mariner's track in the Arctic seas or the traveler's pathway in the African deserts. Earnest and enlightened, he was in tory. sympathy with every enterprise calculated to extend the sphere of knowledge and make known the wonders of this terrestrial globe.

Correspondence.

Bed-bug Spiders. To the Editor of the Scientific American :

ity of at least one species of the common house spider as a of Fenton Barns Farm, 700 imperial acres, or 430 Irish the swinging arms which support the berths in sleeping destroyer of bed-bugs. The latter became introduced into acres. my house (a new one) in a child's bedstead bought at a sale. I tried all possible means to exterminate them, but seemingly without effect, as they had got into the walls and extended to different rooms. One day I noticed what I thought to be a very large bed-bug carrying off a very small spider of about half its size. This I was determined to prevent, and went with a small piece of stick to separate and kill the former. They first ran very lively along the floor in opposite directions, but to my great surprise I saw the little spider wheel around, pursue, seize, and bear off the bug in triumph with great ease. A further search revealed one day a spider's web in which hung about half a dozen dead bugs like carcasses in a butcher's stall, for the spider, who generally depends on his net for securing his prey, had apparently on this occasion left it for so precious a morsel. I forthwith gave directions that no spider's web was to be brushed down for a time, much preferring the remedy in this case to the bugs; and whether it was that the spiders had the best of them I cannot say, but the result was that in a little while they became totally extinct.

There is another species of the spider, numerous but very seldom seen, which does not make webs, but pounces on its prey, and lives in crevices. It is harmless, one of the least repugnant looking, but one of the most extraordinarily active little customers in the insect creation. If it were found that "bug" was "venison" to that spider, and it could be introduced into houses, the former might make their wills. London, Canada, H. TAYLOR.

Pocket Life Buoys.

To the Editor of the Scientific American:

If you will turn to patent 679, issued to me April 7, 1838, you will find described under the above caption your desideratum, namely, "A circlet of waterproof cells, each provided with an automatic valve so as to be easily inflated, and yet all so independent of each other that the bursting of one would not affect the rest," with the addition of a bellows to inflate it, itself forming another air chamber, isolated likewise from the others.

I took to Charles Goodyear, who had on June 17th preceding obtained a patent "for divesting caoutchouc of adhesive properties," orders from responsible firms, one in New York for 2,000 and another in Philadelphia for 1,000 of this "safety life preserver," with the assurance of yet another in New Orleans for an additional supply.

Goodyear was even then in the hands of brokers who had him mortgaged ahead, and his necessities perhaps caused him to fail in delivering a proper article, and to disgust the parties by premature drafts upon them. The matter therefore was dropped; but I cannot at all doubt that all the conditions required in your paper would have been met. As a nation is not born in a day, neither is an invention perfected at once. In the Philadelphia City Directory for 1839 a woodcut of the advertiser represents the article in an improved form, but my expectation was to furnish it eventually of so thin a material that it could be carried in a pocket case, and be reliable in the hour of danger by the number of independent chambers inflated from the bellows. This latter appliance pleased Goodyear much, and he proposed using it for his gum elastic bed and other similar articles.

I had known Charles Goodycar long before, when, in this city, he and his father made his patent pitchforks-an invention that should and could have made him rich had he kept to it. I now found them plodding on in the old manner-the one making rubber cloth in a small frame building near Boston, the other with something like the wealth of the Indies mentally almost in his grasp-alas! his head could produce, but his hands could never reach it.

