the point section *B*. The body, or reservoir, *A*, is filled with ink by operating the plunger, *E*. The original pen, as described in the patent specification, shows the rod, *F*, as one piece, but the pen as now made has a telescopic rod, which reduces the length of the complete pen.

Fig. 158 shows a section through the ink feeding arrangement of C. E. Browning, 1894 (5256). The feed bar, *C*, is formed in one piece, and fits into the nozzle or point section, *B*. The nib, *N*, is held between the upper and lower tongues as shown, and projects backward into the ink chamber, *L*, which communicates with the ink reservoir by the side ducts. Grooves on the inner surfaces of the tongues communicate with the air passage, which runs centrally through the feed bar. This pen was introduced by Mr. Robinson as the "Regal."

In the feed bar shown in Fig. 159 of J. H. Stonehouse, patented in 1894 (5984), a central longitudinal groove extends along its upper surface next the nib. There are also one or more longitudinal grooves on either side for the passage of air. The pen is otherwise of ordinary construction.

The invention, D. Arriaza, 1894 (9220), illustrated in Fig. 160, relates to a pen in which a solution of solid ink is used to write with. The pellets of ink are stored in the receptacle, *B*. One or more of these pellets are placed in the reservoir, *A*, into which water is introduced. The internal reservoir, *G*, is of flexible rubber tubing, and by exerting a slight pressure on the stud, *F*, ink is forced along the tubes, *D*, and an ink conductor to the nib, *H*. When the pen is out of use the cap, *E*, is pushed backward so as to cover the opening in the feed tube, *D*.

(To be continued.)

MANUFACTURE OF GUN-COTTON.

For the production of a high-grade gun-cotton, it is very important that the cotton used should approach as near as possible to pure cellulose. The waste from cotton mills, thoroughly purified, is usually employed. After careful chemical examination has been made to ascertain its freedom from grease and other impurities, the cotton waste is picked over by hand to remove such impurities as wood, cardboard, string, etc. The cotton is then passed through the "teasing machine," which opens out all knots and lumps, thereby reducing it to a state more suitable for the acid treatment and exposing to view any foreign substances which may have escaped notice in the previous picking. The cotton is then dried. When perfectly dry, it is removed to air-tight iron cases, in which it is allowed to cool. The iron cases are taken to the dipping houses, and the cotton waste weighed into small portions which are then transferred as rapidly as possible to the mixed acids, allowed to remain a few minutes, then removed to the grating and the excess of acid squeezed out. The cotton now containing about ten times its weight of acid is placed in an earthenware pot and transferred to the steeping pits, where it is allowed to remain for twenty-four hours, a low temperature being maintained by a stream of cold water.

The cotton is now wholly converted into nitro-cellulose. The superfluous acid is next removed by a centrifugal extractor, after which the gun-cotton is taken out of the machine and immediately immersed in a large volume of water, and thoroughly washed until it shows no acid reaction. The moisture is then wrung out and the gun-cotton is conveyed by tramway to the boiling vats, where it undergoes several boilings by means of steam. When the "heat test" shows that a sufficient degree of stability has been obtained, the gun-cotton is removed to a beating engine, and reduced to a very fine state of division. When this process is completed the pulp is run by gravity along wooden shoots, provided with "grit traps" and electro-magnets, which catch any traces of sand, iron, etc., into large "poachers," in which the gun-cotton is continuously agitated, together with a large quantity of water. In this way it is thoroughly washed and a blend made of a large quantity of gun-cotton.

SOLUBLE GUN-COTTON.—Soluble gun-cotton is made on the same lines as above, except that greater attention has to be paid to the physical condition of the cotton used, and to the temperature and strength of acid mixture, etc.

The term "soluble" usually implies that the gun-cotton is dissolved by a mixture of ethyl-ether and ethyl-alcohol, two parts of the former to one of the latter being the proportions which yield the best solvent action. The classification of nitro-celluloses according to their solubility in ether-alcohol is misleading, except when the nitrogen contents are also quoted.

