

about 3 feet above the hops when the kiln is loaded. This will create additional draught towards the cowl—not a thing to be sneezed at in a foggy morning in September. (1) As to the shape of the kiln, that is utterly immaterial; the distance from fire to kilnhead, the great distance from kilnhead to cowl, the uprightness of the cowl, the draught-pipes (introduced by us into Canada 30 years ago), causing a free circulation of the air from below passing through the hops, constitute the greatest improvement imaginable. In a word the main object in hop-drying, as in drying malt, is to cause the greatest quantity of heated air to pass through the hops, and drive the moisture out at the cowl, without any excess of heat.

If we remember, Dr. Ure, in his volume on Arts, Manufactures, &c., gives a plan of a *Hop Oast* or kiln—we cannot find a copy of this valuable book of a later date than 1843, or we would have given an engraving as an illustration. However, the Township kilns may be copied as far as they go, only altering the dimensions as to height from fire to kiln and from kiln to cowl. We really earnestly beg your attention to this point as many a good sample of hops is spoiled by its neglect.

Heat of Kiln.—Kilns of the kind just described will take a bushel of hops to the square foot. The heat should never exceed 120° F., and to regulate it, take a common thermometer and pass it through the hop until the bottom reaches the cloth, with a small stick attached by a piece of string to the semi-circular piece of iron wire which is found on all metal-cased thermometers, to mark its position.

A large stove, burning either wood or coal, will answer every purpose, but we strongly recommend a sheet-iron pent-house over the stove to spread to heat, and to prevent the fire being too fierce at that part of the kiln head immediately above it. A kiln on the plan we have mentioned should dry off two loadings of hops in 24 hours; which, supposing the kiln to be 20 feet by 12 feet would give, at 1 bushel per square foot each kiln-load, 600 bushels a day. Don't over dry; if a few hops remain clung, or sticky, the heat of the others will dry them in the room where they are put when they come off the kiln. If you are doubtful on this matter, throw the whole lot into a round conical heap: the undried hops will roll down the outside of the heap and can easily be removed. Never pack your hops until they are cool: hops packed hot never drain well from the boiler, i. e. they retain a much larger amount of the worts; a serious matter to the brewer, as both time and value are lost.

Hops are sufficiently dried when the strig, or stalk, will snap. To dry hops well: a moderate heat at first, say 90° F., gradually rising in temperature, till at the end, when the kiln is finished, the thermometer on the cloth indicates 120° F.

Hop-packing.—Here, hops are always trodden into the bags; a hole is generally made at one end of the cooling-room, with a frame and curb raised about a foot above the level of the floor; a round hoop being first fastened in at the top of the bag, it is let down into the hole, the hoop resting on the curb, which being less in circumference than the hoop prevents it from slipping down. The bag being thus slung, a man gets in, and being supplied with hops by a boy or girl,

treads them down as compactly as possible. When full, the hops are down in with stout twine.

In England the chestnut is considered the best wood for poles. In Kent in which county four-fifths of all our hops are grown, the seed of the Spanish chestnut is sown on well cultivated light soil, and the crop is very profitable—18 feet poles of this wood are worth \$12.00 per hundred. Larch comes next in value, and white birch and alder last of all. Here, prices will vary as to locality, but Mr. Paouad, an extensive dealer near St. Hyacinthe, told us some years ago that large quantities of poles are being sent off to Ontario. As several people wished to hear from us on the subject, of course we have told them all we know, and all we can gather from others. *Lance's Hop farmer* is the only authority; this cannot be found in Canada, and even if it were to be had, no book-work can give any idea of the practice to one who has never seen the plant cultivated by a first rate grower. We end with what we started with: Leave hop growing alone; there are plenty of acres in cultivation already.

P. S.—Our Worcestershire friends would have a right to be very angry with me were I to omit to state that in that county is produced a very mild delicate flavoured hop—the quantity produced, however, is small. The North Clays of Nottingham, on the other hand, yield a strong, coarse hop, only fit for such blood-red abomination as the ale they drink in the Potteries. We tasted something like it 30 years ago, before the arrival of Mr Harris in Montreal, when the beer was—ergh!

"The farina, which in the course of drying falls through the cloth, is a valuable article, and is termed *hop-dust*; it is scarcely less valuable to the brewer than the hops themselves, if care is taken that no particle of fire fall into the kiln-pit to injure it, and that it be frequently removed therefrom. One pound of hop dust is equal to four pounds of hops. In porter or common beer a small portion might always be used without injury. It is about one-fourth the price of hops." *Livesque on Brewing.*

HARROWING TO KILL CROP WEEDS.

Several years ago a representative of *The Farmer* while attending institutes in Northern Minnesota, laid great stress on light harrowing in spring after the crop had been started, as a means of killing annual crop weeds. Many farmers across the line have since acted on the suggestion and the following letter in the *Dakota Farmer* from L. A. Safford, Kelso, N. D., gives his experience and opinions regarding this year's results from harrowing:—

