

The San Francisco glistened in the sun. The cars were filling rapidly. From my post I could hear the people talking—bidding each other good-bye, and promising to write and come again.

"Good-bye, Kitty; good-bye, Luc." I hear him say; don't be so nervous. The San Francisco is the safest engine on the line, and Guelden the most careful engineer; I would not be afraid to trust every mortal to their keeping.

"We'll get through somehow, and Joe shall never talk to me again. After all, it was easy enough." I replied as I spoke. I heard the signal: "We are off."

Five hours from L. to D.; five hours back again. I knew now that on the last run I should be myself again. I saw a flutter and never knew what it was until we had passed a train at the wrong place. Two minutes more and we should have had a collision. Somebody told me, and I laughed. I heard the shareholder say respectfully:

"Of course, Mr. Guelden, you know what you are about?"

Then I was alone and wondering whether I should go faster or slower. I did something, and the cars rushed on at a fearful rate. The same man who had spoken to me before was standing near me. I heard the question:

"How many miles an hour are we making?"

I didn't know. Rattle, rattle, rattle! I was trying to slacken the speed of the San Francisco. I could not remember what I should do—was it this or that—faster or slower? I was playing with the engine like a child.

Suddenly there was a horrible roar—a crash. I was flung somewhere. It was in the water. By a miracle I was sobered, not hurt. I gazed at the shore. I stood upon the ground between the track and the waters edge and there gazed at my work.

The engine was in fragments, the cars in splinters; dead and dying and wounded were strewn round—men and women and children, old and young. There were groans and shrieks of despair. The mangled cried out in pain; the unfortunates: their dead, and a voice unheard in any other, was in my ear, whispering "murder!"

The news had gone to A., and people came thronging down to find their lost one. Searching for an old man's daughter, I came to a place under the trees, and found five bodies lying there in all their right horror—an old woman, a young one, baby, and two tiny children. Was it fancy—was it pure fancy, born of my anguish—they look like—oh, heaven! they are my mother, my wife, my children—cold and dead.

How did they come on the train? What means had brought this about? No one could answer. I groaned, I screamed, I clasped my hands, I bore my hair, I gazed on the cold face of her who gave me birth, on the lovely, cold face of my wife, on my innocent children. I called the names by name; there was no answer. There never would be—there never could be.

A whistle! Great God! Onward up the track thundered another train! Its red eyes glared upon me; I threw myself before it; I felt it crush me to atoms!

"His head is extremely hot," said somebody. I opened my eyes and saw my wife.

"How do you feel?" said she; "a little better?"

I was so rejoiced and astonished by the sight of her that I could not speak at first. She repeated the question.

"I must be crushed to pieces," said I, "for the train went over me, but I feel no pain."

"There he goes about the train again," said my wife.

Why, I tried to move—there was nothing the matter with me. I was in my own room; opposite to me was a crib in which my child was asleep. My wife and child were safe. Was I delicious, or what could it be?

"Joe," I cried, "tell me what has happened."

"It's nine o'clock," said Joe. "You came home in such a state from the club that I couldn't wake you. You weren't fit to manage steam and risk people's lives. The San Francisco is half way to A. I suppose, and you've been frightening me half to death with your dreadful talk."

And Joe began to cry. It was only a dream; only a awful dream. But I had lived through it though it were a reality.

"Is there a Bible in the house, Joe?" I asked.

"Are we heathens?" cried Joe.

"Give it to me this moment, Joe."

She brought it, and I put my hand on it and took the oath (to be solemn to be repeated here), that what had happened should never occur again. And if the San Francisco ever comes to grief, the verdict will not be: "The engineer was drunk."

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SCIENTIFIC.

PRISMOIDAL RAILWAY.

Messrs. Lafferty Bros., of Gloucester City, N.J., have lately constructed a four ton locomotive on the above named novel plan, which is thus described in the Philadelphia Ledger:

It is built for a street railroad company in Georgia. This engine can with propriety be called a velocipede, as it rests upon two wheels, one following the other. The rail or track upon which it is to run, a sample of which is laid in the yard of the builders, is styled a "Prismoid, or one track railway," and is composed of several thick-slices of plank, built up in the style of an inverted keel of a vessel, with a flat rail on the apex. Upon a trial of speed, about 12 miles an hour was attained, and the inventor and patentee claims that the speed can be almost doubled on a long haul track.

