THE SHOEMAKER'S OPPORTUNITY.

Not liking the crippled motion of the feet of a certain young American, whose unsteady gait when shod was very unlike his graceful carriage when barefoot, we protested that broader shoes should be furnished him "They are not to be had" was the mother's reply. The child was wearing shoes half an inch longer than his feet, but they were too narrow, by half an inch, across the toes. To make matters worse, the heel was much too wide, allowing a slipping of the ankle from side to side, which even the stiff counters could not keep from causing a marked overrunning of the sole.

Remembering the reform which was made a few years ago in the matter of men's foot wear, we thought it altogether likely that the makers of children's shoes, or some of them at least, might have been led to pay some regard to the shape of children's feet; so we volunteered to find a suitable shoe for our friend's child. Our search was long and faithful: but we had to give it up defeated. There may be dealers in New York who sell children's shoes bearing some reasonable resemblance to children's feet; we sincerely hope there are; but we failed to find any.

The accompanying outline shows the relation between the sole of the child's foot—a perfect foot, such as a sculptor might copy—and the sole of the broadest shoes that could be found of corresponding length. Though they were button gaiters, and so far rights and lefts, not the slightest recognition of the right and left character of a child's feet is discernible in their shape, or the shape of any other children's shoes that we found in the market. "We almost always have trouble in fitting children, their feet are usually so chubby," said one honest salesman. "Why then don't you have the shoes made properly?" we enquired. "Because we could not sell them," was the reply." A mother invariably judges a shoe by its looks. Show her one with a sole broad enough for a baby, and she will scarcely look at it. She wants something pretty and stylish."

Short-sighted shoemaker! To allow her to get off with the notion that anything could be prettier than her darling's tootsy-wootsies!

The society for the prevention of cruelty to children may go far before they find a more suitable occasion for the exercise of their authority. The aggregate amount of pain inflicted upon small children by misshapen shoes must be something enormous.

But surely all mothers are not vain and pitiless—though most of them are sadly uncritical of customary abuses. We are confident that any shoemaker who will adopt for a trademark the foregoing design—first come, first served, gratis—and advertise to furnish suitable foot wear for small children, will receive the thanks of thousands and be rewarded with a profitable business.

There is room for improvement in the material as well as in the shape of babies' shoes. A young creeper will ruin in a fortnight a pair of shoes costing a dollar or more at retail. A buckskin moccasin neatly made would be far more durable, vastly more comfortable, and much cheaper. Hard soles can well be dispensed with until after the child begins to run about outdoors; even then the uppers should be soft and easy.

Who, at this season of revivals, will lead off with the Centennial moccasin?

Mrs. Maxwell's Museum of Natural History in Colorado.

"On the corner of one of the streets in the town of Bowlder, Colorado, is a building with a narrow and somewhat rickety staircase leading up on the outside. At the top of the staircase is the sign 'Museum.' Somebody had said in my hearing that all the animals in the museum were shot and stuffed by Mrs. Maxwell herself, and the collection was nearly a complete one of the native animals of Colorado. I went to the museum, expecting to be much amused by a grotesque exhibition of stiff and ungainly corpses of beasts, only interesting as tokens of the prowess of a woman in a wilderness life.

"I stopped short on the threshold in utter amazement. The door opened into a little vestibule room, with a center table piled with books on natural history, shelves containing minerals ranged on the walls, and a great deer standing by the table, in as easy and natural a position as if he had just walked in. This was Mrs. Maxwell's reading room and study. On the right hand a door stood open into the museum. The first thing upon which my eyes fell was a black-and-tan terrier, lying on a mat. Not until a second or two did the strange stillness of the creature suggest to me that it was not alive. Even after I had stood close by its side I could hardly believe it. As I moved about the room I found myself looking back at it from point after point, and wherever we went its eyes followed us, as the motionless eyes of a good portrait will always seem to follow one about. There was not a single view in which he did not look as alive as a live dog can when he does not stir. The dog alone is enough to prove Mrs. Maxwell's claim to be called an artist.

