wood or ivory. The best method is to employ diamond powder. Take a little of the powder, make into a paste with fine oil, on the end of a copper polisher the surface of which has been freshly filled and slightly rounded. The marks will rapidly disappear when rubbed with this. The surface is left a little dull; it may be rendered bright by rubbing with the same powder mixed with a greater quantity of oil, and applied with a stick of pegwood. Watchmakers will do well to try on disused dial several degrees of fineness of the diamond powder.

Cleaning Pearls.—Pearls turn yellow in the course of time by absorbing perspiration on account of being worn in the hair, at the throat, and on the arms. There are several ways of rendering them white again.

1. The best process is said to be to put the pearls into a bag with wheat bran and to heat the bag over a coal fire, with constant motion.

2. Another method is to bring 8 parts each of well-calcinced, finely powdered lime and wood charcoal, which has been strained through a gauze sieve, to a boil with 500 parts of pure rain water, suspend the pearls over the steam of the boiling water until they are warmed through, and then boil them in the liquid for 8 minutes, turning frequently. Let them cool in the liquid, take them out, and wash off well with clean water.

3. Place the pearls in a piece of fine linen, throw salt on them, and tie them up. Next rinse the tied-up pearls in lukewarm water until all the salt has been extracted, and dry them at an ordinary temperature.

4. The pearls may also be boiled about 3/4 hour in cow’s milk into which a little cheese or soap has been scraped; take them out, rinse off in fresh water, and dry them with a clean, white cloth.

5. Another method is to have the pearls strung on a silk thread or wrapped up in thin gauze, mixed in a loaf of bread of barley flour and to have the loaf baked well in an oven, but not too brown. When cool remove the pearls.

6. Hang the pearls for a couple of minutes in hot, strong, wine vinegar or highly diluted sulphuric acid, remove, and rinse them in water. Do not leave them too long in the acid, otherwise they will be injured by it.

GLASS CLEANING:

Cleaning Preparation for Glass with Metal Decorations.—Mix 1,000 parts of denatured spirit (96 per cent) with 160 parts, by weight, of ammonia; 20 parts of acetic ether; 15 parts of ethyl ether; 200 parts of Vienna lime; 650 parts of balsam; and 500 parts of olive oil. With this mixture both glass and metal can be quickly and thoroughly cleaned. It is particularly recommended for show windows ornamented with metal.

Paste for Cleaning Glass.—

Prepared chalk........ 6 pounds
Powdered French chalk.......... 1 part
Phosphate calcium........ 2 parts
Quillia bark.......... 2 parts
Carbonate ammonia........ 1 part
Rose pink........ 6 ounces

Mix the ingredients, in fine powder, and sift through muslin. Then mix with soft water to the consistency of cream, and apply to the glass by means of a soft rag or sponge; allow it to dry on, wipe off with a cloth, and polish with chamois.

Cleaning Optical Lenses.—For this purpose a German contemporary recommends vegetable pith. The medulla of rushes, elders, or sunflowers is cut out, the pieces are dried and pasted singly along the side of one another upon a piece of cork, whereby a brush-like apparatus is obtained, which is passed over the surface of the lens. For very small lenses pointed pieces of elder pith are employed. To dip dirty and greasy lenses into oil of turpentine or ether and rub them with a linen rag, as has been proposed, seems hazardous, because the Canada balsam with which the lenses are cemented might dissolve.

To Remove Glue from Glass.—If glue has simply dried upon the glass hot water ought to remove it. If, however, the spots are due to size (the gelatious wash used by painters) when dried they become very refractory and recourse must be had to chemical means for their removal. The commonest size being a solution of gelatin, alum, and resin dissolved in a solution of soda and combined with starch, hot solutions of caustic soda or of potash may be used. If that fails to remove them, try diluted hydrochloric, sulphuric, or any of the stronger acids. If the spots still remain some abrasive powder (flour of emery) must be used and the glass repolished with jewelers' rouge applied by means of a chamois skin. Owing to the varied nature of sizes used the above are only suggestions.

Cleaning Window Panes.—Take diluted nitric acid about as strong as strong
vinegar and pass it over the glass pane, leave it to act a minute and throw on powdered whiting, but just enough to give off a hissing sound. Now rub both with the hand over the whole pane and polish with a dry rag. Rinse off with clean water and a little alcohol and polish dry and clear. Repeat the process on the other side. The nitric acid removes all impurities which have remained on the glass at the factory, and even with inferior panes a good appearance is obtained.

To Clean Store Windows.—For cleaning the large panes of glass of store windows, and also ordinary show cases, a semiliquid paste may be employed, made of calcined magnesia and purified benzine. The glass should be rubbed with a cotton rag until it is brilliant.

Cleaning Lamp Globes.—Pour 2 spoonfuls of a slightly heated solution of potash into the globe, moisten the whole surface with it, and rub the stains with a fine linen rag; rinse the globe with clean water and carefully dry it with a fine, soft cloth.

To Clean Mirrors.—Rub the mirror with a ball of soft paper slightly dampened with methylated spirits, then with a duster on which a little whiting has been sprinkled, and finally polish with clean paper or a wash leather. This treatment will make the glass beautifully bright.

To Clean Milk Glass.—To remove oil spots from milk glass panes and lamp globes, knead burnt magnesia with benzine to a plastic mass, which must be kept in a tight-closing bottle. A little of this substance rubbed on the spot with a linen rag will make it disappear.

To Remove Oil-Paint Spots from Glass.—If the window panes have been bespattered with oil paint in painting wells, the spots are, of course, easily removed while wet. When they have become dry the operation is more difficult and alcohol and turpentine in equal parts, or spirit of salt ammonia should be used to soften the paint. After that go over it with chalk. Polishing with salt will also remove paint spots. The salt grates somewhat, but it is not hard enough to cause scratches in the glass; a subsequent polishing with chalk is also advisable, as the drying of the salt might injure the glass. For scratching off soft paint spots sheet zinc must be used, as it cannot damage the glass on account of its softness. In the case of silicate paints (the so-called weather-proof coatings) the panes must be especially protected, because these paints destroy the polish of the glass. Rubbing the spots with brown soap is also a good way of removing the spots, but care must be taken in rinsing off that the window frames are not acted upon.

Removing Silver Stains.—The following solution will remove silver stains from the hands, and also from woolen, linen, or cotton goods:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury chloride</td>
<td>1 part</td>
</tr>
<tr>
<td>Ammonia muriate</td>
<td>1 part</td>
</tr>
<tr>
<td>Water</td>
<td>8 parts</td>
</tr>
</tbody>
</table>

The compound is poisonous.

MISCELLANEOUS CLEANING METHODS AND PROCESSES:

Universal Cleaner.

- Green soap: 20 to 25 parts
- Boiling water: 750 parts
- Liquid ammonia, caustic: 30 to 40 parts
- Acetic ether: 20 to 30 parts

Mix.

To Clean Playing Cards.—Slightly soiled playing cards may be made clean by rubbing them with a soft rag dipped in a solution of camphor. Very little of the latter is necessary.

To Remove Vegetable Growth from Buildings.—To remove moss and lichen from stone and masonry, apply water in which 1 per cent of carbolic acid has been dissolved. After a few hours the plants can be washed off with water.

Solid Cleansing Compound.—The basis of most of the solid grease eradicators is benzine and the simplest form is a benzine jelly made by shaking 3 ounces of tincture of quillia (soap bark) with enough benzine to make 16 fluidounces. Benzine may also be solidified by the use of a soap with addition of an excess of alkali. Formulas in which soaps are used in this way follow:

<table>
<thead>
<tr>
<th>Soap</th>
<th>Fluidounces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocoanut oil soap</td>
<td>2 av. ounces</td>
</tr>
<tr>
<td>Ammonia water</td>
<td>3 fluidounces</td>
</tr>
<tr>
<td>Solution of potassium</td>
<td>11 fluidounces</td>
</tr>
<tr>
<td>Water, enough to make</td>
<td>12 fluidounces</td>
</tr>
</tbody>
</table>

Dissolve the soap with the aid of heat in 4 fluidounces of water, add the ammonia and potassium and the remainder of the water.

If the benzine is added in small portions, and thoroughly agitated, 23 fluidounces of the above will be found sufficient. The benzine to solidify the 32 fluidounces of benzine.
CLEANING PREPARATIONS—COFFEE

II.—Castile soap, while. 34 av. ounces
Water, boiling................ 3½ fluidounces
Water of ammonia 5 fluidrachms
Benzine enough to make........... 16 fluidounces

Dissolve the soap in the water, and when cold, add the other ingredients.

To Clean Oily Bottles.—Use 2 heaped tablespoonsfuls (for every quart of capacity) of fine sawdust or wheat bran, and shake well to cover the interior surface thoroughly; let stand a few minutes and then add about a gill of cold water. If the bottle be then rotated in a horizontal position, it will usually be found clean after a single treatment. In the case of drying oils, especially when old, the bottles should be moistened inside with a little ether, and left standing a few hours before the introduction of sawdust. This method is claimed to be more rapid and convenient than the customary one of using strips of paper, soap solution, etc.

Cork Cleaner.—Wash in 10 per cent solution of hydrochloric acid, then immerse in a solution of soda and hydrochloric acid. Finally the corks are washed with a solution of soda and pure water. Corks containing oil or fat cannot be cleaned by this method.

To Clean Sponges.—Rinse well first in very weak, warm, caustic-soda lye, then with clean water, and finally leave the sponges in a solution of bromine in water until clean. They will whiten sooner if exposed to the sun in the bromine water. Then repeat the rinsings in weak lye and clean water, using the latter till all smell of bromine has disappeared. Dry quickly and in the sun if possible.

To Clean Leather Chairs.—Thoroughly beat the whites of three eggs, then with a piece of soft flannel cloth rub the beaten whites into the leather of the chair seat. The leather will soon be clean and will shine as if new. Lamp black may be added if the leather is black.

To Clean or Flush Toilets.—Mix together 1 pound common washing soda in powdered form with 3 ounces of caustic soda. This can be sprinkled in the bowl of the toilet, letting it remain in it for several hours. A little water to moisten the same should be used.

To Clean Waste Pipes.—Simple, inexpensive method of clearing the pipe is as follows: Just before retiring at night pour into the pipe enough liquid potash (not soda) lye of 38° strength to fill the “trap,” as it is called, or bent portion of the pipe just below the outlet. About a pint will suffice for a washstand, or a quart for a bath-tub or kitchen sink. Be sure that no water runs into it till next morning. During the night the lye will change all of the offal in the pipe into soft soap, and the first current of water in the morning will remove it entirely, and leave the pipe as clean as new. Two applications of the lye should be enough to cure any case. The so-called potash lye sold in small tin cans in the shops is not recommended for this purpose; it is quite commonly misnamed, and is called caustic soda, which makes a hard soap. That may block up the pipe even worse than the material it was desired to remove.

To Clean Windshields.—Use equal parts of denatured alcohol and ether. Apply this mixture to the glass with a clean woolen cloth. Rub briskly, then sprinkle a little of jeweler’s rouge upon a piece of chamois skin and polish. The result will be that the glass will shine like crystal.

COFFEE, SUBSTITUTES FOR.

I.—Acorn.—From acorns deprived of their shells, husked, dried, and roasted.
II.—Bean.—Horse beans roasted along with a little honey or sugar.
III.—Beet Root.—From the yellow beet root, sliced, dried in a kiln or oven, and ground with a little coffee.
IV.—Dandelion.—From dandelion roots, sliced, dried, roasted, and ground with a little caramel.

All the above are roasted, before grinding them, with a little fat or lard. Those which are larger than coffee berries are cut into small slices before being roasted. They possess none of the exhilarating properties or medicinal virtues of the genuine coffee.

