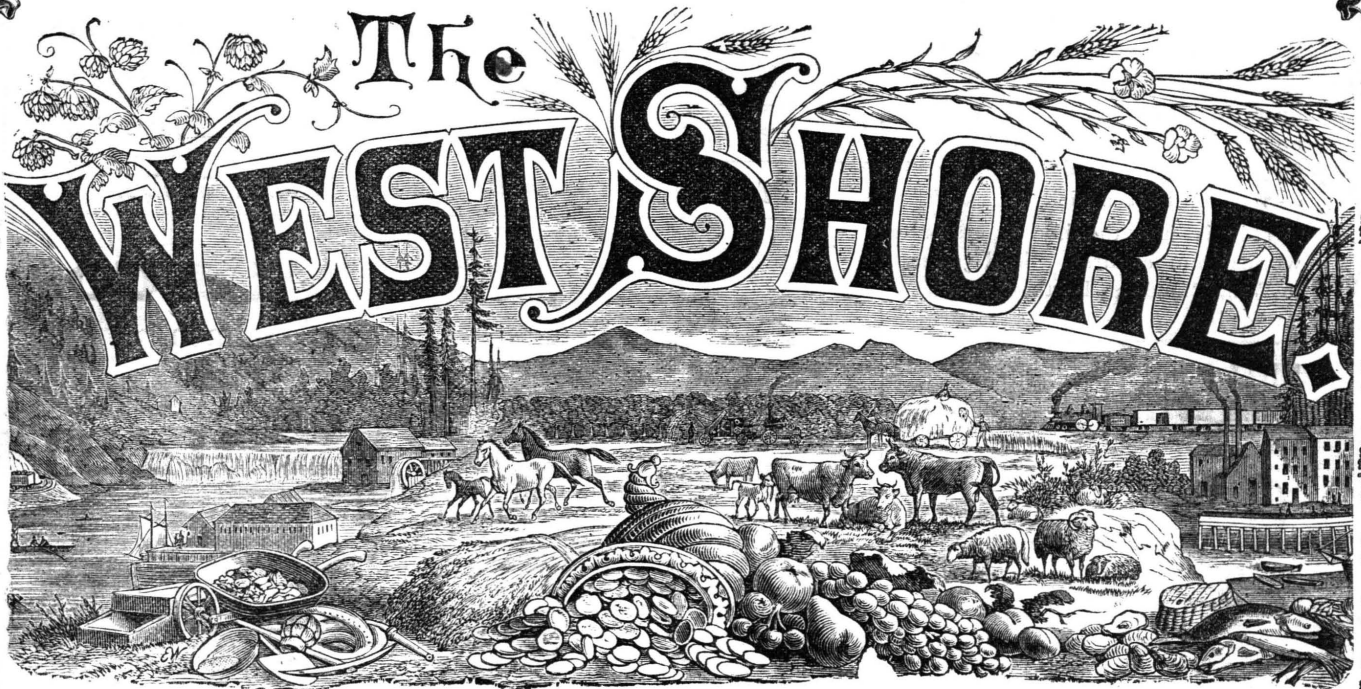


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A FAMILY PAPER,
DEVOTED TO

LITERATURE, SCIENCE, ART,

AND THE
RESOURCES OF PACIFIC NORTHWEST.

Published by
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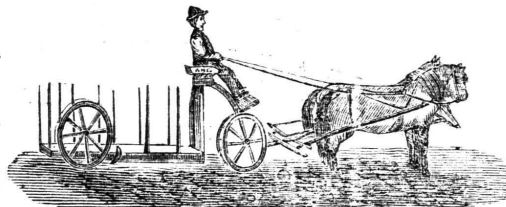
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THE WEST SHORE.

VOL. 7—No. 2. { L. Samuel, Publisher,
5 Washington St.,

Portland, Oregon, February, 1881.

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WILLIAM STEEL.

We give on this page the picture of one of nature's noblemen, WILLIAM STEEL, who was born on the Clyde, at Biggar, Scotland, in 1809. His mother was a cousin of Rt. Hon. W. E. Gladstone, the present Premier of England. When but nine years of age Mr. Steel came with his parents to America. His first home on this side the Atlantic was at Winchester, Va. The family removed in a few years to Ross county, Ohio. When Mr. Steel was about 14 years of age, he went to live with his uncle, John Gibson, at Barnesville in S. E. Ohio, where he remained until 1832, in which year he was married. In the same year he settled in Woodsfield, Ohio, where he engaged in the mercantile business. In a short time he secured, and held for years, a leading position in trade, and became, for that day, a man of large means, which, added to his sterling qualities of character, gave him great influence and power throughout the entire south-eastern part of Ohio. In 1844 he removed to Stafford, in the same state. With the years came financial disaster. By the failure of friends for whom he had endorsed, Mr. Steel saw the fortune which he had spent a lifetime in accumulating, swept away as in a night. After his failure, he again spent a short time in Woodsfield, Ohio, in Pittsburg, and then a few years in Kansas, and finally removed to Oregon in 1872, where he spent the sunset days of his earnest, honest life with his sons. Wednesday, Jan. 5th, at 6:30 o'clock P. M., at the ripe age of three score and eleven years, he exchanged this earth for heaven.

It is written of one of old-time that he so lived that, "being dead he yet speaketh." So lived William Steel. We do well to listen to such "voices from the grave."

What were the characteristics of his life? He put

PRINCIPLE FIRST.

With a keen sense of justice, and a burning indignation against wrong, however popular that wrong might be, his whole life was given to moral reforms. Benjamin West said that his mother's kiss made him a painter. The tears of William Steel's mother made him a reformer. There lies before the writer a little pencil sketch, from his own hand, in which he says: "I became an Abolitionist when I was only nine years of age. One beautiful Sabbath morning, a large clogging of slaves, chained hand to hand, passed our house in Virginia; the front ones were forced to carry an American flag, while two men drove

them, like so many beasts, through the street with heavy whips. When my mother saw it she wept very much, and those tears made me hate slavery intensely from that moment."

When the years of manhood came, this hatred of slavery took a very practical form. He was one of the pioneers of the anti-slavery agitation, entering upon this his great life-work with intense earnestness, and with undaunted courage, periling his life, and property, and good name, bearing the trials, and cares, and anxieties of that unequal contest, when with Lundy, Garrison, Phillips, Lovejoy, and a few other brave souls, the old "Liberty Guard," fought the slave power single handed. William Steel soon became the recognized leader and master spirit of the Abolitionists in south-eastern Ohio. In 1842, Ohio passed a law making it a penal offense to aid or harbor fugitive slaves, thus ante-dating the Fugitive Slave Law. To disobey the law was to face the peni-

arms of the great slave power. When war came, though his heart bled for desolate homes and for his country, still he rejoiced. He felt, with the poet—

"Mine eyes have seen the glory of the coming of the Lord:
He is trampling out the vintage where the grapes of wrath
are stored;

He hath loosed the fateful lightnings of his terrible swift
sword,

His truth is marching on,"

And he never doubted the result of the war. He knew that principle must prevail, because God reigned.

But not to the negro alone, but to all the oppressed, his heart was open and his hand ready to work. He was foremost in all moral reforms. Temperance found in him an early, earnest, consistent advocate and worker. He was the friend of education, and gave to it thought, time and money. The Church found in him a strong support and steady worker. But everywhere, in all

fields of active reform-work, principle guided his action. "Policy" was an unknown word to William Steel. His was, also, a

LIFE OF STRICT INTEGRITY.

No man living ever questioned William Steel's honesty. For years an active politician, at one time a candidate for Congress, he was that rarest of all men, an honest politician. He told no lies, stuffed no ballot-boxes, packed no caucuses, bought no votes, and never used the grog-shop. And yet he lived to see the party he helped organize, sweep the country and hold the reins of power for twenty years. In the very hottest fire of the old slavery contest, though he was always at the front, and was hated most bitterly for his energy, activity, and boldness, still, even his political enemies honored him as a man, never questioned his integrity, and were quick to do him a favor.

As in politics, so in business life: The leading business man of his county, and the wealthiest, by the failure of others he felt the ground give way, and himself swept down to financial bankruptcy. The law gave him his comfortable homestead. But William Steel counted honor of more worth than money or a home. Taking his brave wife by the hand, he went out from his home, in his old age, to begin the battle of life anew, penniless, but rich in the sight of God.

William Steel was

A TRUE CHRISTIAN.

So far as others were concerned, his Christianity was summed up in the Golden Rule. So far as his

own heart was concerned he rested firmly in two thoughts: 1. Himself a sinner; 2. Christ a Savior. Two of David's Psalms—the 51st, that wonderful penitential heart-throb, and the 103d, that song of triumphant assurance—were written on his memory. Men saw his Christianity in an earnestness that took the form of deeds and not words; in an evenness and absence of spasms; in a cheerfulness, born of a living faith.

The rich, full sheaf was at last ripe. God harvested it.

The world will always be better because William Steel lived in it.

J. A. C.



WILLIAM STEEL.

tentiary; but William Steel openly defied the law, clinging to principle even though it imperilled his liberty. He organized the famous "Underground Railway," became its "Superintendent" and "General Passenger Agent," and aided hundreds of fugitives to gain their liberty. Some slave-owners in Virginia offered a reward of \$5,000 for the arrest of William Steel on slave soil. William Steel boldly answered—"that if they would deposit half that sum in an Ohio bank to his credit he would meet them at any place named in Virginia." The deposit never was made.

In the darkest hour he never doubted the triumph of right. Years before it came he predicted war, and the consequent downfall by force of

MINING IN EASTERN OREGON.

It is the belief of those well-informed upon the subject, that mining in Oregon will take a new departure during the present year. Hitherto, mining in Oregon, has been mostly among surface diggings, and has not risen above the dignity of the hydraulic hose. The era of the long-tom and rocker, has long since passed by, and those primitive implements are used chiefly by the unconverted Mongolian, whose "smile is childlike and bland."

The quartz ledges of eastern Oregon have long been celebrated for the high grade of rock produced, but the narrowness of the veins, has hitherto prevented them from being worked at a profit. The Connor creek mine, in Baker county, owned by S. G. Reed, Jno. A. Faull and Joseph Myrick, was an exception to this class. The vein is over six feet in width, thus relieving them from quarrying any waste rock. What the yield of the mine has been, no one knows, for it has always been a close corporation, and its owners have never allowed it to be listed on the stock boards in San Francisco. The success of this mine caused a new activity to spring up among the veteran prospectors of that section, and we may be prepared for extensive discoveries in that region as soon as the snow goes off the ground.

Somewhere in the tributaries of Olive creek, near the boundary line between the counties of Baker and Grant, lies a body of argentiferous galena, similar to that found at Pioche, Eureka and the other large towns of eastern Nevada. This one has been sampled and assayed somewhat extensively in the past four months, and goes from 35 to 58 per cent. of lead. In some places it shows as high as \$30 in gold to the ton, while in other localities, it contains more silver than gold. A similar deposit has been found in Union county, with silver going as high as \$104 to the ton, while the traces of gold are barely discernible. Across from Olive creek, about eight miles, are the Granite creek ledges, of an entirely different character of ore, being the "ruby silver," found in southern Idaho. This is a "roasting ore," and has to be burned before crushing. The Beagle brothers, whose mine is about two miles from the "Monumental," have the best of these

ledges, the vein being over four feet in width. One hundred tons from this yielded \$102.50, and a second crushing of one hundred tons, yielded \$105.25. So far, the Monumental has not been worked to any great degree of profit, but the ledge widens gradually.

Eastern Oregon offers to capitalists two peculiar advantages not possessed by Nevada, and which contribute materially to the economical and successful working of mines. We allude to the splendid water power and abundant supply of wood, enjoyed by the tributaries of the Grande Ronde, Powder and Burnt rivers. The gulches all bear abundant supply of pure water, free from any refractory mineral substances, and the pine wood is so abundant, that four dollars per cord is over the average price. Just contrast this with Nevada mining. At Pioche, the same sort of wood is worth \$16 per single cord and \$14, by the thousand cords. The narrow gauge road from Palisades carries Evanston coal to Eureka for fuel, but for which those mines would be lying idle to-day. In the Cornucopia district the Leopard mine declared dividends so long as the wood lasted, but was obliged to shut down in 1877, because there was no timber within forty-two miles, and the cost of hauling wood to smelt ore, cut off the profits of the mine. No such contingency can occur in either Baker or Grant county.

It is not always the richest quartz that makes the best paying mine. Mining upon scientific principles must be conducted with economy, or it cannot prove lucrative. From what we have been able to glean from parties better posted than ourself, we are justified in saying that the mining of these ledges will be profitable, and that Oregon is rapidly advancing as a bullion producing state. A geological survey of that section would be of untold benefit to our state at this time, but Oregon cannot afford the expense, and there is no private citizen who can afford to advance the money for it. Hence we must "learn to labor and to wait," but we don't think we will have to wait very long for the dawn of a new mining era in our already wealthy state.

"Why is Hymen always represented as bearing a torch?" asks the Boston Post. That's easy enough. It's a hint as to who shall build fires.

COUNSEL AND CAUTION.

As our caption would imply, we feel moved at the present moment to give the good people of our sovereign state, a few words of wholesome advice well seasoned with a due allowance of caution.

Through and in consideration of the World's Fair, to be held at New York during the summer of 1883, it is pretty certain that strenuous efforts will be made by the constituted agents of the various immigration societies of our western states and territories, to secure their own quota of emigration which this fair will cause to leave Europe for our shores. That the fair will provoke a mighty influx of settlers from the Old World, nothing can be more certain. It may not be generally known by the masses of our people that this very object is one of the moving elements in the underlying machinery of these great movements. Eastern capitalists themselves have large land interests in the west and northwest as well as in some of the Pacific states and territories. By inaugurating these monster exhibitions of our facilities, they count on inducing thousands of well-to-do European husbandmen to come over here and purchase their lands that are now not paying the interest on invested capital. Much of this financial machinery has already been set in motion, though for the most part, as yet, only in a sort of *sub silentio* way, the active agents of each interested party thinking, very naturally that they have gotten the start of everybody else. Governor Perkins of California, however, comes out publicly and boldly in his recent message and appeals to the people of his state to begin operations at once in this good work. He proposes that the district agricultural societies report immediately to the state agricultural societies everything of importance relative to the inducements offered to settlers in their respective localities. The amount of wild and improved lands in market, the prices per acre, kinds of soil, adaptability to different crops, nearness to railroad or water transportation, character of markets, etc.; the approximate supply of timber and water, healthfulness, climate, rainfall and temperature, etc., etc., are matters of great moment to settlers, and these the governor wants collected and prepared in convenient form, ready for

inspection at the coming World's fair. Of course, Gov. Perkins is working, in the main, for California, leaving other governors and other legislatures to attend to their own respective concerns as touching this general business.

And now, to come straight to the point, the very gist of this article, we would like to know if anything of a similar nature will be done by our own state authorities? This is a question of no small importance to the people of this state; and it is high time that the subject be brought to the notice of those authorized and qualified to act officially and effectually in the matter.

Let our agricultural societies see to it at once that Oregon shall be represented at the great exhibition of 1883 as her best interests demand. Some of our own friends may think we are premature in urging this business at so early a day, but we have only to repeat what we have said, that other parties are already in the field, fully determined that their own interests shall be justly subserved. Oregon has thousands of acres of good land to sell to the hardy yeomanry that is certain to cross the Atlantic immediately after the great council of nations at New York shall close, and there is no reason why she should not induce a good-sized branch current of the prospective immigration to flow into her borders.

The fair commissioners for each state and territory were appointed by the head managers some time ago, and many of them have gone into active operations with the view of justly and profitably representing their respective claims at the great convocation, and nobly serving their state constituency. As a parting word of caution, we repeat, let our own commissioner and our own people be on the alert.

THE WIDE WEST.

Ever since the growth of the country east of the Cascade mountains began to indicate that the people of that section had turned their attention to something more permanent than placer mining, the necessity of better traveling accommodation was made apparent to the Oregon Steam Navigation Company, of which the elder Ainsworth was the moving spirit. He knew that his company was receiving the highest rates of freights and fares of any steamboat corporation in America, and that it

would be made the subject of hostile legislation unless first-class accommodations in the way of speed and comfort were furnished to the traveling public.

He had a splendid lieutenant at his side, in the person of John Gates, the company's consulting engineer. In fact, he was exceedingly fortunate in his choice of subordinates, and when he once secured a competent officer, he did not propose to let him go. With Gates to model the hull and machinery, and Holland to construct the vessel, it was no wonder that Oregon now boasts the handsomest fleet of stern-wheel steamboats of any state in the Union. And in 1877, about the middle of June, on the present site of Ainsworth dock, was laid the keel of the palatial steamer Wide West; a boat of which it may be truthfully said that she was built upon honor.

Her hull is 215 feet long and about 236 feet over all, which of course includes the "waterfall" enclosing the wheel. She is of 39 feet beam, giving her great carrying capacity. Her hull is divided into 84 water-tight compartments, each of which is provided with a steam syphon to discharge leakage water. This, of course, requires a great deal of extra timber and necessary made the hull strong enough to bear immense weight upon the decks. She can carry about 550 tons of wheat without swashing her guards in the water, and would have been able to carry 120 tons more had her hold been made a foot deeper. In this respect and this only, she is inferior to her consort boat, the R. R. Thompson, built one year later, and now plying between the Cascades and Dalles. In all other respects she is the finest stern-wheel boat in the world.

Her propelling power consists of two horizontal high-pressure engines of 28 inch bore of cylinder and 96 inch stroke of the piston. These engines were built by Pusey, Jones & Co., at Wilmington, Delaware, from drawing and specifications made by John Gates in person. They are exact duplicates of those in the R. R. Thompson, built by Harlan & Hollingsworth at Wilmington. They are provided with an independent cut-off, designed by Mr. Gates, which is a great reduction of steam in the cylinders and as a natural consequence, a great economy of fuel.

These engines are driven by a sec-

tional boiler of great length, of the fire-box model and having an "elephant saddle" or combustion chamber about two-fifths of the distance back from the fire-box which distributes the heat evenly between the upper and lower tubes of the boiler. On the muddy Missouri or Sacramento rivers, such a boiler would need cleaning every other day, and would be utterly useless for that reason. But the water of the Columbia river is so comparatively free from sediment, that these boilers work splendidly if washed out once a week. In the breeching of the boiler, is a spark arrester consisting of a wire screen, against which, the sparks are thrown by the force of the exhaust and fall down into a pit, while a jet of water from the donkey pump plays upon them and washes them out through the side of the hull. This saves an immense amount of paint for the upper works, and keeps the upper deck always clean. Donkey pumps are used also to feed the washstands and work the hydraulic steering-gear, of which more anon.

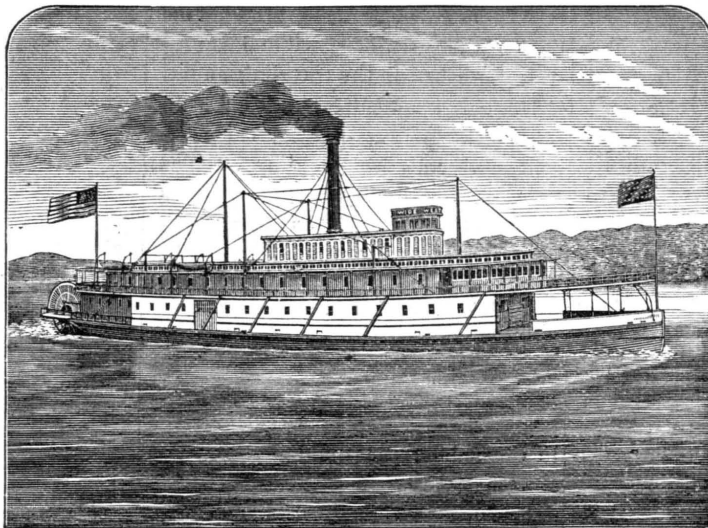
Passing from the main deck to the boiler deck, first we enter the "social hall," which has ten state-rooms with two bachelor berths in each. The steam drum comes up into the hall and is neatly jacketed as a receptacle for valises, overcoats, etc., while the boat is under way. The purser's office is on one side of the hall, and the freight-clerks' on the other. This hall is done in a delicate tint of lilac, and the floors are covered with mosaic oilcloth. We now enter the dining-room which has twenty-two large and commodious state-rooms, each provided with a three-quarter bedstead for two persons, while above it is a single berth. These rooms and those in the ladies' saloon, are all of uniform size and contrast favorably with the cramped up little dens called state-rooms on the eastern steamboats. This room is painted in pale lemon color with gold beads in the door panels, and carpeted with rich Brussels covered with snowy duck. The dining tables and chairs are of Oregon ash, veneered with burl maple, everything betokening home industry.

The ladies' saloon is of different tint from the other sections, and contains six rooms—one of which is fitted up as a ladies' toilet. The pumps keep continuous jets of water playing, while the boat is in motion, so that no offensive effluvia taints these sumptuous cabins.

The room is well warmed in cold weather by a steam heater neatly covered with a marble slab. The upholstery of this room is sumptuous in the extreme, and its delicate tints give the saloon a palatial appearance, especially at night, when the nickel-plated lamps are lighted up.

Passing to the hurricane deck, or, as it is called in steamboat parlance, "the roof," we find ten state-rooms for the accommodation of all the officers save the clerks. On top of this "Texas," we find an elegant pilot-house, enclosed with plate-glass windows, and provided with a steering-wheel, which is operated with a hydraulic lever working two cylinders connected to the rudders by strong wire rope. This lever, which can be moved by a child of six years, is more powerful in changing the vessel's course than the combined bone and muscle of any ten men you can find. It is, together with the water-tight compartments mentioned above, a complete policy of insurance upon each one of the Oregon Railway and Navigation Co.'s seventeen steamboats so provided.

On the roof are seven life-boats with crane derricks which can be lowered at a moment's notice of fire. Take her for all, she is complete in every detail; nothing being spared that will conduce to safety and comfort of the traveling public.— Her cost was not far from \$114,000, and she is good for ten years of future service. She is under command of Capt. John H. Wolf, who has been master and pilot on this route for the past twenty-eight years. The engines are in charge of John Marshall; the office presided over by Daniel O'Neill and Fred Ernst is in charge of the culinary department.— Every man is master of his business, and she has excited the most favorable comments from all



O. R. & N. CO.'S STEAMER, WIDE WEST—Portland and Cascade Route,

Eastern tourists that have traveled on her.

The Wide West is the Oregon Railway and Navigation Co.'s favorite steamboat, and makes regular daily trips between Portland and the Cascades, passing the finest part of the famous Columbia river scenery.

BRITISH COLUMBIA.