"In the opposite corner was a huge bison, head down, forefeet planted wide apart and at a slant, eyes viciously glaring at the door—as distinct a charge as ever bison made. Next to him, on a high perch, was a huge eagle, flying with outstretched wings, carrying in his claws the limp body of a lamb. High above them was a row of unblinking owls, labeled 'The Night Watch.' In a cage on the floor were two tiny young owls, so gray and fluffy they looked like little more than owls' heads fastened on feather pincushions. Mrs. Maxwell opened the cage and let them out. One of them flew instantly up to its companions on the shelf, perched itself solemnly in the row, and sat there motionless, except for now and then lolling its head to right or left. The effect of this on the expression of the whole row of stuffed owls was something indescribable. It would have surprised nobody at any minute if, one and all, they had begun to loll their heads.

"The distinctive feature of the museum, however, is a dramatic group of animals placed at the further end of the room. Here are arranged mounds of earth, rocks, and pine trees, in a by no means bad imitation of a wild, rocky landscape. And among these rocks and trees are grouped the stuffed animals, in their families, in pairs, or singly, and every one in a most life-like and significant attitude. A doe is licking two exquisite little fawns, while the stag looks on with a proud expression. A bear is crawling out of the mouth of a cave. A fox is slyly prowling along, ready to spring on a rabbit. A mountain lion is springing literally through the branches of a tree on a deer, who is running for life, with eyes bloodshot, tongue out, and every muscle tense and strained. Three mountain sheep—father, mother, and little one—are climbing a rocky precipice. A group of ptarmigans shows the three colors—winter, spring, and summer. A mother grouse is clucking about with a brood of chickens in the most inimitably natural way. And last, not least, in an out-of-way corner is a touch of drollery for the children—a little wooden house, like a dog-kennel, and coming out of the door a very tiny squirrel, on his hind legs, with a very tiny yellow duckling hanging on his arm. The conscious strut, the grotesque love-making of the pair is as positive and as ludicrous as anything ever seen in a German picture book. Only the most artistic arrangement of every fiber, every feather, every hair could have produced such a result. We laughed till we were glad to sit down on the railing, close to the grizzly bear, and rest.

"But a funnier thing still was on the left hand—a group of monkeys sitting round a small table, playing poker. One scratching his head and scowling in perplexity and dismay at his bad cards, and another leaning back smirking with satisfaction over his certain triumph with his aces; one smoking with a nonchalant air; and all so absorbed in the game that they do not see the monkey on the floor, who is reaching a cautious paw and drawing the stakes—a ten dollar bill—off the edge of the table. Beard himself never painted a droller group of monkeys, nor one half so life-like. It will always be a mystery to me how, to these dead, stiff faces, Mrs. Maxwell succeeds in giving so live and keen and individual a look.

"I found, upon talking with her, that she has had for a great many years this passion for collecting birds and beasts. She began the collection for her own pleasure, and took several courses of instruction from taxidermists, that she might be familiar with all the processes. Her own methods, however, are peculiar. She molds the animal first of plaster, just as she wishes it to stand. Then she covers it with the skin, fitting the skin to it, instead of stuffing the skin out till it is in the shape of an animal. It seems that there is twice as much skin on an animal as it needs to cover it, and that one reason stuffed animals ordinarily look so frightfully unnatural is that the skin is stuffed till it is stretched out of all proper proportions.

"Mrs. Maxwell is, then, in reality a sculptor of animals. None of the animals in her museum are, properly speaking, 'stuffed animals.' They are sculptured animals, covered with skins appropriate to their kind. Her first collection she had sold, five years ago, to obtain money to make a larger one. Her great desire is to make a Colorado museum which shall be truly a complete one of all the animals and birds of the territory, and its minerals, and fossils, and Indian relics. Coloradoans ought to join hands with her in the enterprise, and all strangers who visit Colorado ought to see her museum—not only as a collection interesting in itself, but as evidence how independent a genuine passion for anything is of outside stimulus and help."—*Mrs. Hunt, in the Independent.*

Boilers.

