FARM AND ORCHARD

Notes and Instructions from Agricultural Colleges and Experiment Stations of Oregon and Washington, Specially Suitable to Pacific Coast Conditions

THE CHEMISTRY OF THE HOP.

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The large amount of hops grown in this state makes the chemistry of the hop of interest both to the local experiment station chemist as well as as the hopgrower. The annual production of the hop crop of this state approximates 90,000 bales annually, while the total consumption of hops in the United States, according to one writer, amounts to 45,000,000 pounds. Again, in the adoption of proper standards for judging the quality of hops the chemical composition must be given considerable consideration. Since the cone is the portion of the plant used commercially, only this portion will be considered in what follows.

Many researches have been carried out by different chemists on the composition of the hop cone, the earliest investigations dating as far back as 1820. During recent years much work has been done on this subject and the results obtained have not been concordant in many instances. The different investigators seem to be agreed, however, that the principal constituents of the hop cone are a volatile oil, a wax, a hard resin, two soft bitter resins, an alkaloid and a tannin.

If hops are placed in a still with water and the mixture boiled, oily drops will be seen coming over with the distillate. As the process continues and a larger quantity of material collects it will be noted that it has a light green color. This oily hop and although it amounts to only hop and altogether it amounts to only one-half of 1 per cent, it is the constituent which gives to the hop its fragrant odor. It is a greenish, mobile liquid and is very aromatic. It is composed of three or four different bodies, some of which are known chemically as terpenes, being closely related in composition to ordinary turpentine.

A wax was isolated from the hop in 1862 by a German chemist. He found the substance to be a white, waxy material, closely allied in nature to beeswax and other waxes. An examination showed the hop wax to be a chemical compound, known as myricyl palmitate. The amount of this substance present in the hop amounts to approximately 0.40 per cent. It is a tasteless, inert substance which is apparently of no value in the practical uses of the hop.

From the investigations made it appears that there are three distinct resinous substances in the hop cone and for convenience two are designated as "soft resins," while the third is called the "hard resin. When the cone is extracted with ordinary ether, all three of these resins are dissolved. If the ether be evaporated from the extract obtained, however, and the resulting residue be treated with light petroleum spirit, only the soft resins pass into solution, while the hard resin is left behind as a light green amorphous residue.

The hard resin is almost tasteless. Chemical experiments indicate that it is probably a mixture of different substances and no definite results have been obtained as to its actual composition. So far as is known it has no value in the practical uses of the hop. The amount of hard resin seems to increase with the age of the hop and also with the use of high temperatures in drying.

For convenience the soft resins are designated as the "alpha" and the "beta." According to the present belief these substances are the constituents which impart to the hop cone the major part of its actual commercial value. Collectively they are known as the "hop bitter," or "bitter principle," and many consider the amount of soft resins as one of the prime factors in judging the quality of the hop. Analyses made in this laboratory show that Oregon hops contain from 13 to 18 per cent of these materials. In the pure state the soft resins are both crystalline substances, which, although only sparingly soluble in water, are readily soluble in alcohol. They impart to their solutions an intensely bitter taste. The "beta" resin is colorless, while the alpha is of a beautiful golden yellow color. When in solution both act as weak acids toward alkalies and for this reason they are often termed the "hop-bitter acids." They also possess certain definite antiseptic properties.

Hops have long been assumed to contain an alkaloid. A German chemist several years ago succeeded in isolating a substance giving the general reaction of an alkaloid. Subsequent investigators repeated this investigation with negative results. Recently, however, an alkaloid has been isolated which is said to closely resemble morphine in its properties. Practically nothing of a real definite nature is known regarding this substance and it is evidently present in very small quantity.

A tannin is present in the bracts and stems of the hop cone which can be extracted with hot water. When isolated it is a reddish brown powder possessing an astringent taste. What the actual value of the hop tannin is in the commercial uses of the hop is still an open question.

The preceding review is simply a brief summary of the chemistry of the hop as obtained from a study of the literature on the subject. There is much regarding the chemical composition of the hop which is still in doubt and it affords a fruitful field to the agricultural chemist for further investigation. When the exact nature and value of the different constituents have been demonstrated by scientific means, then we will be better able to judge the real value of the hop and also suggest methods for improvement in its culture.

WILL SAVE STATE MORE MONEY.

