

following the passage of the so-called denatured alcohol law, which became effective January 1, 1907. The average value per gallon reported for crude alcohol manufactured during the calendar year 1906 was 34 cents. In 1907 it dropped to an average of 15 cents, increased to 17 cents during 1908, and reached an average of 24 cents in 1909.

The use of sawdust and other mill waste as material in 1909 was substantially greater than in any preceding year, and the indications are that the industry will develop largely in future in the direction of utilizing this class of material.

A comparative summary of the operations in 1909 of the 116 hard-wood distillation plants using 1,150,000 cords beech, birch, maple, etc., and the 31 soft-wood distillation plants using 116,000 cords longleaf pine, etc., follows:

| Product. | Hard wood. | | Soft wood. | |
|-------------------------|-------------|-------------|------------|-----------|
| | Amount. | Value. | Amount. | Value. |
| Charcoal, bushels..... | 53,075,000 | \$3,299,000 | 2,403,000 | \$210,000 |
| Crude alcohol, gallons | 8,468,000 | 2,082,000 | ..... | ..... |
| Gray acetate, pounds.. | 148,769,000 | 2,203,000 | ..... | ..... |
| Brown acetate, pounds | 2,157,000 | 22,000 | ..... | ..... |
| Iron acetate, gallons.. | 303,000 | 28,000 | ..... | ..... |
| Oil, gallons..... | 38,000 | 3,000 | 323,000 | 770,000 |
| Tar, gallons..... | ..... | ..... | 1,365,000 | 105,000 |
| Turpentine, gallons .. | ..... | ..... | 683,000 | 243,000 |
| All other..... | ..... | 5,000 | ..... | 59,000 |
| Total value..... | ..... | 7,642,000 | ..... | 687,000 |

NEW BRITISH ALUMINUM ALLOY.

(From Consul Albert Halstead, Birmingham.)

A Birmingham firm has discovered and patented a new alloy of aluminum, which is called *clarus*, and for which many claims are made.

It is claimed that this alloy is at least 60 per cent. stronger than ordinary aluminum and that its weight is one-third that of brass of an equivalent volume; that it will take a very high polish, equal to that which can be obtained with silver; that atmospheric surroundings do not cause it to tarnish; that castings are not brittle, but can be bent cold; that it is suitable for castings of any size, and that in all circumstances such castings have been found to be sound and free from blowholes and other defects.

It is claimed that the new alloy is excellently suited for automobiles and for electric-railroad, railroad-car, and aeroplane fittings. The manufacturers state that it has been made into sheets, drawn into wire, and into tubes and rods; that they have spun it and stamped it, and that they have made hand-pole brackets for the underground electric railways of London, for railway-carriage fittings, for carriage furnishings, street-car fittings, and automobile and motor-bus fittings.

Cost of Production.—Patent Rights.—They assert that it is very little more costly than pure aluminum. Inasmuch as in aluminum alloys much spelter has been used to reduce the cost, the cost of production of this alloy would be greater probably than that of alloys with heavy percentages of spelter, etc. The alloy *clarus* is made from aluminum of 98–99 per cent. purity.

The owners of the patent are prepared to sell the exclusive rights in the United States in preference to permitting its manufacture in the United States under license or exporting the finished product, and are ready to demonstrate its usefulness. (The name of the owners of the patent can be obtained upon application to the Bureau of Manufactures.)

FLAX AND LINSEED OIL.

ENGLAND.

(From Deputy Consul-General Carl R. Loop, London.)

The price of linseed oil in the English market, according to a prominent dealer, changes almost hourly. At the time of

writing (October 25th) the United States is probably buying crude untanked oil from this market or from Germany at about \$11.20 per 112 pounds, in barrels f. o. b. London, less 2½ per cent. for prompt cash.

American linseed oil does not at present participate to any extent in the English market. One dealer advises that it could not have been bought here for some months past, save at a price (c. i. f., London) far in excess of that of English or Continental oil, and adds that it would be almost impossible to make a price here for oil for shipment from the United States.

Crude linseed oil, as supplied from the crushers here, is put up in barrels of about 50 American gallons, in pipes varying from 125–175 American gallons, and also in returnable steel drums of 150–200 American gallons. Linseed oil coming into this country from the Continent is almost invariably sent in barrels, but a part of it is imported in steel drums. Assuming 7½ pounds to be the equivalent of an American gallon, 1 hundred weight (112 pounds) is the equivalent of 15 gallons, and a ton of 2,240 pounds is equivalent to 298 gallons.