Mr. E. Crew, of Opelika, Ga., is the inventor and patentee of both tracks and engines, and he claims that his inventions demonstrate a tractive power superior to anything in the locomotive line of equal weight. The capacity for running on curves is very much greater than the two rail system. The track upon which the trial was made contained 36 feet of lumber an 18 pounds of iron to the linear foot, proving itself equal to a span of 20 feet, remaining firm and unyielding under the pressure of the engine as it traversed the road. The revolving flanges attached to the engine, and which run on the outside of each wheel, Mr. Crew claims, absolutely lock the rolling stock to the prism, and obviate the necessity of so much heavy rolling stock in light traffic at a high rate of speed. It is also claimed that a prismoidal railway built with a base of 14 inches and angles of 45° can be built at a cost of \$3,000 per mile.

The inventor is of opinion that his engine and track are particularly adapted to the propulsion of canal boats, and will compete successfully with horse power on canals without necessarily interfering with the use of the latter, but he does not state in what way. The engine will shortly be shipped to its destination, Atlanta, Ga., where it goes into operation on a street railroad, built at an elevation of 12 feet above the sidewalk.

THE SAVINGS OF SCIENCE.

Doubtless many of our readers have perused Dickens' excellent novel "Our Mutual Friend," and hence are, in a measure, familiar with the London dust heaps. Perhaps it will be remembered how the great writer describes their contents, and, in his inimitable style, sketches the queer people who often spend their lives among them in seeking for treasures. These patient searchers are creations of the past. Their tedious occupation is gone; for science, with her inventions and processes, has extended her sway even to the worthless dust heap, and from the filthy waste brings out the shining gold. The ordinary waste of a single household may be roughly estimated at a barrelful per day, and London, it is said, contains five hundred thousand houses. Hence, the reader may form some idea of the wonderful ingenuity which contrives to utilize the enormous aggregate of one hundred and eighty million barrels of refuse in the course of a single year.

The local authorities of London sell the privilege of removing dust and garbage from each district to a contractor, who carts it away to a large yard in the suburbs. There his workmen, with their hands, separate the mass, by a rude analysis, into component portions. The most valuable of the latter are the waste pieces of coal, and the breeze or coal dust and burnt ashes. The amount of waste of the latter may be measured by the fact, that, after selling the large pieces to the poor, the refuse breeze is sufficient to bake the bricks that are rebuilding London. The material is used by the contractors who generally combine the builder's trade with their regular calling, for the purpose of imbedding the newly made bricks into compact squares. The coal dust having been fired, the mass burns with slow combustion for two or three weeks, aided by the circulation of air which is kept up by the method of stacking. The other constituents of the dust heap are separated by the sifters with the utmost rapidity: bones, rags, paper, old iron, glass, and broken crockery, and even bread, as they are eliminated from the mass being piled in separate heaps. The bones are put to a score of different uses. Of the several tons of bones that are picked out of the dust in the course of a week, some go immediately to the boiling houses, where every portion of fat and gelatin they can yield is extracted; the former substance is bought by the soap-maker, the latter is utilized to make the patent preparations employed in cookery, photography, etc. The large bones are used by the turners and are converted into hundreds of knick knacks, so that the bones you may have picked at dinner again enters your mouth; after many changes, as a toothpick or tooth-brush, while the smaller pieces, for aught you know, have been calcined, and form the very charcoal toothpowder on your toilet table. Fragments that cannot otherwise be employed are ground very fine and treated with sulphuric acid, constituting an excellent artificial fertilizer. Bone dust is also used by bakers for the purpose of adulteration, so that the peevish remark of the giant in the fairy tale,

"I'll grind his bones to make my bread,"

is fulfilled both figuratively and literally. Another important product extracted from bones is phosphorus, for which there are an endless number of uses; and, finally, the fat that is saved in the process of boiling, is employed to make the commoner kinds of soap.

