Imponderable Agents.---No. 2.

[Second Series.

LIGHT—In our last number the theories of Descartes and Newton were presented, and their identity in relation to an undulatory action pointed out. The arguments we have adduced to prove that identity may be new, but not the conclusion. We have still something to add to them.

If light were composed of luminous particles projected through vacuo from the sun, then those particles, if possessing inertia—according to the corpuscular theory—must be deflected from opaque bodies, such as from the moon to the earth, and vice versa, and at last be deposited on all the planets and their satellites reciprocally. As these particles of light cannot be annihilated, it must follow that an accumulation of them should make our earth a luminous body. As there is no prospect of this taking place at present; and as the sun fulfills the same Divine office now as at the Creation—"giving light to the earth," we must conclude that the theory of a subtle ether pervading space, the vibrations of which produce the phenomena of light, appears to be the most rational. But we have stated that the luminous particles of Newton must, in the aggregate, form an elastic subtle fluid, and thus the theories of Newton and Descartes dovetail into one another. If those luminous particles do not form an elastic fluid in the aggregate, they must form "light-dust,"—an atmosphere of rigid particles—and if so, they can easily be weighed, but still this will not exclude them from the undulatory theory, for a motion impressed upon such particles must be undulatory. The readiness by which so many facts in relation to *light* can be explained by both Newton's and Descartes, theories, thus finds a solution; both are true—identical.

LIGHT AND SOUND—Euler has, in a most beautiful manner, compared the action of producing light by the vibrations of his subtle ether, to the production of sound, by the vibrations of our atmosphere. In explaining his theory, he employs a bell as an instrument of elucidation. In condemning Euler's explanation, it was said, "unfortunately for this hypothesis, it has been found that the conducting power of the air increases with its density, while wood and the metals are better conductors of sound than any other matter." This does not affect Euler's explanation, for density in bodies, independent of elasticity has nothing to do with propagating sound, and it was the great *elasticity* of his ether which Euler considered, gave it the power of producing undulations with such extraordinary rapidity. The above quotation conveys the idea that sound is conducted like water running through a pipe, not produced by vibrations, and is therefore not a proper explanation of the phenomenon. The power of any body to propagate sound, depends entirely on its elasticity—not its density. Taking air as unity, in producing sound, iron is equal to 17, while glass is also 17, and yet the specific gravity of the latter is to the former as 1520 is to 7786. Sound can scarcely be propagated by lead at all, and yet its gravity to iron is as 11,352 to 7,786. The velocity of sound through silver is 9, through copper 12, and yet the specific gravity of the latter is to the former as 8,788 to 10,474. Sound is propagated through the air with a velocity in proportion to its elasticity. An increase of temperature in the air of a close apartment augments the velocity of sound. A perfectly inelastic body, however dense, cannot propagate sound. This is well known to all those who are acquainted with the science of music, and with musical instruments. The elastic quality in bodies for producing and propagating sound, has no reference to their ductility, that drawing-out quality peculiar to some elastic substances—but the rapidity and power by which bodies, when pressed or impinged upon, return to their original state.

As we intend to present useful and interesting information on all subjects which have a bearing on these questions, the laws and phenomena of "Sound," may be profitably discussed. The aerial currents and fierce winds do not produce sound, and yet sound, loud and intense is produced without any current being felt in the air, by simple pulsations. How trite, then, is the comparison of Euler, namely, that Light, like Sound, is produced by the vibrations of a subtle elastic aeriform fluid.

It has been said of this theory that "a luminary emitting white light must, at the same instant, be vibrating at the different rates which produce all the colors in the spectrum."

This is not so; for these vibrations are modified in length and velocity by different media. If the objection were good, it would be equally so against any theory yet proposed. It is a curious fact, that sound is modified or affected in the same manner. The *pitch* of a musical sound is determined by the number of vibrations which reach the ear in a second of time. The sound of the steam whistle of a stationary engine is heard in a different key by a person traveling in a train in rapid motion, from that in which it is heard by a person standing beside it.

