The Art of Dyeing—No. 8.

BLUE ON WOOL—All cloth should be made of dyed wool, for the color cannot penetrate so thoroughly into the minute cells of the wool when made into cloth as when in the wool state. The best cloths, therefore, are made of dyed wool, still there is a great deal of black cloth dyed in the piece. These pieces can easily be detected, as the makers of the genuine dyed-in-the-wool cloth weave a selvedge of a different color, while the cloth dyed in pieces cannot show this, and the only way that deception is practiced is by sewing on a selvedge of a different color. Persons purchasing black broadcloth would do well to remember this.

The dyeing of wool differs in no respect from woolen cloth, except in the apparatus; the stuffs employed are the same. The wool is dyed in nets, cloth is dyed by handling on a reel, and woolen yarn by turning it over on pins.

INDIGO BLUE—The common method of dyeing indigo blue on wool for domestic use, is by steeping finely ground indigo in urine, and keeping it at a temperature of about 62°, for four or five days. It then assumes a deep green color, and the wool may be well handled in it for about half an hour, when it will dye a color in depth according to the strength of the liquor. This is a simple and good method of dyeing indigo blue, but the odor is very unpleasant.

THE WARM VAT—It requires greater heat to dye wool than cotton or silk, the vat for dyeing wool therefore, has to be so made that it can be heated up. A perforated steam pipe some distance above the bottom of the vat, secured to its sides by brackets, so as to leave free room for raking, is the most convenient method of heating it. By this plan a wooden vat answers as well as an iron one, and the temperature of the liquor can be regulated with the utmost exactness. The indigo must be ground to an impalpable powder, or it will spot the goods, and also be a cause of loss. Take, for a small vat, six quarts of common flour bran and one pound of ground madder, and boil them in a kettle for two hours. In this liquor dissolve three pounds of potash, then take it off, allow it to settle, and pour the clear into the vat, which must now be filled with water at about 120°, to within six inches of the top. This is for a vat that will contain 250 gallons. Now introduce three pounds of finely ground Bengal indigo, and stir all up with a rake. The vat is now covered with a woolen cloth, and the temperature of the dye house should be maintained at about 62°. It is first left to rest for about ten hours, when it should be opened and raked well, and again covered up, and these operations continued every three hours—during the day time—for three days, when it will have assumed a deep green color, and is then fit for working. A net is let down into the vat, to keep any sediment from rising, and then the goods are introduced and cautiously handled until the depth of shade desired is obtained. The shade will not be deep for a vat of 250 gallons with only three pounds of indigo, but by using six pounds, and the same proportions of madder, bran, and potash, a strong vat will be the result. The heat of the vat for dyeing should be about 120° Fah. The mending and working out of an ash indigo vat, requires great care and attention.

The following is the French method of preparing and keeping the indigo vat for wool, usually termed "Homasel's method," and which, perhaps, has no superior:

"For a boiler of from thirty-six to fifty four-gallon buckets of water, employ four pounds of indigo of a fine copper color, two pounds of madder, eight pounds of pearl ash, or of potash, and one-sixth of a bushel of good bran.

Fill the boiler three-fourths full of soft water; put in four pounds of the alkali, a pound and a half of madder, and a quarter of a bushel of bran. Boil these together for at least four hours; this is absolutely necessary. When the liquor has boiled during that time, let it rest for twenty minutes, and strain it clear from the sediment.

While the bath or liquor is boiling, prepare the indigo, which it is absolutely essential should be bruised into a paste fine enough to pass through a fine sieve, which it must be made to do. The sediment that will not pass through must be ground over again. Put in the indigo, and take care that the boiler be not more than two-thirds full; nor should the heat be now permitted to exceed 45 degrees of Reaumur's thermometer, or 133 of Fah., to which degree it should be kept up; a few degrees below this will prevent its working well, and a few degrees above will scald it too much.

In twelve or fifteen hours the liquor will be green, when you must put in one pound of alkali; stir it well, and let it rest twelve hours, always keeping up the same degree of heat. Then put in the rest of the alkali, bran, and madder, and let the liquor boil for five minutes, but no more. Let the liquor now rest, until it be cool enough to empty into the vat; empty it therein, and stir it well; let it rest four hours, when it will have a fine green color and a pleasant smell.

