

# How to Curries

R. S., of Iowa.—If an insulated wire is wound around a soft iron bar, and a magnet is brought in contact with the end of the bar, or sufficiently near to magnetize it, a current of electricity is excited in the surrounding wire, but the current instantly ceases. On removing the exciting magnet another current of electricity passes through the enveloping wire in the opposite direction from the first. As these electric currents are but momentary, they would not work in the way you propose.

O. S., of Ohio.—Meerschaum is silicate of magnesia—composed of the same substances as soapstone. It occurs native in a very pure state, and is also manufactured artificially. For pipes the meerschaum is soaked in oil and wax, and then baked. It is very porous, and the coloring by use is doubtless due to the absorption of smoke. The white spots in your pipe are probably carbonate of lime or some other foreign substance that will not absorb smoke.

R. H., of N. Y.—Your request, that we should republish for your special benefit a recipe that appeared in our paper in December last, is unreasonable. Every line, even in our advertising columns, is worth 40 cents, and you can get a copy of that paper for 10 cents.

G. F., of Minn.—The substance which you send us is a mixture mostly of clay and carbon, the proportion of carbon being perhaps sufficient to call the specimen impure coal. The occurrence of this substance is some indication, though by no means a proof, of the existence of good coal in the vicinity.

H. B. M. asks:—"In case a man buys a patent, has he a right to use the recommendations which the previous owner received from those using the patent, without asking permission of the owner or those that gave the recommendations?" **ANS.**—There would probably be no impropriety in the use, by the purchaser, of the recommendations.

W. T., of N. H.—After the velocity is imparted to your millstones it will require twice the power to run them at 80 revolutions per minute that it takes to drive them at 40; to impart double velocity requires four times the work.

W. W., of Iowa.—Commencing at a temperature of 32°, the pressure of air is doubled by raising its temperature 49°; with a further increase of 49° its pressure is three times greater than at 32°, and so on.

G. C. W., of Ohio.—A long crank and a large pulley are like a long lever—you can raise a greater weight, but what you gain in power you lose in time.

G. D. G., of N. Y.—India-rubber shoes can be patched by sticking a piece of india rubber over the fracture by means of cement made by dissolving new india rubber (not vulcanized) in spirits of turpentine. The cement can be bought of india-rubber dealers.

A. W. R.—A valid patent cannot be granted for a machine which has been in public use for more than two years without application for a patent by the inventor. A patent issued under such circumstances is invalid and worthless. The invention is public property.

J. P.—Both the maker of the machine and the user are liable for the infringement of a patent.

T. B.—The *New York Ship News* contains the information about duties that you call for.

W. K., of D. C.—Oyster shells will loosen the clinker so that it can be knocked off, when at a dull red. Throw three or four in with the coal, then turn the fire out after they have been in some time, and with a poker (and a blow) detach the clinker.

W. K., of Pa.—We should comply with your request with great pleasure if we had time, but it is unjust to the rest of our readers to ask us to hunt up recipes formerly published, on the supposition that you will at some time send us ten cents.

M. B., of N. Y.—Spelter mixed with 1-20th of its weight of speculum metal makes a good alloy for many purposes, such as chucks for spinning metal work on. It might also answer for hard solder. Speculum metal is 100 copper, 50 tin.

C. H., of Ohio.—Sealing wax for fruit cans is, beeswax  $\frac{1}{2}$  oz., vermilion  $1\frac{1}{2}$  oz., shellac  $2\frac{1}{2}$  oz., resin 8 oz. Melt the resin, add the shellac, stirring slowly, and lastly the wax. It will be hard when cool. If you desire it plastic, add a piece of lard the size of a walnut.

S. A.—Compressing air by wind-mills is an old idea. So is the use of compressed air for driving cars and other machinery.

T. S., of Ohio.—"Will immersing dull files in sulphuric acid sharpen them, or will it ruin them?" It will ruin them. Try one and see.

F. S., of Ohio.—Alcohol when repeatedly boiled and cooled in an iron or steel vessel will not decrease in bulk, provided the vessel is absolutely tight.

S. J. J., of Pa.—A good way to seal fruit jars is to dip a piece of cotton cloth into a melted mixture of two parts of beeswax and one of resin, and tie it over the jar.

P. C., of N. Y.—Call at the Police Headquarters to find the rules laid down for examining engineers and licensing them to run engines in this city.