At a recent session of the British Iron and Steel Institute, Mr. T. R. Crampton said: In the case of boiler performance, the question was how much water would a boiler evaporate with a given weight of coal, and the boiler which gave the highest performance in this way with the smallest area of heating surface was the best boiler. The question of what horse power the steam thus generated would develop was one which depended upon the class of engine to which the steam was supplied, and hence it had nothing whatever to do with the boiler. The class of boiler Mr. Crampton considered unimportant so long as good circulation and sufficient surface were provided for the work to be done. As a general rule, it was desirable to use the most simple construction of boiler possible under the given conditions; but under special circumstances greater complexity was justifiable to obtain the necessary area of heating surface within the required space. Mr. Crampton added that in 1842 he introduced the type of locomotive boiler with the firebox crown made flush with the barrel—the latter being made larger than in the older type—and he found that the additional water space thus provided at the sides of the tubes in the barrel had a decidedly beneficial effect on the circulation. For use in iron works in connection with a puddling or heating furnace, Mr. Crampton recommended a vertical boiler, say, about 3 feet diameter by 30 feet high, resting on the ground and free at the top, this boiler being surrounded by a brickwork casing, to the space between which and the boiler the heated gases from the furnace are admitted by a lateral flue, while they are led off at the top. Inside the boiler should be placed a tube some inches less in diameter than the boiler, thus dividing the ascending and descending currents, and thus promoting the circulation. A boiler thus arranged, Mr. Crampton stated, would never burn, and the gases would be discharged to the chimney with their temperatures reduced to 500°.

Lime in the Blast Furnace.

Mr. I. Lowthian Bell, says: "When limestone, in its natural state, is used as a flux, it quickly reaches a zone where the heat is sufficient to separate the carbonic acid from its calcareous base. The temperature of this region, indeed, is so intense that not only the carbonic acid associated with the lime, but a portion of that due to the deoxidation and carbon impregnation of the ore, is reduced to the form of carbonic oxide.

I have shown, on a former occasion, that the smelting of a tun of iron is probably accompanied by the conversion of 6·58 cwt. of carbon from the state of carbonic oxide to that of carbonic acid. The carbon in its acidified form, in the quantity of limestone consumed, upon one occasion, in a 48 feet furnace, was 1·92 cwt. Hence, we may infer that, were there no reduction of carbonic acid to a lower condition of oxidation, we ought to find, for each tun of iron produced, 8·50 cwt. of carbon, combined with its maximum dose of oxygen.

Instead of this quantity, only 5·47 cwt. of carbon so oxidized was found, in the escaping gases of one of the smaller furnaces referred to, per tun of iron of its make.

This change in the composition of the escaping gases of a blast furnace involves more serious consequences than what, perhaps, at first sight might appear.

	cwt. units.
There is the heat absorbed by splitting up carbonic acid containing (8·50 —5·47) 3·03 cwt. of carbon	9,696
The decomposition of this carbonic acid carries off the same weight of carbon which it contains, and which escapes combustion at the tweers, involving a further loss of	7,272
	16,968

The coke consumed upon the occasion which furnished these data amounted to 28·92 cwt. per tun of iron, and the heat estimated to be afforded by its combustion was 104,012 units. The proportion of the total heat generated, which was absorbed by the expulsion of carbonic acid from the limestone, and the decomposition of this compound of oxygen and carbon, amounted to 22 per cent. Of this, 16 per cent is due to the use of limestone, and 6 to the dissociation of the carbonic acid, produced by the reduction and carbon impregnation of the ore.

An expenditure of 16 per cent of the heating power of the fuel, which is rendered necessary by the presence of one of the constituent parts of our flux, affords *prima facie* a strong reason why we should seek to relieve the furnace of a duty represented by about 4½ cwt. of coke, particularly as half this weight of inexpensive small coal sufficed for the purposes of the limekiln.