When the wool is dyed, the liquor must be cooled to the degree in which the hand can be immersed without inconvenience; that is, rather under than above 133 degrees Fah. Should the vat after working become black, the indigo collects and is not diffused; if it becomes greasy, it leaves white spots on the cloth. In the latter case, put about a gallon and a half of bran in two or three bags, and throw them into the vat; when they have absorbed all the grease they will rise to the top of the vat, when they may be taken out and a refreshing of madder and alkali added, according to the quantity of indigo calculated to remain in the vat. Stir the liquor in the vat; let it rest four hours at the heat of 133° Fah. Stir it well again, and let it again rest four hours. If the vat be black, add a little alkali, and bring up the heat to 133° Fah., for twelve or fifteen hours, till it begins to come to, and then add a little madder and bran. The yarn or wool is handled in any of the known methods.

After having colored twenty pounds of wool, the vat may be slightly refreshed and stirred, and left to settle for four hours; but this refreshment need not be put in unless you observe the vat rather spent, and the green color turning blackish; too much refreshing with madder and bran will make the vat turn greasy.

A vat thus set, will dye thirty pounds of wool a royal blue, for each pound of indigo, and also thirty other pounds a lighter blue, and even give a light blue ground to other parcels intended for greens and browns.—This vat ought to be worked out till it is spent and clear, that there may be no need of the trouble and expense of reheating; and the quantity of indigo should be previously calculated to answer the quantity of blues and greens you contemplate to dye in it. This vat is superior in color, when the indigo is good, to the pastel or woad vat; but when cloth is to be dyed in it, instead of wool, the dyers proceed thus:

For a vat of a hundred buckets of water they employ but four pounds of indigo, which is treated as above. In another small boiler, holding ten or a dozen buckets of water, they set another vat, wherein they employ from ten to twelve pounds of indigo in perfect solution, that is, using the proportions of madder and bran necessary with the alkali to dissolve the indigo. By taking a bucket full or two out of this small vat and pouring it into the large one, the latter is conveniently refreshed, and kept up of any desired strength. Before the cloth is dyed, it is exposed on the grass to bleach, and then fulled, and the large vat is kept rather weak than strong. The bleaching and milling contributes much to the brilliancy of color.

The Snail Trade.

Among the list of articles exported from Switzerland, appears the item "snails," of which 925 quintals were sold for foreign consumption during the months of October and November last.

[Who uses them, and what are they used for.

Remarkable Properties of Sugar Cane Juice.

An article on the cure of consumptive and bronchial diseases, by Dr. Cartwright, of New Orleans, has been published in the Boston *Medical and Surgical Journal*, in which he describes cures effected on persons afflicted with consumption and bronchitis, by inhaling the vapor arising from cane juice, in the act of boiling. The information which he presents is both curious and useful. He says:—

"The alcoholic liquor known as rum, is obtained from sugar alone; the ferment called *dunder*, being an aromatic substance obtained from the skimmings of boiling cane-juice; which is necessary to assist in the decomposition of the sugar in its metamorphosis into rum.

Arequin, a French chemist, of New Orleans, whom Liebig, Dumas, and Gerhardt quote in their works as the very highest authority in the analysis of cane-juice, has discovered a peculiar principle in that liquor, which he calls *cerosie*. He says it is an unique natural alcohol, and presents the only instance known in nature of an alcoholic substance being produced without artificial agency. The new and wonderful science of optical chemistry proves that one of the chief constituents of the liquor in the clarifiers, from which the fragrant saccharine vapor arises, has the power to rotate the plane of polarization of polarized light, 100° to the right.

According to experiments of Carminati, the essential salt of cane-juice destroys such cold-blooded animals as toads and lizards, whether applied externally or given internally. There are also many conflicting facts in regard to the virtues of sugar—some proving that it breeds worms, causes scurvey, and injures the teeth; others, that it destroys worms, cures scurvy, and whitens the teeth. These facts are reconciled by the discovery of the two kinds of sugar—the *dextrogyrate* and the *lævogyrate*. I took an alligator to the chemical laboratory, requesting Mr. Riddell to try if the respiration of carbonic acid gas would kill it. After trying gas upon it for a good part of the day, it was brought back as lively and vigorous as ever. It was thought that owing to the size of the animal, the vessel it was put into might have contained a small portion of atmospheric air. I then gave it some pure dextrogyrate sugar from the plantation of P. M. Latice, Esq., being some of the same parcel which was made by first process, and rotated 100° to the right. Also a solution of it was smeared over its body. This was in the evening. The next morning the alligator was found perfectly dead."

