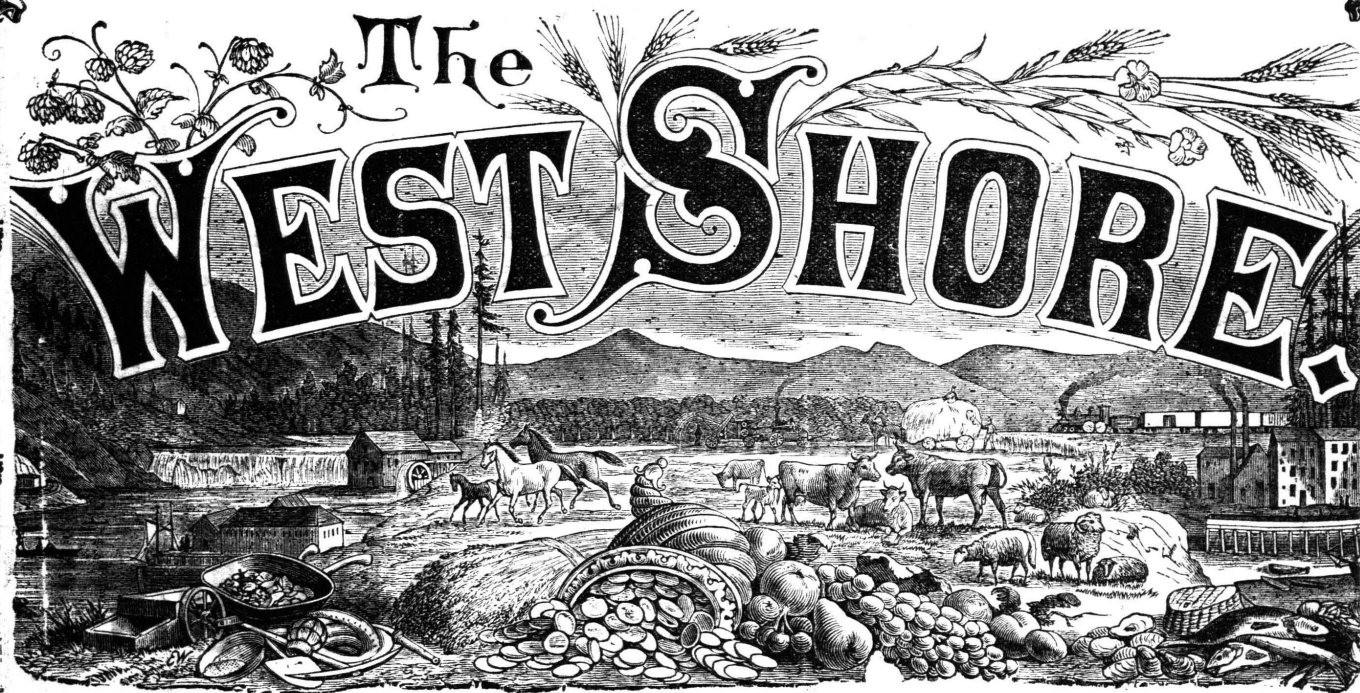


April, 1881.

Vol. VII.—No. 67.

Subscription per Year, postage paid \$2 00.
To Foreign Countries 2 25.
Single Copy 25.



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DEVOTED TO

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AND THE
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5 Washington St.,

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\$2.00. } 25 cts.

RESULTS OF VIVISECTION.

INTERESTING EXPERIMENTS.

PROF. MOTT SHOWS HOW PEOPLE ARE TAKING POISON IN THEIR DAILY FOOD—A PROLIFIC SOURCE OF DYSPEPSIA SCIENTIFICALLY DEMONSTRATED.

A series of highly interesting experiments with dogs have been lately made by Prof. Mott; and in the Scientific American of Feb. 7th a detailed account is given. The disclosures are so unpleasant and startling—coming home, as they do, to every one—that we believe they should be given the greatest publicity. The effort Dr. Mott is making to purify our articles of kitchen use should receive the support of every thinking man and woman. There has been too much indifference on this subject—an indifference that has resulted in Americans earning the title of “a race of dyspeptics.” Poison, year after year, is introduced into the stomach with a criminal disregard to consequences that is appalling. If every purveyor of domestic supplies will carefully consider the result of Dr. Mott’s experiments, as detailed in the Scientific American, one of the greatest, if not the greatest, of these evils will be corrected.

Dr. Mott says: “The introduction of alum in flour, for various purposes, has been a trick of the baker for the past 100 years. Fortunately for society, its introduction is limited now to a few unscrupulous bakers. In England, France and Germany it is an offense, punishable by fine and imprisonment, to use alum in any connection with articles of food. It should be so in America.”

The Royal Baking Powder Company of this city, a long-established corporation, celebrated for the absolute purity of their goods, some time ago commenced a vigorous warfare against many of their competitors who were indulging in hurtful adulteration. The contest excited great interest in scientific

circles, in which Prof. Angell, Dr. Mott and other leading lights took a very prominent part. The experiments of Dr. Mott are a result of this discussion, and go to prove conclusively that the most dangerous adulteration that a community has to guard against is alum in baking powder. In his paper the Doctor says: “It was with difficulty I found a suitable place to conduct the experiments, so that the animals would not disturb the neighborhood; but, through the courtesy of the Commissioners of the Dock Department, I secured a shed on their premises, foot of Sixteenth street and East river. This shed I had completely remodeled into a suitable house, having the dimensions of about 16x14x12 feet. Sixteen stalls were made inside, having the dimensions $3\frac{1}{2} \times 2 \times 2\frac{1}{2}$ feet. The bottom of each compartment was covered with straw; making a pleasant bed for the dogs. I then secured sixteen dogs from the Pound, which were all carefully examined to see if they were in a perfect state of health. None but the strong, healthy dogs were selected. The breed, age, food, color and weight of every dog was carefully noted. Each dog was then confined to a stall and securely chained, and they all received a number, from 1 to 16. I commenced my experiments on the 9th of September, and finished December 3d. My assistant was with the dogs from morning until night, and never left the animals without first securely bolting and locking the dog-house. No stranger was allowed to enter the house unaccompanied either by myself or my assistant, and the dogs never received a mouthful of food or anything else from any one except from my assistant or myself. I will now detail the result of my experiments:

“Dog No. 1.—Breed of dog, coach; age, 1 year; health, perfect; food, bread and crackers; color, spotted black and white; weight, 35 pounds; To this dog, on the morning of the 9th of September, were given eight biscuits, at 8:10 o’clock. The biscuits were made by myself, as follows: One quart sifted flour, 20 teaspoonfuls alum baking powder, 2 cupfuls water, 1 tablespoonful butter—

22 biscuits made, weighing 27 ounces; time of baking, 20 minutes.

“At 11:30, just three hours and twenty minutes, the dog was taken very sick, vomiting profusely; his vim and brightness of eye had departed, and he trembled considerably in his limbs.”

Experiments were then made upon three dogs, with biscuits containing only 10 teaspoonfuls of alum baking powder. The result indicated that some animals are more liable to yield to the effects of poisonous substances than others. When, on the other hand, three other dogs were fed with biscuits made with pure cream of tartar baking powder, no ill effects were experienced. They ate and ate with an evident relish, day after day, and even whined for more.

It was next necessary to discover what effect alum has on the solvent power of the gastric juice. In order to obtain some pure gastric juice, a curious device was resorted to. Dr. Mott sent several dogs to Professor Arnold, Medical Department of the University of New York, who inserted a small metallic tube directly through the skin and into the stomach of each one of them, when the dogs were in a perfectly healthy condition. Prof. Arnold sent to Dr. Mott some gastric juice, which was produced by tickling the lining of the stomach of the dogs with a feather or glass rod, which caused the gastric juice to flow out of the tube into a receptacle placed underneath the dog to receive it.

Dr. Mott, aided by Prof. Schedler, then began some experiments with the four samples of gastric juice which he had received from Prof. Arnold, to discover the effect of the gastric juice in which alum had been dissolved upon fibrine, a white, very easily digested substance, having a basis of coagulated blood. The fibrine was imperfectly digested, and the experiments were very important, as showing that alum can check the digestion of so easily digested a substance as fibrine. They indicate, therefore, how dangerous it is to introduce these two salts into our stomachs, if we do not wish to excite indigestion and dyspepsia. Further ex-

periments showed that the digestive power of the gastric juice is entirely destroyed by alum, so far as its power of dissolving the most indigestible substances, like the boiled white of an egg, is concerned.

Dr. Mott then determined to learn whether alumina could be found in the various organs of the body if a dog was fed with hydrate of alumina. He found a considerable quantity of the stuff in the blood, liver, kidneys and heart.

The Doctor goes on to describe the different symptoms exhibited by these dogs as they passed through almost every phase of animal agony until they were left in a complete state of physical prostration. To those especially interested in the details of this subject, the article in the Scientific American supplement will give most complete information, and we will spare the sympathetic reader the account of the sufferings of these dumb brutes.

Dr. Mott's conclusions, after making these experiments, are of vital interest to every one who either makes or eats bread, and therefore concerns all.

"These experiments," said he recently, while speaking before the American Chemical Society, "clearly demonstrate that the salts left in the biscuit when a cream of tartar baking-powder is used are perfectly harmless; but when an alum baking-powder is used, are very dangerous, for in every case where dogs were fed on biscuits made with such powders, the dogs were made very sick, causing them to vomit profusely, lose all energy, and show weakness in their limbs."

It is a clear and triumphant corroboration of the assertions of the Royal Baking Powder Company, and entitles them to the gratitude and support of the community they are endeavoring to protect. As they claim, and Dr. Mott has shown, bread made of alum is totally unfit for human or animal food. 'Tis true, in the bread of domestic consumption there may not be as large a proportion of baking powders as was in the bread used by Dr. Mott, and that accounts for the fact that the symptoms in the reader are not so well defined as they were in the experiments in question. How many there are of our immediate friends suffering from this evil, scientific investigation will alone reveal; but many a lingering and suffering invalid, with no defined idea of his trouble, can easily trace it to its source by stopping the use of alum powders, substituting some brand like the Royal Baking Powder, whose manufacturers

have a competent chemist in their exclusive employ, who rigidly analyzes every ingredient before its incorporation into their powder. The old cry of "honesty being the best policy" may be worn threadbare, but its truth will hold forever; and while adulterations and short weights abound, it is a pleasure to see at least one in the trade strenuously endeavoring to give full weights and pure goods.

ROGUE RIVER VALLEY, OREGON.

I. NUNAN.

Were the Indian of half a century ago to return to the home of his childhood, the beautiful valley of Rogue River, seat himself on one of the table rocks and view the surrounding country, what changes would greet his eye. The valley he so loved and admired for its many gifts in most luxuriant grasses, roots and innumerable quantities of game is no more the spot his thoughts longed to dwell upon. The progressive white man has taken possession and metamorphosed all with his many modern contrivances. To an Indian the sight would be anything but pleasing. From where we are seated, on the hill west of Jacksonville, the picture before us is such that one must be dull, indeed, to the beautiful in nature if he could not admire it. In the background of the picture and a little north of east, about 170 miles distant, we see the ever faithful sentinel, "Diamond Peak," silent and alone in his glory, covered in a garb of the purest white, glistening and sparkling in the bright sunshine. We turn to the right, due east, and see the guardian of our valley, Mt. Pitt or MacLaughlin, now enveloped in his wintry attire, waiting for the warm rays of the sun to allow him to cast off his mantle of white and appear to his children in his summer dress of green. At this writing a low hanging cloud, balloon shape (less the car), is hovering over and around the peak, deluding the observer into the belief that the Jacksonvillians are about to have a veritable bonanza in the shape of a smoking, burning mountain.

The valley and central figure lies quiet and serene in its beauty, dotted here and there with its many farms and farm houses, barns, etc. The slow-winding Bear Creek, wending its way from the south to meet the more grand and finer body of water, Rogue River. The connection is made under the shadow

of the lower table rock; from thence on the beautiful and majestic Rogue River takes its course westward, through canyons, over cataracts and falls, to help swell the mighty and placid Pacific.

In the foreground of the picture, and almost beneath our feet, we view with delight Jacksonville with its churches, Catholic, Methodist and Presbyterian, and many substantial brick structures, the most notable being the Masonic and Odd Fellows' Halls, Holt's Hotel and Orth's brick block. A little east of the town proper, on a natural elevation most suitable for the purpose, stands the district school house, with a most efficient corps of teachers, Prof. Merritt, Principal. A little south of the district school and fronting on one of the main streets is located the Sisters' school for young ladies; these comprise the educational institutions. All around us we view mountains and hills inclosing one of the most beautiful and lovely spots in Oregon or, we may say, on the Pacific slope; even at this writing, in March, all is clothed in green verdure. Could a Rubens, a VanDyke or a Kaulbach rise from his silent tomb with what delightful emotions he would view the landscape before him.

The town of Jacksonville, according to the last census, contains a population of 850 souls. It is well supplied in all branches of mechanical and mercantile pursuits. What we need is a banking institution of some kind to accommodate the growing want of the people of Southern Oregon. The town takes in an area of many hundred miles, commercially speaking; Lake, Josephine, and Jackson, and a portion of Siskiyou Co., California, with an estimated population of 15,000 persons, and were we blessed with a bank that would loan its money regardless of persons, providing their security were A 1, isolated as we are, the institution would prove profitable to the owners and an inestimable benefit to Southern Oregon and Northern California. Such an opening for a bank, national or private, does not exist elsewhere in Oregon. Should a competent person inaugurate an enterprise of this kind we believe half the capital necessary could be found in our midst. With the buying of gold dust, percentage on exchange and the amalgamating of the insurance business, life and fire, a permanent and most lucrative business would be the result.

WASCO INDEPENDENT ACADEMY.

We present our readers on this page with an engraving of one of the handsomest and best school buildings in the State—the “Wasco Independent Academy”—situated at Dalles City, in Wasco county. This edifice and the school now maintained in it are an illustration of what can be accomplished in a work which, though promising pecuniary advantage to no one, is felt by a community to be a social necessity. It is only a year since the project of building at Dalles an institution of learning was seriously entertained. Half a dozen residents of the place meeting casually, the practicability of such an enterprise was discussed in a general way, and it was agreed to hold a meeting of the people and ascertain whether there was a reliable basis in the sentiments of the community on which to attempt the raising of funds for a building. The meeting was held at the circuit court room and was well attended; the spirit of the meeting was so favorable to the project that its active promoters resolved to make a determined effort to carry it through to success. A committee, headed by circuit judge McArthur, was appointed to report a plan of organization which would avoid the legal difficulties and dangers and the inherent evils of a loan voluntary association, and at the same time secure the

institution against all temptations to get control of it for personal gain. This was admirably accomplished by the simple device of an ordinary incorporation under the general corporation laws of the State, with a provision and fundamental condition in the articles of the corporation and in the contract of subscription to the stock, that no dividend should ever be allowed upon the stock, but all income of the corporation, no matter from what source, shall go into a fund to build up and maintain the institution. Upon this basis the

corporation was organized in May, 1880, and before January 1, 1881, the splendid edifice was completed.

The building is of brick, with stone foundation, is two stories high and has four class rooms, with seating capacity for sixty in each room, besides four other rooms for recitation, apparatus, music, etc. it is hard finished throughout, and furnished in the very best style. The desks are of the pattern and make known as patent seats, which are used in the Park street school of Portland. The blackboards are of patent slating, and the walls are hung

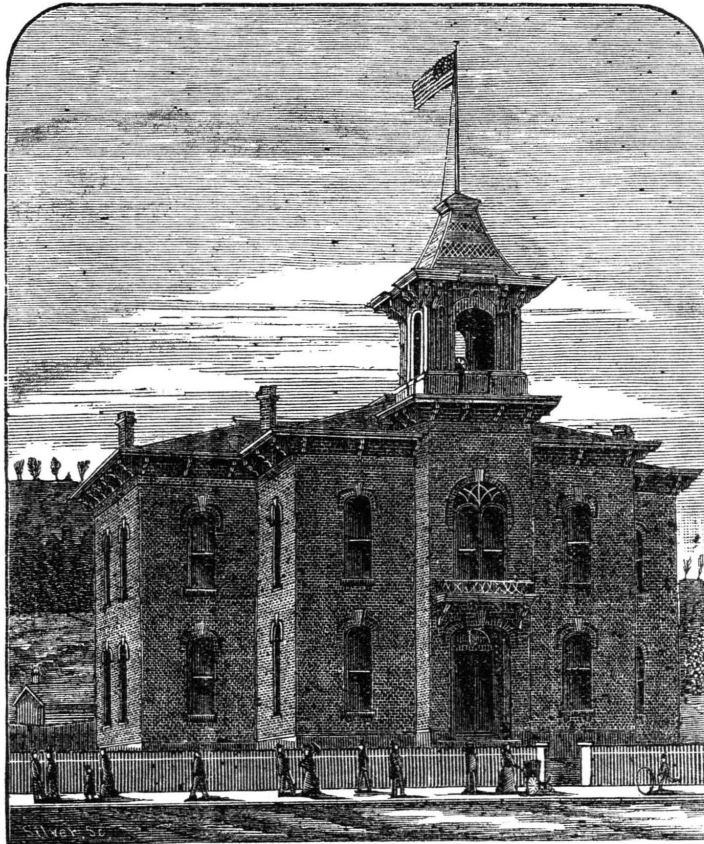
horse chestnut, etc. To all this the best is yet to be added. *The institution, completed with the very best and most improved appointments and appliances for educational purposes, does not owe a dollar.*

The school itself is progressing finely under the master hand of Prof. T. M. Gatch as principal—as any school does where he is in charge. All branches are taught there which are taught in any of the other institutions of learning in the State, and the prospects are that this school will, at the opening of her next school year, stand equal in rank with the leading foundations of the kind in the State.

The people of Dalles have done well in this great work, and their efforts have been recognized by the Legislature, not only in the enabling act above referred to, but in a present of the old U. S. mint property, out of which it is hoped the school will realize a handsome addition to its present financial resources.

A man who passes through this life without marrying is like a fair mansion left by the builder unfinished. The half that is completed runs to decay from neglect, or becomes, at best, but a sorry tenement, wanting the addition of that which makes the whole both useful and comfortable.

A very absent-minded gentleman being upset by a boat into the river, sunk twice before he remembered he could swim.



WASCO INDEPENDENT ACADEMY, DALLES, OREGON.

with maps, charts, etc., for use in the way of instruction. The building is heated by the best quality No. 2 furnace, with a complete system of warming and ventilation registers. It is located on a beautiful plateau at the north edge of the town, overlooking town and river, and presents a very imposing appearance from the river front. It is upon grounds given by the city authorities, under an enabling act of legislation. These grounds, amounting to about 6½ acres, are neatly fenced and set with trees—poplar, maple,

No matter how industrious or economical a young man is, his endeavors to save are wasted if he has a careless wife. He might as well be doomed to spend his strength and life in an attempt to catch water in a sieve. The effort would be hardly less certainly in vain. Habits of economy; the way to turn everything in the household affairs to the best account—these are among the things which every mother should teach her daughters.

Ammon's Cough Syrup never fails to cure if used in time.

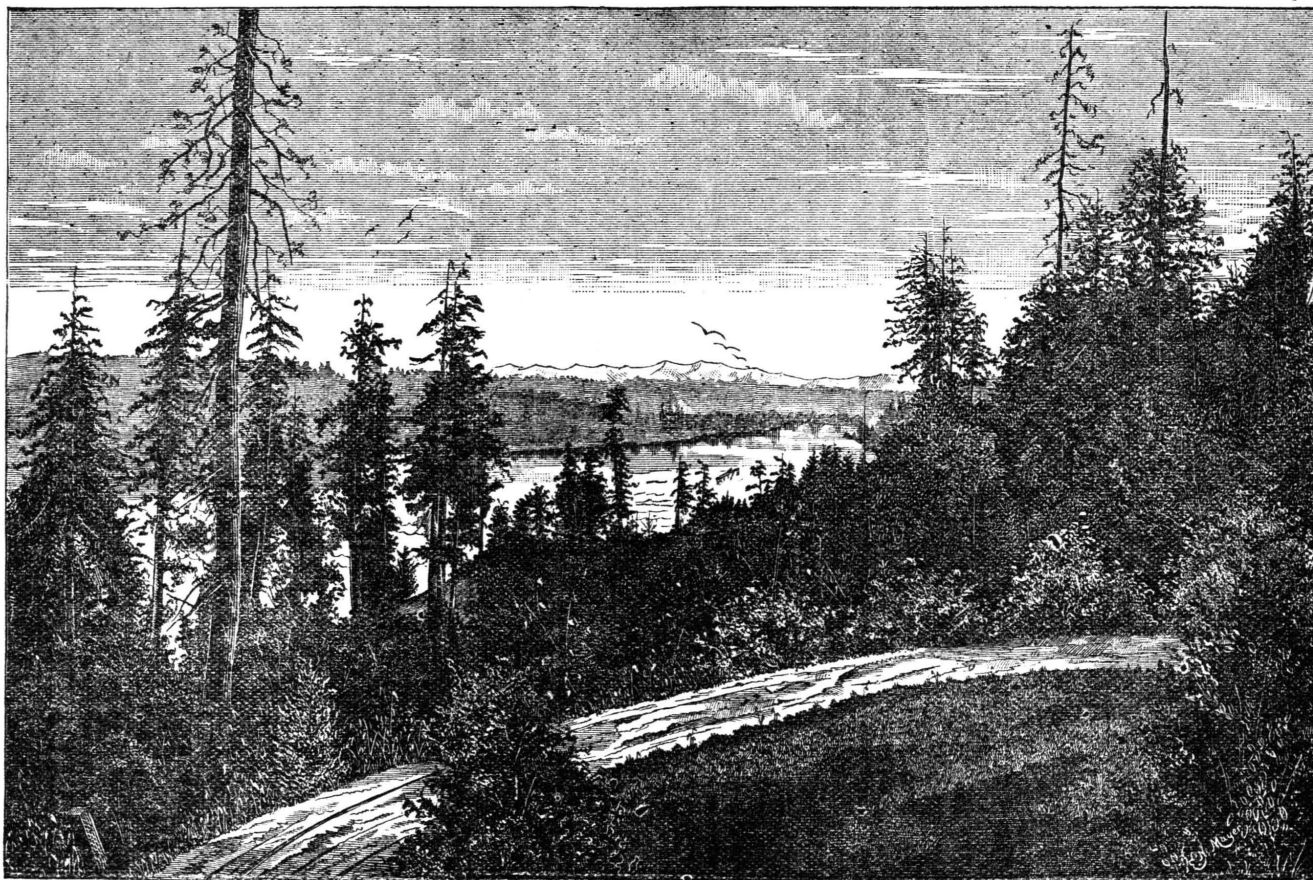
OUR HOME SCENERY.

On this and the opposite page are illustrations of scenery right at our very doors. Few of our residents really appreciate our home scenery, or, if they do, are so used to it that seldom if ever do they express any admiration. A captain of one of the ships now in port who has been over more than one-half of the world, assures us that never in all his travels has he been to a city as large as Portland where so much of the grand and picturesque in nature is to

lines of the numerous schools and other large buildings. Across the river as far as the eye can reach, up to the very top of Mount Tabor we view the many fine farms of our well-to-do agriculturists. The first fine day take your wife and children, a well filled lunch basket, walk or drive out on the White House road, spend the day under the grand old firs, listening to the music of the birds, and the murmuring of the gurgling brooks, and in the cool of the evening come back to town, and you will say with us, that Portland's sur-

THE ANGLING SEASON.

