THE LONDON EXHIBITION—PERFUMERY.

We have received from Mr. Septimus Piesse, of the world-renowned firm of Piesse & Lubin, London, the following very interesting communication in reference to the manufacture of perfumery and the specimens displayed at the Great Exhibition :—

PROCESSES FOR OBTAINING PERFUMES.

The popular impression is that perfumes are obtained by distillation, which, with regard to most flowers, is incorrect.

The odors of tuberose, jasmine, acacia, orange-blossom, violet, jonquil, &c., are only to be obtained in their natural fragrance by the process of enfleurage and maceration.

This process is based on a fact not generally known, namely, that pure grease, fat, butter or oil has the power to absorb the odors of flowers, and to become perfumed when in contact with fragrant blossoms. Grease absorbs odor as salt absorbs water from the atmosphere ; then if such odorated grease be put into rectified spirit, the odor leaves the grease and enters the spirit.

Nice, Cannes, and Grasse, in the south of France, are the present chief seats of this process, and there are annually scented there about 200,000 pounds of grease and oil.

The manufacture of perfumery for home use, together with the quantity exported, involves a trade at the present time of more than a million sterling per annum, and which in a great measure is dependent on this 200,000 pounds of grease made in France.

Now this scented fat is to the British perfumer what raw cotton is to the Manchester spinner.

Samples of grease, perfumed with jasmine, violet, rose, jonquil, orange-flower, and tuberose are exhibited by Messrs. Piesse & Lubin ; also oils of the same flowers.

ENFLEURAGE AND MACERATION.

The process of enfleurage and maceration may be described in few words. Greases thus perfumed were termed butters till within a period of the last twenty-five years, since which the word "pomade" has been more generally adopted ; we thus had violet butter, jasmine butter.

In the Duchess of Grafton's account-book, 1765, there are repeated entries, "Orange Butter, 6*s*."

During the death of the flowers, "when they with winter meet," the makers of these butters or pomades employ their time in purifying the grease which is to be perfumed. This is a labor of no little importance, and requires attention, as the fat has to be scrupulously cleansed from all animal tissue. Clarified fats are exhibited by J. Ewen.

The general plan is to melt mutton and beef fat, with the addition of alum, salt, and niter ; then to wash it continually under a stream of water ; finally, to re-melt the grease, with the addition of benzoin. This latter material has a very marked chemical action upon grease (not yet noticed by chemical writers), tending to prevent the grease from becoming rancid.

The flowers being now in bloom, the enfleurage commences.

Square or oblong frames, lined with glass, termed *chasses en verre*, are employed for this purpose ; these châsses resemble in make a window with one square of glass, and having a frame standing three inches each side above the glass.

The glass is now covered with the purified grease, about a quarter of an inch thick, and upon this the freshly gathered blossoms are sprinkled ; these châsses are then piled upon each other : thus the flowers become enclosed as it were in a flat box, with a surface of grease top and bottom.

The same grease remains, but the flowers are changed as often as they can be during the whole season of blooming of each particular plant, extending over a period of two to three months.

The perfumed grease is gathered together, melted and strained to free it from loose petals, &c., and put into tin canisters for exportation.

Arriving in England, the grease is now forced through a cylinder having slits in it at one end, which causes it to appear in the form of ribbon shavings ; having thus a large surface, it is now put into coppers of ten or twenty gallons' capacity, together with pure rectified spirit, in the proportion of about eight pounds of the butter to every gallon of spirit ; after standing together a month, the spirit is drawn off perfectly clear and bright, but containing all the odor that was previously in the grease.

DISTILLATION.

The odors which rank next in value are those distilled, but, with the exception of rose and lavender, few blossoms will yield odor by distillation.

Bark, wood, seeds and leaves, however, such as cassia, carraway, thyme, cedar-wood, &c., give up their fragrance by this process.

The almost endless variety of essential oils or ottoes in the market, are nearly in all cases the result of the distillation of the fragrant bearing part of the plant.

Few of the ottoes thus obtained are employed for handkerchief perfumes, lavender and rose excepted, but are principally used for scenting soap.

Some odor-bearing fruits, such as lemon, bergamot, and orange, give up their odor by rasping and expressing the rind of the fruit ; these being dissolved in spirit are so very grateful to the olfactories that no less than 40,000 pounds of essence of bergamot are annually consumed in England.

