Then, for awhile, let us leave them and return to the land, where the parched earth and dried, but porous, rock are greedily drinking up the rain as it falls. By and by every crack and crevice will be full of moisture, and every rock will be saturated; then comes the winter's frost, and all the moisture is congealed—with congelation there is expansion, each moistened grain is forced apart from its neighbors, each scale of rock is moved a trifle more from the main mass; for a time icy moisture holds altogether, but with the thaws of spring the bonds are reft—the banks crumble away, mass after mass falls crashing from the precipice, long-weathered blocks are at last reduced to dust, and the earth is strewed with fresh particles, which are swept away in pursuit of those whose course we have already traced.

And again—

"Listen! you hear the grating roar
Of pebbles, which the wave suck back and fling
At their return, up the high strand,
Begin and cease, and then again begin
With tremulous cadence slow, and bring
The eternal note of sadness in."

Those waves are at this same work of change, and, to the ear of the geologist, their "note of sadness" is a wail over the land in time to be no more, the land they themselves are doomed slowly, but surely, to destroy. The pebbles are but fragments of the cliff around in process of destruction; adamantine granite, or soft chalk, or crumbling clay; low-banks, or mighty walls of rock, all alike must yield in the end to the incessant battering of the breakers. It is only a question of time. The foundation of the cliff, be it what it may, is slowly sapped; if its material be soft the process of destruction is rapid, and every storm stains the waves for miles and miles with the *débris;* but if the rock be hard, the siege is a protracted one; deep caverns are formed in the cliff, and in every hollow the waters ply their ceaseless task, until at last a portion undermined topples over on to the shore beneath. A pause in the attack occurs, the breakers have to demolish the fallen mass which for a times serves as a breakwater to protect the cliff; slowly, but surely, the largest of the fallen masses are ground down and broken up—the smaller fragments are hurled hither and thither in the heavier storms, until, by constant attrition, they are renduced to more manageable size when they are tossed by the sport of lesser waves. Smaller and smaller they become, and more and more rapidly does the constantly-increasing friction tell upon them, until we hear their grating roar as every swell rolls in upon the beach. But their destruction is not yet complete; each time the pebbles are flung in and sucked back they lose a portion of their substance, the pebbles become fine gravel, the gravel is worn done to sand, which is finally swept away by the tides and currents, to be mingled with that which has been brought down by the river. And when the hungry waves have devoured the fallen mass, they resume their attacks upon the cliff, and thus by slow degrees the land is swallowed up by the sea.

"Why tell us all these common-places? Each one of us has seen or read of these things." Granted, good reader! but have you *thought* of them? have you carried the argument of these commonplace facts out to its legitimate conclusion? For the last three thousand years these phenomena have been going on beneath the gaze of generations of philosophers—yet it is only within the last century that geology has sprung up to interpret their meaning in the Book of Nature. And we venture to say that there are thousands of educated beings at this day who have never thought to ask themselves what becomes of the earth washed away from the hillside. Enough for them if it rested for a few years on its onward course in the plain beneath, where grow their crops; they care not to note that this mud is the wreck of the land they live on; much less do they dream that its particles are

"The dust of continents to be.'

Emerson, we believe, somewhere says, "Most persons do not see the sun—at least they have a very superficial seeing." And so it is with the rain and the frost and the waves; we see them, it is true, but how few of us recognize the work they are engaged upon, or endeavor to estimate its magnitude!

THATCH MADE BY SEWING MACHINES.

The difficulty of getting farm laborers capable of putting a good, durable, and waterproof thatch on a rick or building, will, in all probability, disappear, if the following method be adopted: Construct a sewing machine, with two motions, and two needles sufficiently large to carry strong tarred yarn; and the needles must be long enough to go through the required thickness of thatch. The straw is fed to the machine on an endless belt, and the needles, working alternately, stitch the straw into heavy matting. This is rolled up, and applied to the roof, or the rick, until it is covered. The sheets of matting should overlap each other as shingles do, and may be fastened to ricks or stacks with wooden pegs, in the usual way. Fifteen hundred square feet can be made in an hour, and can be applied without the aid of any skilled labor. If properly made and carefully taken off the ricks, it can be used for two or more seasons. This method is simple, and, after the first cost for the machine, is cheap. It is particularly advantageous in use where straw is scarce, as it wastes nothing. And the portability of the thatch in rolls is another recommendation, as thatching frequently is wanted for haystacks at a distance from the homestead.

THE size of the tracts of land under tea-cultivation will be readily conceived when we say that an acre, on which are 1,200 plants, will yield about 1,200 pounds of dry tea yearly. Four pounds weight of green leaves are required to make one pound of dry tea.

