

VALUABLE NEW HOP PLANTS.

Department of Agriculture Will Introduce Them in the Northwest.

Imported From Bohemia—Brought Almost Five Times as Good a Price as Washington Hops on the New York Market Last Year—Experiments to Be Made of European Wheat, Grapes and Forage Plants.

The following, from the Seattle Post-Intelligencer, ought to be read by every person in the Willamette valley: Walter T. Swingle, agricultural explorer of agriculture, is a guest of the Seattle. During the past summer, ever since Secretary of Agriculture Wilson paid a visit to this state, the department, convinced of the richness of the soil of Washington, "has been doubling its energies, not only to promote the present agricultural products but to introduce many new plants and grains from foreign soils that it is believed will thrive here.

For several years past the department has had in Japan, South America, Siberia and Asiatic and European countries a corps of scientists looking for agricultural seeds and plants that would grow in this country, with a view of introducing them to American soil and testing their adaptability. In these explorations Washington and the Pacific coast is to receive abundant attention. The soil of this state, where the climate changes are about the same as in Europe and Central Asia, is to be planted with seeds and plants to a degree never before known in its history.

According to Mr. Swingle the department for the past year has had an agricultural specialist exploring the Bohemian hop fields. He has been successful to a degree that may mean much to this state. A few weeks ago the department at Washington received a communication from this specialist, stating that in Bohemia he had found a variety of hops that far surpassed anything grown in this country. The product was limited and used almost entirely at home in the production of a high class of goods. Last year, however, a few bales found their way to the New York market, where they sold readily at 90 cents a pound. At the same time the Washington and Oregon hops were selling on the New York market at 19 1/2 cents a pound, or a little more than 20 per cent of the price brought by the Bohemian product.

The report further shows that the soil on which this high grade of hops is grown is similar in character to that of this state and Oregon, while the climate, during the growing season, is almost identical.

The report has led the department to a determination to transplant this variety in the state of Washington. A sufficient amount of the plants will be imported and sent to the Pullman experimental station to make a thorough test of their adaptability here. If the experiment proves a success it is the intention of the department to distribute the plants over all sections to which their growth is suited and encourage their cultivation in this state.

Mr. Swingle for the past year has been exploring the shores of the Mediterranean, where he has been studying new plants for importation and cultivation, if they prove a success.

"We have demonstrated beyond a doubt that dates and figs, as good as any found in any part of the world, can be grown in Southern California and Arizona," he said last night. "During my stay abroad I have paid special attention to these two fruits, and have brought home with me several valuable varieties, which I am now taking to Arizona to transplant. As the climate and soil conditions are similar, we have every confidence that they will prove successful. If such proves to be the case, we will distribute the plants and may soon expect to grow in these states a much better class of these fruits than at the present time.

"While in Europe, I also paid much attention to forage plants, grapes, wheat and fruit of a variety and kind not grown in this country. I found many of each class that I believe would thrive on the Pacific coast. The agricultural products of Europe cannot be planted in the rich soils of the Central Western or Eastern states, on account of the hard winters. The climate of the coast, where no hard winters are endured, are better suited to their growth and development.

"Many of these varieties we will import and turn over to Prof. Spillman, of the Pullman station, who is thoroughly competent to watch and care for their progress. All that prove successful will be cultivated. They will be introduced by the department distributing a limited amount of seed in the different sections.

"Our department must not be confounded with the congressional distribution of seeds, where business is done on a wholesale plan. It will be the aim of our branch of the service to distribute only a limited amount of valuable seed, and the grower will have to increase his own supply. In what I have been much struck with a large grain found in Europe. This will probably be one of the first brought here.

"From all the countries in which the department has specialists, plants and seeds will be imported for trial, and much of the experimenting will be done in the state of Washington.

"During my stay on this coast I am going to familiarize myself with the agricultural conditions. I have visited the Palouse wheat fields, and before returning will take a run through the hop districts, with a view of gathering data of value to the department."

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"On putting in at Cowes we were boarded by nearly every small boat in the harbor. Capt. Brown had called us all off before making port, and caution-

ery inch of canvas, and not a man of us who did not pray for it to freshen. Word was passed quietly to see that the Englishmen did not shirk. Capt. Brown stood by the English pilot, for him also we had to take on, as the course round the Isle of Wight was new to us, and we had to rely entirely on the pilot's guidance. Capt. Brown watched him like a hawk, but I want to say that he acted on the square with us all the way. With a little freshening, we began to pick up, and our good boat soon fairly leaped along. "I say," remarked a Scotchman, who was one of the six taken on at Cowes, "Do we get some prize money if we win this for you?" "You see that flag up there?" answered the mate, pointing to the stars and stripes. "Well, that's what you're working for. That's all the bloody prize you get." Before that our crew had given no thought to the subject, and no one would have mentioned it again if the skipper had not after the race. "Americans are too damn independent to do this for prize money," he explained, "but you've done well that there's a small divvy coming." As a matter of fact, we each got a few dollars and our passage-money home.

