PREPARATION OF LAMB AND KID SKINS FOR GLOVES.

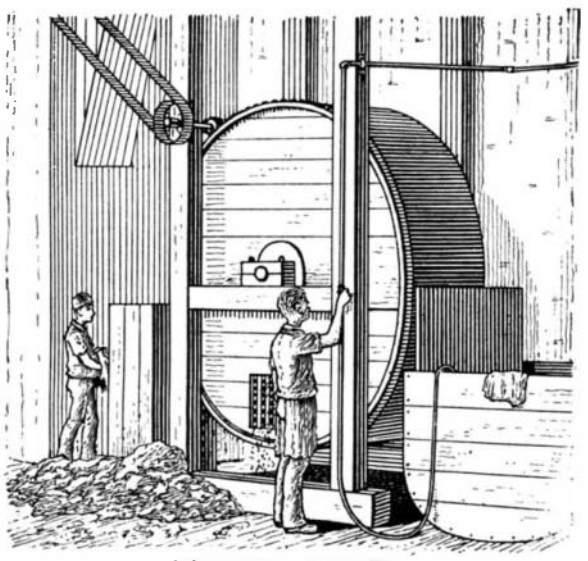
Kid gloves are made principally from lamb and kid skins imported from Brazil, France, and Germany. They come to this country packed in bales containing from 250 to 400 skins. In preparing the material for gloves, the skins have to pass through a number of processes such as washing, hairing, paddling, tanning, staking, coloring, and polishing. The skins, which are about 4 feet in length and about 3 feet in width, are first placed in wooden tubs and thoroughly soaked in cold water. From 600 to 800 skins are placed in each tub and left to soften for from one to two days, according to the season. From the soaking tubs they are placed in a circular revolving drum and washed. This drum is about 8 feet in diameter and about 4 feet in width and revolves at the rate of about 60 revolutions per minute. A number of wooden pins connected on the interior of the apparatus shift the skins about as it revolves, so that the stream of water which passes in at the center of the drum thoroughly saturates and frees them from dirt. After washing for a quarter of an hour, they are taken out and placed in lime pits. These pits are about 8 feet in depth, 8 feet in length, and about 5 feet in width. From 800 to 1,000 skins are placed in each of these pits and are covered with lime and water for about two weeks. The lime acts on the pores of the skin, opening them so that the hair can be easily removed. The skins are taken from the pits by means of long handled tongs. To take off the excess of lime, the skins are paddled. This is performed by placing the skins in cold water and running them back and forth over a paddle wheel. This wheel is about 3 feet in diameter, about 6 feet in length, and travels at the rate of about 40 revolutions per minute. After paddling, the hair is removed by spreading the skins out over an oval-shaped wooden beam, an operator then scraping off the hair by means of an instrument similar in shape to a carpenter's draw knife. A good workman can scrape off about 20 skins per hour. The next operation is fleshing. A skin is placed as before over a beam, the operator cutting off the particles of flesh adhering to the skin, giving it an even thickness and also trimming off the ragged ends. The scraps are sold to glue makers, and the hair to plaster and carpet manufacturers. About 20 skins can be fleshed per hour. After fleshing the skins are washed again in the revolving drum for half an hour, after which they are fleshed again to take off the grease. The material is then paddled again in warm water, after which the skins are spread out again on beams and slated, the process taking off the surplus dirt and giving them a finish. They are then paddled and then drenched in a tub of bran and water. About 800 skins are placed in the drench tub at a time, and paddled for 12 hours, the operation removing the lime and opening the pores of the skins. The skins are then put into a revolving drum containing a tanning liquor composed of alum, salt, flour, and the yolks of eggs. After revolving in this drum for twelve hours at the rate of 80 revolutions per minute, the skins are taken out and hung up on hooks in a drying room in a temperature of 110° for twenty-four hours.

