

## Scientific Museum.

## Imponderable Agents.—No. 6.

We shall this week conclude the present series of articles upon the Imponderable Agents, by considering the application of our theory to some other natural phenomena. Let it be borne in mind that we consider all of them to be similar in their nature to heat or Calorism—that we regard them as existing in all bodies in a latent state, in the same manner in which heat thus exists, and it may be easy to explain many of those natural phenomena which have puzzled philosophers of all ages. The origin of atmospheric electricity has been explained in a variety of ways, some of them simply ridiculous, yet the explanation is very easy.

Clouds are the result of the condensation of the invisible vapor of water, consequent upon the union of a warm current of air with one that is colder. Now it is evident that the same reduction of temperature which produced a condensation of the vapor, would, by that condensation, set free a portion of the latent Electrism previously combined with the vapor, hence the cloud would become charged with free electricity. It might also happen that a cloud floating in the air, until its positive electricity should be dissipated, might be afterwards exposed to the intense heat of the sun, until it should be again partially dissipated; in this case it would be come negatively electrified, and if within striking distance of the air, a stroke of lightning might pass from the earth; but we think such instances seldom if ever occur—certainly never in a storm; hence we distrust the accounts which have been given of the phenomena.

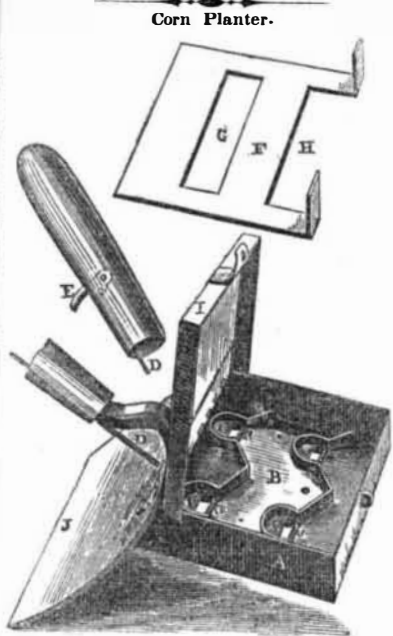
The Aurora Borealis is a phenomenon which has puzzled philosophers more than almost any other; yet, upon the principles we have laid down, its explanation becomes as easy as that given to the rainbow. All meteorologists agree that there is a strong upper current of air continually rushing from the equatorial to the polar regions. If this be true, when it arrives in the vicinity of the icebergs of the frozen zone, it necessarily undergoes condensation,—Lumenism, Calorism, and Electrism are consequently set free. The first produces the brilliant play of light seen in the Aurora Borealis—the changing colors being like the rosy hue of morning consequent upon the action of the atmosphere through which it is required to pass before reaching us; the liberated Calorism modifies the temperature of those dreary climes, and the Electrism produces those magnetic phenomena which are always the attendants of the Aurora Borealis.

The lambent play of light which is often seen in the horizon and about the edges of clouds at the close of a sultry day, is the result of a similar action. The condensation which is going on in consequence of the reduction of the atmospheric temperature, sets free the Lumenism and gives rise to this phenomena.

The cause of Gravity, too, a question on which hundreds have stumbled, and indeed of cohesion and all the other varieties of attraction, is fully explained by our theory. [See article No. 4.] The nature of Chemical Affinity has perhaps given rise to more discussion than almost any other scientific question, yet this is explained on the same principles with the others. We can safely claim at least to have offered an explanation of more of these vexed questions than has been done by any other theory.

We are willing to risk the assertion that no phenomena can be found which will militate against the theory we have advanced; if there be any we should be glad to have them pointed out to us; yet we cannot help thinking that its beautiful simplicity is after all its principal claim to consideration. It seems to us in accordance with the workings of Deity, to establish but few natural laws, and we shall generally find analogy to aid us very greatly in all researches concerning them. It was from these views we were led to the adoption of the theory we have proposed. The laws of heat were better understood than those of either of the other of these great agents, and as we perceived an undoubted similarity in their mode of existence we

were induced to apply these laws to the others. Let onward by this train of thought, and guided by carefully conducted experiments, we arrived at the conclusions we have given. C.W.S.



The cut given on this page is an illustration of J. A. Pease's Patent Seeding Hoe. A is the side, and B is the bottom of the box in which is placed the corn; C C C C are valves operated by the trigger, E, on the end of the handle; F is placed in the box upon the projections which are seen curving around the apertures, a a a a, and is intended to prevent the escape of more than one kernel at a time, the corn passing down through the openings, G H; I is the lid of the box, and J the blade of the hoe. The advantages of this hoe are a saving of labor, as all that is required to drop the corn is to pull upon the trigger, E. By its action the kernels of corn are also dropped evenly and separate. The operation is simply striking the hoe into the ground, pulling the trigger with the fore-finger of the right hand, which drops the corn, which is then covered by the back stroke of the hoe, as it is lifted from making the forward stroke. It will be readily seen that dropping the corn in the hill separate, each kernel three or four inches from the other, gives each stalk a chance for nourishment, which cannot be obtained when the kernels are dropped by hand, all in a heap; besides, with this planter there is no stooping and consequent back aches.

