed at any time or applied in such manner that the directions of its water pipes may be disposed so as to accommodate the bath boiler, into which they are usually led; or whatever side of the range the said bath boiler may be placed, the said improvements consisting, first, in the connecting piece, and the attachments of it and the hot water back, the whole being made to operate together substantially in the manner as above set forth; second, in a second set of attachments (fixed in the opposite face of the water back), in combination with the first set thereof, as described.

I also claim the peculiar arrangement of I likewise claim the injection of a jet or jets on the inside at the top and base of the coflues which lead the smoke and volatile proof air, at the flues or passages, which connect times heavier, which in my opinion would be lumns, as herein fully shown. ducts of combination, directly around the oven, the combustion chamber, with the descending one too many. W. B. To Edward Clapp, (assignor to Edward Clapp & the said arrangement of flues, causing the heat flue, for the purpose of igniting the gases and Old Cambridge, Mass. George Alden), of Dedham, Mass., for improvement [Our correspondent is correct about the preto course against one half of the bottom of retarding the progressive motion towards the in Sad Irons. cision of the terms which he speaks about, as the oven and into another flue, which takes it bottom of the gas chamber. I claim the construction of the bottom of backwards and against the other half of the [We believe the principle of the last claim can easily be proved, thus, say water 1, iron 8 : the polishing iron, the same consisting in mabottom of the oven, thence up a flue against king it with ridges or projections and concais at least ten years old. 8—1=plus 7, or seven times heavier, eight the back of the oven; thence through a flue vities, substantially as described. times as heavy. DESIGNS. extending over and against half of the top of To S. H. Sailor (assignor to Warwick, Leibrandt & To T. F. Bngelbrecht, of New York, N.Y.,) for im-Chasm Tower Blown Down. Co), of Philadelphia, Pa., for Design for Cooking the oven, thence into and through the flue, proved Double-Acting Spring Hinge. The Niagara Falls Iris of Saturday says this I do not claim the combination of an ad-Stoves which carries it backwards and over and Observatory on Mount Eagle, was lifted by against the top of the oven, and conveys it to justable, curved inclined plane, with a per-Music and Painting. tn : wind from its foundation, on Saturday last, Music has been given us, by our bountiful the chimney or discharge flue, not meaning to | tion of a hinge, and an adjustable bearing rolwhen the wire cables by which it was stayed include in such arrangement the radiating ler, with the other portion of the hinge. Creator, to assist in smoothing the path of were broken, and the whole mass fell to the chamber or space hereinbefore mentioned. But I claim the manner of combining the human life. The same being who has covered ground a heap of ruins. And I also claim the two recesses and two helical springs (two) with the cylindrical, rothe face of nature with bright and beautiful colors, has filled the air with sweet and expresflue plates, applied to plate R, in combination | tating tumbler, and cylindrical, sectional case Crows. so that, by the rotation of the cylindrical tum-It is but little more than forty years since with the valve opening, their damper and cam sive sounds. He has taught us to listen to bler, the heart-shaped projection will be made plate, as applied to the top plate of the over" the melody of the birds, the sighs of the passthe first crow crossed the Genesee river westwardly. They, with the fox. the hen hawk, frame, and used under an arrangement of over | to traverse over the inclined plane, and cause | ing breeze, and the accents of the human swallow, and many other birds and insects, flues, substantially as described, the same al- the tumbler to rise and fall, and thus comvoice, with feelings akin to those with which lowing of the adaptation of the oven to either press and expand the helical springs lengthen. we gaze on the glorious heavens, the verdure seem to follow in the track of civilization.

side of the fire place, or the use of two such and their frames in connection with the fire place, all essentially as before stated.

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I also claim the improvement by which the oven can be raised and readily removed, and by which the smoke is prevented from passing underneath the partition which separates the flues on the top of the oven, the same consisting in the sliding or gravitating plate affixed to the partition and made to operate substantially in the manner specified.

To Marvin Smith, of New Haven, Conn., for improvement in the bellows for Musical Instruments. I claim the method, herein described, of making or constructing the wind chest commonly used in seraphines, melodeons, and all similar musical instruments, with one or more sides made of gum elastic materials, and in such way and manner as to be capable of expanding and contracting, or of being increased or diminished in size, and with the aid of metallic or other springs, to answer all the purposes of the common bellows generally used forth. in these and similar instruments, substantial ly as described.

To J. B. Wilson, of Townsend Inlet, N. J., and Stacy Wilson, of Kensington, Pa., for improvement in applying friction rollers to hub and axles.

We claim the herein described method of applying friction rollers to the axles of the wheel carriages the interposition between the bearing of the axle and the faces of the friction rollers, of a loose sleeve, through which the axle is free to slide endwise, while it at the same time carries the sleeve round with it, in its rotation, the sleeve having a groove in its outer periphery, to receive the friction rollers and prevent them from moving endwise on the collar.

To J. D. Boers & Isaac Winslow, of Philadelphia Pa., for improvements in Planing Machines.

We claim the combination of the shifting bed plate with the planes, constructed in the manner herein described, the planes presenting any desired part of their edge for cutting hub, the bar connected with the slur carriage the surface of the board, after the tongueing and grooving has been performed by the circular saws.

> We also claim the rotating arms with their cover, combined with the plane, substantially in the manner and for the purpose herein set forth.

To T. C. Avery, of New York, N. Y., for improvement in Electro-Magnetic Engines. I claim the use and manner of arranging

the helices and poles of the electro-magnets, in combination with the revolving bars or sets of bars: that is to say the helice being upon the bends of the magnets, from which the poles of the magnets extend towards and near to the centre of motion, and the revolving bars, or armatures, extending outwards from the centre of motion, and embracing the poles of the magnets, successively, as it rotates, for producing a magnetic, multiplying power engine, substantially in parts and principle as herein set forth.