TINCTURATION.

Another class of perfumes is prepared by simple tincturation ; that is, infusing the odorous materials, musk, vanilla, benzoin, and ambergris in pure spirit,

By these various methods the primitive odors are obtained, and their number actually in the market extends to about one hundred varieties.

PERFUMERY MANUFACTURE.

The generality of perfumes used for scenting the handkerchief are mostly of a mixed character, harmoniously blended from the primitive odors, and called bouquets and nosegays of euphonious titles, such as Perfume of Paradise, Frangipanni, Stolen Kisses, Hungary Water, &c., and it is worthy of remark that those odors containing the products of the orange tree are even more popular than the rose.

Dry perfumes, such as the gum resins which exude so prolificly from various plants indigenous to the East, were naturally the first fragrant materials employed by our early fathers ; and as such are repeatedly mentioned in the Scriptures, nearly every one of which are still in use in the laboratory of flowers, and give rise to considerable trade at the ports of Smyrna and the rocky city of Petra.

The incense burners depicted on the tombs of ancient Egypt, Meroë and Memphis are still represented at the International Exhibition of 1862 by the elegant sweet fumigation vase for burning or rather volatilizing the sweet savor of incense.

Perfumery manufacture does not confine its limits to dealing with fragrant substance. The dyer is not satisfied with the pristine whiteness of cotton, he stains it with aniline, archile or anatto, as fancy dictates ; so with the perfumery factor, inodorous bodies he makes redolent. Starch becomes Violet Powder, soap becomes Old Brown Windsor, glycerine becomes Crême de Mauve, which will make lank tresses as bright and crimp as a raven's wing. Water is impregnated with elder flowers, and fat is inoculated with orange blossoms, so that by the least deceivable of our senses we know not the one from the other ; these and other accessories to the toilet of fashion and beauty divide the manufacture of perfumery into about twelve sections, independent of the work of the flower farmer, who produces the raw odorated fats and oils before alluded to.

SMELLING-SALTS, &C.

Section 1 embraces the manufacture of smelling-salts and odorous vinegars ; samples of these are to be seen at the various stalls of exhibitors in Class IV. ; liquid ammonia and bicarbonate of ammonia constitute the base of smelling-salts, scented with various ottoes put into bottles either upon sponge or in a semi-crystalline state. Aromatic vinegar ; that is, concentrated acetic acid, aromatized with camphor, &c., is also put into smelling-bottles upon sulphate of potass, and in this state is called crystallized vinegar.

The manufacture of elegant gold, silver, and aluminium smelling-bottles to contain the above is of no mean importance as a branch of the jewelry trade.

Diluted forms of scented vinegar, under the names of Toilet Vinegar, Four Thieves' Vinegar, Cosmetic Vinegar are also extensively exhibited.

Mr. Rimmel makes a speciality of toilet vinegar.

SACHET POWDERS.

Section 2 embraces sachet powders, absorbent powders, &c.

The sachet powders consist of dried flowers, odoriferous gums, and precious spices. Almost every lady's wardrobe contains a sachet for perfuming the linen after the laundry process, or to prevent moths. There are about twenty-four varieties of sachet powder in Atkinson's list.

The absorbent powders, for drying the skin after washing, are an important class of toilet requisites, many tuns of which are manufactured from wheat, starch, and talc powder, and are used in the nursery of children.

COSMETICS.

Sections 3, 4, 5, include cosmetics proper, which are made either to "increase the force of beauty" or to arrest time stains.

Of cosmetics, cold cream of roses is perhaps the greatest favorite ; its reputation has lasted from the days of its inventor, Galen, 1700 years. The English perfumers appear happy in this manufacture ; cold cream anglaise is to be found throughout all Europe.

Milk of almonds, emulsion of pistachio nuts, olivine and jelly of jasmine are favorite preservers of the skin, and it must be admitted that they are of service ; the oil which these emulsions contain in a globular state, applied to the skin, preserves it against the inclemency of our seasons.

HAIR DYES.