The same is true of all sounds. If an observer in a railway train be moving at the rate of 56 miles per hour *towards* a sounding body, he will meet a greater number of vibrations in a second of time, than if he were at rest, in the proportion to which the velocity of the train bears to the velocity of sound, and he will hear it a semi-tone higher than a person moving *from* the same sounding body at the same velocity. In the case of two railway trains running towards one another at this velocity, the one containing the sounding body, and the other the observer, the effect is doubled in amount. Before the trains come together, the sound is heard two semi-tones too high, after they pass two semi-tones too low—equal to a major third.

(To be Continued.)

Carburetted Hydrogen.

MESSRS. EDITORS—I beg to offer a few remarks in reply to J. F. Mascher's article, on page 90 of the "Scientific American," on the subject of Gas Burning. Combustion can only take place at the point where the substances which enter into combustion are immediately in contact—this is distinctly seen in the flame of a common gas burner. The true combustion is confined to a thin exterior sheet of the flame, and all within this is dark, affording no light whatever, because it is occupied by the combustible material or gas escaping from the source of its supply. The interior part of a gas flame varies in darkness according to the pressure of it in the pipe, and is incapable of entering into combustion and giving light from want of proper access to the oxygen of the atmosphere, which is indispensably necessary to the developement of combustion. There is also seen in gas flames a thin blue line around the exterior, which is caused by the low temperature of the gas, and affords little or any light; so that quite one-third of the gas flame is destitute of light. Now, the dark portion of the interior of a gas flame is simply the result of the gas escaping faster than the process of combustion can consume it. Mr. Mascher says, after charging the bladder with gas, "putting it under my arm the results were these; with a moderate pressure of the arm, I obtained the usual light, but on increasing the pressure to a certain extent, I was surprised to find that, instead of obtaining more light, the gas burned with a perfectly blue flame, and the room which was in the first place illuminated, suddenly became quite dark, although it is evident that with the increase of pressure there was an increased consumption of gas." Now my explanation is proved by the first part of Mr. Mascher's remarks, to be correct, that the dark portion of the flame, is caused by the gas escaping too rapidly for the process of combustion, which is unable to take it up so fast. But with increased pressure I don't think there is an increased consumption of gas by combustion; it is wasted because it is carried beyond the point where combustion is actually taking place by its own elastic force, when a considerable body of it is confined, thereby creating great pressure.

CHAS. W. TYLER.

Philadelphia. Pa.

[Our correspondent fails to explain the phenomena described in Mr. Mascher's letter. By the theory above set forth, a white flame should give the most intense heat; but this is not so in fact. If we take a common gas white flame and reduce it to a blue flame, it will give out more heat in the latter case, but less light. The white flame of gas light does not depend upon the intensity of the heat, but the time and space, to allow the solid particles of carbon in the gas to be become incandescent. That the carbon can be consumed (converted by oxygen into C. O.^{2}) during combustion without producing white light, is something which Mr. Mascher's experiment went to prove, and this contrary to the views generally entertained respecting gas illumination in one case, and respiration is a conclusive proof of the same fact in another case. As the white light was depreciated in intensity, by those experiments, the heat was increased. By the undulating theory of light, the blue waves are shorter and more rapid than the red and the yellow, and this has its parallel in the gas flame when the pressure is increased. The way to prove this is to take the socket of a common gas burner, and cover it with a disc of fine wire gauze. The gas will burn above the wire gauze with a yellow flame, which gives more light than a blue flame; by converting this yellow into a blue flame, the heat will increase but the light will decrease. Now, whether is the greatest amount of heat produced by the most perfect combustion, or the greatest amount of light? Some may say, "the most perfect combustion produces both the greatest amount of heat and light," and yet here is an experiment which proves that the heat is increased in a gas flame at the expense of the light. The yellow flame above the wire gauze is converted into the blue flame by blowing into it with a blow-pipe. This device is well known to all jewellers, and has long been employed by them for soldering. A heat can thus be produced so intense as to melt gold rapidly. The fact is, however, that light can be produced independent of what is understood as combustion, that is, the chemical union of oxygen with carbon to produce carbonic acid gas by a flame. No carbonic acid gas is formed by the electric light, which is the most brilliant of all, hence from this we may infer that those sages of the British Association who have forebodings of the sun's light decreasing, may rest contented, for in Nature, provision is made for the production of light *ad infinitum*.

Large Ships - Ancient and Modern.

