

Correspondence.

Starving and Washing Away Rheumatism.

To the Editor of the Scientific American:

In your last issue I find something about starving and washing out rheumatism by extreme exposure. I was a farmer lad in fall of 1850, living near Ottumwa, Iowa. The ague had fastened itself upon me so firmly that every now and then, in spite of various antidotes, I would be visited by a series of too familiar shakes. One afternoon I was hauling saw logs with an ox team, and, the roads being heavy from recent rains, wagon got stuck ascending a hill. Became so engaged in efforts to overcome the difficulty that I failed to take note of an approaching storm simultaneous with a severe chill of the ague. The situation of the team was such that I did not dare leave it, and the result was that the most furious rain storm that ever was experienced broke upon me; and while the rain pelted down I thought I never before realized so severe a chill of the ague. The drenching was so thorough, there could not be found upon me a dry thread, and the duration of the chill was prolonged to that pitch that I thought I would perish then and there. Fortunately a team came along after the storm passed over, picked me up, and took me home. The ordeal was a severe one, but from that day to this, including three years' service at the front in the late war, I have not experienced any symptoms of the ague.

J. W. NEIGHBOR.

Phelps, N. Y., Nov. 10, 1884.

[Although this correspondent survived his heroic treatment, we would not advise others to try the same mode of cure. It might be death to them.—Ed.]

Atropos.

To the Editor of the Scientific American:

I send by this mail a small phial containing some insects that infest houses here, getting under the carpets and into beds. You will see millions of them in a single bed. Will you please inform me what is the name of the insect, whether they do any damage to the bedclothes, where they come from, and how to exterminate them?

REAL ESTATE JOURNAL,

per J. B. PARKER, Publisher.

Nashua, N. H., Nov. 4, 1884.

We submitted the specimens to Prof. C. V. Riley for examination, who writes as follows:

To the Editor of the Scientific American:

The insects which you submit to me, sent by Mr. Parker, publisher of the *Real Estate Journal* at Nashua, N. H., prove on examination to be a species of *Atropos*, but the habits of the species as given by Mr. Parker are certainly exceptional and most interesting. The habits of the family (*Psocidae*), so far as known, are as follows:

Atropos divinatorius Fabr. is one of the worst museum pests, quite injurious to the more delicate parts of preserved insects, and especially the smaller lepidoptera. It is also more or less injurious to old books. The same habit is also possessed by the well known *Psocus domesticus*. Another species, undetermined as yet, I have found caught in great numbers in bird lime used for the purpose of trapping winged *Phylloxera*. Another species of *Atropos*, probably *pulicarius*, has been found by Miss M. E. Murtfeldt, of Kirkwood, Mo., infesting the egg mass of the cottony maple scale (*Pulvinaria innumerabilis*). Another species, which corresponds to *pulsatorius*, has been found in large numbers in preserved corn in the museum of the Department of Agriculture, many of the kernels being eaten out entirely. I cannot imagine that the species sent by Mr. Parker can in any way injure the bedclothes, nor can I state, without knowing more of the surroundings, whence such numbers come, nor suggest any mode of exterminating them other than cleanliness, and especially the riddance of any dry animal or vegetable substance in the house.

C. V. RILEY.

Department of Agriculture, Bureau of Entomology,
Washington, Nov. 13, 1884.

The American Electrical Exhibition, Boston.

As will be seen by reference to our advertising columns, the date of opening this exhibition has been postponed one week, to Dec. 1. It is intended to make this exhibition as complete and comprehensive as possible in every particular, in the interest of science and education in the electrical and mechanical arts, and to present therein a comprehensive view of the recent great progress in practical applications of electricity. The building in which the exhibition is to be held, that of the Massachusetts Charitable Mechanic Association, on Huntington Avenue, is one of the finest in the country for a display of this kind, and the management is of a character which gives every assurance of success.