The number of solvents for gun-cotton which have at various times been proposed is very large. Among the more important may be mentioned the following: Alcohols (used chiefly in conjunction with other solvents) methyl, ethyl, propyl, and amyl, methyl-amyl ether, acetic ether, di-ethyl-ketone, methyl-ethyl ketone, amyl nitrate and acetate, nitro-benzole, nitro-toluol, nitrated oils, glacial acetic acid, camphor dissolved in alcohol, etc.

Some of the above may be called selective solvents, i.e., they dissolve one particular variety of gun-cotton better than others, so that solubility in any given solvent must not be used to indicate solubility in another. No nitro-cotton is entirely soluble in any solvent. The solution, after standing some time, always deposits a small amount of insoluble matter. Therefore, in making collodion solutions, care should be taken to place the bottles containing same in a place free from vibra-

tion and shock. After standing a few weeks the clear supernatant liquid may then be decanted off. On a larger scale collodion solutions are filtered under pressure through layers of tightly-packed cotton wool. The state of division is important. When the end in view is the production of a strong film or thread, it is advisable to use unpulped or only slightly pulped nitro-cellulose. In this condition it also dissolves more easily than the finely pulped material.

THE CHAMPAGNE INDUSTRY.

By CONSUL J. MARTIN MILLER.

DURING the past five years the consumption of champagne wine in the United States has increased over 35 per cent, or an average of about 7 per cent a year. The United States imported 1,235,880 bottles (quarts) more from the champagne district in 1905 than in 1900. Nothing but the best quality of champagne is exported to the United States, the high tariff operating to keep out the low grades. The United States is now consuming about 4,500,000 quart bottles per annum, and the amount in customs duties paid into the United States Treasury on account of this champagne, all of which is produced in what may be called the legal champagne district adjacent to Rheims, approximates \$3,000,000 a year.

RELATIVE CONSUMPTION OF COUNTRIES.

The quantity of champagne in quart bottles* exported from Rheims to the United States annually during the past six years is as follows:

1900	3,287,628	1903	4,351,116
1901	3,700,524	1904	4,621,188
1902	4,132,716	1905	4,523,508

Great Britain imports almost double the amount represented in the figures for the United States, and drinks more champagne than any other nation. The United States ranks second and Russia third as champagne-drinking nations. Belgium is the greatest champagne-consuming nation in the world per capita, and the Scandinavian States are second in that respect, Norway leading Sweden or Denmark.

While France is recorded in the government reports as having consumed 9,335,412 quart bottles in 1903, 9,808,774 in 1904, and 8,864,947 in 1905, it must be understood that the greater part of this is the very cheap quality of wine made from the last pressings and the refuse of the champagne grapes that the first-class houses cannot use in their export trade. In the legitimate champagne trade it is estimated that less than one-fourth of these figures represent the champagne, in its true sense, that is consumed in France.

QUANTITIES EXPORTED.

The quantity of champagne sold from the Rheims district to all of the countries of the world, including France, for each year since 1900, inclusive, in quart bottles, is as follows:

1900	28,454,436	1903	31,859,158
1901	28,055,045	1904	30,893,655
1902	28,205,440	1905	28,710,799

Of all the champagne that is consumed in the world each year, the people of the United States drink approximately one-seventh. The champagne trade with Japan was about one-third more in 1905 than in 1904. Fifteen years ago the people of Japan used little or no champagne, and shipments were made only for the foreign residents. The exporters here point with pride to the fact that this denotes the progress of the "Yankees of the Far East" more than anything else.

China consumes very little champagne, and there is no record of any ever having been sent to Korea.

UNIFORM CUSTOMS DUTY.