V.—Chicory.—This is a common adulterant. The roasted root is prepared by cutting the full-grown root into slices and exposing it to heat in iron cylinders, and they are ground into powder in a mill. It constitutes the chief
COFFEE—COLD AND COUGH MIXTURES

COFFEE so generally employed both as a substitute for coffee and as an adulterant. The addition of 1 part of 10 or 12 good, fresh, roasted chicory to 10 or 12 parts of coffee forms a mixture which yields a beverage of a fuller flavor, and of a deeper color than that furnished by an equal quantity of pure or unmixed coffee. In this way a less quantity of coffee may be used, but it should be remembered that the article substituted for it does not possess in any degree the peculiar exciting, soothing, and hunger-staying properties of that valuable product. The use, however, of a larger proportion of chicory than that just named imparts to the beverage an insipid flavor, intermediate between that of chicory and licorice, while the continual use of roasted chicory, or highly chlorized coffee, seldom fails to weaken the powers of digestion and derange the bowels.

COFFEE CORDIAL:
See Wines and Liquors.

COFFEE EXTRACTS:
See Essences and Extracts.

COFFEE SYRUPS:
See Syrups.

COFFEE FOR THE SODA FOUNTAIN:
See Beverages.

COIL SPRING:
See Steel.

COIN CLEANING:
See Cleaning Preparations and Methods.

COINS, IMPRESSIONS OF:
See Matrix Mass.

COIN METAL:
See Alloys.

COLAS:
See Veterinary Formulas.

Cold and Cough Mixtures

Cough Syrup.—The simplest form of cough syrup of good keeping quality is syrup of wild cherry containing ammonium chloride in the dose of 1/2 grains to each teaspoonful. Most of the other compounds contain ingredients that are prone to undergo fermentation.

1.—Ppecan | wine 1 fluidounce
spirit of anise .... 1 fluidrachm
Syrup ...... 10 fluidounces

Syrup of squill .... 8 fluidounces
Tincture of Tolu. 4 fluidrachms
Distilled water 

enough to make 30 fluidounces

II.—Heroin 6 grains
Aromatic sulphuric acid. 1 fluidounce
Concentrated acid 
infection of roses 4 fluidounces
Distilled water. 5 fluidounces
Glycerine. 5 fluidounces
Oxymel of squill. 10 fluidounces

III.—Glycerine. 2 fluidounces
Fluid extract of 
wild cherry 4 fluidounces
Oxymel. 10 fluidounces
Syrup. 10 fluidounces
Cochineal, a sufficient quantity.

Benzoic-Acid Pastilles—

Benzoic acid. 105 parts
Rhubarb extract. 525 parts
Tragacanth. 35 parts
Sugar. 140 parts

The materials, in the shape of powders, are mixed well and sufficient fruit paste added to bring the mass up to 4,500 parts. Roll out and divide into lozenges weighing 20 grains each.

Cough Balsam with Iceland Moss—

Solution of morphine 
acetate. 12 parts
Sulphuric acid, dilute 12 parts
Cherry-laurel water. 12 parts
Orange-flower water, 
triple. 24 parts
Syrup, simple. 128 parts
Glycerine. 48 parts
Tincture of saffron. 8 parts
Decoction of Iceland 
moss. 112 parts

Mix. Dose: One teaspoonful.

Balsamic Cough Syrup—

Balsam of Peru. 2 drachms
Tincture of Tolu. 4 drachms
Camphorated tincture 
of opium. 4 ounces
Powdered extract licorice. 1 ounce
Syrup squill. 16 ounces
Syrup dextrose (glucose) sufficient to make. 16 ounces

Add the balsam of Peru to the tinctures, and in a mortar rub up the extract of licorice with the syrups. Mix to-gether and direct to be taken in teaspoonful doses.

Whooping-Cough Remedies.—The following mixture is a spray to be used

1.—Opium | wine 1 fluidounce
Spirit of anise .... 1 fluidrachm
Syrup ...... 10 fluidounces
in the sick room in cases of whooping cough:

- Thymol: 1 drachm
- Tincture of eucalyptus: 30 fluid drachms
- Tincture of benzoin: 30 fluid drachms
- Alcohol: 100 fluid drachms
- Water enough to make 1000 fluid drachms

Mix. Pour some of the mixture on a cloth and hold to mouth so that the mixture is inhaled, thereby giving relief.

**Expectorant Mixtures.**

I. - Ammon. chloride: 1 drachm
- Potassi. chlorate: 30 grains
- Pergorylic: 2 fluid drachms
- Syrup of ipecac: 2 fluid drachms
- Syrup wild cherry: enough to make 2 fluid ounces

**Dose:** One teaspoonful.

II. - Potassi. chlorate: 1 drachm
- Tincture gallic: $\frac{1}{3}$ drachm
- Tincture rubarb.: 14 drachms
- Syrup wild cherry: enough to make 3 fluid ounces

**Dose:** One teaspoonful.

**Eucalyptus Bonbons for Coughs.**

- Eucalyptus oil: 5 parts
- Tartric acid: 15 parts
- Extract of malt: 24 parts
- Camo: 100 parts
- Peppermint oil: 1.4 parts
- Bonbon mass: 2,303 parts

Mix and make into bonbons weighing 30 grains each.

**COLD CREAM:**

See Cosmetics.

**COLIC IN CATTLE:**

See Veterinary Formulas.

**COLLODION.**

- Turpentine: 5 parts
- Ether and alcohol: 10 parts
- Collodion: 94 parts
- Castor oil: 1 part

Dissolve the turpentine in the ether and alcohol mixture (in equal parts) and filter, then add to the mixture of collodion and castor oil. This makes a good elastic collodion.

See also Court Plaster, Liquid.

**COLOGNE:**

See Perfumes.

**COLOGNE FOR HEADACHES:**

See Headaches.

**COLORS:**

See Dyes and Pigments.

**COLORS, FUSIBLE ENAMEL:**

See Enameling.

**COLORS TO SET IN FABRICS:**

The colors of fabrics or other materials of any kind may be set by boiling the article in the following solution: To 1 gallon of soft water add 1 ounce of ox gall. This solution should be boiled when the articles are dropped into it. A chemical reaction results and the colors are set or made nonfading. The process is harmless. Colors in wool may be treated in the same manner.

**Condiments**

**Chowchow.**

- Curry powder: 4 ounces
- Mustard powder: 6 ounces
- Ginger: 3 ounces
- Turmeric: 2 ounces
- Cayenne: 2 drachms
- Black pepper powder: 2 drachms
- Coriander: 1 drachm
- Allspice: 1 drachm
- Mace: 30 grains
- Thyme: 30 grains
- Savory: 30 grains
- Celery seed: 2 drachms
- Cider vinegar: 2 gallons

Mix all the powders with the vinegar, and steep the mixture over a very gentle fire for 3 hours. The pickles are to be parboiled with salt, and drained, and the spiced vinegar, prepared as above, is to be poured over them while it is still warm. The chowchow keeps best in small jars, tightly covered.

**Essence of Extract of Soup Herbs.**

- Thyme: 4 ounces
- Winter savory: 4 ounces
- Sweet marjoram: 4 ounces
- Sweet basil: 4 ounces
- Grated lemon peel: 1 ounce
- Escalots: 2 ounces
- Bruised celery seed: 1 ounce
- Alcohol (50 per cent): 64 ounces

Mix the vegetables, properly bruised, add the alcohol, close the container and set aside in a moderately warm place to digest for 15 days. Filter and press out. Preserve in 4-ounce bottles, well corked.

**Tomato Bouillon Extract.**

- Tomatoes: 1 quart
- Arrowroot: 2 ounces
- Extract of beef: 1 ounce
- Bay leaves: 1 ounce
- Cloves: 2 ounces
- Red pepper: 4 drachms
- Worcestershire sauce, quantity sufficient to flavor

Mix.

**Mock Turtle Extract.**

- Extract of beef: 2 ounces
- Concentrated chicken: 2 ounces
- Clam juice: 8 ounces
- Tincture of black pepper: 1 ounce
- Extract of celery: 3 drachms
- Extract of orange peel: 1 drachm
- Hot water enough to make 2 quarts.
CONDIMENTS

RELISHES:
Digestive Relish.—
I.—Two ounces Jamaica ginger; 2 ounces black peppercorns; 1 ounce mustard seed; 1 ounce coriander fruit (seed); 1 ounce pimento (allspice); ½ ounce mace; 1 ounce cloves; ½ ounce nutmeg; 1 ounce chili pods; 3 drachms cardamom seeds; 4 ounces garlic; 4 ounces eschalots; 4 pints malt vinegar.

Bruise spices, garlic, etc., and boil in vinegar for 15 minutes and strain. To this add ¾ pints mushroom ketchup; 1½ pints India soy. Again simmer for 15 minutes and strain through muslin.

II.—One pound soy; 50 ounces best vinegar; 4 ounces ketchup; 3 ounces garlic; 4 ounces eschalots; 4 ounces capsicums; ½ ounce cloves; ½ ounce mace; ½ ounce cinnamon; 1 drachm cardamom seeds. Boil well and strain.

Lincolnshire Relish.—Two ounces garlic; 2 ounces Jamaica ginger; 3 ounces black peppercorns; ½ ounce cayenne pepper; ½ ounce ossein; ½ ounce nutmeg; ½ ounce salt; ¼ pints India soy. Enough malt vinegar to make 1 gallon. Bruise spices, garlic, etc., and simmer in ½ gallon of vinegar for 20 minutes, strain and add soy and sufficient vinegar to make 1 gallon, then boil for 5 minutes. Keep in bulk as long as possible.

Curry Powder.—
I.—Coriander seed...... 6 drachms
Turmeric........... 5 scruples
Cinnamon........... 3 scruples
Chillies............. 1 ounce
Ground ginger...... ½ ounce
Grated nutmeg..... ¼ ounce

II.—Coriander seed...... 1 pound
Turmeric........... 4 pound
Cinnamon........... 2 ounces
Cayenne........... 1 ounce
Mustard........... 1 ounce
Chillies............. 8 ounces

Cardamom seeds..... 5 seeds

Table SAUCES:
Worcestershire Sauce.—
Pimento............. 2 drachms
Clove............... 1 drachm
Black pepper...... 1 drachm
Ginger.............. 1 drachm
Curry powder..... 1 ounce

Capsicum............. 1 drachm
Mustard............... 2 ounces
Shallots, brushe... 2 ounces
Salt................ 2 ounces
Brown sugar........ 3 ounces
Tamarind............... 8 ounces
Sherry wine........... 4 ounces

Wine vinegar........... 2 pints

The spices must be freshly bruised. The ingredients are to simmer together with the vinegar for an hour, adding more of the vinegar as it is lost by evaporation; then add the wine, and if desired some caramel coloring. Set aside for a week, strain, and bottle.

Table Sauce.—Brown sugar, 16 parts; tamarinds, 16 parts; onions, 4 parts; powdered ginger, 4 parts; salt, ½ parts; garlic, 2 parts; cayenne, 2 parts; soy, 2 parts; ripe apples, 8 parts; mustard powder, 2 parts; curry powder, 1 part; vinegar, quantity sufficient. Pare and core the apples, boil them in sufficient vinegar with the tamarinds and raisins until soft, then pulp through a fine sieve. Pound the onions and garlic in a mortar and add the pulp to that of the apples. Then add the other ingredients and vinegar, 60 parts; heat to boiling and add the pulp to that of the apples. If a sweet sauce is desired add sufficient treacle before the final boiling.

Epicure's Sauce.—Eight ounces tamarinds; 10 ounces sultana raisins; 2 ounces garlic; ½ ounces eschalots; 4 ounces horse-radish root; 2 ounces black pepper; ½ ounce chili pods; 3 ounces raw Jamaica ginger; 1 pound golden syrup; 1 pound burnt sugar (caramel); 1 ounce powdered cloves; 1 pint India soy; 1 gallon malt vinegar. Bruise roots, spices, etc., and boil in vinegar for 15 minutes, then strain. To the strained liquor add golden syrup, soy, and burnt sugar, then simmer for 10 minutes.

Piccalilli Sauce.—One drachm chili pods; 1½ ounces black peppercorns; ½ ounce eschalots; ½ ounce pimento; ½ ounce garlic; ½ gallon malt vinegar. Bruise spices and garlic, boil in the vinegar for 10 minutes, and strain.

