SCIENTIFIC AND PRACTICAL INFORMATION.

UTILIZING SUINT FOR THE MANUFACTURE OF PRUSSIATE OF POTASH.

The suint, which forms almost the third part in weight of the raw wool, has been found to be an excellent material for the manufacture of yellow prussiate of potash, which is used for making Prussian blue and other articles of commerce, inasmuch as, after heating, it consists of an intimate mixture of carbonate of potash and nitrogenous carbon. Formerly this suint was exclusively used for the production of potash. Havrez found, however, that it is three times as valuable when directly used for the manufacture of prussiate of potash. While 100 kilogrammes of dry suint, containing 40 kilogrammes pure potash, cost only $3, 100 kilogrammes of the potash of commerce cost from $14 to $16. Thus it will be seen that, by employing the suint, 100 kilogrammes of potash may be obtained for $7.50.

ALCOHOL FROM MOSS.

In the northern governments of Russia, large quantities of alcohol are at present produced from the mosses and lichens growing there in enormous quantities. This new industry originated in Sweden, and was subsequently introduced in Finland. Several large distilleries exhibited such alcohol at the recent industrial exposition in Moscow, where German, French, and English manufacturers praised its quality highly. The net profit is said to amount to 100 per cent.

PROCESS FOR PURIFYING THE CONDENSATION OF ENGINES FROM FATTY MATTER.

The steam condensing from engines always contains fat, resulting from the material used for lubricating. Cail & Co., in Paris, collect the water of condensation in a common reservoir, and pump it into a receptacle provided with a powerful stirring apparatus, consisting of shovels, Archimedean screw, etc. This receptacle is three fourths full, the remaining space being filled with petroleum; the apparatus is set in motion for five minutes, the water being allowed to settle for fifty-five minutes. Five minutes' time is sufficient to separate all the fat which is then contained in the oil, and the purified water can directly be used again. A hundred pounds of petroleum will absorb fifty pounds of fat; it has then a specific gravity of 0·840, but should be renewed when presenting a density of 0·810. It is regained by distillation.

AUSTRALIAN MINERAL CAOUTCHOUC.

This material (described on page 197 of our volume XXVI.) which is now being imported into Germany, occurs in Coorong in moderately thick layers on the sand. Analyses seem to indicate that it stands in a generic relation to petroleum, but why it has been deposited in that peculiar form must be left to future investigations.

TO PROTECT CLOTH AGAINST MOTHS.

Reimann, in his *Färberzeitung*, recommends for this purpose steeping the cloth for twelve hours in a solution prepared in the following manner: Ten pounds of alum and twenty pounds sugar of lead are dissolved in warm water, the mixture being left undisturbed until the precipitate of lead sulphate is deposited. The clear liquor, now consisting of acetate of alumina, is then drawn off and mixed with 130 gallons of water, in which a little isinglass has been dissolved. When well steeped, the goods are dried and finished by pressure or otherwise.

TARTRATE OF MANGANESE.

The action of permanganate of potash upon organic matter in general is to destroy it. Not only is glycerin decomposed with violence when allowed to drop into a hot, concentrated solution of permanganate of potash, but alcohol, aniline oil, and other organic substances, including the organic acids, are decomposed, partially or entirely, by it. Notwithstanding this violent action of the permanganate upon organic acids, Anton Fleischer has succeeded in preparing both a tartrate and oxalate of manganese. The neutral tartrate of manganese obtained was found upon analysis to have the composition represented by the formula $C_4H_4MnO_6$. It is slightly soluble in water, 1,000 parts of water dissolving only 2·17 parts of the salt. On adding alcohol, it crystalizes out. When moist, it is rose red; when dried over sulphuric acid, it has a lighter color; at the temperature of boiling water or above it, it is almost colorless. It dissolves readily in mineral acids. What practical use can be made of it remains to be investigated.

ELECTRO-POSITIVE STATE OF AN INSULATED CANDLE FLAME.

When an insulated flame is placed between the balls of a discharger connected with the positive and negative conductors of an electrical machine, the flame is attracted towards the negative pole so strongly as to ignite a piece of phosphorus attached to that pole. If a piece of burning phosphorus be placed between them, the phosphorus on the positive ball soon burns, and the long column of phosphoric acid vapor is also attracted to it and forms with it the phosphate of the metal.

COOLING WATER BELOW THE FREEZING POINT.