As the question of large ships appears to engage no small amount of public attention at present, by the construction of the "Great Republic," and the proposed mammoth steamer of the "Eastern Steam Navigation Company" in England, it may not be uninteresting to devote some space to more than a mere passing notice of the subject.

Some ships were built by the ancients, which for mass far surpassed any now afloat. One was constructed for Ptolemy Philopater, which was 420 feet long, 56 feet broad, and 72 feet deep, and of 6,445 tons burden. The "Great Republic" is 325 feet in length, 58 feet in width, and 39 feet in depth, with a registered burden of 4,500 tons but it is capable of carrying more than 6,000 tons of cargo. It is recorded that Archimedes—who was perhaps the greatest mechanical genius that ever lived—constructed a ship for Hiero, King of Syracuse, of such large dimensions that none of the harbors in Sicily, or Greece could receive it. Noah's ark, by those who are curious in such things, has been calculated to have contained 1,500,000 cubic feet, and was of 11,905 tons burden. As this vessel was of antedeluvian origin, it may be allowed to stand out as a giant representative of nautical architecture, belonging to the age of giant men, but architects are now determined to surpass even the great father of their calling, by constructing a steamship of 22,942 tons burden, and of an external bulk of 2,973,593 cubic feet. This is the vessel to which we have alluded; it is to be built of iron, a substance which would have been deemed by the ancients better adapted for sinking than swimming. The largest mercantile steamships afloat at present, are those of the Collins Line; the "Arctic" being 3,000 tons burden—the only exception to these is the Great Britain, which is 3,445 tons burden. There is one—the Hymalaya—now in the course of construction, by the Cunard Company, which is to be of 3,532 tons burden. A remarkable difference between modern and ancient times, in state and condition, is exemplified in the "Great Republic." It is the property of a private American citizen; the wealth and resources of all Sicily was called into requisition to construct Hiero's leviathian.

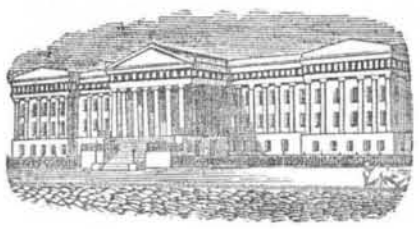
Two hundred years ago the largest vessels were about 80 tons burden, and with a vessel of 60 tons Columbus crossed the Atlantic and discovered our continent. Ten years ago the largest merchant ships afloat were of no greater tonnage than from ten to twelve hundred tons burden, while at the present moment the general tonnage of new built ships range about double that amount. It would therefore seem as if the bent of the nautical mind was in favor of "large ships." There is a line of demarcation, however, in magnitude, beyond which ships cannot be constructed either with safety or profit. The latter consideration entirely depends on the length of voyage, the former on the strength and combination of materials employed in the construction; and the manageableness of the ships at sea. For long voyages, large ships are the most economical, for short voyages so all ones. The other consideration, *safety*, Griffith, on page 114 of his "Ship Builders Manual," says, "shipbuilders are mistaken when they assume a large ship to be equally strong with a small one, and as vessels are increased in size, the leverage of the spars tell with more effect. As a consequence, the liability to the damage of cargoes in large vessels is greater than smaller ones, more particularly clipper ships, because of their increased length." Here is a statement which affords some solution to the complaints from San Francisco, of the great damage sustained by cargoes in recently constructed large clipper ships which have made voyages to that place. "Some other measures,' says the same work, "must be adopted for strengthening such vessels." New improvements, therefore, are demanded in the combination of materials in the construction of large ships. The "Great Republic" is stated to be not only the largest but the strongest built ship in the world, and no doubt the boundary line of safety for large ships is far from being reached yet, but where that line is, we cannot tell, nor do we find any satisfactory information on the subject in any of the works we have consulted. Large vessels cannot be managed in a rough sea so well as small ones; they are not so obedient to the helm. As Napoleon said in respect to Generals, "there was only one in Europe beside himself who could manœuvre 100,000 men," so it may be said of sea captains; it certainly requires greater mental capacity to command a large than a small ship. Revolving the subject of large ships over and over, and taking into consideration the great advances which have been made in the size of ships since the Galleon of Columbus touched the Columbian shore, it is our opinion that we shall yet see much larger ships in our harbor than any which now float there; the "Great Republic" is a shadow of "coming events."

