Year.	Acres.	Old Duty.
1840	44,805	34,091
1841	45,769	146,159
1842	43,720	169,776
1843	43,156	133,431
1844	44,485	140,322
1845	48,058	158,008
1846	51,948	242,929
1847	52,328	215,805
1848	49,232	212,416
1849	42,798	79,791
1850	43,127	233,393
1851		130,055

Excise Duty on Hops...	0	18	8	per cwt.
1840—5 p. cent additional	0	0	11 6-20	"
	0	19	7 6-20	per cwt.

HORTICULTURE.

THE SCIENCE AND PRINCIPLES OF GARDENING.—NO. II.

ORGANS AND PARTS OF PLANTS.

II.—ROOTS.

The root is a very important organ of the plant, serving to fix it in the ground, or whatever else it may grow upon, and is the medium by which it obtains nutriment from the soil. Roots are divided into numerous branches, and are devoid of leaves or scales upon their surface, and they gennerally descend more or less deeply into the earth, according to the nature of the plant and soil, so as to avoid exposure to light. A knowledge of the functions of the root is of the utmost importance to the successful cultivation of plants in general.

Roots may be regarded for practical purposes, either as fibrous or simple; and according to their capacity and disposition to form numerous little branches, will the plant that possesses them, be either easy or difficult to transplant. Trees or plants that have the habit of producing simple roots—"tap-roots" as they are usually called—are among the most uncertain to remove, unless they are transplanted young, when they will often be all the better for some purposes if they have the tap-root shortened, and are thus compelled to throw out side rootlets. The whole of the cabbage tribe are of this description. Other kinds of plants are thrown much sooner into fertility by one or several removals, because the reduction of the roots checks any propensity they may have to form superfluous wood and foliage. This is the case with most fruit-trees, and with many flowering plants.

Roots spread themselves, either horizontally or downwards. Some plants have a natural leaning to either the one of the other of these habits, and should be planted in deeper or shallower soil accordingly. But, in general, those which have a great depth of earth to grow in will be most luxuriant; while such as have their roots necessarily kept near the surface of the ground will be more fruitful and productive, as shall be hereafter explained.

In very poor sandy or gravelly soils, and especially in pure sand or gravel, the roots of plants have an interesting tendency to multiply themselves, and produce a profusion of fibres; as if for the purpose of picking up nutriment from a greater multitude of quarters, when it becomes more scanty. They likewise, in such positions, occasionally form small tubers on the roots, apparently to enable them to lay up moisture in themselves, against the occurrence of a particularly dry period. The former of these facts is instructive as well as pleasing, for it indicates that shrubs or trees reared on a light, poor, and shallow soil, will have the greater quantity of root-fibres, and thus be best fitted for transplanting. We have recently observed, however, with some astonishment, that trees planted on mere sand-hills, near the sea-coast, form scarcely any fibre, but send down long succulent roots to an immense depth—evincing a wonderful power of adapting themselves to circumstances; for, if they were merely to make lateral fibres in such a spot, like the more humble herbaceous tribes, they must soon perish; whereas, by striking down so deeply, they have the means of obtaining constant moisture in the driest weather.

III.—SPONGLETS.

At the top of every root or root fibre, there is a growing succulent point, like a piece of half formed wood, which botanists call the spongiole or spongelet, and which is the medium by which the great bulk of the plant's nutriment is imbibed. This spongelet, which is just an extension of the half elaborated sap or pulp before it is hardened, is extremely tender, porous and absorbent, and is paler, more fleshy, and transparent than the older parts of the roots. It takes up water and other liquids, and immediately conveys them throughout its substance as a sponge does. It will receive nothing but liquids, though it does not reject any thing they may have in solution. This is a fact of considerable importance, for it shows that whatever is intended for the food of plants, must be capable of being easily removed to a liquid state. Manures, therefore, or chemical applications, must either be readily reducible by water, or be rendered so by the addition of some acid or other ingredient.

As the spongelets play so very essential a part in the growth or sustenance of vegetables, it should always be a leading object to preserve and multiply them, where vigorous development is desired, or to lesson their number in case the plant is becoming too exuberant. In removing some plants, therefore, if balls of earth are attached to their roots, a large portion of the spongelets will remain uninjured, and they will thus experience a less decided check; or, if the increase of the plant's subsequent capacities for enlarging itself be sought, transplantation, with its necessary destruction of many spongelets, will produce a tendency to throw out a far greater number, and thus give the means of future extraordinary growth. It is pretty generally known, that most vegetables possess the power of renewing, and indefinitely multiplying their root fibres, on which the spongelets are situated, wherever these get severed or removed. At the same time, the reduction of the number of spongelets will often,