Now that spring has fairly opened and the geese are wending their slow flight to the frozen pole; now that the willow buds are yellow and the frogs have begun their vernal concerts in the meadows; now that the snipe are winging their zigzag flights with querulous bleatings and the pheasants are drumming in the gloomy tamarack thickets, we are reminded that the trouting season is at hand. We snatch down the old and trusty rod from its hooks over



VIEW ON THE WHITE HOUSE ROAD, NEAR PORTLAND—LOOKING EAST.

be seen, by simply stepping to the window of your residence.

Our views are taken from the highlands west of the White house road, and any one visiting the locality will admit that nature has been here lavish indeed in her gifts of the picturesque. River, hills, dense forests and snow-capped mountains greet the eye in all directions. Here and there may be seen the thrifty orchards and well kept gardens of our population; nearly four miles distant, we discern the steeples of Portland's many churches and the out-

roundings offer many inducements to spend pleasant days in innocent, health-giving amusements, if we but take advantage of nature's lavish gifts.

A house and lot will be deeded free to any enterprising merchant who will start a store at Lidiaville, in the Little Potlatch country, Idaho. This is a fine location, being in the midst of a magnificent farming country, 20 miles from Lewiston, 19 miles from Moscow, and 6 miles from Genesee. The town is newly located, has a postoffice, brickyard and blacksmith shop, but no store.

the mantle and, more from gratitude than thrift, declare it good for another season. A new ferule here, and perhaps a new lancewood or greenheart tip, and the trusty servant is once more in our grasp, good as new and better liked than ever.

We confess to a weakness for a day beside the brawling Clackamas or the foaming Parrott creek; for a hard tramp over fallen forest giants and through the swift fords where the speckled beauties feed; for a ten minutes tussle with a two-pounder that

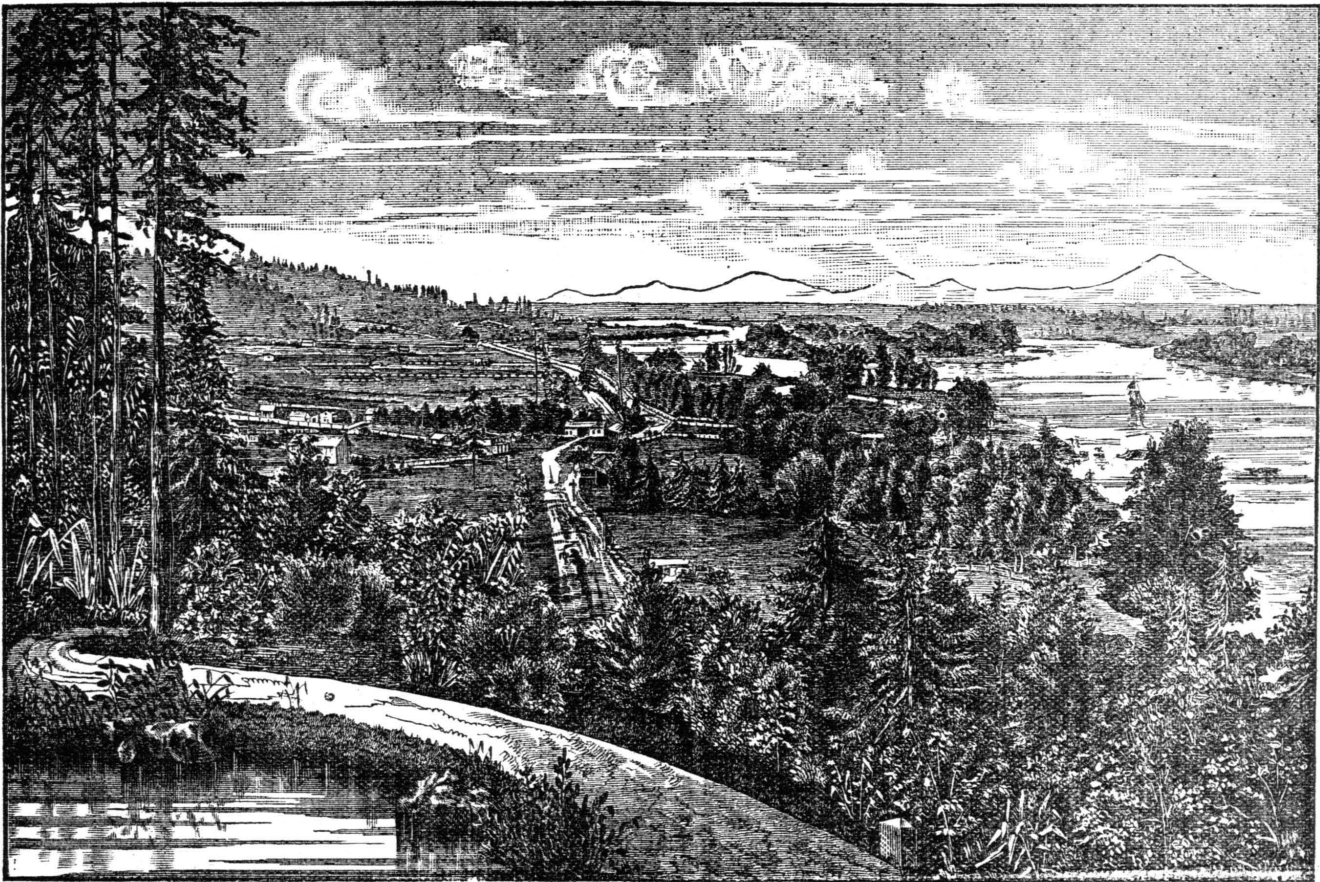
snatches out half-a-hundred yards of line and sets your reel to singing a ditty before he turns up his panting sides against the gravelly beach; for a morsel of cold fowl and a pint of Krug at noon, beneath some giant fir that croons its anthem of peace over your head, and for the pipe of *dolce far niente* that follows the meridian snack. To all these vices we plead guilty for more than thirty years, both as principal and accessory.

Of all fishing, that with the artificial fly is the only real sport for gentlemen.

are but six artificial flies that are available for the Oregon streams from March to July, and you need not waste your money on others. Use them in the order named, tying the first as a "stretcher," at the end of your leader, and the other two at intervals of fourteen inches above it. For March and April, to the 15th of the month, use black gnat, coachman and yellow-bodied professor; for late April, and the whole of May, a brown hackle, grizzly king and cow-dung fly; in June try a palmer, brown hackle and blue professor. By the time that the red ibis and yellow hooker are the only killing flies

of leisure and a plethoric bank account, go over to Tacoma and try Carbon creek or Chambers' lake now, and in July don't fail to take in the gorgeous McKenzie with its snowy banks and its crystal springs. The editor wishes you lots of sport.

If you think this is not complete without a word as to the rights of the inner man, permit us to give you a hint or two in gastronomy. If the trout are plenty, sort your fish for the camp table, frying only those less than five inches



VIEW ON THE WHITE HOUSE ROAD, NEAR PORTLAND—LOOKING NORTH.

Bait fishing bears the same relation to it that glass-ball breaking bears to the woodland quest of snipe or quail; and the man who carries worms or beef-steak in his pocket during the trouting season will also be found in August peppering the duckling mallards or ground-shooting the half-fledged quail that chirp from beneath their mother's wings in the oak coppices. But your real old thoroughbred who carries his "leaders" wound on his hat band, and uses nothing else, is the heir-at-law to honest Izaak Walton and deserves every fin that falls into his well-stuffed creel.

Within our own, experience there

—say in August—the trout is spent with its work of reproduction and affords neither good food nor good sport.

Perhaps our readers would like to be directed to the best fishing grounds? If so, we can only repeat the homely adage of the showman, "You pays yer money and yer takes yer choice." It depends a good deal upon the length of your holiday and purse. If your time and money are limited, try the Clackamas or Abiqua, or the grand lakes of Skamania. If you have plenty

in length, and using nothing but sweet oil or dairy butter for that purpose. Hog's lard is beastly, and there is no reason why you should impregnate the most delicious of all game fish with the essential oil of pig. From five inches to eight, the broiler should be used, buttering your fish on a hot plate and sprinkling them with chopped sorrel or parsley. Above eight inches, the trout should be stuffed with cracker crumbs and onions and rolled in brown paper, to be baked in the ashes of your camp fire.

AN OVERBURDENED CONSCIENCE.

PORTLAND, April 22d, 1881.
TO THE EDITOR OF THE WEST SHORE:

It is never too late to do good, even though one may have led a previously vicious and unprofitable existence, and it is with this feeling uppermost in my heart that I sit down to unlimber an overburdened conscience.

I was born in Connecticut and received the benefits of a good common school education, coupled with that wholesome tuition in religious matters which is a part of New England homestead life. Had my revered parents ever entertained one thought that their son would have entered upon a vocation which though not amenable to criminal prosecution still merits all the censure of just men they would hardly have watched over my cradle with such fond solicitude. Scorning all the temptations to become a burglar and a forger which beset my path when I first arrived in Oregon, in 1872, I became a dairyman.

At first I sold "straight milk" from seven fine cows, purchased by the savings of my wages as a laborer in Yamhill county. But as the demand for the lacteal fluid increased I was suddenly taken with the desire to become as wealthy as D. O. Mills, the great swill-milk apostle of San Francisco, whose cans and pumps have made him a successful railroad contractor in British Columbia and an opulent telegraph speculator in New York. It grew upon me from day to day till I finally bought a rotary pump and began obtaining money through false pretences.

To aid me in this remorseless career of crime I spared no pains that ingenuity could devise. The white cliffs of Dover yielded their chalk to color the insipid fluid for which the average verdant Portlander paid me four bits per gallon. The oat fields of Polk and Marion contributed their glutinous meal to assist the work of dissemblance. And even the little calves which patriotically shed their blood for their country's *weal*, also parted with their brains which I powdered up and mixed with the pellucid waters of the Tualatin, that my customers in the Webfoot metropolis might have milk in their coffee.

The cheese which I produced was a wonder of imperviousness to the trenchant blade of the alleged servant girl, as it were. Had the devoted battle-

ments of Sumpter been constructed of that impenetrable material the Gascon swash buckler, Pierre Gustave Toutant Beauregard, would have seen his iron missiles hurled back harmless from its (Sweitzer) casemates and felt that his hopes of immortality were nipped in the bud. And the only mistake of the illustrious Ericsson was that he did not use my Wapato cheese for the defensive armor of his monitors. I have seen my cheese tested thoroughly by rats—and when I say "rats," like Col. Jack Gambill, I mean all the rats—and have beheld the ambitious rodents retire from the contest as sad examples of that vaulting ambition which overleaps itself. I sold this cheese for Cheshire, but a ship carpenter who purchased some of it remarked that "planksheer" would be a more appropriate name for it. But as he was of Holland ancestry I forgave the covert sneer. He converted it into cork fenders for river steamers for which purpose it was a marked success.

And then the butter which I made. It was fair to look at in the cool days which preceded the vernal equinox, but when the August days of canine rabies came around I could say with Hamlet's uncle (so called because the Prince of Denmark was given to spouting at his residence), that "it smelt to Heaven." It contained some cream, of course, but it might as well have been cream of tartar as anything else. Some censorious people would have called it "bull butter," I suppose, but even when butter is made from cream, which practice is already ranked among the lost arts, the proprietor of the powder horns and other jewelry is but an indirect contributor to the grand result. Hence my fervent protest in behalf of the bull. Let the cows bear the blame. In matters like the Christiancy scandal it is the way of the world to "stone the woman and let the man go free."

Trifling causes often lead to total revolutions, and my evil career was changed by a very unimportant occurrence. Last Summer I was coming down the Columbia on the R. R. Thompson, in company with some sixty or seventy other passengers. Unfortunately I missed getting a seat at the first table and was obliged to take breakfast with several persons who paid for their meals. Opposite me sat a man whose features betokened that he

was of foreign birth. In fact, I think he was a Missourian.

He was about to drink a cup of coffee and noticed that the fluid wore its normal color. He called the waiter and said:

"Please get me more milk."

"Can't do it, sah," replied the son of Ham, "de milk's all out."

"But haint yer got no more down in the cellar, Snowball?" pleaded the disciple of Pap Price.

"I done tole yer de milk all used up at de fustest table," retorted the Louisiana Returning board.

"Look a here, contraband, suppose you ch-a-lk us out a little, can't yer?"

The pangs of a guilty conscience smote me to the quick. I knew he meant the remark for my ears, for he looked at me instead of the unbleached American. Instantly my resolution was taken, and I was determined to lead a more honorable life, if it were even not so profitable. I came home and sold off my cows and pump to a blarsted Englishman, who put up a sign on his front gate "Milk of the First Water sold here." He was an unsuccessful diamond hunter from the Cape of Good Hope, and if he don't take down that sign he'll be walking around with an alpaca duster on, next Christmas day.

I feel already a lighter heart and a clearer conscience. With the money realized from the sale of my dairy I bought two picks, three crowbars and a ton of giant powder, and am now an honest miner. I am engaged in running a tunnel under First street, the alleged terminus of which is under the vault of the First National Bank. If there is no Failing in my undertakings, I shall soon be in possession of countless shekels, enough to enable me to live upon Dry Monopole and Eastern oysters for the rest of my days. Then I can take little children on my knee and inculcate into their youthful minds the lessons contained in that sublime maxim of Rochefoucauld, that "half a loaf is the best policy, and honesty is better than no bread."

Yours, truthfully,

A REFORMED DAIRYMAN.

We put up with folly more patiently than we do with injustice.

Much as he loves roast beef, John Bull is continually getting into Irish stews.

HOLSTEIN CATTLE.

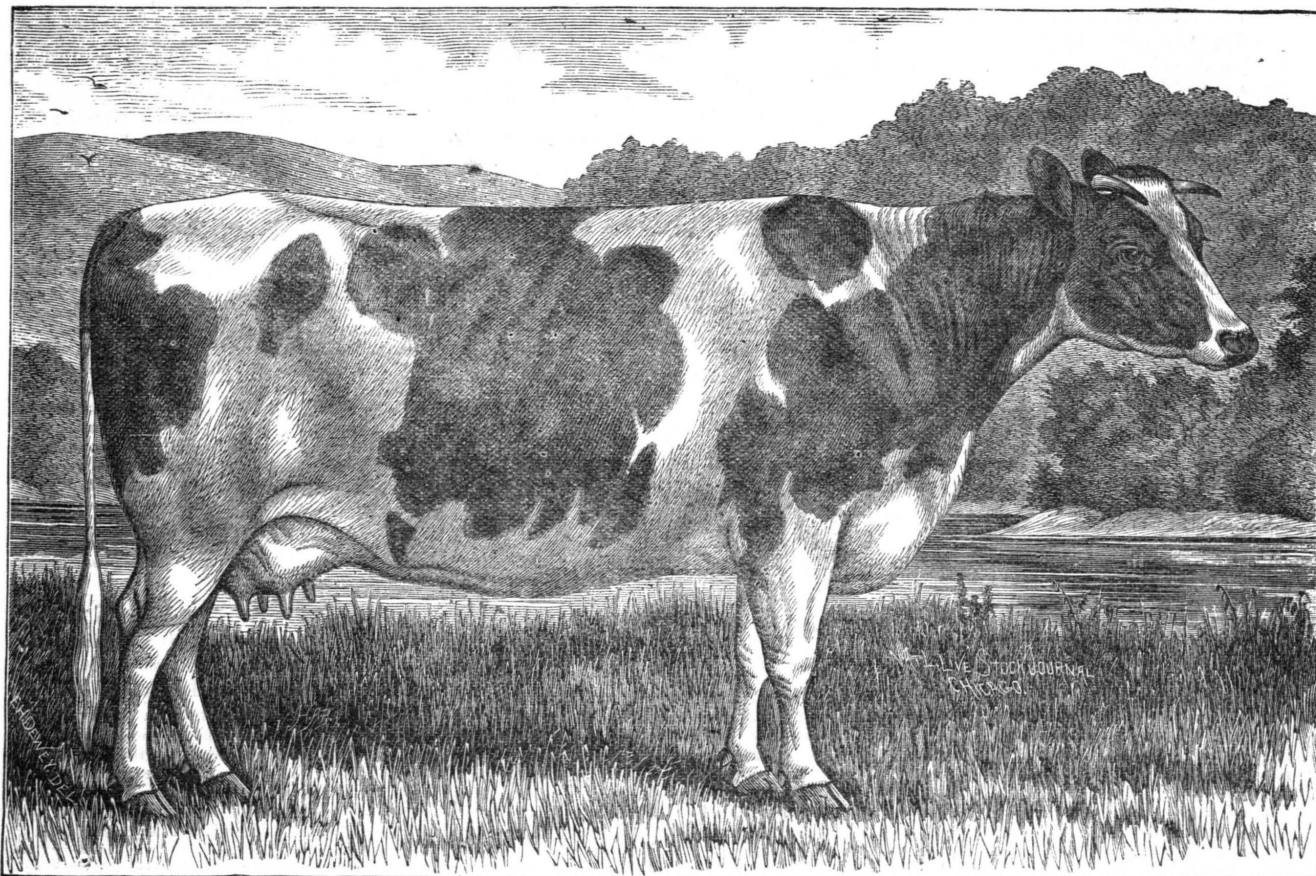
In our former article on the Holsteins we made a few general remarks upon the characteristics of the breed, and gave a portrait of a fine bull, a typical specimen of his kind. At this time we would speak especially of the Holstein cows. In them lies the value of the breed, for the Holsteins are pre-eminently dairy cattle.

The points which are well assured concerning Holstein cows are these: Milking capacity and disposition, from which result a yield of milk far greater than from the common cows of the country; excellent "staying qualities" by which the milking season is prolonged well along to the following calving; large size and disposition to fatten when dried off, thus making a large amount of good meat when turned off from the

contrast of jet and snow. An animal with these colors upon a green pasture makes a striking picture, perhaps a startling one to those who are accustomed to the reds, roans, fawns and grays of other breeds.

SUGGESTIONS CONCERNING LONG LIFE.—If anyone could furnish the world with a medicine which would insure a long life, there is no end to the demand he would have for his drug. The *Herald of Health* thinks he would need many factories to make it, and many banks to hold the money he would receive. Fortunately, there is no such medicine, and so the world will have to get along in some other way. Some time ago the French government sent a circular letter to all the districts of that country to collect information as to those conditions

SMOKER'S CATARRH.—Habitual smokers are notoriously liable to colds in the head, and bronchitis and other congestive affections of the air-passages. On this subject Dr. J. F. Rum-bold says: "The congestion occasioned by the action of tobacco on the mucous membrane of the superior portion of the respiratory tract resembles, in many respects, the congestion resulting from the effects of a cold, and, like the effects of a cold, some of its effects are transitory and some are permanent. The local effect of tobacco on the mucous membrane of the nose, throat and ears is as predisposing to catarrhal diseases as inefficient and insufficient clothing in the case of females. The local effect of tobacco on the mucous membrane of the superior portion of the respiratory tract causes a more permanent relaxation and congestion than any



HOLSTEIN HEIFER, "MINNIE WINKLE."

dairy. These essentials of a profitable dairy animal are supplemented by health and vigor of constitution, beauty of form and gentleness of disposition. All these things are in accordance with our own observation of the cattle at the East, and with all the experiences we have heard or read of them. For these reasons they are now coming into prominence among the dairy producers of the East.

H. C. Hoffmann, President of the Elmira, New York, Farmers' Club, said in a speech before that body that he has one cow which gave an average of 10,092 pounds of milk per year for four consecutive years, and another which gave 11,680 pounds for three consecutive years. There are many such instances which might be cited relative to the milking qualities of these cows.

The engraving which we have used to present to the eye the form of the Holstein cow, represents a heifer called "Minnie Winkle," owned by George E. Brown, of Elgin, Ill., a leading breeder and importer of Holsteins. Her colors, as is characteristic of the breed, are a brilliant

of life which seemed to favor longevity. The replies were very interesting, but on the whole rather monotonous; and the general result is that longevity is promoted by great sobriety, regular labor, especially in the open air, short of excessive fatigue, easy hours, a well-off condition, a philosophical mind in meeting troubles, not too much intellect, and a domestic life. The value of marriage was universally admitted, and long-lived parents were also found an important factor. A healthy climate and good water were mentioned. All this agrees with common sense, unless the idea that the intellect is a hindrance to longevity be considered unreasonable, and we know that some of the most intellectual men have lived to great age.

A NEW CHINESE ALPHABET.—Bishop Eligio Cusi, at Chang-Tong, in China, has invented an alphabet of 33 letters, by which, it is said, all the sounds of the Chinese language can be represented. The characters used by the Chinese number 30,000.

known agent. As tobacco depresses the system while it is producing its pleasurable sensation, and as it prepares the mucous membrane—by causing a more permanent relaxation and congestion than any known agent—to take on catarrhal inflammation from even slight exposure to cold, it should require no farther evidence to show that its use ought to be discontinued by every catarrhal patient.—*British Medical Journal*.

EGGS VS. MEAT.—According to Dr. Edward Smith, an egg contains 15 1/2% of carbon and 2% of nitrogen. Another writer estimates that the value of 1 lb. of eggs, as food for sustaining the active forces of the body, is to the value of 1 lb. of lean beef as 1,584 to 900. As a flesh producer, 1 lb. of eggs is about equal to 1 lb. of beef.

THE NEXT TRANSIT OF VENUS.—The French Academy of Sciences has appointed a commission, under the Presidency of M. Dumas, to make the necessary arrangements for observing the transit of Venus in 1882.

THE DE BAY PROPELLER.

Since the first introduction of the screw propeller, innumerable modifications of the original idea have been made, yet it is admitted that with the propellers in ordinary use, the full efficiency is not utilized. Among mechanical appliances for motive force, none has been more closely studied than this, yet the results of these studies have not been as satisfactory. When the De Bay system, which it is the purpose of this article to describe, was devised, it was so great a departure from custom and theory that few believed any great advantage would result. The system has gradually developed, however, from theory to experiment, from experiment to practice, and now even such an authority as *Iron* is forced to admit that the results of practice, as far as they have gone, stamp the invention as an important practical advance in screw propulsion.

The invention dates back no further than 1876. In that year Mr. De Bay took out a patent for a new form of propeller by means of which he designed to obviate the loss of power caused in the action of ordinary screws by the tangential current thrown off by them. This his invention claims to effect by the employment of two screws working in opposite direction, the blades of each screw having portions cut away to permit of the projections on those of the other screw passing through them. Our engraving which represents the propeller as fitted to the s.s. *Cora Maria*, illustrates the manner in which this is effected. The currents set in motion by the one screw are met by those produced by the other, the result being that the whole body of water is thrust directly astern in a line with the axis of the ship. The different motions to be imparted to the two screws must, in all cases where duplicate engines are not provided, necessitate the use of gearing; and against the prejudice that has so strongly prevailed to the employment of such an arrangement on board ship Mr. De Bay has had to struggle for some years. When he first submitted his invention to the notice of leading marine engineers and scientists, he was met not only by the objection to gearing of any description, but also by opposition on the ground taken by most of them, whose views were that the propeller itself was so weak that it would not bear any rough usage, such as it would be sure to meet with in a sea-voyage. He was also told that, granting its immunity from such dangers, it would be almost certain to be fouled by anything floating with which it might come in contact.

