

SCIENTIFIC AND INDUSTRIAL.

A novel device, one which seems to be regarded as a step at least in rendering railroad travel safer than it is at present, consists of an apparatus for automatically signalling a train at any given station on the line by the train dispatcher at the directing point, which may be hundreds of miles away from the station at which it is desired to display the signal. The latter, however, is not intended to take the place of an operator; it is rather in the nature of an emergency signal, and a check upon the operator who may be engaged in other duties away from his instrument at the all-important moment. But not only this, the apparatus automatically returns a response to the dispatcher, indicating that the signal has been set, and at the same time a bell is sounded to attract the attention of the operator, who is in this way notified that his immediate attention at the wire is demanded. This mechanism is flexible in its application, and there are many other important uses to which it can be put.

The weight of testimony, thus far, in regard to the various methods proposed for rendering wood incombustible, or non-alterable by heat, appears to be against the claim that a building encumbered with inflammable substances can pass through such a test uninjured. It is known that the methods resorted to for preserving wood against fire are principally two, viz.: the injections of saline solutions and the application of a paint or coating; the former has been practically ineffective, and has even been pronounced by some as of dangerous tendency in the case of wood of large dimensions, though the treatment may be applicable to pieces of wood of small size. It is remarked that, of all the various substances which have been brought forward for this purpose, the concentrated solution of phosphate of ammonia has proved the most valuable, the use of this substance, in fact, notwithstanding its high cost, possessing such peculiar advantages as to have recommended its employment in all cases where the matter of expense is not important. In the majority of cases coating with a brush is the really practical solution of this question, and according to Prof. Bondin and Denny of Ghent, the substance most suitable for use in this manner is the cyanide of potassium and asbestos paint.

An interesting trial has been made in Germany with silk weavers' looms worked by electricity. By a cable of 150 feet in length, a one-horse power electric shunt motor, with 100 volts and four amperes, was put in motion, and the transmission for the weavers' looms was restricted by a communicator to seventy-two revolutions. Two weavers' looms were put in motion, the result, as stated, being that the working by electricity was more satisfactory than that by means of caloric engines or gas motors, and that the swinging masses, otherwise necessary for the working on a small scale, can be dispensed with. The German papers think the results named show that house industry could easily be made to flourish by the transmission of electric power, and this all the more, as electricity can be transmitted equally well under any temperature. Further trials in this direction are being made, also, with long-running dynamo machines, without the use of the communicator, for some looms even without shafting, therefore, with direct impulsion of the electric motor at the loom by friction rollers, &c.

Referring to the fact that photographs of the moon, taken at full, give that body an egg-shaped appearance, with the small end pointing toward the earth, a recent writer argues that this goes to prove that planet's non-globular shape, as was indeed to be expected. According to this writer's reasoning, matter at the surface of the moon is acted upon by two important forces—the law of gravity would arrange the matter in a globe around the centre, the moon alone considered, and the attraction of the earth, being always exerted in the same direction relative to the moon's centre, would constantly draw all fluid or plastic matter to the side next the earth; the sun shines not less than 325 hours consecutively on any given point on the moon's surface, and it is not probable that water on the surface would remain frozen under such continued sunshine, so that doubtless the fluid parts of the moon's surface, obeying the constantly acting force that generates the tides on the earth, have long since gathered themselves together on that side of the moon nearest the earth. This idea, it is claimed, is not inconsistent with anything developed by the shadow of the moon in eclipses, nor with any known fact.

Few instances of modern industrial growth in any one specialty are more surprising than that of the manufacture of artificial dyestuffs. In England, France, Germany

and some other countries, but especially in Germany, this industry has attained such prodigious growth that in some cases the extensive works resemble a small town or village. This appears from the published statistics of one of these plants—that of the Farbwerke, at Hoechst-on-Nain, where are employed some 1,000 workmen, 50 foremen, 9 engineers, besides 80 clerks and 67 chemists. The works cover an area of 726,000 square yards, and from one end of the works to the other the distance is 3,800 feet. Besides a great variety of dye stuffs, the acids employed in their production are also manufactured, amounting in one year to 23,108,000 kilograms of sulphuric acid, 12,800,000 of other acids, and 3,024,000 of coal tar products.

A new ore concentrator has been devised which operates by crushing the material to about a quarter of an inch in size, and which, exposed to the action of powerful magnets, separates the particles of iron ore. The particles of ore are again crushed to a finer state and again exposed to magnetic action, resulting in a concentrated condition of the iron.

It seems that the first large forging press that ever was made is now in full work at the armor plate manufactory in Sheffield of John Brown & Co. It is described as 4,090 tons, and is worked by 2,000 horsepower pumping engines, and commanded by power travelling cranes capable of lifting 150 tons. At the works of Krupp, also those of Schneider & Co. in France, similar processes are now at work, and one has been erected at the Terni works in Italy, where the forging of guns and armor plates is largely carried on. A 4,000-ton press has also been made for a Chatillon company.

Her Mother's Trave.

