Agent, to whom their contributions shall be delivered when withdrawn from the exhibition.

Prizes for excellence in the various departments of the exhibition, will be awarded under the direction of capable and eminent persons.

With this statement the Directors solicit the co-operation of the productive intellect and industry of their own and other countries.

THEODORE SEDGWICK, *President.*

AGRICULTURAL INSTRUCTION FOR THE JUNIOR PAUPERS IN THE CLONES WORKHOUSE.

(Continued from page 356.)

The greater part of our common vegetables were introduced into England in the reigns of Henry VIII. and his daughter Elizabeth, though many of them had been known previously in Switzerland and some of the other countries of Europe. Since that period they have all passed through infinate stages of improvement in the course of cultivation. The wild cabbage, from which all the numerous cultivated kinds are derived, is a little, obscure plant, with a few pale-green leaves, growing on our sea coasts. The field beet can scarcely be distinguished, in the natural state, from the class of common weeds. The carrot and parsnip, in the same condition, produce small, spindling roots, so bitter as to be unfit for human use. The wild potato and turnip can hardly be identified with their descendants of the same species, with which cultivation has now rendered us familiar. While, as regards the cereal grains, if we are to believe that they exist at all in the natural state, the same inventive genius of improvement is known to have effected changes upon them still more extraordinary—changes of character amounting to little short of a total renovation of species. It was not, however, till long afterwards—some hundreds of years—that much attention seems to have been paid to the physiology of our most useful vegetables; and some of the opinions of the older agricultural writers are so much out of the ordinary course, as to excite our surprise that ever they should have obtained a place on the records of public opinion.

So late as the seveneenth century it was the general idea that plants derived their food solely from water; and some of the most succesful improvers of vegetable physiology, in the beginning of the eighteenth century, were zealous advocates of this theory. The first great step in the right direction was made, about this period, by the French chemists, in which they were soon followed by those of the German states. Until very lately, the analysis of the vegetable principles was almost entirely overlooked by the British chemists. Davy, Priestly, and above all, Hatchell, were the first who directed their attention to the subject; and now, within the last fifty years, the appearance of this branch of chemistry has been almost entirely changed, and brought to the state which the chemistry of minerals has acquired. This department of science, too, in its relation of agriculture, has been cultivated, within our own times, with a precision and success never before attained. Priestly in England, Saussure in France, and other distinguished chemists on the Continent, had all investigated the subject, with immense labour and ingenuity, though with results very uncertain and unstisfactory. Saussure drew up a copious table of the organic principles of the different farm crops from his own experiments. Boussingault, shortly after, constructed another from analyses of the same plants, grown on his own estate.

The conclusions of these philosophers would lead us to believe, that plants are entirely dependant on the soil for their nourishment. To this principle Schrader conceived there were insuperable objections. Having analyzed the seeds of the grain crops, and ascertaining the exact portion of organic matter which each contained, he made them grow in a medium which could not furnish any earthy ingredients, and he found that they yet contained less or more of earth; some of them even more than had existed in the seed from which they were grown. Similar results were obtained by Braconnot, and Einhof. These chemists analyzed a large number of plants from a calcareous soil, which contained little or no matter, and found that they yet exhibited a considerable portion of silicia; while others which had grown on a soil that yielded no traces of lime, were found to contain no less than sixty-five per cent. of that earth. Schrader, therefore, argued, that the organic constitutents of plants were not referrable to the soil, but to some process of vegetation not known. This theory obtained him the prize essay of the Berlin Academy, in 1800. The authority of Schrader, however, was by no means sufficient to set aside the conclusions of Saussure—that the proportion of organic matter in plants is, at least, considerably influenced by the nature of the soil in which they grow—while his own theory, though it is not opposed to the result of the hypothesis, that the earthy matter had not been taken up from the medium in which the plants grew, is yet manifestly defective in ascribing its formation to the agency of a principle, the existence of which he cannot prove, and admits he does not know. In fact, the very experiments of Schrader, had he attended to the circumstances in which they were made, should have been sufficient to show the imperfection of his deductions.

In all experiments upon growing plants it is obviously impossible to guard against every channel, by means of which foreign substances may have access to them, while under examination. And there necessarily, too, elapses so long a period between the first operation and the final result, that the chain of consequences cannot always be very clearly observed; in this respect there is a peculiarity and a difficulty in