"When the breeze got fresh we simply walked away from everything in sight. The English yachts seemed to be standing still. As we passed the leader at a steamboat speed, the pilot made a remark which afterwards caused trouble. "Capt. Brown," he said by way of a joke, "I believe you have a propeller astern."

"This was caught up and passed along until the English ensigns heard it, and asked if it were true. They would not be convinced otherwise, and after the race spread this report ashore. There we were boarded by greater crowds than ever, and were not cleared of the charge really, until the America was put into dry dock. No one could understand how the Aurora was beaten so badly without some device such as this. She finished about half an hour behind us, and this time would have been tripped had not a strong breeze come up after we had crossed the line."

RAILROAD EARNINGS.

Passenger and Freight Traffic in Europe and the United States.

An official statement has appeared of the railroad earnings of Austrian railroads for the first six months of 1899, showing the gross amount of these to have increased 3,674,000 florins as compared with the first six months of 1898, the number of passengers carried having increased 7,500,000 and the freight carried having increased 2,200,000 tons. These figures are regarded as of considerable importance, showing an increase of 15 per cent. in the number of passengers carried and 5 per cent. in the number of passengers carried and of 5 per cent. in the amount of freight handled in the country in which the whole number of passengers carried in a year is in excess of 100,000,000 and the number of tons of freight carried in a year is somewhat below that figure. The Austrian railroads (including together those of Australia and Hungary) earn in a year \$140,000,000 approximately and the working expenses are \$75,000,000, figures which seem of small importance when compared with those of the United States, the earnings of whose railroads in 1898 were \$1,250,000,000, with running expenses of \$560,000,000. American railroads carried in 1898 515,000,000 passengers and moved 915,000,000 tons of freight.

In most countries the passenger receipts are considerably larger than those coming from freight traffic and the rates of passenger transportation are so high as to yield the railroads a profit quite unknown in this country, where railroads charges have been declining so steadily that in recent years they have fallen below the rates of steamboats and even of canal boats.

In Great Britain the total amount of railroad receipts is \$450,000,000, or about one-third of the total of those of the United States. Toward this total, passenger earnings contribute \$200,000,000 a year and the freight and express earnings contribute \$250,000,000. The number of passengers carried on the railroads of Great Britain in a year amounts to nearly 1,000,000,000 and though increasing the increase is relatively small compared with passenger receipts in the United States. Seven years ago, in 1892, the number of passengers carried on the railroads of Great Britain was \$65,000,000. The passenger traffic in the United States is less subject to fluctuation than is freight traffic, he latter being dependent chiefly upon the condition of business, the price for cereals and staples and the size of the chief crops. The figures for 1898 compared with those of the year preceding showed an increase in passenger earnings on American railroads of \$19,000,000, whereas the increase from freight earnings was \$85,000,000, and generally speaking, 25 per cent. of the earnings of American railroads are from passengers and 75 per cent. from freight.

French railroads carry 350,000,000 passengers a year and about 115,000,000 tons of freight or approximately three passengers for each ton of freight carried is nearly double the number of passengers transported. In Germany, where most of the railroads are owned by the government, the number of passengers carried in a year is about 650,000,000, and the earnings from this source are about \$100,000,000 a year. In respect to railroad figures, however, England is the only country which can be seriously compared with the United States.

"You know," Capt. Hoffman went on, with a wise blink of the eye, "that sometimes you want to pitch a stove overboard, when you are getting a yacht into sailing trim and it is not convenient to have spectators about. Well, when the day came for the cup race, we had the boat cleaned from stern to stern. We did this before the English recruits came on board. Those chaps never forgot that race. I'll bet. You see, twelve men were not enough to handle the boat in a race, and the skipper had six go ashore and hire six Britishers, who were turned over for us to watch."

"We didn't like the looks of them very much, and they didn't seem to fancy us. 'We're going to have trouble with these John Bulls,' reported a big quartermaster named Connors. 'Not if you know your business,' replied the captain. One of them suggested that the Englishmen be divided up so that not more than two would be together at one station, and this was done. They were surrounded and under such vigilance that they could not do anything crooked."