There were, however, a few less prejudiced persons who looked upon the invention with more favorable eyes, and in 1878 the company which had been formed for its development resolved upon having a series of trials made with the steam-launch *Eagle*, which was fitted with the propeller, and they entrusted the experiments to Mr. Folkard, M. Inst. C. E. The results reported by that gentleman induced the directors to try further experiments on a larger scale, and a screw collier, the *Elaine*, of about 600 tons burden, was fitted with the De Bay propeller, and made a successful run through rough weather from the north of England to the Thames. On her arrival there, however, it was found that the gearing had been so badly made that it was impossible to continue to drive the propeller with it.

The directors then had a series of trials of models conducted by independent and disinterested experts, in order to test the power of the De Bay propeller against that of the best known form of the ordinary screw. The result of these experiments showed a gain of 40% obtained by comparison with a model of the Griffith screw as fitted to the *Lord Warden*. So encouraging was this result that the steam yacht, *Isolair*, of 40.37 tons and 20-horse power, was hired and fitted with the De Bay propeller and improved gearing. The results of the trials conducted by

Mr. Folkard as the company's consulting engineer showed a superiority over the ordinary screw equivalent to a saving of nearly 30.5% in coal consumption. It was then decided to give the propeller the crucial test of a long ocean voyage in a large ship, and the *Cora Maria* was selected for the purpose. Her length is 235 ft.; main breadth, 31 ft. and depth 18 ft. 3 inches. She is fitted with two compound, inverted, direct-action, surface-condensing engines. The cylinders are 28 inches and 54 inches in diameter respectively, with a length of stroke of 3 ft., her power nominal being 110-horse power; her tonnage, net register, is 831 tons; displacement on 18-ft. mean draft, 2,800 tons; her ordinary screw had a diameter of 13 ft. 2½ inches, and a mean pitch of 19 ft. 6 inches; her De Bay propeller has a diameter of 11 ft., and a mean pitch of 18 ft.

A series of trial-runs was made with her at Cardiff last autumn, in order to obtain data as to her speed with the ordinary screw with which she was then fitted. These trials having been concluded, she was fitted with the De Bay propeller, as is illustrated in our engraving. The trials which followed gave very remarkable results, as will be seen from the following comparative statement, which we extract from Mr. Folkard's report:—

Four runs over course of 21-fifth miles, two with tide and two against. (Force of wind two to four.) Sea calm. The figures in the first column show the results of a trial made on the 10th of July, 1880, with the ordinary screw; and those in the second column the result of a trial made on the 10th of August, 1880, with the De Bay Propeller. Force of wind, three.

Total revolutions on 4 runs.....	4,279	3,314
Average do. per minute.....	66.32	65
Steam-pressure (average on 4 runs).....	74.7	74.5
Vacuum do.....	25.58	24.25
Indicated horse power.....	584.51	585
Time	Min.	Sec.
1st run, with tide.....	12	5
2nd " against.....	20	27
3rd " with.....	12	3
4th " against.....	19	56
Speed	Knots per hour.	Knots per hour.
1st run.....	10.924	14.5
2nd ".....	6.450	7.9
3rd ".....	10.954	14.5
4th ".....	6.620	8.1
Turning the circle	lbs.	lbs.
Steam-pressure.....	72	69
Vacuum.....	25	24.5
Revolutions.....	64	61.5
Time	Min.	Sec.
To port.....	4	44
To starboard.....	6	51

Almost immediately after her trials with the De Bay propeller, the *Cora Maria* left for Alexandria and the Danube—Mr. Hiscock accompanying her as the engineer nominated by the company to watch and report on the working of the propeller and gearing during the voyage. The gearing with which she was then fitted, and which had been designed by Mr. Hiscock, failed to give satisfaction—not, however, from defect in design, but from faults arising from too hasty construction.

During the voyage to Alexandria, with 1,700 tons of cargo, thence light to the Danube, and home with a heavy freight of grain, that gentleman reports the propeller never to have caused him any trouble, and the saving of fuel he was able to compute, fully bore out the results obtained at the trials at Cardiff. The form of gearing adopted was considered to have proved itself unreliable; and Mr. Hiscock, on his return, designed a set of mitre-toothed gearing. The under shaft, which is of steel, and carries one of the screws, is a continuation of the main shaft, though of less diameter; and it passes through the hollow shaft of phosphor bronze carrying the other screw. The first-motion wheel is keyed on to the main shaft, and transmits a reverse motion to the third-motion wheel on the hollow shaft through the intermediary or second-motion wheel.

All these wheels, which were of three ft. six inches diameter, were cast of crucible steel; and all their bearings were upon a solid cast bed-plate firmly seated on the frames of the ship.

With this improved gearing the *Cora Maria* was fitted when she returned from her second voyage to Bremerhaven and back, on which the propeller was tested severely by meeting in the

northern seas with the most tempestuous weather Captain Cawley, her commander, had ever experienced. Taking on board, at Cardiff, a cargo of coal of over 1,700 tons, the *Cora Maria* left that port for the Thames on the 6th of last month, and met on her journey up channel with the heavy storms which raged on the 7th and 8th of that month. Although considerably injured in her upper works by the force of the sea, the ship made a good run round to the Thames, beating all the steamers which started with her. A few days after her arrival, a large party of engineers and gentlemen connected with the shipping interest were present on board to observe the behavior of the propeller during a run from Gravesend to the Maplin and back. On this occasion the verdict was that there was a total absence of the vibration caused by ordinary screws, no stern wave or wash was perceptible, and the motion more resembled that of a sailing ship than that of a screw-steamer. The vessel's speed, as far as it could be tried in a heavy tideway and shallow water, fully bore out the results of the Cardiff trials.

The report of their consulting engineer has satisfied the directors that the De Bay Propeller Co. that owing to the success of the new gearing they have no further difficulties to overcome. During the trial on the Thames just referred to, although almost new and severely tried by the passage from Cardiff, it worked smoothly and without a sign of heated bearings. The owners of the *Cora Maria* are now so satisfied of the advantages of the De Bay propeller that they are taking steps to have it fitted to other vessels of their fleet. As further experience demonstrates the advantages and reliability of the system, we may expect that an invention which claims to have saved—as in the case of the *Cora Maria*—nearly 50% of fuel (even if that instance should prove to be exceptionally favorable) must sooner or later be widely adopted. The gain to commerce with such conditions will be so apparent to our readers that we need give no figures to illustrate it, and, after running nearly 12,000 miles of ocean journey without the least mishap, Mr. De Bay has fully removed the grounds for the fears expressed as to the weakness of his propeller.—*Mining and Scientific Press*.

THE first iron bridge built in Idaho has just been completed across Snake river at Blackfoot. It is composed of five spans, each 100 ft. in length, while on the east side is about 60 ft. of approach built of timber, and on the west side about 25 ft., making the entire bridge 585 ft. in length. There are six piers or cribs, which are built of heavy timbers 12 inches square and filled with rock, over 100 cords of rock being used for that purpose, the weight of the cribs being estimated at 75 to 125 tons each, besides the weight of the bridge.

ENDOWMENT OF SCIENTIFIC RESEARCH.—At the recent anniversary meeting of the Royal Astronomical Society of London, in addition to the ordinary business, a resolution was carried by a large majority to the effect that a general meeting should be held within two months, to take into consideration the question of the endowment of scientific research, and to express the feeling of the society on the subject.

BLEACHING ALBUMEN BY MEANS OF ELECTRIC LIGHT.—The albumen, from which the blood corpuscles have been entirely removed, is subjected to the action of an electric light, the rays of which are properly collected by means of lenses, etc., and will be bleached within 24 hours. The albumen may be in a dry or fluid state.

ELECTRIC LIGHTHOUSES.—The French government proposes to employ the electric light in 42 lighthouses along the coast, where oil has till now been used. Up to the present time there are but seven electric lighthouses in the whole world, three of which belong to France.

THE OCCIDENT AND THE ORIENT.

The view which we present on this page is interesting in showing to those who have never visited Asiatic countries the effect produced by planting occidental architecture on oriental soil, something like the scene in the engraving may be observed in many ports on the east coast of Asia, where foreign nations have gained access, and established their Government offices and trading establishments. There is something incongruous in seeing bits of Grecian and Norman architecture, surrounded by people in Asiatic costumes, and looking down upon waters covered with Asiatic ships. It is an item of progress of European ideas which the designers or the old classic

AMERICAN TRADE WITH MEXICO.

Tucson, which has been the market to supply the State of Sonora with all and every class of goods and merchandise will, of course, continue to do the same and on a much larger scale than heretofore, provided they will not kill the goose with the golden eggs. The principal complaint of all business in Mexico against American houses is that very mistake, and accounts for the strong hold of European houses all over Mexico, Central and South America. Various instances have occurred that Mexican merchants have gone to New York and made large purchases for cash, and after their return they saw by the next steamer the arrival of an agent sent by the very house from whom they had bought

METALLURGY OF COPPER.

A metallurgical process of apparent importance to copper miners has been made by some manufacturers of Saint Etienne and Lyons, France. Everybody knows of the revolution effected in steel making by the Bessemer process. "Blow air into pig iron;" such was the original idea of that invention. That idea has been generalized. Some time ago, in England, it was tried to blow air into molten pyrites, or sulphides of copper, so that the sulphur could be got rid of and at the same time be used as a combustible. But, as it happened to Sir Henry Bessemer in the beginning, it was impossible to prevent the cooling of the bath at the end of the operation. Only by a mere accident a practical



A SEAPORT TOWN IN THE CHINESE EMPIRE.

models could never have dreamed of. It is a fact worthy of note, that western civilization has planted such sightly structures on Asiatic soil without a return, which can be regarded as any equivalent, because although representatives of China for example are far more numerous abroad than are representatives of foreign nations in China, they do not bring anything enduring to the countries which they visit. Their buildings are of the most wretched character and even the wealthiest of them live in squalid and repulsive apartments. The characteristics of the races as shown forth in their styles of living and building have already furnished themes for many interesting essays.

AN ASTRONOMICAL MUSEUM.—At the Observatoire, near the Luxembourg, Paris, a new museum will shortly be opened, containing pictures relating to astronomy, likewise busts of astronomers and other savants of note, and medals, engravings and photographs will be added to illustrate the phenomena of the heavens.

their goods, bringing with him another shipment of the same goods, with the intention to sell them and to compete with them before their own shop, selling the goods at auction or at whatever price they would fetch. This sort of proceedings of houses, which in New York are considered to be of first-class standing is, to say the least, against all ideas of common decency.

The only line of conduct of our merchants, if Tucson wishes to keep and increase the trade with Sonora, a trade which, after the completion of the railroad to Guaymas, might easily be extended down the coast to Mazatlan, San Blas, Acapulco, and Guadalupe, must be the strict observation of decency and honesty in their dealings with those customers, and if they will keep this before their eyes, we have not the slightest doubt that this city will, in another decade, be the large business center of this part of the United States.—*Arizona Mining Journal*.

THE electric light has been tried with success in London.

way has now been found to overcome this great obstacle.

A French correspondent of *Iron* describes the discovery as follows: Recently some old scraps of copper were to be melted in a copper foundry at Lyons. It happened that a small piece of phosphor-bronze was amongst them. The engineer present at the operation was much astonished when he noticed this particular piece of scrap becoming heated, under the influence of oxidizing heat, to a far higher temperature than the other scraps, arriving at last at a bright white heat. In short, the phosphorus, by its combustion giving an enormous amount of caloric, melted the copper. By observing the order of combustion of the elements mixed with the pyrites, it was ascertained that the sulphur was consumed first, then some other elements, and finally the phosphorus. The question was simply to add a small quantity of phosphorus in order to prolong the operation and obtain in the end good rose-copper. The result has been the formation of a company for treating copper in this way.

WHEN YOU AND I WERE YOUNG.

There is no time like the old time
When you and I were young;
When the early flowers blossomed
And birds of spring time sung.

When we roamed the fields together,
Or loitered by the stream,
I crowned you with forget-me-nots
And called you little queen.

There is no home like the old home,
To us the dearest spot,
Where we spent the days of childhood—
They shall never be forgot.

We may now look back with sorrow,
As through the world we roam,
And wish we could return again
To see the dear old home.

Oh, could we but recall the hours
We spent at thoughtless play,
And be for once a child again,
Our years one happy day.

Could we but kneel in prayer once more
Down by our mother's side,
Again receive that good-night's kiss
From her at eventide.

The dear old home, the dear old time,
Shall never be forgot;
We'll keep for them in memory
A cherished, sacred spot.

A MOTHER'S BOY.

"Is there a vacant place in this bank which I could fill?" was the inquiry of a boy, as with a glowing cheek, he stood before the president.

"There is none," was the reply. "Were you told that you might obtain a situation here: Who recommended you?"

"No one recommended me," was the answer. "I only thought I would see."

There was a straightforwardness in the manner, and honest determination in the countenance of the lad which pleased the man of business, and induced him to continue the conversation. He said: "You must have friends who could aid you in a situation; have you advised with them?"

The quick flash of the deep blue eyes was quenched in the underlying wave of sadness as he said, though half musingly, "My mother said it was useless to try without friends," then, recollecting himself, he apologized for the interruption, and was about to withdraw, when the gentleman detained him by asking him why he did not stay at school another year or two, and then enter into business life.

"I have no time," was the instant reply, "but I study at home and keep up with the other boys."

"Then you have a place already?" said the interrogator. "Why did you leave it?"

"I have not left it," answered the boy quietly. "Yes, but you wish to leave it. What is the matter?"

For an instant the child hesitated; then he replied, with a half-reluctant frankness, "I must do more for my mother."

Brave words! talisman of success anywhere, everywhere. They sank into the heart of the listener and recalled the forgotten past. Grasping the hand of the astonished boy, he said, with a quivering voice:

"My good boy, what is your name? You shall fill the first vacancy that occurs in the bank. If, in the meantime, you need a friend, come to me. But give me your confidence. Why do you wish to do more for your mother?"

Tears filled the boy's eyes as he replied: "My father is dead, and my sisters and brothers are dead, and mother and I are left to help each other; but she is not strong, and I want to take care of her. It will please her that you have been so kind, and I am much obliged to you."

So saying the boy left, little dreaming that his own nobleness of character had been as a bright glance of sunshine to the busy world he had so tremblingly entered.

SOME 330 tons of silver lead ore arrived in Liverpool in February.

LUNAR VOLCANOES.

M. Faye, according to the *Chronique Industrielle*, recently delivered a lecture at the Sorbonne, in which he criticised the prevalent belief that volcanoes exist on the moon, and offered a theory of his own to account for the objects that have been taken as craters due to volcanic action. Water, he said, is the sole cause of volcanic eruptions. Now, on the moon there is no atmosphere; this is a fact recognized by every one, and it is absolutely confirmed by observation of occultations. Since there is no atmosphere there, of course there can be no water, for the latter would instantly evaporate under such conditions, even did it exist. So, since there is no water in the moon, it follows that there can be no volcanic action and consequently no volcanoes. But there are circular cavities on the moon, nevertheless. What are they then, and how have they been formed? To account for these, M. Faye asked his auditors to imagine a river frozen over from shore to shore. Such being the case, the tides will exert a pressure on the under surface of the ice, and if a hole exist in the latter the water will quickly issue up through it and congeal around its edges. And so each successive outflow will freeze over its predecessors until the successive layers form a marginal ring of some height around the aperture. From this we may get an idea of the alleged lunar volcanoes, which are diametrically opposite to those that exist on earth. The craters of our terrestrial volcanoes, that of Vesuvius particularly, are at the top of high mountains; the craters of the so-called lunar volcanoes are, on the contrary, in the center of low hills. The bottom of terrestrial volcanoes is greatly elevated above the mean level of the surrounding land; that of the alleged lunar ones is deep down beneath the surrounding ground. Terrestrial volcanoes are conical mountains thousands of feet in height, having at their summit a crater some hundreds of feet in depth, while the circular cavities on the moon are wells several thousands of feet deep and surrounded by a sort of curb some hundreds of feet in height. The circular hollow called *Copernicus*, for instance, is 11,000 ft. deep, while its marginal hill is only about 2,600 ft. in height. These circular cavities, then, are veritable wells, and they were formed, according to M. Faye, as follows:

At the epoch in which the moon, covered with a thin solid layer, took less than a month to accomplish its revolution around the earth, tides were created on its surface by the latter. The incandescent and liquid mass, covered by a thin coating that might be well compared to an egg shell, was attracted by our planet, and thereby caused to dash up against this solid layer. Now, if we suppose that small orifices were accidentally created in various parts of the still thin crust, the waves formed by the tide would cause some of the molten mass to issue through these apertures, while the surrounding crust would everywhere else resist it. This liquid would flow over the edges of these well holes, and being unprotected against the cold of space would at once solidify. And, as we have just seen in the case of the frozen-over river, at every tide the margin would increase in height by the superposition of new outflows. Finally a moment would come in which the bottom itself would solidify. But this being situated at a great depth, and being protected against external influences, would remain for a short time in a pasty condition. If at such a moment a new flux should take place, the middle of the pasty bottom would be thrust up, and in solidifying would remain considerably elevated in comparison with the surrounding portions of the bottom. Thus may be explained the existence of the peaks which are observed in a large number of these lunar cavities.

Such is an outline of M. Faye's new theory. "It," says the author, "I am asked by what considerations I am led to make known the results of my observations and researches, I an-

swer that I am seeking, first, to banish from science a gross error by proving that these lunar cavities are not volcanoes, for no explosion can take place where there is no explosive material. Then, again, from a geological point of view, I have wished to study in the formation of the moon those phases of the past which may give us an idea of the phases to come. Although the geology of the moon differs completely from that of the earth, this very opposite nature is a valuable element of discussion. It will serve to banish vain theories, and to put in a clearer light the phenomena of which the earth has been the theater."

THE PRESIDENT'S DOG.

Our young friends will be pleased to hear about the dog who has adopted the President of the United States as a master. The Eastern newspapers say that a little yellow dog, which followed Garfield's carriage in the inaugural procession, has a history which may as well be told, as the dog bids fair to become a historical character. About a year ago the same dog followed General Garfield from where he got off a street car to his house, corner of Thirteenth and I streets. The General noticing the dog, threw him a piece of meat and forgot the occurrence until he met the same dog on the same corner the next day. Following him home again he was rewarded by another piece of meat. Finally the dog made General Garfield's house a kind of a temporary headquarters.

When General Garfield went to Chicago as a delegate to the convention that nominated him, the dog followed him to the depot. Before the news reached here of the nomination of General Garfield, the dog set up a joyful barking that was almost unbearable. "Something has happened," said one of the ladies in the house, "and here is a telegraph messenger." The message contained the information of the nomination. When Gen. Garfield returned to Washington, some weeks after his nomination, the story was told him, and he said he would take the dog to Ohio with him; but when the time for starting arrived, the dog could not be found, the animal being of a roving nature. Gen. Garfield never saw the dog since until Thursday, when, riding out with a friend, there he was. Calling him by his name, "Bob," the dog recognized the voice and appeared to be happy. As the general arrived at the Riggs house, the dog again disappeared. He saw nothing of him until Friday, as the procession was moving from the White House. The dog followed the carriage all the way to the capitol.

STYLES IN ARCHITECTURE.

We submit the following as being worthy of the consideration of American architectural students:

First. "Style implies some dominating influence reflecting the mind of the age in all its works, and therefore presumes a certain unity of character throughout."

Second. "The primary elements of style are constructive, and the design of work should have regard to construction, and consequently to the proper use of materials, prior to the consideration of its ornamental decoration."

Third. "As construction necessarily implies a purpose, utility must have the precedence of decoration."

Fourth. "As construction necessitates a proper consideration of materials, and as each material has its own mode of manipulation, and is wrought by separate and varied processes, design must be bad which implies indiscriminately the same constructive forms or ornamental treatments to materials differing in their nature and application."

Fifth. "As the greater regulates the lesser, the building should determine the style, and all of what it contains of furniture or decoration should conform to its characteristics, and thus there should be a proper uniformity of style throughout, and a subordination of all the inferior objects to one another and to the whole."
—Builder and Woodworker.

A CHILD'S FABLE.

The little story that follows was told by a five-year-old girl to her seven-year-old brother, and stenographically (?) reported by her mother:

One day Mrs. Hen felt very lonesome, and wished she had some baby chickens, so she went into her new house and got on her nest, and sat and sat and sat until she hatched a beautiful little white chicken. She was so delighted she didn't know what to do, and she cuddled it under her wings and wished she had 12. Pretty soon Mrs. Cat came over to make a call, and Mrs. Hen said:

"How do you do, Mrs. Cat? What do you think I have under my wing?"

Mrs. Cat said: "Why, it's round, and it moves—I think it must be a magic ball."

Mrs. Hen laughed, and said: "Oh, no; it isn't a magic ball, it's a baby chicken."

Mrs. Cat said: "Why, where did you get it?" "Oh, I just sat on my nest and hatched it," said Mrs. Hen.

"Why! Why! I believe I'll see if I can't hatch some baby kittens," said Mrs. Cat. So she went home and got into her basket and sat and sat, and pretty soon she hatched 1,000,000 baby kittens. She was so delighted she jumped out of her basket and ran over and said:

"Oh, Mrs. Hen, just come and see what I've got." So Mrs. Hen ran over, and when she saw the kittens she said: "Oh! Oh! Oh! What a lot of kittens? We must have a torch-light procession."

Mrs. Cat said, "Why, so I will," and they all went out that night, and you don't know how pretty they did look marching along with torches in their little arms. Wasn't that nice? and the baby chicken grew to be a hen, and the hen grew up to be a rooster.—*New Haven Register.*

FEED THE BIRDS.—Little children, do you ever feed the birds? If not, try it some morning, and you will be surprised how much innocent pleasure can be gathered for yourselves and "that blessed baby" who alternately tyrannizes and beatifies every well-regulated family. Softly open the door where they are wont to gather, and strew crumbs for them, and then watch the result. At first watch slyly, till they understand the arrangement, then you may boldly come to the window and watch their guileless airs of bravado, and, the while, into your dear, childish hearts will sink lessons of tenderness and mercy for all God's helpless creatures.

RUBBER HARNESS.—Rubber saddle girths are made of gum elastic or other webbing, with a spring of perforated elastic compound, about two inches in length, inserted either about the middle or at either end of the girth. The springs are varied in length, according to the thickness and the width of the web. By the use of this girth the saddle is made more secure from turning, as the girth may be drawn very tight without inconvenience to the horse. Surcingle are made either of woven web or perforated felt, like saddle girths, only about twice their length.

TRUST.—Little Tot, sleeping in her cot by my bedside, wakened in the night-time, called softly, "Mama, tate my han' in 'urs, I's 'fraid." Gathering her chubby hands in mine, I soothed her with "Mama's by, dollie;" a smile of loving trust stole over her lips, and she was again in the untroubled sleep of innocent childhood. Sweet illustration of Christian trust. "Take my hand in yours, dear Father, I am afraid."

PRESERVATION OF THE COLORS OF DRIED PLANTS.—According to M. Storz, the slow immersion of the fresh plant in a boiling solution of one part of salicylic acid in 600 parts of alcohol, and then shaking off superfluous moisture, previous to pressing in the usual way between blotting paper, will more nearly preserve the natural color than any other method.

CUCUMBERS are worth 50 cents apiece. Cholera cordial can be bought at wholesale for half a dollar a bottle.

DOMESTIC RECIPES.