One ounce ground Jamaica ginger; 1 ounce turmeric; 2 ounces flower of mustard; 2 ounces powdered black pepper; 2 ounces strong acetic acid. Rub powders in a mortar with acetic acid and add above, then boil for 8 minutes, or until it thickens.

FLAVORING SPICES.
I.—Five ounces powdered cinnamon bark; 2½ ounces powdered cloves; 2½
MUSTARD:
The Prepared Mustards of Commerce.

The mustard, i.e., the flower or powdered seed, used in preparing the different condiments, is derived from three varieties of Brassica: *Brassica alba* L., *Brassica nigra*, and *Brassica juncea*. The first yields the “white” seed of commerce, which produces a mild mustard; the second the “black” seed, yielding the more pungent powder; and the latter a very pungent and oily mustard, much employed by Russians. The pungency of the condiment is also affected by the method of preparing the paste, excessive heat destroying the sharpness completely. The pungency is further controlled and tempered, in the cold processes, by the addition of wheat or rye flour, which also has the advantage of serving as a binder of the mustard. The mustard flour is prepared by first deoiling the seed, then grinding to a fine powder, the expression of the fixed oil from which completes the process. This oil, unlike the volatile, is of a mild, pleasant taste, and of a greenish color, which, it is said, makes it valuable in the sophistication and imitation of “olive” oils, refined, cottonseed, or peanut oil being thus converted into *huile vierge de Lucea*, Florence, or some other noted brand of olive oil. It is also extensively used for illuminating purposes, especially in southern Russia.

The flavors, other than that of the mustard itself, of the various preparations are imparted by the judicious use of spices—cinnamon, nutmeg, cloves, pimento, etc.—aromatic herbs, such as thyme, sage, chervil, parsley, mint, marjoram, tarragon, etc., and finally chives, onions, shallots, leeks, garlic, etc.

In preparing the mustards on a large scale, the mustard flour and wheat or rye flour are mixed and ground to a smooth paste with vinegar, must (unfermented grape juice), wine, or whatever is used in the preparation, a mill similar to a drug or paint mill being used for the purpose. This dough immediately becomes spongy, and in this condition, technically called “cake,” is used as the basis of the various mustards of commerce.

Mustard Cakes.—In the mixture, the amount of flour used depends on the pungency of the mustard flour, and the flavor desired to be imparted to the finished product. The cakes are broadly divided into the yellow and the brown. A general formula for the yellow cake is:

Yellow mustard, from 20 to 30 per cent; salt, from 1 to 3 per cent; spices, from $\frac{1}{2}$ to 1 of 1 per cent; wheat flour, from 8 to 12 per cent.

Vinegar, must, or wine, complete the mixture.

The brown cake is made with black mustard, and contains about the following proportions:

Black mustard, from 20 to 30 per cent; salt, from 1 to 3 per cent; spices, from $\frac{1}{2}$ to $\frac{1}{2}$ of 1 per cent; wheat or rye flour, from 10 to 15 per cent.

The variations are so wide, however, that it is impossible to give exact proportions. In the manufacture of table mustards, in fact, as in every other kind of manufacture, excellence is attained only by practice and the exercise of sound judgment and taste by the manufacturer.

Moutarde des Jesuites.—Twelve car- dinals and 280 capers are crushed into a paste and stirred into 3 pints of boiling wine vinegar. Add 4 ounces of brown cake and 8 ounces of yellow cake and mix well.

Kirschners Wine Mustard.—Reduce 80 quarts of freshly expressed grape juice to half that quantity, by boiling over a moderate fire, on a water bath. Dissolve in the boiling liquid 5 pounds of sugar, and pour the syrup through a colander containing 3 or 8 large horse-radishes cut.
CONDIMENTS

mixing thoroughly by grinding together in a mill, then put in a warm spot and let stand for 10 days or 2 weeks. Finally

<table>
<thead>
<tr>
<th>Mustarde aux Epices.</th>
<th>Mustard flour, yellow. 10 pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mustard flour, brown. 40 pounds</td>
</tr>
<tr>
<td>Tarragon</td>
<td>1 pound</td>
</tr>
<tr>
<td>Basil</td>
<td>5 ounces</td>
</tr>
<tr>
<td>Laurel leaves</td>
<td>12 ounces</td>
</tr>
<tr>
<td>White pepper</td>
<td>3 ounces</td>
</tr>
<tr>
<td>Cloves</td>
<td>12 drachms</td>
</tr>
<tr>
<td>Mace</td>
<td>2 drachms</td>
</tr>
<tr>
<td>Vinegar</td>
<td>1 gallon</td>
</tr>
</tbody>
</table>

Mix the herbs and macerate them in the vinegar to exhaustion, then add to the mustards, and grind together. Set aside for a week or ten days, then strain through muslin.

In all the foregoing formulas where the amount of salt is not specified, it is to be added according to the taste or discretion of the manufacturer.

**Mustard Vinegar.**

Celery, chopped fine. 32 parts
Tarragon, the fresh herb. 6 parts
Clove, coarsely powdered. 6 parts
Onion, chopped fine. 6 parts
Lemon peel, fresh, chopped fine. 3 parts
White-wine vinegar. 572 parts
White wine. 612 parts
Mustard seed. 100 parts

Mix and macerate together for a week or 10 days in a warm place, then strain off.

**Ravigote Mustard.**

Parsley. 9 parts
Chervil. 9 parts
Chives. 1 part
Clove. 1 part
Garlic. 1 part
Thyme. 1 part
Tarragon. 8 parts
Salt. 4 parts
Olive oil. 183 parts
White-wine vinegar. 183 parts
Mustard flower. sufficient

Cut or bruise the plants and spices, and macerate them in the vinegar for 12 or 20 days. Strain the liquid through a cloth and add the salt. Rub up mustard and the complete mixture makes 384 parts.

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<thead>
<tr>
<th>Cardamom seeds</th>
<th>2½ drachms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutmeg</td>
<td>2½ drachms</td>
</tr>
<tr>
<td>Cloves</td>
<td>4½ drachms</td>
</tr>
<tr>
<td>Cinnamon</td>
<td>1 ounce</td>
</tr>
<tr>
<td>Ginger</td>
<td>1 ounce</td>
</tr>
<tr>
<td>Brown mustard cake</td>
<td>6 pounds</td>
</tr>
<tr>
<td>Yellow mustard cake</td>
<td>9 pounds</td>
</tr>
</tbody>
</table>

Grind all together to a perfectly smooth paste, and strain several times through muslin.

**Dusseldorf Mustard.**

Brown mustard cake. 10 ounces
Yellow mustard cake. 48 ounces
Boiling water. 96 ounces
Wine vinegar. 64 ounces
Cinnamon. 5 drachms
Clove. 15 drachms
Sugar. 61 ounces
Wine, good white. 64 ounces

Mix after the general directions given above.

**German Table Mustard.**

Laurel leaves. 8 ounces
Cinnamon. 5 drachms
Cardamom seeds. 2 drachms
Sugar. 64 ounces
Wine vinegar. 96 ounces
Brown cake. 10 ounces
Yellow cake. 48 ounces

Mix after the general directions as given above.

**Krems Mustard, Sweet.**

Yellow cake. 10 pounds
Brown cake. 20 pounds
Fresh grape juice. 6 pints

Mix and boil down to the proper consistency.

**Krems Mustard, Sour.**

Brown mustard flour. 30 parts
Yellow mustard flour. 10 parts
Grape juice, fresh. 8 parts

Mix and boil down to a paste and then stir in 8 parts of wine vinegar.

**Tarragon Mustard.**

Brown mustard flour. 40 parts
Yellow mustard flour. 20 parts
Vinegar. 6 parts
Tarragon vinegar. 6 parts

Boil the mustard in the vinegar and add the tarragon vinegar.

**Tarragon Mustard, Sharp.** This is prepared by adding to every 100 pounds of the above 21 ounces of white pepper, 12 ounces of pimento, and 21 ounces of cloves,
CONDIMENTS—CONFECTIONERY

CONDIMENTS, TESTS FOR ADULTERATION:
See Foods.

CONDITION POWDERS FOR CATTLE:
See Veterinary Formulas.

CONDUCTIVITY OF ALUMINUM ALLOYS:
See Alloys.

Confectionery

Cream Bonbons for Hoarseness.—
Stir into 500 parts of cream 500 parts of
white sugar. Put in a pan and cook,
with continuous stirring, until it becomes
brown and viscid. Now put in a bak-
ing tin and smooth out, as nearly as pos-
sible, to the thickness of a leaf, twice that
of the back of a table knife and let it
harden. Before it gets completely hard
draw lines with a knife across the sur-
face in such manner that when it is quite
hard it will break along them, easily, into
bits the size of a lozenge.

Nut Candy Sticks.—Cook to 320° F.
8 pounds best sugar in 2 pints water,
with 4 pounds glucose added. Pour out
on an oiled slab and add 5 pounds al-
monds, previously blanched, cut in small
pieces, and dried in the drying room.
Mix up well together to incorporate the
nuts thoroughly with the sugar. When
it has cooled enough to be handled, form
into a round mass on the slab and spin
out in long, thin sticks.

Fig Squares.—Place 5 pounds of
sugar and 5 pounds of glucose in a cop-
er pan, with water enough to dissolve
the sugar. Set on the fire, and when it
starts to boil add 5 pounds of ground
figs. Stir and cook to 240° on the ther-
ometer. Set off the fire, and then add
5 pounds of fine cocoanuts; mix well and
pour out on greased marble, roll smooth,
and cut like caramels.

Caramels.—Heat 10 pounds sugar and
8 pounds glucose in a copper kettle until
dissolved. Add cream to the mixture,
at intervals, until 2½ quarts are used.
Add 11 pounds caramel butter and 12
ounces paraffine wax to the mixture.
Cook to a rather stiff ball, add nuts, pour
out between iron bars and, when cool
enough, cut into strips. For the white
ones flavor with vanilla, and add 2
pounds melted chocolate liquor for the
chocolate caramels when nearly cooked.

Candy Orange Drops.—It is compar-
atively easy to make a hard candy, but
to put the material into “drop” form
apparently requires experience and a
machine. To make the candy itself,
put, say, a pint of water into a suitable
pan or kettle, heat to boiling, and add
gradually to it 2 pounds or more of sugar,
stirring well so as to avoid the risk of
burning the sugar. Continue boiling
the syrup so formed until a little of it
poured on a cold slab forms a mass of the
required hardness. If the candy is to be
of orange flavor, a little fresh oil of or-
ange is added just before the mass is
ready to set and the taste is improved
according to the general view at least
by adding, also, say, 2 drachms of citric
acid dissolved in a very little water. As
a coloring an infusion of safflower or
tincture of turmeric is used.

To make such a mass into tablets, it is
necessary only to pour out on a wet
greased slab, turning the edges back if
inclined to run, until the candy is firm
and then scoring with a knife so that
it can easily be broken into pieces when
cold. To make “drops” a suitable
mold is necessary.

Experiment as to the sufficiency of the
boiling in making candy may be saved
and greater certainty of a good result
secured by the use of a chemical ther-
ometer. As the syrup is holed and the
water evaporates the temperature of the
liquid rises. When it reaches 220° F.
the sugar is then in a condition to yield
the “thread” form; at 240° “soft ball”
is formed; at 245°, “hard ball”; at 252°,
“crack”; and at 290°, “hard crack.”
By simply suspending the thermometer
in the liquid and observing it from time
to time, one may know exactly when to
end the boiling.

Gum Drops.—Grind 22 pounds of
Arabian or Senegal gum, place it in a
copper pan or in a steam jacket kettle,
and pour 3 gallons of boiling water over
it; stir it up well. Now set the pan with
the gum into another pan containing
boiling water and stir the gum slowly
until dissolved, then strain it through a
No. 40 sieve. Cook 19 pounds of sugar
with sufficient water, 2 pounds of gluc-
ose, and a teaspoonful of cream of tar-
tar to a stiff ball, pour it over the gums
and let it steam for 1½ hours, then
set off the fire. In the kettle taking care that the water does not run dry; then open the cover
and let the gum settle for nearly an hour,
and then remove the scum which has settled
on top, flavor and run out with the fire.
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and drop into the starch impressions, and place the trays in the drying room, and take the drops out of the starch, clean them off well and place them in crystal pans, one or two layers. Cook sugar and water at 343° on the syrup gauge and pour over the drops lukewarm. Let stand in a moderately warm place overnight, then drain the syrup off, and about an hour afterwards knock the gum drops out on a clean table, pick them apart, and place on trays until dry, when they are ready for sale.