"The morning of August 22d broke with a clear sky and soft breeze from the west, and before ten o'clock fifteen boats, of all lengths and sizes, had gathered about us. As the Aurora went by manoeuvring, her crew were hoisting the mainmast. When they got aboard a little cockney started up the old song, 'A Yankee Ship Sailed Down the Bay,' and the rest of the crew came in on the chorus. 'Pull, boys, pull, boys, pull.' 'You'd better save that sheet for a tow,' called one of our men, but the Aurora had passed and did not hear it.

"I fancy it's us'll need the tow," said one of our English recruits.

"Let me give you some advice," said the second mate, who overheard the remark. "Don't let the skipper hear you say that."

"When the signal was given, the breeze blew very light, and some of the English boats forced ahead, among them the Aurora. We crowded on ev-

THE DEADLIEST OF POISONS

The Mere Smell of Some of Them Will Cause Instant Death.

Extraordinary Precautions That Are Necessary in the Manufacture of Hydrocyanic and Nitric Acids, Ammonia, and Other Deadly Drugs.

New York, September 22.—Surrounded by four of the narrowest, steepest, shortest streets of all the Greater New York, not far from the East river, in a neighborhood seldom invaded by casual visitors, is a great manufactory for the making and compounding of poisons, where a sufficient quantity of deadly substances are produced every day to cause the death of every human being in New York. It is an establishment in which the Borgias might have revelled for pure joy.

The variety of poisons manufactured in this place is enormous, and were the Borgias or any other of the ancient poisoners brought back to life, bewilderment at the numerous death-dealing materials of which they had never dreamed would pass their powers. They would be interested especially in the compounds of chloroform and ether, those subtle fluids the diluted vapors alone of which, in small doses, produce deep sleep, and which in quantities mean death as certainly and as absolutely without pain as any of the old-time secret concoctions of demoniac ingredients. They would open their eyes wide because of the combinations of ammonia and the various acids, sulphurous and nitrous. They would gaze with amazement upon tons of beautiful pure white powders, so destructive to life that death would follow almost instantly from placing upon the tip of the tongue as much as would adhere to the moistened end of the finger. They would be astounded on being told that all these subtle poisons are made in that shop, not to take life, but to preserve it, and that since their times the knowledge of man regarding nature's most dreadful secrets had increased so that the most harmful substances known had been made helpful to mankind.

Unquestionably, the most wonderful thing about manufactories where poisons are handled is the mastery which has been gained over them. There are poisons the very smell of which produces death. The most subtle of these poisons—by far the most deadly substances known to man, in fact—is hydrocyanic acid, the prussic acid of commerce. One whiff of it in its full strength causes death, not in half an hour, or in a few minutes, but literally at the instant. The victim inhales the subtle gas—for pure prussic acid is a gas—and his life ceases before the lungs—quicker than he could drop his hand from his side. So destructive to life is this thing that one smell from a bottle containing seventy-two parts of water and eighteen parts of the acid is just as deadly, for all practical purposes, as from a bottle of the pure acid, and the ordinary preparation of commerce—ninety-eight parts water and only two per cent acid—is so dangerous that no one is allowed to buy it unless the best of reasons for its use can be advanced.

Not many persons are aware of the fact, but this awful substance comes primarily from the most repulsive sources, since it is found in rotting animal tissues, the outcome of dreadful corruption. In practice the makers of prussic acid produce it from yellow prussiate of potash; but the latter is made from the horns of cattle and the hoofs and hides and hair of horses. These properly treated, yield a variety of cyanogen compounds, so called, prussic blue, a pigment of value, being among the number. Personal contact with this poison would mean death so certainly that devices for carrying on every operation of its manufacture, completely shielded by retorts and tubes, have been perfected and before it was sold so cheaply as now many photographers who used it in their business made the acid for themselves in a little toy-like apparatus. Diluted by the way, this poison has an extremely pleasant smell—not unlike peach blossoms. It exists, too, in pencil pits. Its discoverer was killed instantly from incautiously smelling of the undiluted acid. There is something else about poisonous substances that few not versed in chemistry know; it is that most pure acids are gaseous, and not liquid. Nearly all are soluble in water, though, and after being diluted and purified are conducted through tubes to tight vessels partly filled with water where it and the acid combine to form the acid of commerce. You never saw pure ammonia, for instance, it is invisible—a gas of such strength that one full respiration would destroy life. The ammonia which you buy in mostly water, and the fumes arising from it are produced by the releasing of the gas, which disengages itself whenever opened to the air. Ammonia, like prussic acid, is manufactured in airtight receptacles, and therefore the workmen are not in special danger unless there is a leakage or something bursts. Deaths from this class of poisons are, therefore, rare. Nearly all the more recent of these accidents have been caused by the bursting of carboys of nitric acid. Death occurred in none of these cases while the acid was being made, but after it had been put up for shipment.