A GOOD PEA-SOUP.—In an article on "Summer Soups," Mrs. Beecher gives the following as a recipe for "a most delicious pea-soup": Put half a pound of butter into a soup-kettle, over the fire, and add to it a quart of green peas. Shake them round constantly for 15 minutes to prevent their browning. Then take out half the peas, and set aside; then pour in two quarts of vegetable stock, or some prefer boiling water. Cut fine about a pint of spinach, half a dozen green onions, a little mint if agreeable, and a head of celery. Set the kettle where this will stew slowly two hours, till all the materials are reduced to a jelly, then add the pint of peas reserved, three teaspoonfuls of sweet butter rolled in flour, two teaspoonfuls of salt, and one of black pepper. Let it just boil up, then pour into a hot soup tureen, and serve immediately.

MILK SOUP.—Wash, pare, slice and parboil a pound of potatoes; pour away the water; skin and scald two onions, chop them; place the potatoes, onions, one teaspoonful of salt and half a teaspoonful of pepper in a stewpan, with one quart of cold water; bring to a boil and boil till quite soft (about a half hour), crush the potatoes and onions with a spoon till smooth, and one quart of new milk and one ounce of crushed sage; stir continually till it boils, then boil for 10 minutes. This soup may be made richer by adding one ounce of butter or dripping to the quart of cold water; also by putting a yolk of an egg, well beaten, into the tureen, and mixing the cooked soup slowly with it. The soup must be off the boil, or the egg will curdle.

JUGGED PIGEONS.—Clean and wash well, and stuff with a dressing made of the giblets boiled and chopped; a slice of fat pork also minced fine; the yolks of two hard eggs rubbed to powder, some bread crumbs, pepper and salt, bound with a beaten raw egg. Tie the legs and wings close to their bodies, and pack the pigeons in a tin pail with a tight top. Plunge this into a pot of boiling water; put a weight on top to keep it steady, and cook two hours and a half. The water should not boil over the top. Drain off the gravy into a saucepan, thicken with a tablespoonful of butter rolled in flour. Season. Boil up, pour over the pigeons, cover again, and leave in the hot oven ten minutes before serving.

MINCED CHICKEN OR MUTTON WITH EGGS.—Take, if chicken, some of the white meat from the breast and remove all skin and outside parts—if mutton, an underdone slice or two from the leg, saddle or loin; mince it very finely; put it into a stew-pan with a little good gravy or beef tea free from fat; flavor it if liked with a few herbs and spices, and simmer gently until quite hot, but not boiling; then thicken it with a little butter and flour, and season to taste with pepper and salt. Put this mince on a small dish and serve on the top a poached egg.

DUCHESSE POTATOES.—Mash one quart of hot boiled potatoes through a fine colander with a potato masher, mix them with one ounce of butter, one level teaspoonful of salt, half a teaspoonful of white pepper, quarter of a teaspoonful of grated nutmeg, and the yolks of two raw eggs. Pour the potato out on a plate, and then form with a knife into small cakes, two inches long and one inch wide; lay them on a buttered tin, brush them over the top with an egg beaten up with a teaspoonful of cold water, and color them golden brown in a moderate oven.

CREAM DRESSING.—When oil is disliked in salads, the following dressing will be found excellent: Rub the yolks of two hard-boiled eggs fine with a spoon, incorporate with them a dessert-spoonful of mustard; then stir in a tablespoonful of melted butter, half a tea-cupful of thick cream, a salt-spoonful of salt, a little cayenne pepper, and a few drops of anchovy or Worcestershire sauce, and sufficient vinegar to reduce the mixture to a smooth creamy consistency, and pour it upon lettuce.

COAL IN ARIZONA.

In our last issue we gave the statement that a valuable addition to Arizona's mineral wealth had been made in the discovery of beds of coal. Through the kindness of a correspondent of the *Press* we are enabled to publish the following particulars.

I write to inform you and through you those who are interested or contemplate investments in Arizona, of the latest and in many respects the most important discovery yet made in this Territory,—that of extensive coal deposits. The location is near Saddle Mountain, 20 miles northeast of the junction of the Gila and San Pedro rivers, and on the upper waters of Deer creek. This is 80 miles from this place in nearly a northerly direction and a shorter distance southeast from Florence. Some two weeks ago David Anderson brought in some specimens, claiming it to be coal, some of which he had used at his mine sharpening picks and drills. The news was quietly circulated about town, but created no very deep impression. However a party was fitted out by George Martin, James W. Oates and Geo. Cook, which went out to prospect the country about the head of Deer creek. The result of a week's search was the discovery of a much larger body of coal than David Anderson's party had found. This latter showed croppings, float and shale, in the easterly end of a valley about 12 miles in length, and all the ground in the vicinity with coal on the surface had been occupied when the second party reached the valley. They, however, followed down the same, occasionally finding evidences of the presence to coal, till near the southwestern end of the valley they found hundreds of acres literally covered with coal croppings. Where the waters, rushing down a wide canyon had cut a wash-out of 20 ft. in depth they found the black walls reaching from the bottom to the top, while the floor of the wash was not still through the deposit. An examination of the location disclose, what would appear at a cursory glance, to be 30 ledges all dipping into the hill to the southeast at an angle of 20°, but which are doubtless, only one or two, the surface being marked somewhat with the debris from the tall hills on that side. This party, with a few others who joined them in the valley, located 1,240 acres. In a few days the valley was full of prospectors making locations, and now nearly the entire valley between the two original discoveries is taken up and occupied.

Specimens from the southwestern discovery were brought to this city yesterday morning, and has been tested. It is a fine quality of semi-bituminous coal, generates gas well and cokes beautifully. It is free from impurities and deleterious matter, and is pronounced by competent judges to be the best article or quality of coal for this country.

This coal field is not more than 25 miles from the point where the extensive copper smelters are soon to be erected by Mr. W. A. Ballinger, and will supplement the smelting industry southeast of Globe, now bidding fair to be very large and extensive. A competent engineer estimates the cost of constructing a railroad up Deer creek to the mines at \$10,000 per mile.

Unquestionably this is a most valuable discovery, and will satisfy a need long and seriously felt in Arizona.—*Scientific Press.*

TEACHER.—"John, what are your boots made of?" Boy—"Of leather." "Where does the leather come from?" "From the hide of the ox." "What animal, therefore, supplies you with boots and gives you meat to eat?" "My father."

LITTLE Lottie to her friend: "I have so many cares. Yesterday a little baby sister arrived, and papa is on a journey. It was but a piece of luck that mamma was at home to take care of it."

WHITTIER'S NEW POEM.

[The Prelude to "The King's Missive and Other Poems."]

"I spread a scanty board too late;
The old-time guests for whom I wait
Come few and slow, methinks, to-day.
Ah! who could hear my messages
Across the dim unsounded seas,
On which so many have sailed away!

"Come, then, old friends, who linger yet,
And let us meet, as we have met,
Once more beneath this low sunshine;
And grateful for the good we've known,
The riddles solved, the ills outgrown,
Shake hands upon the border line.

"The favor, asked too oft before,
From your indulgent ears, once more
I crave, and, if belated lays
To slower, feebler, measures move,
The silent sympathy of love
To me is dearer now than praise.

"And ye, O younger friends, for whom
My hearth and heart keep open room,
Come smiling through the shadows long,
Be with me while the sun goes down,
And with your cheerful voices drown,
The minor of my even-song.

"For equal through the day and night,
The wise Eternal oversight
And love and power and righteousness will
Remain; the law of destiny
The best of each and all must be,
And life its promise shall fulfill."

CHAFF.

WHAT this country needs is an invention to convince flies that a bald head is not a skating-rink.

THERE is one farm in California that is half the size of Rhode Island. But it can't raise baked clams.

OLD lady to modest curate: "Lor, sir, I do like to hear you preach extrumpery. Your language is that won'erful fluid!"

AFTER supper at a ball—He: "Without joking, Elsie, I do adore you. When I look at you there is such a commotion in my breast!" She: "And mine too, Henri; it must be the lobster salad."

AN impatient boy, while waiting for the grist at the mill, said to the miller, "I could eat the meal as fast as your mill grinds it." "How long could you do so?" asked the miller. "Till I starved to death," retorted the boy.

"WHAT are you going to do for Ireland?" said a member of the Land League to a New York domestic. "Faith, I'm going to save my money until I've enough to go into light housekeeping along with Dennis Murphy," was the answer.

"IS IT law you're talking about? Look, now, when I was a sauder I shot 20 men for the Queen, and she gave me a pinshun; but if I was only to shoot one stray fellow for myself, bedad, I'd be tried for murder. There's law for yez."

"Do you want to kill the child?" exclaimed a gentleman as he saw a boy tip the baby out of its carriage on the walk. "No, not quite," replied the boy; "but if I can get him to bawl loud enough, mother will take care of him while I go and wade in the ditch with Johnny Be-care."

A GALVESTON darkey rushed into a doctor's office, and breathlessly exclaimed: "Come on, doctor, right off. Dar is somebody in my house who is in an awful fix—laid up in bed aggronin' and aggronin'." "Who is it?" "It's me. You see, boss, I didn't hab nobody to send, so I come myself."

A VERMONT man in a sleeping car was accosted by his neighbor opposite, who was also putting on his shoes, with the inquiry, "My friend, are you a rich man?" The Vermonter looked astonished, but answered the pleasant-faced, tired-looking gentleman with a "Yes, I'm tolerably rich." A pause occurred, and then came another question—"How rich are you?" He answered, "About \$700,000 or \$800,000. Why?" "Well," said the old man, "if I were as rich as you say you are, and snored as loud as I know you do, I would hire a whole sleeping car every time I traveled."

MONOLITHIC BREAKWATER.

Mr. Kinipple, harbor engineer of Westminster and Greenoch, has patented his monolithic system of forming sea breakwaters and harbor walls. This invention enables harbor works to be constructed in jointless masses of concrete *in situ* without the aid of divers, stagings, or overhead travelers; in fact, without the use of the ordinary costly plant. The system has been experimentally tried with success at New York, Quebec and Greenoch, and last year it was also experimentally used by the patentee at Wick, in the reconstruction of the south pier-head upon its old, or rubble foundations. The Government Loan Commissioners granted a sum of from £10,000 to £12,000 for these repairs, and for the extension of the head this year for 40 ft., so as to render last year's repairs safe against any seas which may enter the bay of Wick. The extension will be of the same monolithic construction, and founded deep into the hard clay of which the bottom of the bay is composed. At Wick any breakwater which is not of monolithic construction from foundation to parapet cannot be relied upon as safe against all contingencies of sudden and severe storms. There are numerous places, it is believed, where, had this system been used instead of the ordinary blocks or bags, the breakwater would have been in existence at the present time, and at 40% less cost. One of its chief merits is its simplicity and reliability, for any breakwater in the most exposed localities can, it is asserted, now be constructed at about one-half the usual cost, and certainly within one-third of the time formerly occupied in executing these works, for there is nothing whatever to prevent breakwater being commenced at its head, center, or root, or being carried on simultaneously from end to end. No skilled workmen beyond ordinary laborers or fishermen are required, and, indeed, a present of a batch of Portland cement to some of the poorer fishermen is all that is necessary to enable them to repair or construct small breakwaters along the coast. The system is well adapted for founding on rocky or irregular bottoms, but in many cases trenches would have to be dredged by dipper or other dredges for the reception of the concrete. The concrete is mixed either in bulk or in blocks, and allowed to set or harden out of water, so that when thrown overboard into the foundations or works it is hard enough to prevent the cement from separating from the sand and shingle while passing through the water, and soft enough when in the work to fall together and to become one compact mass, equal in strength after a short time to the natural rocks. Where the walls are required to be vertical or battered, a few iron rods are used with sliding planks to retain the concrete in form for a few days until it is set. At Wick recently, masses of concrete cast in this manner resisted a heavy storm within 24 hours after they were put in, while stones of several tons weight were hurled in every direction by the same gale.—*Engineering and Building Times*.

A MILE IN 58 SECONDS.—The new fast locomotive, No. 10, just turned out at the shops at Altoona, was recently given a trial and did wonders. She was taken to Huntingdon and then started home. The distance of 34 miles was made in 44 minutes, but there was some time lost by a "green block." One mile was run in 58 seconds and another in 59 seconds, and throughout the trip the engine behaved very well. It is a tremendous piece of mechanism, and, although finished very plainly, is well proportioned and pretty as a picture. There are many changes from the usual engine in this one. The endeavor has been to put all weight as low down as possible. The whistle is on top of the cab, the engine's reverse lever is worked by steam, and the sand-box, instead of being near the dome, is in the sheathing covering the driving-wheel. A modoc looks like a pygmy alongside of this monster. It will be kept at Altoona for a few days, and run on regular trains until its capacity is tested.—*Harrisburg Telegraph*.

DISEASES OF MINERS.

In the *Popular Science Monthly* for March, a summary is given of the diseases of miners, as they have been specially studied by Dr. Paul Fabre, of Commeny, France. The diseases prevalent among workmen who labor in damp or wet galleries are largely governed by certain accessory circumstances. No morbid symptom is developed among those who work in a gallery which is simply damp and of a temperature not exceeding 58°. But if cold water falls upon them, or if they have to put their legs in water, they become subject to lumbago, sciatica, to indefinite pain in their limbs, and often rheumatism, generally subacute, sometimes chronic, most frequently localized in a single joint—generally that of the left knee, on which the pickmen and heavers rest in working. In galleries saturated with moisture, and where the temperature exceeds 70 or 80°, the workmen are soon overcome with an extreme lassitude; they get hot, they gasp for breath, the sweat rolls down their bodies, and they are obliged to stop working and rest for awhile in a cooler spot. A rapid enervation compels frequent changes of the men in the gallery, and sudoral or miliary eruptions occur, sometimes boils, rarely eczema. If, while the gallery is constantly damp, the air is vitiated by poisonous or irrepressible gases, and if the water contains sulphates or sulphuric acids in solution, the men, in addition to pains in their limbs and difficulties in breathing, experience lively itchings and painful smarting wherever the surface of the skin has been abraded. Those who have labored for a long time in the damp galleries contract a chronic inflammation of the gums, together with muscular pains in the limbs, and have often intestinal troubles and spots of purpura. These phenomena indicate the coming of a mild form of scurvy. The remedies are improvement of the sanitary conditions of the mines and the homes of the miners, and the usual applications for scurvy whenever the symptoms of that disease appear.

THE TALES OF OLD MINERS.—An Eastern exchange says: An old miner, who has had 15 years' experience underground, says that he has observed one peculiar fact, that between 12 and 2 o'clock in the night if there is a loose stone or bit of earth in the mine it is sure to fall. Says he: "About this time it seems that everything begins to stir, and immediately after 12, although the mine has been as still as a tomb before, you will hear particles of rock and dirt come tumbling down, and if there is a caving piece of ground in the mine it is sure to give way." This is of a piece with the old story about water mills doing more work in the night than in the day time, because of the water being heavier in the night than during the day—pressing more strongly toward the center of gravity, and therefore bringing more force to bear on the wheels. It may be that in some localities water mills would do more work of nights in hot weather than during the day, as, on account of a suspension of evaporation in the stream, there would be a little more water. It is about midnight that ghosts walk, as is told in old tales, and therefore it is probable that about that time some old miners may be making more diligent use of their ears than at other times. Rats begin to run about the mines before a big cave, and serve as a warning to miners in old levels, but this is because these animals first detect the movement caused by settling in the waste rock filling among which they live, and probably begin to find themselves pinched in their holes.

TURN-UP HATS.—In regard to children's hats, reference is made by the London *Lancet*, objecting to the senseless fashion of turning up the brim of the hat in Tyrolese, or Spanish fashion, so that "infants and little folks of tender years have half-closed eyelids, corrugated brows, and faces screwed up by the glare of the sunshine, from which the brim of the hat, if correctly used, ought to protect them."

CROCODILE SHOOTING IN INDIA.

Although the Hindoos, similar in that respect to the Egyptians we read of in the Bible, revere those wild animals which they have to fear, and will often subject themselves to loss of property, yea, loss of their own or their kindred's lives, sooner than to entrap and kill them, they have of late years, often appealed for deliverance to the Englishmen, whom chance or the rumor of a man-eating tiger or crocodile has brought in the neighborhood. The Mussulman has no such qualms of conscience, for not believing in metempsychosis, he has no fear to kill some relation whose soul has passed into the body of the animal he wants to slay.

Shooting crocodiles is at the best but tame sport; but when you know that the old fellow, shown in the engraving, sticking his head through the reeds, has entombed within his spacious belly, and that in the space of only two weeks, several human beings, you rather feel your blood boil, and you determine that you shall destroy his man-relishing appetite forever.

However dangerous the crocodile is in the water, he is not much to be dreaded on dry land. In some places on the African coast the negroes, who readily eat crocodile meat, will, for the sake of his flesh and the pleasure the thing affords them, suffer themselves to be hunted by him—for a while. One of them will attract the notice of a large crocodile and draw him on in pursuit. The distance steadily decreases between the two, and now they are but a foot or two apart. Suddenly the tormentor wheels off in another direction and is far away before the crocodile, who cannot turn with ease, is able to come to a stop. Another negro now takes the first one's place, and the game is kept up till the reptile is exhausted. Then one of the party gets on his back, and with a few hard blows upon his skull, ends that game forever.

LONGITUDE OF THE ASIATIC COAST OF THE PACIFIC.—It is understood that Lieutenant Commanders F. M. Green and C. H. Davis, Lieutenants S. M. Ackley and John Morris, and Surgeon Dale, U. S. N., now in San Francisco, have been detailed by the Navy Department to determine the correct longitude of the Asiatic coast of the Pacific ocean. They sail Saturday for China, to join the *Palos* on the Asiatic station. All points on the coast of Japan and China, connected by cable, will be visited, and their exact longitude determined. The American officers have permission from the cable companies to establish stations and use the wires at night. English officers are engaged in a similar work in New Zealand and Australia. The information obtained from the observations will be exchanged by the two nations. English officers have determined the longitude as far as Madras and Russian officers have made observations on the Siberian coast. All observations have been taken from the Hongkong observatory. The American party will ascertain the precise longitude of that place, there being a question as to the accuracy of the standard. The object of this movement by the Navy Department is to establish correct standards, from which true charts for the protection of maritime interests may be produced.

FOOD VALUE OF VARIOUS SUBSTANCES.—Prof. W. O. Atwater, in an essay on the nutritive value of fish, gives the following table: Taking medium beef at 100, we have, as the nutritive value of like weights of fish free from bone: Medium beef, 100; fresh milk, 23.8; skimmed milk, 18.5; butter, 124.0; cheese, 155; hen's eggs, 72.0; fresh codfish, 68.0; flounders, 65.0; halibut, 88.0; bass, 79.0; mackerel, 86.0; lake-trout, 91.0; eels, 95.0; shad, 99.0; salmon, 104.0; salt mackerel, 111.0; dried codfish, 346.0.

WHenever you find a great deal of gratitude in a poor man, you may take it for granted that there would be as much generosity if he were a rich man.

WIRE ROPE TRANSMISSION.—Among the recent improvements in the way of transmitting power for long distances, is the substitution of belts by endless wire ropes running at a high speed. Just where the belt becomes too long for economy there the rope steps in. In place of a flat-faced pulley a narrow sheave, with a deep, flaring groove, is used, the groove being filled out, or lined rather with leather, oakum, India rubber, or some other soft substance, to save the rope. The essential points are a large sheave, running at a considerable velocity, and a light rope. When the distance exceeds 400 ft., a double-grooved wheel is used, and a second endless rope transmits the power 400 ft. further, and so on. The loss by friction is said to be only 8% per mile. If it is required to transmit 300 horse power by means of a wire rope, the size of rope required will be one inch

ANTARCTIC EXPLORATION.—While the energy of modern explorers has greatly extended our knowledge of the geography of the North Polar regions, comparatively little has been done in the exploration of the corresponding portions of the southern hemisphere. Lieut. Wilkes, at the head of an American expedition, believed that he had established the existence of an Antarctic continent, and this discovery was verified a year later by Sir James Ross, who found the extensive Victoria Land with mountains 14,000 ft. high, and an active volcano. Beyond these discoveries, nothing is positively known of these extensive regions of the earth. It is now proposed by the Italian Geographical Society to send out an Antarctic exploring expedition under the command of Lieut. Beve, an Italian officer, who accompanied Prof. Nordenskjöld in his recent Polar voyage. The ex-



VENGEANCE ON THE MAN-EATER.

in diameter, running 4,920 ft. per minute over a wheel 14½ ft. in diameter, making 108 revolutions per minute. One is thus enabled, at a small expense, to transmit power in any direction.

THAT WONDERFUL LOCOMOTIVE, built at Paterson, N. J., for an inventor, who, in his design, turned the ordinary locomotive topsy-turvy and imparted power to the driving wheels by friction, has been tried, and is said to have given remarkably good results in drawing heavy loads up grade, but it has not been tested for speed. On an up-grade of about 12½ ft. to the mile, the engine pulled 21 cars weighing over 474 tons with such an ease that more cars were added to the train in successive experiments, until finally 39 loaded cars, weighing 862 tons, were pulled over the same grade with from 135 lbs. to 140 lbs. of steam. In this engine the cylinder and the moving parts are above the boiler, so as to permit the use of double drivers, one set above the other, so proportioned as to give great speed to the driver, resting on the track, and to which power is imparted by friction.

pedition of Lieut. Beve, it is given out, will be fitted out for a prolonged voyage, and it is announced to be the intention of the voyagers to winter in the Antarctic region for the purpose of making a thorough study of its character.

ARTESIAN WATER IN BOSTON.—For some time past boring for artesian water has been in progress in Providence street in the city of Boston. The chances of success were generally believed to be against the effort. Quite recently, however, water has been found at a depth of 1,850 ft., and the well is now capable of delivering from three to four hundred thousand gallons of water a day.

ANOTHER MEXICAN RAILWAY.—The telegraph reports another Mexican railway project, with \$30,000,000 capital. Among the incorporators are Mayor Prince, Ben. Butler, U. S. Grant, Jr., and two Mexican capitalists. The main line is to run from Piedras Negras, on the Rio Grande, to a point on the Gulf of California, with branches.

THE WIDOW'S PICNIC.

In one of the many neat but humble dwellings which encircle the thriving town of M—, situated on the line of the Southern Pacific Railroad, dwelt the Widow Harty, and her two boys and two girls. The departed spouse, Dennis Harty, had joined one of the beneficent Orders of the day, and had left his widow with a snug sum of money sufficient to keep the olive branches from raggedness and hunger. Her constant care was to regulate her little household and train them up in the way they should go. She never failed to regret the loss of Dennis, and cherished his memory with due diligence. She was a woman who had a "theory" that there was only one good husband for a woman; if she drew a prize the first time, she would likely get a blank in further ventures, and *vice versa*. She lived an easy-going, industrious life since her widowhood began, which was some two years past. She seemed likely to glide along in the quiet stream of her widowhood until she became mother-in-law to somebody, without a ripple on the tide. But this was not to be, for the appearance of Larry Hughes broke up the even tenor of her way, and her troubles began.

Larry was a countryman of hers who had a claim some ten miles up Dry creek. One day, passing by with his cart on his way to the town, he stopped at her gate to give some of her children a lift to the school-house. There were some half dozen urchins in the cart he had already picked up along the road, who, calling his attention to them as they were leaving home, he added them to his load. He was a good-looking, good-natured, merry specimen of an Irishman, to whom life's troubles seemed but trifles. She had often seen him pass with a lot of children, but this was the first time he had picked up any of her brood. She was at the gate as he drove up, and the compliments of the day were freely passed to and fro over the fence. This was the beginning of an acquaintance, continued with increasing intimacy and interest, till the widow began to overhaul the records to see if her "theory" of the result of a second draw at the lottery would hold water; she counted off the eyes on her right hand and the nays on the left, and was relieved and satisfied to find they came out even anyhow.