Corvallis—Prediction is made by Prof. E. L. Potter of the animal husbandry department of the Oregon Agricultural College, who is also secretary of the new state stallion license board, that the operation of the new stallion law will save the horsemen of the state many thousands of dollars.

"If we had had the law before it would have saved some $10,000 or $15,000 to the horsemen of the state on the price of animals sold them as pure-bred under bogus certificates," said Professor Potter recently, discussing the results to be expected. "It is probable that $1000 more was paid apiece for the dozen stallions with unsatisfactory pedigrees for whom we have received requests for licenses, than if a true statement of their breeding had been given at time of sale.

"We have thus far had applications from about 400 stallion owners, which is probably not much over half the number of stallions owned at present in Oregon. The greater number have come from Wallowa county, though many have come in from Marion, Douglas, Baker, and other parts of the state. We take these applications as an evidence of good faith on the part of the breeders, and they will not, of course, be prevented from using their stallions between the filing of the application and the issuance of the license. The heavy correspondence regarding applications, and the work of classifying and fitting them, occupies us at present, but when that is done we will begin issuing the licenses.

"Besides correcting the present practice of some horsemen of selling and using stallions having bogus pedigrees, the new law will do much to raise the standard of soundness, and thus improve the stock of the future. The future saving to horsemen of Oregon on these two points will be more than the entire cost of inspection and registration, to say nothing of the prevention of the use of stallions as 'sound,' which have diseases or constitutional weaknesses liable to affect the offspring."

SAVE YOUR RADISHES AND ONIONS.

Corvallis — "Carbolic acid emulsion is used to destroy the eggs and young maggots which infest radishes, onions and similar garden crops, and occasionally for other insects," is a statement of H. F. Wilson, entomologist at the Oregon Agricultural College, who is about to publish a useful bulletin on the protection of the garden from pests.

"To make such an emulsion, dissolve a pound of hard soap in a gallon of boiling water, add a pint of crude carbolic acid, and churn (preferably with a handpump) until the mixture is a creamy white. This forms a stock which may be diluted by adding thirty times as much water as stock. It should be applied to the surface of the ground about the plants."

FASHION HINTS

This suit of dark blue soft-finished serge has all the newest touches without being tryingly extreme. The coat is short without being "bobby," and the skirt is narrow, though far from suggesting the "hobble"

The Extraordinary Thing.

A young attorney not noted for his brilliancy recently appeared in court to ask for an extra allowance in an action which he was so fortunate as to have been retained in. The court not discovering anything at all unusual, complicated, or extraordinary about the litigation, inquired of the young man: "What is there about this case that to you seems extraordinary?" "That I got it," blandly and innocently replied the youthful aspirant for fees.

Polishing Metal Utensils.

Utensils must be kept polished. For copper use soap applied with a damp cloth, then sprinkle thickly with borax, if you have no regular copper polish. Brass can be cleaned by being moistened with kerosene, then rubbed with a paste of powdered chalk and lemon juice, and polished with chamois. Boil tin utensils occasionally in strong soda water, and if rusted rub with lard and let stand before washing.

FASHION

PARIS.—I spent Easter at Monte Carlo with some friends who have been there all the season and the weather was simply glorious. Blue sky, blue sea and blue gowns; at least there were a great many of the latter, for blue in all shades is quite the rage of the year.

Nothing could exceed the brilliancy of scene on the terrace of the Casino, and in the Casino itself, at all hours of the day and night during Easter week. It baffles description. I have always said that the famous planches at Trouville, that broad wooden pathway by the seashore, showed off pretty gowns better than any other walk in the world, but the terrace at Monte Carlo runs the planches very close. And then at Monte Carlo one has a glory of golden sunshine and a blue in the sea such as the northern watering places never know.

And the dress? It was quite wonderful! Morning, afternoon and evening.

This year, as always, I noticed that for morning wear fresh white suits had it all their own way; nothing could equal them for effect in those brilliant surroundings and no other costumes could prove so flattering to a smart and pretty woman. And of white costumes, they were many and of varied materials. The more successful were those of pure white linen, that canvas linen which in France we call "toile nationale. This material is firm and yet supple, and women who have to study economy can console themselves with the knowledge that it gives almost everlasting wear. But then it must be perfectly fresh and spotless—always.