A Good Summer Taffy.—Place in a kettle 4 pounds of sugar, 3 pounds of glucose, and 1½ pints of water; when it boils drop in a piece of butter half the size of an egg and about 3 ounces of paraffine wax. Cook to 265°, pour on a dish, and when cool enough, pull, flavor, and color if you wish. Pull until light, then spin out on the table in strips about 3 inches wide and cut into 4- or 4½-inch lengths. Then wrap in wax paper for the counter. This taffy keeps long without being drained by the heat.

Cheving Candy.—Place 20 pounds of sugar in a copper pan, add 20 pounds of glucose, and enough water to easily dissolve the sugar. Set on the fire or cook in the steam pan in 2 quarts of water. Have a pound of egg albumen soaked in 2 quarts of water. Beat this like eggs into a very stiff froth, add gradually the sugar and glucose; when well beaten up, add 5 pounds of powdered sugar, and beat at very little heat either in the steam heater or on a pan of boiling water until light, and does not stick to the back of the hand, flavor with vanilla, and put in trays dusted with fine sugar. When cold it may be cut, or else it may be stretched out on a sugar-dusted table, cut, and wrapped in wax paper. This chewing candy has to be kept in a very dry place, or else it will run and get sticky.

Montpelier Cough Drops.—

Brown sugar ....... 10 pounds
Tartaric acid ...... 2 ounces
Cream of tartar .... ½ ounce
Water ........... 1½ quarts
Anise-seed flavoring, quantity sufficient.

Melt the sugar in the water, and when at a sharp boil add the cream of tartar. Cover the pan for 5 minutes. Remove the lid and let the sugar boil up to crack degree. Turn out the batch on an oiled slab, and when cool enough to handle mold in the acid and flavoring. Pass it through the acid drop rollers, and when the drops are chipped up, and before sitting, rub some icing with them.

Medicated Cough Drops.—

Light-brown sugar . . . 1½ pounds
Tartaric acid .......... ½ ounce
Cream of tartar ........ ½ ounce
Water ................ 2 quarts
Anise-seed, cayenne, clove, and peppermint flavoring, a few drops of each.

Proceed as before prescribed, but when sufficiently cool pass the batch through the acid tablet rollers and dust with sugar.

Horehound Candy.—

Dutch crushed sugar . . . 10 pounds
Dried horehound leaves . . 2 ounces
Cream of tartar ........ ½ ounce
Water ................ 2 quarts
Anise-seed flavoring, quantity sufficient.

Pour the water on the leaves and let it gently simmer till reduced to 8 pints; then strain the infusion through muslin, and add the liquid to the sugar. Put the pan containing the syrup on the fire, and when at a sharp boil add the cream of tartar. Put the lid on the pan for 5 minutes; then remove it, and let the sugar boil to stiff boil degree. Take the pan off the fire and rub portions of the sugar against the side until it produces a creamy appearance; then add the flavoring. Stir all well, and pour into square tin frames, previously well oiled.

Menthol Cough Drops.—

Gelatin .............. 1 ounce
Glycerine (by weight) . 2½ ounces
Orange-flower water .. 2 ounces
Menthol ............. 5 grains
Rectified spirits . . . . 1 drachm

Soak the gelatin in the water for 2 hours, then heat on a water bath until dissolved, and add 1½ ounces of glycerine. Dissolve the menthol in the spirit, mix with the remainder of the glycerine, add to the glyco-gelatin mass, and pour into an oiled tin tray (such as the lid of a biscuit box). When the mass is cold divide into 10 dozen pastilles. Menthol pastilles are said to be an excellent remedy for tickling cough as well as laryngitis. They should be freshly prepared, and cut oblong, so that they are fresh, and the patient may take half of one, or less, as may be necessary.

Violet Flavor for Candy.—Violet flavors, like violet perfumes, are very complex mixtures, and their imitation is a
CONFECTIONERY

correspondingly difficult undertaking.
The basis is vanilla (or vanillin), rose, and orris, with a very little of some pungent oil to bring up the flavor. The following will give a basis upon which a satisfactory flavor may be built:

Oil of orris........ 1 drachm
Oil of rose .......... 1 drachm
Vanillin ........... 2 drachms
Cumariin .......... 30 grains
Oil of clove .......... 11 ounces
Alcohol .......... 5 ounces
Water ............. 5 ounces

Make a solution, adding the water last.

CONFECTIONERY COLORS. — The following are excellent and entirely harmless coloring agents for the purposes named:

**Red.** — Cochineal syrup prepared as follows:

Cochineal, in coarse powder........ 6 parts
Potassium carbonate ........ 2 parts
Distilled water ........ 15 parts
Alcohol ........ 12 parts
Simple syrup enough to make ......... 500 parts

Rub up the potassium carbonate and the cochineal together, adding the water and alcohol, little by little, under constant maceration. Set aside over night, then add the syrup and filter.

**Pink.** —

Carmine ............... 1 part
Liquor potassae ........ 6 parts
Rose water, enough to make .......... 48 parts

Mix. Should the color be too high, dilute with water until the requisite tint is acquired.

**Orange.** — Tincture of red sandalwood, 1 part; ethereal tincture of orincon, quantity sufficient. Add the tincture of orincon to the sandalwood tincture until the desired shade of orange is obtained. A red added to any of the yellows gives an orange color.

The aniline colors made by the "Aktiongesellschaft für Anilin - Fabrikation," of Berlin, are absolutely non-toxic, and can be used for the purposes recommended, i.e., the coloration of syrups, cakes, candies, etc., with perfect confidence in their innocuity.

**Pastille Yellow.** —

Citron yellow II ........ 7 parts
Grape sugar, first quality .......... 1 part
White dextrine .......... 2 parts

**Sap-Blue Paste.** —

Dark blue .......... 3 parts
Grape sugar .......... 1 part
Water ............. 6 parts

**Sugar-Black Paste.** —

Carbon black .......... 3 parts
Grape sugar .......... 1 part
Water ............. 6 parts

**Cinnabar Red.** —

Scarlet ............. 65 parts
White dextrine ........ 30 parts
Potato flour .......... 5 parts

**Bluish Rose.** —

Grenadine ........... 65 parts
White dextrine ........ 30 parts
Potato flour .......... 5 parts

**Yellowish Rose.** —

Rosa II ............ 60 parts
Citron yellow .......... 5 parts
White dextrine ........ 30 parts
Potato flour .......... 5 parts

**Violet.** —

Red violet .......... 65 parts
White dextrine ........ 30 parts
Potato flour .......... 5 parts

**Carmine Green.** —

Woodruff (Waldmeister) green ........ 55 parts
Rosa II ............ 5 parts
Dextrine .......... 55 parts
Potato flour .......... 5 parts

To the colors marked with an asterisk (*) add, for every 4 pounds, 1 ounce, a grain of sodium carbonate and sodium nitrate. Colors given in this form of powders should be dissolved in hot water for use.

**Yellow.** — Various shades of yellow may be obtained by the maceration of Besiello saffron, or turmeric, or grains of Avignon in alcohol until a strong tincture is obtained. Dilute with water until the desired shade is obtained. An aqueous solution of quercitrol also gives an excellent yellow.

**Blue.** —

Indigo carmine .......... 1 part
Water ............. 2 parts

Mix. Indigo carmine is a beautiful, powerful, and harmless agent. It may usually be bought commercially, but if it cannot be readily obtained, proceed as follows:

Into a capsule put 30 grains of indigo in powder, place on a water bath, and heat to dryness. When entirely dry put
into a large porcelain mortar (the substance swells enormously under subsequent treatment—hence the necessity for a large, or comparatively large, mortar), and cautiously add, drop by drop, 100 grains, by weight, of sulphuric acid, C. P., stirring continuously during the addition. Cover the swollen mass closely, and set aside for 24 hours. Now add 3 fluidounces of distilled water, a few drops at a time, rubbing or stirring continuously. Transfer the liquid thus obtained to a tall, narrow, glass cylinder or beaker, cover and let stand for 4 days, giving the liquid an occasional stirring.

Make a strong solution of sodium carbonate or bicarbonate, and at the end of the time named cautiously neutralize the liquid, adding the carbonate a little at a time, stirring the indigo solution and testing it after each addition, as the least excess of alkali will cause the indigo to separate out, and fall in a doughy mass. Stop when the test shows the near approach of neutrality, as the slight remaining acidity will not affect the taste or the properties of the liquid. Filter, and evaporate in the water bath to dryness. The resultant matter is sulphindigotate of potassium, or the "indigo carmine" of commerce.

Tincture of indigo may also be used as a harmless blue.

Green.—The addition of the solution of indigo carmine to an infusion of any of the matters given under "yellow" will produce a green color. Tincture of crocus and glycerine in equal parts, with the addition of indigo-carmine solution, also gives a fine green. A solution of commercial chlorophyll gives grass-green, in shades varying according to the concentration of the solution.

Voice and Throat Lozenges.—

Catechu.... 191 grains
Taninc acid...... 273 grains
Tartaric acid..... 273 grains
Capsicum..... 39 minims
Black-currant paste. 7 ounces
Refined sugar,
Mushage of acacia, for each a sufficient quantity.

Mix to produce 7 pounds of lozenges.

CONSTIPATION IN BIRDS: See Veterinary Formulas.

COOKING TABLE: See Tables.

COOLING SCREEN: See Refrigeration.

Copper

Annealing Copper.—

Copper is almost universally annealed in muffles, in which it is raised to the desired temperature, and subsequently allowed to cool either in the air or in water. A muffle is nothing more or less than a reverberatory furnace. It is necessary to watch the copper carefully, so that when it has reached the right temperature it may be drawn from the muffle and allowed to cool. This is important, for if the copper is heated too high, or is left in the muffle at the ordinary temperature of annealing too long, it is burnished, as the workmen say. Copper that has been burnished is yellow, coarsely granular, and exceedingly brittle—even more brittle at a red heat than when cold.

In the case of coarse wire it is found that only the surface is burnished, while the interior is damaged less. This causes the exterior to split loose from the interior when bent or rolled, thus giving the appearance of a brittle copper tube with a copper wire snugly fitted into it. Cracks a half inch in depth have been observed on the surface of an ingot on its first pass through the rolls, all due to this exterior burning. It is apparent that copper that has been thus overheated in the muffle is entirely unfit for rolling. It is found that the purer forms of copper are less liable to be harmed by overheating than samples containing even a small amount of impurities. Even the ordinary heating in a muffle will often suffice to burn in this manner the surface of some specimens of copper, rendering them unfit for further working. Copper that has been thus ruined is of no use only to be refined again.

As may be inferred only the highest grades of refined copper are used for drawing or for rolling. This is not because the lower grades, when refined, cannot stand sufficiently high tests, but because methods of working are not adequate to prevent these grades of copper from experiencing the deterioration due to overheating.

The process of refining copper consists in an oxidizing action followed by a reducing action which, since it is performed by the aid of gases generated by the copper being heated, is called poling. The object of the oxidizing action is to oxidize and either volatilize or turn to slag all the impurities contained in the copper. This procedure is materially aided by the fact that the sub-
oxide of copper is freely soluble in metallic copper and thus penetrates to all parts of the copper, and parting with its oxygen, oxidizes the impurities. The object of the reducing part of the refining process is to change the excess of the suboxide of copper to metallic copper. Copper containing even less than 1 per cent of the suboxide of copper shows decreased malleability and ductility, and is both cold-short and red-short. If the copper is to be refined contains any impurities, such as arsenic or antimony, it is well not to remove too much of the oxygen in the refining process. If this is done, overpoled copper is produced. In this condition it is brittle, granular, of a shining yellow color, and more red-short than cold-short. When the refining has been properly done, and neither too much nor too little oxygen is present, the copper is in the condition of "tough pitch," and is in a fit state to be worked.