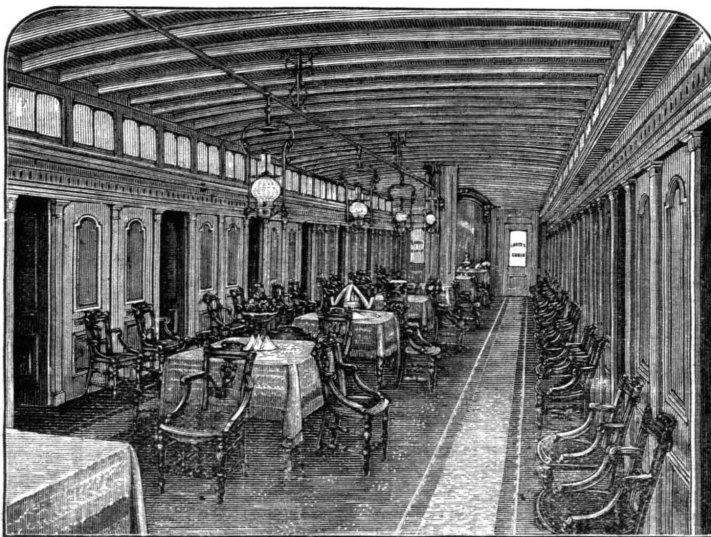
A prosperous season is about dawning on this favored locality. Rich in natural resources, which are being gradually developed, its railroad enterprises are to be pushed forward with renewed vigor so soon as spring fairly opens. The contractor of the Savona branch of the Canadian Pacific R. R. advertises for 3,000 white laborers. Victoria, the metropolis, will reap a rich har-

vest from the general activity. Already a pretty place, with natural advantages of location and climate, these brisk times will have a tendency to build up and make it a still handsomer and more desirable place for business and residence. Numerous engravings of the city and surroundings have, from time to time, appeared in these columns. We present in this issue three additional views. The Four-mile house is located at Craigflower, four miles from Victoria, in the midst of a cool

forest and within sight of salt water. It is but one of the numerous charming, rural spots to be found on the far-famed roads leading in nearly every direction from the city.

Corner Douglass and Cormorant Sts. is a substantial, neatly kept hotel, the property of Joseph Gosnell, Esq., who also owns a number of neat cottages adjoining. Mr. G. came to B. C. from Canada in 1862, and is an enterprising, go-ahead merchant, being engaged in the grocery business directly opposite the hotel.

Government is the principal business street, and the stores thereon will compare favorably with those of any city on the Pacific coast. Tourists, especially, will find the London Bazar, of which Mr. Thos. Carrington is proprietor, a nice place to visit. The goods displayed therein are mostly of foreign manufacture and entirely unlike those we are in the habit of seeing in similar stores on the American side. Adjoining the Bazar are the warerooms and furniture manufactory of Jacob Schl. The store runs through from Government to Langley Sts. The latter street being considerable lower than the former, makes the building a three-story one on Langley street. It is 64 feet wide on both streets—was erected by



DINING SALOON, STEAMER WIDE WEST. PHOTO BY I. G. DAVIDSON.

VIEWS IN BRITISH COLUMBIA.—PHOTOS BY R. MAYNARD.

Mr. S. at an expense of \$11,000, and is entirely occupied by him for his extensive business. In the manufactory, occupying the entire lower story, steam, and the latest invented labor-saving machinery, enables Mr. S. to fully keep up with the demands of the market. He, at the same time helps to build up the country by giving steady employment to a large force of men and using a large quantity of native raw material. Mr. S. has been a resident of British Columbia for twenty-two years, nineteen of it in business for himself; and having accumulated a full share of this world's goods, is the very best evidence that manufacturing in British Columbia pays.



THE FOUR-MILE HOUSE, CRAIGFLOWER.

and pleasant sociables given by them, they prosper and amity prevails.

The country surrounding the village, though mostly hilly, rocky and covered by a dense growth of fir and pine when cleared of timber, is by good tillage, made to yield a fair crop—but it is to the excellent water-power, together with the giant timber, that Stayton owes its birth. Although it has no immediate means of transportation by water or rail, it has grown rapidly and continues to grow. All in all, Stayton is a picturesquely situated and industrious, healthy little manufacturing town.

VIOLET.

STAYTON, MARION COUNTY.

This is a flourishing little town beautifully situated on the north side of the mouth of Santiam river, about 9 miles east of Turner, the nearest railroad depot. It reaches nearly to the hills, where tables of hard slate-rock are visible above the soil, while here and there masses of rocks hang out from the hillside made beautiful by the rich drapery of variegated mosses, and anon, a tuft of delicate silvery fern (*Gymnogramma triangularia*), peeps forth from the deep recesses of the rocks.

The village now supports three stores, two blacksmith shops, two livery

stables, one drug store, a grist-mill, a saw-mill, a carding machine, a furniture shop, a boot and shoe shop, a hotel, a restaurant, and, sad to say, two drunkard manufactories. The health of the inhabitants is insured by the presence of two physicians and one dentist. The Stayton school, under the management of Prof. Privett, is well attended. The subject of building a commodious two-story building for the use of the school, is being agitated. The enterprise, if successful, will greatly benefit the village. The Baptist, Methodist and the Christian churches, have societies; both the Masons and Odd Fellows have lodges, and judging from their neat halls

Three new steamers are receiving their engines along the city front. Whenever the railroad gets to Grand Ronde valley, the quartz machinery for the Idaho mines will also be manufactured in Portland. There are good times ahead and plenty of money for all.

Beef producers will find out that the day of men getting rich by letting cattle take care of themselves, has gone by. It has passed away with the era of rockers in mining. The successful stock-breeder of the future must feed his cattle in winter if he would hope to lay up any stock of money in bank.



GOVERNMENT STREET VICTORIA.



COR. DOUGLAS S AND CORMORANT STS., VICTORIA.

A GOOD MAN GONE.

On the 15th day of the current month, at his residence in East Portland, died Dr. James C. Hawthorne, aged 62 years. He was stricken down with paralysis on the 12th, and remained insensible until his brave and gentle spirit left a world that had seemed a better one for his presence. The news of the fell blow spread far and wide and the afflicted family were surrounded on all sides by sympathizing friends, but vain was mortal power to save the man whom none knew but to love.

On the Wednesday previous to his death, the writer met him looking as well as ever he looked. Tall and erect, his muscular figure unbowed by thirty years of pioneer life, he seemed good at least for the allotted three score and ten years of man in the world's earlier ages. He was, in my mind, a link with the elder days of his profession in America, a relic of the old school of medical men of whom the elder KISSAM, David Hosack and Benjamin Dewees, were the representatives.—Simple in his dress, unostentatious in his manner, he was a living example of the poetic maxim that "a man's a man for a' that." His rare judgment showed him the dividing line between dignity and arrogance, and taught him how to discriminate between discipline and tyranny. It was no wonder, then, that men cherished his friendship, for he was the personification of sincerity and the embodiment of manly courage.

In a residence of twenty-three years in Oregon, no man ever called his personal integrity in question. His word was his bond, and nobody ever had to complain of his want of the great cardinal virtue called punctuality. His life was one of great usefulness, and he seemed to have based his whole career upon the poetic maxim:

"Count the day lost whose setting sun
Finds at thy hand no generous action done."

For nearly nineteen years he was custodian, governor and medical adviser of the insane of our state, and no man ever saw his superior in this arduous position. To a high order of professional skill, he united an amount of tact and diplomacy that placed him far in advance of all contemporary physicians for the fulfillment of this sacred though ill-appreciated trust. In all his intercourse with the hundreds of unfortunates placed under his charge, there

came not a whisper of anything but gentleness and mercy.

He was shrewd and far-sighted, as well as industrious, and had accumulated a fair share of this world's goods, but this is the least of the legacies he has left to his bereaved widow and children. The greatest wealth they can inherit is his good name which is enshrined in the hearts of the hard-faring poor, whose many wants he relieved, laying up day by day his treasures "where neither moth nor rust doth corrupt."

He came to California in 1850, and to Oregon, seven years later, so it can be truthfully said he was one of the founders of two great sovereign states. In California, he was state senator, and his vote was always cast on the side of rectitude and probity. In our own state, he refused all elevation to office, but as a private citizen, he was a power in the land. So stern in his condemnation of wrong—so steadfast in defense of justice—it was no wonder that he became a man at once to be loved and feared. But he is gone now and the great heart of Oregon throbs heavily at his grave.

All that was mortal of him has been committed to a winter grave—not dust unto dust, but snow unto snow—for his life was pure and gentle beyond the lives of most men. Clothed with power, he never abused it; conscious of the infirmities of all mankind, his only aim seemed to be to win back by kindness, those who had swerved from the paths of rectitude. Those who mourn him—and their name is legion—will mourn the loss of nothing but an earthly body, for the memory of his good deeds shall ever survive him. Our bereaved state has gathered to her bosom the latest and ripest of her jewels.

"The great work laid upon his three-score years,
Was done, and well done: If we drop our tears,
Who loved him as men are seldom loved,
We mourn no blighted hope nor unfinished plan
In him whose life stands rounded and approved
In the full growth and stature of a man."

M.

Persevere in whatever calling you adopt, your progress may be slow and results seemingly meager, but remember how the little brook persistently winds its way to the river, and the river to the ocean—both reach their destination.

If a man has love in his heart, he may talk in broken language, but it will be eloquence to those who listen,

VICK'S FLORAL GUIDE.—Of the many guides and seed and plant catalogues sent out by our seedsmen and nurserymen, and that are doing so much to inform the people and beautify and enrich our country, none are so beautiful, none so instructive as *Vick's Floral Guide*. Its paper is the choicest, its illustrations handsome, and given by the hundred, while its colored plate is a gem. This work, although costing but 10 cents, is handsome enough for a gift book, or a place on the parlor table. Published by JAMES VICK, Rochester, N. Y.

Dr. X. is as bad a hunter as he is a physician, but this does not prevent him regularly as the hunting season comes round from spending a fortnight in the fields with his dog and gun. "And that's the only time of the year when he doesn't kill any thing," said one of his colleagues, kindly.

"Bob Brown, did you say that my father had not as much sense as Billy Smith's yellow dog?" "No, I never said any such thing. I never said that your father had not as much sense as Billy Smith's yellow dog. All I said was that Billy's yellow dog had more sense than your father; that's all I ever said." "Well, it's well you didn't say the other, I tell you."

A doctor has discovered that nervousness is an imaginative disease. This will be cheering news to the young men who have frequently thought themselves to be nervous when the sire of the beautiful being on the other end of the sofa stuck his head inside the door and remarked that it was time for everybody but burglars to be in bed. The knowledge that the unpleasant feeling is purely imaginary will be a great consolation, and nerve them to even more prolonged vigils.

Cigarette-smoking is growing in favor, and yet experience proves that it is more injurious than either pipes or cigars. Medical men declare that the tobacco of which the cigarettes are generally made is strongly impregnated with opium, and that the wrapper, invariably said to be rice paper, is the most ordinary quality of rice paper, whitened with arsenic.

The *Brooklyn Times* says of the *North American Review*: "It is the intellectual periodical of America, and draws to itself what is best in American brains. It is the cream of the nation's thought." The *Review* and THE WEST SHORE are furnished together at \$6 per year. Subscriptions should be sent to this office,

SPRING TIME.

Fitting to the approach of spring beauties is the simple sketch which we give upon this page. It is merely a little picture of children and flowers cast amid the surroundings of a homely farm landscape. And how proper and natural is the association. How the imprisoned city youth will envy these little ones with their freedom of earth and sky and air. The more we see of city children the more we are impressed with the fact that they are sadly out of place. But they come, and they must struggle on toward manhood and womanhood, unconscious perhaps of how much of the world's beauty they lose. Do as well as they may, it is the youth of the country who are the hope of the republic, and who will be the heroes and the heroines of the coming generation. Give them the freedom of the wood lot and the lane. Dame Nature is the kindest nurse and she can bring the fullest strength to their limbs, and joy to their hearts.

STRONG DRINK AND THE LIVER.

The *Family Physician* tells us that when alcohol is introduced into the stomach in the ordinary way, it nearly all passes through the liver. Undiluted spirits are much more injurious than when mixed with water, and produce greater irritation. Alcohol consumed as wine or beer is far less destructive to the liver than when taken in the form of ardent spirits. A hot climate intensifies all the vicious effects of alcohol. The symptoms of cirrhosis of the liver are in the early stages often obscure, but later they are sufficiently well marked. At first the liver gets slightly enlarged, and the patient suffers from pain in the right side, indigestion, wind and costive bowels. He is occasionally feverish, his skin is hot and dry, and he has a peculiar, unhealthy, sallow look, which he probably fails to notice, but which is sufficiently obvious to his friends. The necessity for making a change in his habits is forced upon his attention, and for a week or two he is under the doctor's orders, and not feeling able to drink any more, he consents to follow a restricted diet, and to take a course of purgatives.

Soon the most prominent symptoms are relieved, he fancies himself well again, and quickly returns to his old habits. Gradually, however, he notices that he is getting thinner and weaker, and occasionally he has a good deal of pain in the side. He is nervous and out of sorts. He has no longer the pluck he used to have; first his friends notice it, and then he gradually becomes aware of it himself. He finds that he is not "fit for business," and he is afraid to see people. The patient has occasional attacks of diarrhea, his appetite fails, and the emaciation and debility increase. He tries all kinds of treatment, but never sticks to one for long at a time. He would give up the drink if he could, but he can't. His self-reliance is gone, the alcohol has stolen away his will, and he is utterly incapable of giving up the dangerous fascination. He will take an oath to-day that he will never touch another drop of spirit, and will probably break it to-morrow. Sometimes he wishes that some would lock him up in an asylum, or that by some chance or other he would have six months' imprisonment, but he never feels able to put himself under restraint. After a time the liver gets smaller, and this, instead of being a good sign, is a bad one, for it is contracting. He would willingly enough consent to knock off drink now, but it is too late; the mischief is done, the liver is in a state of cirrhosis, and no medicine can restore it to its natural condition. Is there any remedy for this horrible complaint? Yes, one, teetotalism—absolute abstinence from alcoholic liquors of all kinds. This remedy must be applied early. If he waits until his liver has undergone serious organic change, it is too late. No half measures will suffice; he must give up drink of all kinds. If he does this he will recover; but if he goes on in his old plan an early and painful death is the inevitable consequence.

THE CURRENT OF RIVERS.—A very slight declivity suffices to give the running motion to water. Three inches per mile in a smooth, straight channel gives the velocity of about three miles an hour. The Ganges, which gathers the waters of the Himalaya mountains, the loftiest in the world, is, at 100 miles from its mouth, only 300 ft. above the level of the sea, and to fall 300 ft., in its long course, the water requires more than a month. The great river Magdalena, in South America, running for

EGYPTIAN OBELISKS.—There are 30 of them at the present time scattered over Europe. Rome has 11, four of which are higher than our New York obelisk. The highest of the Roman obelisks, which is also the highest in Europe, stands before the church of St. John Lateran. The obelisk in the piazza of St. Peter's is 82 ft. 9 inches high. Both of these were mounted on high pedestals. The pedestal of the St. John Lateran obelisk is 44 ft. high, making the entire height of obelisk and pedestal 150 ft. The pedestal of the St. Peter's obelisk is a trifle less



RURAL SCENE AT SPRING TIME.

1,000 miles between two ridges of the Andes, falls only 500 ft. in all that distance. Above the distance of 1,000 miles, it is seen descending in rapids and cataracts from the mountains. The gigantic Rio de la Plata has so gentle a descent into the ocean that, in Paraguay, 1,500 miles from its mouth, large ships are seen which have sailed against the current all the way by the force of the wind alone—that is to say, which, on the beautiful inclined plane of the stream, have been gradually lifted by the soft wind, and even against the current, to an elevation greater than our loftiest spires.

than 50 ft. high, making the whole height of the monument 132 ft. 2 inches.

SCOURING WOOLEN TISSUES.—A French firm have patented a process for scouring woolen tissues and yarn, using pure carbonate of soda, free from causticity and iron. They have also patented the bicarbonate of soda for the scouring and fulling process. Woolen fabrics are first scoured with a cold solution of carbonate of soda; they are then washed, and afterwards fulling with a soap made of carbonate of soda, mixed profusely with olein.

HOW HANDLES ARE MADE.

Very little has ever been written or published relating to this industry. Nevertheless it has taken wonderful strides and grown to mammoth proportions during the past decade. More than \$5,000,000 worth of handles and other commodities manufactured in direct connection with this industry, are turned out every year. When we come to consider that every house, store, manufactory, and barn in this broad land has from five to twenty handles in every day use, we will not be surprised, or think the above figures overdrawn. It is our intention, however, to confine ourselves more especially to the manufacture of implement handles in this article.

In the first place, it is essential that the manufactory should be situated in a locality where can be found an abundance of white ash, hickory, or maple timber. The logs are cut in bolts of from four to twenty feet long, according to the length of the handle to be made; then drawn to the factory and sawed into plank. Here, great care must be exercised to saw the timber with particular reference to the grain. Only sawyers of years of experience and adepts in their particular line should be employed. The durability and value of the handle depend largely upon the first sawing.

The planks are sawed, cut off, made of a uniform length, and taken to the lathe to be turned. But a few years ago, a hundred finished handles was considered an unusually good day's work for a single man—to-day, one man with a gauge lathe, is capable of turning out from seven to 1,200 per diem, according to the length and shape of the handles. The handles are next taken to the chucking machine, where the top end is rounded and chucked; the bottom is at the same time seized or chucked to fit the ferule. This is rapidly done, one man being able to chuck half a carload per day. It should be remembered that the handles are all turned while the timber is yet green. After the chucking process, they are transferred to the dry kiln to be seasoned. If the handles are to be bent, they are steamed and placed in forms to cool, after which they are taken to the finishing room and polished on sand belts.—*Industrial World*.

HARD SOAP BY A COLD PROCESS.—Mr. R. F. Fairthorn, Ph. D., has contributed the following recipe to the *Druggists Circular*: A good hard soap can be easily produced if four lbs. of olive or sweet almond oil mixed with two lbs. of soda lye, of the strength of 36° Baume, are stirred until of the consistence of thick paste, when it should be poured into molds, covered by several folds of muslin and kept in a warm room for 20 hours. By this treatment the process of saponification, or union of the acids in the oils with the alkali, is complete. When these materials are first mixed the temperature of the mass rises, and in order to effect the entire union of ingredients so as to form the compound called soap, it is necessary that the heat thus generated should be maintained for some time, hence the necessity for covering the molds and keeping them in a warm room. He has found that it is desirable to use oil that is slightly rancid, or, if free from rancidity, to add about 10% of oil that has become so. Oil that is perfectly sweet requires two or three days to effect saponification.

PHOTOGRAPHING THE CHROMOSPHERE.—Janssen has been induced, by his late-novel experiments, to undertake photographs of the chromosphere. He allows the solar luminous action to continue so long that the solar image becomes positive to the very circumference, without going beyond it. The chromosphere is then shown in the form of a dark ring, with the thickness of 8" or 10". He has compared positive and negative solar photographs, which were obtained on the same day and with the same instrument; the measurement of the diameters shows that the dark ring in question is wholly outside of the solar disk.—*Comptes Rendus*.

A NEW PROPERTY IN SELENIUM.—M. Blondlot has communicated the results of some investigation on a new property of selenium, which is of timely interest in view of the famous researches of Bell and Tainter. M. Blondlot finds that when a piece of annealed selenium is connected to one pole of a Lippmann capillary electrometer, by means of a platinum wire, and a plate of platinum is similarly connected to the other pole, a comparatively powerful electric current is developed by rubbing the selenium against the platinum plate, as is shown by the deflection on the electrometer scale. Mere contact between the selenium and the metal produces no deviation from the zero; but the act of rubbing readily gives an electromotive force equal to that of a sulphate of copper cell. As if to take the effect still further out of the category of those already recognized, M. Blondlot has verified the facts that neither the rubbing of two metals against each other, nor an isolating substance against a metal, nor two isolating substances, can produce a change in the capillary electrometer. The current flows through the electrometer from the unrubbed to the rubbed surface of the selenium. Now a thermo-electric current set up by heating a selenium-platinum junction would, as M. Blondlot points out, flow through the electrometer from the hot selenium surface to the cold one, or in precisely the opposite direction; hence, the novel effect cannot be due to heat developed by the friction.

LEARN TO SLEEP.—The true art of sleeping is the power to shut one's self within one's self under any circumstances. The man who can thus take rest is refreshed and strengthened under many circumstances which would keep other people weary and wakeful. He is master of every situation as regards his own rest. Some men, by long habit, find themselves able to take sleep with the same ease that others would take a glass of water. They can sleep either while perched on a high stool or rattling along in a railroad car at 40 miles an hour. The economy of wear and tear on the lives of such people is wonderful. The man who cannot sleep unless he has first removed his clothes, put out the light and climbed into his bed is at a great disadvantage. Greater yet is his disadvantage if he can sleep in no bed but his own. There are some who are possessed with the notion that their own bed is the only one in which they can slumber. These people are utterly wretched when traveling, or obliged to absent themselves from home on business. But he who has accustomed himself to sleep, can enjoy that boon at any time or place, and is made better and happier thereby.

NEW PATENTS.—Dewey & Co.'s SCIENTIFIC PRESS Patent Agency has received official notice of the issue of the following patents to Pacific coast inventors, for the week ending January 18, 1881:

236,708, wick ratchet, E. H. Jenkins, S. F.; 236,730, ore separator, E. W. Stephens, S. F.; 236,857, horse collar pad, J. T. Stoll, Sacramento, Cal.; 236,862, corset fastening, Isidor Ulman, Santa Cruz, Cal.; 236,864, wagon standard, J. S. Van Eps, Mammoth City, Cal.

January 25, 1881.—236,993, car brake, E. & J. E. Dawson, Red Bluff, Cal.; 237,011, glove, O. Guittard, S. F.; 237,015, bottle stopper, B. Hegele, San Jose, Cal.; 236,896, music chart, Minna Knapp, S. F.; 237,034, gas regulator, J. Merritt & A. Ford, S. F.; 237,038, ironing board, M. Miles, Gilroy, Cal.; 236,907, plow, C. Mowrey, Stockton, Cal.; 236,935, earring, A. Claude, S. F.

"MRS. SAGE, I should like to know whose ferry boats those are that I stumbled over in the hall?" "Ferry boats indeed, sir! Those are my shoes! Very polite of you to call 'em ferry boats." "Didn't say ferry boats, Mrs.; you misunderstood me—'fairy boots' I said, my dear friend."

BOYS AND CIGARETTES.

Physicians and moralists alike are pained by the spectacle, growing more common every day, of pale-faced lads, ranging in age from 16 to 20 years, who are puffing their little lives away in cigarette smoking. Day and night they throng the streets, where the peculiarly offensive odor generated by cigarettes made of cheap paper and bad tobacco renders their smoking as obnoxious to others as it is hurtful to themselves. Every evening before the doors of the theaters, they raise a cloud of foul smoke that is equally injurious to their own rickety constitutions and to the noses of their victims. Doubtless, also, they carry their pernicious habit into their homes—when they are old enough to do so without risk of the spanking they deserve—thus still further doing harm to themselves and making other people uncomfortable.

The cheap cigarette is a modern invention, and a peculiarly vicious one. Twenty years ago, when the cigarettes all came from Cuba and were wrapped in rice paper, smoking them did no great harm. Moreover, being made of Honrad, or some brand of equally strong tobacco, only a boy of stout stomach could smoke more than two or three of them at a time. But to meet the boyish demand cigarettes are sold nowadays both cheap and weak. They are made of mild, often bad tobacco, and for the most part they are wrapped in ordinary white paper. Rice paper wrappings necessarily increase the cost, and the boy who wishes to prove by the ordeal of smoke that he is not a boy but a man, much prefers the article that he can get the most of for his money. Moreover, the boy does not know the difference apparent to the sight between rice paper and ordinary paper, any more than he knows that while rice paper burns away with scarcely any smoke at all, common paper burns with a foul smoke that cuts like a saw into the chest and throat. So he spends his money on cheap cigarettes and makes everybody around him uncomfortable while he smokes himself away into an untimely grave.

Of course, the boys do not intend to sin against themselves and their neighbors. They do not realize what a bad smell their nasty little cigarettes make, and they are very far from knowing what serious injury the smoke from them inflicts upon their throats and bronchial tubes and lungs. They smoke in innocence, not knowing what they do, but most earnestly believing that their smoking makes men of them. Down in the depths of their hearts the most of them have no sincere affection for smoking; and in the depths of their stomachs, they not unfrequently entertain a feeling of positive aversion toward it. But they hang on to their pestilent habit with a persistency that, in a better cause, would be worthy of all praise, stifling the dictates of conscience and asserting a bad mastery over the rebellions of the flesh. And, if reasoned with, they answer in the words of dear John Leech's bad boy, "But what is a fellow to do, when all the men of his own age smoke?"