J. J. WHITE.

formed that the balance sheet on this side is most satisfac- ness of their houses, resulting in the entire absence of dis-

scientific method will doubtless approve of the pasture wish to see a country prosper may prefer that the same land native, saw no fighting, and heard no profanity. may be cultivated by a method which will pay \$7,000 in wages, and encourage the importer and manufacturer of fertilizers to the tune of \$6,000 per annum.

| Feeding Stock. | Cheviot Sheep. | 400 | 250 | | Manures | Acre. | £1.10.0 |
|--|--|---------|---------|-------------------|--------------------------|-----------|---------|
| | Breeding Bullocks ¹ Leicester Cheviot Cows. Heifers, Sheep. Sheep. | 300 | 009 | | Wages per Acre. | | £2.0.0 |
| | Bullocks and Heifers. | 08 | 100 | | Women and Boys. | | |
| | Breeding Cows. | 17 | <u></u> | Employed on Farm. | Men. | | 18 |
| | Bull. | | | | Steward Shepherd | | ~ |
| Turníp Seed. | | 13 | 0 | Emp | Steward | | |
| 2 years old Pasture. | | 50 | 23 | | Furm Horses. | | |
| l ycar | 1 year old Pasture. | | 68 | : | Plows. | | Ω. |
| Rye Grass | Ryc Grass 1 year and old Clover Pasture | | | | Steam Plow. | | |
| | Oats. | 54 | 63 | | Lime, | Топя. | 70 |
| | Barley. | | 02 | 0n = 2,240 lbs. | Nitrate of Soda. | Tons. | 9 |
| Acres Acres Beans (English) Potatons and Turnipa. Wheat. | | 126 | 141 | | Super Phosphate. | Tons. | 40 |
| | Татијри. | % ~~ | | ed on F | | \ | |
| Beans | and Vetches, | 88 | 41 | | ! : | a. 'Tons. | 48 |
| | Polators. | | 61 | Cone | Grain. | Bushels. | 1,600 |
| Acres (Buglish) in | | 1866 | 1867 | • | Corn and Oil-Cake. | Tons. | 100 |

Mr. Handyside's farm, of Fenton Diern, is similarly man-¹ ented an improved Harness, which consists in a novel araged, and is of about the same extent. It has about 4 pota rangement of thill straps, a hip strap, and a pad, whereby toes and turnips, ²/₆ grain, and ²/₆ one and two year old grass; the weight and pressure are distributed more uniformly over only 3 acres permanent grass on each. Wages of each farm the body of the horse, and greater freedom of motion is perabout £1,400, sterling, per annum. Cost of manures, £1,200 mitted than by the employment of the breeching heretofore to £1 300 per vear. in common use. Mr. Thomas C. Smith, of Greenpoint, N. Y., has devised A grass farm in Ireland would pay in wages about £30 or £40 a year, giving no employment except to a herdsman an improved Ice Pitcher, which is so made that as large a piece of ice can pass in through its mouth as its body will These farms, and those of Badhoeve in Haarlem-Meer, hold, and it is provided with a device which will prevent under the ocean that the Communists of the West had de-Holland, owned by Mr. Amersfoordt, and the farm of Rath- the ice from being poured out with the water. elly in Ireland, owned by Mr. F. Barber, are the model Mr. Joseph M. Kurtz, of Weston, Mo., has recently patented an improvement in Glazier's Square and Rule. This farms of the world. invention consists in a rule having inches and parts of in-Such an account is absolutely unanswerable, except by a ches marked upon it, and provided with an arm at a right disproof of the figures, which is challenged. angle, to form a square. The rule or base has an extension EDWARD H. KNIGHT. slide at one end, which may be clamped in position, and it is Paris, September, 1878. also provided with a movable guide, which may be clamped at any point on the rule, and forms a stop for the glass, while Heathen Japan. the arm of the square serves as a straight edge along which

eases such as scarlet fever, diphtheria, and other afflictions so Those who scowl at the employment of machinery and common in this country. The people arc of gentle manners and particularly kind and careful of their animals. During farm with its man and a boy at \$200 a year; but those who his residence there he never heard a cross word uttered by a

New Inventions.

An improved Suspension Arm for Sleeping Car Berths has been patented by Mr. John R. Fish, of Grand Rapids, Statement of high farming in East Lothian, from a visit Mich. The object of this invention is to provide a simple Perhaps there are not very many aware of the great util- in 1868, when the late Mr. George Hope gave this account and convenient means for fastening or locking the joints of cars, whereby the joint is made rigid after the berth is prepared for use, and the berth is prevented from closing in case the car tips over.