S. B. E.—Slatted floats for steamboat wheels, operating as you suggest, were long ago proposed.

**RECEIPTS.**—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona-fide* acknowledgment of our reception of their funds.

# RESPONSES

**MESSRS. EDITORS:**—Mr. C. H., of New Haven, appears to be very anxious to have the popular fallacy of large pulleys corrected (see page 132, *SCIENTIFIC AMERICAN*, current volume).

Now, I have been criticised for the last thirty years about a "fallacious" idea I had of making pulleys probably twice as large as the ordinary size, but I could endure the criticism better than I could endure the breaking and slipping of belts. Then again, I was too stingy of power to be constantly wasting it in bending a heavy stubborn belt around a small pulley, and straightening it again as it leaves the pulley—a serious loss when belts are heavy and strong enough to transmit much power through small pulleys. I have seen saw mills (and sash mills at that) running with pulleys on the crank shaft of only 16 to 18 inches in diameter, heavy belts of two or more thicknesses, and 14 to 16 inches wide, and a half-ton weight on the tightening pulley to make the belt adhere to the small pulley sufficient to turn the crank shaft with an eight-inch lever; the consequence was, that the tug of such a tight belt on the journals, and bending and straightening such a stiff heavy belt around so small a pulley wasted about half of their driving power.

Many grist mills have small pulleys on the spindle, and belts sufficient to drive four run of stone if the belt had speed, as it would have if the pulleys were large enough. The miller levels the bedstone all so nice, then trams the spindle from the face of the bedstone and has it all quite right; but before he grinds he must put on the tightening pulley with a tremendous pressure to make the belt stick on the small pulley, which tightening operation frequently springs the bridge tree, and the spindle is not plumb while grinding, which makes bad work. If he tries to plumb up again, he must take off the tightening pulley before he can turn the spindle, and when the tightening pulley is off the spindle is plumb as before; so he will continue to do bad grinding without knowing the cause, until some "fallacious" individual is sent for to hunt the mysterious mischief out of the mill.

A pulley on the spindle near the diameter of the stone, and driving drum to correspond, and a light and pliable belt make a good rig; and the miller will be pleased to grind thereon four bushels per hour with such an one more than he could with the fashionable-sized pulley and belt tight enough and stiff enough to waste a great portion of power. P. D. Jersey City, N. J., Feb. 26, 1866.

## Pittsburgh Rolling Mills.

**MESSRS. EDITORS:**—As your rolling-mill readers are numbered by hundreds throughout the country, a letter on the subject may not be uninteresting from this appropriately named "Iron City." Pittsburgh contains between thirty and forty rolling-mills and steel works, five manufactories of gas pipe, four nut and bolt works and foundries innumerable.

The rolling-mills have been pretty generally stopped during the past four weeks, owing to an attempt of the proprietors to reduce the wages of the employees twenty-five per cent; it is supposed by many that this movement on the part of the ironmasters is done more for the purpose of impressing Congress with the necessity of increasing the tariff than any real desire to reduce the workmen.

Five years ago it would have cost some trouble to get a sheet of iron seven or eight feet wide, but since the beginning of the war a revolution has been worked in this as in many other things. The demand for large and heavy plates made by the Government, caused the proprietors of rolling-mills to increase the size of their machinery and furnaces, and now, when the mills are running, making plates of the above size is a daily occurrence. The other day I witnessed them making, at Lyon Shorb & Co's. Works, a plate thirteen feet long, and six and a-half feet wide, three-eighth-inch thick, with surprising ease. The rolls at this mill will weigh fourteen and a half tons each.

At Morehead & Co's. I also saw them rolling a

plate weighing twenty-eight hundred lbs.; the rolls at these works are reversed, so that the iron enters at either side, doing away with the necessity of passing the iron over the top roll to be entered again at the same side. The making of fancy or eccentric-shaped iron is now more common than formerly; the architect or engineer now sends for almost any geometrical shape and has it made. Angle L and T iron are now as common in the rolling mills here as bar iron, almost even cast steel is rolled in nearly as many shapes as iron—agricultural implements demanding almost every conceivable shape in the vast quantities used for that purpose; here it is made perfect and in quality to equal any in the world; in fact, Pittsburgh cast steel is getting a reputation that is creditable as well as profitable to the manufacturers. L.

