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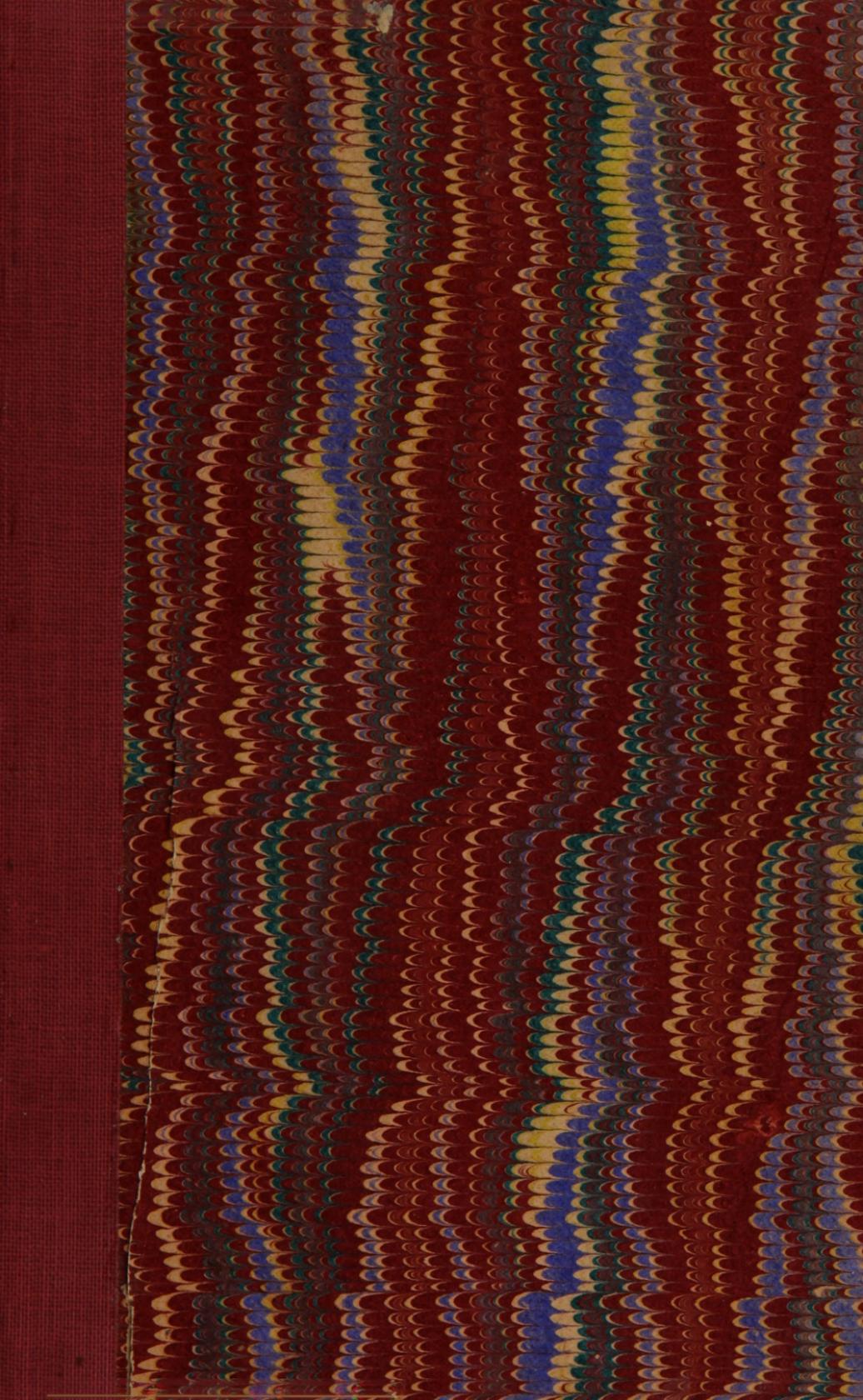
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# COSMETICS

A TREATISE

FOR

# PHYSICIANS AND PHARMACISTS

BY

DR. HEINRICH PASCHKIS,

Docent at the University of Vienna.



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By DR. HEINRICH PASCHKIS, Vienna.

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# COSMETICS.

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## CHAPTER I.

### INTRODUCTION.

THE minor ailments of which the following pages treat have been neglected by medical science. The literature upon the subject of cosmetics, which is quite abundant, is made up in part of excellent works by manufacturers and pharmacists intended for others in the same calling, in part of treatises written by the laity for lay readers. Even medical authors, as is shown, for instance, by an early work of the old master Dittl or a publication of Dachauer's, scarcely accomplished anything except to copy recipes which could scarcely be utilized by the physician, from works such as those described above. There have been a few authors—Auspitz, Pinkus—who have treated of limited provinces in this field in medical monographs. Still the physician is wrong in overlooking the study of the science of cosmetics, for with a knowledge of this he cannot only be of service to patients who suffer from slight blemishes, but he can also guard them against dangerous experiments.

With this idea in view, I have endeavored to present the outlines, in which shall be found the methods of action as well as the results of modern dermatology.

In treating of the latter, I have adhered to the teachings of the Viennese school, as can readily be imagined. The views which the exponents of this school—Hebra and Auspitz, Kaposi and Neumann—have advanced in their works will be found in the following pages.

In reference to individual remedies and their *modus operandi* and also the directions for use, I relied principally upon

my own experiments, even though the works of Husemann, Vogl, and Bernatzik, and especially the technical treatises of Atkinson, Engelhardt, Hirzel, Piesse, and others, contain many valuable points.

Most of the prescriptions I have had prepared by my friend Mr. Steiden (pharmacist—Rathhausapotheke), and here I desire to thank him for his courtesy. I employed the remedies on dead subjects and upon the living. The purpose of this book will explain why I have been indifferent regarding the perfume of the preparations.

The historical introduction which follows, and which represents the development of the science of cosmetics in stages, is far from complete. If it were so, it would lead us far beyond the scope of this work. Nevertheless, I hope these pages will prove interesting to the reader.

It would be impossible to answer the question as to what constitutes personal beauty in a manner which would be satisfactory to everybody. The physician defines this differently from the artist; the philosopher has still another definition; youth decides differently from old age. Beauty is "one of the great secrets of nature. We all see and experience its effects; but an exact general idea of its characters belongs to the undiscovered truths."<sup>1</sup> Among the ancients, the Greeks considered their ideal in a combination of goodness and beauty, *καλοῦ καὶ ἀγαθοῦ*; in like manner later authorities on art and philosophers found general beauty in "a complete harmony between the body and its component parts." This, in its greatest development, required a state of perfection which is unknown to human beings; but beauty itself had some of its greatest triumphs in classical ancient times, and its method of acquirement, apparently changing in subsequent centuries, really remained the same.

As a rule, we cannot define our ideas of bodily beauty; the latter is not "geometrically exact;" if it were, there would be no difference of opinion regarding it. Ideas of beauty vary among different nations and among different races. Even among the same nation, opinions regarding human beauty differ. Such opinions depend upon individual taste and are founded not only upon regularity of form and on color, but also on expression and grace, and in addition are influenced by the tyrannical laws of style.

It is obvious that beauty must be considered differently in one or the other sex, in various races and at various periods of life. The child, the young girl, the adult man, the old woman, each may be possessed of beauty peculiar to and corresponding to that period of life. A European, a Persian, a Nubian—each may represent a distinct type of beauty, and yet we may regard them all as beautiful.

Then we arrive at the influence of taste. There can be as little question regarding what is customarily and habitually considered as beauty and the means employed to enhance this, as there can be any doubt about the use of ornaments (which are really closely allied to cosmetics) and the portions of the body on which we prefer to wear them.

Though these differences in taste be ever so great, there exists in all mankind the science and the desire to ornament themselves, to improve the beauty of body and face in order to appear more favorable in the eyes of male or female companions. The means employed may differ, but the object remains the same. A great many of the wild tribes paint the body with horrid colors, or make these permanent by tattooing, or dig scars into the body (Nubians). Leaving out of consideration these savages who paint the body different colors and apply red and blue or yellow and white to the face, as the women of Greenland do, and regarding only the ancient races of culture, it is astonishing how these procedures, governed as they are by style, have been preserved. In the oldest historical times perfume was employed, color was applied to the face, hair was burned, crimped, and dyed just as is done now; even the same cosmetics are employed now that were used centuries ago, though their number has increased. These remedies either were guarded as business secrets by druggists and physicians, or they were promulgated from woman to woman. Curiously, there is scarcely any mention of cosmetics except those used by women—they seemed to have an historical right to use them; but in the case of the male sex, scarcely any are mentioned except perfumery and hair remedies.

In ancient Egypt the young girls were in the habit of powdering and painting, of coloring their pale lips, and of greasing their hair with odorous oils. They also colored their finger-nails and toe-nails orange with henna, just as many Orientals still do. (Among the educated Egyptians, in burial

rites the endeavor was made to preserve the exterior of the body as much as possible even with the mummies; hence such bodies are found in which nails were colored red and others in which they were gilded. Perhaps Egyptian women also gilded their nails during life.) They were so well up in these practices that they blackened the eyebrows and lashes in order to brighten their glances. Both remedy and method have remained the same up to the present time. Black sulphide of antimony (mestem) is employed not only by the Egyptians of to-day under the name "kochl," but it is also used elsewhere. The form of metallic rouge-bottles which were sold in Egypt at that time is about the same as what we see pictured as antique salve-jars—alabastra. Even the stopper, elongated into a stem to be dipped into the paint, was not missing. Such a holder tipped with color was placed between the open eyelids, the lids closed gently, and the mestem was rubbed into the edges of the lids and the lashes; then followed the painting of the lower lid and of the eyebrow. A recipe for a hair-dye is credited to Schesch, the mother of Teta, who was the wife of the first King of Egypt; this is the oldest prescription known. The cosmetic science of the mouth was also developed; to perfume the breath, it was customary to chew mastich branches or to use cachous. These pastilles were prepared from *kyphi*, an incense, the recipe for which is still preserved; according to Dioscorides it was made of honey, wine, raisins, large and small juniper, cardamom, calamus, galange, rosin, myrrh, aspalathus, clover, mastich, asphalt, fig-leaves, sorrel.<sup>2</sup>

The Jews learned these toilet customs, among other things, from the Egyptians, and they carried a part of this knowledge with them. Even though some of this knowledge was lost during their wanderings, much of it was retained; and when they settled and prospered and had more and more intercourse with other nations, the knowledge of these toilet customs was applied more generally. At first this was confined chiefly to the use of odorous salves and of perfumes in general in the observance of religious ceremonies, but afterward these were also employed in the houses and as an adjunct in the toilet. Consecrated oil was made by digesting myrrh, cinnamon, cassia, and calamus in oil; this was used in anointing Aaron and his sons. Later kings were anointed and finally oil was

employed for general use. This use of oil was considered a luxury, or at least a sign of comfort, as is shown by many examples in the Scriptures: "Thou anointest my head with oil." This is also indicated by the fact that the Jews and Egyptians deprived themselves of this procedure when in mourning. (The Essenes were the only ones who did not anoint themselves; they regarded it as uncleanly.) As a perfume for private uses the Jewesses<sup>3</sup> used henna blossoms; they had learned this in Egypt, but the plant also grew in Judea. The white blossoms are agreeably fragrant. It is uncertain whether they also employed henna as rouge, as was done in Egypt; it is probable, for they were familiar with the other Egyptian cosmetics. The paint for the eyes—"mestem"—is called in the Scriptures "kochl," a name prevalent to-day. Later, improvements in the toilet advanced rapidly, and in the Scriptures one of the prophets makes a comparison to courtesans, among whom such embellishments were probably most frequently found.