When the skins are dry, they are dampened with water and put into a mill and softened. This mill consists of two perpendicular swinging planks suspended from the ceiling, connected to the bottom ends of which are large wooden blocks, which move back and forth when the apparatus is in motion. The dried skins to the number of 50 or more are placed on the floor of the mill in front of the blocks, which, as they move forward, squeeze and press them together until they become soft, after which they are staked. This is performed by drawing the skins back and forth over the edge of a broad steel knife, about 18 inches in length and about 8 inches in width. After this operation, which also softens the material, they are put again into the drying room, after which they are staked again, the operation taking off the dried flour, which sticks to the material from the tanning liquid.

The white skins are then packed away for a few months to ripen for working purposes. The skins are then selected out for coloring, being first washed in a drum of cold water for 20 minutes, after which they are placed in a revolving bath of egg yolk for twenty-four hours, which softens and makes the stock pliable. The skins are then colored. A skin is first slicked out smooth on a lead covered table and given a wash of potassium bichromate and soda; the solution preparing the skin so that it will take the coloring ingredients. The gloves are colored in black, drab, and tan, iron sulphate being used to produce black, zinc sulphate for drab, and sulphate of alum for tan color.

The coloring ingredients are poured on the skins with a cup and rubbed in with a brush. The skins are then dried and steaked again, and then polished over a flannel covered wheel. The raw skins cost from $7 to $9 per dozen.

The sketches were taken from the plant of C. G. Gottschalk, Jersey City Heights, N. J.

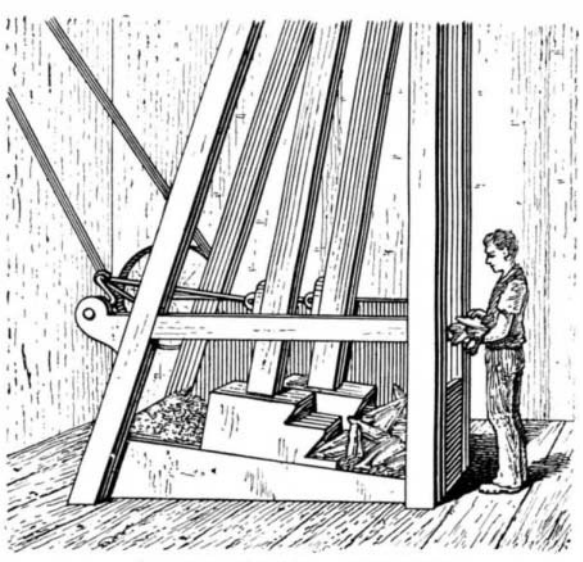


WASHING DRUM

PADDLING SKINS

UNHAIRING BEAM.

STAKING.



SOFTENING SKINS

COLORING.

POLISHING SKINS.

Fattening Oysters.

Off the shores of eastern Virginia a new method is now being tried of fattening oysters. Hitherto the plan adopted by the oyster men has been to transfer the oysters from the bays along the Atlantic coast to the estuaries of the rivers, to feed on the matter brought down by the current. In the low, marshy ground that fringes one of the bays on the Virginia coast, a number of parallel canals are being made into which the sea water will be admitted by sluice gates. In these canals the oysters will be grown, much as water cresses are grown around London. The oysters will find their natural food, which consists of diatoms and other minute algæ, which are reproduced in prodigious quantities when salt water is mixed with a small percentage of fresh water. On a small scale the plan has worked successfully. Thus far the small oysters have been transplanted into the canals from the bays; but, with the plan in full operation, this will not be necessary, as the canals open on to the breeding grounds, and during the early summer, when the spawn is given off, it will float into the canals, and the oyster beds will be planted naturally. Other advantages claimed for the new method of culture are freedom from sewage contamination, the easy exclusion of the enemies of the oyster, and the ease of harvesting.

The Oldest Botanical Work.

The oldest botanical work in the world, says the Newcastle Chronicle, is sculptured on the walls of a room in the great temple of Karnak, at Thebes, in Egypt. It represents foreign plants brought home by an Egyptian sovereign, Thothmes III, on his return from a campaign in Arabia. The sculptures show not only the plant or tree, but the leaves, fruit and seed pods, separately, after the fashion of modern botanical treatises.

Highest Speeds of Railroad Trains for Various Distances.