OBITUARY.—HON. DAVID LYMAN.

Died in Middlefield, Conn., on Tuesday, Jan. 24th, Hon. David Lyman, a prominent manufacturer and most worthy citizen, whose public and private labors have rendered his life one of continued usefulness, and who will be long remembered as one of those "whose works do follow them." Mr. Lyman had built up an extensive manufacturing business, in the washing and wringing machine line, in Middlefield, and through his efforts in the State Legislature that place became an incorporated town. Towards the close of his life, he became greatly interested in the Air Line railroad enterprise, and his efforts in its behalf are thought to have brought on the attack of typhoid fever of which he died, after a brief illness. In all his social relations, Mr. Lyman was greatly esteemed. His business talents and enterprise were of that rare kind which yield to no obstacle, and his success in life is a brilliant example of what perseverance and integrity can accomplish, when coupled with sound judgment and good sense. He had amassed quite a fortune in his business, and it is said his life was insured to the amount of $80,000.

CRYOLITE AND ITS USES.

There is only one place in the world where this stone is found, and that is in Southern Greenland, at Ivigtuk. On account of its resemblance to frozen water it was called by the early settlers, "ice-stone," or in Greek, "cryolite," just as a magnesian stone, from its resemblance to the foam of the sea, was called meerschaum.

In 1850, Professor Thomsen, of Copenhagen, analyzed the rock, and found that it could be decomposed by lime by fusion or by boiling, and he must thus be regarded as the father of the cryolite industry. He found that pure cryolite was composed of

Fluorine	54·2
Sodium	32·9
Aluminium	12·9
	100·00

After complete decomposition, 100 pounds of the mineral will yield 24 pounds of alumina and 44 pounds of soda—both anhydrous. Large quantities of cryolite are now sent to this country and Europe, and are worked up for the following purposes:

1. Sulphate of alumina. also called concentrated alum, because it contains 14 per cent alumina, against 11 per cent in the ordinary crystallized alum.
2. Hydrate of alumina, as a basis for the manufacture of salts of that oxide.
3. Crystallized and caustic soda.
4. Metallic aluminium.
5. Cryolite fluorspar as incidental product, used as a patent flux.
6. In the manufacture of white glass.
7. Cryolite, oxide of zinc, and quartz for artificial marble.
8. Hot cast porcelain.
9. Hydrofluoric acid.
10. In the analysis of minerals.

It will be seen from the above that the Greenland stone is capable of extensive uses, and it is to be regretted that other deposits of it have not been found in more accessible regions.

A Warning to Inventors.

The New York *Tribune* of the 25th ult., utters the following warning:

"All who have business with the Patent Office or any of the Departments at Washington are warned that they are surrounded by "agents," who do not hesitate to borrow the names of M. C.'s and others to adorn the circulars wherein they spread nets for the unwary. Many of them are arrant swindlers; others simply inefficient and bankrupt, so that money sent them is simply thrown away. Don't mind their begging, hiring, or stealing some M. C.'s frank—that doesn't help the matter a bit. A correspondent suggests that all such agents should be required to procure a license. We are not sure that this would do any good, but we throw out the suggestion."

Annual Meeting of the Society of Engineers and Associates.

The annual meeting of this association was held on the evening of January 26, at No. 9 Lafayette Place, New York. The meeting was designed to be a social reunion only, and no business was transacted. A large number of the most eminent engineers and manufacturers of steam-engine work in New York and vicinity were present. At 9 P.M. the gentlemen sat down to a splendid collation, and the evening was passed in a very pleasant manner. The number present was smaller than would have been the case had the night been less inclement, but notwithstanding the storm, the efforts of Messrs. George H. Reynolds, President, A. S. Cameron, Vice-President, and M. B. Smith, Secretary, with the cooperation of other members, rendered the meeting a complete success.

Cheap Hydrogen.

A correspondent asks the cheapest way of hydrogen gas. We believe the method of Du Motay gives in the SCIENTIFIC AMERICAN, August 27, 1870, to be the best.

Take quicklime, slake it, let it cool, and crumble into a dry hydrate; then mix it with charcoal, coke, or peat, and heat in a retort. The hydrate of lime (slaked lime) gives up the water that was used in slaking it, and becomes quicklime. The water is decomposed into hydrogen and carbonic acid, and these two gases can be separated by passing them through water, or the carbonic acid may be economized by employing it in the manufacture of bicarbonates. The quicklime can be again slaked and used as often as required. In a small way, hydrogen can be made from water by means of zinc and sulphuric acid.

The Effect of Watered Stocks.