It is difficult to ascertain what is the annual consumption of silver in the manufacture of hair-dye, but we have good reason to know that the quantity is far beyond the ordinary belief of those even who are used to abstract statistics ; still, from the difficulty of staining the living hair, the problem of making a universal hair-dye has yet to be solved, and some curious phenomena are occasionally seen in the way of green and purple hair, which results from the chemistry of the hair-cutting room. Mr. Condy, whose energies are devoted to the study of manganese, produces a most excellent brown hair-dye, consisting of permangate of potassa, under the euphonious title of Condy's Baffine Fluid ; but, though the article is excellent for its purpose, the public are rather uncertain whether the fluid is "to polish dining-tables," or is a "piquant sauce."

DRESSINGS FOR THE HAIR.

Sections 6, 7, 8, take in the manufacture of unguents, oils, balsams, hair-washes, bandaline and other dressings for the hair.

The mane of the British lion appears to give him a great deal of trouble to arrange and to beautify before he considers himself fit "to enter society." Atkinson has rendered himself famous for his bears' grease, but whether the article sold is the veritable fat of Bruin, ill-natured people doubt ; however there is a liberal show of it in this class, every one of the perfumers having some special panacea for making hair grow, and the most notable of our time appears to be pistachio nut oil, expressed from the kernels of the *Pistache vera* of Spain ; and such is the present consumption that pistachio nuts, to use a Mincing Lane phrase, have "gone up" from £5 per cwt. to £12, with every prospect of a "further rise."

Whether shampooing was ever an Eastern practice, we must leave to Mr. Layard and other oriental scholars to inform us ; but it is certain that this modern habit has been introduced from America by the Figaros of New York. American Bay Rum or Hair Water appears to contain hartshorn and cantharides with a scented spirit.

SOAPS AND SHAVING-CREAM.

Sections 9, 10, are important branches of the perfumers' trade, consisting of the manufacture of scented soaps for washing, which are or should be hard, and of shaving-cream, which is soft and honey-like.

The removal of the excise duty on soap gave a most valuable impetus to this trade. Refined scented soap was only known as a luxury, but now it is of universal employment, and ranges in price from 1*s*. to 20*s*. per pound. Some of the scented soaps varying in price from 4*s*. to 10*s*. per pound are very exquisite, such as rose soap, bergamot (commonly called spermaceti) soap, frangipanni soap, and numerous others ; Mr. Cleaver being the maker of the famous honey soap, scented with otto of citronella from Ceylon. Messrs. Low, Son, & Hayden are in

high repute for their scented soap: Paris's Old Brown Windsor soap is still and will remain from intrinsic merit a favorite detergent. Pear's transparent soap, invented by the father of the present exhibitor, is worthy of notice; but the firm is prevented from obtaining the full benefit of the invention by the excise duty on the spirit which is necessary for its manufacture; the consequence is that German and American transparent soap is imported into this country, and the inventor is undersold at his own door.

Piesse & Lubin's specimen of cold cream soap is pressed into notice; it consists of a fine curd soap in which the free alkali is nearly all neutralized by the addition of wax and spermaceti.

There is a great variety of other named soaps, from the sublime "sultana" to the ridiculous "turtles' marrow."

DENTIFRICES, &c.

Sections 11, 12, combine the making of dentifrices, mouth-washes, opiates, tooth pastes, breath pastils, nail powder and rouge.

Dentifrices consist principally of antiseptic and astringent substances, and a hard base to act as rubbing material; such as Peruvian bark, cascarilla bark, cassia bark, bole ammoniac, burnt horn, precipitated chalk, charcoal mixed in various proportions with orris root and some peculiar perfume.

Mouth-washes and tinctures principally contain a spirituous infusion of cedar wood, gum myrrh, rhatany or cloves, to which are added otto of roses and peppermint.

EXPORTS AND IMPORTS.

The total value of perfumery exported in 1860 was £274,350.

The average annual importation of some natural productions used by the perfumer for the past five years has been given by Mr. Septimus Piesse in his work, "The Art of Perfumery," as follows:—

Musk	9,388 ounces.
Rose	1,117 "
Vanilla	3,525 lbs.
Ambergris	225 ounces.
Civit	355 "
Orris root	420 cwt.

PIESSE AND LUBIN'S FOUNTAIN OF PERFUME.

Among other goods exhibited is an elegant perfume fountain, designed by Mr. Septimus Piesse, and executed in terra cotta. It represents Christiana, daughter of Linnæus, watering some favorite plants with an arrosoir: the whole figure stands, without plinth, four feet high. The statue is so contrived that water or perfume may perpetually fall from the arrosoir, thus becoming a falling fountain—a pleasing tribute to the great botanist.