THE CHASE COAL MINE FIRE.—Advices from Victoria are to the effect that the fire in the Chase mine has burned through the roof of the No. 2 chamber, and is burning at a fearful rate in the slate stratum above. Owing to the intense heat and dense smoke it is impossible to ascertain the extent of the fire, or the direction in which it is traveling. The fire engine, however, is kept constantly at work day and night, but owing to the peculiar position of the fire the streams can only be sent up among the flames at intervals. Some incline to the opinion that the fire has struck a "pocket of coal;" others that the seams have split and the fire is now in another seam of coal. It is almost impossible to state the exact nature of the fire, for nearly every person working in the mine has a different opinion from his fellow-workman. One thing is certain; the fire is raging and, beyond causing a heavy daily expenditure of funds, is causing a great anxiety to the officers of the company and to citizens generally.

FOOD ADULTERATION.

The subject of food adulteration has of late attracted a great deal of attention, as from time to time developments are made showing to what an extent the nefarious traffic is carried on. The yeast powder men were probably the first of the class to be investigated, and they did not come out with clear skirts by any means. But there are many other branches of manufacture and trade which need to be closely watched also. Local attempts to regulate the sale of food have, on account of limited jurisdiction or other causes, generally proved inadequate for the purposes for which they were designed, and wise laws—national, if possible—should be enacted, which will afford adequate protection both to consumers and honest manufacturers.

About a year ago a member of the National Board of Trade placed at the disposal of the Executive Council of the Board the sum of \$1,000 for a prize, or prizes, to be given for the best act, or acts, accompanied by an essay, designed to prevent injurious adulteration and regulate the sale of food, without imposing unnecessary burdens upon commerce. A committee of experts was appointed, one of whom was a physician, one a chemist, one a lawyer and one a merchant, this committee having authority to pass upon the essays, and when their labors were completed, to give to the President of the Board an act to accomplish the purpose described.

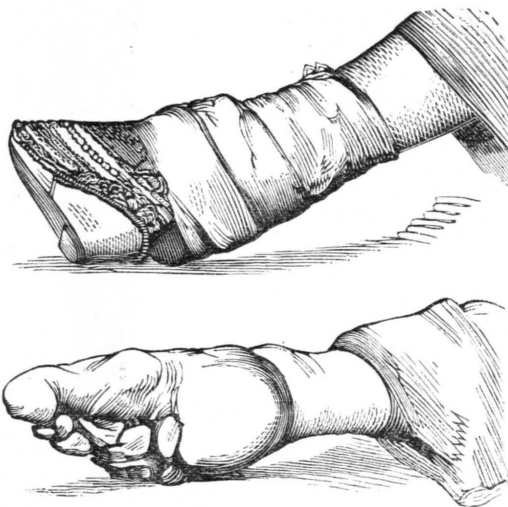
The competition instituted by virtue of this resolution ended October 1, 1880. The committee of experts awarded the first prize (\$500) to G. W. Wigner, F. C. S., of London, an analytical chemist of high reputation; the second prize (\$300) to Vernon M. Davis, of New York, and the third prize (\$200) to William H. Newell, M. D., of Jersey City. They also, in accordance with the resolution, prepared the draft of a national act designed to prevent future deleterious adulterations. The committee who made the award and who prepared the bill, consisted of John S. Billings, M. D., Surgeon U. S. A., Vice-President of the National Board of Health; Prof. Charles F. Chandler, President of the New York Board of Health; the Hon. B. Williamson, Ex-Chancellor of New Jersey, and A. H. Hardy, Esq., of Boston. In the composition of this committee are included the sanitarian, the health officer, the chemist, the jurist and the merchant. In the treatment of the subject the advantages of their varied experience and special knowledge have been obvious.

The act or bill referred to has been drawn up and presented to Congress. The influence of all citizens is asked to secure the passage of the proposed law, a copy of which has been transmitted to us, and which we shall publish next week.

This subject is a most important one for the community. We buy things in packages, boxes, jars or bottles, purporting to be certain substances, when in reality they are not what is represented. We are apt to eat things injurious to us, unknowingly, and all these dangers are incurred simply because some manufacturer is not satisfied with a fair profit, but wants to get rich quickly at the expense of his customers. Whenever we see a factory where they are making up any article of food, with the forbidding "no admittance" sign up, we always suspect the products of that place. But how is one to tell without an examination of each article, and each sample of it? There ought to be heavy penalties attached to food adulteration. People who steal horses, or money, or anything else of the kind, are considered thieves, and are put in prison for a term of years. But a man may steal another's health, which cannot be replaced, by selling goods which are deleterious; yet he will hold up his head in the community and be considered, when rich, a "smart" man. We hope to see the time come when such people are classed with highwaymen and other thieves. You can have some grain of respect for a man who stands up and takes a chance when robbing you; but for the thief in the dark, the pick-pocket, the man who vitiates the food you eat, you can have none.

CHINESE WOMEN'S FEET.

An American missionary, Miss Norwood, of Swatow, some time since described in a New York Times paragraph how the size of the feet is reduced in Chinese women. The binding of the feet is not begun until the child has learned to walk. The bandages are especially manufactured, and are about two inches wide and two yards long for the first year, five yards long for subsequent years. The end of the strip is laid on the inside of the foot at the instep, then carried over the toes, under the foot, and around the heel, the toes being thus drawn toward and over the sole, while a bulge is produced on the instep, and a deep indentation in the sole. Successive layers of bandages are used till the strip is all used, and the end is then sewn tightly down. The foot is so squeezed upward that, in walking, only the ball of the great toe touches the ground. After a month the foot is put in hot water to soak some time; then the



COMPRESSION OF CHINESE LADIES' FEET.

bandage is carefully unwound, much dead cuticle coming off with it. Frequently, too, one or two toes may even drop off, in which case the woman feels afterward repaid by having smaller and more delicate feet. Each time the bandage is taken off, the foot is kneaded to make the joints more flexible, and is then bound up again as quickly as possible with a fresh bandage, which is drawn up more tightly. During the first year the pain is so intense that the sufferer can do nothing, and for about two years the foot aches continually, and is the seat of a pain which is like the pricking of sharp needles. With continued rigorous binding the foot in two years becomes dead and ceases to ache, and the whole leg, from the knee downward, becomes shrunk, so as to be little more than skin and bone. When once formed, the "golden lily," as the Chinese lady calls her delicate little foot, can never recover its original shape.

Our illustrations show the foot well bandaged and unbandaged, and are from photographs forwarded by J. W. Bennington, R. N., to the *Scientific American*, and who writes: "It is an error to suppose, as many do, that it is only the upper ten among the daughters of China that indulge in the luxury of 'golden lilies,' as it is extremely common among every class, even to the poorest—notably the poor sewing women one sees in every Chinese city and town, who can barely manage to hobble from house to house seeking work. The pain endured while under the operation is so severe and continuous that the poor girls never sleep for long periods without the aid of strong narcotics, and then only but fitfully; and it is from this constant suffering that the peculiar sullen or stolid look

so often seen on the woman's face is derived. The origin of this custom is involved in mystery to the Westerns. Some say that the strong-minded among the ladies wanted to interfere in politics, and that there is a general liking for visiting, chattering and gossip (and Chinese women can chatter and gossip), both and all of which inclinations their lords desired, and desire, to stop by crippling them."

TUNNEL THROUGH THE PALISADES.—Chief Engineer Katta is getting his machinery on the ground, preparatory to building a double track tunnel through the solid mass of rock known as Bergen hill, for the New York, Ontario and Western railroad. Its length will be 4,225 ft., and it will extend from Weehawken, on the Hudson river, westward to the Hackensack meadows at New Durham. The time within which this work is to be accomplished would have astonished people born before the era of modern engineering, as the contract says all must be complete one year from date, November 19, 1880. The eastern approach cut measures 150 ft.; the tunnel proper, 4,225 ft.; western

approach cut, 2,700 ft. The earth cut comprises 131,000 yards; loose rock, 9,000 yards; solid rock, 44,500 yards, exclusive of 79,607 yards on the tunnel proper. Height of tunnel, 20½ ft.; width, 27 ft. The shafts, five in number, involve 2,103 ft. of rock cutting; area, 7x15. The track will rise 25 inches per 100 ft. to a point near the meadows, and then fall 40 inches per 100 ft. The new railroad will give a third route through the rocky barrier of the lower Hudson, of which the Delaware, Lackawanna and Western and the Erie are the first two.

PALMETTO PARCHMENT.—People of the Southern States discovered that smooth, strong and pliable parchment can be manufactured from the palmetto of Florida and other Southern States. The parchment can be washed, rubbed and handled just like cloth, and the writing will not be effaced. It can be cheaply manufactured, and is likely to come into general use for conveyances, land office receipts, etc. As much as 60% of the weight of the palmetto can be utilized in paper making.

EXTENSIVE SHIP BUILDING.—Ship building on the Clyde was unusually active last year. Two hundred and forty-one vessels of all kinds were launched, of a total, officially, 239,000 tons, an excess of 71,000 tons over 1879. Their marketable value represents an outlay of about \$30,000,000.

THE American Institute of Mining Engineers held its opening session at Philadelphia Tuesday evening.

SCENERY OF THE COLUMBIA RIVER.

There will soon be published by the Continent Stereoscopic Co., of New York, an illustrated work descriptive of the upper Pacific coast, entitled "Picturesque Northwest," by E. Conklin, of the Frank Leslie publishing house. It is pronounced by a New York critic, who has seen the advance sheets, to be "a superb volume." By the courtesy of the author we are enabled to give our readers a glimpse at a few scenes which the book will present, choosing for this page La Tourelle falls on the Columbia river, and in connection therewith we shall quote from an advance sheet the authors' comments upon these falls and the scenery leading thereto. "The Columbia river drains over 400,000 superficial square miles in its course. It rises in the Rocky mountains, in British America, just north of the United States line. It takes a due southerly course and holds this general course south, traversing the eastern half of Washington Territory until it reaches Oregon. It then turns directly westward, forming the boundary line between Washington Territory on the north and Oregon on the south. Near the point where it first touches Oregon, it connects with the Snake river from the east. The Snake, a large and navigable stream, rises far to the south in Idaho, comes north to a point a short distance north of the northern boundary of Oregon, and then turns east to join its waters with the Columbia in its grand march to the sea. A sail up the river is a continuous revel among nature's most charming diversions of foliage, hill-creeping forests; level, verdant plains, stretching back on each side of you, and little bends and islands which lend the finishing enchantment to the whole.

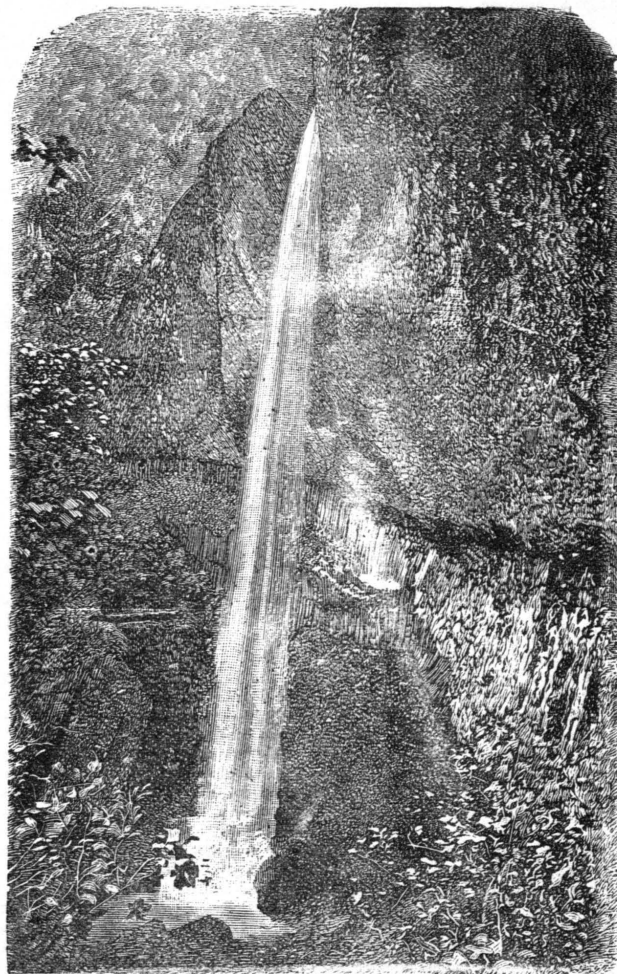
"At the end of 125 miles, having passed the mouth of the Willamette river, you enter the region of the great cascades of the Columbia, and what is known as the 'Cascade Route.' This is a section which justly claims a place among the natural wonders and phenomena of the United States, and what is laid openly and boldly before you, on each side of the river, warrants this assertion. Being comparatively unexplored, little is known of this section but what is conspicuously laid open to the sight in the trip on the river; but the sturdy pioneer, in search of agricultural pursuits has, even at this present writing, found ample to award him, and settlements can now be seen in many cases, occupying the very brink of the river.

"The Cascade trip comprises a distance of 60 miles; and the upper portion—or the last five miles—is the portion where the waters of the mighty Columbia forces its way through the Cascade mountains. Roaring and surging, with immense walls and mountains, 3,500 ft. high, on either side, to assert that this is one of America's premium sights, and makes the traveler feel there is yet more in this country of ours than was ever dreamed of. Huge mountains from 1,000 to 3,500 ft. high fret the surrounding country to the very water's edge and ever find their way beneath this current in such promiscuous and ponderous masses as to throw the boats out of recognition of their courses.

"One of the first points of interest is that known as Cape Horn, a peculiar formation of concrete and sandstone rock rising perpendicularly from the water's edge to a height of 250 ft., and extending along the river for one-half a mile. The formation resembles large posts, pillars and cones cemented together to form some immense wall or barricade. The river boats, in their passage, run within stone's throw of it, and one gets his first sense of inspiration of the region he is now passing through. Following for a distance of eight miles is a region where the nymphs seem to have resorted; in their greatest ecstasy, to fulfill the delights of

their wanton spirits. It would be hard to say how many water-falls there are in this limit. The La Tourelle fall is one of the grandest on the river, and to those who will stop at the La Tourelle Mountain House, and visit the fall, there will be at least one lasting reminiscence of a successful tourist. The falls are about 400 ft. high. Coming from an overhanging wall projecting from the land a distance of about 50 ft., the water is thrown in rain-bow style, far out from the main land; and coming through mid air with great force, dashes itself to pieces in a basin carved from the rocks by its own power, and ornamented with wild flowers and vines in gorgeous profusion. Behind the falls there is a distance to the main land of about

SODA FOR BURNS.—All kinds of burns, including scalds and sunburns, are almost immediately relieved by the application of a solution of soda to the burnt surface. It must be remembered that *dry* soda will not do unless it is surrounded with a cloth moist enough to dissolve it. This method of sprinkling it on and covering it with a wet cloth is often the very best. But it is sufficient to wash the wound repeatedly with a strong solution. It would be well to keep a bottle of it always on hand, made so strong that more or less settles on the bottom. This is what is called a saturated solution, and really such a solution as this is formed when the dry soda is sprinkled on and covered with



LA TOURELLE FALLS ON THE COLUMBIA RIVER.

80 ft. This is ample room for a drive-way between the fall and the back wall. You look out upon a broad open vacuum and up to a spotless azure sky; and between you and infinity there comes dashing down, in appearance, one colossal water column from heaven."

TO CURE A SHEEP SKIN.—To clean the wool on a sheep's skin and to cure the skin.—Nail on a board stretched, wool out, and scour with good soap suds and fuller's earth until properly cleansed. Then rinse thoroughly in hot water, and comb. Nail, wool down, stretched taut on a board, rub in plenty of salt, stand in warm place, and finally scrape off the softened inner membrane with a blunt knife. Then rub in plenty of moist alum powder, and let it stand several days or a week in a dry place. Soften, if desired, by rubbing with hot flour paste and the yolks of a few eggs, or with plenty of oil.

a moistened cloth. It is thought by some that the pain of a burn is caused by the hardening of the albumen of the flesh which presses on the nerves, and that the soda dissolved the albumen and relieves the pressure. Others think that the burn generates an acrid acid, which the soda neutralizes.

TO PREVENT CLOUDING OF MIRRORS BY MOISTURE.—A writer in the *Manufacturer and Builder* says that by coating over the surface of glass mirrors with glycerine their clouding by the accumulation of condensed water vapor will be prevented for a considerable time. The attraction of the glycerine is so great for the water as to absorb the latter as fast as deposited. This hint may prove of great use to dentists, who are frequently troubled by the clouding of mouth-mirrors, and it may also be of value to those who are compelled to shave themselves in chilly apartments

DISAGREEABLENESS.

A discussion of disagreeable people should interest us all. What I shall say will be but the "widow's mite," only help a little, if any.

If there are women so deficient in amiability, capability or adaptability, as to be disagreeable they surely are not responsible for nature's organization, therefore should receive aid and encouragement from their more fortunate fellows. Then I would ask what the poor, unfortunate, "disagreeable women" are going to do for a livelihood, and to get a competence for old age? They are certainly obliged to be independent, self-helpful, and lead self-directing lives. They are obliged to put their own hands to the helm, and find out what responsibility, foresight and planning mean. Yet I do not see that "old maids" and long widowhood are any sign of disagreeableness; should say just the contrary, that they were so very agreeable they could find no mate. At all events, if they are, and intend to remain single, and are disagreeable women, they must embrace an active life. It is very rarely that a human being is born without possible power in some one direction. The field which is traversable to women is much more circumscribed than that traversed by men, yet I have read a statement of the number of employments in which women are engaged in the United States is greater than 500. Certainly, out of so many a woman can choose one which, though not wholly to her taste, is better than debasement by indifferent marriage or being dependent and taking the risk of being called disagreeable; for men like independent, self-reliant women, and if one should make, a fortune she would be agreeable ever after to men, no matter how disagreeable they had once thought her.

Women can teach as well as men, but must be content with less pay, for men are lions and they will take the lion's share. Women also can sell goods, and ought to monopolize the business, for surely a man is as much out of his sphere in holding up a piece of muslin at arm's length, and expatiating on its merits to a bevy of women, as a woman is in the pulpit or before the mast. Also, the whole land groans under inefficient domestic assistance, and if healthy, well-behaved American girls would be willing to work in kitchens which they do not own, one-half as hard as most women work in kitchens they do own, thousands of doors would fly open to them. Women need not feel disgraced at "going out to service," for everybody in the world who is not a cumberer of the ground, is "out at service," and one thing is as honorable as another. The highest plaudit mortal can hope to receive is, "Well done, good and faithful servant." A nobleman ennobles his work. A king among basket-makers is none the less a king.

I do not understand how women can be so enamored of the needle as to work for the mere pittance of 25 cents per day, when they can go into a handsome house in the next street, to make beds, scour knives and iron clothes for four or five dollars a week, besides board and rent.

Women make a mistake in all rushing for the school-house as though that was the only respectable path to independence. I heard a man a short time ago speaking of the high school of his native city. He said that it did more harm than good, for every year a class was graduated, all ladies, they did not want to work, and there were not schools for so many. It was an evil that seemed to be growing worse every year; the implied grievance was, that educated women were a drug in the market; the implied remedy, that girls should be left more uncultivated that they might be turned to commoner uses.

I may be saying something that the gentlemen readers of the PRESS will call "disagreeable," so will cease speaking for the present; the subject to be resumed at some future time when the "spirit moves," and with the permission of the editor.—Mrs. E. J. S., in *Rural Press*.

GLYCERINE FOR ACIDITY OF THE STOMACH.

A late number of the *Boston Journal of Chemistry* reprinted from the *London Lancet* Dr. Ringer's article upon the use of glycerine in flatulence, acidity and pyrosis. Dr. J. A. Lewis, referring to the same article, in a communication to the *Louisville Medical News*, says:

"I desire to add my testimony to its value, so far as regards acidity and flatulence. For this form of indigestion, so common, and for the relief of which so many persons resort to the daily use of soda, glycerine is a remedial agent of no mean value. I have used it for several months with my patients troubled in this way, and in a majority of cases the results have been gratifying.

I had no knowledge of its use for dyspeptic troubles, and was led to the use of it much in the same way as reported by Mr. Ringer. I knew of its property of preventing fermentation, and especially of its use by druggists in preserving their syrups from acidity. I was led to a trial of it upon this principle, and soon became satisfied of its real value. I have always prescribed it in large doses, never less than two teaspoonfuls to a tablespoonful for an adult, to be taken in a wine glass of water immediately after eating. It does no good after fermentation of the food has taken place in the stomach.

It is no specific, no cure-all, but certainly does afford alleviation, if not a cure, in many of these cases, and is worthy of a place among the remedies in use for this very common ill of the flesh.

DANGER IN THE SLEEPING-ROOM.—In fighting that terrible enemy, sewer gas, it will not do to depend on the plumber. In sleeping-rooms the syphonage of the trap is the opening of the gate of death; and yet, strange to say, thousands of people hear nightly this death-rattle in their rooms, and do not know what it means. Now, if one can't have effective plumbing, the next best thing is to know what to do about it. As syphonage implies the breaking of the water-seal that acts as a barrier against the free admission of sewer gas, it is, first of all, important to know what traps are defective. When one hears a low, gurgling sound in the wash-basin, the time for action has come. Any noise beneath the wash-basin, at any hour of the day or night, when the water is not turned on, means death. The gurgling sound is caused by a draft of air down the escape-pipe, which breaks the water-seal. Of course the services of the best plumber should be had at once; but in the meantime fight the enemy. First turn on water and fill the trap. Then put in the plug, fill the basin half full of water, and with wax or soap seal up the overflow holes. Lower a window and let in the outer air. Until the sound of syphonage ceases, and you are absolutely certain that the trap can be relied on, stand guard over it. Keep the overflow holes sealed and the plug in, no matter at what risk of flooding lower rooms, in case some one is thoughtless enough to leave water turned on. If every family would act on these hints we would have less diphtheria.

WASHINGTON PUDDING.—Put a teacup of seeded raisins into the flour sieve, throw over them a pint of flour and add half a teaspoonful of salt, the same quantity of ground cinnamon, and a quarter of a teaspoon of ground cloves. Sift the flour and spices from the raisins and make a batter with a cupful of sweet milk, a cup of molasses and one egg. Add a cupful of chopped suet (sprinkle with flour while chopping), half a teaspoonful of soda dissolved in a tablespoonful of hot water, and last of all the floured raisins. Steam in a buttered mold two and a half hours and serve with a nice pudding sauce. Mix two teaspoons of corn starch and two cups sugar well together. Add the juice of a lemon and half the grated peel, half a cup of butter and a cup of boiling water. Stir and boil for five minutes.

A NEW THEORY OF THE CONSTITUTION OF THE SUN.

Some recent studies of solar spectra in connection with sun spots and other features of the sun's envelope have led Mr. Charles S. Hastings, of the Johns Hopkins University, to form a somewhat novel theory of the sun's constitution and the conditions producing the more notable phenomena familiar to solar students.

Mr. Hastings finds, contrary to the received opinion, that the spectra of the center and the outer edge of the sun's disk are not precisely alike, though the differences are so minute as to escape all but the most perfect instruments and all methods which do not place them in close juxtaposition. Certain of the Fraunhofer lines, thickest and darkest in the spectrum, notably those of hydrogen, magnesium and sodium, which appear with a haze on either side in the spectrum of the center of the solar disk, are sharp and distinct in the spectrum of the limb. Certain very fine lines are stronger at the limb, while other very fine lines are stronger at the center. The ordinarily accepted theory of the solar constitution and the origin of the Fraunhofer lines fails to explain these phenomena.