"Farmers here harrow more grain each year, now that they have learned the advantages resulting from it. The best time, I think, is when the grain is coming up, that is as soon as it may be worked without covering the grain. If the soil bends the grain down and covers it, not much of the covered grain will grow. If the land has been spring plowed, or disced, greater care must be taken, and a very slanting toothed harrow is better. We harrow both soft and hard ground, when the grain is coming up, with common harrows, with upright teeth. The grain does not get bent when very recently above the ground, it is too stiff to get bent down then. It would be well perhaps to harrow before any comes

up, but I like to delay the working that there may be a little more time between the last cultivation before seeding and the next one. It is very seldom that the harrows pull up much. The loss is likely to be by covering and bending the grain down. Unless a very bad job has been done, the grain will shoot out so much more that at harvest time it will be thicker than grain not harrowed. Excepting the early harrowing the grain will look badly, which is discouraging before farmers have learned the advantages. I harrowed all of my grain, excepting where I sowed grass seed with the grain. Have harrowed some, during many years, but not nearly all, till last year. Last year I am sure I raised one-quarter more where I harrowed, having left bulks unharrowed, so that I could test. My whole crop of wheat last year was 21½ bushels per acre, this year 29½. The season this year being wet, I do not think the harrow helped as much as in dry seasons. I got more this year per acre than last year, because the season was better. My few tests show an increase this year of about one-sixth, by the harrowing after seeding. The dirt mulch obtained by the cultivation, is supposed by many, especially by the best farmers and experimenters, to be of great benefit in dry seasons. Probably the greatest good got by cultivation in a wet season, is by keeping the ground nearly clear of weeds. I stop seeding to harrow as the grain is coming up, if the ground is not too wet. With a four or six horse harrow it is but little work to harrow many acres and puts back the seeding but little. I am sure the early harrowing does the most good. I harrow wheat, barley and oats only, but think I will try flax and millet. I drill my grain and, of course, it is all deeply covered."

Mr. Stafford might have made his case more clear than is done by the above letter. First the press drill to put in the seed at an even depth, then harrow as the grain is coming through with very light harrows, and if the dose is repeated in a week the results will be still more thorough. If the land has been properly firmed down, as by first rate summer-fallowing the previous season, there is no fear that the young grain will get buried by the harrowing, if the harrow is not too heavy. Only those who see the average crop delivered at an elevator can have any idea how the land is being exhausted by growing one crop of grain and another of pig weed on the same land every year. Harrowing in spring at the right time, and in the right way, would kill millions of weeds in crops. (1)

SNOW ROADS.

The experiences of the past week in this vicinity, recalls the fact that a large number of valuable horses were spavined or otherwise more or less seriously injured during the winter of 1892, by turning out into the deep and drifted snow for meeting teams. Creamery patrons, who must go in all weather and all conditions of the roads, were special sufferers, and it is more especially for their benefit and comfort that we once more call attention to the system of winter road making which has been successfully tried in portions of Vermont and New Hamp-

(1) Senator Guérin, by our advice, harrowed and rolled his grain in 1886, and won first prize at Sorel. His neighbours said he was "bien bête" for doing so, but he was not.—Ed.

shire. As soon as a deep snow has fallen, or the roads are drifted, the district pathmaster starts out with two teams hitched to a heavy harrow having a spread of eight or nine feet.

He proceeds along one side of the track to the end of the district and returns, thus harrowing down a strip 16 to 18 feet wide. Following the harrow comes a heavy roller of the same length (8 or 9 feet) drawn by two teams, or more if necessary, and the harrowed snow is rolled down to a solid mass. This is repeated as often as is needed.

The result is a fine, solid winter track, say 13 feet wide, without pitch-holes, admitting at all times of the easy and safe passage of loaded teams. This method is worthy of being remembered and put in practice anywhere that a good winter road is a necessity.—Ed.

THE FEEDING VALUE OF POTATOES.

A large proportion of this year's potato crop will have to be disposed of in other ways than for culinary purposes. Fortunately, almost every farm has a market of its own.

The winter feeding value of all dry, bulky fodder crops is very dependent on a supply of turnips or other vegetables. The average quantity of water in a Swede is 89 per cent; of carbohydrates, 7 per cent; of albuminoids, 1.4 per cent; of fats, .03. The average in the potato is 75 per cent. of water, 20 per cent. of carbohydrates, 2.2 per cent. albuminoids, and fats, .03. Casually observed, a ton of potatoes contains nearly three times as much starchy matter and nearly twice as much albuminoid; consequently the analytical feeding value of the potato is far more than twice as great as that of Swedes. In actual practice, however, the analytical value of green fodder crops is not the only factor to be considered. The water contained in green crops is analytically exactly the same as pure water from any other source; but in some unexplained way it acts more beneficially on an animal. Take, for instance, a rich pasture on which cattle fatten in summer without any outside assistance, then try to feed animals on the hay from the same pasture, supplying the water in the bucket instead of in the form of natural juices, and a far different result is obtained. The animal will not starve, at the same time it will not fatten, no matter how much hay and water are given it. Yet, analytically, water is the only constituent lost in the practice of haymaking. "I don't need to grow turnips now, I've got a windmill," remarked one individual who had fallen into the erroneous notion that his way of furnishing stock water would equal Nature's plan, as found in the succulent turnip. Treating from the other side of the question, the carbohydrates, albuminoids and fats can be supplied more cheaply in the form of cereals and other concentrated foods than from potatoes; but the value of the extra succulence of the potato diet more than makes up for the deficiency in constituents. Says W. J. Maiden in "The Potato in Field and Garden":

"The full value of potatoes is not obtained unless they are cooked. In the case of sheep, large quantities of raw potatoes produce scours; in pigs and horses, indigestion. It is our personal experience to have had to feed large quantities of potatoes which have been injured in one way or another, so

(1) Really worth attention.—Ed.