## Correspondence.

### Machine for Sawing Rails.

*To the Editor of the Scientific American:*

I notice in a recent number of the *Railway Register* an article on the rail mill at Greenbush, N. Y. We have had one at Grand Island since 1879, also run by an eighty horse power engine at the rate of 3,000 revolutions per minute.

The saw is forty in. in diameter, five-sixteenths inch thick, made of Bessemer steel, with a smooth edge.

Two one-half inch pipes keep a constant current of water on it, notwithstanding which the rail for one-eighth inch in front of the edge is made red hot by friction.

The saw was made for iron rails, which it cuts in from twenty to forty-five seconds. It has been tried on steel rails, though it did not work. It is believed by the present general foreman, B. C. Howard, that the reason is that the feed is too fast, and he intends to demonstrate by a series of experiments whether or not steel rails can be cut by it. A CONSTANT READER.

Grand Island, June 10, 1886.

### How to Clean a Farm Horse.

One of the most important things to be observed in the management of farm horses is their cleaning, and yet it may be safely stated that nothing is more neglected by the majority of farmers. The horse should never be cleaned or harnessed while it is eating breakfast. Let horses eat their food in peace, for many, from sanguine temperament or greed, bolt their oats when handled during the time of feeding. Harness can be quickly enough put on after the feed is eaten, and time should then be taken to comb the mane and tail and use a wisp of straw on the body and legs. When the horses come in at dinner time, they should at once be *unharnessed*. The feed is then to be given, and before the harness is again put on, the horse should be thoroughly rubbed down with a wisp of straw or hay. If the horses are very warm on coming in, they should be rubbed down immediately after the removal of the harness.

The cleaning or grooming, which should be done at night, consists first in currying the horse with the currycomb to free him of the dirt adhering to the hair, and which, being now dry, is easily removed. A wisping of straw removes the roughest of the dirt loosened by the currycomb. The legs ought to be thoroughly wisped, not only to make them clean, but to dry up any moisture that may have been left in the evening; and at this time the feet should be picked clean by the foot picker—*i. e.*, an iron instrument made for the purpose—of any dirt adhering between the shoe and the foot. The brush is then to be used to remove the remaining and finer portions of dust from the hair, which is cleared from the brush by a few rasps along the currycomb. This wisping and brushing, if done with some force and dexterity, with a combing of the tail and mane, should render the horse pretty clean, but there are more ways of grooming a horse than one, as may be witnessed by the careless and skimming way in which many hired hands do it. The skin of the farm horse should at all times be *clean* if not *sleek*, and a slap of the hand upon the horse will show if there is loose dust in the hair. The currycomb should not be used below the knees, as it is apt to cause injury. For cleaning the legs and feet, nothing is better than the water brush; and when fitting a horse for the show-yard, it may also be used on the body with water, or even a little kerosene, but the latter is not required for common cleanliness, but merely to impart a temporary gloss.

How many farmers can say that their horses are cleaned as thoroughly as we have advised in the above? How much longer would horses live, work, and remain healthy if the above suggestions were put into practice? These are questions which it will be well to consider and answer at leisure.—*Farmer's Review.*

### Treatment of Acute Rheumatism.

The last number of the *Russkaya Meditsina* contains a communication from Dr. L. Grinevitski, of Rostoff-on-the-Don, who writes that for more than twenty years he has treated acute articular rheumatism with nitrate of potash, two drachms being given daily in raspberry sirup, and a dose administered every two hours. Together with this internal medication he prescribes an ointment for use morning and evening of the following composition: Olei hyosc., 1 oz.; ung. hydrarg. cinerei, 2 dr.; ext. acon., 1 dr. He has tried all ordinary remedies, and finds that on the whole this plan of treatment is more satisfactory than any other, being especially valuable in those cases where salicylates fail to give relief. Generally the disease is brought to an end in from one to two weeks, according to its severity and the time the treatment was commenced. When commenced at the onset of the attack, and before more than one joint was affected, the others were usually spared altogether.—*Lancet.*

### A Photographic Railway Car.

Mr. F. J. Haynes gives the following account of his new car in a recent number of the *Photographic Times:*

This car is built after the latest pattern of Pullman cars, 66 feet long, 12 wheels, air brake, air signal, and all the other improvements. The observation end consists of two large plate glass windows, and glass door running nearly to the floor. This room is used as a reception room. It is 8 ft. 6 in. by 16 ft., carpeted and furnished as a parlor, the panels between the windows being used for the display of specimens. Electric bells connect this room with the culinary department and dark room, and by a series of calls the assistant operator knows when making a sitting all about the plate, size, etc. A stationary desk occupies one corner, while a wardrobe with similar exterior finish fills the other. Mirrors, to give distance, abound in every suitable place.