Rufus Hatch, of this city, publishes a circular in which he discusses the subject of watering stocks by the process so successfully carried out by Vanderbilt in connection with his railroads. Referring to the capital stock of the Lake Shore and Michigan Southern Railroad, which has been raised from $3,300,000 to $8,750,000, Mr. Hatch declares with great force that "if the State and General Government should impose a tax of one cent a bushel on grain it would create a revolution, and yet Commodore Vanderbilt taxes the producers ten cents a bushel, that an eight per cent dividend may be paid on his watered stock."

This is a very clear illustration of the character of the imposition now being heaped upon the heads of a patient and long-suffering people. These railroad monopolists get possession of some important line of communication, and no sooner is this accomplished than they set about to double the stock, and then, in order to make the earnings pay on the increased stock—which often has no real basis of value—the fares and tariffs are also largely increased, while the people bow their necks in submission. The public would almost mob the man found guilty of watering their mess of milk, but these railroad stock waterers and tax increasers do worse things and escape serious censure. The people seem rather to enjoy the thing than otherwise.

Sulphurous Acid.

The *British Medical Journal* reports the publication, by Professor Gamgee, of a new and convenient mode of using sulphurous acid, the disinfecting qualities of which are universally known. Cold alcohol, the Professor asserts, will dissolve three hundred times its own volume of the gas; and a fluid possessing such powers of concentration cannot but be as efficient as it is portable and convenient. A few drops of the sulphuretted alcohol in the bottom of a trunk, will disinfect any clothing that may be put into it; and fungous germs, such as must in casks, etc., may be destroyed by the use of a very small quantity. The Professor does not tell us the price at which it can be produced; but it must be a very low one, if the new preparation is to supersede permanganate of potash (Condy's Fluid).

Novel and Convenient Mode of Using Lunar and Other Caustics.

The extreme danger of conveying infection on the point of a frequently used pencil of caustic, will recommend this simple device to the medical profession: Take a bundle of splints of wood, similar to lucifer matches; dip the ends in melted caustic, separate them, and allow them to dry. A fresh match of caustic may be used for each application, and a fine caustic point is thus always at hand. Lunar and carbolic acid, and all the solid caustic bodies, may be used in this manner, of which the original suggestion appeared in a London newspaper.

ILL EFFECTS OF HYDRATE OF CHLORAL.—Certain ugly facts concerning the fashionable sedative, hydrate of chloral, will probably diminish the frequency of its use. We have the high authority of Dr. Habershon for the statement that its action on the pneumo-gastric nerve produces bronchial and pulmonary congestion. A fatal case recently happened in Guy's Hospital, London. Another English physician, Dr. Shettle, of the Royal Berkshire Hospital, stated, in his recent lecture to the Reading Pathologic Society, that formiate of soda is frequently produced in the blood by the use of chloral, and that, from its tendency to decompose the blood, it will render hemorrhage very dangerous. Obstetric practitioners will not fail to notice the last fact. As a hypnotic, there is much to be said in its favor. It is powerful and safe, equalling opium in its pain-relieving power. But like all anesthetics, the continued use of it is sure to be hurtful; and if it aid congestion it were better for a patient to suffer weeks of sleeplessness than to habituate himself to its use.

PHOSPHATE OF LIME AS A MORDANT.—Dr. Reimann has lately communicated the following, which will correct a very erroneous impression as to the use of phosphate of lime as a mordant: A thick, sirupy solution of phosphate of lime (boneash) in hydrochloric acid having been recently recommended as a mordant to be used after a previous sumaching of the goods, I find that, according to my experience, the phosphate of lime solution is altogether superfluous, since a sumaching with 4 lbs. of sumac to 20 lbs. of cotton is of itself a sufficient mordanting to fix aniline colors excellently. The application of the phosphate of lime solution as a mordant for cochineal colors upon cotton, is equally superfluous.

SPONGIO-PILINE is the name of a very ingenious contrivance, recently introduced abroad, which may be used either as a poultice or as the means of fomentation. It consists of wool and small particles of sponge, apparently felted together, and attached to a skin of india-rubber. It is about half an inch in thickness. It will be found of great value and convenience for either of the purposes referred to. It retains heat for a considerable time, and vinegar, laudanum, camphor, hartshorn, etc., can be, by its means, placed on the skin, accompanied by heat and moisture, much more readily, and with greater cleanliness, than by means of ordinary poultices.

CHEESE, MILK, AND BUTTER contain caseine in large proportions. This important member of the organic chemical world is a powerful counteragent to lead in the human system, and may be freely taken in all cases of lead poisoning with great benefit. Lead colic, an unfortunately common disease among workmen employed in white-lead factories, may be entirely prevented by the free use of pure milk as a daily beverage.

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