

Hop Extract Industry Started Locally? (1973)

The following article was written by M. L. Peterson for The Waterville Times in 1973.

The Centennial had as its motto, "A Tribute to a Proud Past." As time marches on, and I look more and more into the history of our village, it seems that more and more comes to light as evidence of this Proud Past. I feel it our duty to bring to the attention of the younger generations these accomplishments, so they in turn can feel proud of the achievements of their forefathers. We all learn early of the glory of the "hop days", the hop pickers, the big money, the luscious green and the acrid smell of the hop yard.

One aspect of all this "hop talk", however, seems to get neglected to some extent, and that is the marketing. Maybe this is because only a few men were concerned and they were quite removed from the hop yard in their dealings. In many instances they controlled the money; it was from them the grower borrowed or obtained credit for supplies - poles, fertilizer, hop sacking, hop twine and tools. (No complicated machinery was used until later when horse-drawn sprayers and blowers came into use, and these were quite simple when compared to modern-day farm equipment.) The hop merchant had to be a gambler, though: if he backed a grower and the crop was a loss - as could easily happen to all growers in an area if the weather was adverse - he stood to lose as well. Thus the market and the price of hops would vary from year to year over a great spread, like 10 cents to over \$1 a pound.

Brewers would also have their problems; the quality of the hops would vary and experimentation was necessary to determine what portions to use to obtain the right flavor for the beer or ale. Not only that, but hops from different yards had variations, depending on the soil, the fertilizer used and the weather conditions during growth. This led the brewers to think of long-term hop preservation which would stabilize the price and allow breweries to stock up when there were bumper yields and the price was low.

During the Waterville Centennial preparation, the local Hop Extract kept bobbing up as a local industry. I tried to find out more, but there was - and is - very little written material in existence about it and I have found little, to date. The pursuit of this topic continues and some success is gained.

First of all, I was curious to know if the use of hop extract in the manufacture of beer and ale was still a practice or if the whole scheme had been dropped for some more modern and better method. I contacted one of our local breweries and they were most gracious and helpful. I found that about one-third of the beer made today is with the use of hop extract. It (beer-making) is a big business, and extracts are a good part of the industry. Through the brew master, I found reference in a book put out by a German brewery, which also has its own hop extract plant, that the first to make a commercial product was a plant located in Waterville, Oneida County, New York State. It was set up in the 1870's - 1873, I believe - and the author states there never was any problem in selling the product.

Wondering how the author of this book learned of the part Waterville played, I contacted him at his office in Germany. A very gracious man, he sent me a photostatic copy of a German paper, written in 1886, devoted to the beer industry. In this was a brief story of German attempts to preserve hops, pointing out that the German scientists found that for the past 13 years the successful preservation of

hops had been going on in Waterville, New York. This ties in nicely with the 1873 date which is given in the Waterville Times as the starting date of the Extract.

The obvious question that occurs is: where did the editor of this German paper find out about the Waterville Extract? Now in 1883, just ten years after our Extract was started, a man by the name of Meeker published a book called "Hop Culture in the United States". He was both publisher and author, it would appear at first glance, but upon closer examination one finds that about one-third of this book was written by a Waterville man, a Mr. W. A. Lawrence. Mr. Lawrence was the first superintendent of the New York Hop Extract Company, as our local company was called. Apparently Mr. Lawrence had made quite a study of not only the extraction part of the industry but the growing part, as well. He evidently sought advice of local growers and mentions his indebtedness to such successful hop growers and merchants as Morris Terry, William P. Locke, C. B. Terry, John J. Bennett, A. R. Eastman, H. W. Tower, Daniel Mix, Sylvester Gridley, James P. Neison, I. D. Brainard and A. I. King. Most of these names will ring a bell with native Watervillians and local historians. Ezra Meeker had migrated to Washington State (Territory, it was then) and started raising hops. He apparently felt the urge to write of his experience, possibly to encourage others to go into the hop culture business. How he happened to get Lawrence to write about the hop business in New York State will probably never be known, but he did, and Lawrence mentioned his hop extraction company in the book. Here is what he had to say, in part: "In this way we have extracted and preserved over 2,000,000 pounds of hops, mostly in the low years of 1877 and 1878, when we ran our works night and day, but our capacity was too small to meet subsequent sales; and the licensee, J. R. Whiting, has just now erected in Waterville the third factory we have been obliged to build to meet the increasing demand. The new works have a capacity for extracting and preserving 20,000 pounds of hops per day. We consider this very slow progress for a record 13 years. But whether our business is built on solid foundation or not will best be judged by statements of disinterested witnesses."

This reference to a third factory made me wonder if there had been two earlier factories located elsewhere. I don't believe so, or some mention of other places would have been made, and there was little reason to establish a plant elsewhere than in the hop-growing center - which Waterville was. The Waterville Extract plant referred to was located on the Deansboro Road on the site now occupied by the Agway Petroleum Distribution Plant.