This is a simple and ingenious invention, and we see nothing to hinder its practicability. It is certainly worth the attention of our agriculturists, for if the seeding apparatus should not work to their satisfaction, no great loss would be involved, as the hoe would yet be left.

For further information apply to the inventor at Burlington, N. J.

## On the Disease and Preservation of the Potato.

It is now more than ten years, we believe, since what is called "the potato disease" first appeared in our country, and every year since then, although many plans have been tried to prevent it, its ravages have always been more or less manifested every season, and in none more fatally and universally than the present, excepting the terrible year of 1846, when it may be said to have been the means of depopulating Ireland of more than two millions of inhabitants. This disease has not been confined to any locality, for it has extended with more or less virulence over every country in which this useful tuber has been cultivated, consequently the cause of the disease must have been general, and a remedy for it would be hailed with gratitude by more than two hundred millions of the human race. We have published much useful information on the subject, and nothing but what was practical and sensible, and we take pleasure in laying before our readers again some new information which we look upon as valuable and worthy of being acted upon by our agriculturists. T. J. Herapath, an English chemist of celebrity, has written a letter to the "London Chemical Gazette," giving conclusions at which he has arrived after a great many experiments, respecting the cause and cure of this disease. They are as follows:

1. That the potato blight is neither directly nor indirectly caused by the ravages of any parasitical insect.

2. That it is the effect of a species of putrefactive fermentation or incipient decomposition of the nitrogenous, i. e. albumenoid constituents of the sap or cell-contents.

3. That this decomposition is either directly produced by a peculiar fungus, the "Botrytis infestans"—to which public attention has been already directed by other writers—or, what is in my opinion a still more probable supposition, the fungus referred to only makes its appearance after the fermentative processes have been in action for some time, and consequently is an effect, and not the cause of the disease.

4. That the blight has been in some measure produced by the long-continued and indiscriminate use of animal nitrogenous manure, which has over stimulated the potato plant, and has thus rendered it more susceptible of disease, and has, in fact, produced the same effect upon it that alcoholic drinks, when taken in excess, do on the human system; that is to say, it has injured the stamina of the plant, and rendered the organism more readily affected by atmospheric and other influences.

5. That animal or highly nitrogenous organic manures should be used with great caution in the cultivation of the potato, and indeed in that of all root crops; the best manure for the potato plant being the inorganic compounds, such, for instance, as those which are, or were at one time, used in some parts of the continent.

6. That the disease having once established itself, has become epidemic.

7. That it is contagious, if not infectious.

8. That the only mode of eradicating it is to restore the original constitution of the plant.

9. That this desirable result can be only brought about by introducing a complete alteration in the mode of cultivation that is adopted.

10. That the changes in question should consist,—1st, in thoroughly drying the seed potatoes, by the process now followed in some parts of Germany; 2ndly, in steeping them for a short time in a dilute solution of the sulphate of copper (blue vitriol or blue stone) of about the same strength as that used for "pickling" wheat; 3rdly, in planting them in poor, well-drained land; 4thly, and lastly, in substituting for the farm-yard manure, &c., now employed, some inorganic compost similar to those before alluded to.

In conclusion, I would suggest that the following simple experiment should be tried in storing the potato crop during the present season:—Let the tubers be stored in the usual way, but in the center of each heap or sackful let there be placed a quantity of unslacked lime, not in actual contact with the roots, but enclosed in some porous vessel—an old wicker basket, for instance—and covered over with and surrounded by, a thick layer of straw or hay. By this means the tubers will be kept dry; and as the presence of humidity in the air is a great incentive to putrefactive decomposition, one of the main causes of decay will be removed. The lime, so soon as it has become slacked, may be taken away and employed as manure; and, if practicable, should be replaced with fresh lime. The experiment I have described, it must be remembered, can be easily tried, and would cost but little even if carried out on a large scale; it cannot be productive of any injurious consequences, and will be doubtless attended with beneficial results."

The manure recommended here is that of plaster and such like substances. The experiments mentioned can easily be made and should be instituted so as to test them thoroughly.—The manner recommended of storing potatoes can be easily tried by our farmers this winter, and we hope it will be by many. It can do no harm, and will involve no expense worth mentioning.

