

Scientific.

BLASTING IN A COAL-MINE.

"DOWN in a coal mine" is a locality which, although immortalized in a popular air ground out at the rate of some twenty times, a day by wheezy hand organs under our windows, is not the most inviting place in the world to eke out one's existence. We descend the shaft with a disagreeable feeling of going, we know not whither, save somewhere into the depths of a black pit which yawns beneath us. Once at the bottom, there is a damp oppressive feeling in the air; the rock overhead drips dirty water down upon us, and occasionally an icy stream crawls down our back, sending a disagreeable shudder from head to foot. Of course we get bewildered; the light from our little oil skin hat is very dim and smoky, and casts a sort of uncertain radiance for about three feet in advance, throwing great black shadows which leave us in a kind of unpleasant doubt whether or not we shall suddenly step into some abyss and disappear forever into the bowels of the earth.

We trudge through countless leads, now scrambling over timbers, then compressing ourselves into incredibly small compass in order to crawl through the narrowest of openings. There is a conglomeration of coal dust and mud under foot that sticks to our shoes like glue. We trip over the rails, and bruise every square inch of our bodies against the sharp angles of the rough walls, while our hands and faces, within a very few minutes, partake of the somber hue of our surroundings.

Soon we encounter a party of miners, rough hardy looking men, far healthier than we should believe would be the case with beings whose labor is carried on away from the light of day. They are preparing a blast, our guide tells us, and we draw near to watch the operation, but speedily retire in dismay at the apparently careless handling of the powder in close proximity to the unguarded flames of the lamps. The men manifest no concern, and all are coolly smoking or chatting.

Now, the charges are ready, and one of the miners lights the fuse from his pipe. We scramble precipitately to a safe position in total disregard of either dirt, wet or bruises; and then, in a state of suspense, we stop our ears and wonder whether the smoke will leave us entirely or only partially suffocated. The men lounge lazily out of the way, forming a little group by themselves—and puff quietly at their pipes.

A flash—then a deep muffled explosion which echoes through the long caverns, and is followed by the rumbling and crashing of the falling debris—clouds of dense sulphurous smoke fill the chamber, rising up to the roof and curling away toward the shaft. We get down close to the floor with a handkerchief—a very grimy one by this time—over our nose and inwardly yawn for one breath of fresh air. Meanwhile the blasters wait until the smoke disperses, and the atmosphere becomes less stifling; then they resume work. Some pile the detached bits of coal in heaps, and others fill the tubs which travel on the rails in the foreground of the mine. Then the mules are signalled for, and we can hear the noise of their hoofs approaching, mingled with the sounds of blows and an alarming chorus of expletives on the part of the drivers. The animals are attached to the tubs, and, after arguing some time with their attendants, mule fashion, by drumming on the waggons with their heels, refusing to stir, or manifesting an unconquerable disposition to lie down, they are at length persuaded through the energy of a club or by being banged about the head with a lump of coal, that resistance is useless, they have reluctantly start off on a slow jog trot. We follow them to the shaft, leaving the miners swinging their picks or hammering at their drills, apparently careless of the dark heavy atmosphere around them.

MINNESOTA TREE PLANTING.

The Minnesota newspapers are calling upon the State Legislature not to adjourn without taking some action in the matter of appropriating a sum of money for the purchase of seed trees to be distributed to each town throughout the State. They especially urge that trees be planted on the prairies of the State, for the benefit of the farmers who fill up the broad stretch of land between the railroad and river, so that they may thus fence their roads and farms with forest trees. Already has this been done to some extent. The system has been adopted on all the lines of the St. Paul and Pacific Railroad, and already have many miles of trees been planted. The same course has been pursued by farmers in the neighborhood of Hutchinson, who have set out from 1,000 to 20,000 trees each.

The Prince of Wales has succeeded in shooting a bull at seventy yards, and the English papers indulge in enthusiastic admiration, for so princely an act, to the extent of about the same number of yards of fine writing.

A LARGE SAW.