The use of Hop Extract has many advantages. I have mentioned its one great boon, the stabilization of the hop market price, but in addition it came to the brewer as a standardized product; each unit used gave the same degree of flavoring, certain unwanted ingredients that are present in the raw hops and that give rise to the obnoxious odor called "skunking" when beer is exposed to strong sunlight could be removed in the extraction. To date I have found nothing that exactly describes the techniques used in the Waterville Extract plant but this much becomes apparent: there are certain chemicals in the hops called "tannins" - the same type of chemical in hemlock bark and used in tanning leather - and those tannins are water soluble. Early attempts at recovering the flavor hops gave beer depended on soaking the hops in water, treating hops with steam, boiling hops in water. This method only obtained part of the essential ingredients.

The Whiting process used at the Waterville plant employed naphtha - or "high test" gasoline - as a solvent, and was capable of dissolving the resins that the steam or hot water would not. Today in the modern extract plant both solvents are used; water and some hydrocarbon like gasoline or a derivative of the hydrocarbon family of chemicals. Thus more of the essentials necessary for good beer production are extracted.

We know that the use of gasoline was the important part of the Waterville process. It was a "first"! We know that the ingredients in the hops do not chemically combine with the gasoline. Thus, the process is not chemical and no change in the hop materials takes place. The material just dissolves in the solvent. These materials can be washed easily from the hop blossom, the residues disposed of, retaining that which is wanted and this reduces the volume to one-twentieth of its original and the weight to one-twelfth. The gasoline or solvent, because it is not effected chemically, acts as a vehicle only, and once the dissolved materials are recovered the solvent can be reused. This was accomplished easily, by heating the gasoline to above its rather low boiling point and changing it into the gaseous state. At the local plant, a grid of metal pipes were embedded in the ground and the gaseous solvent conducted into the pipes. The ground being cold enough to cool the gas to a liquid state, and the ground being on a higher elevation than the plant, the liquid gasoline simply ran back into the plant by gravity and was ready for use again. The hop residue was used as a fertilizer or as a fuel for the plant's boilers. An account in an 1896 Waterville Times states how an explosion and fire resulted from the use of the extracted hops as a fuel. It is possible that a residue of the gasoline solvent was still in the hops when being fed to the furnace. It is not hard to imagine the danger and why a fire resulted!

The method employed at our Waterville plant would be classified as very crude, today, but the basic principle is still used. With the advanced knowledge of organic and biochemistry we now have, the chemical control so necessary for standardization of a product is superb. A brew-master, today, is first a trained biochemist. In Germany, it was not until the 1950's that the hop extract began to catch on. This was largely due not only to the fact that the state of the art had advanced to this point where hop extracts were capable of producing a more consistant-flavored beer, but could do it more economically than with the raw hops. Thus extracts are being used more and more, and the day of beer making with raw hops may well soon be a thing of the past.

The following article is from The Waterville Times dated Thursday, August 12th, 1875.

THE PRESERVATION OF THE HOP.

A New Enterprise in Waterville

It may not be generally known by our readers that Messrs. W.A. Lawrence of New York, and -----Whiting of Philadelphia, are establishing a new enterprise in our village, which will prove of great interest and benefit to Brewers throughout the entire Union, and to hop growers in this vicinity, especially.

For the past fifty years the attention of scientific men has been directed to the possibility of producing an extract of the hop which could be carried over from year to year. Up to 1870, however all attempts in this direction proved futile; but during that year a process was discovered by which a reliable extract can be obtained, and Messrs. Lawrence & Whiting, who are engaged extensively in the business, have erected works in our village, and will commence operations therein as soon as the new crop is ready for bailing.

We glean the following facts relative to the Extract, from a speech recently delivered by Mr. Lawrence, before the Fifteenth Annual Congress of the Brewers' Convention:

1. The Extract contains all the valuable contents of the hop.

It is the hop without leaves and stems, the meat without the bones, the wheat without the chaff, the flour without the bran. By the analysis of Dr. Hayes, the sworn State Assayer of Massachusetts, it contains in one hundred parts:

17.94 Aromatic Essential oils or in round numbers one-sixth pure Aromatic Oil.

31.63 Lupulin, or one-third pure Lupulin.

40.41 Hop Rosin, or nearly one-half pure Hop Resin

10.02 Extract Matter, etc., or one-tenth Extract Matter.

100.00

The wood of the hop is all we have left after taking out the Extract. If we only took out some part of the hop as for instance, the Aromatic Oil or the Lupulin, the Extract might still be valuable for some purposes, but as we take out everything useful that is in the hop it is valuable for all purposes of brewing, and all the more valuable because our air-tight extractors preserve all the Aromatic Oil which is generally lost to a great and damaging extent by open boiling.