A glass tube closed at one end and blown to a bulb near the upper end, and the upper limb bent and drawn to a point, is filled to the middle of the bulb with distilled water that has been boiled. The water is heated to drive the air out of the tube, and the tube is sealed by the blowpipe. Another tube of the same form, but not bent and drawn to a point, is filled with water that has not been boiled and hence contains air. The two are now placed in a freezing mixture, and after the water in the open tube has frozen, the other will be found to be still liquid. On taking it out of the freezing mixture and shaking, it will instantly congeal.

HAY MITES.

Some time ago, there died a large number of horses in Nordheim, Germany, from inflammation of the intestines, the true cause not at first being known. At last it was assigned to the hay, in which, upon close examination, an immense number of microscopic animalculæ were found. They belonged to the genus *acarus fœnarius*, to which genus the mites living on dry fruit and in cheese also belong. In times of horse diseases it might, therefore, be proper to microscopically examine hay and straw, since even the best fodder, if stored in a damp place, is very likely to be infested by those and other parasites.

TESTING WATER FOR HYGIENIC PURPOSES.

One third of a fluid dram of the water to be tested is evaporated on the object glass of a microscope, on which a small reservoir has been formed by cementing a glass ring upon it. The temperature should be about 120° Fah., not higher. The residue from pure water, when examined under the microscope, reveals only colorless, dendritic or sharply defined crystals of carbonate of lime. But if the water holds organic substances in solution, the residue exhibits more or less imperfectly formed crystals of a yellowish or reddish color; and, if the impurities are considerable, it shows twin crystals and triangles with obtuse angles and other distorted forms. Experiments prove that less than a one thousandth part of urine or decomposing organic matter is sufficient to change the appearance of the residue considerably.

DURABLE CRUCIBLES FOR MELTING STEEL.

Such crucibles are prepared from a mixture of 10 parts ground and washed chamotte, 10 graphite, 15 asbestos, 3 quartz (not too finely powdered) and 22 fireproof clay. The asbestos, as a fiberous body, prevents the falling asunder of the crucible when cracking, and thus any loss can be prevented.

ORIGIN OF ELECTRICITY.

Dr. Louis Elsberg, of New York city, has communicated a new theory of the origin of electricity. According to this scientist, the number of vibrations executed by the molecules of an electrified body are between those of sound and heat, namely, they exceed 38,000 a second (at which point the consciousness of sound ceases altogether) and are below 200 billions in a second.

EFFECT OF DIFFERENT COLORED LIGHT UPON THE AMOUNT OF CARBONIC ACID GAS IN RESPIRATION.

Two Italian investigators, Selmi and Piacentini, have instituted an interesting series of experiments to determine whether different colors affected the respiration of animals as they are known to affect plants. The animal to be experimented upon was placed in an air tight box into which no light could penetrate except such as passed through glass of a given color. Air freed of carbonic acid was constantly admitted into the box, and escaped by a second opening, where it was passed through a vessel which contained some absorbent of carbonic acid, so that its amount could be accurately determined. Representing the quantity of carbonic acid respired by a dog, in a given time under white glass, by 100, the amount given off under black glass was 82·07, under violet, 87·73, under red 92, under blue 103·77, under green 106·03, and under yellow 126·83. The difference was still greater when the experiment was tried on a pigeon and on a hen. The authors came to the conclusion that green and yellow rays, which are the most important to the vegetable kingdom in taking up carbonic acid, are also most favorable to the respiration of animals, that is, enable them to give off the most carbonic acid. Previous investigators have reported in favor of blue glass, so that the question is not yet fully settled.

ANTIMONY AN EXPLOSIVE METAL.

If a piece of copper foil be attached to the negative pole of a galvanic battery, and a piece of platinum foil to the positive pole, and the two immersed in a hydrochloric acid solution of antimony, the antimony will be precipitated as a metallic mirror on the surface of the copper. After removing it from the liquid and carefully washing with distilled water, the brittle antimony can be removed by bending the copper back and forth. Antimony thus obtained will explode upon being rubbed in a mortar or struck with a hammer, light and heat as well as detonation being produced by the explosion. The reason of this extraordinary action of only one metal is due to the rapidity with which it returns from the amorphous form to the crystaline.

BENT WOODWORK IN CARRIAGE MAKING.

BY HENRY F. PORTER.