The probable reasons for this failure Mr. Hastings discusses at considerable length in the January issue of the *American Journal of Science*, and then proceeds to frame a theory of the sun's constitution, which, he thinks, will satisfactorily explain all the observed phenomena, and which may be briefly summarized as follows:

His theory differs from that of Faye chiefly in localizing the phenomena of precipitation instead of regarding it as proper to all portions of the photosphere, and in supposing the precipitation confined to one or two elements. He attributes the granular appearance of the solar surface to ascending currents directed generally from the center of the sun. About these currents are necessarily currents in an opposite direction, which serve to maintain a general equilibrium in the distribution of mass. The ascending currents start from a level where the temperature is probably above the vaporizing temperature of every substance. As they move upward the vapors are cooled, mainly by expansion, until a certain element (probably the carbon group) is precipitated. This precipitation, restricted from the nature of the action, forms the granules. The precipitated material rapidly cools, on account of its great radiating power, and forms a fog or smoke, which settles through the spaces between the granules till revolvatized below. It is this smoke which produces the general absorption at the sun's limb, and the "rice grain" structure of the photosphere. The reasons for supposing the precipitated element to be of the carbon group (carbon or silicon) is simply that no other substances present the properties indicated by the cloud masses of the photosphere. It is pretty clear that the substance has a boiling point above that of iron, for iron vapor at a lower temperature exists in its immediate neighborhood. The element is not a rare one, and its molecular weight cannot be great, for though precipitated below the upper natural limit of its vapor there are few elements found in abundance above it, and those in general of low vapor density. It is possible that the light coming from the sun is radiated from solid or liquid particles of carbon just at the point of vaporization; but Mr. Hastings is rather inclined to suspect that the photospheric material is silicon. There is also good reason to suppose he thinks, that carbon is precipitated at a higher level, possibly along with the less common element boron.

The clouds of carbon or other smoke would naturally be drifted into spaces of downward flowing currents, thus forming sun spots, the characteristics of which are readily accounted for by the necessary behavior of smoke clouds sinking into regions of higher temperature. This explanation of sun spots and their allied phenomena is certainly plausible, and we shall look with interest for what older students of the sun shall have to say about it.

RECIPES.

WHITE SOUP.—This soup is usually made from the white meat of chicken, or from veal; but an excellent white soup of vegetables may be made from the following receipt: Take six potatoes, four onions, four ounces crushed tapioca, a pint and a half of milk, butter, pepper, salt. This will make two quarts of soup. Cut up the potatoes and onions and put them into two quarts of boiling water; boil for three-quarters of an hour; rub the vegetables through a sieve; put back the potato-paste into the water again, add butter pepper and salt to taste; then boil the four ounces of tapioca for fifteen minutes in the soup, add the milk, and when fully heated through, serve. A little sweet marjoram or sweet basil, with a dash of nutmeg, adds to the delicate flavor of this nourishing soup.

SOFT-SOAP.—Put one and one half pails of lye that will bear up an egg into your soap barrel and to it add eight pounds of melted grease, free from sediment. Thin with weak lye as it is obtained from the leach. Stir occasionally. It should thicken and be ready for use in two or three days, providing the weather is warm or the barrel stands in a warm place. This method makes very good soap, and it is a saving of time, strength and fuel, which is sufficient to justify one in throwing away the scraps, which may not be quite so thoroughly "tried out," as in the old method. As to the scraps, the best use they can be put to, is to throw them to the hens,—they will repay you.

MOUNTAIN CAKE.—To the yolks of five eggs, well beaten, add one cup of sugar, one half cup of butter, one half cup of sweet milk, one tea spoonful ground cinnamon, one grated nutmeg, then the whites of two eggs, well beaten, one and a half cups of flour, having in it one measure of baking powder, bake in jelly cake pans, when cold spread each layer with an icing made of the whites of three eggs, beaten stiff, and one and a half cups powdered sugar.

STEWED CHICKEN.—Put in a saucepan a piece of butter the size of a walnut, dredge in a little flour, set on the stove and stir till smooth and a little on the fry; add a very little water, let it cook a trifle more, then put in your chicken that of course has been washed and cut up, stir it all round slowly, then dredge in a little more flour and pour in a little more water, cover up and stew, occasionally adding more water as required, but not too much at one time. Let it be well done before dishing.

RUSKS.—One quart of light bread sponge, two cups of sugar, one-half cup of shortening, and a beaten egg. Make into a soft dough. When very light, roll out an inch thick and cut into rounds. Let rise again and bake in a moderate oven—a heat that will not form a hard crust at top or bottom. These are very nice with coffee or tea. When stale, split them, toast slightly, butter, and eat at once.

TO JUG BEEFSTEAK.—Cut a piece of beefsteak in nice square pieces, roll them round your finger; take a deep stone jar, pile the rolls one above the other, add two whole onions, one glass of port wine, pepper and salt to taste, a few pepper corns, but no water; cover close, put the jar in boiling water, and steam till tender. This dish resembles jugged hare.

VEAL SAUSAGE.—Take fat bacon and veal in equal quantities, with a handful of sage, a little salt, pepper, and if at hand an anchovy. Let all be chopped and beaten well together, floured, rolled and fried. Veal sausage are better used for persons whose digestion is not very strong than those made of pork.

SODA CRACKERS.—Fourteen teacups of sifted flour, half a cup each of butter and lard, two cups of milk or water, two spoonfuls of cream-of-tartar, and one of soda. Mix; do not pound; roll thin, cut into squares, prick with a fork, and bake in a moderate oven.

THE FLOURING INDUSTRY OF THE PACIFIC COAST.

We trust our friends will find the following items of information not only worthy of careful perusal, but preservation for future reference. Much pains have been taken to arrange them in a clear, concise, and connected manner. Our readers will find them historical, in many respects, as well as statistical. Many facts are brought to light not generally understood by the people at large, while we doubt not that manufacturers and dealers themselves may read the whole statement with profit and pleasure. For the fund of information contained in the article, we are indebted to Horace Davis & Co., of the Golden Gate Mills, of San Francisco. These gentlemen stand in the foremost rank among the flour manufacturers of the Pacific coast, and are doing much to add strength to the great thews of our rapidly growing commerce.

During the past four years there has been a marked revolution in the flour manufacture of the East. It was formerly supposed that the most economical and satisfactory way of reducing wheat to flour was to crush the grain between the stones, remove the bran, and pulverize the middlings at the same time. By this simultaneous operation, all the dirt upon the wheat, all the bran and the germs, pulverized by the stones, were necessarily incorporated in the flour. It was found that the wheat grown about Minneapolis, when treated by this method, could furnish but a second grade article of flour, although it was capable of being made into the best of flour when differently handled. The old treatment is known as the "low grinding" method. It was only when "high grinding" was introduced that Minneapolis began to recognize the value of her wheat and her water-power.

The phrases "patent flour," "middling purifiers," and "gradual reduction," now so familiar to millers, were there brought to public notice through elaborate experiments at Minneapolis. Their flour at once monopolized the markets at fancy prices. Those who utilized winter wheat, realizing that this system could not redound to their advantage as it had done to their Minneapolis friends, were slow to adopt the plan in their own mills. In the end it prevailed, however, and now but few mills at the East pursue the old style of manufacture. Doubts similar to those entertained by the winter wheat men prevailed here in California. Our millers, although they eagerly watched the contest between the two systems at the East, were doubtful as to whether the strife would ever reach this coast.

There are certain differences in the characteristics of wheat, which prevent the advantages accruing to the patent plan at the East from ever being realized here. And yet, there has been a steady progress in our own systems, and in the same general direction as those in the East. Such mills in this State as make high grade flour, have introduced purifiers, and very much improved their manufacture. These changes have not been in the direction of economy, and it has required faith on the part of our millers that good work would eventually justify them in risking heavy expenditures.

The white skin of California wheat, when pulverized in the flour, is not so conspicuous, nor does it injure the flour like the skin of the Eastern wheat. Hence, the differences between poorly and well made flour are not clearly marked here as there; nor do the prices obtained for a choice article here rule so high, relatively, as at the East. The encouragements for good milling is, therefore, materially lessened. Nevertheless, our people have not remained inactive. On the contrary, many of the better mills have been substantially modified within a few years past, resulting in a great improvement of their high grade flour. The number of patented machines, methods and processes which have sprung up during this activity enables the miller to exercise his judgment as to what best subserves his purpose.

Besides the common millstones, Eastern manufacturers are using "roller mills," in which the grain is crushed between chilled

iron or porcelain rollers, either corrugated or smooth. Chilled iron disks are also operated like mill stones, for which inventors claim great advantages. Whatsoever method is used, economical milling demands middlings purifiers for removing the dust from that portion of the middlings which escapes the crushing process, and the patents on these devices are legion. It will readily be seen that it is no easy task for a miller to substitute a new method for one which he has used for a term of years. No one change can be made without entailing others; and yet, these machines have steadily crept into our mills in the face of a general disbelief in their being adapted to California wheat. Middlings purifiers of the most approved patterns are to be found in all our best mills, while rollers have been used in a few instances for some years. Money has been freely spent in striving to determine how far Eastern experience has been of value to us, surrounded as we are by so many essentially different circumstances. These experiments are not as yet conclusive, but their effect will tend to the improvement of our brands.

While this struggle has been going on within the walls of our mills, a change has manifested itself in one of two great markets for California flour. Heretofore, Hongkong has been a sort of reservoir into which all our offal and low-grade flour has been poured, and highly advantageous prices have been realized. But greater familiarity with the use of flour, on the part of the Chinese, has resulted in a nicer discrimination, and that market now readily absorbs higher grades at remunerative prices, while low grades assume a similar position to that which they occupy in our own markets. The good prices paid for high grades in China is a standing encouragement to our millers to improve their brands; and it may safely be asserted that Hongkong, so far as its capacity goes, will continue to absorb the brand of any mill which may choose to maintain its uniformity of excellence.

There were exported from New York, in 1880, 4,176,839 barrels of flour, and 560,770 barrels from San Francisco. Liverpool absorbed the greater portion shipped from New York, and 166,201 barrels from San Francisco. Were it not for the uncertainty introduced into the calculation by ships' charters, which, during a scarcity of vessels, uses up all the margin of profit between San Francisco and Liverpool prices, there might be some hope for this trade. But it must remain speculative until the day when regular packet lines, with regular freight rates, shall be permanently established.

The nomenclature of the grades of flour have been somewhat modified by the new methods of manufacture in the East. Patent flour, in the sense in which that term is used, is made exclusively from the best purified middlings; and in its manufacture, the primary effect is to convert the wheat into middlings, and not flour, the process of pulverizing into flour being reserved for a second treatment after the dust shall have been removed from the middlings. "New process" flour is another term sometimes used. This refers to the process by which the flour is made, and the intention is to convey the idea that the article thus produced is really a "Patent" flour. "Granulated" is another term. "Patent" flour is generally granulated. The better flours of the "Washburn Mill" and the "Crown Roller Mill" are very coarse and sandy. Hence, the general impression would be that a granulated flour would be a "patent" flour. There is little justification for the use of these terms or brands from manufacturers now or heretofore on this coast. There are many brands in which the proprietors take pride, and which, measured by the grade, may answer to the quality designated by the above phrases; but our millers have not as yet been converted to the new process, and they hesitate to revolutionize their machinery to the extent demanded by the new process. Hence, one who is disposed to carp at trifles might ask if they mean the same by these terms that an Eastern miller would imply by their use. If so, their use is not fairly justified in brands on this coast. —Exchange.

THE MINER'S CABIN.

The little sketch on this page will remind many people, now residents of cities, of old days in the mines. And it will also be recognized as truthful by those who still "bach it" in mining regions of the coast. The storms of this winter must have brought to many a fire-side recollections of days when "roughing it" was experienced by the head of the family, and when he came into the cabin wet and weary to rest and dry himself by the blazing open fire.

And these things are not recollections only; they are still being experienced by the hardy miners of this coast. Hundreds of cabins dot the hill-sides, near the numerous mining camps, which are scattered through the mining regions. In all of these two, three, or four miners live on pretty much the same fashion that miners did 20 or 30 years ago. True, there are more hotels and boarding-houses, and more miners working for wages, and less for themselves, than there were in those "days of gold." Yet the miner's cabin of romance is still a reality as well. Perhaps there would be very little romance in the life if many of us were to return to it again after a lapse of years, wedded, as we are, to the artificialities of civilization; but we venture to assert that few look back to their days of rough living, hard fare, and hard work, with the pleasurable excitement provoked by the miner's vocation, without regret, and a wish that the same unselfishness that prevailed among men then would exist now. A hard, wet day's work in a claim, in a rain-storm when water was plenty and the sluices full, instead of bringing ill humor and grumbling, brought joy and good humor, as is depicted on the faces of the honest miners in our sketch.

NEW TANNING PROCESS.

The Eglington Chemical Company, of Scotland, have been for some time actively engaged in perfecting the new tanning process by bi-chromate of potash. The leather which they have produced appears to be a very serviceable article. The *Scottish Leather Trader*, says:—We have seen a fine sample of strap butts, from native hides, where the fiber had thoroughly absorbed the tanning, and to anything but an experienced eye had all the appearance of an ordinary tannage. The color was good and the butt mellow; also a sample of crupp, of which the tanning and currying are thorough, and there seems nothing to prevent it suiting all the purposes for which this kind of leather is used; also a sample of calf which seems to us perfect and scarcely to be distinguished from the best home dressed. Samples of the tannage have been submitted for analysis to Dr. Clark, the city Analyst of Glasgow. These samples were bends of foreign and native pelts, butts, buffalo hides, and calf skin. The object of the analysis was to ascertain the total quantity of chromium which they contained, and the amount which was extracted by the action of water under different circumstances.

The result of the analysis and examination is reported as highly satisfactory. The leather was also submitted to Mr. Kirkadly of the testing and experimenting works, Southwark, London, for the purpose of ascertaining the tensile strength of chrome-tanned vs. bark-tanned leather. The results of the experiments showed that the chrome leather exceeds bark in strength, and that after it has set under the necessary stress it still retains an extraordinary amount of elasticity, which is available for tightening machinery belting or pulleys. For instance a piece of chrome leather, bore an ultimate stress of 3,297 lbs. per square inch, while a piece of bark leather only bore an ultimate stress of 2,672 lbs. per square inch, which proves the samples of chrome tanned to be stronger than bark tanned by 15 per cent.

A NEW ILLUMINANT.—Herr Kordig, a Hungarian, has lately been performing some very curious experiments at scientific meetings in Paris with a new volatile combustible essence, which is offered for lighting purposes. Having arranged on the table several lamps in which the essence burns with a beautiful bright flame, Herr Kordig pours a quantity of the liquid on his hat and lights it, whereupon a long flame springs up to the ceiling. To the surprise of the audience, he puts his hat on his head and waits till the flame goes out. The hat is then shown to be intact. He pours some of the liquid on the floor and on a handkerchief and lights it. The floor and the handkerchief are noways damaged. Some drops may be put in the hollow of one's hand and burnt without producing appreciable pain. These extraordinary facts are easily explained. Herr Kordig's mineral essence boils at about 35° C., and the tension of its vapor is considerable, so that it is not the liquid that burns, but its vapor. He states that the liquid is a very volatile essence of



HOME AGAIN AFTER A HARD DAY'S WORK.

naphtha, with a certain mixture of ether of its composition added. The new essence is said to be obtained quite simply from natural oil beds recently discovered in Hungary, and the cost is low. The liquid has a slight smell of petroleum, and produces on the hand a cold sensation like ether.

NEURALGIA AS A "WARNING."—The great prevalence of "neuralgia"—or what commonly goes by that name—should be regarded as a warning indicative of a low condition of health, which must necessarily render those who are affected with this painful malady especially susceptible to the invasion of diseases of an aggressive type. It is always essential that the vital forces should be vigorous, and the nerve power, especially, in full development. Neuralgia indicates a low or depressed state of vitality, and nothing so rapidly exhausts the system as the pain that prevents sleep and agonizes both body and mind. It is, therefore, of the first moment that attacks of this affection, incidental to and indicative of a poor and weak state, should be promptly placed under treatment, and as rapidly as may be controlled. It is worth while to note this fact, because, while the spirit of manliness incites the "strong-minded" to patient endurance of suffering, it is not wise to suffer the distress caused by this malady, as many are now suffering it, without seeking relief, forgetful of the condition it betokens, and the constitutional danger of which it is a warning sign.—*Lancet*.

NEW TREATMENT FOR VARICOSE VEINS.—According to the *London Lancet*, Dr. Linon, of Verviers, has used per-chloride of iron locally with great success during the last three years in the treatment of varices. The strength of the solution is about two and a half drams to eight ounces of water. Compresses of flannel are steeped in the water, then wrung out, and applied by means of a flannel bandage, which is only moderately tightened. This application is to be kept on 24 hours, and on removing it the surgeon is much surprised to find that the venous dilations have almost entirely disappeared. The applications are to be renewed for seven or eight days successively, after which time the bandage is to be kept on, without any further wetting, until it gets loose. It is then to be wetted again with the solution, and applied until the varices have disappeared, which generally takes place after eight days or a fortnight, according to the size of the swelling. This simple method has removed, in a few days, enormous varices, which were accompanied by

violent pain, with black spots on the surface, and have restored the use of the limbs. By the unsuccessful application of dry bandages only, Dr. Linon has been able to show that it is not compression, but really the local action of the iron which is efficacious.

KEROSENE AND SALT FOR DIPHTHERIA.—A correspondent of the *New York Sun* says: "In 1862, on a plantation in south Alabama, where there was great difficulty in securing good medical advice, I saw a whole plantation of blacks, as well as the white members of a large family, successfully treated for diphtheria with kerosene oil and salt, used thus: Every patient was given a lump of rock salt about the size of a boy's marble, and instructed to keep it in his or her mouth, swallowing the salty saliva. At the same time the throat was rubbed with kerosene oil, and a flannel saturated with kerosene kept around the neck until the symptoms were abated or entirely gone. If necessary, mild cathartics were given. Not a case was lost, and there were fully 150 in all on the plantation."

RUBBER SAP A BEVERAGE.—The rubber tree belongs to the genus *Euphorhicea*, which are members of the *Massoranduba* of Brazil, the cow tree of *Demerara* and the butter tree of *Africa*. The negroes and Indians are fond of drinking this sap, it being the custom of the latter at the beginning of their feasts to make a present of a bottle of it to their guests.

DRIFTED OUT TO SEA.

Two little ones, grown tired of play,
Roamed by the sea one summer day,
Watching the great waves come and go,
Prattling, as children will, you know,
Of dolls and marbles, kites and strings,
Sometimes hinting of graver things.

At last they spied within their reach!
An old boat cast upon the beach,
Helter skelter, with merry din,
Over its sides they clambered in—
Ben, with his tangled nut-brown hair,
Bess, with her sweet face flushed and fair.

Rolling in from the briny deep,
Nearer, nearer the great waves creep,
Higher, higher upon the sands,
Reaching out with their giant hands,
Grasping the boat in boisterous glee,
Tossing it up and out to sea.

The sun went down 'mid clouds of gold;
Night came, with footsteps damp and cold;
Day dawned, the hours crept slowly by;
And now, across the sunny sky,
A black cloud stretches far away,
And shuts the golden gates of day.

A storm comes on, with flash and roar,
While all the sky is clouded o'er;
The great waves, rolling from the west,
Bring night and darkness on their breast;
Still floats the boat through driving storm,
Protected by God's powerful arm.

The home-bound vessel, *Seabird*, lies
In ready trim 'twixt sea and skies;
Her captain paces restless now;
A troubled look upon his brow,
While all his nerves with terror thrill
At shadows of some coming ill.

The mate comes up to where he stands,
And grasps his arms with eager hands;
"A boat has just swept by," says he,
"Bearing two children out to sea,
'Tis dangerous now to put about,
Yet they cannot be saved without."

"Naught but their safety will suffice;
They must be saved," the captain cries,
"By every thought that's just and right,
By lips I hoped to kiss to-night,
I'll peril vessel, life and men,
And God will not forsake me then."

With anxious faces, one and all,
Each man responded to the call,
And when at last through driving storm,
They lifted up each little form,
The captain started with a groan,
"My God!" he cried, "they are my own!"

—Rose Hartwick Thorpe.

MRS. WILKIN'S DUTY.

"She always tried to do it," she said, but like kitchen work of poor housekeepers, it was never done up. Tim insisted that there was more than belonged to one family; "Aunt 'Liz'beth took in a good deal for other folks;" and once he slyly chalked a sign upon the front door, "Duty Done Here." But then Tim had arrived at that peculiar age when a boy has no rights, and is needed to run of errands, and it is probable that duty—his aunt's, not his own—interfered with his comfort even more than that of older people.

Mrs. Wilkin kept no dog, but her duty sniffed an opportunity and pounced out of its hiding-place, when there came a timid little knock at the dining-room door in the early morning, and its answering revealed a small, quiet-faced, brown-robed figure—face and dress both past the freshness of their youth—carrying a basket.

"Good morning, Mrs. Wilkin."

"Come in?" questioned Mrs. Wilkin, with only half an invitation in her voice.

The acceptance was a half one likewise.

"I called to see if you didn't want to buy some knitted articles, or to engage some work of that sort," she began, in a gentle, deprecating voice.

"Well, I don't," interposed Mrs. Wilkin very positively. "I do all such work myself."

"I didn't know. Many ladies haven't time, and I'm glad to do it."

"I suppose so, but I consider it my duty to do all I can myself, and set other folks the example, whether they follow it or not," said Mrs. Wilkin, with a slight gesture like emptying her hands of responsibility. "If I was goin' to

give out work at all, it would be some hard jobs that it would be a help to be rid of; not the pick and choice little easy things that I call rest and not work; but then I ain't as particular as some, and so I do all kinds myself."

A faint flush crossed the visitor's thin face. She was not quite sure that she had been called indolent and advised to go to work and earn an honest living; the words only had an uncomfortable sound; so her lips kept their timid, gentle smile, though they trembled a little.

"Wasn't you rather hard on her, 'Liz'beth?" asked Mr. Wilkin, with a regretful glance toward the door as it closed.

Mrs. Wilkin returned to her seat at the breakfast table, and surveyed him over the shining tin coffee-pot.

"Hard on her? I only told her what I do, and if that pricks her conscience and makes her uncomfortable, it's not my fault. She's one of the weak kind that can't be stirred up, and haven't spunk enough to say their souls are their own. I wonder what such folks are good for; they'll never make the world any better, that's sure."

"But then everybody ain't alike, 'Liz'beth," interposed Mr. Wilkin.

"Needn't tell me that! it's plain enough," snapped Mrs. Wilkin. "Just look at this neighborhood—peaceable, orderly place two years ago; and now there's a mill started and all sorts of vagabonds brought here to work it."

"I don't see as the mill folks have done any mischief yet, 'Liz'beth."

"Of course you don't see, and nobody else sees; but I know there's something goin' on, when the lower part of the mill—that old empty store-room back where it can't be seen from the street—is lighted up two or three nights every week," said Mrs. Wilkin triumphantly.

A suppressed giggle made Tim suddenly cough and put down his coffee cup.

"Timothy!" exclaimed his aunt, severely. "If you can't drink coffee without doin' it so fast that you choke yourself, you'll have to go without it. I'll do my best to bring you up right, whatever comes of it."

