

number of hands for gathering them can only be obtained in particular localities. This country, however, ought at least to supply its own wants, instead of importing large quantities, as has been hitherto the case, from the United States. Whether the British market will offer sufficient inducement for our farmers to raise hops for exportation, is a matter at present purely problematical. The contemplated extinction of the excise laws and duty would probably place hops in the same category as corn—open to a free competition with all nations; yet the low prices that have been obtained of late years in England for this article, seem to warrant no encouraging expectation of our being able to engage in a profitable exportation.

The soils best adapted to the growth of hops are such as are deep and rich in organic matter, resting on moist porous subsoils; yet they must not be wet, as that is a condition the most unfriendly to this plant. The hop delights in a soil containing a large per centage of lime—usually termed calcareous—on a dry alluvium, where the subsoil is kept cool and moist by a running stream, the hop will luxuriate. It is of importance that land intended for hops should be deeply cultivated and cleared of weeds previous to planting. It would be useless to attempt to grow hops on exhausted land without the best cultivation and heavy dressings of rich farm yard manure.

Having properly prepared the land by repeated ploughing and harrowing, the next thing is to mark out correctly at regular distances the hills or spaces where the cuttings are to be planted. This is a matter of considerable importance, as when hops are planted in straight rows at right angles with each other, not only is the cultivation by the plough or horse-hoe, rendered more easy and effective, but what is also of equal or even of greater moment—a regular supply of light and air is enabled to reach the growing plants. The hills should be from 6 to 7 feet apart. To mark out these spots accurately take a long line made of strong string and at every six or seven feet, according to the distance determined on, fasten a feather or a piece of coloured worsted. When the line is stretched out, short sticks are to be inserted in the ground under these marks, which thus denote the exact place in which the plants are to be placed. It is difficult to give precise verbal directions as to the "setting out" as it is termed, but stretching the line in opposite directions near the centre of the field a square consisting of a number of sticks may be formed, and by careful attention, the whole of the field may be then marked out before beginning to plant. From ten to twelve hundred hills will stand upon an acre.

Planting should be done as early in spring as the

season will admit. Cuttings should be obtained from young plantations, and each cutting ought to have two joints of buds, and should be planted in as fresh a state as possible. Three or four cuttings should be planted by means of a dibble in each hill, within the circumference of 12 or 15 inches, the earth well pressed against the plants. The application of dung, unless thoroughly mixed with the soil, is not to be recommended for planting in, as in dry weather it would tend to retard rather than promote the vital energies of the plant.

As soon as the vines (vines) get about two feet high, they must be tied to short poles previously fixed in the ground by means of a sharp iron crow bar. In the second year poles of a larger size will be required—two or three to a hill. It is frequently found injurious to the strength of young hops to use too large poles the first and second years.—The circumference of poles, as well as their length, should be considered in adapting them to the strength and capabilities of the soil and plant. In this country, cedar, in point of form and quality, is the best wood for hop-poles, which may be cut from 14 to 16 or 17 feet long, according to circumstances. It is most desirable to use poles of a pretty uniform length in the same plantation, otherwise some plants will be shaded by others and the demand upon the roots will be unequal.

In case of springs or stagnant water, under-draining to sufficient depth to dry the land is in hop grounds absolutely essential. Water furrows should be made on the surface before winter sets in, which will very much facilitate the exit of water in spring. Hops require frequent manuring, farm yard-dung being the most available kind in this country.—Lime applied occasionally to soils not naturally rich in that mineral will be found highly beneficial. It is a principle in hop-culture, as in all row crops that the ground be frequently stirred during the period of growth, and kept perfectly clear of weeds.

ON THE APPLICATION OF SCIENCE TO AGRICULTURE.

NO. IV.

COMPOSITION OF SOILS.

It was stated in a previous paper, that soils generally have been formed from the abrasion of the rocks on which they repose. This is the case in regard to the earthy matter of soils, which has been produced by the action of water, air, frost, &c., upon the subjacent rocks, causing a disintegration or crumbling down of previously existing materials. Extensive accumulations, however, called *drifts*, are frequently found on the earth's surface, bearing evident marks of having been washed down or other-