To Joseph Banks, of New York, N. Y., for improved connection of the beams and columns of iron buildings.

I claim the method, herein described, of securing together the beams and columns of cast iron fronts for houses, by means of the lugs, with their flanges on the upper and under sides of the ends of the beam, and the projections

wind and unwind said helical springs, around the motion of the door in either direction,) by torsion and expansion, to close the door, when it shall have been opened, as described.

To Francis Hoguet, of Philadelphia, Pa, for imrovement in Extension Tables.

I claim the arrangement of a screw, or other equivalent device, in combination with the slides in such a manner, that a screw, or its equivalent, of sufficient length to move out one pair of slides, will move out any number described, substantially in the manner and for the purposes set forth.

To Wm. Sours, of Mount Jackson, Va., for improvenent in Cooking Stoves.

I claim the transverse partition, in combination with the arrangement of front and back flues, as above described, for causing the several currents to unite after having traversed courses of nearly equal length, as set

To Abner Lane, of Killingsworth, Conn., for improvement in machinery for turning pregular forms.

I do not claim merely the employment of two or more cutter wheels, cutter shafts, or cylinders, provided with any number of cutters of any required form, for cutting the whole surface and forming articles of any irregular form, without the use of the model of the article to be formed.

But I claim this only when the cutting cylinders are sustained, revolved, and carried to and from the block to be twined, by a revolving cylinder, in whose periphery they are placed, without any longitudinal or lateral motion, substantially as described.

To H. W. Sabin & Geo. Drew, of Canandaigua, N. Y., for improvement in Spring Hinges.

What we claim is the piece to one side of which the spring is attached, and which has, on the other, a projection, with a hole therein, by means of which and a pin, the spring can be engaged and disengaged, when the door is shut, substantially in the manner and for the purposes described.

To J. Sloan, of New York, N. Y., for machine for arranging and feeding screw blanks

I claim the lifters which select and lift the blanks, &c., from the hopper, substantially as specified, in combination with ways or conductors, or the equivalents thereof, substantially as specified into or onto which the blanks, etc., are transformed, as specified.

I also claim giving to the lifters, or to the inclined ways, or their equivalents a lateral motion, in combination with a stop or detector, substantially as specified, for the purpose of arresting the operation of the lifters, until ally enrich and bless each other. a further supply is required, as specified.

RE-ISSUES.

To Horace Boardman, of Plattsburgh, N. Y., for improved arrangement of Steam Boiler and Furnace thereof. Originally patented Aug. 14, 1849.

I claim the combination of a fire chamber and a water casing, the upper horizontal sections of both of which are greater than their lower, with a descending flue, the fire chamber and water casing being so arranged with respect to each other, that both the larger sections of the one adjoin the larger sections of the other, substantially in the manner and for the purposes herein set forth.

ing their coil, and simultaneously therewith, of the woods, and the meadows enamelled with a thousand flowers. And He has taught us, the spindle, and thus cause them to act (by too, to make our senses of the beautics of nature, derived from the eye or the ear, the foundation of two exquisite arts, by which not only our perceptions of these beauties are quickened and enhanced, but our intellectual and moral qualities are called into action. Painting and music perform much higher parts than that of merely ministering to human pleasure.

The Wants of Man.

Man is the most needy of all creatures. The horse constructs for itself a winter's dress, which is equally fit for wet or dry, day or night, out of the food it eats. The birds and fowls drop their feathers, but neither applies to the tailor or milliner for another suit; out of the seeds they consume, they produce robe and plumage of a texture and beauty which throw the apparal of a Solomon into the shade. The animals require neither plowing nor sowing, neither weaving nor cotton-spinningmines, factories, furnaces, fires, workshops, nor bake-houses; but man is full of wants. Houses, fuel, furniture, clothing, cookery, vehicles, and books are necessaries of life, if we would make him what a human being ought to be. The productions of one country are rarely sufficient to supply his need. Animals have no wants which the soil on which they were born does not supply. The silk worm can live and rear its family, and construct its cocoon. in a mulberry tree. A few yards of space will suit it better than the range of the universe. The white bear, the reindeer, the elephant, the horse, the eagle, and the hippopotamus, have their own localiy, from which they cannot move without risk. But if you confine man to a small circle, you may starve him in body and mind. He is the creature of all climes; he was made for all the world, and all the world was made for him. Wherever he goes he has something to sell or something to buy. Barter and traffic are no small part of his calling on earth, in which not only his physical, but also his intellectual and moral nature are called into full play. Were there no trade and intercourse between mankind, there could be no morality. Justice and benevolence are intended to sanctify the relations, associations, and dealings of the human family. Give us cultivated fields, skillful artizans, good manufactories, industrious workshops, wellmanned ships, unrestricted commerce, free trade with all the world, and pure morality and philanthropy to regulate our proceedings, and we can place every comfort within the reach of every child of Adam, and thus mutu

For the Scientific American.

The Terms "As Heavy" and "Heavier. If a square foot of water weighs 1,000 ounces, and a square foot of iron weighs say 8,000 ounces, does it not follow that iron is eight times as heavy, and seven times heavier than water.

If the above terms are not synonymous why is it that "heavier" is used instead of "as heavy" in many popular and scientific works, including your own journal lately, in your article on Hydrostatics? Partington's "British Cyclopædia" would say that iron is eight times as heavy as water, and not eight