Bringing up Tim in the way he should go was one of Mrs. Wilkin's strong points. He was the son of her niece; and Belinda had married in opposition to her aunt's advice.

"Having the boy to raise makes me more careful about the morals of the whole place," she said, returning to her original subject; "and as for being no thieves 'round here, I've thought for some time that the meat went pretty fast from our smoke-house."

"Don't—now, 'Liz'beth, I—I'm sure no one's stole any," said Mr. Wilkin, with a startled, uneasy look. "You—you couldn't have counted the hams and everything."

"No, I don't count, but I can miss'em for all that," affirmed Mrs. Wilkin decidedly. "I know there's more go than we use."

"Anyway, it's no difference. I wouldn't, 'Liz'beth—there's plenty, you see, more than we want," advised Mr. Wilkin, urgently but rather incoherently. Then he caught up his hat and started for the barn.

Mrs. Wilkin looked after him with pitying disapproval.

"When you've more than you want yourself, leave it handy for somebody to steal! Well, that's a new commandment, I do declare!" she said.

"Not so dreadful new, neither, Aunt 'Liz'beth," interposed Tim, stoutly. "'Cause the Bible folks was told to be sure and leave some of their harvest so the poor could come and get it. I read it myself; only it wasn't called stealing then, and was to be left handier than all stowed away in smoke-houses."

"Timothy!" began Mrs. Wilkin. But Tim suddenly remembered that the chickens were waiting for their breakfast.

"Yes'm, I'm goin' to feed'm right away," he observed, seizing a basket of corn and darting through the door by which his uncle had departed.

In truth it was not altogether easy to mold Tim into the desired shape; there was too much individuality about him. Encasing him in Mrs.

Wilkin's code of manners was putting too large a boy into too small a jacket; he was always bursting out at the elbows or tearing off the buttons.

That evening the mysterious lights appeared again in the store-room of the mill. Mrs. Wilkin determined to take a more thorough observation than the kitchen window allowed, and, throwing a shawl over her head, she picked her way carefully down the icy steps and crossed the yard to the gate.

But before she discovered any one entering there she heard sounds in another direction—steps in the yard behind her. Yes, some one tried the smoke-house door and entered. Breathlessly Mrs. Wilkin waited until the figure reappeared. It was easily recognized. Mr. Wilkin, beyond all question, stealing meat from his own stores!

The revelation was astounding. In her astonishment Mrs. Wilkin incautiously loosened her hold on the gate-post, took a step forward, and her feet slipped upon the treacherous ground. She sat down violently, and in an instant was speeding rapidly down the hill toward her original point of investigation. For once the path of duty was smooth before her—entirely too smooth, and icy. She could not check or guide her progress; her feet struck with force against the mysterious door, pushed it open, and she slid into a hall.

Thieves, gamblers, or whoever they were, she must not be discovered, and springing to her feet, she slipped behind some boxes piled near her. The noise attracted attention, and in a moment the store-room door was opened and a boy looked out.

"Guess it's only the door blew open; don't catch good," he reported.

"Lock it then, James, and bring in the key," said a voice from within; and to Mrs. Wilkin's consternation the order was obeyed, and she was a prisoner.

The boy left the other door slightly ajar as he re-entered. A gleam of light shone into the hall, and there were sounds from the room beyond, a scratching of pens, and a woman's voice; it sounded wonderfully like that of the little knitting-woman, directing and encouraging.

"Well done, Susan."

"Now don't be disheartened, Will."

There were a few simple mathematical problems, and then a reading, and the words, spelled out with difficulty by some, were Bible words.

"Charity suffereth long and is kind," "Vaunteth not itself," "Seeketh her own," "Thinketh no evil," "Beareth all things, believeth all things, hopeth all things."

Then those wonderful words read so slowly and emphatically, seemed suddenly to assume a new and deeper meaning than Mrs. Wilkin had ever thought of their possessing—some things do show so much more clearly in the dark than in the light.

As the timid little woman, who would have been frightened at her own voice in any other audience as large, explained in her simple, gentle way, the passage read, it occurred to the listener outside that some one was keeping a "sharp watch" on these mill people, after all, and that this might be a better way of doing it than would be practiced by any police force. It was a very informal school. One girl had brought her best dress that the teacher might show her how to mend a rent in it, and another was trying to knit a pair of mittens for her brother. Every winter has its thaws. Mrs. Wilkin had a heart down under all the crust of opinions that she had christened duty; she became interested despite of her uncomfortable situation.

The position was unpleasant. But when the lesson hour ended they departed slowly, by twos and threes, the open door flinging a flood of light out into the hall. At last only one lingered, and Mrs. Wilkin listened intently as she caught his voice.

"Now, Tim," said the little knitting-woman, "I like to have you come, you know that, and I'll help you all I can, but you really must tell your aunt about it."

"Well, you see, I don't know what she'll say," began Tim, irresolutely.

"But that should not hinder you from doing your duty."

"Don't know about that," said Tim, still doubtful. "You see, Aunt 'Liz'beth's got an awful 'mount of duty of her own, and it's such a partic'lar kind that other folk can't get much chance to do theirs only when hers is knappin'. Why, Uncle Reub gives my mother lots of meat, but he just slips it off and don't tell."

"Well, if you don't know what is right for you, I do know what is right for me," said the little teacher with a quiet laugh; "and I can't let you come again until you tell your aunt how you spend your evenings."

Mrs. Wilkin nodded a vigorous approval, but it was evident that Tim departed in a state of dissatisfaction.

There was a sound of a crutch tapping on the floor, and Mrs. Wilkin remembered that a little lame brother had sometimes gone about with the knitting-woman. The two were left alone in the room, and went around shaking out the fire, and putting up the books and papers.

"Only ten cents a week for each one—that's so little," said the boyish tones, musingly.

"Yes, but it isn't so very much that I can teach them," answered the little woman, humbly. "And then it's all they can afford to pay, poor things! And you know we began more for their sakes than our own, though we do need money. Courage, though, Johnny! it all counts, and you shall have your overcoat pretty soon now. Besides, this is work that blesses both ways—in what we give as well as what we get."

If she could only pass that open door! Mrs. Wilkin was growing benumbed by standing so long in the cold. Finally the light was extinguished, and the two came out. Just then, fortunately, Johnny remembered that they had left a book behind them, and as the unconscious jailers turned back, the prisoner seized her opportunity and escaped.

She was sitting alone by the fire when Tim, who had made his homeward route sufficiently circuitous to include a call on his mother, returned. He sat down near her, twisted his fingers uneasily, and Mrs. Wilkin guessed what was coming.

"There's been an even' school started here, Aunt 'Liz'beth."

"So I understand," responded Mrs. Wilkin, coolly.

"Why, I thought"—began Tim, with wide open eyes of surprise, and then checked himself with a sudden reflection that it might not be wise to recall the conversation of the morning. "I'd like to go to it—that is, I have been once or twice," he said. "Fact is, Aunt 'Liz'beth, when we lived down the river, before you took me, there wasn't any school for me to go to, and so I'm behind other fellers. Miss Kelsy, she makes 'rithmetic so plain, and helps me with writin', and so—"

"You might do worse," said Mrs. Wilkin, briefly. "Go if you want to. Only one thing, Timothy Stone, I won't have any ten-cent business about it! Honesty is honesty, and it's worth more'n ten cents a week to teach you any thing, as I know."

"She wouldn't take any more pay, 'cause she'd want to serve all alike, but oh, Aunt 'Liz'beth, if I just could give her and Johnny something nice for Christmas!"

"Humph! I'll think about it," answered Mrs. Wilkin, not disapprovingly.

"'Liz'beth," began Mr. Wilkin, nervously the next morning, "I wouldn't say nothin' to anybody about thieves, or watchin' them mill folks, if I was you."

"I don't mean to," replied his wife, with an odd pucker about her lips.

"Well, I'm glad of it—I really am," said Mr. Wilkin, in a tone of great relief.

"Reuben," she said quietly, "if you see any thieves 'round our smoke-house, just tell'em there's a couple of chickens hanging near the door, that I dressed a purpose. It's natural Belinda'd like a change of meat as well as other folks."

WOMAN'S WORK AND A FARMER'S WIFE.

Mrs. Jones seated herself in a large arm-chair, and soliloquized as follows: "Woman's work and a farmer's wife"—I should say so, with a thousand cares and a housefull of little ones. Why, here I've been married these ten years, and my hands are virtually tied as if I had been a Chinese slave. Up at four in the morning! Why, I declare! Jessie is awake, and breakfast not half ready! If that isn't enough to try the patience of any woman, farmer's wife or no farmer's wife! Susie, though only eight, must be called to take the baby, though it is fully two hours before day. Jones and the men must have an early breakfast. Ham, eggs and potatoes must be cooked; coffee must be made. Jones, poor fellow, he has poor health, and he must have warm cakes for breakfast, though I do have to hold the baby while I cook them. It does seem a little hard, but then I am only a farmer's wife.

Jones is gone to the field with the men, and I am left with the little ones—one, two, three, four, five, and the oldest only eight years. Ah, Aunt Jerusha, don't think I am complaining. No, no; I am only a farmer's wife! Why, there is the *RURAL PRESS* came three days ago, and I haven't even looked into it; while there is "Mrs. W. H." and "Mrs. Nichols," so glad that one little corner is devoted to the "Home Circle."

Yes, home circle. I should say so; with a ring as big as the moon, and 10,000 cares inside of it. I do wish the editor of the *RURAL PRESS* could go through with one day's care of a woman's work, and we would have the whole of the *Rural Press* devoted to the "Home Circle." Let me see: Up at four; breakfast for six; pots and dishes to wash—yes, and the little ones to care for.

There comes Jimmy, he is only six, and I must fasten his pants. Sakes alive, there comes Tommy. What is he up to? what in the world is the matter? Mouth stretched from ear to ear. Poor boy, it was only yesterday he stepped into a pile of hot embers and burned his little foot awfully. Ah! Jesse, my darling, mamma had almost forgotten you; you, too, must be washed and cared for.

Oh! the cares of a day. Hush, baby, hush; I wish you had slept a little. A big washing to be done—pants, shirts, pillowslips, sheets and socks, all to be done by one pair of hands. How will I ever get through? It requires the patience of Job, and a mother's love to go through with it. Five beds to make, up stairs; down stairs, seven rooms in all to put in order. The yard must be swept, for Jones loves to see everything look tidy. The milk is to skim and strain, the chickens are to feed, the pigs, too, must be fed, the old hen that is hatching must be taken off. I declare, Jones has not fixed the coop and I must put her under a box. Dear, oh, dear, the gate is open and the pigs are in the garden, and I must run them out. Well, I declare, there goes the calves with the cows, and I must turn them back.

Oh! the cares of a farmer's wife! Dinner to get for six or more; 'tis time the roast was on, pease to pick and shell, beans to pick and snap; potatoes to dig and scrape; lettuce to pick and clean; onions to pull and wash; the bread to bake; pie or cake is to be made; butter to churn and work. "A woman's work and a farmer's wife." I should say so.

When Mrs. Jones was waked from her reverie by the clock striking ten, and all was forgotten by a Christian woman and a loving mother.—*Mrs. Stoaks in Rural Press.*

RECORDER (to witness with bandaged head): "Did he have any provocation when he struck you?" Witness: "He may have had something of the kind concayled on the person, but it was a brick he struck me wid."

TOM'S LESSON.

"Go and get it! Go and get it, I say!"

Poor little Dash crept close to his young master's feet, looking up in his face with earnest, pleading eye, as if he would say:

"Please, please don't! I cannot do what you want."

Tom was trying to make Dash swim after a stick which he had just thrown into the river. Now Dash was not a water dog, having no more love for it than a cat, and foolish Tom was bent on making him one. He kicked the poor little animal away and repeated his order; then, angry that it was not obeyed, seized him and threw him into the water. The dog was sorely frightened, but by hard struggling reached the bank, and crawled to his master's feet, with a pitiful whine, wet, panting, trembling. The cruel boy caught him up with rough words, and was just going to throw him in again, when a pair of strong arms seized him, and a man's voice said:

"Here, you young scamp! Now we'll see how you like to swim!"

It was Tom's turn to be frightened. He turned pale, trembled and caught his breath as the stranger lifted him in his stout arms as easily as he had poor Dash. He began to beg.

"Oh, sir, pray don't! I cannot swim, indeed I cannot! Oh, don't throw me into the water! I will never, never do so again."

The man paused, but did not let go his hold.

"Neither can your dog swim," said he; "but you meant to make him do it, just to amuse yourself. Why can I not make you do it to amuse me? I am as much larger and stronger than you as you are larger and stronger than that poor, panting, trembling dog."

Tom still begged and promised, and the stranger at last released him, saying:

"Now, my boy, let me give you a kind word of advice. Never treat another, whether human being or dumb animal, as you would not like to be treated yourself. Never try to make anybody or anything do what God, when he created it, did not make it to do, or to be what he did not mean it to be. If you keep these rules, you will be a better, wiser, happier boy. Good-by."

And Tom knew in his heart that the man was right, and the lesson, though it seemed severe, given in real kindness.

SICK HEADACHE.—This complaint is the result of eating too much and exercising too little. Nine times in ten the cause is in the fact that the stomach was not able to digest the food last introduced into it, either from its having been unsuitable, or excessive in quantity. A diet of bread and butter, with ripe fruit or berries, with moderate and continuous exercise in the open air sufficient to keep up a gentle perspiration, would cure almost every case in a short time. Two teaspoonfuls of powdered charcoal in a half-glass of water, and drank, often gives instant relief. Sick headache with some persons comes on at regular intervals, and is a signal of distress which the stomach puts out to inform us that there is an over-alkaline condition of its fluids; that it needs a natural acid to restore the battery to its normal working condition. When the first symptoms of headache appear, take a teaspoonful of lemon juice clear, fifteen minutes before each meal, and the same dose at bedtime. Follow this up until all symptoms are past, taking no other remedies, and you will soon be able to go free from this unwelcome nuisance. Many will object to this because the remedy is too simple; but many cures have been effected in this way.

It is claimed by some medical men that smoking weakens the eyesight. Maybe it does, but just see how it strengthens the breath.

WHEN a young lady asked to look at a parasol, the clerk said: "Will you please give the shade you want?" "I expect the parasol to give the shade I want," quoth the young lady.

RAILROAD ITEMS.

Before very many days now the other trans-continental line will be completed. The Atchison, Topeka and Santa Fe railroad, on the 15th inst., advanced their construction terminus 12 miles, which brings them distant by road only 12 miles from the junction with the Southern Pacific. Large tracts of country will be opened up by this new line, and towns are already springing up at different points. It is mainly through the influence of this road that so many miners are seeking new grounds in Arizona and New Mexico. It is probable that a great deal of ore will be shipped away for reduction as soon as the means of transportation are produced.

At El Paso, or near there, where the junction of railroads is to be made, it is stated that all the roads centering there, three or four in number, are to join and build a huge depot house. The Atchison, Topeka and Santa Fe has 50 acres there, and the arrangements for work are going on satisfactorily.

Dispatches from Chicago state that J. W. Morse, General Passenger agent of the Union Pacific, has just returned from New York, where he and other officials of the road have been perfecting arrangements for the construction of a new line from Granger, Utah, a station on the Union Pacific, to Baker City, Oregon, where a connection is made with the Oregon railway, now in course of construction to Portland and other points in Oregon. It is the intention of the Union Pacific to get ahead of the Northern Pacific in reaching Oregon points, and provide a competing line that it is claimed will be 300 miles shorter to Portland, Oregon, taking Chicago as a common point, than the Northern Pacific. The new line will start from Granger station, and run northwest to a connection with the Utah Northern, also controlled by the Union Pacific. The Utah Northern might have been used all the way from Ogden, but by building a new line from Granger northwest, 750 miles in length, the route is shortened 150 miles. In the building of this connecting link, a tunnel 2,000 ft. long has to be constructed, and work on this has already been commenced. Work on the new line will be commenced at once, and is expected to be ready for business to Baker City in one year. While the parties were in New York, arrangements were also completed for taking control of the Kansas Central railroad. This road runs from Leavenworth west to Onaga, Pottawatomie county, Kansas. The Union Pacific agree to assume the debt of the line, and will at once extend it to Clay Center, where a connection is made with the Junction City branch of the Kansas Pacific. The principal object of the Union Pacific in getting control of this road is to prevent it from falling into the hands of rival lines, and to cover a territory which has as yet no other railroad facilities.

The Utah and Northern railroad is the longest narrow-gauge in the country. Its rolling stock for this year will be not less than 720 cars and 38 locomotives.

The railroads throughout California have been of late very much troubled, owing to floods, washouts, caves, etc.

BEEFSTEAK PICKLED.—Lay a steak in a pudding-dish with slices of onion, a few cloves, whole pepper, salt, a bay leaf, a sprig of thyme, one of marjoram, and some parsley; add oil and tarragon vinegar in equal parts, just to come up to the steak, and let it steep in this for about 12 hours, turning it occasionally; then either broil it or fry it in butter, and serve with mashed potatoes. It may also be fried in butter, and then stewed with a little common stock, and served with piquant sauce.

THE ALASKA MINES.

A correspondent of the *Mining and Scientific Press*, writing from Sitka, Alaska, under date of January 25th, in relation to the mines in that Territory, says: "I think it probable that as you have not heard for a long time from this part of the coast (Sitka), a few notes in regard to certain newspaper reports may be of advantage to the readers of the *Mining and Scientific Press*. During the past summer, feeling confident of the mineral wealth of Alaska, I fitted out seven different parties to prospect, each with six months' provisions and equipments. I also paid each party, which consisted of five or six men, regular wages; as otherwise I could not expect to have the prospecting of the country done to my own satisfaction.

The last of the seven parties returned in the latter part of November, and brought here to Sitka, on a canoe, about two tons of the richest quartz I ever saw in any country. I went up to this new El Dorado, leaving here on the 25th of November, and arrived there, on a canoe, on the 29th of the same month.

The district is called after the discoverer, "Harris district," and is situated on the main land of Alaska, between the Takou and Chilcat river, in 58° 28' north latitude and longitude 134° 10', within four miles of Stephenson's straits, opposite Douglas Island, on the northern end of Admiralty island.

The discoveries of the ledges and placers were first made on Gold creek, but since traced and found in Salmon creek and Glacier creek, five and seven miles northwest respectively, and in Sheep creek, three miles southeast. The same ledges and ores were found 30 miles southeast, and in Windham, Spruce and Sehug creeks, where, for the last five years, the placers have been paying well to a small lot of men. In Gold creek and its tributaries some 60 claims are now already taken up and staked out, and on all very encouraging prospects have been found. They may be called \$5 to \$20 diggings. But very little can be done there before April or May, as the men are not prepared to work yet, and are only getting ready and prospecting their grounds.

THE LEDGES.

The ledges which made these placers are at the head of the creek, and cross the creek twice in a distance of about two miles. There is but one belt of them, which is about 3,000 ft. wide, and in it the six main ledges run parallel to each other, besides a number of smaller veins, but which are taken in by the main locations, as those are only about 300 to 500 ft. apart, and are from 6 to 30 ft. in width. These ledges, which show bold cropping for over three inches (so far as I have been on them), hold very regular in size and distance apart, and the whole length show the richest kind of ore. The quartz is imbedded in soft slate, and is quite decomposed and brittle. The gold is mostly free in the quartz, but the richest ore is in the galena, which is the only disadvantage of the ore, as I expect it will interfere with the amalgamation; yet the gold is quite coarse and very heavy, so that it will readily concentrate with the galena to be smelted there. I have made upward of a hundred assays, both fire and wet, and the lowest assay out of the very poorest piece of quartz yielded \$33 per ton, while the average of my assays which might be also called average of the ledges, are 285 per ton, and run from \$100 to \$5,000 per ton; and then I have never yet assayed any specimens.

The ledges were respectively called the Jamestown, Takou, Pilz, North Star, Montana, California lodes, and on each there are claimed already six locations of 1,500 ft. each, with plenty of ore on all of them. In the creeks lay thousands of tons of the richest kind of ore, every piece of which shows the gold plainly, and a good many of the placer claims are valuable for the quartz which lies on them.

WATER IN THE CREEKS.

There is an abundance of water in the creeks as they are fed from eternal snow banks high up in the mountains, and there were on the 15th of De-

cember, all of 3,000 inches running, which is the lowest water of the year. There is nothing to prevent working these mines the year around. As so far as this (January 18th), in the season, we have had only six days of frost, and now there is no snow as far as 1,000 ft. above sea, and it rains a good deal, of course, in the high mountains. It snows in the higher mountains.

The country is thickly timbered with red and black spruce, black pine, hemlock, alder and red birch, not so tremendously thick as on the island, as there is 100% more moisture on the archipelago than on main-land.

The way to it is very easy and any large vessel can sail to the mouth of the creeks and anchor within 200 ft. of the shore. Already I had a 150 ton steamer up there, taking up my men and supplies, and by the middle of February, I expect to have the mail steamer *California*, running up there with lumber and supplies. Outside of this district one of my parties found

A SILVER ORE DISTRICT

Between Lynn canal and Youiatate and Hoonah island. The ore they brought from there is most encouraging. They brought some chloride and some bromide silver ore which is quite high grade, and they claim to have plenty of it. They also bring samples of argentiferous galena, from a whole mountain of the kind, which yields 40% lead, and \$25 to \$60 per ton in silver.

Another ledge they report quite large, the samples yielding from \$30 to \$120 in silver and \$60 to \$100 in gold. They report also and bring fine samples of copper-silver glance, antimonial silver, and sulphurets of copper, in large quantities. This is called Morrisana district, and I shall visit it early in the spring in the U. S. N. steam launches. I must not forget to give due credit to Commander Glass and the other officers of the U. S. ship *Jamestown*, for their ready assistance to us prospectors, they having done everything in their power to further our efforts. You will please continue to send me the *Press*, and send me also a set of back numbers from July last."

SUGGESTIONS CONCERNING LONG LIFE.—If any one 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 of life which seemed to favor longevity. The replies were very interesting, but on the whole rather monotonous; and the general result was 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 hinderance to longevity be considered unreasonable, and we know that some of the most intellectual men have lived to great age.

IMPROVED CAUSTIC.—It sometimes becomes necessary to remove certain morbid growths in the throat and elsewhere, and for this purpose a stick of fused nitrate of silver secured in a quill is generally employed. Unfortunately it not unfrequently happens that the caustic breaks off and slips down the throat. To prevent this, a Russian surgeon melts together five parts of nitrate of silver and one part nitrate of lead. This composition does not break easily, and can be sharpened like a lead pencil. It should be fastened in a quill made of metallic aluminum, which is not corroded by the caustic as metallic silver is.

WEEL MAY THE BOATIE ROW.

Weel may the boatie row, and better may it speed,
Weel may the boatie row that gains the hairnies' bread,
The boatie rows, the boatie rows, the boatie rows fu' weel,
And mickle luck attend the boat, the merling*, and the creel†.

I cast my line in Largo Bay, and fishes I caught nine;
Three to boil, and three to fry, and three to bait the line.
The boatie rows, the boatie rows, the boatie rows indeed,
And happy be the lot of a' who wishes her to speed.

When Sawnie, Jock, and Janetie are up and gotten lea,
They'll help to gar the boatie row, and lighten all our care.

The boatie rows, the boatie rows, the boatie rows fu' weel,
And lightsome be her heart that bears the merling and the creel.