Besides henna and kochl, another toilet article was mentioned; it was called "puch," and probably it was also an expensive paint or perfume (2 Kings, ix. 30; Jeremiah, iv. 30).

The third daughter of Job was called *Keren hapuch* (Job, xlii. 14), which means "paint-jar." The more the Jews mingled with other nations in commercial pursuits and then in wars, the more extensive became the use of cosmetics which were quite common among the Persians and the Babylonians. Certainly no lady ever consumed a longer time in completing her toilet than did a maiden intended for King Ahasuerus (Esther, ii.). She required one year to finish this noble object; for six months she was perfumed with balsam and myrrh and for six months more she was embellished. So that she probably understood the art of using cosmetics and its secrets.

Among the Greeks and Romans, too, the science of cosmetics was looked upon very favorably. At first, as far as literature enables us to estimate, it was quite simple and was limited to abundant bathing and anointing the body after the bath. At first the anointing was done with simple oil or lanolin. Odysseus returning as a beggar received a foot-bath followed by an anointing with oil. Penelope was anointed while asleep with ambrosial oil of Cytherea. Later, odorous materials were added to the oil; then the plain oil was used

as a hygienic remedy—by men after bathing or before battle; the artificially perfumed oil, “myron,” which the Greeks became familiar with from Asiatic races, was considered an article of luxury. Apothecaries sold not only medicines, but also cosmetics. The use of these perfumes became so elaborate that different varieties were applied to different parts of the body; thus, Egyptian salve was applied to the feet and thighs, Phoenician salve for the chin and breast, sisymbrium salve for the arms, amaracus salve for the hair and eyebrows, serpyllon salve for the knees and back. During this later period the women of Greece probably also painted. They were also familiar with “diapasmata,” which was made from fragrant flowers and other substances powdered and was used to absorb the sweat, to perfume the bed, and finally to perfume clothes, being made into bags like the sachets now employed.

The odorous salves were of firm and of fluid consistence; the former seemed to be used for inunction, the latter as perfume.

The Romans acquired the knowledge of this luxury from the Greeks and extended it after their power became so great, until finally it acquired a degree of perfection almost abreast of that of to-day. Catullus, Ovid, Martial, Petronius, and Lucian give such complete recipes and directions that we can readily imagine the toilet of a Roman lady and possibly also that of a Roman “incroyable.”<sup>4</sup>

In the evening the face was covered with paste, consisting of crumbs of bread in milk (poppæana) or else of fatty beans, “aut tegitur pingui terque quaterque faba” (Ovid).

This not over-appetizing (nec amabilius) coating was removed in the morning by water, or by an emulsion prepared with ass’ milk (Poppæa, the wife of Nero, is said to have had one hundred asses with her constantly) or with lait virginal (myrrh and corn).

Many ladies were afraid of water or of fluids in general for their toilet, and removed the perspiration accumulated during the night by using powder (diapasmata).

Besides these simple remedies, many ladies employed others which were more complicated and which were recommended as beautifying agents. Ovid gives many examples in full:

Hordea, quæ Libici ratibus misere coloni  
 Exue de palea, tegminibusque suis  
 Par ervi mensura decem madefiat ab ovis  
 Sed cumulent libras hordea nuda duas;  
 Hæc ubi ventosas fuerint siccata per auras,  
 Lenta jube scabra frangat asella mola  
 Et quæ prima cadunt vivaci cornua cervo  
 Contere. In hæc solidi sexta face assiseat.  
 Jamque ubi pulvereæ fuerint contusa farinae  
 Protinus in cumeris omnia cerne cavis.  
 Adice Narcissi bis sex sine cortice bulbos  
 Stenua quos puro marmore dextra terat.  
 Sex tantemque trahat gummi cum semine tusco  
 Huc novies tanto plus tibi mellis eat.  
 Quæcumque afficiet tali medicamine vultum,  
 Fulgebit speculo levior ipsa suo.

(Ovid, de medicamine faciei liber.)

Barley, sent by ships, from the barn-floor of the Lybian farmer  
 Is first separated from the chaff and shelled.  
 Then take ten eggs; moisten the same quantity of peas;  
 The grain itself must, however, weigh two pounds;  
 After you have dried the mass thoroughly in the wind  
 The ass shall grind it slowly,  
 And the horns which first fall from long-lived deer  
 Rub together, take four ounces from the full pound;  
 After you have mixed this thoroughly with the powdered flour,  
 You must bolt this vigorously through a curved sieve.  
 Add the bulbs of twelve daffodils without scales,  
 Rubbing them only in clean marble vessels.  
 Then two ounces of Tuscan grains and gum,  
 And pour in nine times as much honey.  
 If then you rub this mixture on your face  
 It will become so bright that your own mirror will not be more so.

Hands, face, and breast were rubbed with the fat of sheep's  
 wool. Unfortunately they were not acquainted with the means  
 of purifying this, and its bad odor may have caused many a  
 fair Roman to regard its application as a disagreeable act.

Non semel hinc stomacho nausea facta venit.

To remove the fat from the hands, soap was used; there  
 were two sorts: Gallic and German. The latter was made  
 from the ashes of the beech and goat's tallow, and was, ac-  
 cording to Plinius, considered the preferable. After washing,  
 milk was poured on the hands and then they were dried upon  
 a fine linen cloth or in the hair of a boy. When a bath was

desired it consisted of meal (*farina lupini*), in order to make the skin very smooth, and it was often perfumed with oil of jasmine or similar perfumes; these baths were taken not only in the bathing establishments, but also at home, in the most costly silver extensive bath-tubs. Then the nails were cut, and marked callosities were removed, undoubtedly by skilled hands. During the banquet of Trimalchio, boys moved about under the tables and attended to the feet of the guests, doing this with special skill.

Perfume, which constituted an important factor in the toilet, consisted of fragrant salves or oils. The latter, which were fluid and, as at the present time, used in atomizers, were largely used as luxuries.

Roses, violets from Athens, spikenard, and henna blossoms from Egypt served as sources of perfume; these were used not only separately, but in mixtures, and the perfumers of that period were just as proud of certain fragrant compounds as those of the present time often are. They were valued according to their source or according to the firm which prepared them. The names of perfumers who excelled and whose manufactures commanded a big price have been preserved: Cosmus, Nicero, and Aurelian were the Atkinson and Lubin of that period. The manufacture of perfumes, at least that of oils and salves, was very much like that of the present age. Ointments and oils were impregnated with delicate odors by maceration; they were warmed in a water-bath and fresh flowers added several times; they were prepared exactly like the *huiles antiques* of the French perfumers. The ancients also were aware that certain very delicate odors required fortification with others of a more lasting quality to make them more permanent; oil of rose was mixed with andropogon, oil of lilies with calamus and myrrh. Alcohol was not known as such, but wine was impregnated with aromatics and this was employed by perfumers; this was used to prepare pomades. An old recipe of Dioscorides, in whose *materia medica* a great many superior prescriptions are found, gives an excellent basis for ointments: Deer or ox suet was melted with a little salt, after removal of all foreign particles, and then poured into pure water, which was changed frequently, the fat being cleansed by kneading. Then it was boiled repeatedly with fragrant wine until the original disagreeable

odor had disappeared. This basis for ointments corresponds to our *Adeps benzoinatus*. A great many oils were used, and these were prepared in other ways—bleaching in the sun, washing with water, etc. Almond oil from bitter almonds (*metopium*), olive oil, oil of ben, oil of sesame, nut oil, castor oil, and juniper oil were all known and employed in the preparation of perfumery.

As already stated, these scents were used liberally and, later on, even too profusely in a manner which would have been distasteful to us. It seems extraordinary to us to read of the guests of Trimalchio having been treated to fragrant oil so liberally that they were soaked with it, and of costly salves having been applied to the forehead so that they ran into the eyes; for we do not now hear of any one perfuming his guests. But we must not forget about the propensity of the ancients for anointing the body; and we should also remember that even at that time, ladies and gentlemen who were drowned in an excess of oils and perfumes were ridiculed. In addition, it may be stated that certain strong odors were preferred for men, and others of a fine delicate quality, or mixtures, were selected by women.

The various cosmetics used in the care of the mouth were very important. The brushing of the teeth and the removal of tartar belonged to cosmetic procedures as well as improving the teeth and drawing them. They also looked after the odor of the breath, and to improve this or to cover up some disagreeable odor, they were in the habit of employing mouth-washes prepared with saffron, roses, etc., or of chewing myrrh, mastich, fennel, or costly preparations corresponding to the perfumed cachous of the present day. Any disagreeable odor occasioned by food or drink was remedied in the same manner. Ladies and gentlemen were not satisfied with the remedies of the *ars ornatix*, but not infrequently employed those of the *ars fucatrix*. White and red paint was used in the form of powder and of paste, especially white lead and chalk. For rouge, among other things, minium and carmine were employed; and for blacking the eyebrows, burnt ant eggs (Plinius) or soot was used. Frequently there were added to face pastes substances that were of value or were thought to be of value as cosmetics, just as is done to-day. A favorite remedy, the value of which must be acknowledged, was car-

bonate of soda; this was named "aphronitrum." Ovid gives recipes for such beautifying cosmetics, and also for others containing sal ammoniac.