It is only recently that much attention has been paid to the bending of different wooden parts of a carriage. Not only in this country, but also in Europe, it has long been customary to saw out crooked pieces, and when lately we resorted in preference to bending, it was not only for the purpose of saving material but particularly for the reduction of weight and the greater durability of the pieces. The latter is a very important point. The saving of weight is twofold. In the first place, a piece which is to be bent can originally be sawn out in a reduced size, for the reason that the grain will all run parallel with the sweep when the wood is bent, and thus such a piece does not require to be stronger at any particular point as a piece sawn cross-grain always must be. The second point in which weight is saved is that a bent piece requires for plating only one half the size of iron of that which must be put on a cross-cut piece. We will illustrate this with the example of a rockaway perch, or, in other words, a perch for the heavier class of work. If such a perch is sawn out cross-grain, it will require to be plated on all four sides, thereby considerably increasing the weight without adding to the durability. We have seen many cases where the incessant vibrations and jerks, to which the perch is exposed under all conditions, have caused the wood to be chawed off by the ironing, occasioned by the exposure of the cross grains. If, on the other hand, the perch is bent a single iron plate on the bottom is all that is required, and there is no possibility of the wood getting damaged by it, as all the grains run parallel and present a smooth surface not easily attacked. The point of durability has long been recognized by leading eastern builders, and, on such work as the Concord coach, of which the proverb says "it wears but never tears," we find the back pillars, bottom pieces, and most of the crooked parts all bent. Scarcely any kind of vehicle has been exposed to such hardships as the old overland stage, and it was early found that cross-cut parts could never withstand such trials as upsetting, rolling down ravines, etc., incidents so common on the old perilous overland route. When bent, such pieces, as a rule, never broke. This example goes far to show that it is preferable to bend perches, whenever practicable, instead of following the old method of cross sawing. Still, there is another and very material point to be obtained in making perches. It will frequently be noticed, on perch carriages, that it seems to have been the aim of the maker to conform the sweep of the perch as near as possible to the lines of the body; and this produces, in many instances, a very crooked perch, a circumstance which is rather unfavorable to durability.

In speaking of perches, it may not be out of place, although not coming under the heading of this article, to say a few words with reference to straight double perches for wagons. It has been customary to plate these underneath, by bolting a perch $1\frac{3}{16}$ inch square with a $\frac{3}{16}$ bolt, which in reality leaves not sufficient strength in the wood to resist an extraordinary strain, such as may be caused by accidents, or even by ordinary wear and tear. It has been tried for this reason, and found to be perfectly practicable that these perches for wagons are not ironed through their whole length, but only sectionally at both ends, namely, nine inches on either side. In this way the inevitable vibrations can take place unobstructed in the middle of the perch, and the resistive power of the wood is not endangered or lessened by any holes. Plating in general is of no account after the wood has given way. Besides perches, there are other important pieces of bent work connected with carriage parts, namely, bottom-beds, futchels, back bars, and shafts. As for the bottom-bed, its arch is, in the first instance, conditioned by the hanging of the body, and next by the hight of the front wheels. If the body is to be hung low, the bed will have little or no arch; and if the wheels are low, it will require more arch on the bed in order not to get too high a carriage part. The extreme hight of carriage parts should never be more than twelve inches for the heaviest work, which of course is considerably reduced for lighter classes of work. The arch of the bed is also limited by the consideration of obtaining the proper position for the pole, and we cannot give here fixed measures, because they vary in almost every instance. What we wish to convey is that a bent bed, even when arched as much as four inches or more, is still safe, and that a bed sawn across grain, whose arch a contemporary thinks should be limited to $2\frac{1}{2}$ inches, is more unsafe than a bent one with double this amount of arch.

Back bars, when they have to be arched, should always be bent. The curve required can be sawn out. In the case of bars, the grain of the wood is not exposed to friction, and therefore there is no danger of checking. Back bars have, under certain circumstances, to stand a considerable strain. When the vehicle is moving on a sloping road, the whole weight is thrown on one side, and the bar is thereby given a tendency to twist. The motion of the springs also is often not the same on each side, for instance, when one wheel meets with a resistance while the opposite runs on smooth ground. Jerks thus caused are transmitted to the bar, with a somewhat reduced force, it is true, but still with such intensity as to call for the best material. On C spring carriages, the back bar will have to be plated with band iron, or made wholly of iron, as is now frequently done.