BLACK STAIN FOR WHITE WOOD.—A dull deep black satin may be imparted to white woods by the following process: Procure some logwood chips and boil them in water until a strong decoction of logwood is made; brush this over the wood with a soft brush, and allow the wood to dry. Treat it two or three times in this way, and then let it get thoroughly dry. While it is drying, prepare a solution of acetate of iron by soaking some flakes of iron rust or old, rusty nails in best white vinegar. It may even be best to prepare this solution first. This may be brushed over the wood in a similar manner to that for the logwood dye, when it will be found to turn the wood a deep dull black. It

BURNT CLAY FOR RAILROAD BALLASTING.—The Chicago, Burlington, and Quincy Railroad Company are burning clay for ballasting their road. A small fire of bituminous Iowa coal is started on the surface of the ground, and, when burning freely, the fire is covered with a lump of clay, then alternately coal and clay, the coal decreasing in quantity until at the top it is as one to fifteen. The mass is formed like a cone. Three united cones, each 18 ft. high and containing in all about 1,000 cubic yards of material, have been started near Red Oak. They will burn for months. Six hundred miles of



THE FISHERMAN'S DAUGHTER.

And when wi' age we're worn down, and hirpling at the door,
They'll row to keep us dry and warm, as we did them before.

The boatie rows, the boatie rows, the boatie rows indeed,
And happy be the lot of a' that wish the boat to speed.

—John Ewen.

—*A fish allied to the cod. †A wicker fish-basket.

A MICHIGAN stump-speaker boldly announced, the other day, that "the country is drifting into arnica."

has been said that a small quantity of nut-galls, ground to powder and boiled with the logwood, improved the decoction. A solution of protosulphate of iron (green copperas) may also be used instead of the acetate of iron. When the stained surface is dry, it may be varnished or polished with a rag smeared with a mixture of beeswax and turpentine, or polished with French polish darkened with a little indigo. The decoction of logwood should be used hot; the other solution may be used cold.

road are to be ballasted with this crude pottery broken up. It resembles coal cinder, but is harder.

REPAIRING CRACKS IN BOILERS.—A correspondent of the *Engineer* describes a new method for repairing cracks in boilers invented by a German, Herr Knoelke. It 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.

AMERICAN LOCOMOTIVES.

The United States exported 25 locomotives during the fiscal year of 1870, and 60 during the year 1880—an increase of 140%. Several monster locomotives for freight service are in process of construction for the New York, Pennsylvania and Ohio railroad. They rest on six drivers and a four-wheeled truck, and will weigh 38 tons, empty. Train men are considerably troubled by these trains breaking in two when hauled by these powerful consolidated engines, and the only remedy seems to be in equipping freight cars with heaviest drawbars, shackles, and pins.

The following from Mr. R. M. Brereton, C. E., may be quoted as an authoritative English opinion of American built locomotives: "I argue that the greater duty done by the American motor is due to the better design and the better system of working the locomotives. The American builder excels in the system of framing and counterbalancing, and in the designs of crank axles, etc., so that the engine may run remarkably easy and without jar, round sharp curves, and work not only on the light roads, but also diminish the wear and tear on the solid roads, and at the same time increase the effective tractive force. The English engine is a very heavy affair, and in running it not only wears and tears itself very rapidly, but also the roadway, and it greatly, by its unsteadiness and jar, fatigues the drivers and firemen. I have ridden hundreds of miles on engines in India, in England, in France, and in the United States, and I have always found the American engine most easy and comfortable, but I never did the English or the Continental engines. It is almost impossible to give these engines their full hauling power, simply because the greater portion of the weight cannot be thrown off the driving wheels."

THE INFLUENCE OF A TUNING-FORK ON THE GARDEN SPIDER.

Having made some observations on the garden spider which are I believe new, I send a short account of them in the hope that they may be of interest to the readers of *Nature*.

Last autumn, while watching some spiders spinning their beautiful geometrical webs, it occurred to me to try what effect a tuning-fork would have upon them. On sounding an A fork and lightly touching with it any leaf or other support of the web or any portion of the web itself, I found that the spider, if at the center of the web, rapidly slew round so as to face the direction of the fork, feeling with its fore feet along which radial thread the vibration travels. Having become satisfied on this point, it next darts along that thread till it reaches either the fork itself or a junction of two or more threads, the right one of which it instantly determines as before. If the fork is not removed when the spider has arrived it seems to have the same charm as any fly; for the spider seizes it, embraces it, and runs about on the legs of the fork as often as it is made to sound, never seeming to learn by experience that other things may buzz besides its natural food.

If the spider is not at the centre of the web at the time that the fork is applied, it cannot tell which way to go until it has been to the centre to ascertain which radial thread is vibrating, unless of course it should happen to be on that particular thread or one stretched supporting thread in contact with the fork.

If when a spider has been enticed to the edge of the web, the fork is withdrawn and then gradually brought near, the spider is aware of its presence and of its direction, and reaches out as far as possible in the direction of the fork, but if a sounding fork is gradually brought near a spider that has not been disturbed, but which is waiting as usual in the middle of the web, then instead of reaching out towards the fork the spider instantly drops—at the end of a thread of course. If under these conditions the fork is made to touch any part of the web, the

spider is aware of the fact and climbs the thread and reaches the fork with marvelous rapidity. The spider never leaves the centre of the web without a thread along which to travel back. If after enticing a spider out we cut this thread with a pair of scissors, the spider seems to be unable to get back without doing considerable damage to the web, generally gumming together the sticky parallel threads in groups of three and four.

By means of a tuning-fork a spider may be made to eat what it would otherwise avoid. I took a fly that had been drowned in paraffine and put it into a spider's web and then attracted the spider by touching the fly with a fork. When the spider had come to the conclusion that it was not suitable food and was leaving it, I touched the fly again. This had the same effect as before, and as often as the spider began to leave the fly I again touched it, and by this means compelled the spider to eat a large portion of the fly.

The few house-spiders that I have found do not seem to appreciate the tuning-fork, but retreat into their hiding-places as when frightened; yet the supposed fondness of spiders for music must surely have some connection with these observations, and when they come out to listen, is it not that they cannot tell which way to proceed?

The few observations that I have made are necessarily imperfect, but I send them, as they afford a method which might lead a naturalist to notice habits otherwise difficult to observe, and so to arrive at conclusions which I in my ignorance of natural history must leave to others.—C. V. Boys, in *Nature*.

THE ISTHMUS SHIP RAILWAY.

Capt. Eads is a good persuader. His remarkable scheme of a ship railway across the Isthmus of Tehuantepec is taking a tangible shape. The Mexican Government has made a very liberal concession, giving him the right to construct a railway on such line as he may select, the work to be commenced within two years and completed within 12 years. He is allowed to charge \$5 per cubic meter of the displacement of each vessel transported; also \$15 for each passenger on the ship, and 1% on the value of coins or precious stones carried. The Government also gives him a subsidy equal to 1,000,000 acres of public lands, and makes other liberal concessions. While this will go but a little way toward the estimated cost of \$75,000,000, it will doubtless assist Capt. Eads in raising money in the United States. He desires to have our Government guarantee 6% dividends on \$50,000,000 of the stock of the company in consideration of free transportation of Government ships, officers and soldiers, and the benefit which the proposed road will be to our commerce. This, however, will be difficult to obtain. The projected road is, if built, to be about 112 miles in length, while the proposed Panama canal will be 45 miles long; but the Tehuantepec route will save about 1,500 miles between New York and San Francisco over the Panama route, while the distance from the mouths of the Mississippi to California by Tehuantepec is 2,300 miles less than by Panama. The Panama canal and the ship railway are fairly in the lists as competitors, while the Nicaragua canal scheme is also being urged, and if all are completed, it will be all the better for the country.

MACHINERY FOR WASHING AND SCOURING WOOL.—This is an invention of combination of mechanism for dragging the wool from the washing contrivance up the incline to the squeezing rollers. One of the modifications consists of two sets of frames rammed with teeth, the rays of the teeth in one frame alternating with the rays of the teeth in the other frame, while another modification makes use of only one frame to drag up the wool, the other frame having a lifting movement to retain the wool. The frames are similar to a barrow in construction.

THE COLOR RELATION OF METALS.

In a paper on the color relation of metals, and notably on those of copper, nickel, cobalt, iron, manganese and chromium, lately read before the Chemical Society, Mr. T. Bayley records some remarkable relations between solutions of these metals. It appears that iron, cobalt and copper form a natural color group, for, if solutions of their sulphates are mixed together in the proportions of twenty parts of copper, seven of iron and six of cobalt, the resulting liquid is free from color, but is gray and partially opaque. It follows from this that a mixture of any two of these elements is complementary to the third, if the above portions are maintained. Thus, a solution of cobalt (pink) is complementary to a mixture of iron and copper (bluish green), a solution of iron (yellow) to a mixture of copper and cobalt (violet), and a solution of copper (blue) to a mixture of iron and cobalt (red). But, as Mr. Bayley shows, a solution of copper is exactly complementary to the red reflection from copper, and a polished plate of any two of these elements is complementary to the third, if the above portions are maintained. Thus, a solution of copper salt of a certain thickness, is silver white. As a further consequence, it follows that a mixture of iron (seven parts) and cobalt (six parts) is identical in color with a plate of copper. The resemblance is so striking that a silver or platinum vessel covered to the proper depth with such a solution is indistinguishable from copper. There is a curious fact regarding nickel also worthy of attention. This metal forms solutions which can be exactly simulated by a mixture of iron and copper solutions; but this mixture contains more iron than that which is complementary to cobalt. Nickel solutions are almost complementary to cobalt solutions, but they transmit an excess of yellow light. Now, the atomic weight of nickel is very nearly the mean of the atomic weight of iron or copper, but it is a little lower—that is, nearer to iron. There is thus a perfect analogy between the atomic weights and the color properties in this case. This analogy is even more general, for Mr. Bayley states that in the case of iron, cobalt and copper, the mean wave length of the light absorbed is proportional to the atomic weight. The specific chromatic power of the metals varies, being least for copper. The specific chromatic power increases with the affinity of the metal for oxygen. Chromium forms three kinds of salts—pink salts, identical in color with the cobalt salts; blue salts, identical in color with copper salts; and green salts, complementary to the red salts. Manganese, in like manner, forms more than one kind of salt. The red salts of manganese are identical in color with the cobalt salts and with the red chromium salts. The salts of chromium and manganese, according to the author, are with difficulty attainable in a state of chromatic purity. He thinks these properties of the metals lead up to some very interesting considerations.

TEMPERED GLASS.—Tempered glass can be tempered in great pieces, gifted with a power of resistance, of which its specific lightness, compared with heavy metals, would not have given the least presumption. It can now be employed, notably in carpentry, for posts, joists, ties and buttresses. It combines the advantages of strength and of incorruptibility, in contact with all atmospheric agents, as well as with chemical factors, and consequently is of perpetual duration. Besides these advantages another is the smallness in the price of acquisition. This material is now as cheap as iron of the same weight, and as a large sale is counted on, it will not be long before the reduction of price will be below the cost of wood. No doubt many industries will profit from this new progress in the fabrication of glass, and it will be greatly appreciated in the household. One will see the time when the metals and wood will be replaced by glass, in a great number of implements, utensils, and objects of diverse nature, such as stop-cocks, gutter-spouts, buckets, and even barrels.

ROTARY CUTTERS FOR METALS.

It would seem, to the experienced machinist, that the manners, and methods and means of working metals cold has been reduced to an exact science. The planer, the lathe, the drill, the shaping machine, the milling machine, and other general and special tools are usually considered to have covered the ground of reducing and sizing metallic objects; the abrading and abolishing of the work being relegated to another branch.

But somehow the different manipulations on and processes of working metals seems to be so intimately connected that in many instances one department and one method overlaps and engages with another.

It is hard to point out the dividing line between turning (cutting) and finishing and polishing; it is difficult to determine where drilling and milling are separate; to say what difference there is in the resultant action of the shaping-machine and the profiling machine, although one acts with a fixed cutter and the other with a rotary cutter. The result of file finishing and corundum, or emery, finishing may show apparent difference to the mechanical eye, but the object sought may be equally gained by one method as well as by another.

The uses of these natural abrading materials are yet in their infancy. To make a turning or planing tool requires stock—the best of steel—and hand labor, and dulness and wear of the cutting edge requires additional labor and considerable skill to put the tool in shape again. Whereas, the emery wheel is a constant, requiring only occasional dressing, easily made. It is noticeable that most of the improvements in the working of metals cold drift toward the application of rotary contrivances, and that the emery wheel is largely superseding the chisel edge and the serrated edge, as represented by the turning and planing tool and the file. In fact, the milling machine has stolen a large share of old time lathe, planer and vise work, and almost rules in the shop, its control being shared by the stone and emery wheel.

All this movement is in one direction, and it is not surprising that advanced mechanics insist that the movement has not reached its maximum. These improvers assert that a large amount of the work now done by the lathe and the planer with fixed tools should be done by modifications of these machines with rotary tools; and recently an ingenious and progressive mechanic has given proof of the advantages of substituting rotary for fixed cutters in the lathe and on the planer. His idea is to use mills of small diameter in place of the cutters in general use. A quotation from his own statement is better than a synopsis of his plan.

"All fixed and stationary cutting tools are merely chisels, driven either by percussion or by pressure; the percussion must be regular and equal or the work will be ridgy and 'chattered.' The pressure must be uniform, a condition impossible where the object to be turned is suspended on centers, which allows more or less recess on from the cutting point as the circumferential resistance is greater or lesser. But with a rapidly revolving cutter there is no time for recovery from the attack of the abrading cutter, and no chance of any projection or prominence overcoming the attack of the tool. So on the planer the spring and 'action' of the fixed tool leaves the surface in a series of transverse ridges; the finishing cut being only a reduction of this fault but not a removal of it. There is no planed surface but is a series of ridges; no smooth surface is possible with a fixed tool in a planer head. So in the lathe, it is impossible to turn a journal except its surface be left in ridges, which cannot be ground down and will not wear down. I insist that better work can be done on the lathe and the planer by rotary cutters than by any fixed cutter. The improvement will be as much as the sliding cut of the planer chisel over the percussion cut of the cold chisel. The only known means of producing an equal surface on metals

is by a rotary motion. This is seen in our means of polishing and our methods of finishing. No true surface is expected by longitudinal or transverse motions. In either case the ridges must be removed by rotary motion. So in the lathe and the planer, the fixed cutter in one produces longitudinal ridges, and the other transverse ridges, to be removed after the work is done by rotary polishing or rotary wear. I claim that the only proper way of sizing metals is by rotary tools."

This mechanic has made some tests that appear to favor his plan. He rigged up a lathe with a rotary mill in place of the ordinary fixed chisel and turned a shaft of two and a half inches from the rough to size with one going over of the mill. The shaft was revolved at a rate somewhat less than for ordinary turning, and the mill driven by an overhead belt at as rapid a rate as it could stand, being fed with soda water.

The mill was only one and a half inches diameter with between 30 and 40 teeth, and was fed with a feed of about 30 to the inch. It should be stated that this was as rapid a feed as he could get on the lathe, and he thought a feed of 20 or 22 would give better results. The specimen showed excellent work, very true as to circumference and very smooth as to surface.

On the planer he introduced a similar mill in place of the chisel cutter, but he had to run his platen at a lower speed than with the chisel cutter. The result, however, was very fine, a smooth surface apparently needing little more than ordinary stoning to make a good finish.—*Boston Jour. Com.*

ANOTHER DEPARTURE IN LOCOMOTIVE BUILDING.—There seems to be an inclination of late to depart from the long existing and uniform style of locomotive building. We have already described a locomotive with a double set of driving wheels, the one over the other, the lower ones being actuated by friction; and here comes the description of still another departure, which we clip from a cotemporary: A locomotive of rather unusual shape is building at the Concord railroad repair shop at Concord, N. H. The boiler, instead of being round is flat—some 2 ft. thick by 7 ft. wide and 12 ft. long—the tubes running horizontally; this boiler rests over the fire-box and in the middle of the locomotive, the engineer's position being in a little cab, similar to a wheelhouse on a steamer, at the forward end, while the fireman's position is at the opposite end as now, the whole "machine" being considerably longer than the largest used at present. The inventor is a young man by the name of Stevens, whose name this novel locomotive will bear. The greatest idea is the economy of fuel, the boiler being flat, and covering over so much of the fire-box, while the water will in no case be to any great depth as now. The invention was shown by J. H. Pearson, one of the largest shareholders, who was so pleased with it that he made arrangements to have one built for trial. It will be several weeks before this engine will be finished, and should it meet the expectations of its friends it will be quite a departure from the present style of locomotive.

MINING UNDER THE SEA.—A number of English coal mines are being worked under the ocean. In Northumberland, Eng., the net available quantity of coal under the sea is estimated at 403,000,000 tons, and on the Durham coast under the sea, including a breadth of 3½ miles with an area or 71 square miles, 734,500,000 tons. The latter mine is in a vein of an aggregate thickness of 30 feet, distributed in 6 seams. Engineers are considering how it can be worked successfully in the future.

MALLEABLE CAST-IRON.—According to Mr. L. Forguignon, malleable cast-iron appears as an intermediate body between steel and gray pig-iron, from which it differs by the special nature of its amorphous graphite and by its great tenacity. It is distinguishable from steel by its slight extensibility and its large proportion of graphite.

SAWS.

The grand secret of putting any saw in the best possible cutting order consists in filing the teeth at a given angle to cut rapidly, and of a uniform length, so that the points will all touch a straight-edged rule without showing a variation of 100th part of an inch. Besides this there should be just enough set in the teeth to cut a kerf as narrow as it can be made, and at the same time allow the blade to work freely without pinching. On the contrary, the kerf must not be so wide as to permit the blade to rattle when in motion. The very points of the teeth do the cutting. If one tooth is a twentieth of an inch longer than two or three on each side of it, the long tooth will be required to do so much more cutting than it should, that the sawing cannot be done well. Hence the saw goes jumping along, working hard and cutting slowly. If one tooth is longer than those on either side of it, the short ones do not cut, although the points may be sharp. When putting a cross-cut saw in order, it will pay well to dress the points with an old file, and afterwards sharpen them with a fine whetstone. Much mechanical skill is requisite to put a saw in prime order. One careless thrust with a file will shorten the point of a tooth so much that it will be utterly useless, so far as cutting is concerned. The teeth should be set with much care, and the filing should be done with great accuracy. If the teeth are uneven at the points a large flat file should be secured to a block of wood in such a manner that the very points only may be jointed, so that the cutting edge of the same may be in a complete line or circle. Every tooth should cut a little as the saw is worked. The teeth of a handsaw, for all sorts of work, should be filed fleaming, or at an angle on the front edge, while the back edges may be filed fleaming or square across the blade. The best way to file a circular saw for cutting wood across the grain is to dress every fifth tooth square across and about one-twentieth of an inch shorter than the others, which should be filed fleaming at an angle of about 40°.

SPONTANEOUS COMBUSTION OF WOOD.—The *American Journal of Science* gives a remarkable instance of the spontaneous combustion of wood. A Mr. Adam Reigart, two years previous to the occurrence, received a piece of wood, supposed to be cedar, detached from a large piece dug up 39 ft. below the surface, near Lancaster, Penn. The piece weighed a few ounces, and it was broken in two and laid upon a white pine shelf in Mr. Reigart's counting room. About four days before the discovery of the fire he had occasion to wipe the dust from the shelf and from the piece of cedar, with a wet cloth. Three days after it was discovered that the piece of wood had ignited and combustion was proceeding so rapidly that in a few minutes the shelf would have been on fire. Probably another prolific source of our forest fires is to be sought in the liability of decayed wood, not only to spontaneous combustion, but from the direct rays of the sun. At Winchester, Conn., some years since some workmen, about 2 P. M., on August 5, discovered smoke arising from a barren upland. The sun was excessively hot at the time. When they went to seek the origin of the smoke they found that the remains of an old decayed hemlock log had burst into a blaze, and were burning fiercely.

AN ELECTRIC WATCH.—A watchmaker at Copenhagen, of the name of Sonderberg, is reported to have made a watch which requires no winding up, inasmuch as it performs that work itself by means of an electric current. An electric magnet fixed inside the watch keeps the spring perpetually in a state of tension. All that is required to keep the watch running is to preserve the battery in proper working order, for which purpose one or two inspections in a twelve-month are said to be sufficient.

SINGULAR DISCOVERY IN CONNECTION
WITH PHOSPHORESCENCE.

The property possessed by certain metallic sulphides and other phosphorescent bodies of absorbing light when exposed to its influence, and giving out the same when brought into a darkened room, has long been known to scientists, but it is only quite lately that efforts have been made to utilize such properties. Of these, the most striking consisted in spreading a sulphide of this nature upon a flat tablet and exposing it to a strong light for a few seconds under an ordinary photographic negative. Upon removing the tablet thus impressed into a dark room, the picture on it will be found to be glowing in quite a mysterious and wonderful manner, and it will continue for some minutes to radiate the light which it absorbed.

It has occurred to an ingenious physicist, A. L. Henderson, to mix one of the most sensitive of these phosphorescent metallic sulphides with the bromide of silver, now so generally employed in the preparation of photographic dry plates, and, after emulsifying this mixture with gelatine, spreading it upon the surface of glass plates, and treating the same as ordinary ones, except in so far as regards the exposure, which must be momentary. He appears to have reasoned in this way: With even the briefest exposure capable of being given, a certain modicum of change will be produced on the sensitive bromide of silver, although manifestly such as will be incapable of yielding a properly developed image. But the light also falls upon the atoms of the phosphorescent powder incorporated in the films; and as these in turn radiate such light, it follows that they will complete the imperfect exposure set up in the bromide by the direct action of the light.

This reasoning has been found correct, and the result at present stands that plates have been prepared having such exceeding sensitiveness as to be well impressed by what Mr. Henderson designates "the flash of a match."

Phosphorescent sulphides may easily be prepared by heating the carbonate of lime, of barites, of strontia, or other carbonate found most suitable, in a covered crucible with half its weight of sulphur. After an hour's exposure to heat, the preparation is complete and phosphori are obtained which, upon being briefly exposed to light and then withdrawn into a dark room, will be seen to glow brightly, the color of the light emitted depending upon the nature of the carbonate originally selected.

This application of a well recognized fact in phosphorescence is so novel, and calculated to be of so much use, that we have no doubt its progress toward development will be rapid.—*Scientific American.*

PRESERVING MEAT FOR FOOD IN CARCASS.—Prof. Wickersheimer, a German chemist who has recently sold to the Prussian government a process for preserving organic substances, has since patented a process for preserving meat for eating purposes. A solution (heated to 50° C.) of 36 grams potash, 15 grams common salt and 60 grams alum, in 3 liters of water, is mixed with a second solution of 9 grams salicylic acid in 45 grams methylic alcohol, to which 250 grams glycerine is added. With this liquid the animal to be preserved is injected. In the case of small animals, 100 grams of the liquid for every one kilo. body weight, is recommended; in larger, the proportion may be reduced to 40 grams. Fishes, birds, and such small animals are not previously killed, but the injection made direct into the heart with a syringe having a sharp canula. Large animals are injected immediately after slaughtering, the liquid being introduced by one of the large cervical arteries. For cattle and swine, two or three grams saltpeter are added to the liquid. The flesh of animals so treated keeps (it is said) two or three weeks perfectly good and inodorous. If the preservation is to be for a longer time, the proportions of methylic alcohol, salicylic acid and glycerine are somewhat increased.

ANOTHER "NEW" LOCOMOTIVE.