Free nitric acid is so deadly, to tell the truth, that were it not for its tendency to set fire to whatever wool substance with which it comes in contact, no one would venture near a burst carboy. Such an accident occurred in an American chemical works—not in New York—last year. Through the carelessness of a workman in the shipping department a carboy was broken. All the men in the department departed without cere-

mony, and for a little space no one approached the acid. It spread out upon the floor and over a lot of sawdust, and soon it was observed that the sawdust was smouldering. It was then seen that unless something was done the entire works would be burned, not only causing immense loss, but throwing hundreds of men out of work. Four men, employed in the acid department, volunteered to put out the fire and were allowed to make the attempt, in which they succeeded easily and speedily. Moreover they came out of the room apparently unaffected by the noxious fumes, one or two others returning to their work, and the others, whose time it was to rest, going to their homes as if nothing out of the way had happened, and feeling as well as usual.

In each case, almost exactly four hours to a minute after the men had subjected themselves to the acid fumes, they became distressed, and in less than an hour every one was dead, having suffered untold tortures meanwhile. An autopsy was held on one of the bodies, and it was found that there had been complete cauterization of the inner surface of the linings of the lungs, making it impossible for the blood to absorb oxygen or to give off carbonic acid, and thus become purified. In other words, these men were smothered to death, the gradual effect of the acid being explainable from the fact that the fumes as breathed in were diluted highly with air. For such poisoning there is positively no antidote. Remedies for acids that have been swallowed are effective sometimes, if taken quickly, for such remedies may be swallowed, but you can't force liquid remedies into the lungs, and nothing antidotal to acids that can be inhaled has been discovered as yet.

There is no great wholesale poison factory in the Borough of Manhattan. Most of all of the acid making establishments of this neighborhood are in Newark. The precautions taken in acid manufacture differ according to the substance made. Inhalers containing sponges often are used. Sometimes the sponges are saturated in plain water, but often they are soaked in a solution of something just as deadly as the fumes to be guarded against, though of a neutralizing tendency. Thus, ammonia is neutralized with acetic or wood vinegar, itself a deadly poison in certain forms.

Some poisons are manufactured under an iron "hood," or in a little room which the workmen never enter while the process is going on. This hood has one opening, set with glass at about the level of the eyes, through which he may watch the process and see to do his part, and another, not fitted with glass, near the floor through which tools for handling the stuff can be thrust. The top of the hood, or room, is open to the air through a chimney, or other wise, and a constant draught is kept up by the heat of the operation, if there be sufficient, and by fans if there isn't, so that all the poisonous smells and vapors are carried into the open. There they mix with air so as to lose their deadly qualities, and, in fact, rarely descend to earth at all, though there are exceptions in some establishments, such as the ore-reducing concerns, which use quantities of cyanide and other extremely deadly compounds.

It is to aid in getting rid of the dangerous gases that the actual manufacture of poisons is carried forward usually in the top story, the product descending from floor to floor, till it reaches the level of the street, where the boxing and shipping is done.

Mercurial poisons are the most dangerous to make, and no amount of precautions can render their manufacture safe. The subtle vapors of mercury can not be carried away entirely by means of the hood, nor can they be neutralized by any type of inhaler yet discovered.

Altogether the worst mercurial compound is bichloride of mercury, commonly known as corrosive sublimate. The fumes of this poison produce the most painful results in a short time. In ten minutes there is running of the eyes, nose and mouth; great desire to expectorate follows, and then shivering, nausea and headache. There is high fever, and the finger-nails turn blue. Death surely follows lack of speedy relief, and the precautions taken to guard against the escape of the fumes are exceedingly elaborate. A room where corrosive sublimate is made looks like an alchemist's laboratory.

Compounds of phosphorus are hard to manage likewise, hence the many stories printed and told of necrosis, or rapid decay of the teeth and bones among employees of match factories.

Quinine is made of Peruvian bark, the grinding of which is going on unceasingly in a big factory across the river. Eaten in quantities such as would be delicious were the substance powdered sugar, which it resembles greatly, quinine kills. Quinine is of much of the same appearance as atropine, another vegetable substance, and a well-known physician of New York who visited the works came near losing his life the other day owing to his inability to distinguish them apart.

Two great bins of wonderfully attractive looking crystallized powders were shown to him. "That is quinine," said the guide, pointing to a couple of tons of the powder which conquers fevers and ague. The doctor stood next to another bin also containing another crystallized powder,

and he put forth his moistened finger to take a taste of the quinine. The guide stood some feet away, but with a cry he rushed forward, seized the doctor by the arm and dashed his head aside, barely in time to prevent his tasting the powder.