Shafts and poles for wagons have been bent for a number of years, for the same reasons which we gave for the other parts. Our intention has been to call attention to the decided advantages obtained by having all pieces bent over the old plan of sawing them out. The progress made in bending during the last few years is worthy of notice, and proves the patronage and encouragement given it by the trade. It is only a few years since one of the first leading firms in this country experienced great trouble in bending double sweep ash and hickory top beds to a sweep of five inches. Nowadays they find no difficulty in bending perfectly, and without split, seven to eight inches. A further illustration is the advance made in the bending of rims. A rim bent at present is less in size and just as durable as a heavier rim was some years ago, both for the same size of work. It is made for top wagons at present $\frac{7}{8}$ inch deep, with $\frac{6}{8}$ inch tire. This progress was in a great measure brought on by machinery, and it is but just to say that, for all similar wants of our trade, requiring the ingenuity of others, we are promptly met by inventions of the most excellent tools and materials. This fact in itself should be an encouragement to us to keep on the road to improvement and perfection.—*The Hub.*

FEW things are impracticable in themselves, and it is for want of application, rather than of means, that men fail of success.

An American Doctor in London.

Dr. E. P. Miller is writing from Europe, to *The Laws of Life and Journal of Health*, edited by Harriet N. Austin, M. D., and published at Dansville, N. Y., some very interesting letters. From a lengthy letter from Dr. Miller in the January number, we condense the following extracts:

There are some things in this world so vast that it is literally impossible for finite minds to comprehend them. It is true we are not quite so lost in thought in their contemplation as when we attempt to search the boundaries of space or number the fixed stars, yet we are amazed to find how much there is to learn, and after all we have done, how little we know.

London is a world of itself, and it would require more than a lifetime to know it. There are more than 3,000,000 human beings, crowded into an area of about 122 square miles. There are about 6,000 public houses, wine cellars, and beer saloons, where alcoholic liquors are sold, and these places dispense 43,200,000 gallons of ale, 7,800,000 gallons of wine, and 2,000,000 gallons of other strong drinks every year. As a result they have 129,000 paupers, and it requires 5,000 lawyers, 2,000 ministers, 3,000 doctors, and 500 undertakers to take care of the criminals, sinners and sick people.

Nearly every street you traverse, and public or private building you examine, has a history of its own—many of which date back hundreds of years.

THE LONDON UNDERGROUND RAILWAY.

Dr. Ellis kindly invited me to visit the Crystal Palace with him on the day following my arrival, and I gladly embraced the opportunity of accompanying one so familiar with the grounds. The Crystal Palace is about six miles from my hotel, and the most convenient mode of reaching it was by the Underground Railway. I had wanted an opportunity to examine this subterranean enterprise, and was both surprised and delighted with its workings. It has become one of the indispensable necessities of London. They could no more get along without their underground railway than could New York without horse cars. Trains pass on these roads every ten or fifteen minutes, and a train often carries four or five hundred passengers. The stations are frequent and convenient, and the cars are so constructed that a stoppage of not more than one or two minutes is required to load and unload an entire train. The cars are well lighted and frequent openings of the roadway to the surface secure tolerably good ventilation. The engines in use condense their own steam and consume their smoke, so that these nuisances are almost entirely avoided.

THE CRYSTAL PALACE.

The train I took stopped at the Crystal Palace grounds; and, as I stepped out from the depot, at a short distance in front and above me stood that magnificent temple of glass and iron glistening in the sunlight, while all about, for acres, was one grand parterre of flowers and fountains. I can never forget the sudden change in my feelings as I passed from that subterranean passage of darkness to the magnificent scene which was the very perfection of light. I was literally chained to the spot. It was like a fairy vision, so beautiful; I thought of the Bible description of "the Holy City coming down from God out of Heaven prepared as a bride adorned for her husband," and of the time when "all tears shall be wiped away and there shall be no more death, neither sorrow, nor crying, neither shall there be any more pain, for the former things shall be passed away." It seemed to me that all the beautiful things that were ever thought of in Paradise were concentrated here. I do not think it possible to find another place where can be seen more of the beauties of nature and of art in three or four hours' time than at the Crystal Palace.