The tariff on champagne is higher in Brazil (\$1.44 a quart) than in any other country. Russia has the next highest tariff, the United States third, Peru fourth, and Germany fifth. On March 15, 1906, Russia reduced the tariff from 95 cents to 91 cents a quart. Italy has the lowest tariff. Greece is the only country in the world admitting champagne free. Great Britain has the very low tariff of 15 cents per quart. The following table gives the tariff per quart in the several countries, expressed in United States money:

Brazil	\$1.44	Switzerland	\$0.27
Russia	.91	Italy	.05
United States	.66 2-3	Spain	.24
Peru	.64	Japan	.06
Germany	.57	Austria-Hungary	.50
Mexico	.54	Portugal	.50
Cape Colony	.52	Argentina	.32
Norway	.42	Chile	.38
Sweden	.39	Venezuela	.30
Denmark	.12	India	.14
Great Britain	.15	Federated Australia	.53
Canada	.28	New Zealand	.37
Cuba	.17 1-2	Turkish Empire	8 per ct.
Philippines	.66 2-3	Egypt	8 per ct.
Belgium	.10	China	5 per ct.
Holland	.06 1-2	Greece	Exempt

There is no government tax on champagne in France. Practically all the cities and large towns of the republic collect an "octroi" tax, however. This is 1 cent per bottle on all consumed in Rheims, and 6 cents at Marseilles and Nice. Paris abolished the tax a few years ago.

FEATURES OF THE TRADE.

Champagne is probably the only commercial commodity in the world that does not fluctuate from year

* Only so-called quart bottles are considered. Probably one-half of the 4,500,000 "quarts" consumed in the United States annually is in pint bottles. While the hotels and cafés quote prices for "quart" and "pint" bottles, the bottles do not contain full United States liquid quarts nor pints.

† Plus 10 per cent.

to year, in either the wholesale or the retail price. It is the same this year as it was one year, five years, and ten years ago. The crop of champagne grapes may be much shorter in some years than others, but this does not affect the price of champagne in the least. Another peculiar feature of the champagne trade is that no matter what the tariff may be the retail price is practically the same the world over. A bottle of champagne at one of the leading hotels in Paris, where there is no duty, will cost about the same as at a similar place in New York or other American city; and the price is practically the same in London, Berlin, St. Petersburg, or Rome, the tariff apparently cutting no figure in establishing the price. Consumers in the United States should be thankful for the high tariff for the reason that it protects them against inferior qualities of sparkling wine.

INFERIOR GRADES.

The fourth and fifth pressings of the champagne grapes and the imperfect grapes that are carefully separated by hand from the choice ones are made into a cheap champagne of two or three different grades. Under the law, however, manufacturers may use the name "champagne" on this cheap wine, for it is made from champagne material. The great houses sell their last pressings and rejected materials to the smaller houses in the trade. This cheap champagne retails at the lower class of restaurants and public houses in Rheims, Paris, and other cities in France at 1 franc (20 cents) up to 2 or 3 francs per pint bottle. It will be seen that the cheapest grade sells for less at retail than the tariff imposed by the United States.

SPARKLE FROM NATURAL FERMENTATION.

It is safe to say that the sparkle in all the champagne shipped from here to the United States is from natural fermentation. Some of the cheaper sparkling wines, sometimes called "champagne," are artificially charged the same as the so-called champagne cider or soda water. This kind of sparkling wine has nothing in common with sparkling champagne except the bubbles. It is easy to detect the artificially prepared wine from the real by the fact that the effervescence of the former dies away almost immediately, while that of the latter remains for some length of time.

There seems to be an impression in the United States that considerable California still wine is sent to France and manufactured into champagne. Further on in this report I explain the law and why it is impossible to use for this purpose any material grown outside the champagne district. I am in receipt of a report from the French government giving the amount of California wine imported to France during the three years named, as follows: 1903, 63 hectoliters, or about 5,040 quarts; 1904, 151 hectoliters, or about 12,080 quarts; 1905, 48 hectoliters, or about 3,840 quarts. The fact that large quantities of cheap wine come to France from Tunis and Algeria has nothing to do with the champagne industry whatever. The French people are the greatest consumers of cheap wines in the world. It is used more generally than milk in the United States. Even the little children drink it. The public schools give it to the pupils. The servants insist upon the daily allowance for wine.

