in the abandonment of this idea. Certain forms of crinoids, as Pentacrinus, Democrinus, and Bathycrinus, are peculiar to great depths, and form in our seas numerous and widely separated colonies.

A recent species of Pentacrinus, a genus largely represented in the lias and oolite, was brought in 1755 from Martinique to Paris, and described by Guettard. At long intervals rare specimens from the Caribbean Sea have been seen. On the 21st of July, 1870, Gwyn Jeffreys, while dredging from the Porcupine at a depth of two thousand metres, in longitude 39° 42′, latitude 9° 43′, procured a score of specimens. It would seem as if their excellent state of preservation would prove whether they were free or fixed. Thomson, who studied them, believed that the animal lives slightly attached to the soft mud, changing at will its abode, and swimming by means of its feathery arms. On the Talisman, the trawl was twice dropped to depths occupied by this Pentacrinus; and we decided, contrary to the prevailing opinion, that these animals live firmly fixed by the backward-curving tendrils, which grow from the terminal joint of the rod. These hooks, as it were, solder themselves to the bottom, and can be detached only by breaking.

We have attempted to show in our plate the character of the bottom of the sea on which Pentacrinus lives, as it was shown by the dredging made opposite Rochefort, at fifteen hundred metres. Pentacrinus Wyville-Thomsoni in considerable numbers covers the ground, forming a kind of living meadow, from which rise large Mopseas. The rocky ground was covered with beautiful corals, resembling flowers with the calyx opened; and in the midst of this living world moved hitherto unknown crustaceans (Paralomis microps A. M. Edw.) whose carapace was ornamented with fine spines. Actinometra (crinoids which become detached from their rods after full growth) were floating in the water, or fastened themselves for short intervals by their tendrils to the branches of the Mopseas. Pentacrinus and Actinometra were of a beautiful grass-green, the Mopseas of an orange color, the corals of a deep violet, and the crustaceans of a mother-of-pearl whiteness. This profusion of life, and this prodigality of colors, at fifteen hundred metres below the surface, certainly form two of the most wonderful facts which have been reserved for the naturalist to discover.

In 1827 Thomson found attached to Comatulas (free crinoids with no attaching rod) a Pentacrinus of small size, which he described under the name of Pentacrinus europaeus. This animal seemed to possess, in all the details of its structure, the characteristics of the fossil Encrinus and of the modern Pentacrinus. Ten years later Mr. Thomson, when again examining a small crinoid, was much astonished to see it suddenly abandon its rod, and begin to swim with its arms for some time, and then to reattach itself by its tendrils. Continuing his studies, he saw the arms, originally branched at the summit, gradually assume the character of the arms of Comatula; and he was gradually brought to the knowledge that Pentacrinus europaeus was only a young Comatula.

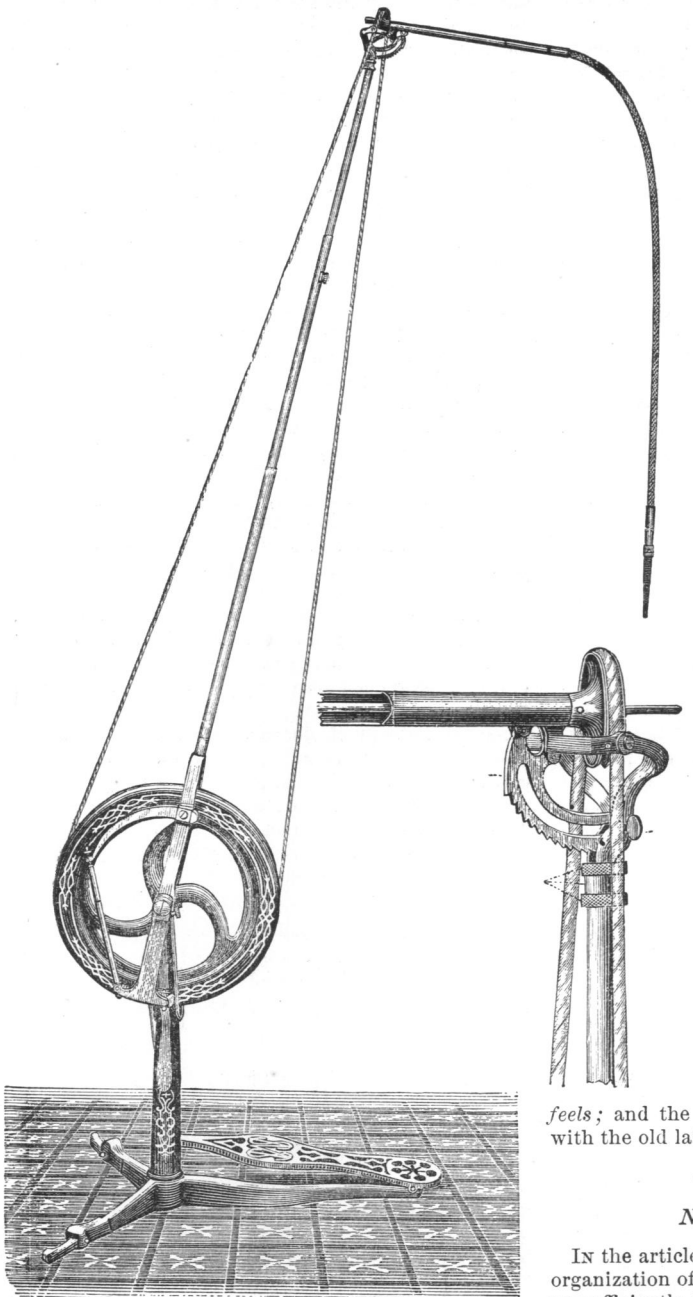
Comatulas are numerous at certain points on our coast, where they are found, according to their age, gracefully clinging among the sea-wrack, or sheltered under the pebbles accumulated on the reefs. Several species descend to a considerable depth, one being found abundantly at twelve hundred metres. At some places we saw Comatulas existing by thousands, and representing almost exclusively the animal life of the locality.