I am not aware that the experience of any iron smelter justifies the belief that any approach to this economy was ever realized by the substitution of lime for limestone. With the same quality of coke in each case, one of the smaller furnaces (48 feet) gave the following results:

14 days' make per furnace.	Average No.	Coke per tun.	Mine yielded.		
tuns.		cwt.	per cent.		cwt.
419	3·34	29·06	41·9	Limestone per tun	14·53
444	2·20	39·64	42·6	Burnt lime "	11·14

Other examples from furnaces of similar dimensions gave the following averages:

14 days' make per furnace.	Average No.	Coke per tun.	Yield per mine.		
tuns.		cwt.	per cent.		cwt.
404	2·65	29·31	42·0	Limestone per tun	15·89
451	2·10	27·99	42·6	Burnt lime "	11·46

In the first two cases given, the consumption of fuel is practically the same, but the produce of Cleveland iron, when smelted with calcined limestone, is somewhat better. Discarding this cause of difference, the sole advantage from the use of lime is the increased make and superior quality of the iron. In the next two examples, an improvement in production and grade of metal is also observable, along with an economy of 1·32 cwts. of coke, part of which is probably due to the better yield from the ironstone (Cleveland), as well as to a somewhat superior quality of coke received at the works, when calcined limestone was being used. In none of these instances, judging by the relative qualities of burnt and raw limestone employed, has one half of its carbonic acid been expelled.

The apparent want of reconciliation between the theory and practice in the consumption of fuel, when using the flux raw or calcined, is, in my judgment, in a great measure independent of the imperfect expulsion of carbonic acid from the latter; and further, I am of opinion that a complete separation of this element would fail to effect, in a larger furnace, any appreciable good in respect to the coke required for this process."

SALE OF SEWING MACHINES.—From the *Sewing Machine Journal*, we learn that there were sold, during the year 1874, 602,074 sewing machines of the different American makes, and that, since 1853, when the first sewing machines were made, up to the end of 1874, there have been in the aggregate 3,785,968 made and sold. Quite a business.

The Fraunhofer Lines of Diffraction and Prismatic Spectra.

BY PROFESSOR JOHN C. DRAPER.

Having been engaged during the past year in making photographs of absorption spectra of organic bodies, in which a solar spectrum with Fraunhofer lines was formed by a diffraction grating, I have resorted to the following method of forming such solar spectra, a description of which may prove of interest to those who are experimenting in the same field.

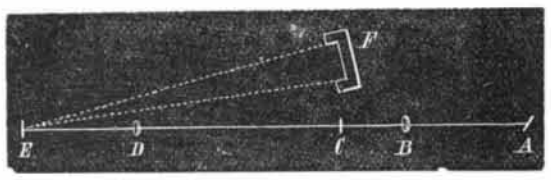
The grating generally used was made by Mr. L. M. Rutherford; it is ruled on speculum metal, 6,481 lines to the inch; it gives spectra by reflection. Other gratings on glass, now in my possession, give spectra by reflection and by transmission. The method answers equally well for both. It may be briefly stated as follows:

A beam of light is directed by the silvered plane mirror of a heliostat, A, into a darkened room.

It is received on an achromatic lens, B, 3·93 inches in diameter; focal distance from posterior surface, 23·50 inches.

A slit, C, is then placed within the focus of this lens, the distance being 18·86 inches from the lens, B.

After passing through the narrow slit, which is about 0·04 inch wide, the light is received upon a second achromatic lens, D, of the same diameter as the first, but with a focal



distance of 45·2 inches. The distance of this lens from the slit is 64·4 inches, and the focussing of the lines of the spectrum on a paper screen or on the ground glass of the camera is accomplished by moving the lens, D, nearer to or farther from the slit, C, or by moving the camera or screen, F, itself.

The grating, E, mounted on a suitable stand, is placed at a distance of 31·4 inches from the second lens. All parts of the apparatus being carefully adjusted, so that A, B, C, D, E are on the same horizontal axis, the grating is then arranged on its vertical axis, to throw the center of its reflected image on the opening of the slit, C.

The lines of the grating being accurately parallel to the sides of the slit, a series of beautiful spectra are produced on each side of the slit, any or all of which may be received on suitably adjusted screens, one of which is represented at F. In all of these spectra, if the slit has been very narrow, the prominent Fraunhofer, with numerous other lines, appear sharply defined.