## Medical Works.

We are in the regular receipt of six medical magazines, namely, "The Virginian Medical and Surgical Journal," edited by George A. Otis, M. D., and Howell L. Thomas, M. D., of Richmond, Va.; "The Northwestern Medical and Surgical Journal," edited by W. B. Herrick, M. D., H. A. Johnson, M. D., of Chicago, Ill.; "Nelson's American Lancet," by Horace and

Alfred Nelson, Plattsburg, N. Y., "The Scalpel," edited by Edward H. Dixon, M. D., New York City, "The New York Medical Gazette," edited by Meredith and Reese, and the "Eclectic Medical Journal," by Joseph R. Buchanan, M. D., and R. S. Newton, M. D., Cincinnati.

There are a number of other journals devoted to the medical professions—we call them professions because there are different opinions among them. We must, however, give them all the credit of great ability in their respective fields.

## Burning of the Henry Clay.

Our readers will remember the dreadful catastrophe of the burning of the Henry Clay, on the North River last year, by which a great number of persons lost their lives. After a shameful delay of eighteen months, one of the owners, the Captain, and the Pilot were tried in this city, and acquitted by a Jury on the 3rd inst. The trial lasted two weeks. Having carefully read the evidence, we cannot but say that from it we would have come to a different conclusion from that of the Jury, in respect to those who had charge of the boat.

## LITERARY NOTICES.

SCOTIA'S BARD.—(Illustrated).—This is a splendid new work, by Robert Carter & Brothers, this city; its object is to present to the American public choice extracts from the poets of Scotland, especially the minor poets of that country, of which there are not a few of great excellence, who are almost unknown to our people, such as Hector McNeil, Robert Nichol, J. Bethune, R. Tamahill, Pringle, Blair, Graham, and other worthies. The pieces and songs are selected with good judgment and great care, and are all of a religious and purely moral cast. The engravings are beautiful and numerous, the paper is superb, and the printing excellent. Edward Everett has said, "the throne and the sceptre of England will crumble in dust before the lords of Scottish song will cease to reign in the hearts of men." The work should meet with an extensive sale.

THE PRINCETON REVIEW.—The last number of this able Quarterly, for 1853, of the O. S. Presbyterian denomination, published at 205 Chestnut st., Philadelphia, contains an able and exceedingly instructive article on Education in the High Schools of Germany. It should be extensively read by our people.

THE FAMILY DENTAL JOURNAL.—Is a new monthly published by Joel Munsell, of Albany, N. Y., and edited by D. C. Estes, Dentist. The first number contains a great deal of useful information respecting the teeth of children.

"Graham's Magazine," for November, has been laid on our table by Messrs. Stringer & Townsend, 239 Broadway. It has a number of capital articles, and many illustrations of scenery in Wales, with a finely written article.

"Putnam," for November, and "Littell's Living Age," have been received; also the Phrenological and Water Cure Journals, and the North Carolina University Magazine.

## MECHANICS

Manufacturers and Inventors.

A NEW VOLUME OF THE SCIENTIFIC AMERICAN

Is commenced about the 20th September, each year, and is the BEST PAPER for Mechanics and Inventors published in the world.

Each Volume contains 416 pages of most valuable reading matter, and is illustrated with over 500 MECHANICAL ENGRAVINGS of NEW INVENTIONS.

The SCIENTIFIC AMERICAN is a WEEKLY JOURNAL of

ARTS, SCIENCE, AND MECHANICS,

having for its object the advancement of the

INTERESTS OF MECHANICS, MANUFACTURERS

AND INVENTORS.

Each Number is illustrated with from FIVE TO TEN ORIGINAL ENGRAVINGS

of NEW MECHANICAL INVENTIONS, nearly all of the best inventions which are patented at Washington being illustrated in the Scientific American. It also contains a WEEKLY LIST of AMERICAN PATENTS;—notices of the progress of all MECHANICAL AND SCIENTIFIC IMPROVEMENTS; practical directions on the CONSTRUCTION, MANAGEMENT, and USE of all kinds of MACHINERY, TOOLS, &amp;c. &amp;c.

It is printed with newtype on beautiful paper, and being adapted to binding, the subscriber is possessed, at the end of the year, of a LARGE VOLUME of 416 PAGES illustrated with upwards of 500 MECHANICAL ENGRAVINGS.

The Scientific American is the Repository of Patent Inventions: a volume, each complete in itself, forms an Encyclopedia of the useful and entertaining. The Patent Claims alone are worth ten times the subscription price to every inventor.

## TERMS! TERMS!! TERMS!!!

One Copy, for One Year	\$3
"    Six Months	\$1
Five Copies, for Six Months	\$4
Ten Copies, for Six Months	\$8
Ten Copies, for Twelve Months	\$15
Fifteen Copies for Twelve Months	\$22
Twenty Copies for Twelve Months	\$28

Southern and Western Money taken at par for Subscriptions, or Post Office Stamps taken at their par value. Letters should be directed (post-paid) to

MUNN &amp; CO.,

128 Fulton street, New York.