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The Weather and its Signs.

There is no subject of more importance, and yet there is none with which men of science, and others, are so superficially acquainted, as that indicated in the above caption.

The heat of summer and the cold of winter, the rain and the snow, the thunder and the lightning, the hurricane and the gentle breeze, how many mingled associations of pleasure and grief are connected with these. Our enjoyments, yea, our very existence, it may be said, are dependent on those operations of nature, which we call *the weather*.

Sometimes, as in 1854, the clouds will refuse their refreshing showers for a long period, and over extensive tracts of country the grass withers, and the corn and wheat fields become parched and barren: the lowing kine perish for want of the water-brooks, and then famine comes and desolates many once-happy homes. Sometimes, again, the clouds will pour down their torrents for long periods, and the floods will come and sweep resistless over broad lands, carrying the crops of the farmer from his fields, and his flocks from the vales. Again, the hurricane will sometimes come on swift wing, bearing destruction in its pathway; and, if accompanied with red bolts of lightning, may consume well filled barns and storehouses, and level many beautiful dwellings to ashes. Were those weather changes governed by immutable laws, and were we well acquainted with these, we might adopt special means to meet special ends, and provide against the coming drouth, the floods, and the hurricane. Hitherto the weather has been considered fickle as the human temper, and if it is governed by fixed laws, the whole world lieth nearly in gross darkness respecting them. The sky may be cloudless to-day, and to-morrow, yea, in a few hours, the lightning and the tempest may come, and no man living, so far as we know, can predict the event with certainty.

The astronomer has watched the motions of the distant planets, has weighed them in a balance, and can tell the exact period when the moon, after a long interval, will hide the sun's rays from the earth by day; and also when the eccentric comet, after long journeys in unseen regions of space, will revisit our system again,—but he cannot positively tell the particular atmospheric changes that will occur to-morrow in the city where he dwells; and yet a correct knowledge of coming atmospheric changes would be most useful to all men.

Can such information ever be obtained? Not unless such phenomena are governed by fixed laws. Well, when we consider that the planets roll, and the tides flow, by immutable decrees, can any person doubt that the weather is governed by fixed laws? That such laws do exist, no one in his senses can doubt, and that they will yet be discovered, we have as little doubt, and it is a shame that so little has been done to discover them. We are glad, however, that something has been done, and there is a promise of something more. Various stations have lately been established in our own country for taking meteorological observations, and all the leading nations of Europe have also entered upon the same course of investigations. Such observations extending over various parts of the globe, and for a number of years continuously, will no doubt lead to astonishing results. Already, by private enterprise and keen observation, Prof. Espy and Mr. W. C. Redfield, of this city, have made valuable discoveries relating to gales and hurricanes, and the latter has laid down some practical rules for navigators, regarding the rotary progressive course of tornadoes, which have proven to be of great benefit, by teaching seamen how to withdraw from their power. The spots observed on the sun's disk, take place at regular intervals, and these, Sir Wm. Herschel asserts, affect the weather, on our globe, to such a degree, as to regulate the very price of wheat. Lieut. Maury has done much to reduce the weather changes on the ocean to a science. It is believed by Humboldt and other eminent philosophers, that the sun is the source of magnetism as well as heat, and that the vibrations of the magnet are to our globe, as the beating of the pulse to the human system.

In an article in the last number of the *North British Review*, believed to be written by Sir David Brewster, he says, "Had Hipparchus and Ptolemy made hourly observations, and had they also been made by their cotemporaries and successors in different parts of the world, we might now be predicting the weather with as much certainty as we do the planetary motions." The great number of meteorological observations now being made in various parts of the world, inspire us with hope that such a result will yet be accomplished. We hail every effort that is made to reduce "the weather and its changes" to a positive science, because, as we have already stated, such knowledge will be most useful and important to all men.

The Hughes Printing Telegraph.

"[1.] This wonderful invention, which is destined to effect a complete revolution in the Telegraph business, is now being subjected to the severest test at Boston, upon a wire upwards of five hundred miles long, and is found to realize the most sanguine expectations of the inventor and the owners of the Patent. [2.] There is found to be no practical difficulty whatever in working the instruments in perfect unison in a circuit of five hundred miles, and there is no reason to doubt but that they will work with complete success through a circuit of one or two thousand miles. [3.] Nor is there found to be the least difficulty in transmitting messages from opposite ends of the wire at the same instant of time—[4.] the two operators being thus enabled to exchange about twenty to twenty-five hundred letters per hour.

[5.] The mechanism of the Hughes machines is extremely simple, and can be manufactured for about $100 each. Mr. Phelps, of Troy, the ingénious gentleman who has charge of the invention, has, however, since seeing the machines working in a long circuit, projected several important improvements, by which, without detracting anything from the efficiency of the instruments, they can be considerably simplified and cheapened. Any child who can read will be able at one hour's practice to transmit messages with perfect accuracy, and at a fair rate of speed. We understand that the American Telegraph Company, who own the Hughes Patent, have decided to have the style of the instruments improved in accordance with the suggestions of their machinist, which will cause a delay of a very few days in introducing the invention to the public."

We copy the above from the *New York Times*. The same statement, word for word, appeared the same day in the *New York Tribune*. We have had occasion, heretofore, to comment upon errors put in circulation in regard to "this wonderful invention." We have now to make a few more inquiries.

[1.] What is the nature of this "severest test?" Where is the wire, 500 miles long, located? Is it under cover in a dry apartment? Or is it stretched on poles, like other Telegraph lines?

[2.] The successful working of a Telegraph instrument on a circuit of 500 miles, is no proof that it will operate well on a circuit of one or two thousand miles. Experience proves that beyond a maximum of 800 miles, difficulties are always encountered which augment with an increased length of the circuit. What is it that exempts Hughes' invention from the difficulties common to other electrical telegraphs?