Pittsburgh, Feb. 26, 1866.

## Burying Cream.

**MESSRS. EDITORS:**—I will state, for the information for all parties interested, that while living on the Republican Fork River, Kansas, in 1860, I frequently made butter by burying the cream, but found that it did not succeed well when quantities of cream larger than 3 pints were used. The difficulty might be obviated by having the sack long and small round so as to have a sufficiently large surface of the soil in contact with the sack to absorb the cream rapidly. It should be kept in the ground about eighteen hours, and as many inches deep. I used to lay it down at sunset and unearth it the last of the forenoon. The cream should be stiff without curd. Of course where there is much cream it would not do to waste the buttermilk in such a mode as this. J. H. SWAIN.

Boston, Mass., Feb. 19, 1866.

## POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular weekly meeting at its room at the Cooper Institute, on Thursday evening, March 1st, 1866, the President, Prof. S. D. Tillman, in the chair.

### RUSTING OF ARMOR PLATES AND IRON BUILDINGS.

The President, in his usual summary of scientific news, read the statement, that has appeared several times in our columns, in regard to the rusting of the armor plates on the French iron-clad ships.

Mr. Dibben remarked that he had seen the statement repeatedly, but it was very unsatisfactory from its incompleteness. There was no explanation of the manner in which the plates are secured.

Dr. Rowell observed that there are numbers of iron ships, with comparatively thin plates, which have lasted many years without suffering materially from rust.

Capt. Maynard said that he could probably explain the matter. Iron ships are protected by being painted inside and out, but the paint upon armor plates can be renewed only on the outside, and the rusting takes place on the back side—next the ship. Capt. Maynard continued—

"There is a large and beautiful iron building within a hundred yards of this place—I allude to Tompkins Market—which can be painted on the outside, but which is plastered inside, so that the iron cannot be reached; and the iron of that building is being very rapidly corroded—it will last but a few years."

### WALKING ON ARTIFICIAL LEGS.

Mr. J. W. Weston exhibited an artificial leg invented and manufactured by him. It is made of sheet brass, struck up into form and soldered on the inside, with rings and straps of steel to strengthen and stiffen it in the proper places. The foot is secured by a simple joint with a cushion of pure india-rubber, and the socket for the stump is lined with cork. A young man present, who was wearing one of the legs, walked about before the audience without any cane, and with a very easy gait.

Mr. A. A. Marks then presented the leg invented and manufactured by him. It is a hollow wooden limb, and its principal peculiarity is the foot, which is made of solid india-rubber attached to the leg without any joint whatever. A young man present, wearing one of these limbs, was called on to exhibit his gait, and as he walked back and forth

through the hall, without any cane, it was difficult to believe that his legs were not both those which nature gave him.

*Mr. Marks*—"Gentlemen, which is the artificial leg?"

*Voices*—"The right—the right—the right."

*Mr. Marks*—"They are both of wood."

Every one was impressed with the immeasurable value of the limbs to this young man, in place of the two stumps left to him on the battle field. It was further stated that he could skate with them very well.

The subject was continued to the next evening, when legs, invented by others, will be exhibited.

#### NEW INVENTIONS.

*Machinery for Cutting Files.*—Files to the value of between seven and eight millions of dollars are annually imported into this country from Europe; which value is predicated upon a gold basis. Besides this foreign supply, there are files manufactured in various sections of the United States every year, which are worth between three and four millions of dollars. Thus it may be seen, that upwards of eleven million dollars worth of files are used in this country alone, every twelve months. All of the files thus used, with very few exceptions, are manufactured entirely by hand, at a cost which is necessarily immense. The expense of the cutting alone, of an ordinary twelve-inch file in this manner, is two dollars per dozen. The same work, upon the same file, can be done with this machine at an expense of twelve cents per dozen; and not only so, but the article produced from this machine is of a better quality, and superior in every respect, to that manufactured by hand. Of the many machines for this purpose is one of a very ingenious yet simple character, patented by James C. Cooke, of Middletown, Conn., who has devoted much time and attention of this branch of the subject. The machine consists in a novel construction and arrangement of a cutter stock, applied to a sliding head in such a manner that the cutter is rendered capable of being adjusted, with the greatest facility, in the several positions relatively with the file blank that it is necessary to have in order to cut the file properly. The machine has, also, a novel manner of securing the file blank in its bed, whereby the blank may be secured in the bed and the finished file removed therefrom very expeditiously. The machine also consists in certain means for automatically adjusting the file bed, for the purpose of compensating for any variation in the thickness of the blank, and insuring a cut of uniform depth throughout the entire length of the blank.