"That is atropine, doctor," he said, gasping, "not quinine."

Even the doctor turned pale, for the taste of atropine he narrowly escaped would have meant a funeral for an eminent physician.

Larger from arsenical poisoning and lead poisoning comes inately from floating particles in the air. Workmen are governed by the strictest imaginable rules in handling these things, and their employers declare they can not be injured if they live up to the rules, though the state board of health does not agree with them in every respect. In the paint making shops, many of which are poison factories as surely as are the chemical works, the only precaution insisted upon is perfect cleanliness, the workmen being obliged at the end of the day's work to wash thoroughly with "paper-makers' soap." Men dealing with lead compounds in the chemical works are cautioned to handle them with little spoons always and never with bare hands. When there is lead sickness in these places the employers say they know for a certainty this rule has been broken.

Cyanide of potassium is peculiarly dangerous. Though it does not exhale deadly fumes, it kills almost as suddenly as prussic acid if eaten. It is especially pretty to look at and its smell is decidedly agreeable. Men who have worked about it say that this smell creates an almost uncontrollable appetite for the cyanide itself, and workmen employed together are obliged to watch one another to prevent involuntary suicide.

THE RACE BETWEEN THE GREAT YACHTS

The international race between the American yacht Columbia and the British yacht Shamrock has been a subject of discussion for months and however great the interest shown in previous years may have been it is not equal to that manifested in the sailing contests inaugurated on Tuesday.

In 1851 the Royal Yacht Squadron of Cowes, Isle of Wight, England, presented for competition, open to yachts of all nations, a cup known as the "One Hundred Guinea Cup." Fifteen yachts, eight cutters and seven schooners started in the race of August 22d of that year and the trophy was won by the keel schooner yacht America, owned by J. C. Stevens and G. L. Schuyler of New York.

The cup was subsequently presented to the New York Yacht Club under a deed of gift in which it was provided that any organized yacht club of any foreign country could claim the right of sailing a match for the cup and during the last 48 years there have been nine contests, the cup still remaining in America. Those contests were as follows: In 1871 the Sappho defeated the Livonia; in 1876 the Madeleine defeated the Countess of Dufferin; in 1881 the Mischief defeated the Atlanta; in 1885 the Puritan defeated the Genesta; in 1886 the Mayflower defeated the Thistle; in 1893 the Vigilant defeated the Valkyrie; in 1895 the Defender defeated the Valkyrie III.

It was not till 1885 when Edward Burgess, the designer, began his work of annually turning out a cup winner that people in Great Britain and the United States universally commenced to take a deep interest in these races. The British had maintained that we could not build yachts, but repeated and unsuccessful attempts to send out racers which were faster than a craft constructed in America demonstrated something to the contrary. The contests developed into competition between two styles of yacht architecture; the American centerboard sloop, broad and shallow, and the English keel cutter, narrow and deep. In American waters the English boat has always proved to be the inferior in speed.

As interest in the international races became more intense more money was spent on the new yachts and designers, using all their skill and ingenuity, began to turn out craft which could be properly called mere racing machines. The two designs began to approach each other, the center-board being replaced by the deep fin keel and the British cutter being made more shallow with greater beam. Scientific experiments continued year after year until the Columbia and Shamrock are practically identical in model, with substantially the same tonnage, length, beam and draught.

The contest this year is therefore of interest as one of similar design but built in different countries and sailed by native crews. It is not so much a question of model as it is a test of rigging, sails, expert handling and good seamanship. It is conceded that the Columbia is the fastest yacht ever launched by American makers and American yachtsmen are also willing to acknowledge that the Shamrock has already shown herself to be the superior of any other craft that has crossed the ocean in the hope of carrying back the coveted trophy. Whatever the result of the races, therefore, they are sure to be close and exciting from start to finish.

The last races which occurred in 1895 ended in so much ill-feeling and with such a display of temper on the part of the disgruntled Dunraven that it was feared challenges for the cup would not be made again for many years. Fortunately Sir Thomas Lipton was sufficiently big and broad and sportsmanlike to forget past disturbances and in the name of the Royal Ulster Yacht Club has asked for another trial. All through he has acted the gentleman. There has been no difficulty in making the arrangements, mutual concessions have been granted and the best of feeling prevails. Every preparation has been made to have the races sailed under the most favorable conditions, with every opportunity for each yacht to show its best qualities. Yacht building science and nautical skill of the highest order will be put to the test and every lover of fair and honorable sport will wish that the best yacht may win.