2. The extract contains no deleterious or objectionable substances, as is distinctly stated in the letter of Dr. Hayes, herewith submitted. In fact there is no room for any as is shown by the above analysis, and we offer \$1,000 for an ounce of anything foreign found in the Extract and contrary to the analysis as above.

3. The Extract gives always the same color to the beer, and that color is a shade paler than the color of any but the very choicest of hops and is not inferior even to them. When brewers sometimes pay two cents per pound more for certain grades of hops purely on account of their color, the advantage of a pure and light color is apparent.

4. The extract is always of a uniform strength. The value of this fact to the brewer is so clear that I mention only three points:

(a.) The Brewer using the Extract avoids the costly mistakes so often caused in the best breweries by the varying strength of different bales even when taken from the same lot and from the same grower.

(b.) He avoids the necessity of buying a large lot of hops at one time and even paying more per pound for the sake of getting a "straight" and even lot of hops. Brewers who have been using the Extract for two years, frequently order "some of the same," and as we never had any other we are very particular to send them that kind.

(c.) In the summer while brewing "present use" our customer has hops in the Extract as fresh as in the previous fall, while bale hops are losing and varying their strength day by day.

5. The Extract never changes by age. I present herewith for your inspection, a can of the Extract which I know to be at least three years old, and have the best reason to believe is five years old and it is as fresh as when first made.

In the summer of 1874 I sold to my regular customers over one ton weight of hops made into Extract four years previous and kept in open vessels and it was found to be of precisely the same quality as that just made from the hops of the present year.

This fact that the Extract is always fresh enables us in the first place to give the brewer in summer when he needs them most, the fresh hops as they come from the vines, and in the second place we can take the fresh hops of a surplus crop and having made a large quantity into Extract carry it over fresh into a subsequent year of failure and otherwise high prices and give the brewer a better article at a lower price and yet make a good profit ourselves.

6. The Extract requires not more than half an hour's boiling with the wort. You can boil it without injury as long as you please but as far as the hopping of the wort is concerned no brewer need boil more than half an hour. To those brewers who believe that long boiling is not only a useless expense but positively injurious to the wort when it has been once well 'broken' the Extract is just what he wants and those who believe in long boiling need not boil a moment less on account of the Extract.

7. The extract gives to the brewer his full weight of hops, and nothing else to pay for. I know from experience that a bale of hops before it reaches the brewer will ordinarily gain by absorbed moisture about two pounds weight. To this must be added from four to six pounds of bagging and pegs, making altogether from two to three dollars on each bale of hops which the brewer pays for nothing and which he does not pay for at all with the Extract.

8. The Extract is less than 1-10 the weight of the corresponding amount of bale hops, and less than 1-20 of their bulk, and the saving in freight in extract over bale hops is no small item to the brewer. To us it is so important that though we now have our factory at New York City, the center of the hop market, and when most of the hops are in the very first stage of their journey to the brewer, yet even from the hop counties of New York to the city, the freight bills are too much for us. Before the coming crop is ready to pick our main factory will be in the hop regions among the growers.

9. The practices of poor picking, sulphur curing, and loose bailing all diminish the amount of extract we get from the hops, and this fact makes our interest and that of the brewer in this matter one and the same, and thus being on the ground among the growers as they gather the crop, we shall serve your interests while working for our own.

10. The extract requires no new apparatus and no changes in the old.

11. It can be used part hop and part extract in the same brewing.

12. The extract must be kept reliable in order to make a solid reputation and a good business. This is the best guaranty and security to the brewer that he will find it always the same. We have put too many thousands of dollars and too many years of time into this business to allow us to throw it all away, and ruin the trade by palming off an inferior article on a brewer, when his beer wort would be certain to detect it instantly. Those, who might not trust our honesty, will at least trust our own self-interest to keep our goods reliable.

13. The extract can be furnished to the brewer not only better but cheaper than bale hops.

By treating the hops in air-tight extractors, under a pressure of 150 pounds to the square inch, it is

reasonable to suppose that we are able to extract more from them than can be done on the top of a kettle of boiling wort, and moreover, the best part of the hop, which passes off from the copper, is all saved by our air-tight extractors. This saving is our profit; and the brewer, who gets from us a hop, which hops his beer equal to the best new hops, and does it every time, will be satisfied if he gets it at the same price as those hops are bringing in the market, for even at same price it is cheaper by all the advantages above mentioned.

We propose, therefore, to grade the price of the Extract by the price of hops in the market. If we can afford it cheaper, the difference is so much clear gain to the brewer, and, if at any time he becomes dissatisfied with our extracted hops, or the price of them, his remedy is right before him: We are glad to say that this remedy has not yet been found necessary by those who have used it steadily, and who have the best reason to know what this Extract is.

End of document.