Scraps of paper abundant in the dust heaps. These are carefully sorted, the white from the colored and printed. The solid pieces, which can not be profitably manufactured are used to make papier mache ornaments, dolls' heads, etc.; the clean paper is returned to the mill, and even the printed paper has the ink discharged from it, and goes again into circulation. Old rags, of course, are valuable to the paper maker, although the discovery of other materials renders this form of waste not quite so important as formerly. Greasy wash cloths cannot go to the mills again, so they are sent to hop growers, to whom they are valuable as fertilizers. Woollen rags if they happen to be dyed scarlet, are treated for the recovery of the cochineal, which is used as a dyeing material; and other valuable colored rags, are ground up to make black paper.

The great markets for all old woollen fabrics in England is the town of Batley and its neighborhood, in Yorkshire, the great shoddy metropolis. A writer says, regarding this manufacture: "Reduced to filaments and greasy pulp, by mighty toothed cylinders, the much vexed fabric re-enters life in the most brilliant forms, from the sold plait cloth to silky mohairs and glossiest tweeds."

Cotton and woollen rags are both valuable when separate, but of late years it has been the custom to weave the cotton and woollen together, the warp being made of the latter material and the weft of the former; thus mixed, however, the fabric cannot be converted into paper or cloth. Many endeavors have been made to effect a separation, and at present the rags are placed in a closed receiver and subjected to steam at a very high temperature. The result is that the cotton comes out pure and fit for the paper maker; the wool is reduced to a dark brown powder, known as ulmate of ammonia, and is employed to enrich manures which are poor in nitrogen.

A very important constituent of the dust heap is the old iron, battered saucepans, old nails, rusty hoops, horseshoes, and nails from the road. All soldered articles have the solder extracted from them, as it is more valuable than the iron, and the cheaper metal is then melted. The horseshoe nails are not mixed with the common cast iron, as they are much sought after by gun-makers for the purpose of making stub twist barrels. Scraps of iron, it is found, may be made very useful in securing the copper in the streams washing veins of copper pyrites. Pieces of battered iron are placed in tanks, into which these are collected; the copper quickly incrusts the iron, and in process of time entirely dissolves it, so that a mass of copper takes the place of the iron. The residuum, in the shape of a colored deposit, is at times taken out, dried, and smelted.

The savings of science, however, are not all made in the dust heaps of London, though in the brief outline we have given, of the mode of utilizing some of the constituents of the waste of the great city, a vast economy is indicated. A singular and recent French discovery is that sheep draw a considerable quantity of potash from the land on which they graze, much of which is ultimately excreted from the skin with the sweat. It was pointed out by Chevreul that this peculiar potash compound (shewit) forms no less than one third of the weight of raw merino wool, while of ordinary wool it constitutes about 15 per cent. of the weight of fresh fleeces. As the shewit may be extracted by mere immersion in cold water, it is easy for the manufacturers to produce more or less concentrated solutions from which the potash may be recovered by appropriate treatment. The development of this new industry is principally due to MM. Maumene and Roquet, and their process consists in evaporating the solutions, which are sent to them, until a perfectly dry and somewhat charred residue has been obtained. This is placed in retorts and distilled very much in the same manner as coal at gas works, and the result is that, while much gas is evolved which can be used for illuminating the factory, and much ammonia is expelled which can be collected and utilized in many ways, there remains a residue which chiefly consists of carbonate, sulphate, and chloride of potassium. These three salts are separated by the usual method, and then pass into commerce. Curiously enough, they are remarkably free from soda.

The wool manufacturers of Rhoms, Elbef, and Fournies annually wash the fleece of 6,750,000 sheep, and the amount of potash, reckoned as carbonate, which these fleeces would yield if all were subjected to the new process, represents a value of \$400,000. The by products of gas works are so valuable now that factories are actually set up beside such establishments for their utilization. The most important is alum, which, like sal ammoniac, once came, at a great cost, from Egypt, but is now mainly procured from an aluminous shale, which forms the roof of coal mines, and which has to be brought to the surface before the coal can be gained. This was for a long time a perfectly refuse material, covering acres of ground, like the scoria and cinder heaps; but chemistry has found it out, and now obtains the product by setting fire to the shale, the carbon and sulphur which it contains being sufficient for the purpose. The friable porous

residua are afterwards heated in iron pans with sulphuric acid, to which is added the ammonia from the gas liquors, and the three bodies combine with water to make common or ammoniacal alum.