Of the spectra described above, only the first, second, and third orders on each side of the image of the slit are available for general use on account of the overlapping of those that follow. Of those that are available, I have preferred to use the second order, since in this the dispersion is much greater than in the first, and by the apparatus described above a spectrum of a length of more than 11·8 inches is obtained.

For the projection of the prismatic spectrum a prism is substituted in place of the grating, when a very fine spectrum is produced, the focus of the violet end of which is very much closer to the prism than that of the red end.

In the diffraction spectra, also, it is necessary to vary the angle at which the screen is placed, to define sharply the lines at the extremities of each spectrum. In the spectra of the first order on each side, the screen is placed very nearly at right angles to a line drawn from the grating to *b*, in the spectrum. As each order in succession is examined, the divergence from this angle is greater and greater, and at the same time the focal distance of the lines meves nearer to the grating.

The lenses I have employed were those of a very fine photographic combination; they give with the rest of the arrangement a spectrum in which the definition of the lines is perfect, and they are present by hundreds. Though the lenses are 3·93 inches in diameter, only the central portion of each is used, a diaphragm with a circular aperture of 1·97 inches or less being placed in front of B.

To form the absorbent spectra of any organic substance, a suitable solution of the same is poured into a cell with parallel sides. This is placed at any convenient point between A and B, care being taken that the faces of the cell are at right angles to the course of the ray, A B. The slit may in this case be opened wider, when each spectrum will show the characteristic absorbent bands of the substance employed, the position being indicated (and if required, recorded) by their relation to the lines of the solar spectrum in which they are produced.

When the calcium or electric light is to be used for lecture room demonstration of diffraction spectra, the lens, B, should have as short a focus and as large a diameter as possible. The grating may also be so arranged on its vertical axis as to throw its image at a right angle to the line, B E, to be there received on a screen. Though by this device the spectra on one side of the image of the grating are greatly elongated and those on the other compressed, it presents the advantage of enabling the audience to see all the spectra at once, and also the optical contrivances by which they are produced.

AT Pribram, in Bohemia, the Adalbert shaft of the silver and lead mines has reached the extraordinary depth of nearly 3,300 feet.

Useful Recipes for the Shop, the Household, and the Farm.

Varnish brushes should never be allowed to touch water, as it not only injures the elasticity of the hair, but a resinous substance is formed in the hilt of the brush, which can never be thoroughly removed, and which will work out little by little when the brush is used, destroying the glassy surface which otherwise might be obtained.

Paint intended for outside work, which will not be protected by varnish, is mixed as follows: Crush the color if in lumps, and mix to a stiff paste with linseed oil, boiled or raw—the latter is preferable; then, if a dark color, add brown Japan or gold size, in the proportion of ½ pint to a gallon of oil; in a light color, use patent dryer in similar quantities.

A large stick of cypress timber will rot off cypress tenons, or tenons of any other kind of timber (if put together when the cypress is green), if kept under shelter. Cypress will dry rot itself, if over 15 or 18 inches square: and green oak of any kind, 12 inches square, will rot a dry 1½ inch pin of the same wood, or a pin of any other wood, if dry, and driven tight to exclude all air.

Horses will work much more easily, and lose less of their effective force, by working abreast, than when they are placed in single file. If four horses are to draw a load in one wagon, it is better to have a long double whiffletree, with a span of horses on each side of the tongue, than to have one span placed before the other.

A skillful sawyer, in sawing a log into scantling, which he knows will spring, will first mark off the ends into cuts; and then, after sawing once through on one side of the log, will saw a slab off the other side, and finish in the middle. By this means the lumber will be about as true as if the timber were not inclined to spring at all.

Chimneys are excellent lightning conductors. In view of which, it is recommended: First, that they be kept clean; then, that all the grates in a house be connected by means of a strong wire, such as is used for telegraph purposes, with a piece of metal in the earth, or with the iron gas or water pipes.

Veneered Diamonds.