A BAND saw, fifty-five feet long, sawing planks from a pine log three feet thick, at the rate of sixty superficial feet per minute—probably the most extensive experiment in log cutting ever undertaken and successfully carried out—is the subject of illustration herewith presented. No more forcible instance of the great capability of the continuous saw blade can, we think, be adduced, nor its superior efficiency, as compared with the gate and circular saw, for the purposes indicated be better demonstrated, than by the details below given, obtained directly from Mr. J. J. Van Pelt, in whose mills (at the foot of 10th street, East river, in this city) the immense machine has, for some time past, been employed.

The saw, which is 55 feet long, 4 1/2 to 6 inches wide, and of 16 gage was made by the celebrated firm of Perin and Co., of Paris, France at the cost of one hundred dollars. The machinery was constructed from the drawings and specifications of M. Van Pelt, by Richards, London & Kelley, of Philadelphia, Pa. The pulleys are of 75 inches in diameter, including hubs of wrought iron, and are mounted centrally on the main column so as to equalize the strain of the saw and prevent its springing, and to economize its weight. They are covered with a lagging of pine, over which is glued an envelope of heavy harness leather. The bearings for the wheel shafts are four inches in diameter and twelve inches long, and are made of alloy of six parts copper and one of tin. The tension is from one to four turns, and necessarily calls for the greatest rigidity in the framing to prevent the guides from being thrown out of position by the varying tension of the blades.

COMPLETE DRAINAGE OF HOUSES.

The importance of good drainage is advocated as follows, in the last issue of *The American Builder*:

Where the geological character of the ground is such that nature has not made ample provision for removing the surplus water at all seasons of the year, a builder cannot expect to have the advantages of a dry cellar and a dry yard unless a system of complete drainage is commenced below the foundation of the lowest stones or bricks of the cellar wall. Many builders have made the grave mistake of deferring all provision of drainage until after the superstructure was finished.

Very few builders, either in the country or city, can be induced to introduce a proper system of drainage beneath and around a dwelling, or a large barn. For this reason, the proprietor himself, or some competent representative, should supervise this important part of the building, as soon as the excavation for the cellar is completed. A deep ditch should first be sunk so that water will flow readily away from the cellar to some distant point, where it will mingle with some stream. Before any part of the foundation wall is laid, let a channel be sunk about three inches deep around the outer edge of the excavation, partially beneath the bank of earth, for receiving the water that would otherwise come to contact with the foundation wall and find a passage into the cellar. The most convenient way to sink such a channel is to make a sort of a rammer of a stick of hard timber. Should the earth be exceedingly compact, as the substratum is in many sections of the country, it may be necessary to use an old axe for cutting down the sides of the channel, after which the middle can be removed with a sharp pick. When the channel is completed, let two or three pails of water be poured into it at the highest point; and if it does not flow readily away into the ditch, let the channel be sunk deeper in places until the grade is uniform. Then let drain tiles two inches in diameter be laid with such care in the channel, and be covered with gravel. If the drain tiles are thoroughly burned, and if they are laid assuggested, the drainage will be complete as long as the building endures. One or two poor drain tiles, however, will spoil an excellent job, as they will disintegrate and obstruct the watercourse. After the foundation walls are carried up above such a drain, the excess of water in the earth, that would come in contact with the walls, will form direct passages through the ground to the tiles, and will quickly pass away without wetting the walls. By this means the earth around the building will never become excessively wet, even while protracted storms prevail; the walls of the cellar will never become damp or covered with mildew, and the cellar bottom will always be dry.

To keep the watercourse of the drain tiles always free from silt the waste water from the cistern should be directed into the tiles, at the highest point of the drain. During heavy showers of rain, the tiles would be thoroughly cleaned of all silt, several times a year. But it is difficult to introduce such a system of drainage after a building is erected.

"Your Field-marshal Moltke," said an enthusiastic Englishman, recently, to a Prussian democrat, is very much like our Duke of Wellington. "Certainly," was the answer "he is just as stubborn a reactionist as the iron duke was."

Miscellaneous.

HOME HINTS.

**OIL THE MACHINERY.** The oil of the cheerfulness makes the machinery of the household run smoothly—not that compulsory sort which says, "Though my heart is like ashes, my lips shall wear a smile," but a true, hearty lightness of spirit which shines out through the face. Servants and children need encouragement more than fault-finding, and their mistakes and failures should not be treated with severity. They soon rebel against injustice. It is better to be too lenient than too severe; better occasionally to pass over an error with a smile and an expression of a hope of better doing in the future, than to be always on the alert for faults.