The interior fulfilled the promise of the surroundings. Outside there are acres of flowers, tropical plants, trees, shrubs, and vines, native products of different countries and climes, growing in all their freshness and beauty. Acres of fountains, in glass and out of glass, picture galleries of ancient and modern masters, statuary, architectural products and manufactured articles, pictures and wax representations of all the different nations and tribes of people, and of the different beasts, birds, fishes, and insects. I am quite sure Noah's ark was not half as large, nor did it contain half as many curiosities, or cost half as much to build it.

A concert is given in the Crystal Palace every afternoon. The view of the fountains in full play, when seen from the balcony of the Palace, beggars description. There are hundreds of them of every conceivable variety and form. the water being supplied from towers 260 feet in hight, which are erected on the grounds.

The Crystal Palace cost about $6,000,000, and not far from $3,000,000 are annually expended in supplying it with new curiosities and defraying the running expenses. May it always stand an emblem of the ingenuity, industry, enterprise, intelligence, and refinement of the English people!

I must confess my opinion of the English people was essentially changed by an acquaintance with them. They are a great people. They are proud of their race, and justly so. They are honest, industrious, and educated. They are above the average of the human race in health, physical strength, and endurance. They are fond of out-door life, of sports, of physical exercise, and social enjoyments.

REMEDIES FOR SORE THROAT AND NASAL CATARRH.

Dr. Ellis gave me a simple recipe for throat and lung affections with which I propose to close this article. Upon my remarking on my tendency to such affection, he said "Now, Doctor, you may go home and thank God for having seen me, for I will give you a simple remedy that will be the means of prolonging your life many years. Get a silk ribbon an inch or more wide, tie it about your neck and wear until worn out and then replace it, and continue to do so." I confess I was a little surprised to find a man of Dr. Ellis's intelligence relying with so much confidence on such a remedy, and I asked an explanation of its virtues, but this he was not prepared to give. If any reader tries this or the following remedy, I should be pleased to know the result.

A remedy for nasal catarrh which I think of some value, I will also give. Many cases of catarrh are caused by inability of the liver to perform its function properly. In such cases there is often a too alkaline condition of the blood. When this is the case, the liver does not take out as much of the carbon and other substances as it should, and the mucous membrane of the nose becomes a dumping ground for the foul matter. If persons thus afflicted will squeeze the juice of a good sized lemon into half a tumbler of water and drink it without sugar just before dinner, they will, if they live hygienically, be surprised to seen how soon the catarrhal difficulty will diminish. When it fails to do so, it may be considered as due to other causes.

New Apparatus for Testing Quality of Lubricating Oils.

This machine, recently patented by R. H. Thurston, Hoboken, N. J., affords a means of making a combined dynamometrical and thermometrical test of the lubricating value of any lubricant, and also of determining, at the same time, its power of sustaining heavy pressures and its durability under any required pressure.

A journal, on a shaft running in a securely mounted frame, is grasped by a clamp and the boxes are set up to any desired intensity of pressure by a powerful screw compressing a spring; the pressure is known from the reading of a suitably arranged scale.

The pressure being adjusted as desired, the clamp swings about the journal and, by compressing a spring or by raising a weight, determines the exact amount of force required to overcome friction, by the reading of another scale.

A thermometer, set in the journal brass, indicates the commencement and progress of any heating of the journal. The time required to beccme heated and to burn off, under a given pressure, will indicate the durability of the oil where it may be exposed to such a pressure.

Several forms of machine are described for special classes of lubricants, as for heavy oils for locomotives, at the one extreme, and for the light oils used on sewing machines and other light machinery, at the other extreme.

The Spread of Fires in Cities.

A correspondent, R. B. V., of Md., says:

"It strikes me that the greatest cause of the spread of fires is the falling of the walls of the houses as they are burned out, a dread of which, in very many instances, keeps the firemen back from the work. If that dread was removed they would rush forward and subdue the enemy; but as houses are now erected, many of the valiant men are crushed to death by falling walls; and not this only. Who has not seen rows of houses all on fire in a few minutes from end to end, just because they were so built that the partition walls, one after the other, had fallen, thereby permitting the fire to go from house to house with such rapidity that all efforts to save them were in vain? To prevent this, permit me to suggest: That the walls be of brick (it is the most fireproof material) and of reasonable thickness, with as few windows as will afford the necessary light and air, with tight iron shutters to each. In all the walls on which girders or joists are to be placed, put good substantial upright fastening that will not burn, for the ends of every girder and joist to fit on; so that each of them, while laying horizontally, will be a reliable stay to keep the walls in their proper upright position, and will be so constructed that, as soon as each girder and joist is either burned or broken in two, they will fall out of the wall without injury to it; for, after all that has been said on the subject, the walls are thrown down by the great leverage given to each girder and joist by the present plan of putting them in the walls. When the falling of the walls is obviated, the standing ones will screen the surrounding property, and the damages of fire will be much less, and can be repaired with less than half the expense of labor, time and money."