Mr. Hiram Snider, of Plattsville, Ontario, Canada, has devised an improved Automatic Weighing Apparatus, which may be attached to the delivery spouts of flour mills, for the purpose of weighing the grain, flour, bran, and other products as they are delivered, and registering the weight. By this apparatus the gross product of a quantity of grain when ground may be ascertained, or the weight of the flour, bran, and middlings may be found separately, and a miller can ascertain without trouble the exact yield of a given quantity of grain.

Messrs. James Dunseith and Samuel Crawford, of New York City, have patented an improved Water Heating Attachment for Stovepipes, which is so constructed as not to interfere with the draught of the stove, while utilizing the heat that may be passing off through the pipe for heating water, making coffee, or other purposes.

Mr. Hermann Lingen, of Wheeling, W. Va., has patented an improved Measuring Jacket, which is similar in form to the body of a frock coat, having its seams united by elastic cords, to permit them to open more or less to allow the jacket to conform itself to the shape of the body of the person being measured. The elastic scam lacing cords are provided with hooks, which may be adjusted from one eyelet to another. Flaps are placed behind the scams to receive chalk marks, and the jacket is provided with suitable pads.

Messrs. Joseph W. Trudell and Louis S. Trudell, of Sioux City, Iowa, have patented an improved Coupling for connecting the parts of the front gear of a wagon in such a way that they may play easily upon each other, and at the same time may be held securely in place.

Mr. Thomas Stumm, of Ada, Ohio, has patented an improved Washing Machine. This invention relates to certain improvements in that class of washing machines covered by letters patent granted to the same inventor May 5, 1874. No. 150,494, and February 16, 1875, No. 159,855.

An improved Ear Ring Cover has been patented by Mr. Anthony Hessels, of New York City. This invention refers to improvements in that class of ear rings in which an outer shell or covering is used to inclose a diamond or other valuable stone whenever it is not desired to expose the same to view. It consists of a cover or shell having a bottom opening for inserting the diamond or other stone, a slit extending from the opening to the top or apex of the shell, and a gravity drop plate at the inside for closing the bottom opening of the shell.

Mr. Benton Elliott, of Ellsworth, Wis., has patented an improved Holder for Strings used in tying packages or bags, and for holding shoe strings, so that one at a time may be removed from a bunch without snarling those that remain.

An improved Ore Separator has been patented by Mr. Emory B. Hastings, of Palmer, Mass. The object of this invention is to furnish a machine for separating ores, or similar uses, for treating finer and coarser particles with the same facility. It may be easily adjusted to operate upon different grades, is simple in construction, and easily operated.

Mr. Theodore Miner, of Brooklyn, N. Y., has devised an improved Carburcter, which feeds the naphtha automatically to the carbureting chambers as it may be required, and will introduce the gas into the warmer part of the carbureting chambers and withdraw it from the colder part.

Mr. Daniel K. Wertman, of Mount Carmel, Pa., has pat-

Labor Saving Farm Machinery.

To the Editor of the Scientific American :

It is not always that the poison and antidote come to hand and a boy. together; but the other day the news came along the wire clared against labor-saving machines, especially the automatic binding reaper. About the same time M. Tisserand, the Director General of Agriculture, a gentleman who had charge of the government farms under the empire, and retains the same position now by virtue of his thorough acquaintance with the subject, handed me the inclosed statement. It may be remarked, in passing, what a fearful comment it is on republican institutions that he was not at once put out and some party worker put in. But these French seem to be behind the age.

Professor Edward L. Morse, who holds a professorship in the cut is made.