AGE DOES NOT IMPROVE.

Much of the champagne sent to the United States from here is three years old, but some of the choicest brands are five years old. Champagne, however, does not improve with age. Owing to the fact that it requires from three to five years to place champagne on the market after the grapes are pressed, it will be seen that vast capital is required by the great houses to keep the necessary stock on hand from which to meet current demands. The amount of stock constantly on hand in the cellars of the great houses of Rheims and vicinity amounts to about three times the amount that is sold every year. Should there be an entire failure of the grape crop in any one year there would be enough stock on hand to supply the trade without interruption.

The quantity of champagne stock on hand during the past six years was as follows, the figures representing quart bottles:

1900	99,019,659	1903	108,537,987
1901	100,641,967	1904	104,353,969
1902	113,898,775	1905	100,698,363

MANY MILES OF CAVES.

The great caves or cellars are miles in extent, dug out of the solid chalk, from 20 to 100 feet under ground, one under another, without any supports for the most part. It is under ground in these caves that the champagne is made, and where it is kept after the grapes are pressed, for from three to five years before it can be shipped to the dealers. The caves are completely lighted by electricity. Six of the large firms have caves that are 8 to 11 miles in extent each. These caves are in reality subterranean passages that almost rival the catacombs of Rome in extent. They are much greater in the number of miles than the subways or underground railways of New York and London combined. The champagne caves of Rheims and vicinity are estimated to be fully 150 miles in extent. The site on which Rheims is located, in the business portion at least, is completely honeycombed underneath with tunneled caves. The great caves of Pommery and some others are in the environs of Rheims.

Summer and winter they are kept at an even temperature—about 45 degrees Fahrenheit. One of the leading houses has short caves extending two or three hundred feet in both directions from the main tunnel, divided into geographical divisions representing the different nations of the world. These are subdivided

and named after the leading cities. The division representing the United States has its New York, Boston, Philadelphia, Washington, Chicago, New Orleans, San Francisco, etc., all indicated by large enamel letters. Here, in the same way, is London, Paris, Berlin, Rome, Yokohama, St. Petersburg, Melbourne, Calcutta, Buenos Aires, Mexico City, etc., including all the principal cities of the world. Each one of these spaces is piled high with pyramids of champagne in bottles.

WORKMEN AND THEIR METHODS.

The champagne workman is generally of a superior type to the factory hand, as much skilled labor is required. Wages run as high as 300 francs a month (\$60), besides a bonus. In adopting the bonus system, to be paid only on condition of faithful and loyal service at the end of each year, the champagne manufacturers have effectively cured the strike evil. Cleanliness, order, and sobriety are strictly enforced on the part of the employees. No chemists or scientific men are necessary, no foreign matter being employed in making champagne. The "chef de caves" alone tastes and blends the wine in the requisite proportions. It requires about 4½ pounds of grapes to make one quart of champagne. The makers often pay as high as 1 franc a pound, while the ordinary table grapes sell in the market at less than one-fourth that price.

GROWTH AND GATHERING OF GRAPES.

The champagne grape is not used as table grapes. The latter are not grown here, but are shipped from other parts of France and from foreign countries. In fact it may be said that nothing but champagne grapes are grown in the champagne district. The champagne grape is small and exceptionally sweet, hence its special qualities for creating a natural, sparkling wine. It is not white, as many people think, but black. A white grape is used to a limited extent, however, by certain manufacturers.

Some of the great houses grow their own grapes in part, but most manufacturers buy them. The vines of champagne can be divided into three divisions: The Rheims Mountains, with the famous plantations of Verzy, Verzenay, Sillery, Mailly, Rilly, and others; Bouzy, Ambonnay, etc., and the famous hillsides of Avize, Le Mesnil, Oger, Grauves, and Cuis, all south of Epernay; lastly, the valley of the Marne, with Ay, Mareuil Champillon, Hautvillers, Piery, Dizy, Epernay, and Cumières. In these vineyards 25,000 vine dressers are employed. The cultivation of the champagne grape requires exceedingly refined processes, which to a great extent complicates and renders the work very expensive. The cultivation, including fertilizer, costs from \$150 to \$300 per acre each year.