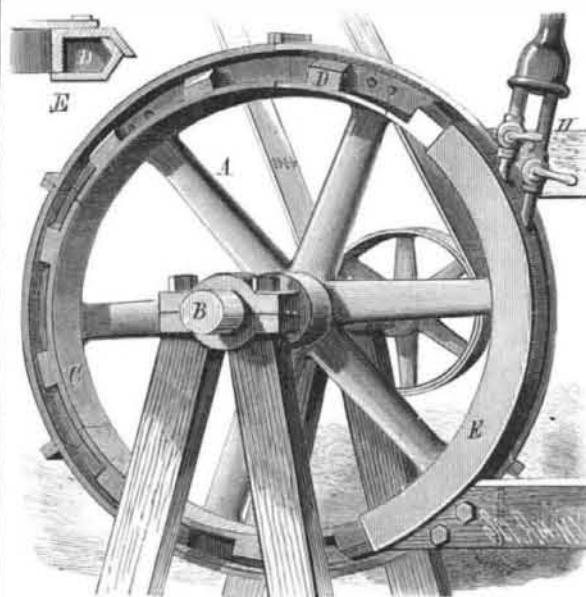
Progress of Photography.

A recent number of the *Photographic News* contains a reproduction of a photograph of the Paris express train taken by an exposure of the entire plate for one three-hundredth part of a second—a side view, while the train was running at a velocity of forty-two miles per hour. There is a slight blurring in some of the details of the picture, but in general it looks as if the cars and locomotive were standing still.

IMPROVED STEAM WHEEL.

The accompanying engraving represents a simple and effective motor, actuated by either steam, compressed air, or water, and which consists of a wheel having a hollow rim open at one side, and containing a series of pistons adapted to slide through a segmental casing fitted to the rim and pistons, and serving to confine the steam. Mounted upon the shaft, B, is the spider, A, to which the hollow rim is attached. The ring is composed of segments fitted end to end and secured together by bolts, each segment being secured centrally to an arm of the spider. That side of the rim opposite or remote from the spider arms is open, and the peripheral side is flared or beveled outward, and is only about half the width of the inner side. In the angle of the rim is secured a series of pistons, D, having V-shaped outer ends. A case, E, having the same curvature as the rim and fitted to the plane and V-shaped sides of the pistons, is provided with ears which support it in such relation to the rim as to form a closed curved chamber through which the pistons may pass.

The V-shaped outer edge of the casing, E, passes between the beveled part of the rim and the pistons, making a steam-tight joint (this construction is clearly shown in the small cut, which is a cross section through the rim). The casing, E, is provided with a double nozzle, H, each provided with a stop valve, by which the amount of steam admitted can be regulated. Steam, air, or water impinging on the pistons drives them forward in the segmental casing, E, and when they arrive at the end of the segment the steam escapes. As



LALIBERTY'S IMPROVED STEAM WHEEL.

may be easily perceived, this motor may be put up to run in either direction.

Great speed is possible with this motor, and the advantages derived from applying the power at the periphery of the wheel will be apparent.

This invention has been patented by Mr. Homer Laliberty, of Blackfoot, Idaho.

Sir Moses Montefiore.

Well done, Sir Moses Montefiore! It may now be hoped that we have heard the last of the opinion that in modern times no human life has been proved to reach 100 years. With the extending term of human life and the steady improvement in human habits, life has often seemed to reach 100 years and more. But this has not frequently been the case in persons whose history was so well known as that of Sir Moses Montefiore. He was born at Leghorn on October 24, 1784, whither his parents had gone on a business journey. His birth was duly entered in the books of the Spanish and Portuguese synagogues in Bevis Marks. It is a grand thing to live to 100 years and to be still cheerful and thankful. It is so, in the first place, for the pleasure of rebuking such skeptics as Sir George Cornewall Lewis, and in the second for the pleasure of giving all men proof that there is nothing in physiology to make it impossible for them to achieve a century of honorable and agreeable existence. We do not wish to magnify mere longevity, or to make every man believe that by any amount of thought he can necessarily attain to it. Our study of longevity leads us to think that it is generally a constitutional, and often a hereditary, matter. It is more important to live well than to live long.

"Nor love thy life, nor hate; but what thou livest
Live well; how long or short permit to Heaven."

It is in this spirit, and doubtless largely because of this spirit, that Sir Moses has attained to his 101st year. It should not be forgotten that in the last decade of it he accomplished no less a feat than a journey—the third he had made—to Palestine. And it is only by so "living well" that any one is likely to attain to an enjoyable and unselfish old age. Living well in the vulgar sense of the word is one of the surest ways of failing of this achievement. There are a few men whose powers of vitality and whose integrity of tissue are so exceptional as to enable them to almost disregard the laws of health; and their survival to a high age often leads careless observers to wrong conclusions; but there is nothing more certain than that for Jew or Christian—and Sir Moses shows how much there may be in common between a good Jew and a good Christian—the great secret of longevity is to "live soberly, righteously, and godly."—*Lancet*.