About this time Prof. Riddell was busily engaged in looking into a new world, invisible to the naked eye, through his powerful microscope. The sediment taken from the gutters was found to be alive with rotifera and various other hideous-looking animalculæ. The most numerous among them was a species of the *Euchlanis Leucophreys patula*. They briskly moved through an olgoid substance, called by the Professor *ocillaria*. He fed them with various matters, such as carmine, which they devoured with the same rapacity that hungry, ravenous beasts, in the visible world, devour their food. He fed them on human blood, which they gobbled down with a keen relish. At length I handed to the Professor a stock of mature cane, just cut from the field of a sugar plantation. He squeezed some juice out of it, and put a speck into the nidus of these ravenous animals. It killed the whole of them as quick as lightning. Young Riddell, a smart boy about 12 years of age suggested to his father, the Professor, to try to bring them to life by the same means that he had brought others to life killed with chloroform. He tried, but could not bring them to life. They were dead. Among them was a nondescript animalculæ resembling a tape-worm. It did not die instantly as the others did, but all its joints came apart, and in a few seconds every joint was dead."

These results appear more like magic than sober facts. From witnessing such remarkable properties in sugar cane juice, Dr. Cartwright anticipated remarkable effects from its application to medicine. He was filled with enthusiasm, and at once proceeded to the house of a patient—a young Frenchman in New Orleans—who appeared to be dying with the consumption. He had him conveyed to a sugar house in a very short time afterwards, where he soon recovered by inhaling the vapor of boiling cane juice. This person is Dr. Chapellier, whom his friends had given up as one ready to drop into the grave. It has long been observed by overseers of sugar plantations that weakly and sickly persons soon get robust and strong when set to skimming the pans during the boiling of cane juice; facts are overwhelming on this point. From Dr. Cartwright's knowledge of this, and the peculiar effects of cane juice in destroying cold-blooded animals, he recommends the inhaling of cane juice vapor as a cure for consumption in its early stages. His own experience seems to be conclusive on this point. The fragrant cane juice is perfectly respirable, and penetrates into the smallest bronchial tubes, and produces beneficial effects.

"The essential salt of cane juice," he says, "is technically called *dextrogyrate* sugar, because its solution rotates the plain of polarization of polarized light to the right. No other saccharine matter than dextrogyrate, or vital sugar, is contained in the cane plant. After the canes are cut, unless the weather be extremely cold, whether the juice be expressed or not, chemical changes begin almost immediately to occur, as in the blood and flesh of slaughtered animals. Instead of putrefaction, as in flesh and blood, fermentation takes place, and the dextrogyrate begins to be converted into *lævogyrate* sugar, which rotates to the left. The refiner's art can convert it into *glucose*, and make it assume the crystalline form, looking pretty and white, and rotating to the right again; but no art can ever reconvert it into a substance possessing its original properties—its lost aroma cannot be restored. That aroma is very volatile; it is as effectually destroyed by double refining, as the aroma of wine by its distillation into alcohol. Loaf sugar, however, when made by what is called the 'first process,' on the same day the canes are cut, preserves much of its aromatic odor. It is the volatile aroma in the cane juice, which, perhaps, imparts some specific virtue to the vapor that hangs, like a cloud of incense, over the boiling-kettles of a sugar house. Although something is known in regard to it, there is yet much to learn."

The extracts which we have given from the article of Dr. Cartwright, deserve a wide circulation. It appears there are two kinds of sugar, of very different properties, both made from the cane, the best being made from the unchanged juice. It therefore appears to us to be a question which should deeply interest sugar planters, namely, to prevent the juice undergoing any chemical change before it is boiled and made into sugar.

A New Life Preserver.

The Toledo (Ohio) *Blade* says: Capt. Isaac T. Phratt, of the *Northern Indiana*, has invented a new life preserver, which promises to be very valuable. The idea is, to attach to the panel of every door on board of a vessel or a steamboat an india rubber sheet, which, in a collapsed condition, lies flat upon the surface. Usually there will be four panels to a door, and when the sacks are inflated it is designed that the door shall be capable of saving one or more individuals. Small cords are to be attached to each door, and staples are driven in each, so that two or more doors can be promptly lashed together.

More Gold.

The steamship *North Star* arrived at this port from Aspinwall, on Thursday evening last week, with no less than $1,239,000 in gold. This shows that the placers are still yielding large quantities of this precious metal. A great number of machines are now at work in California crushing the ore and operating upon a large scale. Improved methods of crushing the quartz and extracting the gold are now reaping their golden harvests. Hand labor by simple pan washing will soon be at an end, but the fields for machine labor have no limits.