Like our own beauties, the Roman women attached great importance to their natural or artificial coiffure and to hair ornaments. They used combs of wood (*multifido buxus dente*) or of ivory (*morsu numerosi dentis eburno*) or of tortoise-shell; the latter were, however, used chiefly as ornaments. They perfumed the hair with fragrant oil, used the curling-iron, and had these curls extend low down on to the forehead in front and hang down loosely behind, where at the part they were joined to an artificial chignon by means of richly-decorated wooden or golden pins. Finally a net, the color of which corresponded to the hair, was placed over all.

If in consequence of age, grief, or other causes the hair had lost its color, dyes were resorted to. A great many hair-dyes seem to have been used in Rome; among them there were some which are still in use, such as green nut-shells and acetate of lead. A recipe of Plinius directs that the latter shall be made by mixing leeches and vinegar together and allowing them to remain in a leaden vessel for two months; it seems, too, that the "*plumbea Nicerotiana*" belonged to this category. We are ignorant of the nature of other remedies, such as the "spheres of Matti" (coming from a part of Germany near Wiesbaden).

After the Roman had seen the blonde maidens of Germany, blonde and red hair came into style more and more, and efforts were made to bleach the hair. For this purpose strongly-alkaline soaps, especially the German (*spuma batava*), were used. This or some other hair-dye seem to have been especially deleterious; it greased the scalp and favored baldness. This served as a subject for satirists as much as the wigs which were worn not only on account of baldness, but also on account of desired color when this could not be imparted to natural hair. As blonde and red hair became fashionable, wigs of these colors, especially those made of German hair, became common and desirable.

As is usually the case, this bleaching, which originally was used by a few elegant ladies only, became exceedingly common and vulgar, so that finally it was a specialty with the *demi-monde*. Hair-dressers had another important cosmetic

occupation—epilation. Ladies had hair removed from the abdomen and men from the armpits. This was of greater importance than with us; for with few exceptions, hirsute appendages are only regarded as cosmetic errors when they occur upon the face, neck, or, in the case of women, on the arms. In Rome, where the left shoulder, arm, and armpit, together with the back of the neck and the breast, were always exposed, and the legs frequently bare, the removal of hair from these situations was absolutely necessary. At first this custom was prevalent with women only, but after a while men also resorted to the procedure. The razor was employed (*novacula*) for coarse hair, as for instance on the legs, or else pumice-stone was used in places of more limited extent, as for instance on the upper lips of women, around the nostrils; fine forceps were used on the eyebrows (*volsellæ*); finally vegetable materials were used, especially upon the face; among the latter class were *psilothrum* (*Bryonia alba*?) and *dropax* (unknown); these seem to have been employed chiefly by women.

In addition to these remedies, the Roman women were acquainted with many other means of increasing their beauty. Thus they used the breast-band (*maxillare*) to diminish the size of a breast that was too large, and to retard its growth. This was the analogue of the bodice, which is intended to give the women of the present period support, the wearing of which is a custom which reminds one of the costume of the *Bajadere* Indians.

*Taurino poteras pectus constringere tergo  
Nam pellis mammas non capit ista tuas.—Mart. xiv., 66.*

You might bind your breasts with the back of a steer,  
For this leather band will not hold yours.

*Fascia, crescentes dominæ compesce papillas,  
Ut sit, quod capiat nostra tegatque manus.—Mart. xiv., 144.*

Bind, restrain the growing breasts of women,  
So that they may be grasped and covered by our hand.

Even beauty-plasters (*splenia*) were not unknown; they served partly to hide blemishes in the face, just as they are sometimes used at the present time, or else to add to beauty by making the brow resemble the firmament.

The subsequent periods do not present much literature which would enable us to judge of the advance of the knowledge of cosmetics. It is certain that this did not lag behind, since a people or a nation that makes strides in the possession of land and in culture, also progresses in the enjoyment of the luxuries of life.

The Arabians were the successors to the physicians of the post-classical period who are credited with special knowledge of cosmetics; they occupied themselves quite extensively with this subject, which was an evidence of the demand for such services. Four hundred years later, we still find cosmetic prescriptions in the works of French physicians: recipes of Rhazes (end of ninth and beginning of tenth century), of Avicenna (end of tenth and beginning of eleventh century), and of Mesuë (probably Mesuë the younger, eleventh century). Belonging to this period is a work which is very interesting to us, by the famous Trotula,<sup>5</sup> "De mulierum passionibus," and which also contains cosmetic prescriptions. Another work, "Practica Trotulæ mulieris Salernitanæ de curis mulierum," deals chiefly with this subject; and a third, also from Florence, is partly devoted to it, "Trotula in utilitatem mulierum et pro decoratione earum scilicet de facie et de vulva earum." The diseases of the skin of the face and cosmetic remedies are also spoken of in an anonymous work of the twelfth century of the Salernitan school, "De ægritudinum curatione."

The greatest surgeon of the middle ages, Guy de Chauliac, furnishes material for admiring his extensive knowledge of this subject in a chapter of his "Grande chirurgie."<sup>6</sup> We observe also that it was not beyond the province of so celebrated a physician to notice these minor affections of man. With the exception of a few prescriptions of a peculiar nature inherited from the ancients, all of his directions are excellent and many of them are still followed at the present time.

In the chapter "Pour embellir et faire bonne couleur" he recommended paste made from beans, wheat, rice, or almonds with milk; these were to be applied to the face over night. Lead and sublimate ointments were also recommended for the same purpose. The method of applying powder and paint is presented in an excellent manner: "La maniere de farder ou embellir est, que le visage soit premierement estuüé puis soit lauë avec du sauon destrempé en eau tiede." . . .

“Le visage estant essué, qu'on y applique vn des susdits vngnents et qu'on l'y laisse toute la nuict. Landemain soit laué avec eau de son, ou de violettes et que le visage demeure quelque peu de temps couuert d'vn drapeau. Puis si vous voulez donner couleur aux joues mouillez de l'eau d'alum, en laquelle ou ait destrempée vn peu de la ratisseures de bresil.”

For the cure of facial blemishes there were recommended calcined tartar, litharge ointment, lait virginal made from litharge dissolved in vinegar and mixed with salt-water, and especially a paste recommended by Rhazes and Avicenna, prepared as follows: One drachm of mercury and three drachms of almonds are rubbed together until the mercury is no longer visible; then an equal amount of pulverized melon seeds is added and mixed. This paste was to be applied seven successive nights and washed off in the morning with lukewarm water.

Guy also paid attention to the hair. For cleansing, he recommended washing with egg or with soap, either soft (Sarrasin) or hard (François). To prevent the falling of the hair, myrrh and labdanum with vinegar and wine; this was to be followed by washing. Alopecia areata was treated with sulphur, euphorbium, staphisagria, and cantharidal oil—remedies which we are unable to improve upon five centuries later.

It need not be wondered at that there were some peculiar medicaments; the greater portion of these, however, were quite rational. An example of such a peculiar “mixtum compositum” is the following, which was recommended in alopecia: “Echini with their coverings, green galls, bitter almonds, bear's hair, adianthum, rattan root, fig-leaves, of each two drachms; rat fæces, one drachm soaked in vinegar; cedar-resin and bear's grease, sufficient to make a soft ointment.”

In dyeing the hair, a wash of alum dissolved in lye was first employed. The women of Montpellier, the city in which Guy practised the longest, added lavender flowers and broom, and the Parisians added gentian, berberis root, and carthamas to this lye (undoubtedly for bleaching). To color the hair black, among other remedies, oil which had been mixed with lead in a leaden vessel was recommended (plumbea Nicertiana!).

Five methods are mentioned for removing hair: Cutting, shaving, epilation with forceps or with the fingers, pitch, and

depilatories. Orpiment with lime is the only example mentioned in the last class; this was to remain on the skin as long as it took to say a *miserere*; after washing off, the skin was to be treated with oil of rose or white ointment.

The Renaissance period occasioned a stimulus among the petty arts of applying cosmetics. Giovanni Marinello, a physician who also wrote a very good book on obstetrics, published a treatise on "Cosmetics for Women"<sup>7</sup> which he dedicated to Signora Vittoria and Signora Isabella Palavicine. In the preface the author justifies his writing in quoting Ovid that one is but doing right and pleasing God in treating of the beauty which He had given and in trying to improve upon it by art.

At first general remedies are given: Perfumery for various purposes, aromatic baths to keep the skin youthful and fresh, and remedies which were supposed to make certain parts of the body stout and others thin. Medicines to prevent hyperidrosis and bromidrosis—myrtle leaves in wine or sweat-absorbing powders of roses, spike, and myrrh.

Among the general beautifying remedies are reckoned the powders and paints—cerussa of marble, cerussa of stag-horns, and litharge in vinegar—then also rouge. The custom of painting and powdering grew in style during this period, and not only the face, but also the neck and breasts were covered. Thus Cesare Vecellio, a nephew of Titian, writes: "It is easy to recognize the prostitutes who come to Venice from other places. They are very bold and show not only their face, but also a large part of their white-powdered breasts."

Pigmentation of the skin, scalding, freckles, and roughness of the skin of the face were treated with borax, alum, lead, and nitrate of silver; the last was mixed with hen's blood (Cotture o sufferse nate del feruore del sole, Lentigine, Macchie fatte del sole, La pelle grossa della faccia con quali modi si possa fare sottile, chiara e morbida). Solution of carbonate of potassium, lemon-juice, and powdered snake-root were also recommended for these defects. Marinello treated the cosmetic defects of the mouth, especially chapped and pale lips, in a very sensible manner—also the gums and teeth. Concerning offensive breath, he remarks that if this be due to retained particles of food, poor teeth, or diseases of the gums, it may be cured, but not in cases having a different etiology.