Beware of Putting "Patent" on an Unpatented Article.

On the 9th inst., as we learn by our Boston cotemporaries, a very important patent case was tried before Judge Sprague, in the U. S. Circuit Court in that city. The complainant was J. R. Nichols, the defendant J. Newell and others. The suit was brought against defendants for putting the word *patent* on certain articles which were not not patented, in violation of the patent law, which make a fineable offence of $100 for every case—one half of the fine goes to the informer. The defendant was fined $400. The articles against which complaint was made, were camphene lamps and cans. Both parties are well known to our readers.

Dr. Bridgeman says that the last census of China which he saw in print was for the year 1813, which made the population of the Empire more than 361,000,000. He is confident that the present population cannot be less than 400,000,000.

Henry Ramsey, C. E., of Schenectady, N. Y., has been appointed State Engineer.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 13, 1853.

HYDRANT VALVE—By James Cochrane, of New York City: I claim combining with the issuing pipe and main cock or two way cocks, flat or conical valve and leakage wastewavs, a piston and chamber, or a partly flexible chamber emptying into and receiving from the issuing pipe, water, between the interval of opening and closing the main and leakage waste way.

I claim, also, the shutting force, by hydrostatic pressure and gravity of the ordinary waste water; also the general arrangement of the moving parts by their gravity, to favor the shutting force, as set forth.

BIT STOCKS OF BRACES—By John Comstock, of New London, Ct.: I claim the arrangement of the ring with its pin or screw, in combination with the eccentric shaped back catch, and the helical spring, the whole combined and arranged as set forth.

MODE OF FIXING THE COLORS OF COTTON UMBRELLAS.—By Norman Cook, of New York City: I do not claim the composit on of the preparation applied, neither do I claim the application o such preparation for rendering cloth water proof.

I claim the application of a dilute solution of india rubber paste or cement, as described, to cotton or gingham umbrella coverings, for the purpo e of enveloping the fiber of the cloth, and setting the color of the same, without adding to the weight of the umbrella, as set forth.

CAR WHEELS—By Carmi Hart, of Bridgeport, Conn.: I claim the arrangement of the plates of the wheel in the arch at the hub, so that its opposite sides curve in similar curves, adapting themselves to each other, and are also ogees, and whose continuation from the apex or point of unison is also an ogee to the rim in combination with the spokes or radii, which are ogees on the surface of the inner plate, and also ogees sidewise, and forms a continuous part of the inside plate itself.

INKSTAND COVERS—By Jos. Nock, of Philadelphia, Pa.: I claim the application of the stamped round part and the solid part (or the moving lid or cover), fitted together as a hinge, which forms a rounded smooth turned face, and the manner in which the pin is connected with both parts, as described, using for that purpose the aforesaid two pieces to form a regular curvilinear or round turned hinge, made of any materials which will produce the intended effect.

SPRING CLAMPS FOR CLOTHES LINES—By F. S. Hotchkiss & C. W. Blakeslee, of Northfield, Conn.: We claim the connecting t gether of the two levers, as described, by one piece of metal, in such form and manner as to constitute both spring and hinge, as set forth.

TURNKEYS—By Melvin Jinks, of Wayland, N. Y.: I claim the turnkey, as described, in the adjustable claw, constructed and arranged as described, in combination with another claw, and the rolling fulcrum having a limited motion.

[In Vol. 7, page 396, may be found a description of this invention.]

BEDSTEAD FASTENINGS—By W. E. Merrill & Freeman Tupper, of Nashua, N. H.: We claim securing the posts and rails together, by means of the corner irons attached to t e ends of the rails and the clamp or dog attached to the posts of the said corner irons and clamps or dogs, being constructed and arranged as described

[A description of this invention may be found on page 298, Vol. 8 Sci. Am.]

HARVESTERS AND BINDERS—By J. E. Nesen, of Buffalo, N Y. Patented in England Aug. 27, 1853: I do not claim the slotted fingers, nor the teeth, nor do I claim an endless belt, irrespective of the peculiar motion communicated to it.

I claim, first, giving the endless apron an intermitting motion, for the purpose of carrying the grain to the binding hooks, at intervals and in proper quantity said motion being communicated to the apron, by means of a belt shipper worked automatically, from some moving portion of the machine, as described.