PREPARATION FOR MARKET.

While the production of grapes varies somewhat from year to year, the soil of the Champagne district produces an average of nearly \$20,000,000 worth each year. Everything for the production of the wine and placing it on the market, except the cork, is furnished here, and many of the grape growers as well as the wine makers, bottle manufacturers, and cork dealers have become very wealthy. The corks alone in the 4,500,000 bottles shipped to the United States each year cost fully \$200,000, while the bottles cost at least \$650,000. The champagne bottle of the present day in strength and endurance is the result of the development of many years. Owing to the loss of some of the elements in the glass a bottle cannot be used the second time for champagne. The manufacturers of the cheap and artificially charged wines use the second-hand bottles almost exclusively. The quart bottles, including the cork and fastener, cost from 18 to 22 cents each, and the pint bottles 12 to 16 cents each when bought in large quantities, as the great houses here must purchase them. The larger sized corks, which for champagne bottles must be the highest grade known, cost from 4 to 5 cents for each cork, or \$40 to \$50 per 1,000. The corks for pint bottles cost 3 to 3½ cents each. All corks for champagne bottles must be carefully selected. Every imperfect one is thrown aside for use outside the champagne trade. There are scores of cork experts employed by the large houses among the fifty cork manufacturers and dealers here, using material that comes from Spain and Portugal almost altogether.

PECULIARITIES OF THE SOIL.

The Champagne soil consists generally of a mixture of argillite, or clay, chalk, and sand. The thickness of the upper or top soil varies from two to three feet. The undersoil in certain parts is of a clayey and calcareous nature, mostly the latter, which is nearly pure chalk in many places. The latter has a depth of from 250 to 500 feet, and in some places much deeper. The vine adapts itself readily to the calcareous slopes, its roots absorb the fertilizing elements, which, owing to the permeableness of the soil, filter through the fissures of the chalk. On those slopes of a chalky composition the grapes grown produce a wine of a very superior character to that produced from grapes grown on the more clayey slopes. On the former maturity comes earlier; the upper soil, of very little depth, permeable, and very light, dries rapidly after a rain, the undersoil helping in that the water filters through very easily, permitting the sun's rays to heat the roots of the vines. The champagne vineyards are at the limit of the climate where it is possible to cultivate the vine in the open air.

CHAMPAGNE AND BURGUNDY.

Champagne wine derives its name from the ancient province of Champagne, now a part of the northeastern section of France. The plantation of the first champagne stocks is traced far back in history, certainly to

the fifth century. One of the first, if not the original plantation, is near Rheims. The fame of champagne wine has caused it to be imitated by the use of grapes grown in other parts of France and in other countries. For a whole century Champagne and Burgundy had a demoralizing contest. At the end, by influential intercession, a peace was declared and signed in the following form by the representatives of both industries:

"That if Beaune inspires more love songs, Rheims inspires better music; that to become and remain joyful, a man requireth both these wines as much as he needs two legs."

THE INDUSTRY PROTECTED BY LAW.

It is forbidden by law to use the name "champagne" on any wine made from grapes grown in France or elsewhere outside the area prescribed in the immediate vicinity of Rheims, consisting of about 45,000 acres. A proposed law, more stringent than any heretofore enacted, has recently passed the Chamber of Deputies, and will undoubtedly pass the Senate and become a law at this session. This proposed law bounds more definitely than ever before the area within which grapes from which champagne may be made can be grown. The owner of the vineyards a half mile beyond the line cannot have his grapes manufactured into wine to be called "champagne." Under the law of March 21, 1884, many convictions of violators have been secured. Merchants using the materials coming from outside the district and selling the product as champagne have been heavily fined. A court action was brought in Rheims some time ago against a firm of wine merchants of Saumur. They were convicted of fraudulently using the name "champagne," fined 10,000 francs and costs, assessed for the payment of advertisements in twenty newspapers and the printing and the placing in conspicuous positions of 1,000 posters giving publicity to the fraud.