The Hinckley Locomotive Works of Boston are building a locomotive on a somewhat novel principle. It is the invention of Mr. Henry D. Shaw, and is described as follows in the *Boston Journal of Commerce*:

His peculiar idea in this matter is that of running the locomotive with two cylinders upon either side. One cylinder is attached to the crank upon one side of the center of the wheel, and the other cylinder to the opposite side of the same wheel, or opposite to the first connection. These cylinders are made one above the other, a connecting rod running from each cylinder directly to its crank-pin. The lower cylinder acts directly on the wheel or crank-pin in the wheel. The outside end of the crank-pin has a connection which passes to the center of the wheel, where it is taken hold of by an outside frame or a connection to the main frame of the locomotive, and affords it a bearing, while the extension of this piece makes up precisely the same kind of a connection with the locomotive driving wheel that the ship carpenter's auger affords him with the double bend in it, the cranks being each side of the center. This attachment is to be made to both sides of the engine. A yoke separates and keeps the connecting rods in place should either one let go, so that no interference is to be feared from this.

The idea is to relieve the engine of the swaying caused by taking hold at the angles and changing the pressure with each revolution at each end of the stroke. Theoretically this is correct. A locomotive is being built which will be finished within the next two or three weeks, and is, we understand, to be put over the New York and New England or the Boston and Providence railroad for a thorough practical trial. Mr. Shaw is certainly deserving of success, and we hope will meet it, as there is little doubt about the matter mechanically.

A HORSE SHOE IN A TREE.—A sycamore tree was recently blown down near the residence of Geo. Douglas, in Hartford, Connecticut. On cutting it up for fire wood, there was found embedded in the trunk, 59 inches in diameter, an old horseshoe with nails on one side only. It was 22 inches from the bark, or outer edge of the tree, the wood of which is perfectly sound. The tree is known to be more than 130 years old, and it is estimated that the shoe has been embedded in it 110 years. In ye olden times, it was a customary thing to nail old horseshoes to trees for hitching horses to, and it is supposed that this one was nailed there for that purpose, and that as the tree grew, it incased the shoe in it. Mr. Douglas' house formerly belonged to the Mather family. A brick building used to stand in the corner of the lot, where the Mathers had their office, and the probability is that the tree was used as a hitching post.

INSOLUBILITY OF RUBBER.—The most delicate of fabrics made of vulcanized rubber may be brought in contact, or immersed with impunity in such chemical liquids as sulphuric or nitric ether, oil of turpentine, or any of the essential oils. They may also be boiled in potash, lime and soapuds, by which, indeed, they are improved. In fact, vulcanized rubber articles either remain uninjured or are improved by exposure to agents that destroy other fabrics, and even wood, leather, iron, copper and brass.

LOOM FOR TENDER YARNS.—A Swiss loom maker, Hennegger, has invented a loom in which the shuttle is not thrown, but is handed over from side to side by hooks, much in the same manner as the silk loom handles. A loom on this principle was shown weaving in the Paris exhibition. The shuttle is handed by a peculiar mechanism, so that no strain is exerted upon the filling, and no friction upon the warp, as the shuttle does not run on the warp as in the ordinary loom.

POPULATION OF THE UNITED STATES.

The Census Bureau has figured so far upon the returns of population as to reach the conclusion that the total, exclusive of Alaska and that region west of Arkansas known as the Indian Territory, is 50,152,559. But while these figures are official they are not final, and may be changed hereafter in the revisory calculations, though it is not likely that such possible changes will go above the units, tens or hundreds columns. For all practical purposes the total population of the United States and Territories, exclusive of Alaska and the Indian Territory, may be stated at 50,152,000. The increase since 1870 has been 11,266,024, or nearly 9½%. The present population of the Pacific States and Territories, namely, California, Oregon, Nevada, Washington, Idaho, Arizona and Utah, is officially stated as follows:

California.....	864,686
Oregon.....	174,767
Nevada.....	62,265
Washington.....	76,120
Idaho.....	32,611
Arizona.....	40,441
Utah.....	143,907
Total.....	1,393,797

The increase of this division of the country since 1870 has been 451,866, or 48%. The increase in Nevada was but 6%, which is the lowest, while in Washington Territory it was 100½%, which is the highest rate. The per cent. of increase in the Pacific division is greater than in any other. In the Eastern division, including New York, New England, New Jersey and Pennsylvania, the per cent is but 18. In the Western division, including Missouri and the Territories of Dakota, Wyoming and Montana, 34%. In the southern division, excluding Missouri and including all the other old slave States, 34%. In the district of Columbia, 35%. It is now conceded that the apparent large increase in the Southern States is due to the fact that this census was taken there with more regard to exactness than any preceding one, while that of 1870 was done in a slovenly and careless manner, not reaching a large mass of the population. There is but one city in the United States or on the American continent that contains over 1,000,000 population—New York. There are three others that contain over half a million; three others above 300,000; three others above 200,000, including San Francisco, and ten others above 100,000. The following is a carefully revised list of the cities that overgo 30,000 inhabitants each, California having two of them. It will be a good thing to keep for future reference:

New York.....	1,206,590	Columbus, O.....	51,665
Philadelphia.....	846,984	Paterson.....	50,887
Brooklyn.....	566,689	Toledo.....	50,143
Chicago.....	503,304	Charleston.....	49,999
Boston.....	362,535	Fall River.....	49,006
St. Louis.....	350,522	Minneapolis.....	46,887
Baltimore.....	332,190	Scranton.....	45,861
Cincinnati.....	255,708	Nashville.....	43,461
San Francisco.....	233,956	Reading.....	43,230
New Orleans.....	216,140	Hartford.....	42,553
Cleveland.....	160,142	Wilmington.....	42,499
Pittsburg.....	156,381	Camden.....	41,658
Buffalo.....	155,137	St. Paul.....	41,498
Washington.....	147,307	Lawrence, Mass.....	39,178
Newark.....	136,400	Dayton.....	38,677
Louisville.....	123,645	Lynn.....	38,284
Jersey City.....	120,728	Denver.....	35,630
Detroit.....	116,342	Oakland, Cal.....	34,556
Milwaukee.....	115,578	Atlanta.....	34,398
Providence.....	104,850	Utica.....	33,913
Albany.....	90,908	Portland, Me.....	33,810
Rochester.....	89,363	Memphis.....	33,593
Allegheny, Pa.....	78,684	Springfield, Mass.....	33,340
Indianapolis.....	75,074	Manchester, N. H.....	32,630
Richmond.....	63,803	St. Joseph, Mo.....	32,484
New Haven.....	62,882	Grand Rapids.....	32,015
Lowell.....	59,485	Wheeling.....	31,206
Worcester.....	58,295	Mobile, Ala.....	31,206
Troy.....	56,747	Hoboken.....	30,999
Kansas City.....	55,813	Harrisburg.....	30,762
Cambridge, Mass.....	52,740	Savannah.....	30,681
Syracuse.....	51,791	Omaha.....	30,518

CLOTH CAR WHEELS ARE THE LATEST. They are the invention of a Frenchman, who is said to be very scientific.

RAILROADS OF THE WORLD.

From a volume published by the French minister of public works, entitled the "Album of Graphic Statistics," the *Saturday Review* has compiled an interesting article in regard to the railroads of the world. Taking the kilometer for the standard, it may be roughly estimated at three-fifths of a mile, or exactly .621 of a mile. In 1830 the total lengths of railroads in Europe were 316 kilometers, of which 279 were in England, and 37 in France. In the United States, there were 65 kilometers. In 1850, Europe had 23,083 kilometers, of which 10,656 were in the United kingdom. Germany had 5,823, and France only 3,080. In the same year, the United States had 14,443 kilometers. In 1870, there were 104,120 kilometers, of which the United kingdom had 24,999, very nearly one-fourth of the whole. But Germany, during the 20 years, had more than trebled her railroads, and possessed 18,560 kilometers. France had not been asleep, however, and had 17,924 kilometers.

In 1876, the United States had 84,637 kilometers, or about four-fifths of the mileage of Europe. In 1878, the increase in Europe was 50% over the railway system of 1870. Germany had then, it seems, the greatest lengths of lines in Europe—some 31,556 kilometers, while France had only 24,424 kilometers. The Germans, then, had much greater facilities in sending troops forward than had the French. This want of railroads in France may account for Mr. de Freycinet's railroad policy. Two years ago, according to the French authority, we had 131,682 kilometers of road. In comparing the length of railroads with population, Sweden is the best provided of any of the European states, having 1.03 kilometers for every 10,000 inhabitants.

Taking the mean in Europe, it is 5.3 kilometers for every 10,000 inhabitants. The United States is prodigal with her railroads, having 39.9 kilometers to every 10,000 people, six times more than the European mean, for the reason that we build roads to attract population, thus "reversing ordinary European ideas that railways should attend traffic, not go before it." For comparison of kilometers to area of kilometers of surface, Belgium has 13.5 kilometers of road, Germany 5.8, France 4.6, the mean of Europe being 1.7, and, strange to say, the United States mean is about the same as the European one.

From the statistics, the English reviewer seems to think that outside of England, Holland and some few minor European countries, railroad construction has hardly commenced, and that if the world is only at peace for a short period, railroad building will shortly take a fresh start of activity, and once more give rise to a brisk demand for iron and steel.

WATER POWER AND STEAM.—The partial or entire discarding of water power by a large number of Northern and Eastern manufacturers is one of the industrial features of the hour. Favorable sites where a fall of water could be secured, led to the foundation of the most important of the New England industrial centers, but as time has gone on the power available has been found insufficient in itself and steam manufacturing have sprung up in the vicinity. This has been the case at Paterson, N. J., Lowell, and numerous other localities we could enumerate. Manufacturing operations have now attained a magnitude that renders absolute dependence on a supply of water subject to the drouth of summer or congealing in winter out of the question, being a source of constant loss. Hence, steam is everywhere in the ascendant, either as a supplemental or exclusive agent of power. Steam, unlike water power, has no assignable limits, and the means of further economizing its application are assiduously sought out with its more exclusive use; yet water power will always be a factor of value, and the great West still offers magnificent sites to which manufacturers are flocking to undergo the same experience of the more populated Northern and Eastern States.

LUMINOUS PAINT.

According to the *London Building News*, luminous paint is getting into quite extensive use in England. Mention is made of offices coated with the paint, which give great satisfaction to the occupants. The effect is that of a subdued light, every object in the room being clearly visible, so that in a room so treated one could enter without a light, and find any desired article. The luminous paint is excited by the ordinary daylight, and its effect is said to continue for about 13 hours, so that it is well adapted for painting bedroom ceilings, passages that are dark at night, and other places where lamps are objectionable, or considered necessary. For staircases and passages, a mere band of the paint will serve as a guide, and costs but a trifle. For outdoor purposes the oil paint is used, but for ceilings and walls, the luminous paint, mixed with water and special size, can be used the same as ordinary whitewash, and presents a similar appearance in the daylight. By the recent discovery that it can be applied as ordinary whitewash considerably expands the field of its usefulness. Sheets of glass coated with the paint are in use in some of the vessels of the navy, at the Waltham powder factory, at Young's paraffine works, and in the spirit vaults of several London docks; and now that, by increased production and the use of water as the medium, its cost is reduced by one-half, it will probably be extensively used for painting walls and ceilings. The ordinary form of oil paint has already been applied in many ways to statues and busts, to toys, to clock faces, to name plates and numbers on house doors, and to notice boards, such as "mind the step," "to let," etc. The paint emits light without combustion, and, therefore, does not vitiate the atmosphere. Several experimental carriages are now running on different railways, the paint being used instead of lamps, which are necessary all day on account of the line passing through occasional tunnels.

CHINESE AND NEGROES.—The *Herald*, in reviewing the late census statistics, finds that while the increase of the black population of the 15 Southern States, during the decade preceding 1870, was only 5½%, the increase during the last 10 years was more than 35%. Regarding the increase in different States, the *Herald* says: "In Nevada they have increased, since 1870, from 3,152 to 5,420; in Colorado, from 7 to 610, of whom about one-third are in Denver; in Washington Territory, from 234 to 3,182; in Wyoming, from 143 to 914; and in Dakota, from none to 238. In Idaho and Montana there has been a marked falling away of Chinese, the decrease being from 4,274 to 3,378 in the former Territory, and 1,949 to 1,737 in the latter. New York city, which had just a round dozen in 1870, now musters 747, while Philadelphia, which started 10 years ago with precisely the same number as New York, can only show 80. Kings county enumerates 118, which may be taken as the approximate number of Chinese laundries in Brooklyn. Even New Jersey has 176 Mongolians within its borders, while Massachusetts has 237, and Connecticut 124. It is probable that New Orleans has attracted 473 to Louisiana, but St. Louis has drawn less than a hundred to Missouri.

A POWERFUL QUINTET.—Says Senator Beck: "Scott, Garrett, Huntington, Gould and Vanderbilt, the five railroad magnates, can sit down, and in a five minutes' chat fix a tax of \$200,000,000 upon the commerce of this country by raising freight two cents a bushel, and do it according to law."

THE race between Hanlan and Laycock, over the Thames championship course, for the championship of England, the Sportsman Challenge cup, and £1,000, was won easily by Hanlan by about four lengths.

WORKING IN LEAD FUMES.

There are men in Eureka, says the *Sentinel*, who think it easy to get a job. They say those who work are too lazy to keep it; they declare that the "fumes" would not trouble them if they were hungry and could get to labor for four dollars per day on the dump or about the furnaces. It would be well for such people, men or women, to run over to the furnaces about the time the shifts are changing some day or night, and take a look. For instance, we will cite one case, and the average is to be judged therefrom.

Only a few nights ago, when the 11 o'clock shift was whistled, there was no less than 25 men standing about the Richmond furnaces and refinery. If a man gets leaved and fails to show up when time is called, some man from among those seeking jobs or standing about, is at once put on in his place, and the "falling down" is of such frequent occurrence that the men congregate there to get a job if possible. There they are by the score at every change of shift.

On the occasion to which we referred, a rather small man was put on. He did not look very strong. His job was to wheel out a slag-pot from the refinery. George Stitt, a powerful man, who has walked from Secret canyon over Prospect mountain, and as far northeast as the Newark mines, in search of work, and who has not missed to be on the ground at a change of shifts at some of the furnaces for upwards of six weeks, was standing by when the little one went to work.

George communed with himself, and the conclusion arrived at was that he (the young fellow) could not stand it to work the shift through. All other seekers of jobs had departed but George took up a favorable position to see the young man tumble and be on hand with his services if the foreman should so order.

In George's words: "The first hour the little chap worked like a bugger; about 12:30 his returns with the trucks were markedly slow; the water was running from every pore in his hide, and his hand would sweep over his face to be filled with perspiration. At 1 A. M. I says I'll have him in 30 minutes—he was as pale as a ghost and was trying to vomit. I stayed till 3 o'clock and the little one was still moving along the track, spilling slag all over the same, but he had the d—dest grit ever stuck in so little hide."

The "little one" worked a couple of shifts, but went by the board through pure lack of strength to perform the work allotted him and the fumes which he had to take. None but the very strongest men can stand the labor.

PROFESSOR FRANK.—The *Carson Tribune* has the following: Prof. W. Frank Stewart was present at the reunion of the California Pioneers in New York recently, and delivered an address. We suppose the Professor told his hearers all about the schistose formations of the ferruginous conglomerations of quartzose molecular transmutations connected with the contact veins of the porphyritic eliminations peculiar to the ramifications of the volcanic stratifications of the tertiary period indigenous to the mineral indications of the Maine mines. A Comstock Irishman, once hearing that Stewart was reporting on the mines of Maine, remarked that it would be a mighty "Maine" mine that the Professor couldn't give a big report on.

J. C. ABERLY, of Aberley theater, New York, has been arrested for admitting boys under 14 to his theater, contrary to the statute. He claims it is conspiracy. The penalty is a year in the penitentiary or \$200 fine.

THERE is talk of an extra spring session of Congress, since it is regarded as impossible for Congress to finish the work that is awaiting action before March 4th. Many important bills have hardly been referred to as yet.

ALASKA.

Our Territory of Alaska has of late attracted more attention than usual. It is an immense tract of country which is very little known. That its interior will be better known before long, there is little doubt. Gold has been found on the Yukon river, and also, lately, on the Takow river. In the spring there will be further prospecting done.

A story is now current that rich discoveries of silver were made last season in Alaska by the crew of a whaling vessel. The story, as told by the captain of the whaler, is as follows: While the vessel was lying in a small bay at the mouth of one of the rivers which empty into the ocean on the coast of Alaska, a great many of the natives came aboard to trade for sea biscuit. They were treated so liberally by the white men that the chief invited the captain to accompany them up the river on a fishing excursion. A whale-boat was manned, and the captain, one of the mates and four men started on the expedition. The entire party

done, and the piece which the captain chopped off the top of the hill with the ax, went \$6,000 per ton in silver, and the loose rocks picked up on the side of the hill went as high as \$275, silver, per ton.

On the strength of this story, for which we do not vouch, it is said that an Oakland company has been formed to send the whaler up next April for a cargo of the ore.

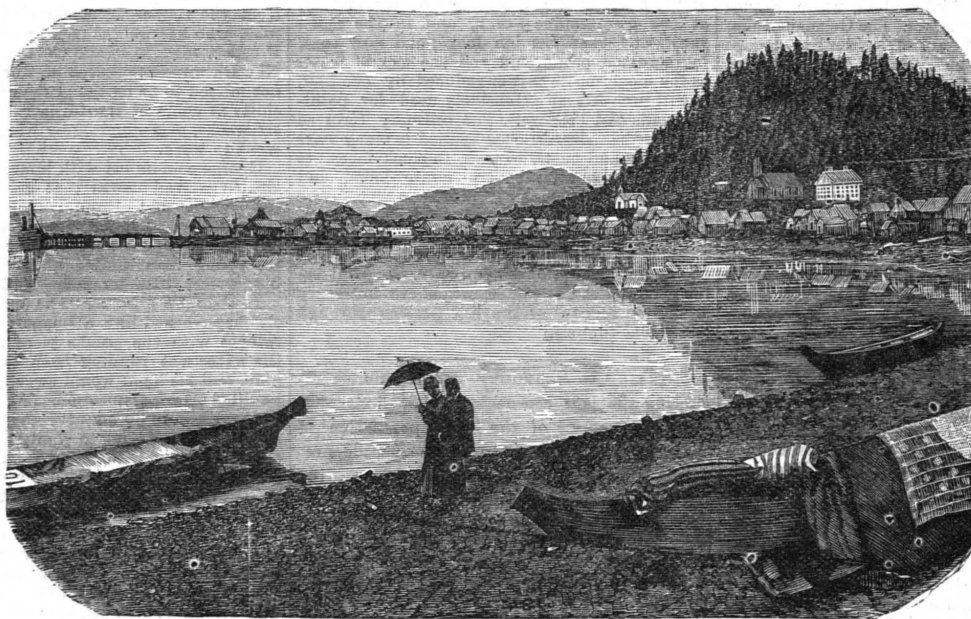
There is good coal up there we know, whether there is silver or not. The *Corwin*, in her Arctic trip, this year found a splendid bed of coal in northern Alaska. It is near the beach, and easily quarried out. Capt. Hooper informed the writer that the coal was of good quality.

Alaska has very many good harbors, and our Government is having the coast-line properly surveyed. Mr. Dall has been there with a surveying party, on the Yukon, this year.

Among the harbors and towns on the Alaskan coast, is that of Fort Wrangel, so named after the famous Russian Arctic explorer. We give an engraving of this place herewith. Fort Wrangel is this side of Sitka, on the steamer's course. The place is a small one, and is noted for two features—the presence of numerous In-

HOSE PIPE NOZZLES.

Who is going to invent the nozzle of the future? There is no nozzle that we have ever seen that seems to us to control the stream it delivers as it should do. Instead of projecting a solid stream for a long distance, the water breaks soon after leaving the nozzle, and soon sprays and breaks up altogether. We often hear of steamers throwing 250 and 300 ft., but we recently heard a veteran chief say that he had yet to see the apparatus of any kind that would throw a solid stream 100 ft. The difficulty may be all with the water, which is naturally inclined to separate, but we are of the opinion that part of the trouble lies in the construction of the nozzle. An experiment made at Boston by putting a core into a play pipe, and thus dividing the stream into four parts, depriving it of its rotary motion, showed a gain of 30 ft. in distance playing. But even this does not seem sufficient. Our steamers give us power enough for throwing, and the hose in use gives every facility for carrying a large volume of



FORT WRANGELL WITH ITS MISSION CHURCH AND SCHOOL.

went up the river about 15 miles, passing over a rapid which was difficult on account of the swift current and rocky obstructions. Soon after passing the rapids they came in sight of a hill, fringed with trees and shrubs at its base, but barren and rocky toward the summit, which seemed to be not more than 400 or 500 ft. high. Going up the hill, what was supposed to be a crater of an extinct volcano was found. The captain saw a metallic substance and broke it off with a boat ax. Where the ax had cleaved its way through the rock, he saw it was as soft nearly as lead, although it did not shine. He thought then that it was a metal of some kind, and kept it. The mate meantime had picked up some of the loose rocks and boulders, and they started away. Toward evening a native brought a piece of rock about 12 inches long by 6 inches thick which weighed 48 lbs., and sparkled with gold, stating that he had found it near another hill farther up the river, and that such rock was easily gathered there. The party returned to the vessel, and in due time arrived in San Francisco. Here the story was told to a gentleman living in Oakland, and the specimens handed over to him for the purpose of having proper assays made. This was

dians, whose peculiarities at once strike the new comer, and for its being the point of the first introduction of our missionary work. It is a great free-trading station, though now not as important as formerly.—*Scientific Press*.

Our engraving is taken by permission from Conkling's forthcoming work entitled "Picturesque Northwest."

THE ORIGIN OF THE DIAMOND.—M. J. A. Roorda Smit has in the *Archives Neerlandaises des Sciences Exactes* a paper on the diamond mines of South Africa. He states that the diamond is found in a primitive gangue of volcanic origin, the presence of a double carboniferous silicate being a characteristic of these mines, which he regards as extinct craters of volcanoes. His hypothesis is that the diamond is of Plutonic origin formed at the expense of organic matter under the influence of great pressure, and at a high temperature. The recent artificial production of the diamond appears to confirm this view. M. Mennier states in the *Comptes Rendus* that he has produced crystals of spinel, and he believes periclase and corundum, by the action of steam on the chloride of aluminium in presence of magnesium at a red heat.

water. There should be some means devised for delivering that volume in a solid stream at long distances. Great difficulty has been found in making nozzles operate uniformly at all times. A manufacturer of steamers once found a nozzle that gave him great satisfaction; with it his steamers could throw greater distances than any he had ever tried before. He ordered half a dozen just like it. The half a dozen were made precisely like the first, but never equaled it in delivering water. There is much to be learned yet regarding this question of delivering water on fires, and the exact relation existing between pressure, hose, play pipes, nozzles and the friction of water.—*Fireman's Journal*.

A VARNISH of cement, which goes by the name of Chinese varnish, and renders card-board or thick paper as hard and horny as papier mache, is easily prepared from blood, lime, and alum. Three parts of fresh blood, well beaten up to prevent the formation of fiber, is mixed with four parts of slacked lime, and a little alum, the thick-flowing mixture that results being at once ready for application to paper or card.

SAN FRANCISCO CORRESPONDENCE.

EDITOR WEST SHORE:

I have been in this metropolis fully long enough to become thoroughly convinced of one thing of considerable interest to the business men of Portland, and that is, *San Francisco has attained its majority as the boasted commercial entrepot of the Pacific coast!* So really convinced are the merchant kings of this city that what I have asserted is true, that they themselves are now on the eager lookout for "fresh fields and pastures new," to secure the investment of millions of dollars, now more an incumbrance on their hands than anything else. San Francisco capitalists are paying enormous taxes on every dollar not utilized, and to those men who adopt the motto: "business is business," this is, indeed, a stubborn and unwelcome fact.