**HOW TO MAKE BOYS GENTLEMEN.**—How many mothers complain that their boys are not gentlemanly, without ever considering whether the boys are treated in anywise like gentlemen. The 'boys' room' is too often a cheerless, unattractive place, with no toilet conveniences, and scarcely such as are necessary. Do not say it is of no use to put nice things in so untidy a place. If you want to interest a boy in keeping himself and his room in gentlemanly order, give him some encouragement to do so, by providing a little something luxurious and ornamental. A little sometimes go a great way.

**SHOEBLACKING.**—A very safe and efficacious shoedressing, is a simple mixture of Printer's ink and sweet oil. It does not give the polish which the patent dressings give, but it is far better for children's shoes, since it keeps the leather soft and renders them less liable to crack.

**ECONOMICAL AND PURE.**—Many persons injure their teeth by a free use of strong acids or alkalis, under the guise of some fancifully entitled dentifrice. Simple pulverized chalk, which is the principal ingredient in all good tooth powders, is the very best thing to use for keeping the teeth white and clean. See that the children are provided with a box of it, and a soft brush, and that they use it the last thing before going to bed; then no food is left in the mouth to do harm during sleep.

**MISCHIEVOUS CHILDREN.**—The surest and easiest way to keep children and grown folks too for that matter, out of mischief, is to keep them busy. Require a certain amount of work, and provide an abundance of recreation. The trouble is, that babies begin to throw out their hands and feet after the things within reach, and we begin by saying "No!" and holding them back, and by-and-by, when the little ones get out of our arms and we say "No, no!" they turn faster than we can follow them to something else, only to be again reproved, until they are glad to get out of our sight, and find vent for their activity in liberty.

Begin rather, by supplying the outreaching fingers, and as the desires develop and enlarge, keep the busy brain and body interested in harmless ways, and there will be little cause to fear that they will go far astray. Does the task seem irksome? It can be made so, but even then it is not better to be wearied in seeking employment that to be broken-hearted over a ruined son or daughter? And it need not be so irksome. Let mothers and fathers interest themselves in their children's tasks and sports, and the elders will keep young and the children will keep happy.

CREDIT MOBILIER.

The public corruption—if so it is to be regarded—which has been brought to light in Congress, is not a singular abnormal, exceptional vice. It is only the exhibition, on an astounding scale, of one that has grown unrebuked and almost unrepented in American society. The House of Representatives is, in fact, as well as in form a representative body, and those who have been convicted before the country of having been, if not false in their trust, at least swayed by personal interest in its administration, are not "sinners above the multitude." The Poland Committee report that there is no evidence that the members of Congress who took the Credit Mobilier stock made any agreement to pay for it by their votes, and we see no reason to doubt the correctness of their conclusion. But the acceptance of stock, in fact a gift though in form a purchase, was, if not a breach of trust, a dangerous temptation to it, since it put them under a seeming, if not a real obligation, and subjected them to a personal bias in the administration of their public duties.

But is this a sin that is confined to Congress?

There is probably not a week that goes by that customhouse inspectors do not receive for themselves or their wives, a handsome present from some one of the numerous importing-houses whose goods are passing through their hands. There is hardly a day that reporters and sub-editors of the very papers loud-mouthed in indignant denunciation of the receivers of the Credit Mobilier stock, do not receive gifts varying in value from an oyster-supper to a one-hundred-dollar bill, from interesting friends who follow Oakes Ames afar off. It is more than suspected that with many of

them the color of the literary criticism in one column depends upon the largeness of the book publisher's advertisement in another. It is the custom of our great railroad corporations to give free passes over their roads to judges before whom at any time they may be brought in due process of law, and to legislators who are to enact laws representing them. The very presses which reveal the sums paid by the Credit Mobilier to Congressmen, disclose the fact that half a million of dollars was distributed among the disinterested and patriotic members of the old Erie Board, to induce their resignation and the expulsion of Mr. Gould from the presidency of the railroad.

