watching them with due care, and repeating the experiment till I was weary, an account thereof was written to Mr. Needham; who having by trials of his own found out the cause of this bad success, advised me to steep the grains before I should attempt to open them; on doing which I was very soon convinced of his veracity, and entertained with the pleasing sight of this wonderful phenomenon. Since then I have made experiments, at different times, with grains of the same parcel, without being disappointed so much as once; and particularly on the 4th day of July, 1747, finding some of the parcel left, I soaked a couple of grains in water for the space of thirty-six hours; then believing them sufficiently moistened, I cut one open, and applying some of the fibrous substance to the microscope in a drop of water, it separated immediately, and presented to my view multitudes of the *anguillæ* without the least motion or sign of life. But experience having taught me, by former trials, that they might notwithstanding possibly revive, I left them for about four hours, and then examining them again, found much the greatest number moving their extremities pretty briskly; and in an hour or two after, they appeared as lively as these creatures usually are. Mr. Folkes and some other friends were witnesses of this experiment."

There can be scarcely found a more interesting microscopical object than these vibriones. Mr. Baker's account of the phenomena they exhibit is as accurate as possible. Curious as the whole matter is, and well as it has been described by him as witnessed almost a century ago, modern microscopists have been as much surprised as he was by these sights, which any person possessing a tolerable instrument may readily enjoy.

The vibriones did not, however, escape the notice of Mr. Bauer, who read before the Royal Society in the year 1822, an account of his "Microscopical Observations on the Suspension of the Muscular Motion of the *Vibrio Tritici*." His excellent drawings of this insect are in the British Museum, where, by the kindness of the gentlemen to whose care these valuable specimens of art are committed, they were examined by the author. Some of them have since been used by Mr. Curtis, to illustrate his observations on the various insects affecting the corn crops, published in the sixth volume of the Journal of the Royal Agricultural Society. He considers that the vibrio belongs to the class *infusoria*, and believes with others that its eggs are taken up by the sap, and are hatched in the stalk and germen. When the grains containing the vibriones are sown with good seed, they burst in the spring, and set the animalculæ at liberty. It is stated by the best entomologists, that the eels sometimes reach the size of a quarter of an inch in length, and that, at a short distance from the extremity of the tail, they have discovered an orifice whence the eggs issue in strings. The young worms are coiled up in them, as seen in the drawing. Mr. Curtis says, "the eggs come forth in strings of five or six together, and are detached in water: the young worms can be seen through the transparent skin. In about an hour and a half after the egg is laid in water, the young worm begins to extricate itself; which it took one of them an hour and twelve minutes to accomplish." When largely magnified the head of a vibrio is easily seen, and its curious formation may be observed. It is furnished with a sort of proboscis capable of contraction or extension, like the tubes of a small telescope. The eggs being laid in water, unquestionably facilitates their being taken up by the roots into the interior of the stem; whence the young ones find their way, as soon as hatched, into the nascent ovule, before the appearance of the young ear. Although the larger vibriones which lay the eggs after coming out of the bursting cockles reach the size just mentioned, those contained in the grain are exceedingly minute; these are so small, that forty or fifty thousand are computed to be sometimes gathered into the soft stringy mass of a single ear-cockle. The large ones die soon after laying the eggs, while those occupying the infected grains retain their capability of exhibiting signs of active life after they have been immured for years in their dark and confined receptacles. Kept for six or seven years, and treated as Mr. Baker directs, they will sometimes exhibit considerable powers of motion. It is almost impossible to decide how this vitality can be preserved, but it has been attributed by some writers to the glutinous matter which has been noticed as still remaining in the ear-cockle. Still this is nothing more than a conjecture. To examine them effectually, the observer should soak the cockles in tepid water for about a couple of hours before they are divided: they will then generally be found very lively, and may be kept in that condition a good while in a little water. Indeed, it is possible to preserve them in this way for several weeks, and keep them ready to show: but if the person to whom they are to be exhibited has never seen them before, the best way is to take them at once from an affected grain, lest so incredible a circumstance as their coming from such a source should be doubted. They are rarely met with in any grain except wheat. In some parts of the kingdom, this disease prevails considerably, while in other parts it is scarcely to be met with at all. Probably the best remedy would be to soak the seed in water sufficiently warm to kill the vibriones, which cannot stand a high temperature; but it must not be hot enough to destroy the vitality of the good seed. The author has frequently shown them to farmers, and witnessed their extreme surprise. One individual, having viewed them with astonishment, met his milier in the street—"You," said he, "may fancy you know a good deal about corn, but you little know what you often grind;" and it would be well most certainly for those who are conversant with this principal portion of the food of man, if they were better acquainted with its real properties and with its diseases.

PRINCIPLES AND EFFECTS OF DRAINING.

Continued from page 98 of Newcastle Farmer.

Draining prevents the injurious effects of the stagnation of water. It does not, of course, and cannot, diminish the quantity of water which soils receive from the atmosphere; but, besides rapidly drawing off excessive supplies of it, and averting some most mischievous effects which an excess of it produces upon climate, soil, and vegetation, it prevents a malign chemical transmutation of its own properties from stagnation. The running water of streams is, in general, free from the excrementitious refuse of plants, and charged with carbonic acid, saline solutions, and comminuted alluvium; and it, in consequence, acts beneficially, for some time at least, upon fine and nutritious herbage, and occasions all the rich and luxuriant vegetation which is well known to characterize irrigated meadows. Even water which wells up in the form of springs from the bowels of the land is, in numerous instances, so highly charged with carbonic acid and saline matters as to act nutriently upon many fine and useful land-plants; and, generally, when it has an opposite effect, and produces the same kind of mischief as arises from an excess of surface water, it really ceases to be proper spring water, and is converted by the local peculiarities of soil and level into water of saturation. But stagnant water, whether from rain, from canals, from pent-up streams, or from repressed and smothered springs, is, in all instances, destitute of the carbonic acid and the alkaline mixtures which nourish vegetation, and more or less charged with vegetable excrementitious matter which is injurious to cultivated crops. No horizontal current passes across a collection of it to carry off its solutions of vegetable excrement, or to spread it out in a succession of surfaces for aeration; but, on the contrary, a slow ascending current rises vertically through it, occasioned by evaporation from the surface—a subordinate descending current falls perpendicularly downward, occasioned by a lower temperature below than above; and the consequence is, that the roots of plants immersed in it, instead of being fed with aqueous solutions of all the valuable gases of the atmosphere, are steeped and sometimes almost drowned in a liquid which presents them with scarcely a particle of nourishment, and which is drugged and polluted with accumulations of vegetable excrement. All stagnant water, no matter how limpid, possesses more or less of the disgusting insipidity which indicates the absence of carbonic acid; and very many specimens of it possess a