Date.	Railroads.	Route.	Distance.	Time.	Speed, including stops.	Weight.
			Miles.	H. M. S.		Tons.
June, 1876	Pa.; P., F. W. & C.; C. & NW.; U. P.; C. P.	Jersey City to Oakland, Cal.	3,311	83 45 0	39·53	..
May, 1893	N. Y. C. & H. R.; L. S. & M. S.	New York to Chicago	964	19 57 0	48·20	..
October 21, 1895	L. S. & M. S.; N. Y. C. & H. R.	Chicago to New York	952	17 45 0	54 20	..
August, 1895	L. & NW.; Caledonian	London to Aberdeen	539	8 32 0	63·24	75
October 24, 1895	L. S. & M. S.	Chicago to Buffalo	510	8 1 7	63·61	152
September 25, 1895	N. Y. C. & H. R.	Albany to Syracuse	147	2 10 0	68·23	83
October 24, 1895	L. S. & M. S.	Erie to Buffalo Creek	86	1 10 46	72·91	152
" " "	" " "	Between Erie and Buffalo Creek	75	1 0 0	75·00	152
" " "	" " "	" " "	59	..	76 08	152
April 21, 1895	Camden & Atlantic	Camden to Atlantic City	58	45 45	76 46	32
" " "	" "	Liberty Park to Absecon	49	37 30	79·70	32
" " "	" "	Berlin to Absecon	35	25 45	82·90	32
" " "	" "	Winslow Junction to Absecon	24	16 00	83·00	32
October 24, 1895	L. S. & M. S.	Between Erie and Buffalo Creek	8		85·44	152
May 19, 1893	N. Y. C. H. R.	Looneyville	5	3 00	100 00	113
May 11, 1893	" "	Grimesville	1	0 32	112·50	113

—Safety Valve.

The Banana.

Never in the history of the world's trade has there been so marked an example of an edible article of commerce attaining within a comparatively short period the popularity achieved by the banana. It is not long ago that this luscious product of the tropics was only heard of as a vegetable curiosity. Occasional parcels were brought to England by vessels trading from the West Indies or the West African islands; but these reached no farther than the narrow circles of the friends to whom they were sent. The omnivorous British public remained practically ignorant of the rich, wholesome fruit which nature was ready to produce so bountifully. Now, however, no fruiterer's stock is complete without its bunches of richly tinted bananas; while the enterprise of the "coster" and other itinerant venders has placed the fruit within the reach of the poorest.

Originally the banana was a native of the eastern tropics, but now it is cultivated in all tropical and subtropical countries, whether in the Old or New World.

The plant itself is a peculiar one, the stem, which attains a height of fifteen or twenty feet, being practically formed by the sheathings of the leaves, the blades of which reach the very respectable dimensions of eight or ten feet in length and eighteen inches or two feet across. The fruit clusters, which branch from the stem, have been known to weigh upward of ninety and even a hundred pounds. A bunch of average bananas contains eight hands of ten bananas, while those of inferior quality will consist of but six or seven hands.

The productiveness of the banana plant is enormous. We are sometimes wont to refer to the productive power of grain or the potato as examples of extraordinary fertility. But, according to Humboldt, the banana is more than a hundred times as productive as wheat and forty-four times as productive as the prolific potato.

As a complete article of food, containing in itself the principal elements necessary to preserve the human machine in health and strength, this fruit is one of the completest with which nature has furnished us. The principal constituent is of course water, which practically forms three-fourths of the weight of the banana. Sugar, pectine, etc., compose about twenty per cent., while nitrogenous matter is, roughly speaking, accountable for the remaining five per cent.

In many tropical areas the banana is the staple food, and from the unripe, sun-dried fruit a most nutritious flour is manufactured. In fact, this fruit is to a great section of the inhabitants of the tropics, and the regions adjoining, what wheat is to the European and rice to the Hindoo.

Twenty-five years ago, some men interested in the New York fruit trade prophesied a big future for this fruit. Thinking that there might be "money in the business," a fruit merchant introduced to the buyers of New York a shipment of four thousand bunches; but this initiatory effort does not seem to have met with much success. Ten years later, another consignment of ten thousand bunches was shipped from Jamaica, and no difficulty was experienced in securing a ready sale. Now, the trade in bananas between New York and the West Indies forms a special department of commerce, for which vessels are specially built and equipped.