One day Larry drove up to the gate with his load of fruit and vegetables, and stopped. He told her there was to be a picnic at the grove May Day, and would she and the children like to go with him in the cart. Everybody was going. She was thinning out a bed of onions, and as soon as she could get some of the kinks out of her back, she took a survey of the cart. It was a likely looking affair enough. She minded seeing lots of women folks and children going into town on worse looking rigs than Larry's cart, and then, too, she wasn't proud. Indeed, what had she to be proud of unless of her children and her good name? She thought, too, with a slight blush, how pleasant such a ride would be "across the moor" beside Larry, and the children tucked out of the way at the tail of the cart. And she thought, too, (widows think awful fast) a little encouragement would not come amiss to Larry, who seemed inclined to play the laggard in love. It will be such a treat for the dear little darlings and she consented to go for their sakes. Larry didn't care for whose sake it was so she was along, and the thing was settled.

May-day morning came in soft and balmy; a light cool breeze was moving up the valley, invigorating and exhilarating. It was what was called a good season, and crops waved with the promise of abundance, and everybody felt as though now was the time for enjoyment. The widow had not been idle since the day of the invitation; and there was a fine large new basket with a rainbow handle, filled to the brim with evidences of her skill as a cook, which

was to serve the double purpose of contributing to the greatest pleasure of a picnic, that of feasting in the open air, and as a sort of domestic battery to bring Larry to business. It was covered with a nice tablecloth, and was placed forward in the cart. The young ones were stored away in the rear and with the widow beside him, on a fine buggy-robe he had borrowed for the occasion from a friendly hostler in the town, Larry started in good style for the grove. They arrived in due time for the exercises provided for the day. By the time noon came, everybody was ready for the eating part of the programme.

The basket was placed against a tree and the snowy cloth spread under its branches. The cakes, pies, custards, tartlets, etc., were scattered picnic fashion. The widow sat opposite to Larry, with the children right and left. Everything was lovely. As Larry glanced over the feast spread by the widow's hand before him, he mentally vowed to engage her for life, if possible, on the way home. The widow took up a deep custard, and was in the act of passing it to him when a pig, which had found entrance to the grounds, thought he would prospect the basket at the foot of the tree. He got his fore feet into the basket; he became alarmed in the rear, and undertook to pass on through the basket instead of backing out, and the result of his fright was that he got the basket upon his back, with the handle firmly around his body like the cinch of a saddle. With a fearful squeal, he made a break straight ahead, overturned the first young one he came across, dashed between the widow and Larry just in time to fling the contents of the custard over his head and shoulders. It filled his eyes and hair instead of his mouth and stomach, and converted a joyful shirt bosom and collar into a picture of misery.

The pig continued on his course, making a wreck of every home circle he entered and demoralizing the whole institution. He was perfectly crazy with fear, stood up on his hind legs, then on his fore, like a California broncho; tried to roll over, and then to shake off the horrible thing on his back; tried to rub it off against anything or anybody he could see, meanwhile keeping up the most frightful and piteous squeals ever heard. He was the liveliest thing that ever dropped in at a picnic. What with the pig and the screams of laughter from those who succeeded in getting upon the wagons and the fence, and the shrieks of the women and children as he raged among them and over the dishes, there was no time for manners, much less courting. As soon as Larry could get enough of the custard out of his eyes to see which way to go, he made for the fence. The widow had just time to jerk two of the youngest into a wagon as the pig again came around, when she made a bold dash for her basket. The pig wanted she should have it, but offered it in such haste that she sat down quicker than she ever did before in her life. Then she climbed into the wagon with her hat under her arm.

She screamed over to Larry to get the basket, but somehow Larry couldn't hear her, leastways he told her so on her way home. Every time the pig circled around near by her she would exclaim, "Oh, my basket, my beautiful basket." The pig finally found the gap he came in at and away he went down the road with the beautiful basket on the top of his back forever.

In spite of the terror and destruction created, it was voted that the fun and excitement was worth it all; nobody was seriously hurt and there was yet plenty to eat. Everybody was in high glee except the widow; she was cross, the loss of her basket for which she had paid \$2.50 was no trifle. The feast she had spread with so much pride was no longer a thing of beauty or a joy to the soul, and not the least of her sorrows was the selfish escape of Larry to the fence, leaving her to look out for herself and family as best she could. She was very cool to him for some time and felt herself aggrieved. But who can sulk long or be cross at a picnic among a tribe of young folks bent on fun and frolic? By the time breaking up came she had recovered her usual good humor, and

Larry and she were again on loving terms. The remains of the feast, dishes, etc., were stowed away under the seat and the table cloth placed over them. This was the only recourse, as the basket was gone and there was no box to be had. They jogged along comfortable-like towards home. The widow was in fine spirits, said nothing was so bad but it might be worse, and they had had a splendid time anyhow. Larry's spirit rose with the occasion and he thought it was now or never. He asked the widow for her hand and offered to divide all his worldly possessions with her in exchange—singing:

"I've built me a nate little cot, love,
I've pigs and potatoes in store.
And I've twenty bright pounds in the bank, darling,
And it may be a pound or two more."

The memory of the departed spouse came suddenly to her, as no doubt it comes to all widows under such circumstances, and she hesitated. The memory of all the loving kindness of Dennis rushed like a flood into her heart, that loving care and forethought too, which had kept the sting of poverty and distress from her widowhood, and her tongue refused to utter the ready affirmative that was in her heart.

"It was so sudden," she said. She hadn't dreamed of such a thing. She thought all along it was the children he was so fond of; she wanted a little time to consider. Would he call Sunday week for an answer. Yes, he would call every day of the week for the matter of that. But little more was said, as each kept up a busy thinking till they arrived at the gate.

"Hould the lines, Mrs. Harty, while I tend to the children; I'll have ye all out in the twink of an eye," said Larry; and he did sure enough. She took the lines, and he sprang to the ground. The bolt which kept the bed of the cart in position had, unbeknown to him, worked out, and as he jumped off, the equilibrium was destroyed, with the balance of power with the children at the tail of the cart. As soon as he reached the ground the rest were dumped like a load of rubbish in front of the gate.

The widow resumed her proper position in the world as soon as possible. Which end of her struck first she never knew; that she made one revolution she was certain. Her ear was full of molasses and her hair of gravy, and her hat was jammed down over her eyes with the rim between her teeth. As for the children, they looked as though they wouldn't need to ask for preserves for a month, if allowed to lick themselves clean.

Mrs. Harty was mad as a hornet. This second catastrophe was too much for her love, and it went out like a match. "Is this the way to bring a lady home, you villain? If I catch ye within my door I'll have ye out in the twink of an eye!" and she shook her fist at him. The cart, relieved of its load, righted up with a bang which set the old horse thinking about home, and he started off at a rate which presumed that the result of his mental investigation was, that he thought it was late. Poor Larry gave a beseeching look at the widow, and an anxious one after his rapidly disappearing vehicle. She looked so ferocious and warlike that he quickly decided it best to look after the cart and old Mike.

The widow stood as though dazed, for some minutes; but a string of teams from the picnic were coming rapidly up the road, and that was no place for her and her family in such a queer muddle; so she scraped the debris into the tablecloth, gathered up the four corners, and pushing the young ones ahead of her, she dragged the wreck through the gate, into the house, and closed the door behind her. Here, shut out from the rude world, she let her feelings have full sway, and woman's best friend in such times came to her relief, and she shed tears in abundance. Such a day she had never experienced in all her life. It seemed a month since morning. What a day it had been!

"This day so wildly welcomed,
This day my soul had singled out of time
And marked for bliss."

She soon had the children to bed with but little ceremony in the way of supper. As the twilight shadows fell she drew her chair to the window, and looking out upon the coming of the gloom and of the stars, she soliloquized as follows: "The spirit of Dennis was wid us today, shure. He don't like Larry, and that is so. Bad luck to the day! If I am to live such a life as Mrs. Larry, I had better stay as Widow Hartly." And she did "stay" as Widow Hartly, for Larry never came back for his answer, and it was months before she set eyes upon him again.—G. W. T. C., in *Rural Press*.

FRENCH MERCHANT SHIPPING.

The new law under which French shipbuilders and ship owners are to receive substantial bounties from the State, has already had quite a contrary effect to what was expected. The jealousy of manufacturers has been aroused, and a reaction has set in which must be regarded as a signal for more clamorous demands in the same direction. A writer in the *France* ridicules the statement in the preamble to the new act that the bounties are accorded "in compensation for the charges which the Customs tariff imposes on shipbuilders," and "for the charges imposed on the merchant navy for furnishing recruits and the service of the military marine." "If," says the writer, "the Customs tariff is defective, it should be amended. Otherwise, now that bounties have been granted to shipbuilders, the same favor must be accorded to cotton spinners, forgemasters, and everybody else." Moreover, it is pointed out by the writer that, if, after all the efforts made to improve the position of the French commercial marine, they should result in failure, ship owners might console themselves by the thought that the evil, Great Britain alone excepted, is universal, and that bounties will nowhere bring about the slightest remedy. The article concludes:

"Italy, which formerly built ships representing an annual tonnage of 100,000, did not perhaps, add 20,000 tons to her home-built shipping a year ago. The United States, which at one time carried by sea 90 per cent. of their own merchandise, were only represented last year by 15 per cent. A fatal revolution has occurred. Steam has swept away sails, and iron and steel have taken the place of wood. And with what result? That vessels are now mostly built where iron, steel, machinery and coal are obtainable at the lowest rates, or, in other words, at Glasgow on the Clyde, Newcastle on the Tyne, and Sunderland on the Wear. The shipbuilding yards of London and Liverpool have themselves had to give way." The French will sooner or later regret that common-sense views such as these should have had no effect in altering the mischievous decision arrived at by the French Legislature, which, however, fortunately, is not irrevocable.—*Iron*.

RAILROAD BUILDING IN THE UNITED STATES. With one single exception, there were more miles of railroad built last year than heretofore in the history of the Union. Fifty years ago (1830) there were but 23 miles of railroad in the United States. Ten years later (1840) the lines had extended to 2,818 miles. At the end of the next decade (1850) there were 9,021 miles; and, according to the reports for 1860, the railroads of the country had reached 30,635 miles. And within the next 10 years, which embraces the period of the civil war, the mileage was nearly doubled. Ere the mutterings of the war had died away the recuperative power, enterprise and genius of the American people were revealed as never before, in establishing and extending the lines of travel and commerce, so that in 1871, the mileage of new road completed amounted to the enormous amount of 7,670 miles. During last year 5,206 miles of track were laid down.

THERE are 121 mines listed at the New York Boards. The February sales were 3,782,000 shares, including 2,340,000 shares of Colorado claims.

HOT AND COLD BATHS.

The London *Lancet* in a recent number points out the difference between the effects of hot and cold baths. The effects of the cold bath, it says, being mainly due to impressions made upon the cutaneous nerves, the modifications of the cold bath largely depend on their power of increasing its stimulating action. The colder the water the more violent the impression. The frequent change of water, such as is found in the sea or in running streams, increases the stimulating effect. Great force of impact, as when water falls from a height or comes forcibly through a hose upon the body; the division of the stream, as is seen in shower baths and needle baths, and the addition of acids or salt to the water, all act, it would seem, by increasing the stimulating power which the water exerts upon the cutaneous nerves.

Warm baths produce an effect upon the skin directly contrary to that brought about by cold water. The cutaneous vessels dilate immediately under the influence of the heat; and although this dilation is followed by a contraction of the vessels, this contraction is seldom excessive, and the ultimate result of a warm bath is to increase the cutaneous circulation. The pulse and respiration are both quickened, as in the cold bath. The warm bath increases the temperature of the body, and by lessening the necessity for the internal production of heat, decreases the call made upon certain vital processes, and enables life to be sustained with a less expenditure of force. While a cold bath causes a certain stiffness of the muscles, if continued for too long a time, a warm bath relieves stiffness and fatigue. The ultimate results of hot and cold baths, if their temperature be moderate, are about the same, the difference being to use the words of Braun, that "cold refreshes by stimulating the functions, heat by physically facilitating them; and in this lies the important practical difference between the cold water and the hot water systems."

SUNDAY DINNER.—Sunday, by a large majority of mankind, is made a day of feasting, and the Sunday dinner is the principal one of the whole week. If there is any scrimping it is done through the week and the strength of the purse and efforts of the housewife are both concentrated and brought to a focus upon a Sunday dinner. Sunday is said to be a day of rest; but very little rest does the stomach find when it is loaded with an assorted cargo of highly seasoned viands, which gives it a job of overwork. And this is more onerous and provoking, as its owner lounges around and takes little or no exercise, which leaves the other organs without employment, and the poor stomach has to work on all alone, although it often exercises its constitutional right of grumbling at its owner's indiscretion and gluttony, which hath such extent that by the close of the day he feels much like a stuffed anaconda. If the quantity of food we eat is to be regulated by the exercise of the body, then the Sunday meal should be the lightest of the week, as usually but little physical exercise is taken on that day, whereas the contrary is the fact and the appetite is nursed and whetted throughout the week that it may make an onslaught on the fat of the land on Sunday, which is a manifest impropriety and a gross violation of the laws of health.

HYDROPHOBIA VIRUS.—That obscure poison which produces hydrophobia has been known to lie latent in the human system for years before developing its fatal results. M. Pasteur asserts that the supposition is well supported that the virus does develop in certain organs, and not, as in other cases, in the blood; and that when, after a period variable according to circumstances, the organized poison passes into the blood severe symptoms come on rapidly, and the victim soon dies. An explanation substantially the same as this had long been advanced as a mere theory, but now M. Pasteur advances it as an ascertained physiological fact.

INDUSTRIAL SECRETS.

A century ago, what a man discovered in the arts he concealed. Workmen were put upon an oath never to reveal the process used by their employers. Doors were kept closed, artisans going out were searched, visitors were rigorously excluded from admission, and false operations blinded the workmen themselves. The mysteries of every craft were hedged in by thick-set fences of empirical pretensions and judicial affirmation. The royal manufactories of porcelain, for example, were carried on in Europe with a spirit of jealous exclusiveness. His Majesty of Saxony was especially circumspect. Not content with the oath of secrecy imposed upon his workpeople, he would not abate his kingly suspicion in favor of a brother monarch. Neither king or king's delegate might enter the tabooed walls of Meissen. What is erroneously called the Dresden porcelain—that exquisite pottery of which the world has never seen its like—was produced for 200 years by a process so secret that neither the bribery of princes nor the garrulity of the operatives revealed it.

Other discoveries have been less successfully guarded, fortunately for the world. The manufacture of tinware in England originated in a stolen secret. Few readers need be informed that tinware is simply thin iron plated with tin by being dipped into the molten metal. In theory, it is an easy matter to clean the surface of iron, dip it into a bath of boiling tin, remove it enveloped with a silvery metal to a place of cooling. In practice, however, the process is one of the most difficult in the arts. It was discovered in Holland, and guarded from publicity with the utmost vigilance for more than half a century. England tried in vain to discover the secret, until James Sherman, a Cornish miner, insinuated himself master of the secret, and brought it home. The secret of manufacturing cast steel was also stealthily obtained, and is now within the reach of all artisans.

CHLORAL FOR TOOTHACHE AND FACEACHE.—Dr. Sporer in a St. Petersburg medical journal, after referring to the great benefit he had derived from chloral, whether administered internally or as an embrocation dissolved in almond oil, for the relief of rheumatic and other pain, states that in toothache and its accompanying facial pain a most effective remedy is found in dissolving from a scruple to half a drachm in two drachms of glycerine, and applying a plug of wadding soaked in this to the carious tooth. As, however, this causes in some cases considerable irritation of the mucous membrane of the mouth, he has during the last four years always applied the chloral in substance. From a half to at most one grain of the granules of chloral are wrapped in a little wool to keep them together, and placed in the cavity of the tooth. When the chloral has dissolved the accumulated saliva is to be spit out. If the tooth is in the upper jaw the chloral should be kept on by the finger until dissolved. The most violent toothache is in a few minutes relieved. He cites some cases in which most distressing and long-abiding toothache, accompanied by severe prosopalgia, was thus promptly cured.

THE SENSE OF COLORS.—At a recent meeting of the French Association for the Advancement of Science, M. Carpentier, of Nancy, read a paper, in which he propounded the somewhat novel theory that the sense of light and that of colors are independent. Since white light is the sum total of the various colors, it has been commonly thought that the sensation of white light was simply the sum total of the sensations of its constituent colors. On the ground that the sensitiveness of the eye for white light may be increased—as, for instance, by the previous absence of all light—without the sensitiveness for color being increased, he urges that there is a color sense as distinct from that of light as is the sense of touch from the sense of heat.

A FARMER'S WIFE OF OLDEN TIME.

A correspondent of the *Western Rural* takes a sketch of a farmer's wife from a book written 250 years ago. The correspondent says: "I tell you, my over-worked sisters, it kind of comforted me just to see that the 'gude man's' wife in those days, even if she had maids under her, couldn't have had a much easier time than we. Just see now what was required of her, and may it give us courage and patience faithfully to fulfill our daily round of duties as farmer's wives."

The following is the old sketch: "I do not find the place of a housewife to be of less care than the office of her husband, understood always that she is acquitted of field matters, inasmuch as she is tied to those of the house and base court, the horse excepted, as he is tied to the business of the field. Likewise, she is to look into the things necessary about kine, calves, hogs, pigs, pigeons, geese, ducks, peacocks, hens and other sorts of beasts, as well for the feeding of them as for the milking of them; the making of butter and cheese, and the keeping of lard, to dress the laboring men their victuals withal; yea, farther, she has the charge of the oven and cellar; the handling of hemp and also the making of webs; of looking to the clipping of sheep, of keeping their fleeces; of the combing and spinning of wool to make cloth to clothe the family; of ordering the kitchen garden, and keeping the fruits, herbs, roots and seeds, and, moreover, of watching and attending to the bees. It is true that the buying and selling of cattle belongeth to her husband, as also the hiring and paying of servants: but the surplus to be employed and laid out in small matters, linen, clothes for the household and furniture—that of a certainty belongeth to her.

"She must be such an one as must be subservient unto God and to her husband; given to store up, to lay up, and to lock up; faithful, peaceable, not loving to stir from home; mild to such as are under her when there is need; sharp and severe when occasion requires; not contentious or full of words, toying or tattling, nor drowsy headed. Let her always have her eye on the maids; first at work, last from it, first up and last in bed; not suffering the least trifle to be purloined; not grumbling at any time for any service done to the lord of the farm, knowing that the value of a crumb of bread denied unto him may lose the quantity of a whole loaf afterward.

"Let her not trouble her brain with the reports and speeches of others, but acquaint her husband with them in good sort and manner. Let her not suffer her daughters to gad abroad on the Sabbath, except they be in such company as is faithful; compelling her sons to be foremost at work, show them the example of their father, that this may be a double spur unto the men-servants; not suffering unchaste words, oath or blasphemy to be uttered in her house, and causing tale-bearers to be silent, not troubling themselves with other folk's matters.

"Let her keep close up her stubble and the lopping of trees for the oven; not suffering the stalks of beans, peas, thistles, the refuse of pressed articles and other unprofitable herbs to be lost, but burning them in winter for their ashes, which will afford provision for her lye tub. Let her give good account of the eggs and young ones, as well of birds as of other beasts; let her be skillful in natural physics for the benefit of her own folk and others when they fall out to be ill, and so in like manner in things good for kine, swine or fowls; for to have a physician alway, unless the case be urgent, is not for the profit of the house. Let her keep all of them of her house in friendly good-will, not suffering them to bear malice one with another; let her form her bread so as that no one be suffered to use it otherwise than in temperate sort, and reserve the dross of the grapes she presses for the servants' drink, that so the wine may serve for her husband."

BRAIN WORK AND SLEEP.

So long as the brain worker is able to sleep well, to eat well and to take a fair proportion of outdoor exercise, it is not necessary to impose any special limit on the actual number of hours he devotes to his labors. But when what is generally known as worry steps in to complicate matters, when cares connected with family arrangements, or with these numerous personal details which we can seldom escape, intervene, or when the daily occupation of life is in itself a fertile source of anxiety, then we find one or other of these three safeguards broken down. Probably the man of business or the successful lawyer fails to free himself from his anxieties at night, and slumber becomes fitful or disturbed. The nervous system, unsettled by the mental strain, brings about various defects in nutrition; the appetite fails, and then we meet with the sleeplessness, the dyspepsia, the irresolution, the irritability and the depression which are the chief miseries of the overworked.

The great thing in these cases is to get a rest at any cost. By rest we do not mean doing nothing, but rather change of scene, of thought and occupation. If you tell a busy man that he must do nothing, he may endeavor to obey you, but he will soon find out that he cannot, for his brain keeps on working in the same old groove, and he is as much, or even more, worried about his business as if he were still in the thick of it. The great thing is to get rest by substituting one kind of work for another, to have for a time a nice, comfortable sort of occupation to replace the old weary round of troubles. One of the most important remedial agents is outdoor life and exercise, which may be taken in any form most congenial to the individual—riding, walking, field-sports, or what not. This is at once the most natural and often the most effectual promoter of sleep we can employ.

Active bodily exertion is well known to be incompatible with the maximum of intellectual work, and full advantage should be taken of this fact. The only thing to avoid is excessive fatigue. It is a remarkable fact that a very large number of distinguished literary and scientific men have suffered severely from megrim, and it would seem that some of them have succeeded in ridding themselves from the malady by the adoption of some simple hygienic measure. One, for instance, cured himself by following the prescription of a farrier, who advised him to drink water, eat little and take exercise. Another was cured by drinking every day a large quantity of fresh water, and exchanging a highly nutritious regimen for a much lighter dietary. A third got rid of his old enemy by the same means, and by taking exercise every day before dinner. There can be no doubt that in many cases great benefit would be derived from a thorough change of locality or climate. Long sea voyages are not unfrequently attended with excellent results, the attacks being absent for months at a time. Unfortunately these are remedies not within the reach of all.

A GOOD WOMAN KNOWS the power she has of shaping the lives of her children, and she endeavors to use that power wisely and well. She teaches her boys and girls that they must be brave in doing their duty, truthful in speech and action, honest and honorable, kind, cheerful and unselfish. By her own example she enforces and illustrates what she teaches.

THE sweetest and most signal revenge to inflict upon enemies, who seek to belittle our labors or underestimate our abilities, is to do everything well, to lead irreproachable lives, to earn popular confidence and respect, to eschew all but laudable undertakings, to succeed in every act and labor. Success is the most effectual reproach to envy, malice and unfriendliness.

HEART-WORK is better than head-work; and it is a better temper to be fervent in charity than in disputes.

FOAMING.

Foaming or priming means that the water in the boiler is in a state of violent agitation, rising and falling rapidly in the form of waves, or that the steam is mixed with water in the form of spray. Foaming is a source of great inconvenience, and not unfrequently of danger, on account of the uncertain and wrong indications of the water level given by the gauges; and as water is carried with the steam into the cylinders, it causes a serious loss of efficiency, and may cause a breaking down of the engines.

Foaming is made evident by the boiling up or the rapid and irregular oscillations of the water in the gauge glass, and by the sputtering sound produced as the mixture of steam and water issues from the gauge cocks. When the water is carried over into the cylinders its presence is made known by a clinking noise caused by the partial collapse of the piston rings, and, when the water is present in large quantities, by the thumping of the piston at each end of the stroke. All boilers are apt to foam when the water contains much mud or dirt of a mucilaginous nature. Soda, introduced into the boiler to neutralize the fatty acids contained in the feed water, often produces foaming. The various organic substances introduced into boilers to prevent the formation of scale are apt to produce the same effect.

