

It is a delicate and capricious plant, and requires a peculiar soil and careful culture. It costs about \$350 per acre to lay out a hop garden; the vines are not ready for picking until four years after planting, and they wear out in ten years. The wages of hop pickers in England, are settled every season at a meeting of the hop-growers. They average three dollars per week, for a man, but they vary with the seasons.

In America, the hop is cultivated upon a somewhat extensive scale in some districts, such as in the beautiful valley of the Mohawk, where Herkimer and Oneida counties have acquired distinction for their large hop vineries. In these localities the hop harvest is also a pleasant season, but no such scenes as those witnessed in ancient Kent are to be found. There is an absence of that unrestrained mirth exhibited by the English hop pickers, but on the other hand, no vagabonds nor abandoned characters are employed in our hop fields. Respectable country lads and lasses from the surrounding villages gather in our hop harvests. In Herkimer county, the hop vines are trained in several instances upon strings, which run up from stakes set in the ground, to cross wires above, the latter being run from posts set at a distance of about eight rods apart. When the hops are ready for picking, the wires and strings are loosened, and the hops can then be removed with facility.

At the present time, the hop product of the United States, reaches to about nine million pounds per annum, most of which, is raised in the State of New York. In England, the annual hop product averages 40,000,000 pounds. The quality of hops is judged of by their weight. A resinous substance, in the form of minute globules, found near the base of the hop scales, contains the essential principles of the hop. It has a bitter taste and a peculiar fragrance. The fibers of the hop plant are sometimes woven into coarse cloth. Hops are believed to have medicinal virtues. In weak fermented malt liquors, they are prescribed for dyspepsia, but their chief use is in the preservation and flavoring of beer. The vast increase in the consumption of lager beer in America has led to a great increase in the cultivation of the hop. In ten years, the quantity has been quadrupled.

M. Esquiros, who is a Frenchman, considers that the barley beer of the Englishman exercises a great influence upon his character, tending to make him strong, patient, reflective and obstinate. "As a nation drinks," he says, "you may form an estimate of its life." Beer was a mighty favorite with the old Danes and Saxons. There are no less than 100,000 ale-houses in Great Britain. These present a striking index of the tastes and habits of the people. Englishmen glory in the vigor of their beer. One of their orators exclaimed at a public meeting, "Beer and wine met at Waterloo; wine red with fury, boiling over with enthusiasm, mad with audacity, rose thrice against that hill on which stood a wall of immovable men, the sons of beer; you have read history—beer gained the day."

According to Chevalier's and Payen's analysis of hops, they contain of volatile oil, 2.00 parts; lupulin, 10.30; resin, 55.00; lignia, 32.00, and traces of a peculiar wax, malic acid and alkaline salts. Lupulin, is the astringent bitter principle of the hop, and this, with the aromatic oil, are the only constituents of the hop which enter into the composition of beer. In making beer, the hops are added to and boiled with the wort. The ales manufactured for hot climates have a great deal more hops added to them than those designed for cold climates. The quantity of hops used in beer, varies from four to eighteen pounds per quarter (eight bushels) of malt. Beer contains gum, sugar and starch, but it is generally believed, that the lupulin of the hop is its principal tonic ingredient. Munich or Bavarian beer, which has a very high reputation, is composed of water, 87.33; malt extract, 7.97; alcohol, 4.50; carbonic acid, 0.20. London pale ale contains 89.85 water, 4.50 malt, 5.65 alcohol. American-made lager beer contains from 91 to 92 of water, 4.70 malt, 4.34 alcohol, 0.11 carbonic acid. American pale ales are superior to the English, but they are not thus generally estimated, upon the principle, we suppose, that "far off birds have feathers fair." To produce forty barrels of lager beer, fifty bushels of malt, sixty pounds of hops, and three gallons of yeast are used. Brew-

ing is only conducted during the cool season of the year. The period of operation is from the end of October to the early part of April. It is estimated, that about 4,000,000 gallons of lager beer, are annually consumed in New York and its vicinity. There are from seventeen to twenty lager beer breweries in Williamsburgh (Eastern District of Brooklyn), one section of which is called Dutchtown, and is inhabited exclusively by Germans, who smoke their pipes, drink their lager, play dominoes, discuss deep subjects of politics, and speak the language and keep up the customs of Faderland.

VALUABLE RECEIPTS.

TO ANALYZE GUNPOWDER.—Take 100 grains of gunpowder and mix it thoroughly with distilled water until all the saltpeter is dissolved. The solution is now poured into a filter of clean paper, when the saltpeter with the water passes through into the vessel below. By evaporating the water over a spirit lamp the saltpeter will be left behind as residue, which when weighed will give the exact quantity. The sulphur and charcoal mass of the powder left on the surface of the filter-paper is now scraped off, placed in a copper disk and heated to 240° when the sulphur disengages itself in fumes leaving the charcoal behind, which when weighed will give the quantities of saltpeter, sulphur and charcoal of which the powder is composed.

SULPHURET OF CARBON.—This is a colorless, thin liquid, of a peculiarly disagreeable odor. Its chemical symbol is C S₂, and its specific gravity 1.272. It is insoluble in water and boils at the low temperature of 108° Fah. It is soluble in alcohol, ether and oils; but it is a solvent of great power itself. It dissolves camphor, amber, gum mastic, resins, india-rubber and volatile oils, and it may be made very useful in the preparation of resinous varnishes, because it evaporates so rapidly in the atmosphere. It is made by bringing sulphur fumes into contact with red-hot charcoal in an earthenware retort. The gas produced by the combination of the sulphur and carbon in the retort is conducted through a refrigerator when it is condensed into liquid among water. It is combustible and burns with a blue flame.