He also recommended remedies to cause large eyes to become small and small eyes to become large; belladonna is, however, omitted from the latter category, although it was sold in Venice under this name about this time.<sup>8</sup> The chapter on hair is very full. In treating falling out, he recommends rubbing with oil, then washing with acetosa (species of rumex containing tannic acid), and "mirobalanen" (also astringent). To promote the growth of hair, he speaks of dried and powdered frogs, lizards, etc.; remedies are also mentioned which are intended to make the hair long and soft and curly; also remedies for eyebrows and eyelashes. Hair is removed by lime and orpiment. Hair-dyes were important remedies at this time, especially the bleaches. Though black was also produced by iron, sal ammoniac, galls, and the various preparations of lead, and though hair was also dyed white and red, the principal color was blonde. The patrician women of Venice colored their hair as the Roman females had done; later on the prostitutes also dyed their hair. A long time afterward this style for bleaching hair pervaded France, though it never became as general there as it had been in Italy, where they had reached a degree of perfection in colors which, if portraits of that period can be believed, has not been equalled since (examples may be seen among the portraits of women by Palma Vecchio in the Belvedere of Vienna); the wonderfully warm tone with beautiful reflexes, *filo d'oro*, or the less admired ash-blonde is really incomparably beautiful. Recipes for these dyes existed in large numbers, and they probably accomplished their purpose, though we are not quite clear on this point. Marinello recommends chiefly ashes of vines, an infusion of lupine made with saltpetre, or alum and ashes, saffron and madder or burned wine-sediment with spermaceti or oxide of lead and chalk and lime. In "Recettario della Contessa Nani" there is a prescription calling for two pounds of alum, six ounces of black sulphur, and four ounces of honey—added to water and distilled. Fioravanti advised washes of infusions of silk-dyes in which calcined tartar was dissolved; or a wash with soap followed by the use of a mixture of strong lye to which tartar, ivy, and barley had been added. The application of these remedies was not a very simple one. Cesare Vecellio describes how ladies who wished to bleach their hair had to spend their time upon the terrace-tops of houses;

the hair was washed and then soaked by repeated combing with the coloring fluid. During all this time, and for hours afterward until the hair was thoroughly dried, they were compelled to sit in the sun so as to fix the color. On this point all authors agree. Alpinus (1592) also mentions it in connection with the employment of henna; he recommends this to ladies, *pro deaurandis capillis*, as something harmless. To protect the complexion during this lengthy exposure in the sun, they wore peculiar hats without crowns and with wide brims; the hair was allowed to fall over the brim from above.<sup>9</sup>

At this time the endeavor to improve feminine beauty was not confined to toilet specialists, but was part of the work of physicians and artists. The latter were not averse to painting according to all the rules of art.

Even Giov. Baptista Porta,<sup>10</sup> a prominent scientist and one of the most noted physicists of his day, did not consider it beneath him to give quite extensive formulæ for beautifying remedies. He shows a familiarity with the older authors and cites Dioscorides, Plinius, and later Trotula; but also gives the results of his own experience. These directions are entirely similar to those of Marinello; some are remarkable on account of being rational, others because they are so singular.

To whiten the face, all things that were white were considered of value. Thus snails, because they leave a silver line behind them; pearls dissolved in acids and rotted in manure produce a brilliant oil which was recommended as one of the best things for the face; carbonate of lead; sublimate. The face was to be cleansed first, so as to take the coating easily. To make the face soft and pliable, he prescribed milk, a paste of milk and bread, and gelatin. As rouge for the face, sandalwood in vinegar and alum, dyer's weed, and anchusa were recommended. Sunburn, especially in travelling, was to be guarded against by the use of a paste of starch and white of egg; this was to be washed off with barley-water after the patient had arrived. Facial blemishes required daily inunction with oil of tartar for ten days, the face remaining unwashed in the mean while; acetate of copper, ammoniated copper, and corrosive sublimate were also used for this purpose. Moles were removed with *aqua regis* or with *Æliani's* "*leonis adeps*:" "Within the skin inclosing the testicles is a

soft and delicate piece of flesh shaped like a grasshopper;” this was rubbed up into a salve with oil of rose. Other moles were treated with mercury dissolved in red wine. Wrinkles were treated with water distilled with phaseolus, verbascum, or polygonum in Grecian wine with lemons, or pastes made with deer-horn, white lead, sal ammoniac, myrrh, incense, and honey. Tooth-pastes were made from toasted bread with salt and honey. For keeping the hands white and soft, almonds, cembra-kernels, melon or pumpkin seeds were used instead of soap, and then the hands were smeared with salves made of butter, wax, and sweet almond oil and covered with gloves; these gloves were washed in Grecian wine and then soaked in this salve before being used. The offensive odor from the axilla was relieved by the use of powdered myrtle-blossoms or washing with solutions of alum or of acetate of lead. Excessive development of the breasts was treated with applications of conium; soft and hanging breasts with white clay, galls, mastich, and incense. Hair-invigorators were honey and oil, singeing with heated nutshells and horse-grease; there were well-known depilatories—epilation—and then to prevent the regrowth of hair, hyoscyamus, cicuta, ivy, etc. The hair-dyes were well known—acetate of lead and acorns in wine for black; lye, alum, and tartar for blonde; to produce the latter color, there was also recommended washing with lye of ashes and bleaching in the sun; finally also the vapor of sulphur placed upon live coals; for red hair, strange to say, alcanna boiled in lye.

About this time Italy was the blessed country. Artists and merchants took from it virtues and vices, the customs of a refined mode of life, and brought these to Germany and France; and young men and women did not hesitate to adopt at home what had been style in Italy, though this was modified a little so as to prevent too great a clashing with home ideas. This did not, however, prevent its progress, and the young lady of the sixteenth century could not be without toilet-waters of wine, primroses, dittany, and especially of lemon-juice, upon her toilet-table; also fine flour from mustard-seeds for rubbing the hands. They made use of a fine napkin or marten’s fur to wipe off the perspiration, and did not disdain to use rouge made from snakeroot.

These minor arts were carried into France by Catharine

de Medicis and by Marguerite de Valois. The latter is credited with the introduction of blonde hair-dye, the former with that of powder and rouge. All these came prominently into use in the beginning of the seventeenth century, and from this time to the middle of the following century their use increased very markedly. During the seventeenth century ladies used powder, "blanc d'Espagne," and rouge, "l'espagnol vermillon," and numerous toilet-waters—some perfumed, like "eau d'ange," "eau de Chypre"—some emulsionized, such as "eau de concombre," "eau de fèves"—also meat-juice and lemon-juice. They dyed the hair blonde, in Venetian style; they used curling-irons; they wore the hair cut off close on the forehead (as is shown in a picture by Racinet) and pasted down—just as was done here until recently.

Though the use of these remedies at this time was not so very extensive, there was considerable ridicule bestowed upon it and attention was already called to the deleterious effects. Thus Labruyère relates that at this time (middle of seventeenth century) women were spoiled by paints and cosmetics, in painting lips, cheeks, eyebrows, shoulders, and even the exposed breasts. Powder, used as early as 1593, was employed even more upon the skin than upon the head. At this period also ladies began to pay attention to coiffure, and hair-dressers became of such importance that they took the most unheard-of liberties. Sieur Champagne gives an account of one of the most celebrated among them, who left the hair of a lady undressed without any reason; in another instance he refused to finish his work until the lady had kissed him, etc.; notwithstanding all this, he accumulated quite a fortune. Ladies also wore plain masks or masks soaked in irritating fluids overnight, so as to stimulate the complexion. This custom also emanated from Italy; originally, though, it was intended simply to shield the face against the sun.

"But since she did neglect her looking-glass  
And threw her sun-expelling mask away,  
The air hath starv'd the roses in her cheeks."

—Shakespeare: *The Two Gentlemen of Verona*, IV., 4.

In the early part of the seventeenth century the reign of the *mouche*—the beauty-spot—began and increased to such an extent immediately that in 1634 an esteemed man asked in all seriousness whether women might wear more than three

*mouches*. Beauty-spots were supposed to make the eye alluring and to enhance the beauty of the face—they were supposed to be irresistible; the gallant might be ever so indifferent and proud—"enfin la mouche le pique." These decorations were at their height at the time of the Allonge wigs; the material was black silk, satin, or taffeta. At first they were worn, just as they had been by the Romans, to cover blemishes, and they were then small and shaped according to the spot they were to hide; but later they had all shapes—circles, stars, semilunar, silhouettes, peculiar figures. A certain Duchess of Newcastle wore upon her forehead one of these beauty-spots representing a coach and four horses, a driver and footman. The form was not a matter of indifference; a round spot was appropriate for the chin, a star-shaped spot on the cheek, semilunar ones beneath the eyes; in the depression formed in laughing, there belonged one called "*l'enjouée*," at the side of the lips "*la coquette*" (also called *précieuse* and *friponne*); upon the forehead "*la majestueuse*," and a large plaster called "*enseigne du mal de dents*" upon the right temple. One day the beautiful Mme. Cazes appeared with such a beauty-spot surrounded by diamonds. These various forms also had special purposes—the long one was for balls; the large, broad one for court; the small, coquettish one was intended for the street, the tête-à-tête, or for the banquet. The most important of them all was the one worn at the angle of the eye, the "*assassine*."

"You may have your hair dressed as you wish,  
With curls falling upon the breast;  
Nothing but the beloved assassine,  
Will rouse the love of men."<sup>11</sup>

The number of them constantly increased; six, twelve, fifteen, and even more were worn, according to fancy. At the end of the seventeenth and beginning of the eighteenth century they were absolutely indispensable to the elegant woman.<sup>12</sup>

This entire period was a precious one for toilet arts. It is wonderful that rouge and all such toilet aids were tolerated, though it was just at this time that clearness of complexion, "*teint de couvent*," was valued so highly that even old ladies wore masks to shield the face from inclement weather. There were hundreds of pastes, essences, beautifying liquids, white

balsams, waters to redden the skin of the face—others to whiten it—others to soften it—to preserve the delicate teint of lean persons—to restore the complexion of the twentieth year, and waters for blemishes, freckles, wrinkles, etc. Then there were *mouchoirs de Venus* and bands impregnated with wax to cleanse and polish the skin of the brow. Gold-leaf was warmed in a lemon at the fire—a preparation intended to give an extraordinary polish to the face (*un lustre surnaturel*). There were a great many recipes, salves, and pots for the hair, nails, and teeth. The paints were of the most importance—chemical white—blue for veins—red, vegetable or mineral, or scarlet. The application of rouge was no little task; it was not only necessary to put it on, but it was expected to be expressive: “Le grand point est d’avoir un rouge, qui dise quelque chose.” It was expected to be a distinguishing feature of the wearer: a lady of society did not wear the rouge of the court lady; that of a peasant woman differed from either, as did also that of a prostitute; these merely had a trace of red: “Il n’est qu’un soupçon de rouge, une nuance imperceptible.” On the other hand, a very intense red was worn at court, which was still more pronounced on the day of presentation; it was *rouge d’Espagne* and *rouge de Portugal en tasse*, and though this scarlet made all surroundings yellow, ladies wore it so as not to appear pale.

It seems almost incredible that they used violet color for a week and then changed to red, changing off with *rouge de serkis*.