Second, I claim gathering the grain in bundles or sheafs, by means of the binding hooks, or their equivalents, said binding hook being arranged and operated as shown—motion being communicated to them by means of the reciprocating bars, as described.

Third, I claim the binding hooks in combination with the endless intermittently moving apron, the hooks and apron being constructed, arranged, and operated as set forth.

[This invention possesses novelty and utility. The Foreign as well as American patents were solicited through this office.]

SECTIONAL BEDSTEADS—By Chas. Page, of North Danvers, Mass.: I do not claim a sectional bedstead the portions of which revolve upon hinges, for the purpose of more convenient transportation, or of raising the head as may be requir.d; neither do I claim securing the mattress permanently to the bedstead.

But I claim, in a sectional folding bedstead, the combination of the adjustable sections with the revolving head and foot boards, as described, by which means the bedstead may, at any time be converted into an invalid bedstead, and extended in such manner that the body and head of the patient may be raised and lowered, independent of each other, his feet being furnished with an elastic foot board, as set forth.

PEG RASPS—By Jos. Sawyer & Lyman Clark, of South Royalston, Mass.: We do not claim hanging the rasp of a tool for cleaning out pegs from the inside of shoes and boots upon a pivot, and allowing it to adjust itself to the position required, as this has been done before, and is furthermore liable to several objections, the removal of which is the object of our present invention.

But we claim the combination of the spring bolt and thumb piece, or their equivalents, with the pivoted rasp constructed and operated as described.

MACHINES FOR CUTTING SHEET METAL—By Jno. Wilmington, of South Bend, Ind.: I do not claim the rotary shears: but I claim the vise in combination with the tramupon which it moves, and upon which the sheet rests, during the operation of cutting, as set forth.

PUMP VALVES—By J. R. Barsett, (assignor to James B. Williams), of Cincinnati, Ohio: I claim, first, the construction, as described, of the puppet check valve, serving also as the piston of a pneumatic spring, and provided, at its lower end, with a small starting valve, substantially in the manner and for the objects explained.

Second, the segmental cylindric slide valve of the discharge openings having prongs as described, connecting it with the clack valves upon the supply openings, so that the motion of the supply valves shall be communicated to the discharge valve, as explained.

MACHINES FOR MOULDING BRICK—By John Butter (assignor to James Sully and Jno. Butter), of Buffalo, N. Y: I claim two hinged followers, so constructed and operated as to press the clay uniformly into the moulds, that is, each end alike, whether operated by gears or levers.

A Lead Wire the thirteenth of an inch, sustains but twenty-eight pounds. A Tin Wire, the thirteenth of an inch, sustains but thirty-four lbs.

New India Rubber Case.

We here present the decision of Judge Duer of the Superior Court, in this city, on the above case, which was finished on the 9th inst.. It had been on trial several days, and eminent counsel were employed on both sides. The question was between Horace H. Day and William Judson. All those interested in patents should give this case particular attention. Wm. Judson filed his bill to obtain an injunction against Day from prosecuting certain suits in the Circuit Court of the United States, (in which Day is seeking to recover damages for infringement of a patent granted to Edwin Chaffee, and by him conveyed to Day,) on the ground that Judson owned the patent, by assignment, and the conveyance to Day was invalid.

JUDGE DUER'S DECISION.—I shall not trouble the counsel of the respondent to reply. I have reflected on this case from the opening of the argument, and am now prepared to state the conclusion to which I have arrived.