The toilet rooms and a section consisting of a double upper and lower berth occupy the next eight feet of the car. Of course, all are familiar with sleeping cars, and know that when the berth is "made up" there is nothing to indicate its use. The seats make a convenient place for friends to occupy. The operating room is 24 ft. long, and with short-focus instruments we have sufficient distance for standing figures on a cabinet.

Owing to the uncertainty of always having the car in the same position, I had the light the same on both sides of the car. The top light is covered with iron shutters to protect it from flying missiles, and when in use does not open up but half. If the car is standing on a north and south track, we are compelled to change the light in the middle of the day, but it is easily controlled. The top light is of ground plate glass; the sides clear. Curtains on spring rollers are at the command of the operator. We have four Seavey grounds and Scovill Manufacturing Co.'s cameras. When the car is in motion, the backgrounds and camera stands are fastened securely to the floor.

In the rear end of the car is the kitchen and porter's room, dark room, runway, and all the necessary sinks, cupboards, etc. The range and heater are in the kitchen, and a six barrel water tank is fastened near the ceiling in this room, which is filled from the outside. As we simply make negatives and proofs in the car, the printing and finishing department is dispensed with.

We finish all work at headquarters in Fargo, mailing the finished pictures to customers. We bill a town the same as any traveling show, and advertise for a certain number of days. The novelty of the thing attracts everybody, and, of course, "artistic photography" is in demand the world over.

The cost of the car was $13,000, with about $2,000 in furniture and accessories, etc. Aside from portraits, I do a large amount of landscape work, chiefly for the Northern Pacific Railroad Company, with a 20 × 24 camera.

### Design for the Great Telescope Mounting and Dome of the Lick Observatory.

At a recent meeting of the Royal Astronomical Society, London, Mr. Grubb said: About three months ago the trustees of the Lick Observatory invited me to make a design for the equatorial mounting and dome of the great 36 in. refractor which Mr. Alvan Clark is at present making for them. They mentioned at the same time that a similar invitation had been sent to three other optical firms. In the working out of that design, I found it desirable to make a model. I have endeavored to bring all the required motions of the instrument and of the dome under the control of the observer with as little physical exertion as possible. The object glass will be 36 in. in diameter, and the length of the telescope tube 57 ft.; the dome will be 70 ft. in internal diameter, and 80 ft. external diameter. To carry out my idea, it will be necessary that small water engines should be arranged in connection with the telescope and with the dome. The observer, on entering the building, will pick up a small instrument attached to a rope of insulated wires. It is made to fold like a book, so that it can be put in the observer's pocket. It contains keys, by touching which he will be able to control the motions of the instrument and of the dome without moving from his chair. It is not desirable to give electricity too much to do in an observatory, and I do not propose that it should be used for opening and shutting the valves of the engines directly; that will be done by a mechanism which will be wound up every day by an assistant, and consists of a barrel and four weights. This apparatus will open or close the valves, and it will be set in motion or stopped by electricity.