Even during the night a light red (*un demi-rouge*) was applied; even the youngest girls had to apply rouge, for that was style. Eyebrows and eyelashes were colored with antimony, and thus apparently the eyes were lengthened and made to resemble the Orientals or even the Chinese. They powdered the hair—their own as well as the false, for the women of 1750 began to wear wigs and braids. This was done partly to dry the hair after dressing, partly for decoration. White, gray, red, and fire-red powder was in use. The entire cosmetic art was known and employed. Men even epilated all over the body: “Dans le grand, le très grand monde peut-être seulement chez les princes un usage conservé de l’ancienne galanterie exigeait du marié qu’il n’entrât dans le lit de sa femme que le corps complètement épilé. C’est ainsi que M. le duc

d'Orléans au témoignage de M. de Valençay qui lui donna la chemise, se présenta dans le lit de Mme. de Montesson."

Men took part in these accomplishments in other ways. They decorated themselves and improved their appearance artificially so as to look their best: "Et pour faire l'illusion complète . . . il en est qui . . . se griment, qui se plâtrent, qui se dépoudrent les cheveux, qui se pâlisent, en se privant du vin . . . avec de la gomme arabique délayée ils se font sur les joues des traces des larmes mal essuyées."

This period, which the brothers Goncourt<sup>13</sup> describe so well, did not last long. In 1760 there was a return to nature, or rather to artificial nature. Ladies wore their hair free, combed almost in antique style. The *teint de couvent* was as highly prized as before; but those who did not possess it did not use *eau de chair*, but ordinary water, to preserve the delicate complexion of a thin person. Of course rouge was still applied, because the dull, pale complexion was not fancied any longer; they preferred the natural red. The very voluminous use of powder on the hair also disappeared. Ladies found that paint made the features coarse and hard, and that it made the faces of blondes insipid and those of brunettes darker than natural. They then employed only a trace of powder, to which was added only a small quantity of blonde or red powder. The application of face-powder has remained like this during the nineteenth century. Even though there was now and then a sort of return—the gold and crystal powder used in the sixties may be remembered—this was always transient, moderate, and not excessive.

A real progress during the latter half of the sixteenth century is represented by the bath. As far as we can tell from literature and from works of art, the use of the bath at home died with the Romans. Even the public baths in regions of mineral springs were given up later or were forbidden by the church. Hieronymus forbade baths of all sorts after childhood; they were revived during the Crusades, when the custom was again learned from the Orientals. A domestic bath in the fourteenth century meant a very thorough wash; bathtubs of that period were merely large basins; baths were taken in castles, etc., in lukewarm water. Since they took their baths, elegantly attired, merely bathing their feet, they could do this and frequently did, in company.<sup>14</sup> During the end

of the sixteenth and beginning of the seventeenth centuries, the public baths were interdicted by religious authorities and were shunned on account of the fear of syphilis. The few bath-tubs which barbers had in their rear rooms were intended chiefly for invalids. Ladies could not patronize these baths. Even toward the end of the seventeenth century, when bath-cabinets were again put in houses, these were not bath-tubs in the sense which we use the term to-day; they were merely copper basins in which, with some care, the feet could be bathed.<sup>15</sup> These baths were gradually elaborated, and finally, in the latter half of the eighteenth century, they constituted one of the great luxuries of elegant houses. These bath-tubs were rather long and wide, but shallow, with rounded bottom, and were just about right for a "half-bath" (*baignoire à la Dauphine Marie Antoinette*). They were intended especially for compound cosmetic baths containing milk and almond-paste, *eau de chair*, and other remedies.

At the end of the eighteenth century the majority of beautifying remedies had been discarded; the Parisian ladies and those of Germany no longer used powder and rouge. Simple hygienic observances were recommended, such as the evening bath, rubbing with bean-meal, and covering the face with cloths soaked in wine, alum, and gelatin. In 1788 an unknown German physician cautioned the people against the use of any cosmetics, even those obtained from Paris, and recommended baths as the only effective cosmetic.<sup>16</sup>

The style of our century has changed much more rapidly than that of the preceding century. But cosmetic has remained the same; the excesses have been dropped; a certain number of minor toilet accomplishments remain, and these seem more rational through the progress made in hygiene and the gradual knowledge of this by the public. Another portion has become the exclusive property of the physician, who is able to improve upon certain errors of nature through his knowledge of dermatology. In this respect the laity, and especially women, have become superstitious and expect the most wonderful remedies; this is as it always was.

The Romans may have cleansed their teeth with urine sent from Spain,<sup>17</sup> so as to keep them nice; but this appetizing remedy is still used to promote the growth of hair. Poppæa attributed her wonderful freshness of complexion to the use of

milk from asses; Empress Josephine, the wife of Napoleon I., thought her celebrated complexion due to the use of milk which was poured boiling over violets.

In most of the proceedings which the physician undertakes upon the surface of the body, the so-called cosmetic relations cannot be ignored. There are a great many precautions and rules for the preservation of beauty and symmetry; these, though not directly connected with cosmetic, have a certain relation to it. Cases occur quite frequently in which persons suffer from disorders that are not particularly grave, in which the physician can only get them to undergo the necessary treatment by reminding them of certain cosmetic blemishes which will result in the absence of such treatment. Inunction-cures and Weir-Mitchell's cure are possibly cosmetic proceedings, if regarded in this sense. In the same way, the majority of cases of curvatures of the spine and of flat-foot which are scarcely perceptible to the unskilled eye are object for rational cosmetic treatment. Still such cases are considered quite removed from what we regard as belonging to cosmetics, because there are, as a rule, deeply-seated changes. How necessary is the knowledge of the folds of the skin or of the growth of hair to the physician, so that he may make his incisions in minor and major operations accordingly! The patient will be all the more grateful to the physician who operates so that the resulting scars shall be imperceptible. A number of physicians vaccinate on the lower extremity, especially the leg, instead of on the arm. When we see the disfiguring, large vaccination-scar upon the faultless arm of a charming young girl, we appreciate this respect for human vanity. Many operations have for their sole object the establishment of some cosmetic improvement; this is often the case when the operation can no longer re-establish a lost function.

From the preceding it is evident how greatly the decisions of physicians must be influenced by cosmetic considerations. Were these pages to consider cosmetics in such a boundless sense, the province would be far too extensive. In the following pages, cosmetics will only be considered in the customary sense—we shall consider only the skin, hair, nails, and mouth, and the cosmetic remedies for these parts.

## CHAPTER II.

### THE SKIN.

IN its normal condition the human skin is smooth; it is peculiarly soft to the touch and has a characteristic lustre. The skin of a healthy Caucasian is in general of a uniform pale chamois color; it varies from a delicate, almost white, yellowish-rose to the peculiar brownish-yellow suggesting bronze of the Spanish, the Italians, and the southern Europeans generally. Particular portions of the surface of the body possess a color differing somewhat from the rest. Thus the cheeks and the finger-knuckles have usually a lively red tone; the portions of the body exposed to the influences of the air, the light, and the atmosphere—that is, the face, the neck, and the hands—are of a darker tone. Apart from these influences the skin of the nipples and of the genitalia is dark. The skin does not appear smooth to the eye, but is provided with a great number of partly parallel, partly intersecting lines. Finally, the skin possesses a certain motility and elasticity.

These properties of the skin are due to its peculiar structure. Its softness, often compared to that of velvet, is to be ascribed to the furrows and elevations made by the lines just mentioned, which latter correspond in direction to the cleft lines of Langer. Besides this, the softness of the skin is due to its hairs, and especially to those which, as lanugo—wool hair—cover the so-called unhaired places. There are also in the skin small hollows or pores, which represent the openings of the hair-follicles and of the sebaceous and sweat glands. Altogether the skin is about one-tenth of an inch thick, and consists of the corium and the overlying epidermis.

The corium is made up of a dense regular tissue of elastic fibres, and under this a fibrillar connective tissue, in whose meshes, as well as in the cellular subcutaneous tissue beneath it, there is a considerable amount of fatty tissue. The skin owes to the former its pleasing roundness, to the latter its

elasticity. The corium is united with the superficial portion of the skin by the papillæ, which fill out corresponding hollows in the other. These papillæ contain either capillary networks or nervous apparatus. The rosy tint of the skin is produced by the fine vascular network. The bluish color of many parts of the skin and of many individuals does not come from the capillaries, but from the larger and smaller veins which shimmer through the exceedingly thin skin of the parts and cause them to appear blue.

The superficial layer or epidermis consists itself of two layers, the rete Malpighi or mucous layer, and the horny layer or stratum corneum. The rete Malpighi sends from its lower surface cones which fit into the hollows of the corium. More superficially there are cells which in normal persons of the white races are but slightly pigmented, but which in certain portions of the body and in the colored races contain quantities of brown pigment. On the amount of this pigment, or rather on the amount of this and on the capillary network shining through it, depends the color of the normal skin. Still nearer the surface are closely united prickle cells whose function is not yet clearly understood, and finally the superficial layer is the stratum corneum, which consists of cells becoming ever smoother and dryer and more horny. This superficial layer is continually being cast off and replaced from below. The rete cells gradually lose their character and become first granular (layer of granular cells). The granules (keratohyalin, Waldeyer) are the first expression of the horny change. The second process is the appearance of a transition layer, the stratum lucidum (Oehl). The casting off of the epidermic scales is normally barely perceptible; it can occur under mechanical irritation or friction; it may be hastened or increased by baths. The cast-off scales are chemically similar to horny matter, they swell in alkalies, etc. The epidermis differs in thickness in different parts of the body; it is thin on the lips, thinner on the flexor than on the extensor surfaces of the body, it is thickest on the palms of the hands and the soles of the feet.

The lustre of the skin and its specific moisture are caused by the secretion of its proper glands. The sebaceous glands are simple acinous glands which, in the case of the coarser hairs, form appendages to the follicle. In some parts of the body,

as the labia minora, glans, prepuce, and the red border of the lips, the sebaceous glands stand in no relation to the hairs. They are completely wanting in the palms and soles. The largest are in the nose and lips. Their secretion is first fluid, but during its stagnation in the duct it comes to be a white, tallow-like mass, which on pressure emerges with a wormy motion. It contains fatty acids, soaps, cholesterin, albumin, and salts, among which latter insoluble earthy phosphates predominate.

The sweat-glands are convoluted tubes, which are largest and most numerous in the palms, soles, and axillæ, sparser in the back. They are entirely wanting in the glans, the prepuce, and the border of the lips. They open into the furrows between the papillæ, at regular distances in the pulp of the fingers, in longitudinal rows on the palms and soles. Their secretion, the sweat, is mostly of alkaline reaction, but often acid from the presence of the fatty acids. It is generally colorless, somewhat cloudy, of salty taste and peculiar smell, varying in different parts of the body according to the volatile fatty acids present. It contains neutral fats, cholesterin, volatile fatty acids, traces of albumin and of urates, and some salts, mostly sodium chloride.