MANY EXPORTING HOUSES.

There are 52 firms exporting champagne from the Rheims district to the United States. Four of these do two-thirds of this business and nine of them nine-tenths of it, roughly speaking. There are altogether 247 champagne houses in the Rheims district. Some houses do not attempt to push their business in the United States, because they claim the methods of "drumming up trade" there require too much of an outlay. The methods of creating a champagne trade are entirely different in every country, it is said. For this reason some of the leading firms here devote their efforts to expanding their business in England, Russia, and other countries, simply accepting the orders that come to them from the United States.

THE ART OF CHAMPAGNE MAKING.

As a rule the public has a false and erroneous notion as to how "sparkling champagne" is prepared. Grapes are never trodden by the feet, but are crushed with machinery, by means of presses built on scientific principles. The "must" is at once separated from the stalk and skin which contains the coloring matter, and a liquid hardly tainted is obtained. After the first fermentation it becomes perfectly white. It is difficult to form an exact idea of the care which is exercised in gathering the grapes. The bunches are carefully detached one by one, without any pressure, sorted according to their degree of ripeness, every berry generally well examined, the grapes being crushed every day without delay under the vine press. The liquid obtained from the press after three consecutive pressings gives the "brew." It is this wine which has the necessary qualities to make sparkling wine. Those obtained by subsequent pressings are called "Vins de suite" (after wines). Very inferior in quality, they can not be used for choice "champagne."

FERMENTATION.

As the "must" runs out of the press it is put into open tubs, where it is left to settle for twelve hours so as to allow the solid parts it contains to descend to the bottom of the tub. It is afterward drawn off into casks that have been scrupulously examined; this is called the "clearing out." Fermentation begins a few days later and changes the sweet liquid or "must" obtained by means of pressing into an alcoholic and acidulated liquid which takes the name of "wine." As soon as cold weather sets in the wine becomes perfectly clear, when it is again drawn off with the greatest care, so as to separate from the wine the dregs which have formed at the bottom of the barrel.

THE MIXING OR ASSEMBLING.

During the two months of January and February the merchant mixes in immense casks the wines of different vineyards which he has bought at the time of gathering. Experience has shown that in order to obtain wines uniting quality, "bouquet," vinosity, and daintiness the champagne maker must mix different wines which possess separately and individually each of those elements. It is in this mixing that the wine dealer shows his knowledge guided by experience, as he must base his judgment on the quality of the wine at each vintage and on the characteristics of each vineyard.

Generally wines put in reserve from previous years are mixed with those of the new vintage. Thanks to this proceeding, new wine is often improved, the type of former vintages is kept up, and the change is rendered imperceptible to the consumer.

THE BLENDING AND SPARKLE.

This name is given to the whole of the different wines. After they have been tasted by the head of the firm, their composition and importance are decided upon so as to form a homogeneous and harmonious "ensemble," in which "bouquets" have been combined, improved, and have completed one another.

As soon as spring sets in and the sap is in motion bottling is proceeded with. The bottles are rinsed with minute care, filled up, and hermetically corked by means of special tools. Then they are packed into immense stores. Here a few words of explanation are necessary. The first industrial attempts of drawing (bottling "sparkling champagne"), which were not very successful, date as far back as the year 1746. The breaking of bottles was considerable. The most experienced men of that time had no idea of the way in which sparkle was formed, and they contented themselves with tasting, in order to know whether the wine contained enough or too much sugar at the time of bottling. But in 1836 a distinguished chemist of Châlons-sur-Marne, Mr. François, succeeded, after numerous experiments, in determining the exact quantity of sugar which champagne must contain when being bottled, in order to give a fine sparkle. For this purpose he used the gluco-enometer (glass floaters invented by Cadet Devaux) and took a given quantity of wine the alcohol of which had evaporated.