Vaccine Virus.

M. Chauveau has succeeded in separating, in a pustule of vaccine, a serous matter and molecular granulations, in order to inoculate with each, separately and comparatively. He has found that the vaccinal serum is not virulent, and that the activity of the virus resides in the solid granulations. On the addition of water, the granulations deposit themselves, and so long as the mixture is in repose, the water is unaffected. If, however, the liquid be agitated, the granulations expand and communicate the virulent property to the whole. It has been determined that vaccine thus weakened with fifty times its weight of water is as certain in its action as if in concentrated form. M. Chauveau therefore concludes that in the pus of the variola and of the morbid affection, as well as in the vaccinal liquid, the specific activity which constitutes virulence resides exclusively in the elementary corpuscles held in suspension by the humors.

An African Steam Gage.

H. A. M., an esteemed Southern correspondent, sends us the following anecdote: Not many miles from Panola county, Miss., a certain wealthy planter has a cotton gin run by steam. Upon one occasion, he invited a mechanical friend up into the gin house to see it work. After showing the premises, he called out to his old Ethiopian fireman: "Sam, are you ready to start?" The old man ran his hand backward and forward over the surface of the boiler, and, with a face important with grave judgment, replied, "No, Marse Abe, I don't tink she quite hot enough yet." "Good Lord," exclaimed the mechanical friend, "is that your steam gage?" and he left the gin house. Fact, gentlemen.

Forests and Drought.

T. S., of Pa., writes to say that it lies with us to decide whether our continent shall retain its present luxuriance and salubrity to remote ages or not. He regrets the rapid diminution of our forests, and the decrease of moisture in the interior parts of the country; and concerning the latter point he states that, in some parts of the country, where five feet of snow usually fell in a year, there is not now five inches.

"Sardinia and Sicily, once the granaries of Italy, have suffered the penalty of their thoughtlessness in exterminating their forests. Two thousand years ago, those lands were celebrated for their wonderful productiveness, and were said to be the most beautiful in the world. In 1800, Humboldt visited Venezuela, South America, and was informed by the natives living in the valley of Araguay that they had noticed, with great astonishment, that a lake which lay in the middle of the valley had decreased in volume every year; the cause of this is clearly traced to the felling of a great number of trees which grew on the surrounding mountains. In Hungary the periodical droughts are universally attributed to the annihilation of the forests. In Cairo, Lower Egypt, a great many years ago, rain fell but seldom, only once in three or four years; but since the time of Mohammed Ali, twenty to thirty millions of trees have been planted, and the result is now that the people have from thirty to forty rainy days every year. Surely these few of the many examples are warnings sufficient to put us on our guard."

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From December 5 to December 11, 1872, inclusive.

CLARIFYING OILS, ETC.—F. Kersting, Grand Rapids, Mich.
CUTTING PLIERS.—N. Thompson, Brooklyn, N. Y.
GAS OR LIQUID METER.—D. B. Spooner, Syracuse, N. Y.
HORSE SHOE NAILS.—A. Alden, Cambridge, Mass.
INSULATING COMPOUND.—Z. G. Simmons, Kenosha, Wis.
LAMP.—J. H. Irwin, Philadelphia, Pa.
MIDDLINGS PURIFIER.—W. W. Huntly, A. P. Holcomb, A. Heine, Silver Creek, N. Y.
ORDNANCE, ETC.—W. E. Woodbridge, New York city.
RAILROAD COUPLING.—H. C. Kibbe, San Francisco, Cal.

PATENT OFFICE DECISIONS.

REED ORGANS.—GOODMAN *vs.* SCRIBNER.—INTERFERENCE.—APPEAL FROM THE BOARD OF EXAMINERS-IN-CHIEF.

In an interference between an application and a patent, where it appeared that the patent had been granted during the pendency of the application without an interference: Held, that the parties should be treated as if both were applicants. Goodman's patent sustained.

COMBINED CLEVIS PIN AND WRENCH.—LLOYD *vs.* ENGEMAN.—INTERFERENCE.