Copper is said to be "tough pitch" when it requires frequent bending to break it, and when, after it is broken, the color is pale red, the fracture has a silky luster, and is fibrous like a tuft of silk. On hammering a piece to a thin plate it should show no cracks at the edge. At tough pitch copper offers the highest degree of malleability and ductility of which a given specimen is capable. This is the condition in which refined copper is (or should be) placed on the market, and if it could be worked without changing this tough pitch, any specimen of copper that could be brought to this condition would be suitable for rolling or drawing. But tough pitch is changed if oxygen is either added or taken from refined copper.

By far the more important of these is the removal of oxygen, especially from those specimens that contain more than a mere trace of impurities. This is shown by the absolutely worthless condition of overpoled copper. The addition of carbon also plays a very important part in the production of overpoled copper.

That the addition of oxygen to refined copper is not so damaging is shown by the fact that at present nearly all the copper that is worked is considerably oxidized at some stage of the process, and not especially to its detriment.

Burnt copper is nothing more or less than copper in the overpoled condition. This is brought about by the action of reducing gases in the muffle. By this means the small amount of oxygen necessary to give the copper its tough pitch is removed. This oxygen is combined with impurities in the copper, and thus renders them inert. For example, the oxide of arsenic or antimony is incapable of combining more than mechanically with the copper, but when its oxygen is removed the arsenic or antimony is left free to combine with the copper. This forms a brittle alloy, and one that corresponds almost exactly in its properties with overpoled copper. To be sure overpoled copper is supposed to contain carbon, but that this is not the essential ruling principle in case of annealing is shown by the fact that pure copper does not undergo this change under conditions that ruin impure copper, and also by the fact that the same state may be produced by annealing in pure hydrogen and thus removing the oxygen that renders the arsenic or antimony inert.

No attempt is made to deny the well-known fact that carbon does combine with copper to the extent of 0.3 per cent and cause it to become exceedingly brittle. It is simply claimed that this is probably not what occurs in the production of so-called burnt copper during annealing. The amount of impurities capable of rendering copper easily burnt is exceedingly small. This may be better appreciated when it is considered that from 0.01 to 0.2 per cent expresses the amount of oxygen necessary to render the impurities inert. The removal of this very small amount of oxygen, which is often so small as to be almost within the limits of the errors of analysis, will suffice to render copper overpoled and ruin it for any use.

There are methods of avoiding the numerous accidents that may occur in the annealing of copper, due to a change of pitch. As already pointed out, the quality of refined copper is lowered if oxygen be either added to or taken from it. It is quite apparent, therefore, that a good method of annealing copper will prevent any change in the state of oxidation. It is necessary to prevent access to the heated copper both of atmospheric air, which would oxidize it, and of the reducing gases used in heating the muffle, which would take oxygen away from it. Obviously the only way of accomplishing this is to inclose the copper when heated and till cool in an atmosphere that can neither oxidize nor deoxidize copper. By so doing copper may be heated to the melting point and allowed to cool again without suffering as regards its pitch. There are comparatively few gases that can be used for this purpose, but fortunately, one which is exceedingly cheap and universally
COPPER

prevalent fulfills all requirements, viz., steam. In order to apply the principles enunciated it is necessary only to anneal copper in the ordinary annealing pots such as are used for iron, care being taken to inclose the copper while heating and while cooling in an atmosphere of steam. This will effectually exclude air and prevent the ingress of gases used in heating the annealer. Twenty-four hours may be used in the process, as in the annealing of iron wire, with no detriment to the wire. This may seem incredible to those manufacturers who have tried to anneal copper wire after the manner of annealing iron wire. By this method perfectly bright annealed wire may be produced. Such a process of annealing copper offers many advantages. It allows the use of a grade of copper that has hitherto been worked only at a great disadvantage, owing to its tendency to get out-of-pitch. It allows the use of annealers such as are ordinarily employed for annealing iron, and thus cheapens the annealing considerably as compared with the present use of muffles. There is no chance of producing the overpolished condition from the action of reducing gases used in heating the muffles. There is no chance of producing the underpolished condition due to the absorption of suboxide of copper. None of the metal is lost as scale, and the saving that is thus effected amounts to a considerable percentage of the total value of the copper. The expense and time of cleaning are wholly saved. Incidentally bright annealed copper is produced by a process which is applicable to copper of any shape, size, or condition—a product that has hitherto been obtained only by processes (mostly secret) which are too cumbersome and too expensive for extensive use; and, as is the case with at least one process, with the danger of producing the overpolished condition, often in only a small section of the wire, but thus ruining the whole piece.

COPPER COLORING:

Blacking Copper.—To give a copper article a black covering, clean it with emery paper, heat gently in a Bunsen or spirit flame,immerse for 10 seconds in a solution of copper filings in dilute nitric acid, and heat again.

Red Coloring of Copper.—A fine red color may be given to copper by gradually heating it in an air bath. Prolonged heating at a comparatively low temperature, or rapid heating at a high temperature, produces the same result. As soon as the desired color is attained the metal should be rapidly cooled by quenching in water. The metal thus colored may be varnished.

To Dye Copper Parts Violet and Orange.—Polished copper acquires an orange-like color leaning to gold, when dipped for a few seconds into a solution of crystallized copper acetate. A handsome violet is obtained by placing the metal for a few minutes in a solution of antimony chloride and rubbing it afterwards with a piece of wood covered with cotton. During this operation the copper must be heated to a degree bearable to the hand. A crystalline appearance is produced by boiling the article in copper sulphate.

Pickle for Copper.—Take nitric acid, 100 parts; kitchen salt, 2 parts; calcined soot, 2 parts; or nitric acid, 10 parts; sulphuric acid, 10 parts; hydrochloric acid, 1 part. As these bleaching baths attack the copper quickly, the objects must be left in only for a few seconds, washing them afterwards in plenty of water and drying in sawdust, bran, or spent tan.

Preparations of Copper Water.—I.—Water, 1,000 parts; oxalic acid, 30 parts; spirit of wine, 100 parts; essence of turpentine, 50 parts; fine tripoli, 100 parts.

II.—Water, 1,000 parts; oxalic acid, 30 parts; alcohol, 50 parts; essence of turpentine, 40 parts; fine tripoli, 50 parts.

III.—Sulphuric acid, 300 parts; sulphate of alumina, 80 parts; water, 620 parts.

Tempered Copper.—Objects made of copper may be satisfactorily tempered by subjecting them to a certain degree of heat for a determined period of time and bestrewing them with powdered sulphur during the heating. While hot the objects are plunged into a bath of blue vitriol; after the bath they may be heated again.

COPPER ALLOYS:

See Alloys.

COPPER CLEANING:

See Cleaning Preparations and Methods.

COPPER ETCHING:

See Etching.

COPPER IN FOOD:

See Food.

COPPER LACQUERS:

See Lacquers.
COPPER PAPER:
See Paper, Metallic.
COPPER PATINIZING AND PLATING:
See Plating.
COPPER POLISHES:
See Polishes.
COPPER, SEPARATION OF GOLD FROM:
See Gold.
COPPER SOLDER:
See Solders.
COPPER VARNISHES:
See Varnishes.
COPYING PRINTED PICTURES.
The so-called "metallic" paper used for steam-engine indicator cards has a smooth surface, chemically prepared so that black lines can be drawn upon it with pencils made of brass, copper, silver, aluminum, or any of the softer metals. When used on the indicator it receives the faint line drawn by a brass point at one end of the pencil arm, and its special advantage over ordinary paper is that the metallic pencil slides over its surface with very little friction, and keeps its point much longer than a graphite pencil. This paper can be used as a transfer paper for copying engravings or sketches, or anything printed or written in ink or drawn in pencil.
The best copies can be obtained by following the directions below: Lay the metallic transfer paper, face up, upon at least a dozen sheets of blank paper, and lay the print face down upon it. On the back of the print place a sheet of heavy paper, or thin cardboard, and run the rubbing tool over this protecting sheet. In this manner it is comparatively easy to prevent slipping, and prints 8 or 10 inches on a side may be copied satisfactorily.
Line drawings printed from relief plates, or pictures with sharp contrast of black and white, without any half-tones, give the best copies. Very few half-tones can be transferred satisfactorily; almost all give streaked, indistinct copies, and many of the results are worthless.
The transfer taken off as described is a reverse of the original print. If the question of right and left is not important this reversal will seldom be objectionable, for it is easy to read backward what few letters generally occur. However, if desired, the paper may be held up to the light and examined from the back, or placed before a mirror and viewed by means of its reflected image, when the true relations of right and left will be seen. Moreover, if sufficiently important, an exact counterpart of the original may be taken from the reversed copy by laying another sheet face downward upon it, and rubbing on the back of the fresh sheet just as was done in making the reversed copy. The impression thus produced will be fainter than the first, but almost always it can be made dark enough to show a distinct outline which may afterwards be retouched with a lead pencil.
For indicator cards the paper is prepared by coating one surface with a suitable compound, usually zinc oxide mixed with a little starch and enough glue to make it adhere. After drying it is passed between calendar rolls under great pressure. The various brands manufactured for the trade, though perhaps equally good for indicator diagrams, are not equally well suited for copying. If paper of firmer texture could be prepared with the same surface finish, probably much larger copies could be produced.
Other kinds of paper, notably the heavy plate papers used for some of the best trade catalogues, possess this transfer property to a slight degree, though they will not receive marks from a metallic pencil. The latter feature would seem to recommend them for transfer purposes, making them less likely to become soiled by contact with metallic objects, but so far no kind has been found which will remove enough ink to give copies anywhere near as dark as the indicator paper.

Fairly good transfers can be made from almost any common printers' ink, but some inks copy much better than others, and some yield only the faintest impressions. The length of time since a picture was printed does not seem to determine its copying quality. Some very old prints can be copied better than new ones; in fact, it was by accidental transfer to an indicator card from a book that nearly a hundred years old that the peculiar property of this "metallic" paper was discovered.

Copying Process on Wood:—If wood surfaces are exposed to direct sunlight the wood will exhibit, after a few weeks in the action, a bronzing of dark tone in the exposed places. Certain parts of the surface being covered up during the entire exposure to the sun, they retain their original shade and are set off clearly and sharply against the parts bronzed by the sunlight. Based on this property of the sunlight.
wood is a sun-copying process on wood. The method is used for producing tarsia in imitation on wood. A pierced stencil of tin, wood, or paper is laid on a freshly painted plate of wood, pasting it on in places to avoid shifting, and put into a common copying frame. To prevent the wood from warping a stretcher is employed, whereupon expose to the sun for 8 to 14 days. After the brown shade has appeared, the design obtained is partly fixed by polishing, or by a coating of varnish, lacquer, or wax. Best suited for such work are the pine woods, especially the 5-year fir and the cembra pine, which, after the exposure, show a yellowish brown tone of handsome golden gloss, that stands out boldly, especially after subsequent polishing, and cannot be replaced by any stain or by pyrography. The design is sharper and clearer than that produced by painting. In short, the total effect is pleasing.

How to Reproduce Old Prints.—Prepare a bath as follows: Sulphuric acid, 8 to 5 parts (according to the antiquity of print, thickness of paper, etc.); alcohol, 8 to 5 parts; water, 100 parts. In this soak the print from 5 to 15 minutes (the time depending on age, etc., as above), remove, spread face downward on a glass or ebonite plate, and wash thoroughly in a gentle stream of running water. If the paper is heavy, reverse the sides, and let the water flow over the face of the print. Remove carefully and place on a heavy sheet of blotting paper, cover with another, and press out every drop of water possible. Where a printing machine is convenient and sufficiently wide, passing the blotters and print through the rollers is better than mere pressing with the hands. The print, still moist, is then laid face upward on a heavy glass plate (a marble slab or a lithographers' stone answers equally well), and smoothed out. With a very soft sponge go over the surface with a thin coating of gum-arabic water. The print is now ready for inkin, which is done exactly as in lithographing, with a roller and printers' or lithographers' ink, cut with oil of turpentine. Suitable paper is then laid on and rolled with a dry roller. This gives a reverse image of the print, which is then applied to a zinc plate or a lithographer's stone, and as many prints as desired pulled off in the usual lithographing method. When carefully done and the right kind of paper used, it is said that the imitication of the original is perfect in every detail.