The enterprising capitalists who are pecuniarily interested in the Keely motor will doubtless be glad to learn of another great discovery, which promises results certainly as astounding as those due to the "watery vapor." Abundant opportunities for investment are offered. The discoverer has worked twenty-eight years at the process, a little more than double Keely's time; and unlike the latter colossal genius, he does'nt keep the secret to himself, or lock it in the bosoms of a chosen few, but spreads it before an astonished world in this wise. Any body can try it for himself, and have a small Golconda in an incredibly short period of time. We extract from gigantic advertisements in the daily journals, the "Process of Producing the Parisian Diamonds."

"The body is of crystal, which is the hardest and best substance that could possibly be used for the purpose. Then, after the crystals are cut in proper shape, they are put into a galvanic battery, which coats them over with a liquid, that is made of diamonds which are too small to be cut and the chippings and cuttings that are taken off of diamonds during the process of shaping them. Thus all of the small particles of diamonds that have heretofore been comparatively worthless, can now, since this great discovery, be used to produce diamond liquid."

The Law of the Rail.

Some one, who has taken the trouble to post himself on the law governing railroad passenger travel, says that extra charges for failure to buy tickets are universally sustained by the courts, but there must be a full opportunity to buy afforded by the ticket seller. Passengers must show tickets when asked for. As to stopping off, there is only one decision, which is that a passenger cannot stop off, and resume his journey, without the previous assent of the company. As to the obligation of the road to furnish a seat to a passenger, a decision says: "A passenger who exhibits his ticket need not surrender it until he has been furnished with a seat." A railroad is not liable for things stolen out of a passenger's seat, there being no previous delivery to the company's servants; for the same reason the company is not liable for baggage in the passenger's own care. Passengers who neglect to look after their own baggage on arrival at their destination cannot recover it if it is lost without fault of the carrier. Baggage left in station houses for the passenger's convenience, after it has reached its destination, comes under a new class of rights and duties, the baggage master assuming the position of a gratuitous bailee, who only becomes liable in cases of gross negligence. The obligation of the railroad as carrier ceases when it has delivered it to its owner at the place of destination, or when he has had reasonable opportunity of receiving and removing it. It will interest sportsmen to know that they may recover for the value of dogs when they entrust them to baggage masters for hire because of their exclusion from the passenger cars.

Outdoor Amusements.

During the recent festival of the German turners in this city, a variety of curious gymnastic amusements were undertaken.

The competitive exercises on the horizontal bar attracted much attention, some of the contestants exhibiting great strength, ability, and endurance. There was also a swimming race in the East river. Twelve swimmers were taken in a tugboat nearly to Blackwell's Island (about 350 yards), and at a given signal all jumped into the water and struck out for the New York shore. After a few dozen strokes three swimmers became exhausted, and were picked up by the boats in attendance. Of the entire number only four swam to the shore. Another amusing feature, and one which caused a great deal of merriment, was boat tilting. Ten boats were each manned by one rower and another man, who stood at the stem armed with a long pole topped with rubber. As the two boats were rowed past each other, each man tried to push off his opponent into the water with his pole.

Common sense Ventilation.

"The best practical statement I have met about ventilation," says Colonel Waring in the last *Atlantic*, "was contained in the remark of a mining engineer in Pennsylvania: 'Air is like a rope; you can pull it better than you can push it.' All mechanical appliances for pushing air into a room or a house are disappointing. What we need to do is to pull out the vitiated air already in the room; the fresh supply will take care of itself if means for its admission are provided. It has been usual to withdraw the air through openings near the ceiling, that is, to carry off the warmer and therefore lighter portions, leaving the colder strata at the bottom of the room, with their gradual accumulation of cooled carbonic acid undisturbed. Much the better plan would be to draw this lower air out from a point near the floor, allowing the upper and warmer portions to descend and take its place. An open fire, with a large chimney throat, is the best ventilator for any room; the one half or two thirds of the heat carried up the chimney is the price paid for immunity from disease; and large though this seems, from its daily draft on the wood pile or coal bin, it is trifling when compared with doctors' bills and the loss of strength and efficiency that invariably result from living in unventilated apartments.

A Hen Crocodile.