We are not prepared to condemn all gift-taking by public men. We are not prepared to say that the nation may not recognize its indebtedness to the general who has carried it through experiences that threatened its existence, or that railroad companies may not be required by law, as servants of the public, to carry judges and legislators free of charge over their roads, or that newspapers may not receive free tickets to lectures and concerts, and books from publishers, or that Congressmen may not invest in stock as well as any of their constituency. We are not even prepared to draw the line which separates between the gift which honors and the gift which disgraces, that which ennoble both giver and receiver, and that which is a shame, and a humiliation to them both. In this as in all else in life, it is the motive which gives character to the deed. But of this much we are certain, that if only he that is without sin cast the first stone there would be few broken bones. Corrupt gift-giving and corrupt gift-taking are not confined to Congress, and the nation will not be purified when corrupt givers and receivers are expelled from Congressional halls. The work of purification must be far deeper to be effectual. Not only every public official, every private citizen, must form the purpose to take no gift whose offering is with the purpose of securing personal interest to swerve from public duty, or whose acceptance may tempt to such a result. There has been discovered a pretty large mote in the Congressional eyes, but there are some beams in other eyes, that it is perhaps quite as important to the national welfare to extract.

But the vice lies deeper than this; it is not confined to public officials, or even to public men.

The contest of old times was between the sword and the people. The modern contest is between the purse and the people. Wealth is power. Millionaires are our feudal lords; the great corporations are our despots. The American's haste to get rich that leads Congressmen to receive stock which they have never paid for, leads private citizens to petty frauds which pass unrebuked. We are all amazed at the fraud which the Credit Mobilier perpetrates on the nation for twenty-seven million of dollars. But is fraud less heinous that pays less wages? Is that fraud only monstrous which pays well? Every grocer who mixes sand with his sugar, every milk-man who waters his milk, every carpenter who puts sappy shingles on his roof every mason who puts ill-made mortar in the walls, every manufacturer who makes his cotton fabric thick and heavy by rolling in starch, every farmer who puts good hay on the outside of the bail and thistles inside, every minister who preaches dogmas which he does not believe for the sake of his place or the perpetuity of his church, every editor who sanctions falsehood to defend his party, or maintain or enhance his subscription list, is guilty of the vice, the exposure of which has justly brought disgrace on men whom the nation aforesaid delighted to honor.

SEPP'S COURTSHIP.

(From *George MacDonald's Magazine*.)

"TO-DAY is our Statute Fair," said an old peasant woman who had been laid up with the gout nigh upon five years, as she raised herself with difficulty and tied with trembling hands a handkerchief round her head. After taking it off and off many times she succeeded in tying a bow in the middle of her forehead, which stood out like the wings of a windmill, and then she again repeated, "To-day is our Statute Fair, Sepp, and you'll have to go alone to the dance this evening, as you did last year, and the year before, and always will, I verily believe! Didn't you promise me faithfully to take a wife this year? But I suppose its no use! you won't marry in my day—no, nor after me either. Ah! if your poor father had lived to see such a thing! Do you want to be forever an old bachelor?—Don't you know what the girls sing?"

"Clipper, clapper, bachelor old,  
Get to the forest and think of the cold;  
Think of the winter, how soon 'twill be here,  
All you can muster your cottage to cheer,  
Wood that makes ashes, and wood that makes soot,  
Cut from the stock, or dug up by the root,  
Get you a plenty, but mark what you choose,  
And see you don't take what the beggars refuse.

The son timidly answered he really did not know which to choose, for all the girls in the village pleased him equally well.

"Go into the village, then," said his mother, "and look about amongst the

girls you think will suit you, and come back and tell me what you found them doing." And Sepp went accordingly.

"Well!" cried his mother when he returned, how did it fare with you? Where have you been?"

"I went first to Ursula: she had just come home from church, with such a fine dress on, and a pair of new earrings."

"The mother sighed, and said, 'The nearer to Church the farther from God! The miller doesn't hear the noise of his mill! Where then did you go?'"

"To Kate, mother."

"And what was she about?"

"Oh! she was in the kitchen, rattling about the pots and pans."

"How did they look?"

"Quite black."

"And her fingers?"

"Quite white."

"Slatternly and greedy," muttered the mother, and then sang:

"Slipper, slapper, dainty and fine,  
Thinks of herself, not your dinner and wine;  
Thinks of herself, not the children and cattle,  
Loves her fine dresses and much little-tattle.  
Look at her twice, and mark what you choose,  
And see you don't take what the beggars refuse.  
Have naught to say to her, Sepp!"