The statement is the most compact exemplification of the University at Yeddo, a city of 1,000,000 people, is now An improved Shirt has been patented by Mr. Edward H. what high and systematic farming will do for labor and in this country. He recently delivered a lecture on the Inglis, of Newtown, N. Y. This shirt has two bosoms or trade; and though it does not include, which I regret, the manners and customs of that people, in which he alluded to fronts, that may be readily shifted when desired, so that figures of return for labor and money expended, I am in their careful treatment of children, the invariable cleanli- when one front becomes soiled it may be replaced by the

one becomes soiled, the shirt having this improvement affords protection to the chest at the most exposed part.

Mr. David H. Thomas, of New York City, has patented an improvement in Cooking Ranges, which consists in a enough to resist simple washing. novel arrangement of the flues and ovens; also in a sectional swinging grate and a blower or grate cover for broiling.

Mr. Henry V. Aiken, of Fishkill Landing, N. Y., has patented an improved Pneumatic Gong Pull, which is so constructed that the gong hammer may be operated by means of compressed air. It may be used upon vessels, in houses, and in other places where signals are to be given.

Mr. Jerome F. Busey, of Peck's Mills, Pa., has devised an improved Machine for Bending Chain Links, which may be adjusted so as to produce links of different sizes and thicknesses of iron by one and the same machine, without necessitating the use of several machines for each size of link.

A WRINKLE IN FILING.

Those who have used slender files have met with the dif ficulty that the file bends from the pressure with which it

that it files the edges of the work away, leaving the sur face rounding, as shown in Fig. 1, in which A A represents the operation of filing out a narrow keyway, the file bending from the pressure, as shown, rendering it necessary to either make a drift to finish the keyway with or to work out the roundness with the end of the file only, which is a long and tedious job

To remedy this defect and enable the filing to be done with full strokes and a maxi mum of pressure, the file may be grasped as shown in Fig. 2. The pressure of the forefinger and thumb, being exerted in the direction denoted by the respective arrows, bends the file to a sweep

or curve, causing it to file flat clear across the work, while obvious that in this case the handle end of the file must be elevated or depressed to bring the belly of the file to bear upon the required spot. J. R.

Chrysoline on Cotton.

The author has been commissioned to examine the applications to cotton of a new coloring matter known as chrysoline, and which, since March, 1877, has been used in wool and silk dyeing. It is the soda salt of benzylated fluorescine, and has been discovered and manufactured by M. Fred Reverdin.

As the inventor has himself in several publications described the chief properties of the new product, and the method of its preparation on the large scale, it will merely be necessary to describe here its characteristic reactions.

This color is soluble in all proportions in water and alcohol. In glycerine diluted with water it is less soluble, and in concentrated glycerine it dissolves only with the aid of heat. It is insoluble in oils. Essence of turpentine precipitates it from its aqueous solutions.

Its solutions by reflected light are of a splendid green color, but by transmitted light of an orange

Alkalies promote its solution, while the acids and all the metallic salts, except the carbonates, give an orange precipitate, the shade of which varies according to the base of the salt.

Among these precipitates, the most remarkable are those given by chloride of tin and nitrate of lead. The latter is brightest if we precipitate a cold, weak solution, which has previously been rendered slightly alkaline

Chrysoline contains two distinct coloring matters-the one gives a yellow precipitate with acids and metallic salts, the fine orange, but not solid. other a red or rose precipitate with salts of lead.

If

The latter color is not fast; the former is more stable.

disappear.

If this colored cotton is passed before drying into a bath of oil mordant, a part of the yellow color is fixed well

A weak solution of nitrate of lead likewise fixes the coloring matter with an orange shade, in which the influence of the red coloring matter may be traced.

Cotton previously prepared with an oil mordant exhausts the color bath and dyes up a full orange. This color resists light better, but does not wash.

Printing.-After these preliminary trials I endeavored to apply chrysoline in printing.

A solution of 1 grain per fluid ounce of water, thickened with egg albumen, gives a fine yellow, which, after steaming, is sufficiently intense. Washing removes much of the yellow, and there remains merely a dull faded color.

A better result is obtained by printing with precipitates containing 62 grains of chrysoline in 31 ozs. of color. I exhibit two such precipitates applied with albumen; the one obtained with nitrate of lead, and the other with muriate of tin.