I was in Portland during the month of August, last, and if I am competent to act as judge in such things, there were three times as many elegant and expensive buildings going up in that place at that time than there are here, to-day, in a city of three hundred thousand inhabitants. Let no one detract from the force of this remark by saying that the season of the year explains the seeming incongruity. As a rule, the winter season is just the time for building in San Francisco, if business requires it. Like other things, the supply of dwelling houses and business stands is regulated by the demand. Whenever a property-holder sees that his money is better invested in a tenement house, a fine dwelling, a store or hotel, the building goes up without let or hindrance, and irrespective of the season of the year.

That San Francisco must suffer a serious relapse upon the full completion of the Southern Pacific, the Northern Pacific, and the great Canadian Pacific railways, nothing can be more true. The great thews of our Pacific coast commerce are already undergoing a movement towards the north, while Oregon and Washington are looked upon as essentially constituting the glorious land of promise.

Henceforth, California must wholly depend upon eastern emigration alone. The day has gone by when farmers, business men and capitalists were wont to come from the north down here to better their condition. Let anybody

take his stand upon the wharves here and watch the departure of the Portland and Puget Sound steamers from week to week, and he will be convinced that the tables have been so completely turned, that "Ho! for the North!" is now the shibboleth of the really enterprising man, whether he be a common laborer or well-to-do in the world. Let the people of Oregon be justly proud of their beautiful metropolis. Let the merchants and capitalists of Portland be content to bide their time, confiding in the present, and trusting that the future will take care of itself. "What of Oregon?" "What of the Puget Sound country?" are among the leading questions with which a new comer from the Pacific northwest is surfeited as soon as he steps from the steamer. Now, all I have to say to the people of Oregon and Washington, may be couched in the homely precept: "Let well enough alone."

That well-nigh everlasting question, the hoodlum question, is once more exercising the people of this city. Our thoughtful citizens have good reason to be thoroughly aroused regarding this matter, if not truly alarmed. It is but a short time ago, that San Francisco hoodlums were found only in small squads, ready to scatter out of sight at the first appearance of a police officer. Soon, they were not afraid to walk the streets at night in respectable platoons; then they increased to regiments, next to noisy brigades, blatant even at noon day, and now, at last, like the evil spirits of old, their name is legion. When the lives and property of law-abiding people become jeopardized on account of existing evils, it is then that the majesty of the law should assert itself and resort to desperate means, if necessary, to provide for the common safety. Just such a state of things exist, to-day, in the once beautiful city of San Francisco. On Christmas morning, a day sacred to so large a portion of the civilized and enlightened world, the papers reported no less than *three hundred* arrests made the night previous, for "drunks," fights and disorderly conduct. As the blood-begrimmed recruits of Satan came pouring in during the otherwise joyful watches of the night, it was found that the common receptacle for evil-doers was not adequate to the task imposed upon it. The cells were crowded to overflowing before the keepers were

really made aware of the ominous fact, and new strongholds had to be temporarily fitted up at the solemn hour of midnight.

But I must hasten on, or I shall not have time to moralize or point out the lesson inculcated by such a doleful record of events.

So all-absorbing has this hoodlum question gotten to be, that public meetings have been called to discuss the matter socially, politically and religiously. Many theories have been advanced as to its cause and ultimate cure, and as almost by common consent, three existing elements have been assigned as the grand producing cause of the evil under consideration, viz: the inefficiency of parental rule, ignorance, and intemperance. But it is one thing to discover the root of an existing evil and another thing to dig it out of the soil and destroy it forever. Perhaps it had been better if I had stated before, that I am not writing this communication merely as a matter of news; my ultimate object is to give to the people of Portland a solemn warning before it is too late to institute reformatory measures. I have about as much interest in the welfare of Portland as if I were actually a resident of that beautiful and growing city. Two principal methods of cure are thought about and talked about here, for the evil in question: compulsory education and reform schools. Now I am inclined to believe that if a thorough system of compulsory education were resorted to in Portland, the hoodlum element of that city would begin rapidly to decrease in numbers and in strength, and a purer citizenship would be gradually substituted in its place.

Where Portland has a dozen hoodlums, San Francisco is cursed by a hundred. Then let the fair metropolis of Oregon indulge the hope that the day of her salvation is not passed altogether without recall, and that by vigorously exerting the strong thews of her moral and municipal authority, she may yet find a glorious victory in reserve.

SUB.

A handsome lady entered a drygoods house and enquired for a "bow." The polite clerk threw himself back and remarked that he was at her service. "Yes, but I want a buff, not a green one," was the reply. The young man went on measuring goods immediately.

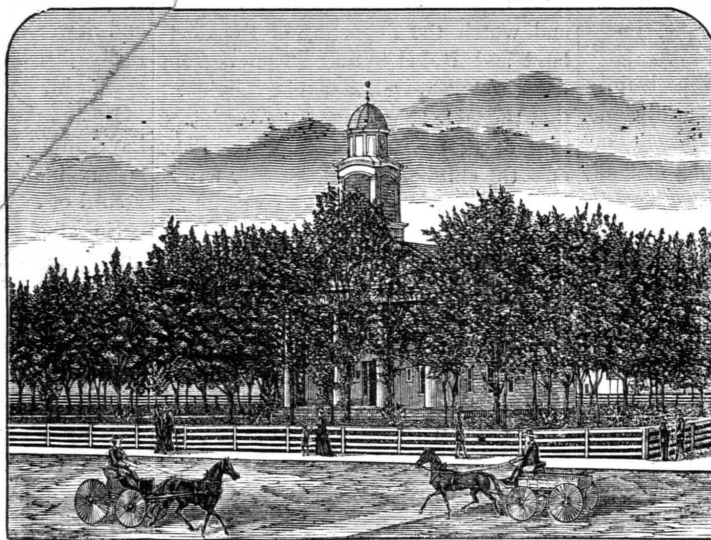
The man who was stage-struck had the driver arrested,

BENTON COUNTY, OR.

This county is named after Missouri's distinguished statesman, Hon. Thomas H. Benton, Oregon's warm friend, who, when this county was organized in 1817, held his seat as the oldest continuous senator in the government of the United States. Since its organization, the counties of Coos, Curry, Douglas, Josephine, Jackson and Lane, have been carved out of it. It is, however, still of pretty good size, being 48 miles long from east to west, by thirty from north to south, making it upwards of 1,400 miles in area.

It is the first of the westside counties as you go up the Willamette river, whose western boundary is washed by the Pacific ocean. The coast range of mountains runs across from north to south through the middle of the county but is so low in the centre, opposite Corvallis, as to deserve but the name of hills. This leaves a gap in the coast range forming a natural and easy pass to the ocean, and through this pass, we are reliably informed, that the cars of the Oregon Pacific Railway will be run in time to move the crop of 1881. The county is admirably watered by the Yaquina, Alsea and Mary's rivers, the latter emptying into the Willamette at Corvallis. The Willamette forms the eastern boundary line of the county dividing it from Linn. The surface of the land is somewhat uneven and in some parts broken by hills and ravines. The hills, however, when once cultivated are as productive as the low land, and for many purposes preferable.

Wheat is the staple product, and it grows abundantly everywhere, except on the coast, where vegetation is so rank that the grain has no time to fill properly. But oats and the grasses are produced in great abundance, furnishing unexampld crops. Fruit of all kinds adapted to this climate grows in profusion and of superior quality.



BENTON COUNTY COURT HOUSE, CORVALLIS, OR.—Photo by Dr. Heslop.

The price of lands will hold the usual average of this valley, and can be obtained of all kinds and at all prices to suit the wants and purses of purchasers.

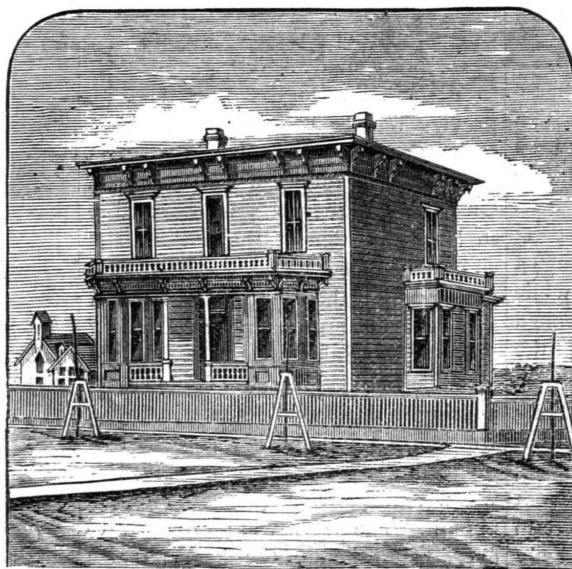
The Oregon and California Railroad have about 10,000 acres of land in this county for sale on the most liberal terms, with long credits and at low prices. There is also plenty of government land open to pre-emption and homestead, that will soon be found accessible and valuable, especially along the coast and bays. Yaquina bay is an estuary of the Pacific ocean, that enters into the west coast of this county, at a point about seven miles north of the Tillamook line. The Bay is about one mile wide between the heads at the ocean, and widens to nearly double the distance as it extends inland about three miles; it

of the vessels now entering Pacific coast harbors. The so-called bar, is at dead low water twelve feet in the shallowest soundings. The bottom of it is composed of solid sandstone rock, which obstruction once removed, would give a permanent deep entrance, as the waters of the Yaquina river emptying into the bay are clear and almost entirely free from sand.

Newport, at the head of the bay, is one of the favorite summer resorts of the northwest, and has every advantage to retain its reputation in that respect. The bay itself is a beautiful sheet of water and offers splendid opportunities for boating. The fishing is excellent; the woods adjoining abound in deer, grouse, pheasants and quail, while the scenery in and about the bay is all that any one could ask for.

Corvallis, the county seat of Benton, was first settled in 1846, and laid out as a town two years later by Joseph C. Avery, Esq., who named it Marysville. This name, however, was changed to Corvallis in 1853; it is of Latin origin, made up from two words, and means "The Heart of the Valley."

During the winter of '53-'54, at the first convening of the Oregon legislature, after Washington Territory was organized, Corvallis became the capital. This glory, however, was short lived, as the legislature simply organized and adjourned to meet in Salem.

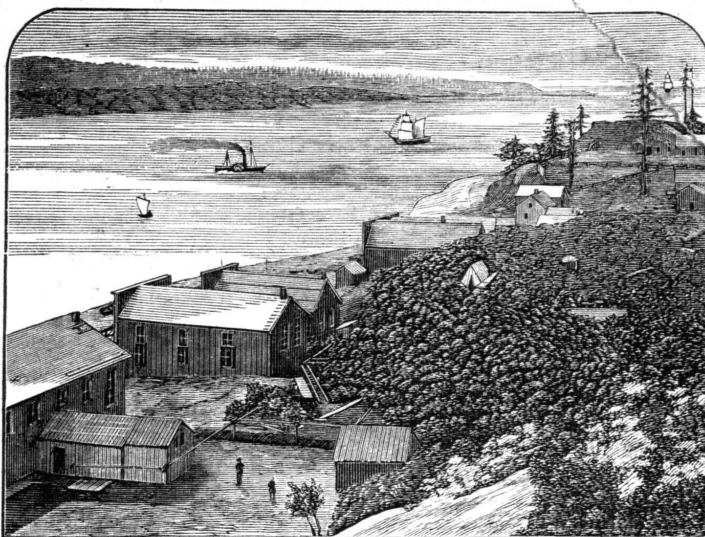


RESIDENCE OF M. S. WOODCOCK, ESQ., CORVALLIS.

The city is situated on the west bank of the Willamette river on high table land; is well laid out, with wide streets crossing at right angles and no breaks or divergencies in the line of streets, to mar the beauty or symmetry of its plat. It has a neat county court-house standing amid a beautiful grove of maples; the state agricultural college, two good public schools, five churches, two good hotels, warehouses, a large number of stores, (of which we intend to speak more fully in our March number), numerous beautiful residences, two very good newspapers, *The Benton Co. Blade*, and *Corvallis Gazette*, are published here weekly. The distance from Portland by river is 115 miles, while by rail it is but 95. Since the completion of the west side branch of the O. & C. R. R., Corvallis has enjoyed a degree of prosperity equalled by no other town of its size in the state, and from its natural advantages of salubrity of climate and central location, we conclude that it has by no means reached its full growth yet.

The growth of the wool industry in Oregon has received a material check by the hard winter in the counties of Wasco and Umatilla. But its severe lesson will not be lost upon breeders. They will find out that fall shearing is practicable in some parts of California, but not in Oregon. Let the sheep be shorn but once a year, and, Oregon wool-growers will be rich. It does not pay to be greedy.

Two northwesterners discuss the fertility of their respective sections of the country: "In Washington Territory, if you let a match fall to the ground, the next year there will grow up a forest." "In Oregon," cried the other, triumphantly, "you let a suspender button fall, and in eight days, you'll have a pair of pantaloons ready made."



NEWPORT, ENTRANCE TO YAQUINA BAY, OR.—Photo by Crawford.

PASSAGE OF THE DALLES.

The splendid steamer, *Harvest Queen*, the finest of all the O. R. & N. Co.'s fleet above The Dalles, was brought safely through The Dalles' rapids, six miles in length, by Capt. Jas. Troup, the youngest captain in the company's service. The following table shows the steamers brought over and their dimensions:

Year.	Name of Boat.	Length.	Beam.
1864—	*Cayuse.....	140	20
1865—	Lewiston.....	94	21
1865—	Okanagon.....	106	23
1870—	+Nez Perces Chief.....	133	25
1870—	+Shoshone.....	130	28
1878—	*Owyhee.....	130	26
1881—	Harvest Queen.....	200	38

*Brought down with steam machinery.

+Came through same day.

The Lewiston was brought through

by Capt. A. Horn; the Okanagon, by Capt. T. J. Stump; the Celilo, by Daniel Baughman; the Nez Perces Chief and Shoshone, by Capt. McNulty. The Shoshone struck three times during the passage and the Nez Perces Chief, once. When we look at the difference in the size of these vessels, the feat of Capt. Troup, is really wonderful, for he never struck at all.

Justice consists in doing no injury to man; decency, in giving them no offense.

Potter's American Monthly published at Philadelphia, Pa., is one of the very best magazines that reaches this office. It is well illustrated, clearly printed on fine paper and contains valuable, instructive literature.

The Californian, for March, is brimful of sparkling western literature, and is just such a magazine as every resident of the Pacific coast should furnish their families with. Published at \$4.00 per year, 202 Sansome street, San Francisco, California.

Most people are like eggs—too full of themselves to hold anything else.

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

The most beneficial discovery of the century to man is Ammen's Cough Syrup. A wealthy gentleman, who claims that it entirely cured him of incipient consumption, offered \$5,000 for the formula and the right to manufacture and sell to the world, which was refused. The Remedy stands upon its own merits. A 15-cent sample bottle will convince the most skeptical of its virtues. Try it. It may save your life. All respectable druggists keep it, at 15 cts., 50 cts., and \$1.

The woman who marries does well, but the woman who does not marry does better nine times out of ten.



HOTEL AT CORVALLIS—Photo by Dr. Helsop.

GRAPE CULTURE IN OREGON.

California has the advantage, not only of Oregon, but of every other state in the Union, in the cultivation of the grape. But it must be remembered that it is confined to wine-making from tropical grapes, such as would not grow in more than four other states in the Federal galaxy. And yet, as a rule, her wines are heavy in their alcoholic properties and, unless great changes are made in the process of vintage to destroy their heavy propensities, will never become favorites with wine-drinkers.

Oregon has the opportunity to become a wine-growing state if the proper kinds of wines are introduced. Her climate is so much at variance with that of California that it would be a sheer waste of time, labor and capital, to introduce the French and Italian varieties of grape or even the Mission grape brought from Spain to California by the pious adherents of Junipero Serra. A different variety of grape is needed, one better adapted to the temperate zone.

More than fifty years ago, a quaint and eccentric Jerseyman emigrated from the cider-barrel state to Ohio. Settling on the rolling hills near the now great city of Cincinnati, he began to plant the Catawba grape with the idea of making brandy. Just then along came a Frenchman who gave him the suggestion of champagne from American grapes. No sooner said than done. An hour later, NICHOLAS LONGWORTH was on his way to New Orleans to contract for bottles and other fixtures to be used in the manufacture of his sparkling Catawba wine. It was the best effervescent wine ever made in America, and Longworth died worth eight millions of dollars. But the growth of the city of Cincinnati made the vineyard so valuable for building purposes that it was cut up into lots and Catawba wine became a neglected if not forgotten industry.

Our own idea is that Oregon is the place where Catawba grapes can be grown with great profit, especially in the arid hillsides of Wasco and Umatilla counties where good grape lands can be had at government price. It is a proposition which has plenty of money in it, to our notion. The only manufactory of Catawba wine now in

successful operation at the east is on Canandaigua Lake in New York state; but the quality of wine so far produced has not equalled that produced by Longworth on the terraced hills where now stand the more fashionable residences of Porkopolis.

Up to date, the only wine made in our state has been produced in Jackson county by Raphael Morat, J. N. T. Miller, Peter Britt and others, to an aggregate of about four thousand gallons per year. The distillation of brandy from peaches and plums has proven more profitable in that section and wine-making will yet have to give way to it, at least in that locality.

The man who will take up a sloping hill with a southern exposure, in either Wasco or Umatilla, set out his Catawba grapes and make them into wine, will make a fortune. We import from California a million gallons a year of wine inferior to what we could make at home if a little pains were taken. Who will be the plucky man to take hold of what will enrich both himself and the state of his adoption?

A HARD WINTER.

Well, it has been a little inclined to be severe on poor people, that's a fact. But let us look at the case through a pair of disinterested spectacles, as it were. Eastern Oregon loses a large valuation of sheep and horned cattle by continuous snow storms while the Willamette valley loses miles of fencing and other valuable improvements by two freshets. Let us look and see if ourselves, "the webfoot gentry," as they style us at the San Francisco hotels, are the only sufferers.

At Los Angeles, Cal., the garden city of America, they have had frosts and ice without cessation. The winter orange crop has been a total failure and this, remember, in that fair land of unbroken sunshine and unfading flowers, which realizes the ideal "Happy Valley" of Rasselas. When you consider that Los Angeles lies 945 miles south of Portland, and only 28 miles from the sea, you will wonder that ice of an inch thickness lay in the gutters of that city for four days in January. The orange crop is to that place what the wheat crop is to Weston or Eugene City, Or. When all is lost that people depend upon for sustenance, what difference does it make where you reside?

But the Willamette is so subject to overflow and carries away so much fencing, you say! Did you ever see a rise on the Sacramento river, Cal., or do you know what has happened there in this month? Do you know that the great valley which heads up at Redding and opens out at Collinsville, has been one vast inland sea for a distance of 345 miles? Ten years ago, the Central Pacific lords bought up all the steamboats on the upper Sacramento river to keep them from competing with their road. This winter their road has been washed away to such an extent as to compel them to put on boats once more, and the steamer *Dana* arrived at Red Bluff on the 14th, the first boat that had reached that point in eight years and her arrival was the first communication with the outer world they had enjoyed in ten days.

The line of railroad between Sacramento and Davisville, the direct line of communication between San Francisco and the East, is washed, out to such an extent that the superintending engineer of the C. P. R. R. advises its abandonment. This, too, after building that monster ferry boat across Caryunes straits, to ferry the eastern trains, at a cost of \$400,000. The line between Red Bluff and Redding has never paid two per cent. interest on its cost, and is likely to be abandoned. The damages to farms and improvements in the three counties of Tehama, Colusa and Butte, are estimated at a million of dollars. As the counties of San Joaquin, Sacramento, Yolo, Contra Costa, Yuba, Solano and Stanislaus, are nearer to the tide-level, they must have suffered in a still greater degree.

There are worse locations than Oregon, after all. You think you have too much water here, but if you go to Arizona, you will have about none at all. California is a great state, to be sure, but then she has her unsound land titles and her great monopolies which render it impossible for the poor man to make more than a bare existence. Oregon is the better state of the two, and if your experience had been the same as the writer's, you would coincide with him. In the past two years, several Oregon millionaires have pulled up stakes and settled in California. They will be glad to get back before they are many years older.

10 CTS. will pay for that valuable relic, a copy of the "Oregon Spectator," dated Oregon City, Feb. 5, 1846—the first number of the first newspaper ever printed on the Pacific coast. Address L. Samuel, Portland, Oregon.

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AN INDEX OF DISEASES,

Which gives the Symptoms, cause, and the Best Treatment of each; a table giving all the principal drugs used for the Horse, with the ordinary dose, effects, and antidote when a poison; a table with an engraving of the Horse's Teeth at different ages, with rules for telling the age of the Horse; 65 engravings showing the important points in the structure of the horse, also illustrating positions assumed by sick horses in different diseases. A valuable collection of receipts, many of which would cost a horse-owner three to five dollars each.

Every Farmer

SHOULD OWN THIS BOOK.

Thousands who have seen it commend it, and many good horsemen have extolled it in the highest terms, even stating that they prefer it to books which cost \$5 to \$10.

Do not throw away your money in the purchase of costly books on the Horse, which are full of Latin phrases and technical terms as to be unintelligible to the average reader, but

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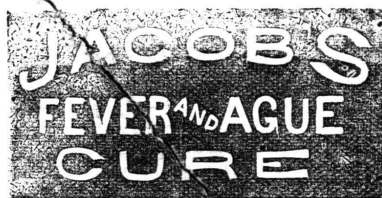
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The Most Successful Remedy ever discovered, as it is certain in its effects and does not blister. READ PROOF

BELOW.

From Rev. P. N. GRANGER,

Presiding Elder of St. Alban's District

ST. ALBANS, VT., Jan. 20th, 1880.

DR. B. J. KENDALL & Co., Gents: In reply to your letter I will say that my experience with Kendall's Spavin Cure has been very satisfactory, indeed. Three or four years ago I procured a bottle of your agent, and with it cured a horse of lameness caused by a spavin. Last season my horse became very lame and I turned him out for a few weeks when he became better, but when I put him on the road he grew worse, when I discovered that a ring-bone was forming, I procured a bottle of Kendall's Spavin Cure and with less than a bottle cured him so that he is not lame, neither can the bunch be found.

Respectfully yours, P. N. GRANGER.

Statement Made Under Oath.

TO WHOM IT MAY CONCERN.—In the year 1875 I treated with Kendall's Spavin Cure, a bone spavin of several months' growth, nearly half as large as a hen's egg, and completely stopped the lameness and removed the enlargement. I have worked the horse ever since very hard, and he never has been lame, nor could I ever see any difference in the size of the hock joints since I treated him with Kendall's Spavin Cure.

R. A. GAINES.

Enosburgh Falls, Vt., Feb. 25, 1879.
Sworn and subscribed to before me this 25th day of February, A. D. 1879.

JOHN G. JENNE,
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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.

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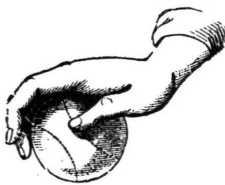
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March 9	" 19	March 14
" 24	April 3	" 29
April 8	" 18	April 13
" 23	May 3	" 28
May 8	" 18	May 13

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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.
Dayton.....	7 A. M.		7 A. M.		7 A. M.	
Salem, Albany, Corvallis and intermediate points.....	6 A. M.			6 A. M.		

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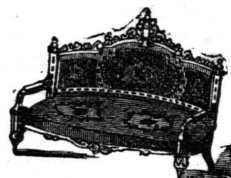
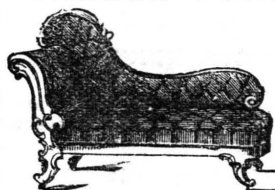
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