DETECTING PRESENCE OF SUGAR.

By means of the gluco-enometer the exact quantity of natural sugar contained in the wine is calculated before bottling. If this proportion is too small, the necessary quantity of pure candied cane sugar is added; then the wine is bottled. The raising of the temperature on one side and on the other the natural evolution of the ferments, which take place at the same time as vegetation begins in vines, cause an active fermentation, thus transforming naturally the original sugar, or that which has been added, into alcohol and carbonic-acid gas. In consequence of hermetic corking, it remains in the shape of a dissolution in the liquid and forms the sparkle. At that period the wine is said to be "raw." "Raw champagne" is good only when it comes from particularly good vintages with regard to quality and vinosity or, again, when it is kept for a good many years.

TWISTING AND DISGORGING.

The fermentation which has developed sparkle has given rise to dregs that must be removed. As soon therefore as the wine has remained long enough in the cellar to be almost matured the bottles are laid on their necks, viz., upside down in a desk or table pierced with holes and having an inclination of 60 degrees. Every day for six or eight weeks these bottles are gently shaken; that is, they are turned round with the hand by a sharp and quick circular movement. Gradually the dregs are displaced and come down on the cork. The dregs that have formed in the wine having accumulated on the cork, the liquor has become absolutely limpid. The workman takes the bottle with his left hand, keeping it inclined, cork downward, while with his right hand, by means of a hook, he cuts the wire which ties the cork. Drawn with pincers and blown out by the gas, the cork comes out with a bang, carrying with it the dregs. At that moment the man raises the bottle swiftly.

LIQUEURING AND DOSING.

Dosing is the most important performance after disgorging. By fermenting in the bottle the wine has lost almost the whole of its natural sugar and has thus become quite dry (brut). To remedy this a certain quantity of a liqueur, made solely of pure cane sugar of the very best quality, dissolved into exceptionally fine "champagne" of choicest growth, is added to each bottle. Such is the liqueur which is used to give sparkling "champagne" the degree of sweetness wanted, according to the different countries where it is to be sold, and where sweet or dry wine is preferred.

The champagne drinker without discrimination wants his champagne sweet, while the connoisseur wants it dry and in its most natural state, with possibly a little sugar. In former times the United States took its champagne considerably sweeter than now. Ten or a dozen years ago the wine sent from the Rheims district to the United States had to have as much as 8 to 9 per cent of sugar for the "Sec" or "Dry," while at present we will not have more than 3 per cent of sugar. Connoisseurs in France comment critically upon the American habit of putting ice into the glass when drinking champagne, which they claim should never be done.

England takes the driest champagne, while Russia takes the sweetest. Germany, Belgium, and the Scandinavian countries want it with a little less sugar than Russia. "Brut" is a natural champagne without any artificial sweetening. "Sec" and "Extra Sec" ("Dry" and "Extra Dry") have a small percentage of sugar.

CORKING AND PACKING.

The dosing done, the bottle is corked again with a new cork of a superior quality to prevent the loss of gas. The cork, which has been previously stamped by burning with the name of the firm, is made fast, sometimes with string, sometimes with wire, or with diverse systems, according to the merchant's taste.

When the bottle has its label, its silver paper, its brilliant or wax capsule covering, it has gone through all the different stages of dressing. According to habits and obligations imposed by different countries the bottle is wrapped up in paper, then in straw, and laid in cases or baskets of various sizes. The "champagne" bottle's resplendent toilet, when finished, has passed through the hands of forty-five workmen.

Crystalline Hair Oil.—800 parts of sesame oil, 100 of spermaceti, 50 of stearin, 20 of oil of bergamot, 20 of oil of geranium, 5 of oil of petitgrain, 4 of oil of cloves. With more spermaceti and stearin, this becomes a firm brillantine usually colored green with chlorophyl.—Parfumeur.