Nearly every article of the toilet bottle or sachet is made from waste, sometimes from foully odorous matters. A peculiar fetid oil, termed ruse oil, is formed in making brandy and whiskey. This fuel oil, distilled with sulphuric acid and acetate of potash, gives the oil of pears. The oil of apples is made from the same fuel oil by distillation with sulphuric acid and bi-chromate of potash. The oil of pineapples is obtained from the product of the action of pyrid cheese on sugar, or by making a soap with butter and distilling it with alcohol and sulphuric acid. Oil of grapes and oil of cognac, used to impart the flavor of French cognac to common brandy, are little else than fusel oil. The artificial oil of bitter almonds is prepared by the action of nitric acid on the fetid oils of gas tar. The wintergreen oil of New Jersey is artificially made from willows and a body procured from a distillation of wood.

Dyes, like perfumes, are often derived from the most repulsive sources. The waste heaps of spent madder were formerly a great nuisance. It is now found that this hitherto waste can be used, and at least no third can be saved by treating it with hot acid. Prussian blue is made from pieces of horse hoofs or refuse woollen materials by fusion with iron and alkali.

Perhaps the most important refuse product that can be mentioned, and proceeding from a systematic manufacturing process, is that known as soda waste. Large quantities of this substance are rejected as useless by most alkali works, and it has been, for many years, a problem and a reproach to chemistry. It is a great loss; and, if we can but recover it, no small victory will be achieved.

HUMOROUS.

UNDER DIFFICULTIES.

Those zealous Christians who cannot believe in the existence of religious duties outside the walls of a church, may be entertained by the following story:—A lady called upon the wife of a stoker, in order to ascertain why she and her husband did not attend church. The woman conducted her visitor to the little kitchen, where her husband sat by the fire. He had just come home for half an hour to have his tea, and was, of course, in his working clothes, and his face and hands were of a deep oily black, after the manner of stokers. "Now, ma'am," said the woman, pointing to him, "you see that there man; that's my husband, and I'm bound to do a part by him, ain't I?" "Surely," said the visitor, anxious to uphold the principles of matrimony. "Ye'y say, then; would you like to know how I pass my Sundays? A washing of his! Never a blessed moment has he to wash himself through the week, out early and late, and half the night, too, and blacker nor any crow all the while. Well, on Sundays it is fitting and proper that he should try to look like a Christian if he can, so he sets me to it after we eats our breakfast, with a bucketful of of soap and a scrubbing brush, and I rubs at him, off and on, all day, till my arms ache, and he aint much better than he was; and after tea I goes at him again, and slices him down till you'd think a born nigger 'ud come out white; and if you will believe me, madam, when I polishes him off with a dry towel afore he goes to bed, he's only a light brown, after all!" What was to be said to such stubborn facts? especially when the good woman finished with the unanswerable argument, "So you see, ma'am, them as wants to live religious has best not marry a stoker."

ADVISING HIM TO "GIT."

President Lincoln was celebrated as a narrator of stories applicable to peculiar circumstances, and was, doubtless, credited with the narrative of many he never told; but he was accustomed to tell good stories, and the following is represented by its writer to be ONE OF "OLD ANG'S" BEST.

During the winter of 1862-3, when Grant was in command in West Tennessee and Northern Mississippi, and cotton brought such high prices, and was so difficult to obtain, a delegation was at the White House, seeking to obtain passes from Lincoln, to allow them to go into the "secesh region" and bring out the precious staple. The President objected to granting such passes, stating that he did not wish to interfere with any of Grant's plans. The General, he added, would probably not allow parties to pass beyond the lines, as they might be spies. "Gentlemen," said he, "I will tell you an anecdote in point. Many years ago, Bob Lewis, of Illinois, having had a violent attack of the land fever, concluded to enter some land in Northern Minnesota. Buying a good horse in St. Paul, where he entered his land, and with his evidence of title in saddle bags, he started on the road to St. Cloud. There were but few settlements on the way, as Bob pursued his course, seeking to locate his purchase, but wherever a cabin was found on the almost "blind" road, Bob made inquiry, as to the section, town, and range. On the evening of the second day out, he rode up to a cabin, which a squatter, living a few miles back, said was upon his eagerly sought land. Sitting at the door was a huge, broad-shouldered, dark-visaged back-woodsman, en-

