

that the greatest quantity of Ammonia is contained in rain water. Some that had fallen on the roof of the Paris Observatory yielded four milligrammes in the French litre; while the water of the rivers does not contain 1-10th milligramme in the same quantity. That snow gathered after lying 36 hours on some fields, yielded ten times more Ammonia than that gathered immediately after it had fallen." That the softness of rain water is referable to Ammonia has long been admitted; but, until the appearance of my papers, it was conceived that this quality was acquired from the atmosphere. It is, therefore, much to be regretted that no reference is made to the relative proportion of Ammonia in rain and snow water, or such information could not have failed in throwing much light on one of Nature's most important operations—a deficiency, it is hoped, the *savans* on this side of the Channel will make good during the coming winter; and it is also to be hoped they will be induced to inquire into the cause of the startling fact, that snow 36 hours' old should be so much more Ammoniacal than that just fallen—it being reasonably to be inferred that this increase is not acquired from the soil, since rain, in its passage through the earth, parts with its Ammonia at all periods of the year. The course I suspect to be purely electrical; and if it should so happen that the Ammonia of the just-fallen snow corresponds in amount to that of rain, we shall have acquired evidence of the very simple means by which the Creator ensures to the northern regions a supply of this essential to the production of nitrogenous matter. This is unquestionably the decomposing era of the earth's present cycle in the creation; and, in reference to the second paragraph of Mr. Ennor's letter of the 3rd inst., I beg his attention to the fact, that Ammonia, like Lime, is a solvent of the mineral kingdom, and that snow is mostly deposited on the tops of hills or mountains, where its ammonia and water would have a levelling influence. Reckless of the consequences, we persist, year after year, in adding to the earth's surface by combustion, at least 60,000,000 tons of carbon, thereby causing the evolution of thousands of millions of tons of gases that cannot fail in producing a most powerful influence on both the atmosphere and earth; and cholera, influenza, potato, &c., disease, deluges of rain, and "strikes" are the fruits. Surely, then, the evidence afforded by M. Boussingault will induce at least an enquiry.

FRANKLIN COXWORTHY,  
Author of "Electrical Condition."

Maresfield, Sussex, Oct. 17, 1853.

LOCOMOTION BY COMPRESSED AIR.—The obstacles which have till now opposed the employment of the expansive force of compressed air will, it is thought, disappear, through the process of M. Juliene, which consists simply in compressing air by means of an hydraulic press. By this method, M. Juliene substitutes for the solid piston—which a grain of sand may alter, which the slightest irregularity in the pump would throw out of action, and which becomes heated by friction—a liquid piston, not less incompressible than the other, filling always exactly the space in which it moves, be it regular or not, and acting by progression on a resistance so exactly calculated, that this proportion, although increasing, is always in relation to the force to be overcome. The air is thus compressed at 30 atmospheres in iron bottles, which are about 4 millimetres thick. It is perfectly preserved under this pressure; and it was with a bottle of this kind that M. Juliene put in action a small vehicle, carrying two persons, and moving with great rapidity.—*American Journal*.

ARTIFICIAL PRODUCTION OF DIAMOND POWDER.—Some considerable sensation has been produced in the scientific circles of Paris by the announcement of the artificial formation of diamond powder. M. Despretz has made two communications to the Academie des Sciences upon carbon. In these he states that placing at one, the inferior, pole of a voltaic battery a cylinder of pure charcoal (its purity being secured by preparing it from crystallised white sugar candy), and at the superior pole a bundle of fine platinum wires so arranged that the charcoal was in the red portion of the electric arc, and the platinum in the violet,—he found the carbon volatilised, and collected on the platinum wires in a changed state. In these experiments the current has been continued during a month in activity, and the powder collected on the wires has been found to be sufficiently hard to polish rubies with great rapidity, and when burnt it left no residue. M. Despretz asks himself,—Have I obtained crystals of carbon, which I can separate and weigh, in which I can determine the index of refraction and the angle of polarisation without doubt? No; I have simply produced by the electric arc, and by weak voltaic currents, carbon crystallised in black octohedrons, in colourless and translucent octohedrons, in plates also colourless and translucent, which possess the hardness of the powder of the diamond, and which disappear in combustion, without any sensible residue.—A similar result has been obtained by decomposing a mixture of chloride of carbon and alcohol by weak galvanic currents. The black powder deposited was found to possess equal hardness with that which was sublimed, and rubies were readily polished by it. A few years since, graphite and coke were formed from diamonds:

we now appear to be advancing near towards the conversion of graphite and coke into diamonds.