To Copy Old Letters, Manuscripts, etc.—If written in the commercial ink of the period from 1800 to 1864, which was almost universally an iron and tannin or gallic-acyd ink, the following process may succeed: Make a thin solution of glucose, or honey, in water, and with this wet the paper in the usually observed way in copying recent documents in the letter book, put in the press, and screw down tightly. Let it remain in the press somewhat longer than in copying recent documents. When removed, before attempting to separate the papers, expose to the fumes of strong water of ammonia, copy side downward.

CORDAGE:

Strong Twine.—An extraordinarily strong pack thread or cord, stronger even than the so-called "Zuckerschnur," may be obtained by laying the thread of fibers in a strong solution of alum, and then carefully drying them.

Preservation of Fishing Nets.—The following recipe for the preservation of fishing nets is also applicable to ropes, etc., in contact with water. Some have been subjected to long test.

For 40 parts of cord, hemp, or cotton, 3 parts of kutch, 1 part of blue vitriol, 1 part of potassium chromate, and 1 part of wood tar are required. The kutch is boiled with 150 parts of water until dissolved, and then the blue vitriol is added. Next, the net is entered and the tar added. The whole should be stirred well, and the cordage must boil 5 to 8 minutes. Now take out the netting, lay it in another vessel, cover up well, and leave alone for 12 hours. After that it is dried well, spread out in a clean place, and coated with linseed oil. Not before 6 hours have elapsed should it be folded together and put into the water. The treatment with linseed oil may be omitted.

Cordage Lubricant:

See Lubricants.

Cordage Waterproofing:

See Waterproofing.

Cordials:

See Wines and Liquors.

Corks:

Impervious Corks.—Corks which have been steeped in paraffin are said to be an excellent substitute for glass stoppers. Acid in no way affects them and chemical fumes do not cause decay in them, neither do they become fixed by a blow or long disuse.
CORKS—CORN CURES

Non-Porous Corks.—For benzine, turpentine, and varnish cans, immerse the corks in hot melted paraffine. Keep them under about 5 minutes; hold them down with a piece of wire screen over the dish in which you melt the paraffine. When taken out lay them on a screen to cool. Cheap corks can in this way be made gas- and air-tight, and can be cut and bored with ease.

Substitute for Cork.—Wood pulp or other ligneous material may be treated to imitate cork. For the success of the composition it is necessary that the constituents be mingled and treated under special conditions. The volumetric proportions in which these constituents combine with the best results are the following: Wood pulp, 3 parts; Roman pith, 1 part; gelatin, 1 part; glycerine, 1 part; water, 4 parts; 20 per cent formic-aldehyde solution, 1 part; but the proportions may be varied. After disintegrating the ligneous substances, and while they are in a moist and hot condition they are mingled with the solution of gelatin, glycerine, and water. The mass is stirred thoroughly so as to obtain a homogeneous mixture. The excess of moisture is removed. As a last operation the formic aldehyde is introduced, and the mass is left to coagulate in this solution. The formic aldehyde renders the product insoluble in nearly all liquids. So it is in this last operation that it is necessary to be careful in producing the composition properly. When the operation is terminated the substance is submitted to pressure during its coagulation, either by molding it at once into a desired form, or into a mass which is afterwards converted into the finished product.

CORKS, TO CLEAN:
See Cleaning Preparations and Methods, under Miscellaneous Methods.

CORK TO METAL, FASTENING:
See Adhesives, under Pastes.

CORK AS A PRESERVATIVE:
See Preserving.

CORKS, WATERPROOFING:
See Waterproofing.

CORN CURES:

I. Salicylic-Acid Corn Cure.—Extract cannabis indica, 1 part, by measure; salicylic acid, 10 parts, by measure; oil of turpentine, 5 parts, by measure; acetic acid, glacial, 2 parts, by measure; cocaine, 10 parts, by measure; collodion, elastic, sufficient to make 100 parts. Apply a thin coating every night, putting each layer directly on the preceding one. After a few applications, the mass drops off, bringing the indurated portion, and frequently the whole of the corn, off with it.

II. Compound Salicylated Collodion Corn Cure.—Salicylic acid, 11 parts, by weight; extract of Indian hemp, 2 parts, by weight; alcohol, 10 parts, by weight; flexible collodion, U. S. P., a sufficient quantity to make 100 parts, by weight. The extract is dissolved in the alcohol and the acid in about 30 parts, by weight, of collodion, the solutions mixed, and the liquid made up to the required amount. The Indian hemp is presumably intended to prevent pain; whether it serves this or any other useful purpose seems a matter of doubt. The acid is frequently used without this addition.

III. Extract of cannabis indica, 00 grains; salicylic acid, 1 ounce; alcohol, 1 ounce; collodion enough to make 10 ounces. Soften the extract with the alcohol, then add the collodion, and lastly the acid.

IV. Resorcin, 1 part, by weight; salicylic acid, 1 part, by weight; lactic acid, 1 part, by weight; collodion, elastic, 10 parts, by weight. Paint the corn daily for 5 or 6 days with the above solution and take a foot bath in very hot water. The corn will readily come off.

Corn Plaster.—Yellow wax, 24 parts, by weight; Venice turpentine, 3 parts, by weight; rosin, 2 parts, by weight; salicylic acid, 2 parts, by weight; balsam of Peru, 2 parts, by weight; lanolin, 4 parts, by weight.

Corn Cure.—Melt soap plaster, 5 parts, by weight, and yellow wax, 5 parts by weight, in a vapor bath, and stir finely ground salicylic acid, 10 parts, by weight, into it.

Removal of Corns.—The liquid used by chiropodists with pumice stone for the removal of corns and callouses is usually nothing more than a solution of potash or concentrated lye, the pumice stone being dipped into the solution by the operator just before using.

Treatment of Blisters.—Wear right and left stockings and shoes, the inner edges of the sole of which are perfectly straight. The blister is bathed night and morning in a 4 per cent solution of carbolic acid for a few minutes, followed by plain water. If, after several weeks, the blister is still distended with fluid, it is aspirated. If the blister is dry, the flatfoot, the arch of the foot must be restored by a plate. When the joints are enlarged because of gout or rheuma-
CORN CURES—COSMETICS

The Treatment of Corns.—Any corn may be speedily and permanently cured. The treatment is of three kinds—preventive, palliative, and curative.

I.—The preventive treatment lies in adopting such measures as will secure freedom from pressure and friction for the parts most liable to corns. To this end a well-fitting shoe is essential. The shoes should be of well-seasoned leather, soft and elastic, and should be cut to a proper model.

II.—The palliative treatment is generally carried out with chemical substances. The best method, is, briefly, as follows: A ring of glycercine jelly is painted around the circumference of the corn, to form a raised rampart. A piece of salicylic plaster mull is then cut to the size and shape of the central depression, and applied to the surface of the corn. This is then covered with a layer of glycercine jelly, and before it sets a pad of cotton wool is applied to the surface. This process is repeated as often as is necessary, until the horny layer separates and is cast off.

If the point of a sharp, thin-bladed knife be introduced at the groove which runs around the margin of the corn, and be made to penetrate toward its central axis, by the exercise of a little manual dexterity the horny part of the corn can be easily made to separate from the parts beneath.

III.—Any method of treatment to be curative must secure the removal of the whole corn, together with the underlying bursa. It is mainly in connection with the latter structure that complications, which alone make a corn a matter of serious import, are likely to arise. Freeland confidently advises the full and complete excision of corns, on the basis of his experience in upward of 60 cases.

Every precaution having been taken to render the operation aseptic, a spot is selected for the injection of the anaesthetic solution. The skin is rendered insensitive with ethyl chloride, and 5 minims of a 4 per cent solution of cocaine is injected into the subcutaneous tissue beneath the corn. After a wait of a few minutes the superficial parts of the site of the incision are rendered insensitive with ethyl chloride. Anaesthesia is now complete.

Two semilariatrial incisions meeting at their extremities are made through the skin around the circumference of the growth, care being taken that they penetrate well into the subcutaneous tissue.

The parts included in the incision, with a pair of dissecting forceps, a wedge-shaped piece of tissue—including the corn, a layer of skin and subcutaneous tissue, and the bursa if present—is dissected out. The ooze is pretty free, and it is sometimes necessary to torsion a small vessel; but the hemorrhage is never severe. The edges of the wound are brought together by one or two fine sutures; an antiseptic dressing is applied, and the wound is left to heal—primary union in a few days being the rule. The rapidity of the healing is often phenomenal. There is produced a scar tissue at the site of the corn, but this leads to no untoward results.

Cosmetics

COLD CREAM.

I.—Oil of almonds... 425 parts
    Lanolin ............ 185 parts
    White wax ......... 63 parts
    Spermaceti ...... 63 parts
    Borax ........... 4.5 parts
    Rose water ....... 300 parts

    Melt together the first four ingredients, then incorporate the solution of borax in the rose water.

II.—Tragacanth ........ 125 parts
    Boric acid ....... 100 parts
    Glycerine ...... 140 parts
    Expressed oil of almonds .... 50 parts
    Glyconine ....... 50 parts
    Oil of lavender ... 0.5 parts
    Water enough to make .......... 1,000 parts

    Mix the tragacanth and the boric acid with the glycerine; add the almond oil, lavender oil, and egg yolk, which have been previously well incorporated, and, lastly, add the water in divided portions until a clear jelly of the desired consistency is obtained.

III.—Oil of almonds ... 22 ounces
    Castor oil (odorless) ... 8 ounces
    Lard (benzonted) ...... 8 ounces
    White wax .......... 8 ounces
    Rose water (in winter less, in summer more, than quantity named) 12 ounces
    Orange-flower water ... 8 ounces
    Oil of rose ....... 15 minims
    Oil of rose ....... 6 drachms
    Extract of jasmine .... 4 drachms
    Extract of cassia .... 4 drachms
    Borax ........... 2 ounces
    Glycerine ....... 4 ounces
COSMETICS

Melt the oil of sweet almonds, wax, and lard together, and stir in the castor oil; make a solution of the borax in the glycerine and rose and orange-flower waters: add this solution, a little at a time, to the melted fat, stirring constantly to insure thorough incorporation; finally add the oil of rose dissolved in the extracts, and let the emulsion until cold.

IV.—Spermaceti (pure), 1 ounce; white wax (pure), 1 ounce; almond oil, 1 pound; butter of cocoa, 1 pound; lanolin, 2 ounces.

Melt and stir in 1 drachm of balsam of Peru. After settling, pour off the clear portion and add 2 fluidrachms of orange-flower water and stir briskly until it concretes.

Camphorated Cold Cream.—

Oil of sweet almonds ... 8 fluidounces
White wax ... 1 ounce
Spermaceti ... 1 ounce
Camphor ... 1 ounce
Rose water ... 5 fluidounces
Borax (in fine powder) ... 4 drachms
Oil of rose ... 10 drops

Melt the wax and spermaceti, add the oil of sweet almonds, in which the camphor has been dissolved with very gentle heat; then gradually add the rose water, in which the borax has previously been dissolved, beating or agitating constantly with a wooden spatula until cold. Lastly add the oil of rose.

Petrolatum Cold Cream.—

Petrolatum (white) ... 7 ounces
Paraffine ... 1 ounce
Lanolin ... 2 ounces
Water ... 3 ounces
Oil of rose ... 3 drops
Alcohol ... 1 drachm

A small quantity of borax may be added, if desirable, and the perfume may be varied to suit the taste.