The human skin is normal when, fulfilling all anatomical and physiological requirements, it is smooth, soft, glossy, and moist, delicately colored, elastic and tense. Still it may not fulfil all the æsthetic and individual requirements. These requirements, governed by taste and fashion, are different in different localities and at different times; the individual requirements are always the more exacting.

The hardest of these to fulfil is the common longing for perpetual youth. Besides being normal, the skin must, at least in its exposed portions, be youthfully full, tense, fresh, and fragrant. At any rate, no anomalies, even if they be so slight as not to be pathological, can be present. These anomalies are as regards color, lustre, smoothness, the covering with hair, the scaling off of the epidermis, the secretion of the glands, and finally the elasticity and thickness.

Changes in the color of the skin depend either on an excess of the pigment existing in the rete Malpighi and in the corium, or on a diminution or entire want of pigment. Or it may not depend on the normally present pigment, but on the increased

or decreased filling of the vascular network, and at times on the presence of a pigment coming from other parts of the body or from without. The overfilling of the capillaries causes the bright red cheeks of young girls; the general diminished quantity of the blood, or especially the loss of blood, causes paleness. This is more intense when there is a lack of red blood-corpuscles or of blood-coloring matter, and becomes then the cheesy-white or greenish-gray chlorotic color. Finally, anomalies in the circulatory system, venous congestion, may produce that bluish-violet color which is known as cyanosis. An increased amount of blood in the vessels of the skin and a healthy red color even without pigmentation may be caused by living in the open air and free light with corresponding food; in confined places the complexion becomes pale from the want of air, just as do the leaves of plants.

Cosmetic therapy in these cases limits itself to the regulation of the manner of living; with anæmic and chlorotic persons, as well as with patients who suffer from disturbances of circulation, the treatment is only that usually employed in these conditions. Pale individuals may increase their color by cold baths and light stimulation of the skin. In many persons one sees hyperæmia or anæmia localized to a small region, which depends on a dilatation or contraction of the vessels of the skin through nervous influences—angiospastic and paralytic hyperæmia and anæmia.<sup>18</sup> This may affect one-half of the body, one extremity, a finger (erythromelalgia), one-half of the face, the nose, etc., and is found, especially in connection with other nervous symptoms, in neurasthenic and hysterical patients. Ergotin, salts of bromine, sodii salicylas, antipyrine, and especially the constant and faradic current, are recommended for this condition, and are often of service. Arsenic in the form of the Asiatic pills has been useful to me in a number of cases. To this form belongs also the sudden paling or reddening of many portions of the skin under the influence of moderately increased or lowered temperature, which condition also is to be treated on general indications.

Changes in the color of the skin which are caused by pigment are either congenital or acquired. They may appear as discrete spots or be extended over large surfaces. The congenital pigment patches are called *nævi*. They vary in color from light brown to dark brown or black, have a smooth sur-

face often covered with lanugo, *nævus spilus*; or warty with thick brush-like hairs, *nævus pilosus*; or finally in the form of flat or prominent tumors, *nævus mollusciformis*. They are permanent, and occasionally, as in pregnancy, change their color. Of the acquired, the most important are the lentiginos and ephelides, freckles. The former are spots varying from yellowish to blackish-brown, lentil-sized or smaller, round and often elevated, which appear on different parts of the body and are permanent. While a single small black lentigo may add a certain charm to a young girl's face, they may become very unsightly when they increase in size and number, as is often the case. Face, neck, and trunk may be covered with lentiginos which have developed into warts. Although they commonly last to old age, cases are found in which a great number of the spots or warts disappear spontaneously without leaving a trace. The ephelides are more sure to disappear with increasing age. These are much paler, yellow or yellowish brown, frequently pigmented irregularly; their form is round, but frequently irregularly notched. They are found most frequently on the *alæ* of the nose, the cheeks, and the forehead, but more numerous on the rest of the body. Freckles also often reach above the level of the skin. They do not owe their origin to the sun, as their distribution over clothed parts of the body shows; still the season has a certain influence on their color, as it has on other skin diseases. They become pale in winter and often vanish, to become again dark in the spring. They are found both in brunettes and in blondes, but are more frequent and intense in persons with a clear, transparent complexion, most marked in persons with red hair, and do not appear before the sixth or seventh year.

The more diffuse pigmentations are called *chloasmata*. Such *chloasmata* are often symptoms accompanying many chronic diseases and certain anomalies of internal organs, especially diseases of the uterus and its adnexa, and chronic disturbances of digestion, also occurring in hysterical women and in viragos, and often during pregnancy. In many cachexias, more or less circumscribed, yellowish-brown or dark brown patches appear chiefly on the forehead, on the upper lip or elsewhere on the face. From their color they are called *chloasma hepaticum*, liver spots; and since they appear with female sexual diseases, they are called *chloasma uterinum*.

It has not been proven that these spots have any causal connection with the diseases mentioned; this belief would seem to have arisen from the fact that they disappear when the other disease is properly treated. The fact that many chloasmata uterina disappear after delivery or after the climacteric period also supports this belief. However, they cannot be with certainty referred to these affections any more than they can be brought into direct connection with liver diseases.

Chloasmata appear also after irritation of the skin. This may be either of a traumatic or a chemical nature, or may consist entirely in a too high or too low temperature. The effect, however, is constantly the same, the skin becomes hyperæmic, in greater or less degree inflamed, and pigment is deposited at the affected spot. The longer the condition of irritation continues, the older the pigmentation becomes, the slower will be the resorption. After chemical irritation the chloasma toxicum produced may last for the patient's lifetime. Such toxic chloasmata are produced by sinapisms, emplastrum cantharidis, emplastrum mezerei and croton oil, if the irritation of the skin be continued until vesicles are produced. If the application of such remedies continue only until redness of the skin be produced, no pigmentation occurs. These remedies cannot be avoided in practice, and the physician can only see that they are not applied to portions of the skin which are commonly exposed.

As chloasma traumaticum are designated those discolorations of the skin which are caused by continued scratching, either in diseases accompanied by itching or in habitual uncleanliness of the body (vermin). Of special importance cosmetically are the discolorations that arise in those parts of the body which are subjected to continued pressure. Pressure from the natural dress may cause such discolorations on the shoulders, the waist, and the legs just above or below the knees. The discolorations correspond exactly to the parts compressed or are somewhat broader, and are gray, yellowish-brown, or dark brown.

Under the influence of high or low temperature and of wind arises the chloasma caloricum, that peculiar red or reddish-brown discoloration of the face, the neck, and all exposed parts of the body which is called tanning. Pigmentation of this sort is seen mostly in individuals who pass much time in

the open air, as hunters, soldiers, and sailors, or in persons who are exposed to the light and wind for a short time, as tourists, bicyclists, oarsmen, etc. Chlorotic persons tan less easily than healthy persons; even they finally become pigmented, however. It cannot be maintained that tanning is exactly beneficial to the bodily health.

Those abnormal discolorations of the skin which are caused by certain organic diseases, such as morbus Addisoni and icterus, would never be the object of cosmetic treatment. I shall merely remark here that after the cure of the disease which has caused the icterus, the biliary coloring matter deposited in all the layers of the cutis gradually disappears. In Addison's disease, however, one may expect neither the cure of the disease nor the resorption of the pigment, whose origin and nature are still under discussion.

Further should be mentioned the discoloration of the skin from foreign bodies. Silver given internally may get into the skin, the silver salts being absorbed, deposited in some soluble form in the tissues, and there being reduced to metallic silver; or it may be introduced intentionally or unintentionally into the corium. These bodies may be simply dark or be colored; in the first case, they appear blue through the epidermis; in the second case somewhat less intense in color. Such discolorations may arise unintentionally through the explosion of gunpowder. They are produced intentionally by tattooing. These pretended decorations which soldiers, sailors, and laborers have put on their bodies partly from wantonness, partly from superstition, are made by pricking the skin with needles and then rubbing in the color. The needles themselves are often dipped in the color, or a paste containing this may be previously rubbed on the skin, so that the needle becomes charged for each prick. Carbon, gunpowder, cinnabar, and indigo are the coloring matters most used. The most frequent figures in our race are names, dates, hearts, crosses, and anchors (faith, hope, and charity); in other races complicated and often artistically-drawn ornaments. The attempts, by tattooing unpigmented portions of the skin, to produce a color similar to the normal, have not been very successful, chiefly because sufficient pains were not taken to get the proper color mixture. Where it is a question of intense color, as after plastic operations on the lips, cinnabar gives a satisfactory result.

An abnormal color of the skin may be due to the lack of pigment, either congenital or acquired. The former is called albinismus, which when total could hardly be the object of cosmetic treatment. A partial albinismus is rare in the Caucasian race, and its treatment is the same as that of the acquired loss of pigment, leucoderma. This is either idiopathic or secondary. The first sort, vitiligo, shows larger or smaller circumscribed pale spots about which the surrounding skin is darker, coming on without a recognized cause. The discoloration may remain stationary, or the spots may extend so that finally they occupy the greater portion of the skin. The cause of vitiligo is of little interest and is altogether unknown; one method of development should be noticed, and that is the one in consequence of pigment hypertrophies in the neighborhood. Thus in the discoloration from pressure of the clothing, etc., described as chloasma traumaticum, central or peripherally-located decolorations often appear, which either remain localized or in time cover the whole extent of the chloasmata and become then surrounded by more intensely pigmented skin. In consequence also of other forms of trauma, such as burning, ulcers, stretching of the skin, and following emaciation after obesity, ascites, and pregnancy, discolorations similar to vitiligo are observed. No difference exists between all these pigment atrophies as regards treatment.

The treatment of discoloration caused by increase of pigment comes within our sphere. The true pigmentary *nævi* can be removed only by surgical treatment, by means of the knife or of strong caustics such as Vienna paste, hydrargyri chloridum corrosivum, and hydrargyri iodidum rubrum, or of the cautery; when they are extensive or when combined with sarcoma, this treatment should not be used, and if they are situated on exposed parts, there is nothing to be done except to conceal them by cosmetics.