In the model which I have here, the engines are represented by a piece of clockwork, and the clockwork is controlled by little electro-magnets. The observer, on entering the observatory, would take up the little keyboard, which would be hanging near the door, and by a pressure upon the first key would light up the observatory with electric lights. He would then press another key, which would move the dome, and at the same time open the shutter, which can, by a contrivance under the control of the observer, be anchored to the wall of the observatory, so that when the dome is moved the shutter is pulled open. A third key will move the telescope in R. A., and a fourth will move it in declination. Lastly, we have to get the observer into position to observe. Instead of making him climb into an observing chair, which would require to be 25 ft. high, and would be very heavy to move, there is a key which causes the whole floor to move up or down, so that the observer can be brought up to within a few feet of the level of the eyepiece, and can comfortably sit on a low chair without fear of falling or accident. I am sure that an observer cannot do his best work if he is perched up at a great height above the floor, or if he has to employ any exertion in moving his seat or the instrument. The machinery which would raise the floor of the Lick Observatory would be strong enough to allow a ton and a half of observers to be carried up with it. Such a force might do some damage if the wrong key were touched, and the floor went up while the observer had his eye at the eyepiece. I have, therefore, thought it well to provide against such an accident by hanging a weight near to the eye end of the telescope, which, when it touches the ground, would instantly cut off the water supply, and nothing could happen after that.

The President: It makes one feel quite envious to think of the luxuries to be provided for the astronomer of the future. The most charming part of the contrivance to me is the movement of the floor. The life of an astronomer with a key in his hand, which he only has to touch to make all these movements, seems almost ideal—something that one might dream of, but could not hope to realize.

Mr. Common: I had the pleasure of seeing this model at the Royal Institution, and I rather hoped that it was the actual model of what they were going to have at Mount Hamilton; but I fear that it is not so. I had a letter from Prof. Holden the other day, in which he says: "The glass for this lens is now finished, and we hope that during the early part of 1887 we may see the object glass finished and perhaps delivered in California. Our large dome will undoubtedly be finished during the current year, and we look forward to commencing serious work during the year 1887." I saw in last month's *Century Magazine* that there is a proposal to make what they call a seven-eighths dome. That is a spherical building, or seven-eighths of a sphere, erected round the instrument. The upper hemisphere would correspond to the ordinary observatory dome with its shutters, and the lower three-eighths of the sphere would be furnished on the inside with tiers of steps, so that the observer could always get up to the eye end of the telescope. Everything which contributes to the comfort of the observer and the dispatch of business is of the utmost importance. It doubles the value of the observatory.

### The Deepest Boring.

The deepest bore hole in the world is at Schladebach, near Kotschau Station, on the railway between Corbetha and Leipzig, and has been undertaken by the Prussian Government in search for coal. The apparatus used is a diamond drill, down the hollow shaft of which water is forced, rising again to the surface outside the shaft of the drill and inside the tube in which the drill works. By this method cores of about 50 feet in length have been obtained. The average length bored in twenty-four hours is from 20 to 33 feet, but under favorable circumstances as much as 180 feet has been bored in that time. Other deep holes are as follows:

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| Domnitz, near Wettin | 3,287 feet. |
| Probat-Jesar, Mecklenburg | 3,957 " |
| Sperenberg, near Zossen | 4,173 " |
| Unseburg, near Stassfurt | 4,242 " |
| Lieth-Elmshorn, Holstein | 4,390 " |
| Schladebach | 4,515 " |

The dimensions of the bore hole at Schladebach are as follows:

| Depths from surface. | Each size bore, Feet. | Diameter, Inches. |
|---|---|---|
| ~~138·6~~ | ~~109·0~~ | ~~11·0~~ |
| 605·7 | 416·1 | 9·0 |
| 661·8 | 56·1 | 7·3 |
| 1,906·5 | 1,244·7 | 4·7 |
| 2,259·8 | 353·3 | 3·6 |
| 3,543·4 | 1,283·6 | 2·8 |
| 4,069·9 | 526·5 | 1·97 |
| 4,514·6 | 444·7 | 1·88 |

The various strata passed through are as follows:

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|---|---|
| Soil and sand, about | 16 feet. |
| Clay | 66 " |
| Sandstone (Bunter) | 459 " |
| Anhydrite | 59 " |
| Brine spring | .... |
| Magnesian limestone (Zechstein) | 144 " |
| Gypsum | 36 " |
| Anhydrite | 295 " |
| Marl-slate (Kupferschiefer) | 3 " |
| Sandstone (Rothliegendes) | 3,435 " |

The bore hole, which in January, 1885, had reached a depth of 4,560 feet, was commenced in June, 1880, but left after a year's work, recommenced at the end of 1882, and is still progressing. The cost up to January, 1885, was about $25,000.