I think it quite unnecessary to inquire whether this Court can rightfully stay proceedings in the Court of a sister State by an injunction, but with regard to suits pending in the United States Courts the case is different. With respect to them the general rule is understood to be, that neither will the Courts of the United States attempt by injunction to restrain a party from proceeding in a suit in the State Court; nor, on the other hand, will the State Court attempt to restrain by an injunction, proceedings in a Court of the United States. Whether that rule is absolute and universal—whether there are or are not any exceptions to it, it is not necessary to decide in this state of the case.—That will be a question which, if your suit is continued to be prosecuted, will arise when a final decree shall be asked for. Admitting, however, that there may be exceptions to the rule, as it respects a court of the United States, I hold, that in order to justify a Court in treating any case that is brought before them as an exception to that rule, the following facts must appear:—First, that the complaints must be founded upon the equity that the Court of the United States, in which the suits are sought to be enjoined are pending, is not competent to administer the cause—in other words, that the equity which is sought is one which can only be had in the new suit which is instituted; and second, that the whole controversy between the parties may be determined in the new suit which is instituted—or in other words, that the parties who are sought to be restrained from the prosecution of their suits in another Court, may have exactly the same relief if the controversy is determined in their favor in the new suit which is instituted, as if they never entertained any of the suits which have been commenced. Now applying these rules to the present case, the first condition seems to be fulfilled. The object of this suit is to obtain a final determination of the question whether the prior grant made to Mr. Judson, the plaintiff, on this grant under which Mr. Day, the defendant, claims is valid. That question could not be finally determined in any suits that are brought by Mr. Day against the licensees of the present plaintiff. It is true that each of these licensees may set up as a defence the prior grant made to the present plaintiff, and the question as to its validity might arise in this suit; but the determination made between them would not conclude any other licensee, and therefore surely would not conclude Mr. Judson. I therefore think that the main question depending between the parties—namely, which of them has a preferable title as assignee of the original patent—is one which will probably be determined in a suit between Judson and the present defendant. Therefore I would not scruple, perhaps, even to issue an injunction, provided the other conditions were fulfilled—namely, that this whole controversey should be finally determined. I am now considering the case as if the application was made to me upon the complaint itself, without any evidence on the other part. I have no right to suppose upon the complaint itself that the plaintiff considers it as a fact conceded that these complainants are absolute owners as assignees of this grant; because, if so, then the question could not arise whether the defendant would or could not be entitled to damages in the suits which he has instituted. I am bound to suppose in determining the question whether the Court will exercise its discretion in issuing an injunction, that the allegations in the complaint may perhaps be refuted, and that in the conclusion of the controversey, the defendant may prevail. Then I hold it to be a necessary condition in all cases where an injunction is to be issued, where a bill of peace is filed, whether in a State Court, or in a Court of the United States, that the party who is thus enjoined shall have, in the new suit thus instituted, the same relief which, if he prevails, he would be entitled in the suits which he himself has brought. Now, if the other parties against whom these suits are instituted, were all of them parties to the present proceeding, and by a final decree of this Court, this defendant could obtain against them here, precisely the same relief which is sought in the suits that have been instituted, that objection would be removed. But they are not parties to this suit, and all that can be determined in this suit, even if it should be decided in favor of the defendant, is that his grant is preferable, and that the prior assignment made to Mr. Judson, the plaintiff, is void. His right to recover damages will remain still undecided, and he will be compelled to prosecute his suit against the defendants, who, in the meantime, may have become irresponsible. Upon the ground, therefore, that this controversy cannot be determined finally in this suit, and that the defendant cannot obtain the relief here which he is seeking to obtain in the suits which he has instituted, I feel myself bound to deny the motion for an injunction.

In answer to an inquiry of Mr. Stoughton, Judge D. remarked that he never knew of a case where an injunction had issued on the application of a party who was not a party to the suits to be enjoined.

An appeal was taken to the General Term.

For Judson, Charles O'Conner and James T. Brady; for Day, N. Richardson, of Boston, and E. W. Stoughton, of New York.

[Our readers will percieve the importance of this case, by the eminent counsel employed. The patent in dispute is that of E. Chaffee, an extension of which was granted by Ex-Commissioner Ewbank.

The assignees of the first term of this patent were Goodyear, Judson, and others, (we do not know all their names) but the extended term of a patent does not become the property of the first assignees; it is wholly the inventor's property; former assignees have no legal right to an extended term. H. H. Day, it seems, has become the assignee of the extended term, but there is a dispute about the legality of his bargain. H. H. Day having become the new assignee of the extended term of Chaffee's patent has entered his suits against a number of old assignees, who have been carrying on the manufacture of prepared india rubber goods as formerly. His (Day's) suits are for the infringement of the patent. The above decision relates to a mercantile transaction; but connected with patents, it embraces new points of legal dispute of no minor importance.

Trial About Selling a Patent.