Many of the smart tailored suits were extraordinarily tight and skimpy, but others, and these may be taken as heralds of the near future, showed a tendency toward more fullness about the feet. The most notable outline of the moment, but this applies more particularly to afternoon gowns, is that which is slightly baggy at the knees and tight round the feet, but not tied in; rather is this tightness achieved by the introduction of heavy fringes and by skillful weighting than by a cutting away of material.

I spoke a little time ago of the coming revival of accordion plaited frills under the hems of skirts, long and short, and as each day goes by the certainty of this revival becomes more assured. We are as yet some way from this change, but faces are turned in that direction.

At Monte Carlo I saw several of the much discussed jupes culotte. But they were not worn by any of the really smart society women, nor did they call for other notice than a little quiet ridicule. The smart women all say the same thing: That the jupe culotte is very well for certain occasions, in private, but that it is quite impossible as a costume for street wear.

The full length sketch which I send shows one of the newest costumes for afternoon wear; a costume of rather a fantastic order, but none the less attractive. The tight skirt is cut up at the sides, but it is not "divided" in any way. It conveys the trouser effect without being at all "trouser." The tunic is very long and also cut up at the side and the quaint little coatee shows the tails at the back which are a feature of some of the most exclusive spring models. I cannot say that these tailed coats are universally becoming, but certainly they are uncommon.

I saw one of our prettiest Parisian actresses wearing a coat of this kind on the Casino terrace on Easter Sunday and it was made of nut brown chiffon cloth with a lining of shrimp pink taffeta. The tails were cut away more sharply than those indicated in our sketch and the coat had two immense revers in the directoire style. The skirt was made of cream shantung silk in a very heavy make and a blouse of thick cream lace accompanied it.

A quaint "cabriolet," seen at the Casino, made quite a sensation. It was worn by an exceedingly pretty woman and its unexpected outline attracted general attention. The dress experts of Paris state, confidently, that we are about to revive the glories of the cabriolet hat, or bonnet, and that in the near future. And I am of opinion that this will be the case, as this style of headdress is a suitable accompaniment for the semi-transparent and "fluffy" costumes which await.

This year, above all others, everything depends on the original shape of the hat and on the beauty of the straw, for in many cases the trimmings are quite simple, such as might be arranged by any clever home worker. But then one has to first secure the uncommon shape, and this is not an easy task, as all the leading milliners make their own shapes and take delight in inventing special combinations of straws.

The curious little hat shown on the full-length figure is one of the most successful shapes of the year. The brim is narrow and close fitting and the crown immensely high and shaped in sugar loaf style. Such haste as this are either trimmed with a very large bow, as indicated in the sketch, or with a jaunty little quill made of velvet and plaited satin. Everything depends on just how such a hat is worn. It requires to be placed at the correct angle and drawn down over the head and hair.

At the Casino at Monte Carlo, in the afternoon as well as in the evening, I noticed a leaning toward the revival of accordion plaited frills. Already some of the most expensive and effective gowns are showing a mass of plaited frills on and under the hem, but these fragile frills are weighted down by masses of jet or crystal beads in the guise of deep fringes. Nothing can be prettier than this latter idea. We retain the clinging style of dress and the ultra slender outline of figure, but we have once again that suggestion of feminine charm which is always associated with dainty frills and which seems to have little place in connection with skimpy skirts which are worn directly over silk tights. The return to frills was inevitable, but even now it is to be counted with things of the future, but that "future" is by no means far away.

I was much struck by a remark made by a clever American friend in a letter received this morning. She had just been to a private view of the wonderful gowns, about 160 in all, which Lucille had prepared for the ex-

The newest "Tailleur" overskirt and rever of navy blue satin, with jacket of blue and white taffetas pekune

hibition of costumes which is to be one of the events of the coronation year in London. This friend, who is exceedingly tailor-made in her tastes, spoke with enthusiasm of the dresses, but added—"most of them were too fluffy for my taste." Lucille has always been devoted to an ultra-feminine style of dress and the materials she uses are supple and luxurious to an extraordinary degree, but on this occasion she has simply struck the note of the immediate future; we are going to be "fluffy" and at the same time snake-like and willowy.

At Monte Carlo this season there has been a rage for a certain shade of red which is rather hard to describe. It is something between poppy and cherry. In the millinery world this red has been and still is ubiquitous, and it is very often used in connection with chip and tagal straws in the new shade of blue, which is neither dark nor light. Blue and red—the colors of the English guards, may be said to be the "mix" of the season, and this is as it should be in a year when we are all talking and thinking of the coronation.