A female crocodile, recently shot in Florida, measured ten feet eight inches in length, and presented many points of contrast with the other. Her teeth were regular and white and sharp. The mottled black and yellow of her back and sides were distributed evenly, the yellow rather predominating than otherwise; while in the case of the male, no part was yellow except the belly—the sides shading off into the lusterless black which covered almost all of the back and tail. The ovary of the female contained four hundred and twenty eggs, varying in size from a No. 8 shot to a hen's egg, and all perfectly spherical. It may be added, in passing, that the female crocodile lays twenty or thirty eggs at a time, which she puts in layers in a hole in the mud or sand on the shore, covering each layer with a coat of earth and reeds and grass. She then leaves the process of hatching to the fermentation of this mass, which reaches the right degree of heat in about a month's time.

Just So.

We have waited long and patiently, says the *Philadelphia Evening Bulletin*, for Keely, because he said he wanted time to make his engine and to secure himself by patent in Europe. Since the announcement was first made, he has had time enough to have built one of the pyramids of Egypt, and to have obtained patents from every government on the civilized earth. Therefore, if Keely does not soon place that engine on a railroad track, and run it over to New York with a spoonful or two of water, it will be only natural that the public should finally determine that the enterprise is a humbug. Perhaps we may save time and ease popular expectation by expressing that opinion now.

For the preservation of wood by means of copper salts, says M. Rottier, cupric acetate and indigo, though good, are too expensive. Heating wood after impregnation with copper sulphates does not give reliable results. Cachou can only be used under certain circumstances. Ammoniacal copper salts are, however, susceptible of very general application, and when applied have more permanent effects than those of other copper salts.

THE clay smoking pipes marked T. D., which have been in use longer than the oldest inhabitant, are made by Messrs. W. White & Sons, of Glasgow, Scotland, an honest old Quaker house which has conducted the manufacture for a century and a half. Over one million of these pipes are imported and consumed in this country annually.

Inventions Patented in England by Americans.

(Compiled from the Commissioners of Patents' Journal.)
From August 17 to September 8, 1875, inclusive.

ATTACHING HEELS TO BOOTS.—J. W. Brooks, Boston, Mass.
BEARINGS.—Lathrop Antifrictionate Company, New York city.
BUSTLES, ETC.—A. W. Thomas, Philadelphia, Pa.
CLEARING PIPES.—J. H. Hawley, Stapleton, N. Y.
COMBINED BEVEL, RULE, ETC.—W. Ascough, Buffalo, N. Y
CRANE.—I. Hahn, Pittsburgh, Pa.
DREDGING SOIL, ETC.—P. Cramer, Providence, R. I.
ENGINE AND METER.—J. S. Foster, Salem, Mass.
EXTENSION LADDER.—R. Gilchreest, Louisville, Ky.
IRON SHIP, ETC.—R. Powell, Washington, D. C.
KNITTING MACHINERY.—N. B. Westcott *et al.*
LIQUID METER.—J. H. Shedd, Providence, R. I., *et al.*
MATCH SPLINT MACHINE.—F. de Bowens (of Elkton, Md.), London En
PREPARING FIBERS.—C. C. Coleman, San Francisco, Cal.
ROLLING MILL.—I. Hahn, Pittsburgh, Pa.
SEWING MACHINE APPLIANCES.—G. H. Bishop, Newport, Me.
SHEET METAL BOX, ETC.—H. Martyn, Boston, Mass.
SINK TRAP, ETC.—F. Adee, Brooklyn, N. Y.
STEAM GENERATOR.—D. Renshaw, Cohasset, Mass.
STREET CAR.—A. S. Gear, Boston, Mass.
TCY.—L. Schmetzer (of Chicago, Ill.), Bothenburg, Bavaria.
TREATING BONE BLACK.—J. Gandolfo *et al.*, Brooklyn, N. Y.
TREATING PAPER, ETC.—H. Kellogg, Milford, Conn.
TYPE MAKING AND SETTING.—C. S. Westcott, Elizabeth, N. J.
UMBRELLA, ETC.—J. C. Hurcombe (of New York city), London, Eng and