She was only a little lame girl, with thin, pinched cheeks, great melting eyes, and a general look of sorrow and suffering around her. Her poor and old-fashioned clothes, pokey little bonnet and threadbare jacket not only spoke of poverty but told of a neglected and wretched home. The man at the cemetery had seen her around many times since the spring weather had made a visit to the burial ground pleasant. Not that she appeared to be interested in the fine monuments, the flower decked lots or the beautiful graves. She never cared to notice them. She always limped her solitary way to a quiet corner of the single grave section, where, seated upon a neglected mound she would stay for hours, thinking, quietly crowning to herself, oblivious of her surroundings and seemingly careless as to who might see her, and indifferent to what was going on in other parts of the beautiful grounds.

The other morning she was at her post as soon as the gates were opened, and the cemetery keeper watched her painfully hobbling along to her accustomed seat, and saw her reverently place upon it a little handful of poor, tawdry blossoms and daisies. It was a small and petty form of decoration, but there could be no question about the purity of the sympathy which prompted her to decorate an unmarked grave.

Taking a bunch of exquisite roses in his hand the man followed the little girl to the place where she was seated, and, handing them to her said:—

"Look here, sis, this won't do. I cannot have a little girl like you moping away by yourself in this dull place. You must come up to the top of the hill and see all the nice people; I'll find you a seat, little one, and then, when you're tired of being among all the fine folks and pretty flowers, you can take your bouquet and go home."

"Oh, please, sir, let me stay where I am. My dress is old and shabby, and I should be ashamed. I thank you for the roses. They are very sweet, and—may I lay them on the grave instead of taking them home? They are too pretty for me, but are not too good for her."

"Why, little girl, how you talk. Whose grave do you wish to lay them on?"

"On my mother's."

The man turned away. Tears were in his eyes. The child's sorrow unmanned him.

Recently I was looking around the lots when the cemetery keeper came by.

"How goes your little lame protégée?"

I asked.

"I went down to the hospital to see her last night," he replied, "and she will never come here again until it is to be laid by her mother's side. She was dying when I left her, and as I pressed her little worn hand in bidding her good-by she said: 'Thank you for the flowers. The angels have told me that mother was grateful for them.'"

Short, stout women should not wear frills around the edge of their bodices.

THE LADIES' JOURNAL

GREAT FALL

BIBLE COMPETITION.

NO 29.

Again THE LADIES' JOURNAL comes before its patrons with another Competition, number 29, and asks for it the careful attention it deserves. It comprises one of the largest and best assorted lists the publisher has ever been able to get together, and goods the value and quantity of which have never before been offered by any publisher in the Dominion. Throughout the number of years he has been pushing this enterprise the proprietor has endeavored to treat all competitors in the most equitable manner possible, as thousands can testify.

The questions are as follows: Where in the Bible are the following words first found: 1st WORLD, 2nd FLESH, 3rd DEVIL.

FIRST REWARDS.

First one an Elegant, Upright, Rosewood Piano. \$500 00
Next one a Lady's Bicycle latest improved Machine. 130 00
Next Five Each, One Lady's Fine Gold Filled Watch, Hunting Case, beautifully engraved, good movement, full jewelled, value \$50. 250 00
Next Five each, one Fine handsomely chased Cake Basket, \$5.00. 25 00

SECOND REWARDS.

First each a handsome Family Sewing Machine with all latest improvements, walnut case, &c., \$70.00. \$210 00
Next three each, Fine Black Cashmere Dress Length, Value \$16.00. \$18 00
Next Ten, each a beautifully bound Revised Edition Testament, morocco covered, with gilt edges, \$2.00. \$20 00
Next Fifteen, each one dozen Quadruple Plate Teaspoons, extra quality, \$5. \$75 00

THIRD REWARDS.

Next Twenty-One Each a Lady's Fine Silver Watch, Excellent movement, Value \$15 Each. \$315 00
Next Fifteen, Each a Set of Dinner Knives, one doz. in a neat case, Value \$10. \$150 00
Next Ten, each one half doz. Quadruple Desert Spoons, \$1.00. \$45 00
Next Fifteen, each one volume of Life in the Highlands, written by Queen Victoria, \$3. \$45 00

FOURTH REWARDS.

Next Six, an Extra Quadruple Plate Silver Tea Service (4 pieces) satin finish, a beautiful set, \$10. \$210 00
Next Twenty, each a beautiful bound volume of War in Sudan, \$1. \$20 00
Next Ten, each one handsomely embossed and engraved Quadruple Plated Napkin Ring, a very handsome article, \$5. \$50 00
Next Ten, each one handsomely bound vol. of Milton's Paradise Lost, \$7. \$70 00

FIFTH REWARDS.

Next Five, Each a Gentleman's Open-Faced Gold Filled Watch, extra heavy cases, beautifully engraved, non-magnetic, Waltham Movement, full jewelled, pinion set, stem winder, \$50. \$250 00
Next ten, each one half dozen Quadruple Tablespoons, \$1. \$40 00
Next five each one handsomely bound volume of Dore Bible Gallery, beautifully illustrated, \$7.00. \$35 00
Next five each one dozen 12 oz. Quadruple Plated Dinner Knives in lined box, \$7. \$35 00

SIXTH REWARDS.