The European Iron-Clads at Sea.

England and France have as yet failed to produce an iron-clad frigate which will sail well during sea voyages. The *Warrior*, the *Black Prince* and *La Gloire* were comparative failures, and now the *Normandie* must be added to the same list. The *Normandie* sailed for Martinique, with a picked crew, and La Gravierre, the best admiral in the French service, was on board. She arrived at Martinique, indeed; but the Paris *Temps* admits that, though favored by magnificent weather, the *Normandie* rolled dreadfully—so much so that it was found necessary to constantly keep the guns lashed, to keep the hatches down, and to take every precaution in the cabin at meal times against sudden lurches. In addition, the want of air between decks was exceedingly marked, the ventilators being insufficient.—*Exchange.*

[This is precisely our opinion, and one of the causes which will, we think, prove a serious obstacle to their general introduction. It is unsafe, in the present history of the invention under consideration, to make any prophecies or predictions; these, like curses, come home to roost, but we trust we shall not be found greatly in error if we venture to say that different models of iron-clad frigates from those now in use must be made before they can be pronounced a success. At the present writing they are in no wise so.—EDS.

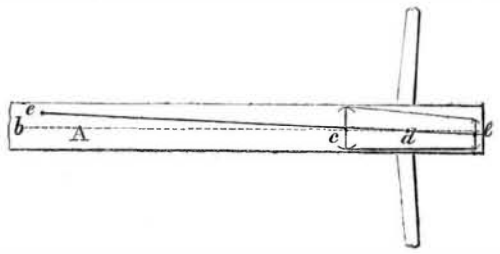
COAL ON THE READING RAILROAD.—If some of the railroads in Pennsylvania have carried but a small quantity of coal this year, it has been otherwise with the Reading line. Last year it carried 1,460,830 tuns; this year it has already carried an aggregate of 2,048,459 tuns.

Correspondence

Setting Carriage Axles.

MESSRS. EDITORS:—In the SCIENTIFIC AMERICAN of November 1st, I noticed the inquiry of Mr. O. N. Chapell, of Prattsburgh, N. Y., respecting the best mode of setting wagon axles to make the wheels run easily. I will give my experience and practice on the subject, and the rule usually pursued in this section of country by wheelwrights for making wooden axles, which are considered the best if put on properly.

The first thing to be ascertained is the dish of the wheel. To obtain this, take a "straight-edge" and lay it against the outside of the wheel, bearing against the felloes; then measure from the middle of the spokes to the edge, subtract half the thickness of the felloe, and the distance is the dish of the wheel.



Suppose the stick, A, is an axle-tree 3 inches by 3½ inches square, the wheels 4 feet diameter, having a hub 9 inches long, and boxes 2¼ and 1¾ in diameter. First snap the line, *b*, in the middle of the stick, and measure 10 inches from the end, and mark a dot as at *c;* from this point mark another dot 4½ inches toward the end. (4½ inches = one half the length of hub and middle of spokes. If the spokes are set "back," measure to the middle, always; if set bracing, take the face spokes which should be straight.) Now mark another point as at *d;* from this point measure toward the middle of the stick half the diameter of the wheel, which in this case is 2 feet, and set the dish of the wheel (previously obtained), toward the top of the stick. Suppose the dish to be 1 inch, set it up from the line, *b*, as at *e*, snap a line from *e*, so as to cross *b* at *d*. This I call the line of axis, on which and immediately above, *c*, draw the size of the larger box, and square the shoulder from the line of axis, also draw the size of the small box 9⅛ inches from this shoulder on the line of axis which falls a little below the line, *b*. Draw lines from the peripheries of these circles, and you have the shape of the top and bottom. To form the right and left side of the horn, snap a line on top of the stick in the middle, set the large box to correspond with *c*, on the side, and the small box to correspond with *e*. It is usual to set the small box about one-eighth or one-quarter (according to the weight of the wheel) of an inch ahead to make the wheels gather a little, it being preferable to have the wheel run against the shoulder instead of the joint-bolt. This should be observed in forward wheels and carts in particular. I put on all my axles by this rule, and they "talk on the road." To set out the left arm, measure 5 feet 5 inches from the point, *d*, and procede the point, *d*. When the arm is finished it should come directly after the middle of the spoke, which should stand plump up from the felloe below.