"After that I went to Barbara. She was sitting in the garden making three wreaths, one of violets, one of roses, and one of pinks. She asked me which she would wear to-day at the fair."

The mother was silent a while, and then she sang:

"A groom dressed in silver, a bride dressed in gold,  
The wedding-day over, the story is told;  
The silver and gold turns to copper and brass,  
And woe, hard as iron, mars every face.  
So look at her twice, and mark what you choose,  
And see you don't take what the beggars refuse.  
Well, what farther, my son?"

"The fourth visit was to Madge; she was standing at the street door, giving bread to the poor."

But the mother still shook her head, and said, "To-day she does what she wishes people to see—another day she may perchance do something she would like to hide. This morning she was standing before the door, this evening, perhaps, she will be hiding behind it. When the farmer comes into his field at midday, it is only the lazy mower who jumps up and begins to mow—the industrious ones remain taking their noontide rest. Sepp, I would rather you never married at all than take her for your wife. Did you go nowhere else?"

"Yes, I went lastly to Mary."  
"And what was she about?"  
"Well, nothing at all, mother."  
"Nothing! she must have been doing something," persisted the old woman.—  
"She couldn't be doing nothing."  
"She certainly was doing nothing I could see," answered her son. "Absolutely nothing—take my word for it."  
"Then choose you Mary, my boy; those girls make the best wives who never do anything the lads can talk of."

So Sepp married Mary, and was supremely happy, and he said afterwards to his mother, "Mother, your advice was very sound advice."

"There is Ursula dainty, and Kate, who so fine?  
And Barbara thinking by gold to outshine;  
There's Madge, and who like her? all so proud and so airy,  
But weighed altogether, not worth half my Mary,  
So I'm glad I looked twice to mark what you choose,  
And I find I have won what no land would refuse."

**THE TORONTO YOUNG MEN'S CHRISTIAN ASSOCIATION.**

PROGRAMME—TUESDAY EVENINGS—  
JAN., FEB., MARCH, 1873.

Jan. 7. Meeting postponed on account of the Evangelical Alliance Meeting.

14. ESSAY—F. H. Wallace, "How the Ancients thought and wrote."  
Geo. H. Moxon, Chairman.

21. ESSAY—John Craig, "Ambition."  
W. A. ... "A Canadian Oxford."  
George Hage, Chairman.

Feb. 4. LECTURE—C. A. Morse, "The Pioneers."  
T. Dixon Craig, Chairman.

11. An evening of Songs and Recitations.—  
C. A. Morse, Chairman.

18. LECTURE—T. DeWitt Talmage, Brooklyn, N.Y.—"Gumbler & Co."  
JOHN MACDONALD, Chairman.

(Admittance to this Lecture, 50 Cents, being one of the winter course of pay lectures.)

25. ...  
Mar. 4. LECTURE—Nicholas Flood Davin, of London, Eng.—"Thomas Moore and His Poetry."  
W. M. Anderson, Chairman.

11. LECTURE—Geo. Hague, "Commercial revolutions and Parties."  
DANIEL McLEAN, Chairman.

18. An evening of Songs, Recitations and Readings..... Chairman.

25. LECTURE—Rev. W. Morley Pughon L.L.D.—"Wilberforce."  
Chairman.

(Admittance to this Lecture, 50 Cents, being one of the same course as on 18th Feb.)

**WE FURNISH**  
Boarding Houses, Employment, (if possible,  
Free Reading Room, Good Company,  
Noonday Prayer-Meeting, 12.30 to 12.55.  
Literary Entertainments every Tuesday Evening at 8,  
Young Men's Prayer-Meeting every Saturday Evening at 5.

Bible Class every Sabbath Afternoon at 3 o'clock.

We cordially invite strangers, and ALL who feel interested in our work to attend the above meetings. The undersigned may be found in the Rooms of the Association, between the hours of 9 a.m. and 1 p.m., or from 2 to 4 p.m.

YOUNG MEN, STRANGERS in the city are especially invited.

THOS. J. WILKIE, Secretary.

P.S.—A well-assorted Library of some 1,200 volumes, to which access can be had by becoming a member. Members fee only \$2 per annum.