The engines of the English naval vessel *Hecate* were broken down by excessive foaming, caused by the lime placed in her boilers to preserve them and not removed before getting up steam. When a vessel coming from the sea enters fresh water, or from a river enters the sea, the boilers foam frequently. In such cases it is advisable to change the water in the boiler as rapidly as possible by opening the surface blow valves wide and putting on strong speed.

The plan of stopping foaming by covering the surfaces of the water in the boiler with a layer of oil or molten tallow injected through the feed pumps is not to be recommended. It is not only an expensive remedy, but the decomposition of the animal or vegetable fats at high temperatures, and in contact with metals, produces fatty acids which are very destructive to boilers. Boilers are liable to foam when they have an insufficient and low steam room, a contracted water surface, and such an arrangement of the internal parts as to render the circulation of the water defective. It may be assumed that any boiler will foam more or less when its evaporation exceeds a certain limit, so that the steam bubbles rise so rapidly as to carry some of the water through which they pass along with them. For this reason, some water tube boilers are provided with deflecting plates at the upper end of the tubes, without which the water would be thrown in jets from the tubes into the steam space.

When the steam, as it is generated, has to escape in large masses through very narrow water passages, separate channels must be provided for the descending water currents, else the meeting of the two currents moving in opposite directions is very apt to result in foaming, or, sometimes, in lifting the water. The latter expression means that the steam does not rise as it is generated through the overlying mass of water, but accumulates on the heating surfaces so that water appears at a greater height in the boiler than would be the case if the steam and water occupied their natural positions.—*Exc.*

BREATHES THROUGH HIS EARS.—A barber in Altona announces his ability to live 10 hours with his nose and mouth hermetically sealed. Those acquainted with him see no reason why he should not be able to accomplish what he claims, for he is able to breathe for a time without the use of mouth or nostrils, communication between his lungs and the outside world being kept up through his ears. When smoking a cigar he often exhales the smoke through the same extraordinary channel, to the profound astonishment of those who are unaware of this freak of nature.

NEW TRADE-MARK LAW.

When, last year, the courts decided that the existing laws relative to United States trade-marks were unconstitutional, those persons whose trade-marks had become of great value to them in their business, were naturally much chagrined. Many trade marks had become so well known as to be worth thousands and thousands of dollars to their owners. It was like taking, in many instances, half the capital out of the business, to make the trade-mark valueless by removing the exclusive right to its use. The declaration of unconstitutionality of the law which gave originators vested rights in their trade-marks, was the cause of profound regret; yet at the same time it was felt that the Government, having received money for granting the privileges, would ultimately provide a law to meet the requirements, which would be constitutional.

A new act was carefully prepared and passed by the 46th Congress, receiving the approval of the President on the 3d of March. The Patent Office is now engaged in preparing rules and forms for the information and guidance of persons seeking to register their trade-marks.

An examination of the law shows that it differs from the act of 1870 on the subject, in that it authorizes the registration of trade-marks only by persons who are owners of trade-marks which are used in commerce with foreign countries or with the Indian tribes, and who are domiciled in the United States or in a foreign country which, by treaty, convention or law, permits citizens of the United States to register trade-marks. The new act seems to have been drawn in substantial acknowledgment of the propriety of the decision of the Supreme Court, which held that Congress had no right to regulate even the registration of trade-marks by citizens of the United States who were dealing only within this country. Owners of trade-marks which are chiefly or entirely used on merchandise of home consumption are, as heretofore, protected by common law, while the Registration Act merely authorizes the registration of trade-marks that relate to merchandise used in foreign commerce.

The following is the full text of the new law:

Be it enacted by the Senate and House of Representatives of the United States in Congress assembled. That owners of trade-marks used in commerce with foreign nations or with the Indian tribes, provided such owners shall be domiciled in the United States or located in any foreign country or tribes which, by treaty, convention, or law, affords similar privileges to citizens of the United States, may obtain registration of such trade-marks by complying with the following requirements:

First. By causing to be recorded in the Patent Office a statement specifying name, domicile, location and citizenship of the party applying; the class of merchandise and the particular description of goods comprised in such class to which the particular trade-mark has been appropriated; a description of the trade-mark itself, with fac-similes thereof, and a statement of the mode in which the same is applied and affixed to goods and the length of time during which the trade-mark has been used.

Second. By paying into the Treasury of the United States the sum of \$25, and complying with such regulations as may be prescribed by the Commissioner of Patents.

Sec. 2. That the application prescribed in the foregoing section, must, in order to create any right whatever in favor of the party filing it, be accompanied by a written declaration verified by the person, or by a member of a firm, or by an officer of a corporation applying, to the effect that such party has at the time a right to the use of the trade-mark sought to be registered, and that no other person, firm, or corporation has the right to such use, either in the identical form or in any such near resemblance thereto as might be calculated to deceive; that such trade-mark is used in commerce with foreign nations or Indian tribes, as above indicated; and that the description and fac-similes presented for registry truly represent the trade-mark sought to be registered.

Sec. 3. That the time of the receipt of any such application shall be noted and recorded. But no alleged trade-mark shall be registered unless the same appear to be lawfully used as such by the applicant in foreign commerce or commerce with Indian tribes, as above mentioned, or is within the provision of a treaty, convention, or declaration with a foreign power; nor which is merely the name of the applicant; nor which is identical with a registered or known trade-mark owned by another and appropriate to the same class of merchandise, or which so nearly resembles some other person's lawful trade-mark

as to be likely to cause confusion or mistake in the mind of the public, or to deceive purchasers. In an application for registration the Commissioner of Patents shall decide the presumptive lawfulness of claim to the alleged trade-mark; and in any dispute between an applicant and a previous registrant, or between applicants, he shall follow, so far as the same may be applicable, the practice of courts of equity of the United States in analogous cases.

Sec. 4. That certificates of registry of trade-marks shall be issued in the name of the United States of America, under the seal of the Department of the Interior, and shall be signed by the Commissioner of Patents, and a record thereof, together with printed copies of the specifications, shall be kept in books for that purpose. Copies of trade-marks and of statements and declarations filed therewith and certificates of registry so signed and sealed shall be evidence in any suit in which such trade-marks shall be brought in controversy.

Sec. 5. That a certificate of registry shall remain in force for 30 years from its date, except in cases where the trade-mark is claimed for and applied to articles not manufactured in this country, and in which it receives protection under the laws of a foreign country for a short period, in which case it shall cease to have any force in this country by virtue of this act at the time that such trade-mark ceases to be exclusive property elsewhere. At any time during the six months prior to the expiration of the term of 30 years such registration may be renewed on the same terms and for a like period.

Sec. 6. That applicants for registration under this act shall be credited for any fee or part of a fee heretofore paid into the Treasury of the United States with intent to procure protection for the same trade-mark.

Sec. 7. That registration of a trade-mark shall be *prima facie* evidence of ownership. Any person who shall reproduce, counterfeit, copy, or colorably imitate any trade-mark registered under this act and affix it to any merchandise of substantially the same descriptive properties as those described in the registration shall be liable to an action on the case for damages for the wrongful use of said trade-mark at the suit of the owner thereof; and the party aggrieved shall also have his remedy according to the course of equity to enjoin the wrongful use of such trade-mark used in foreign commerce or commerce with Indian tribes, as aforesaid, and to recover compensation therefor in any court having jurisdiction over the person guilty of such wrongful act; and courts of the United States shall have original and appellate jurisdiction in such cases without regard to the amount in controversy.

Sec. 8. That no action or suit shall be maintained under the provisions of this act in any case when the trade-mark is used in any unlawful business or upon any article injurious in itself, or which mark has been used with the design of deceiving the public in the purchase of merchandise, or under any certificate of registry fraudulently obtained.

Sec. 9. That any person who shall procure the registry of a trade-mark, or of himself as the owner of a trade-mark, or an entry respecting a trade-mark, in the office of the Commissioner of Patents, by a false or fraudulent representation or declaration, orally or in writing, or by any fraudulent means, shall be liable to pay any damages sustained in consequence thereof to the injured party, to be recovered in an action on the case.

Sec. 10. That nothing in this act shall prevent, lessen, impeach, or avoid any remedy at law or in equity which any party aggrieved by any wrongful use of any trade-mark might have had if the provisions of this act had not been passed.

Sec. 11. That nothing in this act shall be construed as unfavorably affecting a claim to a trade-mark after the term of registration shall have expired; nor to give cognizance to any court of the United States in an action or suit between citizens of the same State, unless a trade-mark in controversy is used on goods intended to be transported to a foreign country, or in lawful commercial intercourse with an Indian tribe.

Sec. 12. That the Commissioner of Patents is authorized to make rules and regulations and prescribe forms for the transfer of the right to use trade-marks and for recording such transfers in his office.

Sec. 13. That citizens and residents of this country wishing the protection of trade-marks in any foreign country, the laws of which require registration here as a condition precedent to getting such protection there, may register their trade-marks for that purpose as is above allowed to foreigners, and have certificate thereof from the Patent Office.

Approved March 3, 1881.

YANKEE NOTIONS IN RUSSIA.

A correspondent of the *Sun*, writing from St. Petersburg, says that while dining in that city, he found Russian and American viands side by side. He ate American canned oysters with an American sauce served in a casket of American make; and used silver-plated knives, forks and spoons manufactured in New York. American jellies and preserves were also served. On looking over the newspaper advertisements, he saw one offering an American sleigh for sale, another an American piano, and a third informing the public of the arrival of a new lot of the American furniture. The correspondent continues:

While walking on the Nevsky Prospect I noticed such signs as "American Dentist," "American Crackers—Wholesale and Retail,"

and "Depot of American Goods." The latter place I entered. There I found a great variety of our goods, sewing machines, parlor and kitchen stoves, kerosene stoves, washing machines, wringers, rollers, nickel-plated irons, scales, lamps, slates, toys, gold pens, steel pens, pencils, safes, stocking knitters, pistols and guns, jewelry, kerosene and astral oil, locks, bronzed handles, opera glasses, inkstands, and a thousand and one patented articles. The depot was in charge of a New Yorker.

"How is business?" I asked.

"Our business is fair. The demand for our goods is increasing. American goods satisfy the taste and demands of the Russians. There is only one obstacle in the Russian-American trade. Articles used by the poorest people in New York, after paying Russian duties are accessible only to the rich in Russia. Take, for instance, this set of nickel-plated irons. In New York you may get it at retail at a dollar and a half. Here we sell it at ten roubles. The same way with other things. And yet we have many regular customers. You see, our goods now-a-days are much favored by the Russians."

"Are there depots like yours in other Russian cities?"

"Yes; there are such in Moscow, Odessa, and Kharkoff. In this city there are also special depots of the agricultural machines, of sewing machines, of printing presses and typographic apparatus, and of rubber goods."

At the agricultural machine depot I found mills working by steam, wind and hand, moving, trashing and winnowing machines, horse rakes, harrows, ploughs, hay presses, and a great variety of farming implements.

"Have you much competition in your line?" I asked.

"Yes; there are many machines and implements of the Russian make which are a great deal cheaper, and on that account mostly used; but as they are much inferior to ours; the rich can afford to buy a good thing. English merchants, however, try hard to undersell us."

"Do the peasants use American machines and tools?"

"No, they are too poor to buy anything beyond the simplest and cheapest implements of Russian make. Should the peasants be able to get our farming machines along with a little more land than they now possess, in a few years Russia would become one of the richest and most prosperous countries of the world. But I don't think we shall live to see such a change in the Czar's country."

At the American rubber store, which bore a complete resemblance to those I have seen down town in New York, I was told that the business is excellent—that the long and wet Russian Springs and Falls compel the people to use rubber goods in large quantities. The goods are sold at low prices, and are being bought by all classes.

I called also at the sewing machine depot, where I was informed that the sale of sewing machines increases each year. They now conduct the business on the same plan as in New York. Payment is made monthly or weekly. The old machines are taken in payment for the new ones, and lessons in sewing are given free of charge.

"Do you get a good profit on sewing machines?" I asked.

"Of course we do," was the reply; "and the Russians get a good return for their money. Russian women are found side by side with the best men in every progressive movement. Public schools, hospitals, and journals and magazines are, to a great extent, in charge of educated women. Institutes, boarding schools for ladies, medical schools for women, university courses for women, female gymnasiums, and numerous kindred institutions are now overfilled with girls and young ladies. They say here that Russia will be saved by the Russian women. In our turn we may say that the American sewing machine will save the Russian woman."

RUSTING OF GUN BARRELS.

The *Boston Journal of Commerce* says: One of the great difficulties which the sportsman has to contend against is the rusting of his barrels, even when protected by the best browning. The alkaline matter existing in snow and in rain, under certain conditions of the atmosphere, works through the best coatings, and reaches the iron. Varnish, as ordinarily laid on, is objectionable, as it gives a gun a "Brummagem" look. The best plan is the following: Heat the barrels to the temperature of boiling water (not any hotter, or you may injure them), and rub them with the best copal varnish, giving them a plentiful coating. Let them remain hot for half an hour, and then wipe them clean with a soft rag. In this way you can get enough of the varnish into the pores of the metal to act as a preservative, and, at the same time, no one would suspect that the barrels had ever been touched with varnish. We have applied boiled oil, beeswax, paraffine, and some other substances, in the same way, and obtained good results; but on the whole, we find nothing better than good copal varnish.

The same journal, in speaking of the rust and corrosion of iron in general, says: Iron is easily corroded by even the weak acids. Sulphuric acid, nitric acid and hydrochloric acid all act on it quickly and powerfully. Air and moisture also quickly corrode it. It is a curious fact that carbonate of soda protects iron very perfectly from rust. We have seen a piece of iron that had been kept in a solution of soda for 20 years, and yet was quite bright.

There are several methods of protecting iron from rust. Painting, varnishing, tinning, zincing, etc., have all been tried with good effect. Painting and varnishing need no remarks. Where bright work is to be temporarily protected, however, a paint of white lead and tallow may be used. This will not dry, and may be easily and quickly removed with a little turpentine.

BLEACHING BY THE ELECTRIC LIGHT.—M. Leon Manet has devised a process for bleaching blood albumen by means of the electric light. The albumen is taken after separation, and either before or after drying. It is then exposed to the light. The inventor arranged electric lights fitted with lenses or reflectors, so as to cast their light upon the albumen which is to be bleached. If it is still liquid the light is thrown upon the plates or trays which contain it in the drying stove. These plates may be made of glass, so as to let the rays pass through them. If the albumen is dry the light can be thrown upon layers of the article arranged upon the stage. In either case the process varies in duration, according as the albumen has been more or less completely separated from the clot. Under ordinary circumstances 24 hours will suffice to bring about a perfect decoloration. For more efficacy the electric light may be brought into action at the beginning of the process, when the clot and the albumen are being separated.

THE POPULATION CENTER OF THE UNITED STATES.—Ten years ago the center of the population of the United States was about 48 miles east of Cincinnati, Ohio. The Superintendent of the late census announces that the growth of the great West during the past decade carried the center of population about 50 miles west, while the large increase in the Southern States carried it a little southward. The result places the center of population within the limits of Cincinnati.

LUMINOUS PRINTING INK.—A new invention is reported from Turin. It consists in the application of light-giving materials to printing ink, by which print becomes luminous in the dark, so that in future it will be possible to read at night, in bed or during a journey, without the assistance of candle or lamp. A new daily paper in which this luminous material will be used is, it is said, about to be published at Turin.

THE NATIONAL BALANCE SHEET.

The following is an official statement showing the financial and economic transactions of the United States of America for the four years ended March 1, 1881:

	For year ended March 1, 1878.	For year ended March 1, 1879.	For year ended March 1, 1880.	For year ended March 1, 1881.	TOTAL.
Total receipts.....	\$ 205,443,881.80	\$ 202,058,817.04	\$ 308,702,742.93	\$ 366,386,715.41	\$1,102,651,107.28
Total disbursements.....	205,000,000.00	202,000,000.00	308,000,000.00	366,000,000.00	\$1,101,000,000.00
Total debt, less cash in the Treasury.....	2,042,027,120.00	2,050,207,537.61	1,860,117,524.51	1,507,352,328.77	\$904,706,500.89
Decrease of debt.....	46,744,013.96	15,829,687.42	31,005,320.40	76,845,897.60	\$208,624,730.37
Annual interest charge.....	92,627,283.50	101,515,647.42	82,211,633.40	76,845,897.60	\$353,240,461.92
Available cash in the Treasury, including redemption fund.....	72,920,913.38	144,635,042.50	150,691,709.36	169,662,832.20	\$537,910,597.44
Gold coin and bullion held by the Treasurer.....	121,738,854.95	133,265,660.28	146,760,758.47	173,068,253.01	\$574,823,526.71
Silver coin and bullion held by the Treasurer.....	4,205,890.39	36,621,660.28	62,676,711.57	84,108,826.08	\$285,283,096.32
Exports of live stock.....	269,752,809.00	320,732,620.00	374,065,342.00	466,244,111.00	\$1,427,803,322.00
Exports of other food.....	639,485,200.00	725,856,206.00	707,875,740.00	915,271,603.00	\$3,048,488,808.00
Total exports—merchandise.....	47,708,305.00	29,391,143.00	22,922,972.00	16,028,803.00	\$113,446,223.00
Total imports—merchandise.....	47,588,818.00	43,004,129.00	55,569,696.00	703,189,893.00	\$2,106,642,632.00
Production of specie.....	25,200,000.00	29,999,280.00	92,714,238.00	98,570,197.00	\$243,492,765.00
Production of gold.....	4,465,423.00	4,811,205.00	6,073,851.00	5,761,252.00	\$21,111,731.00
Production of silver.....	90,000,000.00	91,000,000.00	222,000,000.00	261,000,000.00	\$1,174,000,000.00
Production of wool.....	364,100,000.00	420,000,000.00	442,000,000.00	489,000,000.00	\$1,715,100,000.00
Production of wheat.....	1,342,508,000.00	1,388,215,750.00	1,492,500,000.00	1,639,500,000.00	\$5,862,713,750.00
Production of pig-iron.....	2,066,504.00	2,301,215.00	2,741,853.00	3,200,000.00	\$10,309,672.00
Production of coal.....	54,808,250.00	52,180,684.00	65,908,398.00	69,200,834.00	\$241,448,166.00

NOTE.—The debt, less cash in the Treasury March 1, 1877, was \$2,088,781,143.04, and the annual interest charge, \$94,403,645.50; showing a decrease in the debt during the four years, as above, of \$208,824,730.27, and of the annual interest charge, \$17,557,708.

JOHN SHERMAN, Sec'y.

Treasury Department, March 1, 1881.

A LEG AMPUTATED BY ELECTRICITY.—A very interesting operation was performed in the Toronto General Hospital a few weeks ago. It consisted of amputation, by means of electricity, of the left leg at the hip. The patient, a young man, being reduced very much by the sloughing of an open wound on the outside of the leg, it was desirable that he should lose as little blood as possible. Having placed the patient under the influence of ether, the customary flaps were made, and then a platinum wire, attached to the two poles of a galvanic battery, was encircled round the leg under the flaps. In a moment this wire was brought to a white heat, and began to cut its way through the limb. By the great heat the ends of the arteries were contracted, and only the larger ones required to be tied. Many of the leading surgeons of the city and a large number of the students from both schools were present.

NICOTINE POISONING.—A rather unusual case of poisoning by nicotine has occurred lately in a Paris suburb. The victim, a man in the prime of life, had been cleaning his pipe with a clasp knife; with this he accidentally cut one of his fingers subsequently, but as the wound was of a trivial nature he paid no heed to it. Five or six hours later, however, the cut finger grew painful and became much swollen; the inflammation rapidly spread to the arm and shoulder, the patient suffering such intense pain that he was obliged to betake himself to bed. Medical assistance was called, and the ordinary remedies proved ineffectual. The sick man, questioned as to the manner in which he cut himself, explained the use to which his pocket knife had been applied, adding that he had omitted to wipe it after cleaning the pipe. The case was now understood, and the patient's state becoming alarming he was conveyed to the hospital. There the doctors decided amputation of the arm to be the only hope of saving the patient's life, and this was immediately done.

SECURING GLASS IN SKYLIGHTS AND ROOFS.—A recent English patent shows what seems to us a very convenient and reliable way of fastening sheets of glass in skylight frames of either wood or iron. In the case of a wooden rafter a piece of sheet lead is cut three and one-half times the width of the rafter, laid across the rafter, projecting equally on either side, and nailed at intervals. The lead is then doubled back over the heads of the nails to the center of the rafter on either side and turned up at a right angle. The glass is then laid and the lead turned down over the face of the glass so that when finished the lead covers the glass the same width of the rafter. If iron is used for a rafter the lead is doubled under the edge of the T instead of nailed, as in the case of wood, and in all other respects handled just the same as with wood.

TESTING DRAIN PIPES.—A writer in the *Iron-monger*, from long practical experience in testing drain pipes, confidently recommends for that purpose what he terms a "smoke test," and which gives evidence as to leaks both to the sight and smell. The materials that he employs are soiled cotton waste and sulphur, the smoke from which, after ignition, is blown into the drain or pipes. If leakage exist in the latter inside of the house the smoke and smell both issue forth and show that something is wrong, and generally tells just where the fault or faults are. Sulphur, as is well known, is one of the best of disinfectants, and a dose of the fumes from this to the drains, after disease has been in the house, would effect much good.

PHOSPHORESCENT FLOWERS.—French manufacturers have a very simple method of preparing the phosphorescent flowers, which are commencing to attract so much attention abroad. They are rendered luminous by coating the petals with transparent size, and then dusting them with a phosphorescent substance, such as Canton phosphorus (sulphide of calcium) or Bologna phosphorus (sulphide of borium), the first named being considered the best, and yielding a soft yellow light. According to M. Becquerel, a good quality can be made by mixing 48 parts of flowers of sulphur with 53 parts of calcined oyster shells, and raising them to a temperature of between 800° and 900° C. Exposed to sunlight during the day, the flowers become brightly luminous at night.

A HIGH BRIDGE.—A bridge has recently been built over the Volga, in Russia, at a point where it is a mile in width. So great are the spring floods at that point, that the bridge has been built 100 ft. above the lowest level of the water; the depth of the river is more than 50 ft. The bridge rests on 14 piers. The girders are 364 ft. long and 20 wide, and were riveted together on the bank of the river.

CRACKS IN BOILERS.—A new method of repairing cracks in boilers, invented in Germany, consists in the use of a sort of wedge link—a pair of tapered pins connected with each other in one solid body by a flat wedge.

DESTRUCTIVE WAR IMPLEMENTS.

Dr. J. H. McLean, of St. Louis, who has expended about \$200,000 for models of implements of war which he claims are so destructive that their practical use in one campaign would force the world into a state of perpetual peace, gave a public exhibition of his inventions at Washington Navy Yard on the 27th ult. About 200 persons were present, including the Chinese Minister and suite, General Benet, Chief of Ordnance; Commander McCormick, of the Bureau of Navy Ordnance; Admiral Scott, Colonel Macaulay, Captain Harbison, Lieutenant Very and many army and navy officers. There were 14 implements on exhibition, but only four of them were tried, and of these only one worked perfectly. The "General Sherman," a small breech-loading cannon, which was expected to fire 26 shots per minute, fired 20 shots in a minute and a half. The "Vixen," built of bronze, fired a one-inch ball once in seven seconds. The "Annihilator," which was intended to fire two charges in a second, fired one in a little less than two seconds. The "Lady McLean," which has 36 barrels with an estimated capacity of nearly 13,000 shots per minute, with a range of three miles, was worked to the speed of 72 shots per second. The other guns were not in order for trial. Among other inventions that Dr. McLean exhibited is a magnetic torpedo propelled by clock-work, and guided to iron ships to be destroyed by a loadstone. The guns were pronounced fairly successful by the officers, but the claim that they would bring on a millennium was by no means admitted.