LIP SALVES:

Pomades for the Lips.—Lip pomatum which is said always to retain a handsome red color and never to grow rancid is prepared as follows:

I.—Paraffine ... 80.0 parts
Vaseline ... 80.0 parts
Anchusa ... 0.5 parts
Bergamot oil ... 1.0 part
Lemon peel ... 1.0 part

Geranium oil, African ... 40 parts
Lemon oil ... 20 parts

III.—Rose Pomade,—
Almond oil ... 1,000 parts
Wax, white ... 300 parts
Alkanin ... 3 parts
Geranium oil ... 20 parts

IV.—Yellow Pomade,—
Vaseline oil, white ... 1,000 parts
Wax, white ... 200 parts
Spermaceti ... 200 parts
Saffron surrogate ... 10 parts
Clove oil ... 20 parts

V.—White Pomade,—
Vaseline oil, white ... 1,000 parts
Wax, white ... 300 parts
Bitter almond oil, genuine ... 10 parts
Lemon oil ... 2 parts

VI.—Paraffine ... 49.0 parts
Vaseline ... 49.0 parts
Oil of lemon ... 0.75 parts
Oil of violet ... 0.75 parts
Carmine, quantity sufficient.

Lip.—For treating sore, rough, or inflamed lips, apply the following night and morning, rubbing in well with the finger tips: Camphor, 1 ounce; menthol, 1 ounce; eucalyptol, 1 drachm; petrolatum (white), 1 pound; paraffine, 1 pound; alkanet root, 1 ounce; oil of bitter almonds, 15 drops; oil of cloves, 10 drops; oil of cassia, 5 drops. Digest the root in the melted paraffine and petrolatum, strain, add the other ingredients and pour into lip jars, hot.

MANICURE PREPARATIONS:

Powdered Nail Polishes.—

I.—Tin oxide ... 8 drachms
Carmine ... 1 drachm
Rose oil ... 6 drops
Neroli oil ... 5 drops

II.—Cinnabar ... 1 drachm
Infusorial earth ... 8 drachms

III.—Putty powder (fine) ... 4 drachms
Carmine ... 2 grains
Oil of rose ... 1 drop

IV.—White castile soap ... 1 part
Hot water ... 16 parts
Zinc chloride solution, 10 per cent, quantity sufficient.

Dissolve the soap in the water and to the solution add the zinc-chloride solution until no further precipitation occurs. Let stand over night; pour off the supernatant fluid, wash the precipitate.
well with water, and dry at the ordinary temperature. Carmine may be added if desired.

Polishing Pastes for the Nails.—

I. Talcum ............. 5 drachms

Exhausted oxide ...... 3 drachms

Powdered tragacanth 5 grains

Glycerine ............. 1 drachm

Rose water, quantity

Sufficient

Solution of carmine sufficient to tint.

Make paste.

For softening the nails, curing hang-nails, etc., an ointment is sometimes used consisting of white petrolatum, 8 parts; powdered castile soap, 1 part; and perfume to suit.

II. Esine ............... 10 grains

White wax ............ 1/2 drachm

Spermaceti ..... 1/2 drachm

Soft paraffine ...... 1 ounce

Alcohol, a sufficient quantity.

Dissolve the esine in as little alcohol as will suffice, melt the other ingredients together, add the solution, and stir until cool.

Nail-Cleaning Washes.—

I. Tartaric acid ....... 1 drachm

Tincture of myrrh .. 1 drachm

Cologne water ...... 2 drachms

Water ............... 3 ounces

Dissolve the acid in the water; mix the tincture of myrrh and cologne, and add to the acid solution.

Dip the nails in this solution, wipe, and polish with chamois skin.

II. Benzin Nail Enamel.—

Benzoin .......... 7 oz.

Alcohol 95% ......... 14 oz.

Meth. ether ......... 14 oz.

Methyl acetophenone 1 gram

5% solution of esine 4 drops

Dry the nails and apply the varnish with a camel's hair brush. Before applying the second coat allow the first to dry about 3 minutes. Allow the second coat to dry for 10 minutes and rub to a high polish with a silk handkerchief.

This polish is brilliant and will remain for several days.

II. Nail Enamel.—

Celluloid .......... 1/8 oz.

Amyl acetate ..... 2 oz.

Acetone .......... 6 oz.

Phloxine .......... 1 gram

Dissolve the celluloid which may be cleared moving picture film in the mixture of amyl acetate and acetone. If necessary warm slightly to obtain a syrupy liquid. Keep in well stoppered bottle.

After removing any old enamel from the nails with enamel remover cleanse them thoroughly and apply the enamel with a camel's hair brush. Do not apply the second coat until the first has dried perfectly. Caution—Do not bring your flame when making or applying.

I. Nail Polish Remover.—

Amyl Acetate ........ 1 oz.

Acetone ............ 1 oz.

II. Alcohol .......... 1 oz.

Ether ............... 1 oz.

Acetone ............ 1 oz.

Apply to the nails with a brush and before it dries rub off with a cloth.

REMOVER FOR CUTICLE:

Sodium hydroxide 4 ounces

Water .............. 2 1/2 gallons

Dissolve these two items in a stone jar, to which add two ounces of glycerine and thirty drops of oil of rose geranium. If this mixture is then put in bottles having corks for stoppers, the corks should be dipped in melted paraffin wax.

POMADES:

I. Herb Pomade.—

Vaseline oil, yellow 20,000 parts

Ceresine, yellow 6,000 parts

Chlorophyll ......... 20 parts

Lemon oil ......... 50 parts

Clove oil .......... 20 parts

Geranium oil, African 12 parts

Curled mint oil .... 4 parts

II. Rose Pomade.—

Vaseline oil, white 20,000 parts

Ceresine, white 6,000 parts

Alkanin .......... 18 parts

Geranium oil, African 50 parts

Palmarosa oil .... 30 parts

Lemon oil ....... 20 parts

III. Strawberry Pomade.—When the strawberry season is on, and berries are plenty and cheap, the following is timely:

Strawberries, ripe and fresh .... 4 parts

Lard, sweet and fresh .... 25 parts

Tallow, fresh ....... 5 parts

Alkannin tincture, quantity sufficient.

Essential oil, quantity sufficient to perfume.

Melt lard and lard together on the water bath at the temperature of boiling water. Have the strawberries arranged on a straining cloth. Add the alkannin on a straining cloth. Add the alkannin and tincture to the melted grease, stir in, and...
then pour the mixture over the berries. Stir the strained fruits until the mass begins to set, then add the perfume and stir in. A little artificial essence of strawberries may be added. The odor usually employed is rose, about 1 drop to every 2 pounds.

IV.—Stick Pomade.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural lard</td>
<td>250 parts</td>
</tr>
<tr>
<td>Cerasine</td>
<td>150 parts</td>
</tr>
<tr>
<td>Wax, yellow</td>
<td>50 parts</td>
</tr>
<tr>
<td>Rosin light</td>
<td>200 parts</td>
</tr>
<tr>
<td>Paraflin oil (thick)</td>
<td>300 parts</td>
</tr>
<tr>
<td>Oil of cassia</td>
<td>5 parts</td>
</tr>
<tr>
<td>Oil of bergamot</td>
<td>5 parts</td>
</tr>
<tr>
<td>Oil of clove</td>
<td>2 parts</td>
</tr>
</tbody>
</table>

V.—Petrolatum Pomade.—Melt 250 parts of freshly rendered lard and 25 parts of white wax at moderate heat and mix well with 200 parts of Petrolatum. Add 15 parts of bergamot oil, 5 parts of lavender oil, 2 parts of geranium oil, and 2 parts of lemon oil, mixing well.

VI.—Witch-Hazel Jelly.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil of almonds</td>
<td>256 parts</td>
</tr>
<tr>
<td>Extract of witch-hazel</td>
<td>10 parts</td>
</tr>
<tr>
<td>Glycine</td>
<td>32 parts</td>
</tr>
<tr>
<td>Soft soap</td>
<td>20 parts</td>
</tr>
<tr>
<td>Tincture of musk</td>
<td>Quantity sufficient to perfume.</td>
</tr>
</tbody>
</table>

Mix in a large mortar the glycine and soft soap and stir until incorporated. Add and rub in the witch-hazel and then add the oil, slowly, letting it fall in a very thin, small stream, under constant agitation; add the perfume, keeping up the agitation until complete incorporation is attained. Ten drops of musk to a quart of jelly is sufficient. Any other perfume may be used.

Colors for Pomade.—Pomade may be colored red by infusing alkanet in the grease; yellow may be obtained by using annatto in the same way; an oil-soluble chlorophyll will give a green color by admixture.

In coloring grease by means of alkanet or annatto it is best to tie the drug up in a piece of coarse cloth, place in a small portion of the grease, heat gently, squeezing well with a rod from time to time; and then adding this strongly colored grease to the remainder. This procedure obviates exposing the entire mass to heat, and neither decantation nor straining is needed.

Brocq's Pomade for Itching.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid phenic</td>
<td>1 part</td>
</tr>
<tr>
<td>Acid salicylic</td>
<td>2 parts</td>
</tr>
</tbody>
</table>

Acid tartaric... 3 parts
Glycerole of starch... 60 to 100 parts

Mix and make a pomade.

White Cosmetique.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jasmine pomade</td>
<td>2 ounces</td>
</tr>
<tr>
<td>Tuberosa pomade</td>
<td>2 ounces</td>
</tr>
<tr>
<td>White wax</td>
<td>2 ounces</td>
</tr>
<tr>
<td>Refined suet</td>
<td>4 ounces</td>
</tr>
<tr>
<td>Rose oil</td>
<td>15 minims</td>
</tr>
</tbody>
</table>

Melt the wax and suet over a water bath, then add the pomades, and finally the otto.

Glycerine and Cucumber Jelly.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerine</td>
<td>6 fluidounces</td>
</tr>
<tr>
<td>Water</td>
<td>10 fluidounces</td>
</tr>
</tbody>
</table>

Perfume to suit. The perfume must be one that mixes without opalescence, otherwise it mars the beauty of the preparation. Orange-flower water or rose water could be substituted for the water if desired, or another perfume consisting of:

<table>
<thead>
<tr>
<th>Spirit of vanillin</th>
<th>15 grains per ounce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirit of coumarin</td>
<td>15 grains per ounce</td>
</tr>
</tbody>
</table>

to the quantities given above would prove agreeable.

Cucumber Pomade.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cucumber pomade</td>
<td>2 ounces</td>
</tr>
<tr>
<td>Powdered white soap</td>
<td>1 ounce</td>
</tr>
<tr>
<td>Powdered borax</td>
<td>8 drachms</td>
</tr>
<tr>
<td>Cherry-laurel water</td>
<td>3 ounces</td>
</tr>
<tr>
<td>Rectified spirit</td>
<td>3 ounces</td>
</tr>
<tr>
<td>Distilled water to make 48 ounces</td>
<td></td>
</tr>
</tbody>
</table>

Rub the pomade with the soap and borax until intimately mixed, then add the distilled water (which may be warmed to blood heat), ounce by ounce, to form a smooth and uniform cream. When 40 ounces of water have been so incorporated, dissolve any essential oils desired as perfume in the spirit, and add the cherry-laurel water, making up to 48 ounces with plain water.

ROUGES AND PAINTS:

Grease Paints.—Theatrical face paints are sold in sticks, and there are many varieties of color. Yellows are obtained with ocher; browns with burnt umber; and blue is made with ultramarine. These colors should in each case be levigated finely along with their own weight.
of equal parts of precipitated chalk and oxide of zinc and diluted with the same to the tint required, then made into sticks with mutton suet (or vaseline or paraffine, equal parts) well perfumed. By blending these colors, other tints may thus be obtained.

**White Grease Paints.**

I.—Prepared chalk. . . . . 4 av. ounces
Zinc oxide. . . . . 4 av. ounces
Bismuth subnitrate. . . . . 4 av. ounces
Asbestos powder. . . . . 4 av. ounces
Sweet almond oil. . . . . about 2½ fluidounces
Camphor. . . . . 40 grains
Oil peppermint. . . . . 3 fluidrachms
Essence of bouquet extract. . . . . 3 fluidrachms

Sufficient almond oil should be used to form a mass of proper consistence.

