

## A NEW SYSTEM FOR DRYING HOPS.

Something for Hop Growers to Think About—Drying by Steam Heat—Its Advantages, Etc.—A Proposition to the Yakima Hop Growers' Association.

EDS. THE RANCH: Progress is always more or less hampered by the skepticism of the unthinking follower of the methods established by our forefathers, and the hesitancy to leave the well worn rut, and take up with the untried, until driven to the improvements by popular opinion or sharp competition. It has been so since the beginning of time. Samuel B. Morse, with his invention, required the most indomitable will to carry it beyond the line of theory to that of practicability, in the face of the skepticism of that day, and few men there are but would have given up in despair. Now the world would be in a quandry to know how to get along without the electric telegraph.

Now, I want to present some of the objectionable points to the present system of drying hops, with the hope that I may be able to overcome them.

First of all is the great danger from destruction by fire, which, to the the poor man, just beginning, often means bankruptcy.

Second—The high rate of insurance necessarily following.

Third—The difficulty of keeping the heat of the kiln at an even temperature, especially with inexperienced or careless firemen; and the damage following fluctuating temperature.

Fourth—The large amount of fuel necessary to dry the hops, which is quite an item in this part of the country.

Fifth—The unavoidable damage done to the hops by frequent handling and stirring. Very few practical dryers are able to place a 24 foot kiln without bunching in spots, and it is absolutely necessary to get a kiln placed evenly throughout in order to avoid spotting; also hops should go to the press with as little breaking or crumbling as possible. A kiln should never be "tread."

Sixth—The expenses of drying, which are greater than they should be.

In order to overcome, or, at least, to modify these six objections, I will begin by building a kiln for a 15-acre yard as follows: Foundations only four feet from the ground, size 24x24; six foot walls; sixteen foot rafters to six foot square ventilator in center; ventilator seven feet high, with center-balanced blind transoms on four sides near the top, and all lathed and plastered. On the joists, which are 2x6, I will lay 1½ inch pipe, with 3-inch coil, or elbows, over the entire floor, and connect this coil by a main seventy-five or a hundred feet from kiln to a steam boiler, and dry the hops by steam heat. There will be a valve in the main, at the kiln, that will enable the dryer to turn into the coil just the amount of steam necessary to give

the required heat—a low temperature at first, and gradually increasing, but never diminishing until the hops are dry. About 200 degrees can be obtained, but that heat will never be required. A reliable thermometer should be placed on the coil within the kiln, where it can be seen at all times from the outside, through a pane of glass.

About a three-horse-power boiler would be ample for generating the steam for one kiln, and should be placed under cover, or in a little house for the purpose, and in the same boiler house place on the ground a sheet iron cone stove without bottom, and connected with the kiln by a 4-inch sheet iron pipe, then diverging in four or five smaller perforated pipes placed under the joists and coil to distribute sulphur fumes, the sulphur pan being placed in the cone stove in the boiler house.

To outfit a dry house of two or more kilns, a larger boiler would be necessary, and a larger main to run them by the several kilns to the last one, and connected with each coil by a valve not in the main, but in the coil.

Now, I have overcome objections One, Two, Three and Four, as I have removed all danger from fire by taking all need of fire from the building, and pipes heated by steam will ignite nothing. I have therefore lessened the rate of insurance; the amount of fuel consumed will be about one fifth required by the furnace system. The variation of twenty lbs. of steam in the boiler for a short time would not affect the heat in the pipes very materially, yet the boiler should carry eighty lbs. of steam, as nearly as possible, and any one who can work an injector or inspirator can run the boiler.

To overcome the fifth objection I will construct two sets of trays, six or eight inches deep (not over eight) each one large enough to hold one box of hops. These trays will have wire screen, raised bottoms placed one inch above the bottom of side and end boards, like a raised bottom of a berry box, as the trays are to be placed one on top of another, and it is necessary that the bottoms do not rest on the hops of the one below. I make two sets for the reason that while a kiln is on, another kiln may be filled from the field boxes, thereby allowing for less than one half the present number of boxes to do the field work. In these trays, by reason of their shallowness, the hops will lay up loose and permit the heated air to pass up through a greater amount than when spread in bulk thereby accommodating at least one half more hops in a kiln at one time and they will never "bank." The trays are placed on the kiln four five or six deep, by two men, and are made to fit closely; when the trays are dried the trays are removed in a few minutes to a cooling room, and immediately replaced by another set of green hops. Two men ought to do the

work of changing a kiln within thirty minutes; then the trays of dried hops can be carefully emptied, without breaking a hop, or better still, in my opinion, empty into the press and bale them. The expense of these trays will not greatly exceed the amount saved in the less number of boxes required.

The kiln being only four feet from the ground, allows for a platform on which the field boxes may be unloaded direct from the wagon, and emptied into the trays, then returned to the field by the same wagon to be refilled, this requiring only a few minutes.

I have now obviated the fifth objection. The sixth will be found in a revision of the whole: First, in the amount of feed saved; second, in the amount of insurance saved; third, nearly one-half more hops dried, and dried right, on one kiln in same length of time; fourth, two men can easily manage the work of boiler and kiln and lastly, a better grade of hops is secured with a correspondingly better price.

The cost of such a kiln, complete with boiler, coil pipe, and building, will exceed the present system but little if any, because I save in height of building, furnace, hop cloth for floor, tramways, stairs, etc., and the same outfit might be used for drying fruit when not in use as a hop kiln.

The system is original with me, but may be in use somewhere for all that I know to the contrary. I have no patent on it, nor do I intend to apply for one. I give it to the public for what it is worth, and hope it may set hop growers to thinking and assist them in getting out of the old rut.

If the Yakima Hop Growers' Association will raise funds for the purpose of thoroughly testing my system, I will superintend the construction and testing of it, this coming hop harvest.

JOSEPH G. EVANS.

## A Good Ranch Team.

The hog and the dairy cow make an excellent team with which to haul profit to a community. Here is the way a Minnesota man "hitches up" the twain.

Another means of securing a product that is always in demand is the raising of stock, especially hogs. The latter provide means of almost immediate relief. It will take three years to materially increase the dairy output, for cows are valuable, and cannot be obtained in appreciable numbers without raising them. Two crops of hogs can be raised every year without effort. There is hardly a farmer who cannot secure at least one brood sow and boar with which to stock his farm. From this small beginning he may easily have in eighteen months forty merchantable hogs, which will produce annually a surplus for the market of at least sixty-five marketable hogs.