JUTE FOR BRUSSELS CARPETING.—A patent has been taken out in France by M. L'Heureux, which rests upon the jute in the manufacture of so-called Wilton or Brussels carpeting, which hitherto has been made from wool. The application of jute for this purpose is facilitated by the preparation of a portion of jute yarn into what is called the "Camel," and by the varying proportions of the number of the yarn made use of for the web and the main warp. The jute yarn is fermented for about 10 or 12 hours in a solution formed of 50 quarts of water and one lb. of alum, these proportions to be used for working about 90 lb. weight of thread. After the jute has thus been cleared of the oil it may have gathered during its progress through the various processes of the spinning mill, that is to say, after it has been disinfected, it is dyed if required in the ordinary way; the jute is then sized with the following preparation, one lb. of starch dissolved in 90 quarts of water; the same weight of jute is submitted to the weight of sizing above-named. The warp is prepared and dried in the customary manner. The weaving is carried out on looms, such as are used in weaving velvet, and therefore it does not require special observations. Carpets made in this way can be produced at a reasonable price. —*Fils et Tissus.*

NOVEL EXPERIMENT.—The Port Jarvis, N. Y., *Gazette* says: An odd-looking car has been running over the eastern part of the Erie road recently. The top of the car was covered with wind-mills and revolving cups, so that it looked like the roof of a signal service station. The object, it is said, was to test the pressure of the atmosphere on cars going at different speeds, so as to determine of what shape to make the front of the cars to best resist this pressure, which is very great. The sloping, curved end of the mansard-roofed cars was found to be the best, and the more curves at the end of the car the less was the atmospheric resistance, according to the experiments made.

CEMENTING LABELS TO METALS.—For attaching labels to tin and other bright metallic surfaces, first rub the surface with a mixture of muriatic acid and alcohol; then apply the label with a very thin coating of the paste, and it will adhere most as well as on glass. —*Amateurs' Handbook.*

MINES OF SONORA, MEXICO.

The mines of Sonora have been worked from time immemorial. The immense number of old mines that have a history clouded with early traditions prove the ancient character of the mines of Sonora. Some have been known to reach back 100 years, and others have no data to determine the first period in their history. The number of abandoned mines is considerable, some of which were unquestionably exhausted, while others were abandoned on account of the ignorance of the miners on reaching ores that were refractory or hard to work. Right here it might be well to caution American capitalists against buying holes in the ground, solely because, at one period in their history, they had yielded millions.

Most of the abandoned mines, or quite a large number of them, and of the richest, have been ruined by the class of miners of Mexico called "gambucinos," a poor class who had no capital, and were in search of "bonanzas," or rich spots, working these solely, and filling the drifts and shafts behind them with rejected ores and rubbish, so that when they finished a mine it was almost entirely ruined. In some instances, they have extracted the pillars of old mines of great value, and the walls have fallen in, thus doing an incalculable injury to the mines of the State. There is an old Spanish proverb that tersely states: "It takes another mine to work a mine."

This is undoubtedly true of every mine abandoned by these miners. We use strong language on account of the destruction following in the wake of the "gambucinos." The warning of Mr. Mowry to capitalists in his valuable work on Arizona and Sonora, we herewith quote: "As it is desirable that, in the investment of foreign capital there should be no error committed at the outset, than which nothing would retard the progress of this new mining field more; all persons new to the country had better leave abandoned mines alone, unless directed to them by persons long resident in the country, whose character and veracity are undoubted, and who, after the investigation of all the facts, current accounts, and traditions, have full confidence in some abandoned mine or other. There are, undoubtedly, many abandoned mines that are well worthy of attention and outlay of capital, but strangers are not likely to know at once which of the many deserted mines it will be prudent to meddle with. Under the present state of things, the safest investment for new comers will be those mines that have bona fide owners, for, as long as a mine can be worked according to the custom of the country, it is hardly ever abandoned altogether. The owners are fully alive to the value of their possessions, and as they are already in a more or less independent position, and always in expectation of a sudden fortune, they are not anxious to sell unless induced by a fair offer. It is not advisable to enter into any arrangement with Mexican miners to furnish capital to open up a mine, but it is better to buy the whole at once."

PHOSPHOR TIN.—An alloy of tin with phosphorus has been in use in Germany for some time for making phosphorus bronze. A practical man gives it as the result of his experience that such a compound must contain at least 9% of phosphorus, else part of the tin will remain uncombined. If more than 9% of phosphorus is introduced, the excess will be oxidized and volatilized, because the tin is unable to take up and hold more than a certain quantity of phosphorus. A compound containing 9½% of phosphorus corresponds to the formula $P^2 Sn^5$, corresponding to the higher oxide $P^2 O^5$.

IODINE.—The best weeds from which to make the ashes for the extraction of iodine are said, by Dr. Thiercelin, to be two varieties of the *fucus digitatus*. He has succeeded in obtaining from the plant 3% of iodine.

DETECTING GAS LEAKS.

Mr. G. F. Ansell, of England, whose death was recently announced, recently applied the principle of his fire-damp indicator in the production of a handy little instrument for detecting gas leaks. The action of Mr. Ansell's fire-damp indicator is founded on the fact that different gasses have different rates of diffusion through a porous body, the velocities of diffusion being inversely as the square roots of the respective densities of the gases. In the gas-leak indicator this property is taken advantage of as follows: A small chamber is provided, having its back formed by a disk of terra-cotta, this chamber being provided with a small stop-cock, by which its interior can be placed in communication with the outer air. If, when this stop-cock is closed, the indicator be taken into a room where a gas leakage exists, the gas, in virtue of the above-named law of diffusion, enters the chamber through the terra-cotta disk more rapidly than the inclosed air escapes, and the pressure in the chamber consequently rises. This increase of pressure is utilized to move a hand on a dial at the front of the instrument, each pressure corresponding to a certain percentage of gas in the atmosphere in which the indicator is placed. The dial is graduated from 0 to 35% of gas, and is moreover marked to show when the mixture is and is not explosive. The instrument is very sensitive and prompt in its action, and it is calculated to serve a very useful purpose.

EFFECTS OF TEA ON THE SKIN.—If you place a few drops of strong tea upon a piece of iron, a knife blade for instance, the tannate of iron is formed which is black. If you mix tea with iron filings, or pulverized iron, you can make a fair article of ink. If you mix it with fresh human blood, it forms with the iron of the blood, the tannate of iron. Take human skin and let it soak for a time in strong tea; and it will become leather. Now, when we remember that the liquids which enter the stomach are rapidly absorbed by the venous absorbents of the stomach, and enter into the system by the skin, lungs and kidneys, it is probable that a drink so common as tea, and so abundantly used, will have some effect. Can it be possible that tannin, introduced with so much liquid-producing respiration, will have no effect upon the skin? Look at the tea-drinkers of Russia, the Chinese, and the old women of America, who have so long continued the habit of drinking strong tea. Are they not dark-colored and leather-skinned?

HUDSON RIVER TUNNEL.—According to the *Railway News* the Hudson River tunnel is advancing satisfactorily toward the New York shore at the rate of five ft. a day. Two hundred men are employed digging out the dirt and putting in the iron and brick work. The tunnel is finished as they go along, and the work is much safer than under the old plan, which resulted so disastrously. A small tunnel, about six ft. in diameter, is run ahead of the larger tunnel, which follows and incloses it; warning is thus given of the nature of the soil. The work is now in the south tunnel, which is now completed 290 ft. from the shaft, and will soon be out as far as the north tunnel, which has been cleaned out, but not extended, since the accident. Both tunnels will then be carried along together. A caisson is in course of construction for beginning the work on the New York side.

LEGHORN HATS are whitened (otherwise than with the fumes of sulphur) as follows: Immerse in a strong aqueous solution of sulphite of soda or bleaching powder (chloride of lime), and then in dilute sulphuric acid (acid 1, water 5). The bleaching powder treatment requires much subsequent washing, or the use of an antichlore dip, hyposulphite of soda dissolved in 20 parts of water.

SALICYLIC ACID.

The field for the utilization of salicylic acid is rapidly being widened. Experiments recently made in England show that raw wool washed in a solution of this acid, one part; soft soap, 500 parts; water, 2,000 parts, did not show the least sign of mildew after being stored for a considerable period. Yarns intended for storing were successfully treated in the following way: In greasing them during the process of carding, one part of salicylic acid was added to 500 parts of grease or oil which was used. This small quantity of salicylic acid entirely prevented any signs of deterioration by age, and entirely takes away that offensive smell of rancid oil so often observable. Woolen cloth, when treated in the last wet process with a solution of one part salicylic acid to 500 parts of water, retained its gloss much longer than by any other process hitherto employed.

In finishing cotton goods salicylic acid was added in the proportion of from one to four ounces for every hundred pounds of material being finished, and the goods thus treated were preserved free from mildew or decomposition, even with a prolonged storage. Warp which had been kept for a long time upon the spindle was kept fresh and sound when subjected to the same treatment. The addition of from one to four ounces of salicylic acid to five gallons of finishing material will be found an infallible agent for warding off an attack of mildew from cotton textile goods as well as preventing the unpleasant smells they are so liable to. While not indispensably necessary to goods which are disposed of soon after their manufacture, the addition of salicylic acid to the finishing material will be found to have great favor with the public from the fact that goods keep their original appearance, don't mildew, and do not take on a bad odor when being kept in stock or shipped on a long journey.

INCREASE OF RISK FROM LIGHTNING.—The progress of civilization brings with it ever growing dangers. Herr Von Bezold inferred already in 1869, from observations taken in Bavaria, that there was an increase from year to year in the number of buildings struck by lightning. There seemed to be also an increase in the number of thunderstorms, and this was assigned as the cause. A little later, observations (by others) in Saxony and Schleswig-Holstein also showed an increase in the number of houses struck, but no comparison was made with the number of thunderstorms. Herr Holtz has lately made a fuller inquiry on the basis of data from all parts of Germany, and from Austria and Switzerland. In his brochure on the subject he publishes two tables, one to show the increase or decrease of thunderstorms since 1854, since 1862, and since 1870 in the different regions; the other the increase or decrease of lightning risk estimated from comparison of the number of lightning strokes on houses with the entire number of houses. It appears, then, that, while any increase in the number of thunderstorms is extremely small, and there is in some cases even a decrease, the lightning risk shows a very large increase, and in no case a decrease. Thus the increase of risks from lightning must be regarded as not due, unless in very slight measure, to meteorological influences. This appears more distinctly in that the increase of lightning risk is proportionally greater as the compared years are further apart; but it is not so with the increase of thunderstorms (which, e. g., is less since 1854 than 1862). To explain the increased risk by telluric changes, Herr Holtz supposes the clearance of forest land has to do with it, perhaps, also, the increase of railways, both of these bringing thunderstorms more to towns and villages. Another probable cause is the increased use of metal in house construction.

THERE is no contending against necessity, and we should be very tender how we censure those that submit to it. It is one thing to be at liberty to do what you will, and another thing to be tied up to do what you must.

A FULL CUP.—When the saintly Payson was dying, he exclaimed, "I long to hand a full cup of happiness to every human being." This was the language of a heart thoroughly purged of all selfish affection and filled with the spirit of that love, which led our adorable Jesus to give his life for human redemption. If every Christian would go out daily among men, filled with such longing for human happiness, what marvelous changes would soon be wrought in human society! The selfish element would be eliminated from the dealings of the Christian business man. Not justice merely, but benevolence, would enter into his every-day trade. The same spirit would rule his home and church life. He would become an incarnation of good will toward all, and would so preach the Gospel by his deeds that man would see his good works, and glorify his Heavenly Father. The spirit of Payson is worthy of every man's imitation. Happy he who can truthfully say, "I long to hand a cup of happiness to every human being."—*Zion's Herald*.

THE PRACTICAL VALUE OF SCIENCE.—I have endeavored to state the higher and more abstract arguments by which the study of physical science may be shown to be indispensable to the complete training of the human mind, but I do not wish it to be supposed that because I may be devoted to more or less abstract and unpractical pursuits I am insensible to the weight which ought to be attached to that which has been said to be the English conception of Paradise—namely, "getting on." Now the value of a knowledge of physical science as a means of getting on is indubitable. There are hardly any of our trades, except the merely huckstering ones, in which some knowledge of science may not be directly profitable to the pursuer of that occupation. An industry attains higher stages of its development as its process become more complicated and refined, and the sciences are dragged in, one by one, to take their share in the fray.—*Huxley*.

FRIENDSHIP has its duties. You owe your friend sympathy in his sorrows and in his joys. You owe him confidence and the information about yourself which confidence implies. Yet that information is to be given with a certain reserve, so that you do not seem to force your affairs upon him, or to make him responsible for you. Of crises in which he could not aid you, or would be pained by his inability, it is often wise to say nothing. There is a fine subtle instinct which guides in such matters. However near your friend brings you to him, you are to respect his individuality. Information that is purely personal you must wait for. If he does not volunteer it, be satisfied that he has his reasons. Do not seek—above all, do not claim—it as a right of your friendship. Be generous, not exacting.

THE PRESIDENT'S MOTHER.—The happiest person in the country on the 4th of March, 1881, undoubtedly was the venerable mother of James A. Garfield; and she had the highest right to be. Left a widow with her small children, who, with herself, were quite dependent upon her own exertions for support, she kept her little flock together, and demonstrated, as have many other women also, "what a woman can do." And now her boy is President of the United States of America. All honor to the good mother! Remarkable men almost never have remarkable sons, but a boy that amounts to something "uncommon" almost invariably has been blessed with a superior mother. So far as the human race goes, the mother is the prime factor in excellence.—*Rural New Yorker*.

ESTIMATE actions not by their overt results merely, but by the real though latent power that is implied in them, and the most brilliant deeds of outward heroism will sometimes fall far short of those quiet victories over self to which the Omniscient eye alone is witness.

RICH DISCOVERIES.—A letter from Pitkin, Colorado, says that great excitement prevails there over the discovery of carbonates, and the whole Park, clear down from the Silver Islet mine is being staked off by an eager and lazy mob of men. A body of gray sand carbonates, $\frac{1}{4}$ ft. thick, has been found in the main shaft of the Silver Islet, at a depth of 50 ft. Assays give 132 ounces of silver, 168 ounces and 264, and about 40% of lead. In the Garfield lode, situated in the Park, carbonates running as high as 170 ounces of silver and 60% of lead were discovered at a depth of 60 ft. The Chicago lode is proving one of the best in the district. The shaft is 60 ft. deep, and an adit-tunnel has been driven in on the vein 85 ft. Further down the vein a tunnel has been started that will cut the vein 300 ft. deeper than the above named workings.

MRS. HAYES' PORTRAIT.—The opening words of President Garfield in accepting for the White House the portrait of Mrs. Hayes were not telegraphed, but are reported in the Washington papers as follows: "The very appropriate gift to the Executive mansion which you have brought—the portrait of its late mistress—I gladly accept. It shall take its place beside the portraits of the other noble women who have graced this house. Nothing I can say will be equal to my high appreciation of the character of the lady whose picture is now added to the treasures of this place. She is the noble friend of all good people. Her portrait will take, and I hope will always hold, an honored place in this house."

THE GAIN IN WEIGHT BY COMBUSTION can be very prettily shown by the following method, which also affords a very good lecture experiment. A handful of fine zinc turnings is placed on the scale pan of a common balance, which should then be brought into equilibrium by placing weights on the other scale pan. Now apply a spirit lamp or Bunsen burner to the zinc, which, in its state of fine division, will readily inflame. As it is slowly converted to a cohesive mass of oxide, the scale pan will descend, showing that in burning it has gained in weight.

A PHILANTHROPIST.—Speaking of her past, Mrs. Thompson, the philanthropist says: "I was a poor girl myself, born and raised in Vermont. I had a sensible mother, thank God! who taught me, in fact, rang into my ears day and night almost, that 'handsome is that handsome does,' and I have tried never to forget it. It was my good fortune to meet Mr. Thompson, and we were married. It is now some 12 years since his death, and I have always felt that I could in no way so well show my reverence for his character and name as by using the means he so generously intrusted to me to alleviate the sufferings of humanity."

MUSIC IN DISEASE.—Dr. Oscar Jennings, a physician of standing in Paris, writes to the *London Lancet*, that in the treatment of mental disease he has constantly used music, which calms and soothes the mind, and declares it to be too precious an agent to be neglected. This is both scriptural and poetical indorsement. Saul of Tarsus was cheered by music, and the poet recognizes it as the soother of the savage breast, while Shakespeare denounces "he who has no music in his soul is fit for stratagem and spoils."

EGG DUMPLINGS.—Make a batter of a pint of milk, two well-beaten eggs, a teaspoonful of salt, and flour enough to make a batter as thick as for pound cake. Have a clean saucepan of boiling water, let the water boil fast, drop in the batter by the tablespoonful (four or five minutes will boil them), take them with a skimmer on a dish, put a bit of butter and grated nutmeg, with syrup or sugar over.

WE are all sculptors and painters; our material is our own flesh and blood and bones. Any nobleness begins at once to refine a man's features, any meanness or sensuality to imbrute them.

PETROLEUM AND PLANT LIFE.

At the last meeting of the California Academy of Sciences, a discussion took place on the subject of the use of petroleum for destroying scale insects on rose bushes. Dr. Henry Gibbons said that two months ago he put petroleum on the trees in his garden. Since then the trees have grown better than ever before; they have grown faster than ever before, and given better roses than ever before. The petroleum seems to kill the scale insect. The handsomest rose he exhibited was from a bush which looked nearly dead a short time since. The petroleum was mixed with castor oil. It is not applied profusely and allowed to run down the roots. Perhaps in a crude state the petroleum would be bad, even on the stalks; but mixed with the castor oil it appears to be advantageous to the plant. The compound does not evaporate nor give out the insoluble portion. Therefore you have a permanent coating, acting on the entire surface of the plant.

Dr. Gibbons exhibited a large bunch of beautiful roses of exceeding fragrance, and in full bloom, which he gathered from a bush in his garden which two months ago was overrun with scale bugs and nearly dead.

Now, since using the petroleum and the castor oil, no sign of any scale insect can be seen in the whole garden. He thought castor oil was the only oil that will mix with alcohol, turpentine and the benzines. It is soluble in alcohol, and when mixed with crude petroleum forms a sort of varnish or cement, which remains on the bushes, and does not fall to the ground. Petroleum, uncombined with castor oil, evaporates swiftly, but when combined forms a useful coating to preserve the plant. Many things have been thus tried. Trees have been whitewashed with caustic potash and lime. One of his rose bushes, nearly ruined by scale insects, thus treated, has borne an unusual number of roses, and a single cactus has borne 200 flowers this season. He thought these were practical facts, and quite as valuable as theoretical ones, although he valued both, and was glad to learn of any experience having a bearing of such importance to the agricultural industries of the human family. He cautioned persons against saturating the earth with petroleum as such a course prevents future vegetation. Like all things else, its moderate use, wisely directed, is good, and its excessive use is destructive. A grain of opium relieves pain, but its habitual use persisted in, brings death.

Dr. Behr said that as the mixture was not soluble in water, if it reaches the earth, it cakes the ground and thus shuts out the air, which must permeate the surface and is necessary to plant growth. A few applications will make rose-bushes grow better if sparingly applied, and kill the scale-bugs, but if allowed to reach the soil, it renders vegetation thereafter impossible in that spot, until it is eradicated.

Dr. A. Kellogg thought a simple wash of common lye would at first be sufficient in many cases. Petroleum deteriorates ground for crops. One scale-bug has 60 offspring.

Mr. Verder received a large lot of lemon trees from Australia, covered with scale bugs. He applied refined petroleum to the leaves carefully, and they all fell off, but every bug died, and fresh leaves came out, and the plants continued healthy for many years. He afterward applied it successfully to orange trees. He thinks there is a misapprehension among those who condemn its use. It should not be allowed to reach the ground.

The roundhouse of the Utah & Northern railroad at Utah was burned on the 31st proximo, together with five locomotives, causing damage to the extent of \$60,000. The road is crowded with passenger and freight traffic to the Wood river country and Montana, and the loss of the locomotives will be much felt.

LEADVILLE has now a stock exchange. Stocks are listed free, so they will no doubt have a pretty long list.

ARE THEY NOT ARTISTS?—A correspondent of the *Germantown Telegraph*, after alluding to the grand paintings, superior sculptures, etc., results of the genius of our highest artists, asks: "Are there not others, also, whom we may call artists? When," continues the writer, "I stand among a lot of common stone masons and see one man walk around among the stones, picking one out here and there, dressing one here and there, just as though he were playing, and then suddenly begin to set them up as fast as he can handle them and the mortar, making a handsome wall, I call him an artist. If we look at a man hewing a log straight and smooth, alike in thickness the whole length, and not leaving a mark of the juggling axe, he too seems to me is entitled to the above name. Or a man, who cannot even write his name, bracing himself aside of a huge tree, and sending his axe into it with the precision of a rifle shot, making every stroke tell, and never missing the mark, and when cut in one side changes hands on the axe and cut the other, and throw the tree just where he wishes it to fall—he, too, is not devoid of artistic skill. And many a common blacksmith, who will forge out a piece of iron or steel as round as if it had passed through the turner's hands, or as square as if ran through the planing machine—I count him among the artists. Yet none of these men are ever classed with those of the higher arts."

In business, in home life, in social intercourse, in politics, there is a success worth striving for, which is the attainment of the immediate object in view; but there is something much higher, far more valuable, far nobler. It is the purity of character, the elevation of the purpose, the fidelity to principle, and perseverance of effort which are of themselves the real success of life, and shine through all the clouds of temporary failures.

HOME-MADE FLOOR-CLOTH.—Have any of my sister housekeepers a spare bedchamber, seldom used, the floor of which you would like to cover at little expense? Go to the paper-hanger's store and select a paper looking as much like a carpet as you can find. Having taken it home, first paper the floor of your bedroom with brown paper or newspapers. Then, over these, put down your wall-paper. A good way to do this will be to put a good coat of paste, the width of the roll of paper, and the length of the room, and then lay down, unrolling and smoothing at the same time. When the floor is all covered, then size and varnish; only glue and common dark varnish need be used, and the floor will look all the better for the darkening these will give it. When it is dry, put down a few rugs by the bedside and before the toilet-table, and you have as pretty a floor-cloth as you could wish—a floor-cloth too that will last for years, if not exposed to constant wear, and at a trifling expense. I myself used a common room one entire summer prepared in this way—used it constantly; and, when the house was sold in the autumn, the purchaser asked me to take up the oilcloth, as he wished to make some alterations that would be sure to injure it.—*Jean, in Germantown Telegraph.*

BEAUTY AND STYLE are not the surest passports to respectability—some of the noblest specimens of womanhood the world has ever seen have presented the plainest and most unprepossessing appearance. A woman's worth is to be estimated by her real goodness of heart, and the purity and sweetness of her character, and such a woman, with a kindly disposition and a well-balanced mind and temper, is lovely and attractive. Be her face ever so plain and her form ever so homely, she makes the best of wives and the truest of mothers. She has a higher purpose in life than the beautiful, yet vain and supercilious woman, who has no higher ambition than to flaunt her finery in the streets, or to gratify her inordinate vanity by attracting flattery and praise from a society whose compliments are as hollow as they are insincere.