II.—Zinc oxide. . . . . 8 parts
Bismuth subnitrate. . . . . 8 parts
Aluminum oxychloride. . . . . 8 parts
Almond oil, quantity sufficient, or 5—6 parts.
Perfume, quantity sufficient.

Mix the zinc, bismuth, and aluminum oxychloride thoroughly; make into a paste with the oil. Any perfume may be added, but that generally used is composed of 1 drachm of essence of bouquet, 12 grains of camphor, and 12 minims of oil of peppermint for every 2½ ounces of paste.

**Bright Red.**

Zinc oxide. . . . . 10 parts
Bismuth subnitrate. . . . . 10 parts
Aluminum oxychloride. . . . . 10 parts
Almond oil, quantity sufficient.

Mix the zinc, bismuth, and aluminum salts, and to every 4 ounces of the mixture add 2½ grains of eosine dissolved in a drachm of essence of bouquet, 12 minims of oil of peppermint, and 12 grains of camphor. Make the whole into a paste with almond oil.

**Red.**

Cacao butter. . . . . 4 av. ounces
White wax. . . . . 4 av. ounces
Oil of rose. . . . . 2 fluidounces
Oil of bergamot. . . . . 8 drops
Oil of neroli. . . . . 3 drops
Tincture musk. . . . . 2 drops
Carmine. . . . . 90 grains
Ammonia water. . . . . 3 fluidrachms

**Deep, or Bordeaux, Red.**

Zinc oxide. . . . . 30 parts
Bismuth subnitrate. . . . . 30 parts
Aluminum oxychloride. . . . . 30 parts
Carmine. . . . . 1 part
Ammonia water. . . . . 5 parts
Essence bouquet. . . . . 8 parts
Peppermint, camphor, etc., quantity sufficient.

Mix the zinc, bismuth, and aluminum salts. Dissolve the carmine in the ammonia and add solution to the mixture. Add 24 grains of camphor, and 24 minims of oil of peppermint dissolved in the essence bouquet, and make the whole into a paste with 2 ounces of sweet almonds.

**Vermilion.**

Vermilion. . . . . 18 parts
Tincture of saffron. . . . . 12 parts
Orris root, powdered. . . . . 30 parts
Chalk, precipitated. . . . . 120 parts
Zinc oxide. . . . . 120 parts
Camphor. . . . . 2 parts
Essence bouquet. . . . . 9 parts
Oil of peppermint. . . . . 2 parts
Almond oil, quantity sufficient.

Mix as before.

**Pink.**

Zinc carbonate. . . . . 250 parts
Bismuth subnitrate. . . . . 250 parts
Asbestos. . . . . 250 parts
Expressed oil of almonds. . . . . 100 parts
Camphor. . . . . 55 parts
Oil of peppermint. . . . . 55 parts
Perfume. . . . . 25 parts
Eosine. . . . . 1 part

**Dark Red.**—Like the preceding, but colored with a solution of carmine.

**Rouge.**

Zinc oxide. . . . . 24 ounces
Bismuth subnitrate. . . . . 24 ounces
Aluminum plumbate. . . . . 24 ounces
Eosine. . . . . 1 drachm
Essence bouquet. . . . . 2 drachms
Camphor. . . . . 6 drachms
Oil of peppermint. . . . . 20 minims
Almond oil, quantity sufficient.

Dissolve the eosine in the essence bouquet, and mix with the camphor and peppermint; add the powder and make into a paste with almond oil.

**Black Grease Paints.**

I.—Soot. . . . . 2 av. ounces
Sweet almond oil. . . . . 2 fluidounces
Cacao butter. . . . . 8 av. ounces
Perfume, sufficient.
The soot should be derived from burning camphor and repeatedly washed with alcohol. It should be triturated to a smooth mixture with the oil; then add to the melted cacao butter; add the perfume, and form into sticks.

Brown or other colors may be obtained by adding appropriate pigments, such as finely powdered burned umber, sienna, ocher, jeweler's rouge, etc., to the foregoing base instead of lampblack.

II.—Best lampblack……… 1 drachm
Cacao butter…………… 3 drachms
Olive oil………………… 3 drachms
Oil of neroli…………… 2 drops

Melt the cacao butter and oil, add the lampblack, and stir constantly as the mixture cools, adding the perfume toward the end.

III.—Lampblack ……….. 1 part.
Cacao butter ………….. 6 parts
Oil neroli, sufficient.

Melt the cacao butter and the lampblack, and while cooling make an intimate mixture, adding the perfume toward the last.

IV.—Lampblack ……….. 1 part
Expressed oil of almonds…… 1 part
Oil coconut……………… 1 part
Perfume, sufficient.

Beat the lampblack into a stiff paste with glycerine. Apply with a sponge; if necessary, mix a little water with it when using.

V.—Beat the finest lampblack into a stiff paste with glycerine and apply with a sponge; if necessary, add a little water to the mixture when using. Or you can make a grease paint as follows: Drop black, 2 drachms; alcohol oil, 2 drachms; coconut oil, 6 drachms; oil of lemon, 5 minims; oil of neroli, 1 minim. Mix.

Fatty Face Powders.—These have a small percentage of fat mixed with them in order to make the powder adhere to the skin.

Dissolve 1 drachm anhydrous lanolin in 2 drachms of ether in a mortar. Add 3 drachms of light magnesia. Mix well, dry, and then add the following: French chalk, 2 ounces; powdered starch, 1½ ounces; boric acid, 1 drachm; perfume, a sufficient quantity. A good perfume is coumarin, 2 grains, and attar of rose, 2 minims.

Rosa Putty.—Mix 1 ounce wheat flour with 2 drachms of powdered tragacanth and tint with carmine. Take as much of the powder as necessary, knead into a stiff paste with a little water and apply to the nose, having previously painted it with spirit gum.

II.—White wax, 8 parts; rosin, white, 8 parts; mutton suet, 4 parts; color to suit. Melt together.

Rose Powder.—As a base take 200 parts of powdered iris root, and 600 parts of rose petals, 100 parts of sandalwood, 100 parts of patchouli, 3 parts of oil of geranium, and 2 parts of true rose oil.

Rouge Tablets.—There are two distinct classes of these tablets: those in which the coloring matter is carmine, and those in which the aniline colors are used. The best are those prepared with carmine, or ammonium carminate, to speak more correctly. The following is an excellent formula:

Ammonium carminate… 10 parts
Talc, in powder ………… 25 parts
Dextrin …………………… 2 parts
Simple syrup, sufficient.
Perfume, to taste, sufficient.

Mix the talc and dextrin and add the perfume, preferably in the shape of an essential oil (attar of rose, synthetic oil of jasmine, or violet, etc.), using 6 to 8 drops to every 4 ounces of other ingredients. Incorporate the ammonium carminate and add just enough simple syrup to make a mass easily rolled out. Cut into tablets of the desired size. The ammonium carminate is made by adding 1 part of carmine to 24 parts of strong ammonia water. Mix in a vial, cork tightly, and set aside until a solution is formed, shaking occasionally. The ammonium carminate is made by dissolving carmine in ammonium water to saturation.

Rouge Palettes.—To prepare rouge palettes rub up together:

Carmine………………… 9 parts
French chalk…………. 50 parts
Almond oil…………… 12 parts

Add enough tragacanth mucilage to make the mass adhere and spread the whole evenly on the porcelain palette.

Liquid Rouge.—

I.—Carmine………………… 4 parts
Stronger ammonia water……….. 4 parts
Essence of rose ………… 10 parts
Rose water to make 500 parts

Mix. A very delightful violet odor, if this is preferred, is obtained by using ionone in place of rose essence. A cheaper preparation may be made as follows:
### SKIN FOODS

Wrinkles on the face yield to a wash consisting of 60 parts milk of almonds (made with rose water) and 4 parts albumin sulphate. Use morning and night. Rough skin is to be washed constantly in Vichy water. Besides this, rough places are to have the following application twice daily—either a few drops of:

| I. | Rose water         | 100 parts |
|    | Glycerine         | 25 parts |
|    | Tannin            | 2 parts  |

Mix. Or use:

| II. | Orange-flower water | 100 parts |
|     | Glycerine       | 10 parts  |
|     | Borax          | 2 parts   |

Mix. Sig.: Apply twice daily.

"Beauty Cream."—This formula gives the skin a beautiful, smooth, and fresh appearance, and, at the same time, serves to protect and preserve it:

- Alum, powdered... 10 grams
- Whites of... 2 eggs
- Boric acid... 3 grams
- Tincture of benzoin... 40 drops
- Olive oil... 40 drops
- Mucilage of acacia... 3 drops
- Rice flour, quantity sufficient
- Perfume, quantity sufficient

Mix the alum and the white of eggs, without any addition of water whatever, in an earthen vessel, and dissolve the alum by the aid of very gentle heat (derived from a lamp, or gaslight, regulated to a very small flame), and constant, even, stirring. This must continue until the aqueous content of the albumen is completely driven off. Care must be taken to avoid coagulation of the albumen (which occurs very easily, as all know). Let the mass obtained in this manner get completely cold, then throw into a Wedgwood mortar, add the boric acid, tincture of benzoin, oil, mucilage (instead of which a solution of fine gelatin may be used), etc., and rub up together, thickening it with the addition of sufficient rice flour to give the desired consistence, and perfuming as will. Instead of olive oil any pure fat, or fatty oil, may be used, even vaseline or glycerine.

### FACE BLEACH OR BEAUTIFIER

| Syrup lactic acid | 40 ounces |
| Distilled water   | 5 gallons |

Mix. Gradually add

- Tincture of benzoin... 8 ounces

Color by adding
COSMETICS

Carmine No. 40........ 40 grains
Glycerine............... 1 ounce
Ammonia solution........ ½ ounce
Petrolatum........... 3 ounces

Heat this to drive off the ammonia, and mix all. Shake, set aside; then add a few drachms of kaolin and filter, and add
Solution of ionone..... 1 drachm

Mix the bay rum and glycerine, add the ammonia water, and finally the rose water. It is especially efficacious after shaving.

II.—As glycerine is bad for the skin of many people, here is a recipe which will be found more generally satisfactory as it contains less glycerine: Bay rum, 3 ounces; glycerine, 1 ounce; carbolic acid, ½ drachm (30 drops). Wash the hands well and apply while hands are soft, preferably just before going to bed. Rub in thoroughly. This rarely fails to cure the worst "chaps" in two nights.

III.—A sure remedy for chapped hands consists in keeping them carefully dry and greasing them now and then with an anhydrous fat (not cold cream). The best substances for the purpose are unguentum cereum or oleum olivarum.

If the skin of the hands is already cracked the following preparation will heal it:

Finely ground bismuth, 5.0 parts; bismuth oxychloride, 2.0 parts; with fat oil, 12.0 parts; next add glycerine, 5.0 parts; lanolin, 30.0 parts; and scent with rose water, 10.0 parts.

IV.—Wax salve (olive oil 7 parts, and yellow wax 3 parts), or pure olive oil.

Hand-Cleaning Paste.—Cleaning pastes are composed of soap and grit, either with or without some free alkali. Any soap may be used, but a white soap is preferred. Castile soap does not make as firm a paste as soap made from animal fats, and the latter also lather better.

For grit, anything may be used, from powdered pumice to fine sand.

A good paste may be made by dissolving soap in the least possible quantity of hot water, and as it cools and sets stirring in the grit. A good formula is:

White soap........... 2½ pounds
Fine sand............. 1 pound
Water................ 5½ pints

Lotion for the Hands.—

Boric acid.............. 1 drachm
Glycerine............... 6 drachms

Dissolve by heat and mix with

Lanolin................ 6 drachms
Vaseline................ 1 ounce

Add any perfume desired. The borated glycerine should be cooled before mixing it with the lanolin.

Cosmetic Jelly.—

Tragacanth (white rib- bon)................. 60 grains
Rose water............ 14 ounces

Macerate for two days and strain forcibly through coarse muslin or cheese cloth.