The quantity of bananas shipped from West Indian and adjacent ports into the United States now amounts to thirteen or fourteen million bunches annually, valued at considerably over $20,000,000. Our own possession of Honduras exported, in 1880, bananas to the value of seven hundred pounds, while at present the annual value of this fruit exported is close upon fifty thousand pounds. From one port alone, on the shores of the Caribbean Sea, two hundred and fifty thousand pounds' worth of bananas are exported each year.

The fruit which finds its way to England comes almost entirely from Madeira and the Canary Islands. Before long, however, the West Indian banana will enter the field as a powerful competitor, the arrangements for the safe and speedy sea carriage of the fruit now rendering such a contingency quite feasible.

The bananas intended for export are cut when green, and consequently unripe, and carefully packed in long and loosely constructed baskets, or wooden crates. The bunches of fruit are incased in cotton wool, and while great care has to be taken to protect them from damp or frost, thorough ventilation must be maintained as well. On arrival at the fruit merchant's warehouse, they are stored in dry, airy rooms, the temperature of which is regulated by the condition of the fruit and the length of time it is proposed to keep it before placing it upon the market. Thus, fruit which is wanted to ripen slowly may be kept at a steady temperature of 55° to 60° Fahrenheit, while the ripening process may be easily accelerated by increasing the temperature. When properly ripe, the outer skin assumes that delicate canary hue which color experts maintain has no other exact parallel among the tints with which nature invests her vegetable products.—Richard Beynon, in Knowledge.

Dual Personality and the Double Brain.

A favorite theory with some speculative psychologists, and one which appears to be gaining ground, is that the two cerebral hemispheres are capable, to some extent, of independent activity. The theory has been evoked to account for those strange but well-established cases in which an individual appears to possess two states of consciousness—two personalities as it were—such cases as afford the basis of fact for Stevenson's weird romance of "Dr. Jekyll and Mr. Hyde." Dr. Lewis C. Bruce, in the last number of Brain, records a case which is more strongly in favor of the double brain theory than any, so far as we know, previously reported. The man was an inmate of the Derby Borough Asylum. He was a Welshman by birth, and had been a sailor by occupation. He was a lunatic, but his mental characteristics were very different at different times. In one state he was English, in the other Welsh. In the English stage he was the subject of chronic mania. He spoke English, but understood and could converse in Welsh. He was restless, destructive, thievish, and fond of playing practical jokes. He exhibited a fair amount of intelligence, wrote, drew pictures of ships, related incidents in his past life, recognized the doctors and attendants, and was bold and fearless in his manner. His memory, however, was a blank as to what occurred in the Welsh stage. Thus, on one occasion he burned his arm during the Welsh stage, but, passing a few days later into the English stage, he could give no account of how he suffered the injury. Yet he could remember events which had happened earlier in an English stage: for instance, a year later he could recall accurately particulars about Christmas decorations. He knew coins and their purpose, he recognized varieties of tobacco, and sought to obtain the weed by fair means or foul. He named the primary colors, and was pleased with the sound of a tuning fork. Taste, smell, and touch seemed to be unimpaired. His circulation was good (pulse of high tension), he had a good appetite, his bowels acted well, and he was very fond of his bath. Into the Welsh stage he passed either suddenly or by way of an intermediate stage; in the Welsh stage he was in a condition of dementia. He understood Welsh, but talked a gibberish in which, however, some Welsh words were recognizable; he did not understand English. He sat doubled up in a chair for hours, did not attempt to move at meal times, was sly and suspicious, did not recognize doctors or attendants, his circulation was weak, his extremities livid, his legs often edematous (pulse of lower tension). He suffered from constipation, disliked bathing, did not recognize coins or tobacco, was alarmed at the sound of a tuning fork, and appeared to have no power of discriminating by smell or taste.