Held, that a case may be referred to the Commissioner in person when, in the judgment of the Examiner of Interferences, the interference has been improperly declared and the case has passed beyond the jurisdiction of the Primary Examiner.

The mere exchange of a feature of a device for a different but not novel one of the same kind, to be used in the same way, does not indicate invention.

REFRESHMENT CARS.—AMOS M. SMITH.—APPEAL FROM THE BOARD OF EXAMINERS-IN-CHIEF.

An arrangement of rooms in a dwelling, railway car, or other structure is not a proper subject for patent; such arrangement does not constitute patentable novelty.

THACHER, *Acting Commissioner:*

The following is the claim;

I claim the combination and arrangement of the side passage, B, the saloon, H, store room, G, counter, D, passage, E, and open space, C, substantially as and for the purpose specified and shown.

The grant of patents for improvements of this class can operate only as an unwarran table and vexatious restriction upon architects and builders in the practice of their respective vocations. It is not believed that the spirit of our patent system encourages the imposition of such restrictions. While great liberality should be shown in the grant of patents for improvements which manifestly tend to promote science, art, or manufactures, it is also important that a wise discretion should be exercised to prevent the placing of unnecessary restrictions upon artisans in a legitimate use of their mechanical skill and ingenuity. Due regard must be had for the rights of all parties in the consideration of questions affecting the right to a patent, and that policy should be adopted which seems most favorable to the promotion of the public good. In my opinion sound policy demands the refusal of all patents for subject matter such as is contained in the present application.

This seems also to be the opinion of Commissioner Leggett, as intimated in his decision of August 26, 1872, refusing a patent to John Gates for an alleged improvement in steamboats, and the decision of this case is understood to accord with the spirit of the opinion therein announced.

The decision of the Examiners-in-Chief is affirmed.

PRACTICE IN INTERFERENCES.

Rule 59, relating to interferences, is hereby amended by inserting at the end of the first paragraph the words here italicized, so that as amended the paragraph will read as follows:

"An interference will not be declared until the subject matter involved is decided to be patentable; and when once declared it will not be dissolved without judgment of priority, unless it be found that neither party is entitled to a patent or that no interference in fact exists, *when it will be dissolved, and an appeal may be taken to the Commissioner in person.*

M. D. LEGGETT, Commissioner of Patents.

December 30, 1872.

DECISIONS OF THE COURTS.

United States Circuit Court, Eastern District of Pennsylvania.

HARVESTERS.—WM. H. SEYMOUR AND DAYTON C. MORGAN *vs.* JAMES S. MARSH AND OTHERS.

MCKENNAN, *Circuit Judge:*

On the 1st of July, 1851, letters patent were granted to Aaron Palmer and S. G. Williams for "improvements in grain harvesters." This patent was reissued in divisions, one of which was numbered 1,682, which was extended for seven years from July 1, 1865.

On the 8th of July, 1851, William H. Seymour obtained a patent for an "improvement in reaping machines," which was also reissued in divisions, two of which were numbered 72 and 1,683, and were extended for seven years from July 8, 1865.

The title to these several re ssued and extended patents, 1,682, 72, and 1,683, has been duly vested in the complainants, and they constitute the subjects of the present contention.

These patents embrace several claims, the three following of which only are the defendants charged with having infringed:

1. The claim of 1,682, which is for a "combination of the cutting apparatus of a harvesting machine with a quadrant shaped platform arranged in the rear thereof, and a sweep rake operated by mechanism in such manner that its teeth are caused to sweep over the platform in curves when acting on the grain, these parts being and operating substantially as set forth" in the specification.

2. The claim of No. 72, for "a quadrant shaped platform, arranged relatively to the cutting apparatus, substantially as described, and for the purpose set forth."

3. The claim of 1,683 for "the combination, in a harvesting machine, of the cutting apparatus, with a quadrant shaped platform in the rear of the cutting apparatus, a sweep rake, mechanism for operating the same, and devices for preventing the rise of the rake teeth when operating on the grain, these five members being and operating substantially as set forth."

The defendants resist the complainants' right to a decree upon the g ounds that the reissued patents are invalid; that the inventions claimed are not novel; that such inventions will not work practically, and that they are not infringers.

A reissued patent may embrace whatever was suggested or substantially indicated in the original specification, drawings, or model, and the claims may be broader, therefore, than those contained in the first patent.