With plain white serge suits I noticed several smart women wearing picador hats of this red straw, with lining of white chip and for trimming a couple of red quills. And blue straw hats are treated in the same way, the white lining giving a fresh and youthful appearance to the face. Nearly all the hats of the present day have high-domen crowns and all, without exception, are made so large in the crown that they fit well down on the head and almost cover the hair.—Idalia De Villiers, in the Boston Globe.

TO BE 55 STORIES

Gotham Office Building Tallest in the World.

Structure Rises One-Seventh of a Mile From the Ground—Exceeded in Height Only by the Eiffel Tower.

New York.—Men will be at work daily in a structure of stone and steel one-seventh of a mile from the ground and in all of the 55 stories of the new Woolworth building before the end of next year, the time appointed for completion of the tallest business structure in the world. Laid out flat the giant building would be longer than three city blocks, and Salvator's record speed for a mile would make 14 seconds the time necessary for the champion to cover the distance. Only the Eiffel tower, in Paris, a steel skeleton, will exceed in height this newest New York pinnacle.

Higher and higher do our skyscrapers soar, outtopping everything but the mephitic clouds of smoke from their own boilers; deeper and deeper do they thrust down through the soil until their massive steel roots find anchorage in the rock below. The true Titans of the modern world are the builders, heaving their tons of steel and stone and brick aloft in defiance of the law of gravitation and the winds of heaven and daring even the earthquake to confound their work in ruin. Besides these modern giants of structural efficiency the builders of the early world were but pygmies playing with blocks in the nursery. How high will the skyscraper of the future mount? Has the physical limit been reached, or will the man-made Sierras of tomorrow lift their giant

Woolworth Building.

towers out of the lofty masses of the present like mountains springing from foothills?

Chicago has its skyscrapers, but it has not yet surrendered to the passion for "topless towers" which grips all New York. The Singer building, with its tower lifting 612 feet above the pavement, had scarcely ceased to be the wonder of Gotham before the Metropolitan tower looked down upon it, and now the Woolworth building is to be piled higher yet—nobody knows quite how high. What is to be the determinating factor of the future in regard to height?

BURN MANSION FOR A SHOW

Promoters Get Realistic Views of Fire, Rescue and Bucket Brigade Attempting to Quench Flames.

New Rochelle, N. Y.—The historic Sicard mansion, built 250 years ago by a Huguenot family, and the scene of many festive meetings of aristocratic society in colonial days, is a mass of blackened ruins today. It was sacrificed to furnish a spectacle for a motion picture film. The site of the house was recently purchased for a new Episcopal church, and the old mansion, offered at auction, was bid in by a moving picture company. With the permission of the city authorities the company set fire to the house in order to obtain a series of realistic pictures of the rescue of a child, a village bucket brigade in action, and a mourning family viewing the ruins.

1,800 Foreign Girls Lost.

Indianapolis, Ind.—"Eighteen hundred immigrant girls were lost track of after having been received at Ellis Island, and put aboard trains for Chicago and other points in the west, in the last year and a half," Miss Grace Abbott of Hull House, Chicago, said in discussing in the biennial convention of the Young Women's Christian association of America, the problem of caring for immigrant girls. Miss Abbott advocated a federal immigration bureau in Chicago, "as a check on the work of the white slavers." Immigrant girls deserted the quaint shawls and aprons of their native lands for the hobble skirt all too quickly, Miss Abbott said.

Effect of Imagination.

A man condemned to death was promised that if he would spend the night in bed in which a cholera patient had died and survived the experiment, his freedom would be given him. He spent the night in the bed and died the next day. But no patient had ever died in the bed, and the effect on the imagination and nerves of the condemned man really caused his death.

Some Bad Examples.

We have all heard of the butcher who was a vegetarian, of the barber who never shaved, of the shoemaker who let his children go barefoot, but here is a new one. A delegate to the late convention of the launderers at Lawrence wore a celluloid collar.—Lawrence Gazette.

Old Beliefs Rudely Disturbed.

The old teachings of China and India established the belief in Japan that it was best that women be not noticed by others, that their duties were wholly domestic, and that appearing out of doors was unbecoming a faithful wife or dutiful daughter. Garden parties, dinner parties, balls and social calls are new importations from the west.