SINGULAR EFFECTS OF NITRO-GLYCERINE.—A foreign journal mentions the case of a lady suffering with cramps in the stomach, and to whom something less than a drop of one per cent alcoholic solution of nitro-glycerine was given. In two minutes the pulse fell from 140 to 50, a clammy sweat covered the patient's features, and she became senseless. Stimulants to the nose, and brandy, were quickly given, and in about three minutes more she began to recover—the pain was completely gone, and did not return all that night or the following day. The patient said she felt like two persons, and so strong was this impression, that though perfectly rational in her conversation and unexcited in her manner, she could not shake it off.

THERE is one way of attaining what we may term, if not utter, at least mortal happiness. It is this—a sincere and unrelaxing activity for the happiness of others. In that one maxim is concentrated whatever is noble in morality, sublime in religion, or answerable in truth. In that pursuit we have all scope for whatever is excellent in our hearts, and none for the petty passions to which our nature is heir. Thus engaged, whatever be our errors, there will be nobility, not weakness, in our remorse; whatever our failures, virtue, not selfishness, in our regrets; and in success vanity itself will become holy and triumph eternal.

THE idle levy a very heavy tax upon the industrious when by frivolous visitations they rob them of their time. Such persons beg their daily happiness from door to door, as beggars their bread, and, like them, sometimes meet with a rebuff. A mere gossip ought not to wonder if we evince signs that we are tired of him, seeing that we are indebted for the honor of his visit solely to the circumstance of his being tired of himself. He sits at home until he has accumulated an intolerable load of ennui, when he sallies forth to distribute it amongst all his acquaintance.

REFINED HOMES are the end of civilization. All the work of the world—railway-construction, navigating, digging, manufacturing, inventing, teaching, writing and fighting—is done first of all, to secure each family in the possession of its own hearth, and, secondly, to surround as many hearths as possible with grace and culture and beauty. The work of all races for five thousand years is represented in the difference between a wigwam and a lady's parlor. It has no better result to show.

PROGRESSIVE INSTINCT(?)—A singular circumstance is reported from a hot, dry valley in New South Wales. Last year the drouth there was of long duration, and the denizens of the apiaries suffered much from it. This year the bees have made provision against a similar emergency. They have filled a large number of the external cells in every hive with pure water instead of honey. It is thought that the instinct of the creatures leads them to anticipate a hot summer.

PHOTOGRAPHING MUSIC.—An English paper tells of a gentleman, who, on being asked to sing, produced from his pocket a little case which contained his music, photographed down to the size of note paper. He had duplicate copies of the song, and handed one to the accompanist, singing from the other himself. The expedient saved all the bother of bringing a roll of music, unfolding it, collecting it again, and so forth.

A CHILD'S dress made of flint glass and trimmed with lace made of the same material will soon be exhibited in a show window in Pittsburg. It is now at one of the trimming establishments, and is nearly completed. The dress glistens like the finest satin, and is marvelously beautiful. The fabric from which it is being fashioned was spun and woven at the glass factory of Messrs. Atterbury & Co., Pittsburg.

INDUSTRIAL PARTNERSHIP.

In the hall of the Society of Arts, on Wednesday the 16th inst., a paper was read by Mr. Sedley Taylor, M. A., late Fellow of Trinity College, Cambridge, "On the Participation of Labor in the Profits of Enterprise." Mr. W. H. Hall was in the chair. Mr. Taylor remarked that his justification in bringing the subject forward was to be found in the consideration that the relations between employers and employed under the system of payment by paid wages only were admitted on all hands to be unsatisfactory. This involved a chronic antagonism, breaking out periodically into internecine conflicts, which caused mutual exasperation. The bulk of these experiments had been made on the continent, and though not without examples of failure, they presented on the whole a very decided and encouraging success.

He then described, in a manner necessarily fragmentary, the main features of participation as practiced on the Continent. As to the system itself and its applicability to English circumstances, the theory on which it was based was that by directly interesting workmen in the fruits of enterprise better and more economical labor would be obtained, and thus a source of additional profits opened. These surplus profits, without injustice, might be allotted wholly to the workmen whose stimulated efforts produced them. In practice, however, a share went to the employer, who, if he pleased, might invest it in a reserve fund and protect himself against losses in bad years. Thus participating workmen did, in an indirect, but perfectly real way, share losses as well as profits with their employers. Participation successfully practiced, under whatever form, conferred signal benefits on the parties directly concerned in it. To the employer it gave industrial peace and increased security; for the thrifty workmen it accumulated as the result of his own efforts an economized capital which he might employ in making his old days easy and independent, or enable him to transmit a provision to his children. It brought to the workman likewise an enhanced feeling of respect for himself and his fellows.

Participation encouraged excellence of workmanship, and combated every form of trade dishonesty with singularly efficacious vigor. Considerations could be adduced to show that there was no lack of scope for participators' successes in many branches of English industry. He was inclined to think that participation in profits, if once clearly set before the working classes of this country, would soon be thoroughly understood and appreciated by them. His own conviction was that participation had a great future before it in this country. The work might well be undertaken by a special society, which should endeavor to facilitate in England the practical study of participation, whose objects should be identical with those of the French society, and which might spread sound knowledge on the subject; and he would be very pleased to receive at Trinity College, Cambridge, the names and addresses of any persons who would be disposed to join such a society, should it be called into existence. A discussion followed in which Mr. Lloyd Jones and other gentlemen took part, and which was adjourned to a day to be hereafter announced.—*Engineering and Building Times*.

RECTIFYING ALCOHOL.—If a quantity of 40% to 50% alcohol is placed into a retort and a vacuum is created in this retort by means of an air pump, and the retort is placed into or in connection with the cooler of an ice machine, the alcohol will be evaporated. As the evaporation of the alcohol causes the temperature of the retort to drop below the surrounding temperature, the warmth of water at an ordinary temperature will be sufficient to evaporate the alcohol, and the same can be rectified without the use of fuel.—*R. Pictet, in Revue Univ. de la Brass et Dist.*

THE PLUMAS NATIONAL says: There is about five ft. of hard snow in the high mountains, insuring the miners a good long water season.

NEW INVENTIONS.

We publish descriptions of the following new inventions, obtained through Dewey & Co., Mining and Scientific Press Patent Agency, San Francisco:

HORSE-HOLDING ATTACHMENT FOR VEHICLES. Robt. E. Shannon, S. F. This invention particularly appertains to that class of horse-checking devices operated by gear wheels attached to the hub of the vehicle. The usual running gear of a vehicle is employed. Under the body and running its length between the axles is a shaft terminating in its rear end in a bevel-pinion which meshes with another bevel-pinion on a rod. The rod is fastened in appropriate braces, which permit of its turning to the rear axle. Its outer end is provided with a bevel-pinion which meshes with cogs on the inner side of the hub of the wheel. When the vehicle stops the lines are thrown into a slot in the top of the upright standard. The stirrup is pressed forward, which action pushes the rear boxing sufficiently to throw the bevel-pinion and cogs upon the wheel in gear. If the horse moves forward, the rod turns, which turns the shaft, pushing the feathers or ratchets in the shaft into operation with a loosely running gear wheel, thereby winding up the lines and checking the horse.

WINDOW SCREEN.—John Reardon, Ione City, Cal. This invention consists of a screen, of any suitable material, secured within a metallic frame, which is adapted to slide upon flanged guides secured to the casings so that the screen may move close to the sash, and move through the entire space, from the top to the bottom, of the window-opening, and so that it may be used as a screen at either the top or bottom of said opening, in combination with laterally-sliding, adjustable guide-pieces and holding-screws, by means of which the screen is made to fit window frames of different widths, the limits to whose dimensions are determined by the length of the slot.

STRAW-CARRIER ATTACHMENT FOR SEPARATING GRAIN FROM STRAW.—Jasper S. Scott, San Jose, Cal. This invention relates to certain improvements in devices for separating grain from the straw with which it is mixed and entangled after it leaves the threshing-cylinder and passes up the grain-belt to the straw-carrier; and it consists of a series of vibrating bars having lifting fingers. These bars are set, one just at the lower end of the straw-carrier and the other two beyond its outer end, and they are all caused to oscillate by means of crank-arms, so as to separate the remaining grain from the straw before it passes over the tail-board and is discharged.

SIDE-HILL HEADER WAGON.—W. Taynton & W. J. Derickson, Clayton, Cal. This header wagon consists in certain connections and attachments by which they are adapted for use on side-hills, and are so arranged by means of peculiarly constructed gearing under the bed of the wagon, and operating on curved bolsters, that the bed of the wagon may always be kept on a level without reference to the angle which the wheels may take on side-hills, the center of gravity being always kept in such a position as to prevent danger of overturning, even with top-heavy loads.

BARK MILL.—Herman Kullman, San Francisco. This device relates to an improvement in mills for grinding bark, drugs and similar material whereby steam is introduced to keep the grinder heated and preventing the bark from sticking and clogging the machine. By the use of this machine the bark may be put into the mill at once without any preliminary drying, thereby saving expense of drying-floors, etc.

A RUINED CITY.

Four miles northeast of town, near Ross' Mills, there are several large and regularly shaped mounds. The largest of these mounds is within 20 ft. of the well-traveled road to Tempe. It is about 40 ft. high, and, when once the curiosity hunter has clambered through the debris of fragments of adobe and earthen pottery which covers the sides to the summit, he is rewarded by discovering the well-defined divisions of what was once a large house. Although large trees of the slow-growing mesquit have sprung up, the adobe walls which divided the interior of the building into rooms still remain whole and intact a foot beneath the surface. In some of these walls there still remain the ends of the rafters used to support the floors. All these pieces of rafters are charred, and appear as though they had been at one time subject to intense heat.

Looking to the northwest from the top of this ruin the eye sweeps a small plain, thickly dotted with mounds which differ from the large one only in size, and the whole is enclosed with the remains of what was once a thick adobe wall, the southeast corner of which was formed by the large house. An examination of the ruins discloses a regular system of streets running north and south, intersecting one another, and forming regular and equal-sized squares. Immense quantities of broken pottery strew the ground, and from these fragments, a relic hunter can select, with a little patience, a score of pieces, with each piece bearing a different design; but this variety in design applies only to size and shape, as no colors save black, dark blue and dark red appear to have been used by these ancient decorators.

Here and there can be found fragments of shell ornaments, bracelets, ear-rings, etc., manufactured from a shell somewhat similar to abalone. Everything connected with this desert of ruins tends to give rise to the opinion that the destruction of the city was sudden, speedy and complete; but when and in what manner, it, in common with other cities, was blotted from the land we now occupy, must forever remain a matter of conjecture.—*Phoenix Gazette*.

SIR H. BESSEMER ON HIS IMPROVEMENTS.—Sir Henry Bessemer was presented with the freedom of the Cutlers' Company on Wednesday, Mar. 16th, and was subsequently entertained at a banquet, in recognition of his services to the cause of technical education, which the company is endeavoring to promote. The Master, in proposing "the health of Sir Henry Bessemer," said that gentleman had done that for the prosperity of his country which would continue to be fruitful of good in future generations. In proof of the manner in which the influence of his work in this country spread beyond our shores he mentioned that he had recently received an application from Ohio for copies of the lecture which had been delivered in that hall. Sir Henry Bessemer, in acknowledging the toast, said with regard to the educational movements which had been so long commenced by the Cutlers' Co., if he could further their efforts in that direction he would be pleased to do so. That the Master should have received a note from across the Atlantic in reference to his lecture he was not surprised, because no country was more ready than America to take advantage of the improvements of the age. His invention had been most cordially taken up in that country, for which he had received a token of American regard. There had, however, been a speciality in the mode of recognizing his services there which was well worthy of the people. They had no crosses, orders, honors, or titles to bestow, but they had done him the great honor of naming a rising city in Illinois after his name.

RAIN AND CULTIVATION.—Prof. Aughey claims that more rain falls now in Nebraska than formerly, and that this rainfall is increasing with the march of settlement and consequent cultivation.

HOW CAN WE KEEP OUR SONS FROM FALLING?

BY J. G. S.

"For I know him that he will command his children, and his household after him."

This is a subject that has been weighing on my mind for some time. In conversation with a sister of another church in regard to the training of our sons, she said she believed that we might train our sons ever so careful in their childhood, but still, when they were grown up, they would be in great danger of falling, surrounded as they would be by all the temptations of city life.

But I say that they will not fall if the right kind of influences are brought to bear upon them. I am speaking now of boys who from their infancy have been taught to love and obey God; and who have been early brought into the church. These need a double portion of the Holy Spirit to rest upon them as they walk up and down among the pitfalls, which are spread out before them on almost every corner of the streets.

Why cannot we, as parents, use our reasoning powers more than we do?

Very often have I heard fathers make such remarks as these: my son is of age, he is his own master now, and is responsible for his own actions. Do we ever think how closely Satan watches for these sons of ours, as they stand ready to step upon the stage of action and combat with an ungodly world. Satan considers it a grand victory when he succeeds in entrapping one of these and causes them to fall. At such times all the enemies of the church stand with wide open mouths to proclaim it aloud, and all the devils in hell gloat over it.

There are so many ways for the evil spirit to present himself to our sons. Sometimes he comes to them in the guise of a friend, or an impenitent school-mate who considers it manly to break away from family restraints, and at church, sits in one of the back pews, and accuses his Christian friend of being tied to his mother's apron strings. Sometimes he comes to them in the wine cup offered to them by the jewelled hand of some fair young maiden on New Year's day. It would have been better for him had she hanged a rattlesnake around his neck, the bite of which can only destroy the body; while the sting of the cup destroys both body and soul forever.

He comes to some widowed mother's son in the shape of an avaricious employer. Perhaps this noble boy of hers has taken up temperance, and is making war against alcohol. His employer comes to him and says, that in order to serve him faithfully he must drop his temperance work; it must not be mentioned in his store, because he cannot afford to lose any customers thereby. What a mighty conflict is going on in this young man's soul, now of right and wrong, each trying to gain the mastery. At last he yields to the oily words of the evil one, who is whispering to him, "Your mother first, and God second." So he throws his whole soul into the business of his unprincipled master, and in order to make large sales, he sometimes takes the customers to a saloon and treats them. But what is the result? Those bright expressive eyes of his become blurred and bloodshot, and the strong right hand begins to tremble, and the erect form is stooped, and at last his master opens the door and tells him to begone.

Does this ungodly man set anything aside for the widow? Oh, no! he tells the mother and son to shirk for themselves. If this mother could have seen what the future of that son was going to be in that store, she would have encircled him in her strong arms of faith and prayer and said to him, "My son, my dear son, yield not to sin in one single point; we will put our trust in the living God, who hath said, the righteous shall not be forsaken, nor his seed be left to beg bread.

Now, in view of these things let not our tired, overworked minister be left to watch alone, but let every one of us parents become watchmen and women in our own homes, and may we watch so wisely that we shall take to us the foxes, the little foxes that spoil our tender vines. But we must be much in prayer, and show by our perfect example that we are in earnest. Our hearts must be filled with love, so that it will shine out in our faces. Some father will say that he is disappointed in his sons; that he has expended a large sum of money on them in sending them to college, expecting that they would go into the ministry or take up some profession, but finds that they haven't any inclination to do so.

In this case take your son and have a good honest talk with him, and find out

what the bent of his mind is; and if he wants to be a blacksmith, let him be one; or if he wants to go into the counting room, let him do so, or into any of the mechanical pursuits that he may fancy. Set him to work at once; if he has that wonderful brain that we think he has, he will show it in his superior workmanship. We may be sure that God wants these sons of ours just in these places they have chosen. He wants them to be his armor bearers, and like Joseph of old they may become rulers in the shop or commercial house in which they are working.

The fathers of to-day have one great fault. In their anxiety to make money they do not take time to get acquainted with their sons. Some of these have been away to school for a number of years, and have just returned. The father takes him and holds him off at arms length and looks at him as though he were some superior being. He does not want him to soil his hands with the pick and shovel, as he had to do, although he is weighed down by a heavy debt, on account of the advantages that he has given his son. Now, take this son into your confidence and tell him how you stand. Tell him that you want him to help you bear the burden, and you will see how quickly the tears will come to his eyes and how nobly he will respond to your wishes; and in time your souls will become knit together like the soul of Jonathan to David. And you shall lay your hand upon his head to bless him, and bring down upon him the divine benediction, saying, Lo! I am with you always, showing mercy unto thousands of them that love me and keep my commandments.

PIG IRON.—After an outlay of less than \$40,000, the Port Townsend (W. T.) smelting works are in successful operation, giving employment to 25 men and turning out an article of iron, which, by prominent Seattle foundrymen, is lauded in these words: "It runs good, is clear metal and makes strong castings." Lime rock for the furnace is brought from the immense deposits on San Juan and Orcas islands.

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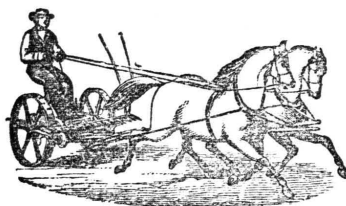
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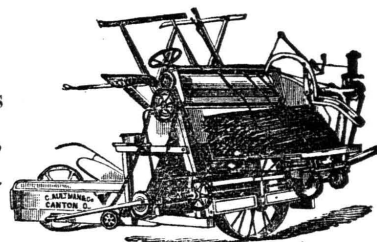
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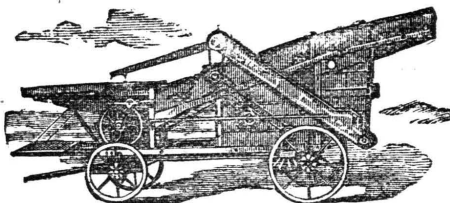
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Astoria, Kalama, Tacoma, Seattle.....	6 A. M.	6 A. M.	6 A. M.	6 A. M.	6 A. M.	6 A. M.
Victoria, New Westminster.....			6 A. M.			6 A. M.
Cathlamet, Bay View, Skomockway, Brookfield, 6 A. M.			6 A. M.		6 A. M.	
Westport, Clifton, Knappa.....		6 A. M.		6 A. M.		6 A. M.
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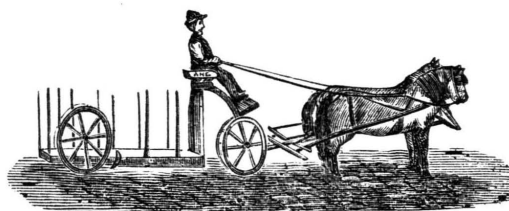
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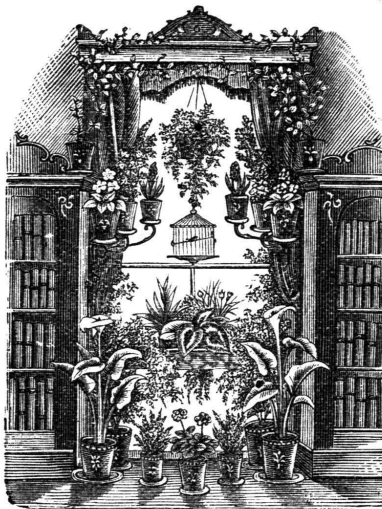
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WHOLESALE GROCERS,
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Mark—Care O. T. Co.**Read Proof of Wonderful Cures.**

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DR. B. J. KENDALL & Co., Gentlemen:—I thank it my duty to render my thanks for benefits and profits which I have derived from your invaluable and far famed Spavin Cure. My cousin and I had a valuable stallion, worth \$4,000, which had a very bad spavin, and was pronounced by four eminent Veterinary Surgeons beyond any cure, and that the horse was done forever. As a last resort I advised my cousin to try a bottle of Kendall's Spavin Cure. It had a magical effect: the third bottle cured it and the horse is as well as ever. Dr. Dick, of Edinburgh, the eminent veterinary surgeon, was an uncle of mine, and I take great interest in assisting his profession.

Yours truly,

JAMES A. WILSON,
Civil Engineer.**KENDALL'S SPAVIN CURE****ON HUMAN FLESH.**

WEST ENO BURGH, VT., Feb. 15th, 1881.
DR. B. J. KENDALL & Co., Gentlemen:—Several months ago I injured my knee joint which caused an enlargement to grow the size of a large walnut and caused me very severe pain all the time for four or five weeks, when I began to use Kendall's Spavin Cure with the most satisfactory results. It has completely removed the enlargement and stopped the lameness and pain. I have long known it to be excellent for horses but now I know it to be the best liniment for human flesh that I am acquainted with.

Yours truly,

T. P. LAWRENCE.**KENDALL'S SPAVIN CURE.**

Send address for Illustrated Circular which we think gives positive proof of its virtues. No remedy has ever met with such unequalled success to our knowledge for beast as well as man. Price, \$1 per bottle, or six bottles for \$5. All Druggists have it or can get it for you, or it will be sent to any address, on receipt of price, by the proprietors, **DR. B. J. KENDALL & CO.,** Enosburgh Falls, Vt.

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The Farmers' and Mechanics' Store

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**No. 184 First Street, between Yamhill and Taylor,
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And occupy the three-story, fire-proof building (formerly occupied by Ira F. Powers), opposite their old store.



What a grand result of four years' honest toil, zealous labor, fair dealing, judicious management and the ONE PRICE Rule!

While we are grateful to a considerate people for having sustained us in our honest system of dealing with them, we desire to call their attention to a few facts worthy their consideration:

Four years ago we started with very little, strove very hard to deal fairly and justly by everybody, sold our goods always at Bed-Rock Prices, and strictly adhered to the One Price System.

We have reduced Prices to one half of what the people were obliged to pay before, broke the monopoly and wrung the Farmer and Laborer of Oregon and Washington Territory from the grasping clutches of avaricious monopolies. And so well did the people sustain us that to-day our business requirements compel us to seek more spacious quarters to accommodate our patrons.

And though we cannot boast of our wealth, we point with just pride to the business we have established, the confidence and patronage bestowed upon us, it is a result we may be proud of.

We have saved to the people of Oregon and Washington many thousands of dollars by reducing prices to one-half, and thus compelled others to do the same.

And now, after having acquired greater facilities, buying in larger quantities from first sources, we can afford to sell better Goods for less money than any of our competitors on this Coast.

We shall continue to adhere strictly to the ONE PRICE SYSTEM and give people full value for their money. A child can buy of us as cheap as the most experienced dealer.

It is well worth your while to call on us at our New Store and examine our immense stock of new choice goods.

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IF YOU WISH TO USE GOODS OF

 Full Weight, Full Strength, Absolute Purity,

SEE YOUR GROCER SUPPLIES YOU WITH

Kingsford's Oswego Starch.

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Patent Safety Elevator.



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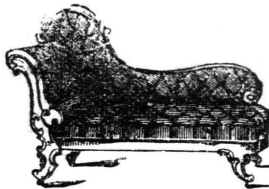
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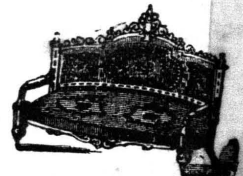
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If you have SICK HEADACHE, DYSPEPSIA, CONSTIPATION, BILIOUSNESS, NERVOUS and GENERAL DEBILITY, IMPURITY of the Blood, Etc.,

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Which promptly RELIEVE and CURE those disorders.

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