The present supply of linseed oil is by no means normal, and has not been during the whole year, the demand far exceeding the supply, and it is said that this situation applies not only to the United Kingdom, but to all parts of the world.

The linseed crop in the United States is just now becoming available for oil; the new crop from Argentina will not be available in the United Kingdom or in the United States until early in the year 1911, while the next Indian crop will not be available for oil until April or May, 1911.

The bulk of the linseed imported into Europe is produced in Argentina and India; small shipments are occasionally made from Russia, and also from the United States, but shipments from the latter have gradually decreased in volume.

The shortage of linseed, both in the United States and Argentina, became apparent at the beginning of the current year, and prices began advancing accordingly, both for the seed and for the oil, until in April a rise in oil of some \$49 per ton (2,240 pounds) had been registered. Owing to various causes, over-speculation included, prices then receded very considerably, but recovered again in August and are now higher than ever, with a difference of no less than £20 (\$97.33) per ton of oil over the prices ruling a year ago. These continued high prices are due to the very unsatisfactory reports regarding the new crops in the United States and Argentina, and if these reports prove true prices will certainly go still higher, and in such case linseed oil in England and elsewhere is not likely to rule below \$195 per ton during next year.

Turning to reliable newspaper statistics for October, 1910, it appears that the ruling price for linseed in London ranges from £45 5s. to £45 15s. (\$220.21–222.64) per ton, while in the corresponding week of 1909 the price varied from £30 to £30 5s. (\$146–147.21) per ton. The importations into the city of London during the week ended October 20, 1910, amounted to 11 barrels from Belgium.

RUSSIA.

(From Consul-General John H. Snodgrass, Moscow.)

The Russian flax crop of 1910 is medium in quantity, but of good quality. The buying price at present (November 1st) is 20 per cent. higher than in 1909, occasioned principally by the larger export demand and the limited stock of the European mills.

During August and September there were few clearances of stocks on account of exporters having succeeded in getting holders to give way in price, but in many places the full asking price was paid. As a rule, dealers have been and are now holding firmly to the little flax they have to sell. A prominent commission house reports as follows:

We are not yet in a position to form a definite opinion as to the

yield compared with last year, taking Russia as a whole, but we are inclined to the belief that the 1910 crop will show a moderate excess. There has been an increase in the total of business carried through in the consuming countries, brought about not by any general buying but by some largish clearances of stocks of certain descriptions, chiefly water-retted; prices have fluctuated to a slight extent, but the last sales reached the highest figures paid. There has been a fair number of transactions in tows; a good deal more would have been done if there had been a greater choice of quality, or if sellers had been more amenable as regards price. A few sales of new crop Slanetz flax have been made at prices which are decidedly under the ideas of the majority of shippers. We have not yet been able to trace any sales of this year's water-retted flax.

The latest official returns show the yield of flax in the several provinces of Russia in the year 1907 was as follows, in tons: Pskov, 32,951; Tver, 64,877; Smolensk, 89,797; Viatka, 47,118; Livonia, 49,568; Vitebsk, 24,989; Perm, 23,931; Kovno, 19,966; Vladimir, 14,485; Kostroma, 16,515; Yaroslav, 16,182; Mohilev, 16,627; total, 417,006 tons.

CHINESE LACQUER WARE.

(From Vice-Consul Henry Oscar Nightingale, Foochow.)

The manufacture of the lacquer ware known to the Chinese as the "No. 1 Foochow lacquer" can hardly be called an art; it is rather a craft, the result of infinite labor and patience, since the laying on of the coat or color requires no more skill than the simplest form of painting.

This lacquer, although very popular and greatly sought by the Chinese, is little known in America, doubtless owing to a lack of appreciation or the cost, since the market is flooded with a cheap form of lacquer that seems to answer all requirements. The superiority of the No. 1 Foochow lacquer over all other forms is due to its durability and beauty; it takes more time to prepare (in some cases several years) and possesses a finish and depth of color unlike any other products of the same nature. The extreme care taken to refine the pure lacquer, the number of coats given, and the great quantity of gold and silver leaf usually used in the last coat are the cause of this.