Next three, each one four Quadruple Plated, brush finished Silver Tea Service, \$50. \$90 00
Next six, each one handsomely bound gilt edged volume of Milton's Paradise Lost, \$7. \$42 00
Next ten, one beautiful Glass, with silver frame, Pickle Cruet, \$3.00. \$30 00
Next twenty, each one solid silver Thimble, \$2. \$40 00

SEVENTH REWARDS.

Next one handsome French Music Box, plays ten airs, Harp, Flanmnet and Piccolo, changes air at will, in handsome Rosewood Case, with inlaid cover. \$00 00
Next three, Gent's Open Gold Filled Watch, with Swiss movement, \$50.00 \$150 00
Next four, each a handsome Black Silk Dress Length, \$30. \$120 00
Next ten, each one half dozen Quadruple Plated Silver Tea Spoons, \$3. \$30 00

EIGHTH REWARDS.

Next Twenty-Five, each copies of the Revised Bible, bound in Morocco and Gilt Edged, \$2.00. \$40 00
Next Three, each one Gent's Open-Faced Gold Watch, with Swiss movement, \$50. \$150 00
Next Four, each one solid Silver Lady's Watch, with good movement, \$15. \$60 00
Next Five, each a beautifully bound Gift Book Coleridge's Ancient Mariner, \$7. \$35 00

NINTH REWARDS.

Next Three, each a beautiful Fine French China Tea Service of 41 pieces specially imported, \$40.00. \$120 00
Next ten, each one set of one dozen Quadruple Plated 12 oz. Dessert Knives in neat case, \$8. \$80 00
Next Thirteen, each one pair of Nickel plated Razor Steel Scissors, \$1. \$13 00
Next Three, each one a Quadruple Silver Plated Silver, \$6. \$18 00

TENTH REWARDS.

First Five, each a fine Black Corded Silk Dress length, \$25. \$125 00
Next Six, each a handsome hand-painted, brass finish, Drawing Room Lamp. \$36 00
Next Fifteen, each one dozen full Quadruple Plated Teaspoons, \$5. \$75 00
Next Six, each a full quadruple plate Berry Dish, with beautifully colored and white glass bowl, a very showy, choice article, \$15. \$90 00

All persons competing must send with their answers, one dollar, for which THE LADIES' JOURNAL will be mailed to any address for one year. THE JOURNAL has been enlarged to 28 pages and a handsome cover added, making it one of the most attractive publications on the continent for the money. There is something in each issue to interest every lady, young or old, and you will find even if you do not get any of the above prizes, that you have received your dollar's worth in THE JOURNAL.

The competition will close on the 31st of December next, and fifteen days will be allowed for the receipt of letters from a distance, which must bear post mark not later than the above date.

The names and full addresses of the winners of the prizes will be published in THE JOURNAL immediately at the close of competition. The publisher has thousands of highly complimentary letters from the winners of prizes in previous competitions. Address, Editor LADIES' JOURNAL, Toronto, Canada.

Notice to Prize Winners.

Successful competitors in applying for their prizes, must in every case state the number of the competition in which they have been successful, and also the number and nature of the prize won. Attention to these particulars will facilitate matters, and save a good deal of time and trouble. Prize winners must invariably apply in the same hand-writing in which the original answer was sent, so that the letter and application may be compared before the prize is given out. The following sums must accompany applications for prizes, whether called for at the office or delivered by express or freight:—Pianos, \$20; Sewing Machines, \$2; Silver plated Tea Service, \$1.50; Gold Watches, Silk Dresses \$1; Other Dress Goods, 50c; Cake Baskets, 50c; Rings, 10c; Books, Brooches and other small prizes, 10c; Family Bibles, 50c; Dickens' and Eliot's Works, 50c; Tea and Dinner Sets, \$1.00; Water Pitchers, Berry Dishes, Salvers, Lamps, 50c; Knives, 25c; Guns, \$1; Breakfast Cruets, Spoons, 20c; Music Box, \$2; Forks, 10c.

We have had the above notice standing in THE JOURNAL for several months, and yet in previous competitions we have had and are having daily no end of trouble to find the names in our lists of winners, who have neglected to comply with these simple requests. Those who do not in future state clearly and distinctly the name of the prize they are applying for, number of it in the competition as well as the number of the competition (given clearly at head of this list,) we will positively not take any notice of their letters. Now no one need be offended as all have fair warning. It is surely, only right and proper that each person receiving a prize will at once on its receipt acknowledge it by the very next mail. It will help us and not hurt the prize winner in the least to show the prize to their friends and neighbours and tell us when writing just what they think of the prize they win. All applications for prizes must be received within thirty days after the list has been published.

Owing to the excessive price of rye &c German Government has decided to use wheat in making bread for the army.