gaged earnestly in smoking his well-burned cob-pipe. He eyed Bob severely. "My friend," said the latter, "I am looking for section—town—range—and I think you must live on it." "Well, yes stranger, I think as how you may be mighty nigh right," replied calmly, the back-woodsman. "Am I? Then, sir, what right have you on my land? My title is in my saddle-bags, from the United States. Now, what title have you to show?" "Jist hold on a minute, stranger, and I'll show my title," was the reply. The brawny man rose slowly, made a few steps, and reaching up to his long rifle, which hung on deer-horns over the fireplace, he returned with it to the door. Bringing it to the shoulder he cried: "This 'ere's my title, stranger; now I advise you to git." Then with louder voice, he almost yelled: "Git out o' here! Git!" Bob knew he had not an instant to lose, and striking spurs into his horse, he was off. Now, gentlemen each of you may be a Bob Lewis, representing the civil law, but you may find General Grant the back-woodsman, representing the military, and he will probably advise you to "git."

"FINISHING THE JOB."

The following incident is related by a Melbourne paper. A certain person was travelling through a lonely district when he heard a great outcry. Thinking that robbers were at work, he fired off a pistol to intimidate them; and presently the noise ceased, and a scampering was heard. On coming to the open ground the traveller discovered a man tied to a tree. "Oh, sir!" cried the victim, "I am so glad you are come. I've been attacked by ruffians, and they were robbing me when they pulled your pistol." "And couldn't you get loose, my friend?" asked the traveller. "No; they tied me so tight." "And did they rob you of everything?" "No; only my watch. They had not time to search for my money, which I placed in my left boot." "How fortunate," observed the traveller; "was the sun considered?" "Over a thousand, thank Heaven," said the poor man. "Are you sure they are gone?" asked the other. "Oh certain." The new comer looked round and round, and seeing the coast clear, said coolly, "Well, as they're gone, I think I'll finish the job myself." And he proceeded to rob the unfortunate victim.

A YOKE OF OXEN AT ONE CHAW.

Many years ago a Mr. Miller, one of the early settlers of an Ohio town, sold a yoke of oxen for fifty dollars, and receiving in payment a fifty dollar bank-note, which he carefully folded up and deposited in his tobacco-box for safe keeping. Mr. Miller was accustomed to make use of the weed at any hour of the day or night even, whenever he felt an inclination for it. The night following the sale of the oxen he sought his tobacco box. Finding a convenient portion, he put it into his mouth, and, not readily obtaining the full benefit he expected, he chewed it up most vigorously and effectually, exclaiming as he did so, "No strength to aining the tobacco!" Next day he looked for the note and found it gone; recollecting the transaction of the day and the place where he deposited his treasure, he added, "Oho! A yoke of oxen at one chaw!"

VARY THE MONOTONY.

Home life is apt to become monotonous, and monotony means humdrum. The ladies of a family hold this matter in their own hands, for men, living an active out-door life, frequently settle down to inactivity during their evenings, unless roused by some pleasant episode into liveliness. It is a wife's privilege to make the home lively, and to give variety and interest to home life. It is surprising how very little invention it requires to do this. All that is wanted is just an excuse for liveliness. A little variety in the amusement of the children, if there be any; a little delicacy at table, or at an unexpected hour in the evening, some little novelty of dress, or the bringing in of an agreeable visitor. When people go travelling they discover how many things they had at home which before they had barely thought of. Just so, when our friends are absent, they show us in their letters so many qualities of observation and sympathy and expression, which had remained undeveloped right under our noses. Somebody has discovered that change of situation has a wonderfully stimulating influence on the mind. We have to accommodate ourselves to new circumstances, and this friction rubs off some of the rust which made us half insensible.

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To gain a name of worth, a man must have an aim, a purpose for which he lives—not merely a bubble upon the stream, tossed to and fro by each succeeding wave; not merely the plaything of fate, but a being of determination, who looks to some harbor where his wills his boat shall anchor, and in willing conquers circumstances, and is not their slave.

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