Concerning the gold and silver leaf used, one imparts to the lacquer a dull gold color, in whose depth a fine gold powder may be discerned, and the other gives a silver-green effect. Sometimes a little coloring matter is added, but the result is supposed to be better without it. The quantity of gold mixed with the lac is about one-third the selling price for these articles, which usually ranges from \$2-3000.

The earliest record of lacquer is from the Sung dynasty, although it probably existed long before that date but in a more crude form. It was introduced into Japan in the third century from Korea, at the time of the conquest of that country by the Empress Jingo. The seventeenth century marked great progress in the industry in Japan, and the gold lacquer became very popular, but from that time its popularity decreased and the demand did not revive until the last few years. Last year the export from Japan was 219,525 yen. The export of No. 1 Foochow lacquer, though a far superior article, is so small as to be classified in the customs returns under the head of furniture.

The lac, as is well-known, is not a manufactured product, but the sap of the *Rhus vernicifera*, or *Ch'i shu* of the Chinese. The tree is tapped at night during the summer season and the lac sold to the consumer as a dried cake or in a semifluid state. It is first placed in a rectangular pan, where it is continually stirred with a spatula for about two days, then pressed by twisting the lac through a sack made of fine grass cloth and lined with a thick layer of cotton. The refined lac is put into the pan again for a day and the same process is repeated. So prepared, the lac will answer for the first coats given the articles,

but for the final or color coat the lac used undergoes this process four times.

The invention of the No. 1 lacquer is said to belong to the Shen Shao An family, in whose hands the manufacture still is. To this same family is also accredited the invention of silk lacquer.

The term lacquer ware applies only to the thing which has undergone certain preparations before receiving several coats of lac. Ordinary woodwork covered with Ningpo varnish, or even with lac, is not included. The proper lacquer ware may be chiefly divided into two kinds, the ordinary and the silk.

The ordinary lacquer is applicable to almost every kind of furniture and to ornamental articles for the houses, but is commonly applied to woodwork. Only very old wood, usually cedar which will neither warp nor crack, is used for this purpose. Articles and ornaments of the most delicate carving are treated in this fashion. To prepare the woodwork, such as furniture, for lacquer, a lacquerer scrapes the wood 1 or 2 inches wide along any crack or joint or opening that may exist; it is then filled up with lac and two or three coats of linen cloth, which will not only cover the depth but also serve to keep the parts together. After a fortnight or longer, when the lac on the linen is perfectly dry, the woodwork is covered with a thin coat of black lac mixed with a little ching-chu, a kind of clay, the preparation of which will later be described.

Ten days later, a process of general polishing is applied to the article with fine pumice stone of various shapes and sizes. About every ten days a new thin coat of the lac mixture is put on. The article is always polished before receiving a new coat. After the ninth or tenth coat of this black lac mixture, the article is thoroughly polished so as to receive the color coat.

For the preparation of the final coat, a small portion of lacquer that has undergone the refining process four times is mixed by a pallet knife on a stone surface with the gold or gold and silver leaf. When thoroughly mixed, it is placed in the center of a thin sheet of cotton paper. The paper is then rolled together with the lacquer inside, the ends being twisted in opposite directions, until the lac oozes through. This is repeated three times. There is great waste by this process which may also account for the price charged for some of these articles.

There is but one coating made of this lacquer. Sometimes a flat surface is decorated by adding flowers or birds with ordinary paint, but this is not very popular, since the color and quality of the lacquer itself are deemed sufficient decoration.

The silk lacquer is generally applied to small articles either for practical use or for ornamental purposes, such as vases, card cases, and images.

The art is so far advanced that images of almost every description can be made under this system, with accuracy and clearness. The process commences by pasting a coat of native printing paper with rice glue mixed with ching-chu powder on a well-modeled clay image, care being taken to cut the paper into proper sizes to suit the different parts where it is pasted, and to paste it so neatly that every wrinkle of the face or fold of the material, should there be any, will remain clear cut. After the pasting, the figure is thoroughly washed with this thin mixture and left to dry for two or three days.

On top of the paper is then pasted the silk with a plaster of black lac and pulverized ching-chu, with still greater care as to the overlaps and folds than is required in the paper coating. Ten days later another coating of silk is added after the necessary polishing has been applied.

For small articles only two coats of silk are sufficient, but in the case of larger ones one or two more coats may be added. When the silk molding is dry and carefully finished subsequent coatings of black lac mixture are applied thereto at an interval of about every ten days in the same manner as to the wood, only greater care is exercised and longer time spent in the