*Machine for Rolling Iron.*—This invention relates to a new and useful improvement in machinery for rolling iron, and it consists in the application of side rollers to the ordinary rolling machines, whereby the edges of the metal, both previous to its passage between the rollers and after leaving the same, are subjected to a pressure, causing the metal to be rolled of an uniform width throughout, and with smooth edges. The invention also consists in a novel means employed for operating and adjusting the side rollers, whereby said rollers may be placed at a greater or less distance apart to suit the width of the metal being rolled, and the rollers at the discharge side of the pressure rollers made to rotate with a greater speed than at the feed side. John F. Lauth, of Reading, Pa., is the inventor.

*Treating Peat.*—This invention relates to the preparation of crude peat for use as fuel. It consists in a method of treatment, and in devices, by means of which, the cellular character of the peat is destroyed and the tubular fibers, which interlace it in every direction, are broken and crushed, such fibers, after they are broken up, being also thoroughly mixed with the rest of the mass. The peat is brought into a fine, soft, plastic state, the water present in its tubular fibers and in its numerous cells being released and mixed through the mass during the process. In this state it is capable of being molded into blocks of a convenient size for handling or burning. In reducing the peat to this state, any air which is confined in its cells is also released. The result of this destruction of the cellular character of the peat, and of the tubular character of its undecomposed vegetable fibers, and the consequent release of the confined

air, and the intimate incorporation of its decomposed and undecomposed elements with each other, is to bring the peat into a condensed state, in which its bulk is greatly decreased, while yet it retains all, or nearly all, the water which was present in it when dug up. The water is afterwards got rid of to a greater or less extent by evaporation in the open air, or by currents of warm air, or in any other way preferred by the operator. T. H. Leavitt, of Boston, Mass., is the inventor.

*Elevator.*—This invention relates to a new and useful device for elevating building materials—such, for instance, as brick, stone, mortar, etc.—during the process of the construction or erection of a building. The object of the invention is to supersede the use of the common hod and the windlasses now employed for such purposes. John C. Wandell and James W. Wandell, of New York City, are the inventors.

*Tailors' Measure.*—The object of this invention is to obtain an implement of simple construction by which any one of ordinary ability may, after obtaining the measure of a person, lay out or mark the cloth so that the same may be cut in the most economical manner, and the garment, when made, fit perfectly the person measured for the same. The cutting out of garments so as to economize in cloth requires considerable skill and practice, and a good cutter can always demand a large salary in ready-made clothing establishments—in fact, a good cutter is not always readily obtained at any price. George Beard, Philadelphia, Pa., is the inventor.

*Device for Cleaning Flues of Steam Boilers.*—This invention relates to an improved method of cleaning the flues of tubular boilers, whether of locomotive or other engines, or tubular boilers used in other connections. The flues of such boilers very rapidly become foul with deposits of soot, ashes, and cinders, which choke some of them and consequently diminish the steam-generating capacity of the boiler. The usual method of cleaning the flue tubes is by the use of scraper and brush, which implements are sometimes used with great carelessness, and when used with diligence and carefulness they demand a great expenditure of time and labor. If the flues are not well and properly cleaned a great waste of fuel is one of the results. This invention is intended to accomplish the cleaning of the flues with ease, expedition and economy of time and labor, and consists in connecting a steam pipe with the boiler or steam chest at any convenient point, and placing a suitable nozzle or jet at its end which can be inserted within the flues at either end of the boiler. The pipe may be gas pipe or any other which will endure the pressure of the steam which in locomotive engines is often very great, and it is made with joints at convenient places therein, so as to be capable of being turned in any direction. A cock is placed on the pipe near the boiler to shut off steam from the apparatus when not in use, and another cock is placed on the nozzle, or near it, to shut off steam when running from tube to tube. It may be applied to the tubes through the smoke box or through the fire box, and by its use a boiler with one hundred tubes can be cleaned in five minutes, and done so perfectly that only adhesive particle of crust and dirt will be removed, and the flame and heated air from the fire be allowed to act with full effect on the clean surface of the metal, thereby saving a considerable amount in fuel. Daniel McDowell, Kingston, Jamaica, W. I., is the inventor.