Lentigines when very numerous may be treated in the same manner as the ephelides. To cure these it is necessary to destroy the skin down to the rete Malpighi in which the pigment is deposited. We employ either agents which cause swelling and exfoliation of the skin, such as alkalies (soap), borax, weak acids, and sulphur, or agents which cause a deep inflammation of the skin, such as concentrated mineral acids, mustard oil, croton oil, mezereum, cantharides, pepper, vera-

trine, iodine, and mercuric salts. The first-mentioned of these agents causing inflammation may themselves cause pigment hypertrophy and should not be used, although continually recommended. Plants containing acids and ethereal oils have long been used for this purpose. A paste composed of vinegar, honey, and bitteralmonds has been recommended, also an infusion of radish in whey, also the application of slices of lemon, and under some circumstances these are successful. These act slowly, as do also the following agents: soap applications with acidum boricum or borax, washing with spiritus saponatus kalinis, pencilling with dilute acids, as sulphuric acid; acidum salicylicum and veratrine act more quickly, as does also hydrargyri chloridum corrosivum in 0.5-1% solution, and white precipitate in the shape of the well-known face pomade. The one-per-cent sublimate solutions may be harmful, even dangerous, when used in the ordinary manner for the rapid removal of extensive pigment spots. Here the skin is covered with a number of layers of linen which are kept moist with the solution for hours at a time, the patient lying down. One large or several small vesicles are thus produced, which are opened. An indifferent powder is then sprinkled on the skin, and after eight days the crusts exfoliate and the underlying skin is white and unpigmented. This method is similar to that of the French, which consists in the energetic pencilling of the pigment spots with a concentrated solution of iodine in iodide of potassium. To protect the surrounding skin, it is recommended to pencil it with a thick solution of gum. In a similar manner may be used tincture of iodine, and sulphur pastes or soap used as an application, and under this treatment the epidermis is raised in vesicles and cast off together with the pigment. The spot may also be covered with a plaster of acidum salicylicum, which acts in the same manner.

In using these agents, care is to be taken that no eczema be produced, and that the dermatitis brought on be properly treated. Applications of plumbi acetate or unguentum boricum were formerly used, salves and powders then being applied to the reddened and exfoliating skin. To show how many agents may be of use, James speaks of a French marquise who went to her country-house every fall and rubbed her face with green nut hulls. Her face became at first the ordinary black color and then gradually exfoliated, leaving the skin

entirely free from freckles and pigment spots. This condition lasted only to the following May. All these agents indeed have but a temporary effect. The pigmentation usually returns.

As we have seen, it is possible to get at least a temporary improvement in cases of over-pigmentation; this is, however, not the case when there is a lack of pigment. Those agents which inflame the skin cause a darker coloring of unpigmented parts, but this is not permanent, and is not of the natural color of the skin. Tattooing has the disadvantage, that a color mixture corresponding to the normal color of the skin has not been found. When there is a want of pigment, or especially a progressive pigment atrophy, it is recommended to decolorize, by one of the methods given, the intervening pigmented patches, which are sometimes dark, pigmented, and always appear so by contrast.

The gloss of the skin may be increased or decreased. The skin shines when tensely stretched, or when swollen by inflammatory products or exudations which have occurred in the corium, or when serous fluids infiltrating the subcutaneous tissue, distend it excessively. In young, healthy individuals having a considerable amount of subcutaneous fat, the skin is more shiny than in older or in emaciated persons. In this case not only the tension and elasticity of the skin is diminished, but its peculiar lustre as well; and the skin becomes dull, faded, and flabby, and since the color also undergoes a change, it becomes sallow and earthy. The lustre of the skin is decreased by visible exfoliation, and increased by hyper-secretion of the sebaceous glands. Finally, there is another change in lustre to be mentioned. This is the peculiar shining appearance caused by atrophy of the skin. The most striking are those partial atrophies of the skin of the abdomen which are called cicatrices of pregnancy. Similar to these are the ruptures of the subcutaneous connective tissue of the thighs and buttocks after pregnancy or obesity. Finally, we should mention here the traumata of the skin and the localized atrophies caused by the separation of the deeper layers of the corium under the normal epidermis. The pressure of infiltrated tissues after chronic inflammations of the skin may act as a trauma, and cause an atrophy with peculiar changes in the lustre of the skin. This is found espe-

cially after chronic eczema, recurring facial erysipelas, etc. It is often hard to decide whether a chronic eczema or a nervous affection may have been the cause of this atrophy and of this waxy appearance.

Therapeutics are powerless against these changes, and the lustre can only be toned down by powders and cosmetics. These parts, however, are so smooth that many powders do not adhere to them, and here fatty powders and fatty cosmetics must be used. If the lustre be lost in consequence of severe illness or premature old age, much may be accomplished by proper treatment of the skin, and especially by the methodic inunctions of fat.

The smoothness of the skin, which is often mistaken for the lustre, is brought about by a number of factors as above mentioned. These are the thickness and tension of the skin, the degree of its adherence to the underlying tissues, its furrows and depressions, its sebaceous secretion, and the slight exfoliation of epidermis. The two latter factors will be treated of later. These atrophies of which we have spoken, when associated with considerable exfoliation, may cause a striking smoothness of the skin. Of importance are the furrows and wrinkles which time engraves in the skin. These are the most undeniable sign of beginning old age. Neither general diseases nor skin affections produce wrinkles of this sort, which appear in greatest number on those parts of the body which are most likely to be noticed and which are the hardest to conceal. These are hundreds of small folds crossing each other in every direction, at first very shallow and becoming later veritable furrows over one-twentieth of an inch in depth. If the skin have a delicate tint, it may still have a youthful appearance, seen from the distance; the deception vanishes, however, on nearer approach. The formation of these folds and wrinkles depends on the loosening of the connections of the skin, on the disappearance of the subcutaneous fat and connective tissue, further on the flattening of the papillæ. They begin first on the neck just below the ear, pass forward to the chin, and finally occupy more or less the entire face. The region of the outer canthus of the eye shows especially converging folds. Apart from these wrinkles of age, the skin of the face becomes furrowed, partly from bad habits, such as the contracting of the eyes in myopia, and the

elevation or contraction of the forehead. These furrows in the face are also influenced undoubtedly by heredity; vertical folds in the forehead running to the root of the nose are often seen in young children, folds which ordinarily are caused only by reflection, anger, and evil thoughts. Finally, we may have a traumatic or toxic wrinkle formation in individuals who from the requirement of the occupation or from vanity use powders and cosmetics. Most cosmetics containing metallic astringents injure the skin if used continuously, especially when the skin is not properly cleaned between the times of application. Since these agents are used chiefly on the cheeks, deep repulsive furrows are often seen in these very conspicuous places.

What can be used against wrinkles? Nothing, of course, will prevent the increasing age. For the wrinkles nothing can be done except the using of cosmetics. Thick fluid or fatty cosmetics are the most satisfactory. The application of the former variety, in which the ground tone is first laid on and then the details added, has come to be an artistic work which is called enamelling. Faces so enamelled cannot be distorted either by laughter or by the expression of anger, since each muscular movement produces deep cracks in the paste; and the paste itself continually causes new wrinkles and deepens the old ones. The wrinkles may be less perfectly concealed by the inunction of fat and subsequent powdering, and still less effective are the moist warm and fatty poultices employed in the most ancient times and ridiculed by Ovid and Juvenal. These, indeed, loosen the skin, but after a short time the wrinkles appear more marked than before.

The folds which are caused by habit in younger persons may be more successfully treated. Here may be used any tonic or astringent agent in the form of a wash, which will be more efficacious when the habit causing the folds is given up. In such cases direct mechanical means are recommended. It may be possible in children to get a permanent improvement by the continued application of non-irritating plasters on the fold previously smoothed out. As a curiosity I give the following method: Two bits of plaster provided with silk threads are stuck one on either side the wrinkle. When the plaster is dry the threads are drawn tightly together and knotted (Débay). To remove the furrows in the cheeks it has been recommended to carry wooden balls between the cheeks and

teeth, but unfortunately the loss of the latter is a very frequent cause of the furrows in the cheeks. The wrinkles caused by cosmetics can only be concealed by the use of cosmetics.

The casting off of the epidermis is normally imperceptible, but nevertheless constant. Anomalies in this regard, however, are noticeable when the epidermis is cast off in large scales or fine dust. This cosmetic anomaly depends always on an exaggerated or a diminished secretion of the sebaceous glands and is cured by treating the latter affection.

The secretion of the sebaceous matter goes on as a rule unperceived, yet the failure of it reveals itself not only through the lessened lustre of the skin, but also by its peculiar dusty appearance in consequence of the perceptible exfoliation. This lack of sebaceous secretion, *asteatosis*, is a consequent or accompanying symptom of other skin diseases, or may be caused artificially by a number of chemical agents, such as hard water, soap, and lye, which rapidly saponify the sebaceous matter. If this continue, the condition may become chronic and the skin assume that lustreless, dry, dusty appearance already described.

The increased secretion of sebaceous matter is more often seen than the decreased secretion. The former condition is called *seborrhœa* and comprises both the exit of the sebaceous matter and its collection in large masses on the surface. If the matter be thick, purely oily, or slightly consistent like varnish, the *seborrhœa* is called *oleosa*. In other cases it comes from the glands together with epithelial cells, or becomes so mixed with epithelial scales on the surface that the masses form crusts, and the disease is called *seborrhœa sicca*. Single portions of the skin or almost its entire surface may be attacked. The face is often the seat of the disease, the hands never. The favorite spots are the forehead, nose, and chin, and the bearded portions of the faces in men. These parts are constantly shiny even after repeated washing, and generally dirty from the adherence of the atmospheric dust, or covered with yellowish-brown crusts. Although in many cases the cause of the *seborrhœa* may be an inflammatory disease of the skin, and in other cases chlorosis or puberty may produce it, still there are a greater number of cases in which no such cause can be found.

Apart from the cosmetic errors which these anomalies

constitute, they require treatment often for the diseases which follow them, such as eczema, comedones, and acne. This treatment must be of two sorts, according to the nature of the disease. The fat and the crusts must be removed. If the former alone be present, *seborrhœa oleosa*, the use of alcohol or ether is often sufficient, or for a quicker effect the use of alkalies, soaps, and borax, or combinations containing these, such as *spiritus saponatus kalinis*. In the latter form where the crusts are to be removed, frequent applications of vegetable, animal, and mineral oils are indicated. This does not loosen the crusts themselves, but the sebaceous matter holding them together. The *débris* is then to be removed with soaps or alkalies. After these are once removed, we have before us a simple *seborrhœa oleosa*, which must be treated. While in general it may be said that *seborrhœa* is curable, there are certain obstinate cases which are so resistant even to a long-continued treatment, that they recur as soon as the treatment is left off, so that such patients must be kept under treatment most of the time. Frequently in young females the change in sexual life may cause the disappearance of the *seborrhœa*, and it almost always passes off in age. It goes without saying that when some underlying condition, such as chlorosis, which might cause the disease, is present, this should also be treated. Often such treatment alone is sufficient to cure the *seborrhœa*.