Iron axles are usually set from a wooden pattern on the same plan. A perfectly straight wheel is to be preferred, and the dish is a little more than half the felloe.

W. H. BENNETT.

Warwick, R. I., Nov. 18, 1862.

Who will Invent a Writing Machine?

MESSRS. EDITORS:—The process of writing is the same that it has ever been; labor-saving apparatus has, I believe, never been applied to it. Is there any reason why the pen may not be driven with great speed and accuracy by machinery as well as is the needle? Cannot the same results which the pen produces slowly be produced with great rapidity by some other contrivance? The printing telegraph apparatus seems to prove that this is possible. Perhaps one of the ingenious readers of the SCIENTIFIC AMERICAN will invent an adaptation of that mechanism, or some better contrivance, that can put thoughts on pape economically, at the speed of ordinary utterance, and in the ordinary characters of our language—legible by all. It is not easy to think of a possible invention which would command more universal use than a writing-machine. It would be used in every legislative hall, in every court-room, in every assembly where reporters are now employed; and it would soon command a very much wider use. For all commercial correspondence—in which "time is money"—it would soon supersede much hand-writing, as the telegraph is superseding much letter-writing. No journalist, no merchant, no lawyer of large practice would be without an apparatus by which a clerk could put words on paper as fast as they were dictated and in a shape in which the document could be used without transcribing. It would make the learning to read and write as fascinating an employment to children as the learning to stitch upon a sewing machine now is, and it would become a necessary part of all educational apparatuses. Perhaps a writing-machine has been tried unsuccessfully; but so have many other things that are now triumphs of ingenuity. Why should it not be done?

A. A.

What an English Ironmaster thinks of Us.

MESSRS. EDITORS:—As I shall not be able to visit New York, it is my desire to submit to the legionary readers of the SCIENTIFIC AMERICAN a few of my views upon what I have seen and thought while on a short "run" from my old home in England to this glorious but now distressed country.

I have been at the seat of war and have seen how a free people can pour out their blood and treasure to save the life of their country—how they can die that their country may live—that immense country which the American people have fondly flattered themselves was to be the refuge of all the oppressed men and women upon the face of God's earth. Never before has the world seen such devotion to a *principle* as I have seen among the hundreds of thousands of soldiers upon the "tented field" and in the hospitals. It touched my heart to see brave men, struck down by the agent of death, suffering patiently, often cheerfully and hopefully to the end. I wish that all my countrymen could have wandered with me among those scenes; then they would better understand the nature of this most dreadful and destructive of all civil wars. They should go into the humble tent of the private soldier—often (in America) an educated and cultivated gentleman—and ask him what he was fighting for, and why he was submitting to such hardships, wounds and death. Then Englishmen would understand why all this "brother-butchery" is engaged in upon such a wholesale scale.

I have also been all over the neighborhood of the great lakes, destined to be the happy homes of millions of free men. I went to the wonderful mineral districts around Lake Superior, and I saw what may be termed mountains of copper, and, more wonderful still, actual mountains of iron almost ready for the iron-worker. God intended all this lake district for a favored people. Iron, the great civilizer, exists in vast abundance; no where on all the habitable globe is the like to be seen. A wonderful commerce is transacted upon the lakes; and I have seen men—not very old ones—who told me they were living here when no steamers and only a very few sailing vessels found employment on those waters.

In passing through the thriving city of Buffalo my old tastes led me to visit the Union Iron Works, which are located on the river by the city; they are among the finest I have ever seen anywhere. There are two very large blast furnaces, using anthracite coal and making about sixty tuns of foundry pig iron per day, which iron is sent to points as distant as Cincinnati, and is sold at from $30 to $35 per tun. These works smelt the pure ores of Lake Superior, some from Canada, others from Oneida county, N. Y., and Lake Champlain. The coal is procured from the great Wyoming coal-field; and the limestone is quarried within the city limits. A very extensive and complete rolling mill is nearly ready for operation; and I was surprised to learn that all its fine machinery was constructed here. I am told that, owing to a want of experience on the part of the projectors of this establishment, their success at the commencement was not flattering; now, however, it is very much so, and it may be regarded as the pioneer to many