#### Oil Smellers.

The wizard characters who figured so extensively in locating wells, in the incipient stages of the oil excitement in Venango county, are not all dead yet. Unlike other prophets, they seem not to be without honor in their own country. Strange as it may seem to those who trust to the more legitimate sciences of geology and mineralogy as guides in searching for petroleum, there are men who profess by means of magic to locate the deposits of oily treasure. While geologists are carefully noting the succession, dip and strike of different strata of rock, and searching for signs of upheaval from which to infer fissures full of petroleum in the sandstone of one period or another, the "smeller" with his magic stone and forked willow in hand, marches with dignified gravity over the land, purchased on suspicion of oil, until

his magic wand informs him where to strike. It is strange what a hold these professional humbugs have upon the credulity of those who are afflicted with oil on the brain.

The Titusville *Herald*, noticing the fact of the strike near Petroleum Center, mentioned in another column, says: "From the fact this territory has produced but little oil lately, the peculiarity of this strike is noticeable. The 'spot' was located by Messrs. P. & D., who were, as are all 'oil smellers,' confident of success. That they succeeded beyond a doubt, the well is positive proof. The question whether or no they can locate a good producing well every time is yet to be decided by actual test. So far they have not missed. The big well on Smith Farm, Cherry Run, lately struck, was also 'smelt out' by them. They have in their possession a kind of chemical, or 'magic stone,' with which they operate. Several parties have tried to prove their *mode* a humbug, but so far have always failed."

One of the failures referred to is stated as follows: A bucket of oil was placed in the cellar of a house, unknown to the gentlemen. They were invited in, and during the conversation were asked to try their chemical stone. The magic stone was balanced, and behold it indicated the spot so correctly that had a hole been bored in the floor directly under the stone, a plummet dropped through it would have fallen into the bucket. Our friend of the *Herald* does not say whether the chemical stone indicates the depth at which the oil will be struck, but we would advise Messrs. P. & D. to offer to show this also. They might, in addition, indicate whether the oil will be lubricating or not. For such additional information they might add to their fee. They need not fear that by promising too much they will create doubts in the minds of their employers, for it is just as reasonable that they know the depth and quality of oil as to discover its locality.

But the "chemical stone" is not the only material that possesses this wonderful oil-indicating power. A forked branch of willow in the hands of one of these professional gentlemen, is just as efficacious as the "stone." The prophet of the willow school, having selected a suitable branch, holds the stem of it firmly, keeping the branch in a horizontal position, and proceeds upon his inspecting tour with no less gravity than he of the chemical stone. When the place where oil is to be found is reached an irresistible and unknown power turns the branch directly in the direction of the charmed spot, and the employer's fortune is made. The willow knows its friends, and cover requires to operate except for certain favored individuals. A third class of "smellers" have made their appearance in the Canadian oil field who use neither stone nor willow. This set are disciples of a more spiritual school than their cotemporaries of Venango. They probably have imbibed their inspiration from the pages of "Footfalls on the Boundary of Another World," or the more recent and eloquent "Man and his Relations." An exchange thus describes the *modus operandi* of one of them: He leaves his comfortable quarters at the hotel, and proceeds at his leisure across the fields, or along the bank of the winding river, ever and anon tracing up ravines, and occasionally may be seen standing on one foot like a lame duck in a puddle, with his eyes riveted upon the ground. He claims that while both feet are on terra firma the magnetic circle is formed, and the same sensation is not felt in his nervous system as when the connection is broken, and all the charge is received in one limb, and whenever oil is beneath him, no matter how distant from the surface, he experiences a certain oily sensation. There are those who are earnest believers, while others refuse to receive the "revealed science."—*Petroleum Times*.

FORTUNE plays some queer pranks. One occurred to a poor widow woman, who did washing for a living in Pithole. She owned a small piece of ground, and some friends got her consent to sink a well upon it, the result of which is a barrel of oil every ten minutes. She has had several offers of matrimonial engagement from disinterested parties, since.

BILLIARD CONTEST.—Messrs. John Deery and John McDevitt, both professional billiard players, contest for the championship, at the Cooper Institute, on Tuesday evening, March 13th.