ARTIFICIAL PEARLS.—AN OYSTER, or rather a water muscle, in which the artificial pearls are formed by the Chinese, has recently been sent to this country. These pearls are only obtained near Ning-po, and until lately very little was known of the manner in which they were formed. The *Hermes* steamer, however, on a late visit to that place, was able to obtain several live ones, in which, on being opened, several pearls, as many as 18 or 20, were found in the course of formation. The one sent only contains simple pearls adhering to the shell. It appears they are formed by introducing small pieces of wood, or baked earth, into the animal while alive, which, irritating it, causes it to cover the extraneous substance with a pearly deposit. Little figures made of metal are frequently introduced, and when covered with the deposit, are valued by the Chinese as charms. These figures generally represent Buddha, in the sitting posture in which that image is most frequently portrayed. Several specimens have, it is said, been preserved alive in spirits, and others slightly opened, so as to show the pearls. The society has reason to believe that it will shortly receive a more detailed statement, accompanied with specimens, in reference to this interesting fact.—*Journal of the Society of Arts*.

DEEP SEA SOUNDINGS.—A brig of war, bearing the stars and stripes of the United States at her masthead, is now lying in the Southampton waters, and engaging the attention of practical and scientific men. She is called the *Dolphin*; and her object in the Atlantic is to procure the data desired by Congress for the use of Lieut. Maury. She left Chesapeake Bay 3 months ago. Her first task was, to strike a line from that bay to Rockule, on the west coast of Scotland, and take soundings at intervals of 100 miles along it. From Rockule, a second line was run to the Azores; a little to the north of which a ridge, 6,000 feet in height from the ocean bed, was discovered,—the soil on this elevation being a fine yellow chalky substance, mixed with fine sand. From the Azores the explorer made a westerly cut,—everywhere finding bottom and everywhere noting the set of tides and currents, and the temperature of the water. The *Dolphin* next steered for the Three Chimnies, where she found bottom at a depth of 1900 fathoms. The greatest depth of water was found in lat.  $41^{\circ}$  to  $43^{\circ}$ , long.  $51^{\circ}$  to  $56^{\circ}$ ,—where the line fell out 3,130 fathoms. In a few days the *Dolphin* will have completed her outfit,—when she will make for the western side of the Azores, and pursue this series of important discoveries. The *Dolphin* is admirably fitted up for her work, and her sounding apparatus is the finest ever seen in Europe. Hitherto a continuous series of soundings in deep water has been rendered difficult by the fact of each sounding costing the ship a fresh line; however strongly the line was made, when once out it has never been recovered. The Americans have invented a mode by which the weight on touching the bottom is detached,—so that the line may be drawn back with ease. We borrow from the *Daily News* an account of this ingenious contrivance:—"A hole is drilled through a 64 lb. or heavier shot, sufficiently large to admit a rod about three quarters of an inch in diameter. This rod is about 12 or 14 inches in length, and with the exception of about  $1\frac{1}{2}$  inch at the bottom, perfectly solid. At the top of the rod are two arms extending one from each side. These arms being up-n easily acting hinges, are capable of being raised or lowered with very little power. A small branch extends from the outside of each of them, which is for the purpose of holding by means of rings a piece of wire by which the ball is swung to the rod. A piece of rope is then attached by each end to the arms, to which again is joined the sounding-line. The ball is then lowered into the water, and upon reaching the bottom the strain upon the line ceases, and the arms fall down, allowing the ball to detach itself entirely from the rod, which is then easily drawn in,—the drilled portion of which is discovered to be filled with a specimen of that which it has come in contact with at the bottom."—With this apparatus, aided by the hosts of assistants whom Lieut. Maury's visit to Europe will doubtless bring to the great work of exploration, the ocean bed may become in time as well known to us as the bed of the Thames or that of the Hudson.

NEW DIBBLING MACHINERY.—Mr. Thomas Revis, of Stockwell, has just specified, under Letters Patent granted to him, for "improved single-seed drilling or dibbling machinery." In this specification, he sets forth the following description of his apparatus, which has been tried, and found to effect the desired object so well that single grains of wheat have been deposited in the ground, and produced giant straw, and ears corresponding thereto both in number and size:—"My invention consists in, or has reference to, improved drilling or dibbling machinery for planting seed singly, or one at a time. The droppers for dropping the seed singly are made to act by means of a lever, or lifter, having its head, or handle, near to the handle of the dibble, and by this means the mouth of the droppers will be opened just wide enough to deposit a single seed, whilst by this arrangement of the handles, the operator can hold and work the dibbler with the same