As far as the symptoms so far mentioned go, it might be possible to explain the man's dual states, taking our clew from the fact that he retained some knowledge of Welsh in his demented stage, by supposing that some variation in the blood supply might have thrown in and out of action the more recently recognized centers, which, as the man was born Welsh, would be the organization for speaking English, while the Welsh part of the speech center would still remain capable of some, though a very imperfect, form of activity. This hypothesis, however, appears to be negatived by the fact that he was right handed while in the English stage, left handed in the Welsh stage. While in the intermediate stage, when this was observed, he was ambidextrous, and spoke a mixture of English and Welsh, understanding both languages. This fact seems to leave us no alternative but to conclude that in the English stage the left, in the Welsh stage the right, hemisphere was the more active. In the Welsh stage, when he attempted to write, the result was practically illegible, but he used the left hand and traversed the paper from left to right; in the English he wrote with the right hand from left to right, and rather more legibly. He could also write with his left hand, but then traversed the paper from right to left, and his writing had the characters of mirror writing—that is it could be read when held up to a mirror.—Brit. Med. Jour.

Conditions of Foreign Trade in France.

The commerce of France during the year 1895 has shown a diminution of 151,000,000 francs in the importations, and an increase of 309,000,000 francs in exportations, 208,000,000 of which are for manufactured articles; that is an increase of 158,000,000 francs in the total amount of exchange between France and other countries.

The commercial balance shows a deficit of 311,000,000 francs in place of the 728,000,000 of 1894:

	Millions of Francs. 1895.	1894.
Importations	3,699	3,850
Exportations	3,387	3,078

The total amount, therefore, for 1895 was 7,086,000,000, in place of 6,928,000,000 in 1894.

We also give below some statistics relating to the commerce of France with the principal countries.

IMPORTATIONS IN MILLIONS OF FRANCS.

	1895	1894
England	494	480
Germany	316	310
Belgium	368	371
Switzerland	65	66
Italy	114	121
Spain	207	174
United States	266	326
Brazil	73	56
Argentine Republic	177	168

EXPORTATIONS IN MILLIONS OF FRANCS.

	1895	1894
England	1,005	912
Germany	328	324
Belgium	515	477
Switzerland	163	129
Italy	139	98
Spain	113	108
United States	282	195
Brazil	80	80
Argentine Republic	44	50

—L'Illustration.

Cotton Seed Oil in Olive Oil.

For the detection of cotton seed oil in olive oil (to which it is equal for all practical purposes, but which those who wish to buy olive oil prefer to get without any admixture), the following table of colorations, etc., caused by treatment with various reagents, will be found interesting and profitable.

The first column gives the reagent employed; the second, the effect produced upon olive oil; and the third, that produced upon cotton seed oil.

REAGENT.	OLIVE.	COTTON SEED.
Nitric acid	Greenish	None.
Fuming nitric	Brown	Brown.
Sulph. 1·65 grav	Green	Red.
Sulph. nit.	Green	Red.
Potash or soda lye	White	Violet.
Zinc chloride	Red	Brown.
Hydroch. acid and sugar	Yellow	Orange.
Calcium disulphide	Permanent gold	Permanent gold.
Tin chloride	At first yellow	Orange yellow.
	Result yellow or green	Yellow brown.
Sirup and phosph. acid	Cold, green	Gold yellow.
	Hot, colorless	Reddish yellow.
Mercuric nitrate	Alone, yellow	Pale yellow.
	With sul. acid, yellow	Pale chocolate.
Iodine degree	81·3	107·9.
	103·9	
Per cent caustic potash for saponification	18·93 to 19·26	19·10 to 19·66.

The Progress of Cremation.

The practice of cremation is increasing in France, but increasing very slowly so far as the general public is concerned. The furnace would often be idle were it not for the remains from the hospitals, which amount to from 2,000 to 2,500 bodies per annum. The apparatus employed is that of MM. Toisoul and Fradet, and works by means of gas with a recuperator. Incinerations are accomplished in an hour, or at most an hour and a quarter, and the cost of the combustible never exceeds three francs per operation.

Astronomical.

Our attention has been called to the fact that the article by Camille Flammarion in a recent issue of the SCIENTIFIC AMERICAN is in error in one respect. Mr. Alvan Clark is credited with being the maker of Mr. Lowell's objective. This beautiful glass is 18 inches in diameter, and Mr. J. A. Brashear, the well known optician of Allegheny, Pa., is the maker of the lens.