WAX VARNISH.—Take pure white wax, 1 pound, and melt it slowly in a porcelain vessel under a very gentle heat, then add a pint of warm alcohol and mix the two as intimately as possible. The composition is now poured upon a cold porcelain slab and ground with a muller until it has become very smooth, when it is thinned with whisky, strained through a cloth and in this condition it is called milk-of-wax. It may be used as a varnish for paintings and is considered the best protective for water colors. Many of the ancient paintings owe their freshness to this varnish. Three ounces of wax dissolved in a pint of turpentine makes an excellent polish for furniture that has not been varnished with copal or any of the common gum varnishes.

ENGLISH METHOD OF BENDING PLATES FOR SHIPS' ARMOR.

A new method of bending iron plates for ships' sides has been invented by a workman in an English navy yard. It is described as very much facilitating the work, but it is, in reality, much more costly, more cumbersome, and less expeditious in every way than the methods in use at our own machine shops. The machine referred to is provided with an "ordnance box," for taking the mold for the curve of the plate. This box is a wide piece of iron standing on its edge, through which a number of bolts are screwed up against the ship's side until the exact curve is obtained, the bolts are then fastened with screws and rendered immovable. In connection with this apparatus is another for obtaining the levels and curved edges of the ship's side; it is made of polished iron, very flexible, so that it conforms to the curve, when, by movable pieces of iron, crossways and lengthways, the levels are taken; the instrument on being removed returns immediately to its flattened shape, the edge only retaining the peculiar form given to it by the ship's side. The mold being thus taken, it is transferred to the machine that actually makes the curves, which consists of an iron box fitted with a number of pieces of iron about an inch square and ten inches long; these, by means of screws in the box bottom, can be raised or lowered until they re-

semble the mold which has been placed upon their ends. The "peppots" are then secured in their position; another framework is now provided, which has smaller "peppots," arranged in reverse order to the first; when the plate to be bent is heated and laid on, a framework is drawn out on a railway, and the plate drawn down upon the "peppots" aforesaid by a lever, the upper "peppots" are thrown into contact with the armor with great force, and the end is attained. This plan is said to possess great advantages over the old method, which was to take a wooden mold from the vessel, said mold being only 3½ feet wide, 4½ feet thick (?) and about 15 feet long.

[The above method, copied carefully from an English journal, if it represents properly the means in use for bending armor plates, is certainly rude and clumsy enough; we suspect, however, there are some inaccuracies, as it certainly is not very intelligible; whatever "peppots" may be, no such term is known to us. The wooden molds used in transferring the fac-simile of the *Roanoke's* side are not cumbersome or costly. They represent a wooden skeleton of the plate as it goes on the ship, and they can be readily handled by one man, or at the most two; this skeleton is then laid upon a screw press having movable dies, fixed in the center but loose on each end; as it lays there, winding and twisted, with the beautiful sweep of the bow, the dies—strong heavy bars of cast iron—are quickly raised to the templet until every part of them touch it; the templet is then removed and the massive top bed, with its movable bars, is lowered by a jack, and these accommodated to the lower ones. The press is then ready for the plate, which has been heating by the side of it. Three men could do the whole work of setting the press.—Eds.]

Business in War Times.

The Bangor *Times*, in a recent issue, had some sensible ideas in relation to the prosecution of general business, and the carrying out of public enterprises in war time. So appropriate are these remarks that, with a slight change, we give them a place in our columns. Says that paper:—

Many people seem to suppose that because we have a great war upon our hands every one must stand back and look on as an inactive spectator—that he must enter into no speculations and exhibit no enterprise. This is an erroneous idea, and should be corrected. There are serious duties for those who remain at home. We must keep up and if possible increase our usual spirit of business enterprise so that we may be able to sustain those we send to the field. We owe it to the country and to our soldiers as well as to ourselves, that we be active and vigilant in all that shall help to sustain the business prospects of the country. There never was more money in circulation in the country than now, and business need not be allowed to suffer seriously for want of support. The trouble is that attention being withdrawn to the movements of the armies, immediate business and social enterprises are neglected in proportion. We are all engrossed with the one idea of the war and our energies are suffered to lie dormant. Retrenchment in private and public amusements is commendable and highly proper at this time. But there is danger that our people will run into the extreme of unthriftiness, losing confidence in all enterprises of a private nature, and then, that we shall lose confidence in the national ability. It does not take long, when once a people get started on this down grade, to ruin a State by universal private doubts and dejection. We repeat, we who remain at home have our duties to perform, serious duties too. Upon us devolves the burden of sustaining this war by all the material aid at our command, and all that private enterprise can possibly produce. It is the business of communities that goes to make a nation strong and durable, in war as well as in peace, and this community has only to sustain its usual reputation of thrift, to do its share in giving confidence to the affairs of the country.

Prussia intends to become a strong naval power. It is officially announced that within seven years she will have a fleet of seventy men-of-war, carrying five hundred and sixty-eight guns. The Baltic is to be the principal maritime station, the Government having selected the port of Jasmund in the Island of Rugen. The cost of the fleet and the dockyards is estimated at fifty millions of dollars.