RECENT PROCEEDINGS OF SCIENTIFIC SOCIETIES.

New-York academy of sciences.

June 3. — Mr. G. F. Kunz read a paper on a new process of cameo or intaglio gem-engraving, in which he said, that, from his first experience in the dental chair, he received the impression that the machine used in tooth-drilling would be the proper one for engraving and cutting on stones similar to cameos and intaglios. In the engraving-lathe at present used, the tool revolves on a horizontal shaft, to which are attached tools of different size and shape; the Italians and French using a screw-thread, while the English make use of a lead head, which is simply fastened in by the revolving of the wheel. A set of tools or drills often numbers over a hundred. Mr. Kunz exhibited the S. S. White improved dental engine, which is somewhat similar to the other machines in use, and may be described as follows: A driving-wheel eleven inches in diameter is set in motion by a foot-treadle; and from this wheel the power is conveyed, by means of a cord of fibre or thin leather, to a pulley-head. To this is hinged a pivot-rod, extending from it as a flexible arm, which conveys the power to the drill through a steel or iron head-piece. The main advantage lies in the revolving-point being allowed so much freedom of motion by the flexible wire arm, that it can be placed in any position desired, and held in any position on the work instead of the work being held on it. Any revolving-tool that can be placed at will on the work, in any desired position, gives the desired result; and this can be attained by a flexible driver, as in this machine. It might, however, be improved. 1°. The points or drills should be made of softer iron, to hold the particles of diamond-dust more readily. 2°. The tool should be arranged to work more steadily, and thus overcome any possible jar in very fine work, although it has drilled a series of holes in a metal plate, which no engraver with the old lathe could place more closely. 3°. The driving-wheel should be heavier and larger, to attain more

power and a greater rate of speed. 4°. The wheel and treadle should be placed under a bench, and the



THE WHITE DENTAL ENGINE, APPLICABLE TO GEM-ENGRAVING.

flexible arm passed through its centre, in front of the workman. A machine of this kind might be used for all rough grinding-out; or, for some of the fine work, a diamond-pointed tool, the diamond being the amorphous carbonado. This would in all respects be a miniature rock-drill. Mr. Kunz had no doubt that with this tool, the diamond being properly secured, any stone softer than diamond could be engraved much more readily than with any known drill; and that for engraving on diamond it could also possibly be used, since the amorphous diamond is really harder than the crystalline form of this mineral. As engraving on this gem has been much more in vogue of late than ever before, its use in this field, also, would be required. It could at least make the round furrows, such as in ancient times were made by the bow-drill, and afterward by the diamond or emery-stone point, and then polished out by the finer particles of these minerals. One great advantage of this method is, that the very pulsation, as it were, of the artist, will be conveyed to the drill, thus imparting to the stone whatever artistic feeling he may possess, instead of the mechanical, unartistic effect so common with the work of the old machine. By this method, should it be given a fair trial, not only will the style of work be likely to be greatly improved, but a rapidity of execution will be attained that has never been accomplished by the old lathe-machine, even by the best workmen. Who would think of a sculptor holding the statue against the chisel, or of a violinist rubbing the bow with the violin? And yet the present mode of engraving is quite correctly illustrated in these apparently extreme examples. The conveyance of the pulsation through such a machine as this is really the same as the inspiration which a musician or an artist conveys to his instrument, his brush, or pencil: it is what he *feels;* and the graver cannot convey this pulsation with the old lathe.

NOTES AND NEWS.

In the article in our number of last week, on the organization of an international scientific association, no sufficiently distinct reference was made to the committee appointed by the American association. Dr. Minot has called our attention to the omission, which we endeavor to make good by the following statement. The committee referred to was appointed in 1882 at the Montreal meeting of the American association