Improved Developer for Gelatine Plates.

At a recent meeting of the Society of Amateur Photographers in this city, Mr. H. J. Newton gave the following formula for a developer well adapted to bring out fully the details in a plate which has had a very short exposure:

No. 1.

Water..... 1 ounce.
Carbonate soda..... 15 grains.
Yellow prussiate potash..... 15 grains.
Sulphite of soda..... 5 grains.

No. 2.

Water..... 1 ounce.
Chloride of ammonia..... 7 grains.
Pyro (dry)..... 6 grains.

Nos. 1 and 2 are mixed, and the whole poured over the plate. Development commences within a minute, and is usually finished at the end of three or four minutes. The proportions named above are correct for an ordinary drop shutter exposure, but they are not arbitrary; they may be varied to suit different cases, as, for example, should the plate have been greatly underexposed, equal parts of Nos. 1 and 2 (with the pyro left out of the latter) may be added, a little at a time, to from three to four times the strength stated, until all the details in the shadows are brought out, without danger of producing green fog, which frequently appears from the excessive amount of ammonia sometimes used in the ordinary ammonia and pyro developer. In case of overexposure, half a grain to the ounce of developer of bromide of sodium is added, and the solution diluted with water.

Nos. 1 and 2 solutions may be kept in a more concentrated form, and diluted for use. The following are the right proportions for 10 per cent. solutions:

No. 1.

Water..... 9½ ounces.
Carbonate soda..... 430 grains.
Yellow prussiate potash..... 430 grains.
Sulphite soda..... 160 grains.

No. 2.

Water..... 9 ounces.
Chloride of ammonia..... 510 grains.
Solution of one drop of sulphuric acid in one ounce water..... 1 drop.
Pyro (1 commercial ounce)..... 437 grains.

If No. 2 does not change from a purple color to a clear yellow color within an hour after mixing, one or two drops more of the sulphuric acid solution may be added.

To prepare a developer of the proper strength with the above solutions for the development of a 5 x 8 plate which has had a drop shutter exposure take:

Water..... 6½ drachms.
No. 1 solution..... 2½ drachms.

Also:

Water..... 7 drachms.
No. 2 solution..... 1 drachm.

Mix the two, and develop in the usual way. The proportions given will be equivalent in grains to those stated in the first formula.

Mr. Newton described some interesting experiments, which substantiated very forcibly the value of the developer for instantaneous work. Two plates exposed precisely the same time, on the same object, were developed side by side, one with the developer as prescribed in the directions of the manufacturer of the plate, and the other with the above developer. With the ferrocyanide there was from a half to a third more detail brought out in the shadows, and development was completed sooner than with the prescribed developer; the negatives being more brilliant and vigorous.

Plates were shown which had been kept for some time, in which was seen the marking of the dividing mat, and a general fogging proceeding from the same cause. Mr. Newton had discovered that by adding a small quantity of bromide of sodium—half a grain to the ounce to the developer—all traces of fogging and all indications of metallic silver disappeared—the plates developing clear and free from such defects. He advised the use of the above remedy where plates affected as described were discovered. His theory of the developer was, that when the chloride of ammonia or No. 2 solution was mixed with No. 1, the chloride of ammonia was decomposed, ammonia being liberated, which, acting in conjunction with the yellow prussiate of potash and carbonate of soda, produced an extremely powerful developing agent, while the chlorine liberated from the chloride of ammonia acted or seemed to act as an agent to prevent the discoloration of the film.

Mr. W. E. Partridge showed two negatives which he had developed with the developer, which were very clear and of excellent printing quality. He was much pleased with the working of the developer. Mr. F. C. Beach stated that he had also tried the developer, with satisfactory results. It acted very quickly, kept clear, and was of a light straw color by daylight when first mixed, afterward turning to a cherry color. Free ammonia was easily perceived, showing that the action was similar to Mr. Newton's explanation.

Two negatives were shown by Mr. Beach which had had extremely short exposures; one was developed with the formula as given, and was of a dense greenish yellow color, the other by a modification consisting of the use of a sulphurous acid sulphite soda solution of pyro in place of dry pyro, as advised in No. 2. It had a clear, grayish wet-plate appearance, and, in his opinion, developed up better, although somewhat slower. In each case an equal amount of detail was brought out in the shadows. A sample of the developer was shown, after it had been used in the development of two plates and had been standing for twelve hours; it was clear, but of a sherry color.