In this city on Friday the 16th a suit was brought before Judge Ingraham by Samuel G. Walker against Abraham Cox to recover damages (amount laid at $1,000) for alleged deceit and false representations—plaintiff having been induced, it is said, by defendant to purchase and pay $625 for a fortieth part of "Mallet's Improved Bell Telegraph," defendant knowing that the right to said invention was claimed at the time by Timothy D. Jackson and A. Judson, and that a suit brought by them was pending in the United States Court at the time to test the said patent; that plaintiff tendered back the share in said patent and asked for a return of his money, which was not made and action is brought.

In defence, it is denied that Mr. C. knew that there was any doubt in regard to the patent, or that there was any suit pending, or that he made any false representations. He says that he was employed to sell a part of Mr. Howland's interest, and referred plaintiff to Mr. H., and that plaintiff, after examination, purchased. The complaint was dismissed.

Measuring the Area of a Circle.

Permit me, through the columns of the "Scientific American," either to correct an error or to be myself corrected. In No. 12, of the present volume, were given some good practical rules for finding the area of a circle, illustrated by two examples. If I mistake not, however, there was an arithmetical error in the latter proposition, which stands thus:—$4 \times 22 = 88 \div 7 = 12\ 6\text{-}7$; instead of twelve and *four* sevenths; which latter number would quadrate exactly with that in the former proportion. H. F.

Spring House, Montgomery Co., Pa.

[You are perfectly right sir, and we thank you for calling our attention to the subject.—We saw the error also, but too late for correction in *that* number; we intended to make the correction in our next, but forgot to do so. We make no excuse, for the error should not have been made; it teaches us to be more watchful of our language.

A more minute rule than the one given above to find the circumference of a circle, when the diameter is given, and thus find out its area, is the following:—"The circumference of a circle is to the diameter, as 3·14159 is to 1."

This rule we have always used ourselves, it requires more figures than the other, and this was the reason we did not present it, as the other is sufficient for all practical purposes.—What is the circumference of a cylinder, 6 feet in diameter; $6 \times 3{\cdot}14159 = 18{\cdot}84954$. Old Rule. $7 \div 22 \times 6 = 18\ 6\text{-}7$.

The Illustrated Weekly Record of the New York Exhibition of the Industry of all Nations.

Edited by B. Silliman, Jr., and C. R. Goodrich. G. P. Putnam & Co., of this city, having been selected as printers and publishers extraordinary to the the Crystal Palace Association, undertook the publication of the above work, which we have briefly noticed during its progress. We are inclined to think that the "Illustrated Record" has not received from the public that degree of appreciation it so justly deserves; this has undoubtedly compelled the puplishers to restrict the quantity of matter originally intended for it. The number before us embraces 15, 16, 17, and 18, although no larger than two single numbers ought under different circumstances to have been. The necessity which exists for its abridgement is to be regreted for in a strictly artistic sense is the most meritorious work ever undertaken here.

There is, we think, one good reason only for its apparent failure, viz., the dull and heavy character of the articles. *Classicality*, want of condensing power, absence of the right sort of stamina which makes up the Peoples' Instructor, too much learning in abstractionisms are incapable of satisfying the universal thirst which now prevails for the arts and sciences. The editors, although able men in their proper spheres, were evidently never intended for this particular species of intellectual labor. Notwithstanding this defect the work deserves support. The engravings which have graced its columns are generally of the first order in point of mechanical execution, reminding us of the designs illustrated in the celebrated "London Art Journal," and the public are indebted to Messrs. Putnam & Co., for the stimulus which they have given to the wood engraving art, an art which is rapidly supplanting all other processes for beauty, rapidity, and excellence.—The "Illustrated Record" will make a very handsome volume, and we hope the public will feel interested in its circulation. The numbers bound will make a beautiful volume of the useful and ornamental—fit for the library or the center table.

Treatment of Trees in Cold Weather.

We occasionally hear of people being quite at at a loss to know what to do with trees received in a cold time, or when the ground is frozen. The way is, either deposit the packages in a cellar as they are received, or open them and set the roots in earth until the weather changes or a trench may be made in the open ground, even if the surface must be broken with a pick-axe, and the trees laid in until they can be planted. They may remain in this state quite safe all winter. Every season we receive packages of trees from Europe in mid-winter, and we find no difficulty in taking care of them in this way. —[Horticulturist.