by promoting the parturition of the female, and then that of the male, and placing the eggs in the conditions most favorable for their development; he had thus the happiness of seeing the breeding of a certain number of trout, and noticed their preserving under the venter a part of their eggs, and living during some time at the expense of the rest.

But this was not all. it was necessary to provide for the ulterior preservation of the young animal by a practicable process. The obscure fisherman, who hardly knew how to read, did not yield before this difficulty: he set at work observing again; he placed some frogs in the basin containing the young trout, judging with reason that the spawn of these batrachians would be a resource for the spawn of the trout; he gave them also bits of veal as they grew larger. But as these aliments, though successful, would be too expensive, Rémy, not knowing of the existence of the sciences of botany and chemistry, contrived a process based on one of the great laws of nature. He planted some herbivorous fishes in the water which contained the carnivorous trouts, and from this moment he had no more trouble with the raising of his "elèves." In the course of six years, with very limited means, Remy, who was in the interval associated with Gehin, had bred several millions of salmon and trout. After he had been for six years thus preparing the living food for his fishes, M. Haxo, made known his results to the Academy of Sciences, and the government ordered a full investigation into Remy's process. Pisciculture was established in the basins of the canal of the Rhone, on the Rhine at Luningue, in the department of the Upper Rhine, not under the direction of Remy or of Gehin, but of M. Coste, who had succeeded in appropriating to his own profit the labors of the modest fisherman. A spirited dispute ensued, which continues still, and has engaged several independent pens, as MM. Haxo, Victor Meunier, the journal *La Presse*, the Abbe Moigno, etc., who defended the rights of the oppressed against the despoiler. Justice will be done; Remy will receive a pension as a national recompense.

The following is briefly the method employed in this new branch of industry. Through M. Millet, Inspector of Forests, the processes are become so simple that they can be executed by the most inexperienced hands. The Administration of the waters and forests, is now organizing a regular service for effecting a repeopling of the waters of navigable streams. The apparatus of M. Millet is placed in the hands of the fish-keepers, and the living alimentary material will be manufactured, so to speak, at all points. The details which follow are taken from a work yet unpublished on Millet's process, which I have seen in the course of its preparation.

Two boxes of lead, 1 meter long and 1 to 2 decimeters broad, and 5 to 6 centimeters deep, are disposed in steps in the fire-place of his apartments. Some frames or sieves of hair, flags or metallic network, etc., contain the eggs. According to the species, these eggs are immersed to a depth of one or several centimeters. These frames may be withdrawn or replaced at will, by means of tringles which support them by pressing against the side of the box. A reservoir of water, furnished with charcoal and gravel, is near by, and turns into the box, drop by drop, filtered water, furnishing about 2 or 3 litres of water per hour. The water is thus always in motion, and it is only necessary to fill the reservoir each morning to keep the apparatus in action without supervision.

The total expense of the establishment is but 6 francs. With 35 litres of water for six weeks, M. Millet has bred about 25,000 trout or salmon, and he expects to breed some millions of different species in the course of the year.

In order to obtain the eggs from the female, M. Millet employs nearly the process used by Remy and Gehin. He makes the eggs to pass out only as they are mature, leaving an interval of two days between each operation, this consisting in passing the finger lightly over the surface of the abdomen of the female. Another process consists in enclosing the female in a cage with a double bottom, formed of bars rather far apart; the females drop their eggs by organic contraction, and aid themselves in it by rubbing against the bars. The eggs fall upon the frame. The males are then introduced, and often they fecundate at once the eggs, being incited to it by the presence of the female and the odor of the eggs; but if not so, it is provoked by slight friction, as in the ejection of the eggs from the female.

Another result of interest is, that M. Millet has caused trout and like species which live in running streams, to breed in standing waters, by causing some aquatic plants to grow in the water. The species which I have seen employed, was the *Lemna minor* (duck weed.)

This experiment calls to mind the *organic equilibrium* of Mr. Warrington. It is known that this chemist has for several years kept in a glass vase full of water, a small aquatic menagerie, consisting of a *Valisneria spiralis*, several fish, (species of Gasterosteus), and some aquatic univalves, without injuring the purity of the water. It is seen that the carbonic acid and azotized products given out by the animals are absorbed by the plant, which converts at the same time the carbonic acid into oxygen. The debris of the plant serves as nutriment to the snails whose eggs in their turn feed the fish.

The process of M. Millet has been put in practice in several places near Paris, and repeopling the rivers has been already begun. Contrary to the prescription of Remy and Gehin, who nourished the young for some time on the spawn of frogs and coagulated blood, after the pouch under the venter had disappeared, M. Millet commences the distribution of them whenever this period has arrived. The future will show whether the method just mentioned is wise, or whether it will not be necessary to return to the process of Remy, which consists in "sowing" herbivorous fishes in the streams populated by the trouts. M. Millet is still engaged in his labors, and we shall endeavour to keep our readers acquainted with the progress of this new branch of industry.

On the Origin of Coal-Fields.

By Sir Charles Lyell.

The force of the evidence in favour of the identity in character of the ancient coal-fields, with the deposits of modern deltas, has increased, in proportion as they have been more closely studied. They usually display a vast thickness of stratified mud and fine sand without pebbles, and in them are seen countless stems, leaves, and roots of terrestial plants, free for the most part from all intermixture of marine remains, circumstances which imply the persistency in the same region of a vast body of fresh water. This water is also charged like that of a great river with an inexhaustible supply of sediment, which had usually been transported over alluvial plains to a considerable distance from the higher grounds, so that all coarser particles and gravel were left behind. On the whole the phenomena imply the drainage and denudation of a continent or large island, having within it one or more ranges of mountains. The partial intercalation of brackish water-beds at certain points is equally consistent with the theory of a delta, the lower parts of which are always exposed to be overflowed by the sea even where no oscillations of level are experienced.

The purity of the coal itself, or the absence in it of earthly particles and sand throughout the areas of very great extent, is a a fact which has naturally appeared very difficult to explain if