These precipitates were obtained as follows: 171/2 fluid must be forced upon the work to make it cut The result is ozs. of solution containing 15 grains of chrysoline.

other Besides the advantage of having a clean bosom when light. A few hours of exposure cause it to fade and even to city. A small lantern could be so arranged as to throw the picture of a common watch or chronometer upon a suitable white screen in places much frequented at night. The movements of the hands would be quite as distinct as those of a real clock with a transparent face and a strong light behind it. The project recommends itself to smaller citics. unable to bear the expense of a costly tower clock with illuminated face.

New Mechanical Inventions.

Mr. Edmund Golucke, of Crawfordville, Ga., has patented an improvement in stationary Horse Powers employed for driving cotton gin machinery; and it pertains particularly to the construction of the king post and master wheel and their appendages.

Mr. John W. Donnel, of Muscatine, Iowa, has patented an improved Millstone Driver, in which the driving points and the point of suspension are in the same plane and parallel with the face of the runner. By this construction the extra pressure on the skirt of the stone is avoided. The driving block is supported on the shoulder of the spindle a sufficient distance below the cockeye, so that it may vibrate and balance itself easily

An improved Hoisting Jack has been patented by Mr.

Richard O. Keeffe, of Omaha, Neb. The object of this invention is to furnish an improved hoisting jack for raising railroad tracks, safes, and other heavy bodies that require to be taken hold of close to the ground or floor.

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Mr. Ramon Verea, of New York City, has patented an improved Calculating Machine. This ingenious machine is capable of rapidly performing addition, subtraction, multiplication, and division. The details of its construction cannot be properly described without engravings.

Mr. William Booth, of Newark, N. J., has patented an improved Machine for Rounding Off the Ends of

Fig.1. Α Fig.2. Sci An N.Y.

A WRINKLE IN FILING.

This is slowly precipitated in the cold, with $\frac{1}{2}$ oz. of a Fine Combs, such as arc made of celluloid, hard rubber, and if any particular part only requires to be filed the file may solution of nitrate of lead, or of tin crystals, containing 31/2, other material, the machine being adapted for cutting difcantation. 51/2 fluid ozs. of this precipitate are thickened and accurately.

> on steaming and exposure to the air. The tin color, on the and also for the driving cords of lighter machinery, such as steaming, and resists light better.

The two colors are much degraded and changed in tone by a slight soaping. They present then a flesh color, which is restored to a yellow by acids.

There is still a third method of application, that with arsenite of alumina. Upon calico prepared with acetate of alumina there is printed a solution of chrysoline, 62 grains to 35 fluid ozs., containing the necessary quantity of arsenite of soda, and thickened with white starch. The results are better as regards solidity, but at the expense of beauty. The orange is less intense, more of a yellow shade, and wanting in brighiness. It resists washing and light.

Dyeing.-I submit some skeins dyed upon the same principles. The results are not much more satisfactory. The first skein was mordanted in acetate of alumina, at 5° B., steeped in a bath of chrysoline and arsenite of soda, wrung, dried, steamed, and washed. A tolerable orange, which resists light slightly.

The second skein, prepared in the same manner, was then dyed in a bath containing acetate of alumina and arsenious acid dissolved in glycerine. Wring, dry, steam, and wash. The tone is much more yellow.

Caution must be used in this process, as it is difficult to get the threads evenly dyed.