[3.] It is an utter impossibility to send two messages, in contrary directions, over the same wire, at the same instant of time. As well might it be expected to send two streams of water, in adverse directions, through the same pipe, both at the same time. What is the object of such incorrect statements? A similar publication was made, not long ago, but we took it for granted that the meaning intended to be conveyed was that, *during the interval* elapsing between the striking of letters or signals sent in one direction, signals could be sent in a contrary direction. This is a well-known system, and was long since practically realized—probably before Hughes' invention was thought of. We repeat, two messages cannot be sent over the same wire, in different directions, *at the same instant of time.*

[4.] Does this mean that the combined labors of both operators results in the sending of 2,000 to 2,500 letters per hour? Or does it mean that each individual sends that number of letters?—making an aggregate for the two operators of 4,000 to 5,000 letters? We suppose the latter. This combined speed is less than that practiced by single operators on the Morse lines, for they send 6,000 letters per hour.

In several previous statements, it has been alleged that each operator, with the Hughes' instrument, could send from 20,000 to 25,000 letters per hour. Has the late practical trial caused a reduction of speed from thousands down to hundreds?

[5.] Here it is stated that the instrument is extremely simple and cheap, costing only $100, but that since the trial, Mr. Phelps has ascertained that they can still be considerably simplified. What will be the cost of the instruments that will be considerably simpler than those extremely simple machines, which cost only $100?

So far as we can judge, from the interested reports that have been issued, Hughes' Telegraph has proved defective, in one way or another, at every trial. Notwithstanding these facts, it is still proclaimed as a "wonderful invention;" "destined to effect a complete revolution," in Telegraph matters. We hope no one will be led to sacrifice their interests or lessen their confidence in Morse's, House's, and other Telegraphs, in consequence of the puffs that are so often appearing in our daily prints of this machine.

Recent American Patents.

Improved Carriage Clip.—By William Cox, of Doylestown, Pa.—The irons on the shafts instead of being made of single pieces, with an eye for the admission of the clip bolt, are made in two parts, hooked shaped, and when put together they clasp the bolt, thus making a connection. One of the parts is elastic. They are fastened together by means of a screw, by loosening which the shafts may be detached from the carriage. This improvement prevents rattling, avoids wear, &c.

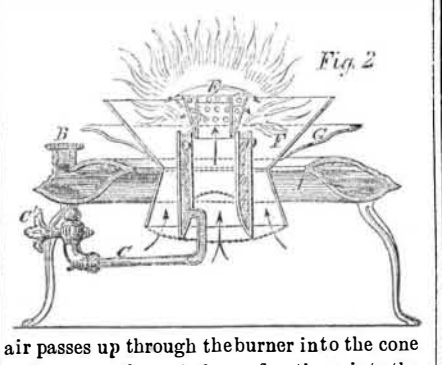
Improvement in Harvesters.—By Owen Dorsey, of Triadelphia, Md.—Consists in a peculiar method of operating the cutters, so that they receive twice as many vibrations at every turn of the driving wheels, as the cutters of the common machines. This invention, together with other improvements, embracing a novel and ingenious method of operating a series of rakes, so as to sweep off the cut grain from the machine to the ground, and leave it in regular piles, convenient for the binder, previously patented, were fully illustrated and described a short time since in our paper—No. 39, present volume. The invention is, apparently, one of value

Implement for Cutting Down Trees.—By G. C. Ehrsam, of New York City.—Consists in giving a rotating motion around the body or trunk of the tree, to a cutting blade; also, in giving to the blade a feed motion into the tree, by means of an annular rack or toothed rim, and a spiral thread. The rack or toothed rim is attached to a collar, which is fitted around the trunk of the tree, the screw thread being cut on the upper edge of the collar, and fitting in or between corresponding threads on the under side of the chisel or cutter. Power being applied the cutter revolves around the tree, and cuts inward, until the trunk is severed. This is a novel invention.

Improved Vise.—Horace B. Chaffee, of New York City.—Consists in having a supplementary jaw pivoted to the stationary jaw of the vise, the lower end of the supplementary jaw being connected by a rod with a weighted pawl. The arrangement is such that the pawl is made to catch into a rack which is attached to the lower end of the movable jaw. When the jaws come in contact with the article which is to be clamped between them, the pawl serves as a self-acting stop to the rack and enables the movable jaw to be secured firmly up against the article, without requiring the insertion or alteration of pins, as in the common vise.

Cooking with Alcohol.—By W. J. Demorest 375 Broadway, N. Y.—A few days since the inventor called at our office, bringing under his arm a small apparatus like that shown in our engraving. Within, on the wires, were a couple pans of genuine dough. Having placed the thing on the floor, he lighted the alcohol, and closed the doors. In a very short time the apparatus became hot, and in twenty minutes from the commencement we took out a loaf of thoroughly baked bread and a dish of excellent biscuits. The fuel used was alcohol, and the value consumed two cents.

The construction is such as to insure a great economy of the heat. The alcohol is contained in the hollow ring reservoir, A, being introduced through an aperture at B, which is covered with wire gauze to prevent accident. C is a pipe which conducts the fluid to the burner, D, (fig. 2.) The burner is made simply of two tubes placed one within the other, and sealed at the bottom, the space between them being filled with fine pebbles which serve to conduct and spread the alcohol. E is a hollow perforated cone placed above the burner, so as to deflect the flame, as shown. Cold



air passes up through the burner into the cone and escapes, through the perforations, into the flame, thus increasing the supply of oxygen, causing most perfect combustion, and augmenting the intensity of the heat. F G are reflectors, which throw the heat upwards into the oven and increase the temperature in that direction, while they keep the alcohol holder,