The third skein was saturated with a solution of chrysoline, dried, and passed into nitrate of lead. The result is a

tin, the tone being slightly less red than the foregoing. All rear tongues, the latter curved to form sockets for the pivot. the shades obtained with chrysoline are rendered yellow by I have still to relate a fact which has been already remarked with other artificial coloring matters. A yellow dyed with bark is considerably heightened by taking it through a weak solution of chrysoline, 1 grain to the fluid ounce. Chrysoline, therefore, cannot be considered applicable to cotton where nitroalizarine may be advantageously used in its stead. This latter color gives shades more solid, and almost as brilliant.

be brought to bear against it and short strokes taken. It is ozs. per 1% pint. The precipitate is washed twice by de-ferent sizes of combs, and accomplishing its work rapidly with 21/2 ozs. of egg albumen. The lead color, though the Mr. Arthur Sirois, of New York City, has devised an immore beautiful, must be given up, as it becomes discolored proved Coupling for the driving belts of heavy machinery,

other hand, is of a very fine orange, and is developed by sewing machines, etc., the coupling admitting of the instant connecting or disconnecting of the belts or cords, while taking up a small space, so as not to interfere with the driving of the pulleys or wheels.

Mr. William H. Peterson, of Richmond, Ind., has patented an improved Double Acting Force Pump, that is of simple and compact form, and adapted to be placed at any depth in the well, so as to make it non-freczing.

An improvement in Machines for Cleaning and Polishing Coffee has been patented by Mr. Henry Bamberger, of Philadelphia, Pa. This invention has reference to an improved machine for cleaning coffee of its adhering impurities, dry hulls, etc., and imparting to it a smooth and uniform appearance

Mr. Willie Kniffin, of Yorktown, N. Y., has patented an improved Lifting Jack for raising the axles of wagons to allow their wheels to be removed, and to raise other heavy weights. It is so constructed as to enable a weight to be raised by a slight exertion, and will hold the weight suspended for any length of time.

Mr. William H. Walsh, of Fort Worth, Texas, has devised an improved Gin Saw Sharpener, of simple construction, by which the teeth of the saws are cut square at the inside and pointed at the top, and by which the sharpening of all the saws of a cylinder is accomplished quickly and perfectly, avoiding the objectionable features of hand sharpening.

Sedgwick M. Wade, of Andover, Ohio, has patented a The fourth skein shows the color fixed with muriate of Strap Hinge, composed of two leaves, having flanges and

the precipitate produced by muriate of tin is allowed to settle, the clear liquid above is of a light orange. If this is acids, and are restored to their primitive shade by alkalies. rendered ammoniacal, and mixed with a weak solution of nitrate of lead, it deposits a splendid rose-colored precipitate, apparently due to the presence of a certain quantity of eosine, which is produced in the manufacture along with the vellow color.

Cotton cannot be dyed in a direct manner with chrysoline, and receives only a slight rose coloration if previously mor. danted with salts of iron or alumina.

With a lead mordant it takes a beautiful light rose, the shade of which is scarcely proportionate to the total quantity of chrysoline in the dye bath. It is the red coloring matter alone above mentioned which dyes. The whites are always stained.

If cotton is worked in a watery solution of chrysoline, 1 grain to the fluid ounce, and dried, it takes a very fine orange shade. This color, which is characteristic of chryso- for illuminated tower clocks. It is the use of a magic lan-

Chrysoline will find its use for wool and silk, which it dyes readily without mordants, and on which it is much more solid.-Société Indust. de Rouen.-Chemical Review.

A Cheap Illuminated Clock.

Reiniger, ot Stuttgart, proposes an ingenious substitute ventilation of the warehouses, so as to insure that the sulline, is not fixed upon the cotton, and is very sensitive to tern, so frequently employed for street advertising in this phurous and sulphuric acids generated by the burning of the

At the last meeting of the Chemical Section of the Philosophical Society of Glasgow, Dr. William Wallace, gas examiner and public analyst for the city of Glasgow, read a short paper on the destruction of the color of cotton goods by the sulphur in the gas burned in the London warehouses. Sulphuric acid, he said, was found in considerable quantity in the goods after being some time exposed, while the same articles in the fresh condition were quite free from that acid. In some cases the cotton fiber itself was rendered so tender

as to be perfectly useless. The same thing had been observed in the warehouses in several large towns in England, such as Leeds, Manchester, etc., where common coal, containing much sulphur, was used as the source of the gas supplied to the consumers, but only to a limited extent. The remedy which was recommended by Dr. Wallace was the thorough