It is impossible to cure the lack of sebaceous secretion; the natural fat may only be replaced by inunction. If the lack of fat be caused by chemical agents, these should be avoided, or when this is impossible, the necessary fat should be applied to the skin after or before working with the chemical agents. In this case the saponification of this fat protects the fat of the sebaceous matter.

That form of disturbed secretion which produces comedones is worthy of our attention. These comedones are from pin-point to pin-head sized, brown or black points in the skin, generally of the face, and especially of the forehead and nose. They sometimes appear on the chin and more rarely on the bust. They correspond to the orifices of the sebaceous glands, and represent the free end of a sebaceous plug which fills the entire gland and which is usually discolored with dust or dirt. The brown color is not caused entirely by dirt,

but it is also no doubt true that the sebaceous matter mixed with epithelial scales may become dark from the action of the light, perhaps through oxidation. When the walls of the gland are compressed, the plug is squeezed out of the orifice and has the appearance of a small white worm with a black head. The contents of the comedo consist often, besides the constituents of the sebaceous matter and some cells, of a number of fine hairs, and at times also of a peculiar mite, the *acarus folliculorum*. The orifice of a gland remains gaping for some time after it has been pressed out. The development of the comedo is generally produced by a clogging up of the duct and a consequent passive dilatation of the gland. In other cases where the hair follicles are accessories of the glands, the irritation which the growing hair causes to the wall of the duct may lead to a slight inflammation and an active dilatation of the gland. In this way may be produced the peculiar sheath of the comedo. Finally, it cannot be denied that a comedo may develop on account of diminished tone of the walls of the duct. The formation of comedones after the first two methods explains their occurrence in persons who have abundant sebaceous secretion and are much exposed to the air, and also explains their occurrence about the period of puberty.

Single comedones are found in every skin; they only form a cosmetic anomaly when in great numbers. The comedo often becomes loose and is then carried off in the ordinary washing; if it exists longer, it may cause a local inflammation of the skin and furuncles and acne pustules may come on.

The treatment of the comedones is first the mechanical removal of the plug, by pressing the walls of the duct with the fingers or finger nails, or by pressing a watch key or Hebra's similar instrument over it. This is the most important part of the therapy. This very tedious procedure must be gone through with day after day. The comedones may also be removed by rubbing with sand, soap, etc.

The hypersecretion of the glands must also be combated with the agents mentioned before, soap, alkalies, and alcohol. Although these substances irritate the skin, no powder should be used after their application, since this may cause a clogging of the ducts of the glands and produce new comedones. In seborrhœa in general, the powdering of the face is harmful.

The secretion of the sweat glands also shows anomalies. In a beautiful skin the secretion of sweat should be imperceptible, although a certain amount is indispensable. In individuals in whom in consequence of skin diseases or general diseases (diabetes), the secretion of sweat is diminished or abolished, anidiosis, the entire skin or single portions of it appear dry and parched.

There may be anomalies both of quantity and of quality. The increased quantity, hyperidrosis, may be general or local. The latter is chiefly the object of cosmetic treatment. It is habitual in the face, the hairy scalp, the axillæ, about the genitalia, beneath the breasts in females, in the rima ani and in the palms and soles. The large quantity of sweat secreted in these parts has the composition of normal sweat, but is more easily decomposed on account of its stagnation in certain places, and on account of its mixture with epithelium and fat. Its unpleasant odor is caused in part by this decomposition. It may be said that every individual has a sweat with a specific odor. This odor, which is different in different parts of the body, becomes unpleasant to others only after its decomposition. The cause of the hypersecretion is not fully explained, although in certain cases and in special localities a reflex nervous action may be assumed. The development of the peculiar local hyperidrosis which interests us is not clear. Of the localities named, the altered quality of the sweat is most noticeable in the axillæ and on the hands and feet. In the axilla and on the feet and in other locations, hyperidrosis may cause other diseases of the skin, such as eczema and the formation of rhagades. The sweating in the axilla is more frequent in females than in males, and is disagreeable both on account of its bad odor and on account of the discoloration of the clothing which it produces. The dress shields of rubber or other material protect the clothing, and by preventing evaporation lessen the odor. The shields of doe-skin recently introduced are the most serviceable.

The sweating of the palms of the hands, although it has no disagreeable odor, is unpleasant both for the patient and for others. Such hands feel moist, cold, and sticky, as if one had touched a frog. "Such a condition renders them and of the most beautiful woman unpleasant to the touch, and may often have cooled the glow of love" (Kaposi). No matter how often

the hand is washed and dried, it always appears covered with little drops of sweat; if this condition be of long duration, the epidermis becomes tender, often white, and occasionally vesicles appear on it. Wiping and washing the hands is of no avail. The sweating of the hands is found at every age in either sex, more frequently in the young, however, especially about the period of puberty, and perhaps more often in the female than in the male. Certain general diseases, chiefly disturbances of nutrition, such as chlorosis, seem to dispose to this affection. In such cases it may disappear of itself or continue stationary in spite of every treatment.

Still more disagreeable than these is the habitual sweating of the feet; first, because the skin is loosened and softened on the soles and the ends of the toes, and tears so that every pressure and even walking may be painful, and, second, because the stagnation of the secretion causes a very disagreeable, penetrating odor. The decomposition of the sweat is not the only cause of the odor; this is also produced by the decay of the loosened epidermis and the masses of sebum between the toes. This exceedingly bad odor is communicated to the shoes and stockings through their impregnation with the sweat, and these articles of dress are the principal cause of the bromidrosis. The odor disappears, as a rule, when they are removed. Carefully-washed feet left bare have no bad odor; just as the clothing is ruined by the axillary sweat and the gloves by the sweating of the hands, so are the stockings by the sweat of the feet. This sweating may be found in either sex at any age, and may continue from childhood to old age; it disappears sometimes of itself, but less frequently than the hand-sweating. It may be produced by excessive use of the feet, and such a local unhabitual hyperidrosis pedum may have the same unpleasant consequences as an habitual sweating of the feet. Sweating of the hands and feet is associated in many persons; the latter, however, is more frequently present by itself.

Apart from the bad odor which arises from the decomposition of the sweat and the other skin secretions, as well as of the epithelial masses, in consequence of their stagnation or their impregnation of articles of dress, specific odors, if in fact they ever exist, are very rare. I remember hearing Prof. Jarisch say that he had observed a case of bromidrosis in

which the sweat of all parts of the body had an odor suggesting the stable.

Other qualitative changes in the sweat occur as regards color. Cases of chromidrosis are reported in which the sweat is said to have been yellow, blue, green, or black. It is not rare to find sweat blue or yellow to orange-red. The latter is found in the axillæ of red-haired individuals. Interesting, but unimportant from our point of view, is the presence of urea in the sweat. In hairy parts, when there is hypersecretion and stagnation of the sweat, especially the axillæ, the pubes, and the genito-crural fold, the hairs have often larger or smaller round, yellow, or brown granular accumulations. These masses cling tightly to the hair. The microscope shows them to be yellow, fatty masses mixed with epidermis cells.

The treatment of the local hyperidrosis consists, first, in the frequent washing of the part, either with water or with agents which increase the tone of the tissues in general, as alcohol, dilute acids, alum, etc. In many cases hydrargyri chloridum corrosivum, acidum salicylicum, and naphthol are of service. An important indication in the treatment of hyperidrosis is the isolation of sweating surfaces from each other. For this purpose agents are employed which absorb the sweat, as all sorts of powder, which may either be sprinkled on the surface or used on pledgets of cotton wool. Often in severe cases of habitual sweating of either the axillæ or the hands and feet, the unguentum diachyli Hebra is of great value. The most important indications are frequent washing and frequent changing of the clothes, which should be thoroughly aired. The manner in which this treatment is to be carried out will vary with the location. Where hairs are present, it is necessary to free these from the concretions by washing, best with alkaline soaps, and this is at the same time the best means of preventing the odor. After this the part should be moistened with one of the alcoholic fluids mentioned, which is allowed to dry. The highly-perfumed and recommended *vinaires de toilette* are much employed in sweating of the axilla. They have a certain value if used in the right place, since they contain vinegar and alcohol, remembering always that the mixture of a pleasing and a bad odor is unbearable and that the latter is first to be removed. In

the treatment of sweating feet, the greatest attention is to be paid to cleanliness. The layers of epidermis found between the toes are to be removed constantly. The treatment is to be begun only after the cleansing. Many cases of hyperidrosis pedum which are not severe are cured by bathing every evening with spiritus vini gallici. Potassii permanganas, often recommended for its deodorizing effect, can only be used on parts where the color it produces is not objectionable. The application of this in the form of a powder mixed with indifferent powders, especially to exposed parts, is useless. If the more simple means, such as washing and the use of powders on the skin and scattered in the garments, be of no avail, we may have recourse to Hebra's ointment. This is applied in the following manner. After the feet are washed and dried, a piece of linen spread with the salve is wrapped about them, the spaces between the toes being filled with pledgets of cotton on which salve has been spread. If the patient is in a position to give up his occupation, rest in bed will hasten the cure. The salve is to be renewed in twenty-four hours, the feet not being washed but cleaned with cotton wool and powder. As a rule, the disease is cured in from one to three weeks, and the superficial epidermis is cast off, after which powder is to be frequently used. Acidum salicylicum and acidum tartaricum, which are often added to such foot powders, may cause erosions and rhagades in a sensitive skin. The vegetable powders are to be avoided, since these may cause harm by swelling and producing pressure on the skin. The unguentum diachyli may be used in obstinate cases of axillary sweating also.

All dermatologists now acknowledge that the treatment of these local hyperidroses has no injurious effect on the organism. The secretion of the sweat is lessened by a number of agents given internally, and local hyperidroses have been treated in this manner. In ancient times those medicines were used which increase the secretion of urine. The old Greeks and even modern physicians have recommended a decoction of artichoke roots; in later times agents which check directly the secretion of sweat, such as atropine and agaricin, have been employed. These drugs, which have a remarkable effect in general hyperidroses, sometimes are followed by permanent results in local hyperidroses, often only by transitory.

The uniformity and beauty of the skin is affected by a number of diseases which come within the sphere of cosmetic considerations; these are callosities, corns, warts, and chilblains. The callosities (*callositas*, *tylosis*, *tyloma*) are lentil-shaped, yellow or brownish, horny thickenings of the skin, not sensitive, and closely connected to the underlying tissue. They are thickest in the centre, one-twentieth to one-fifth of an inch or more, thinner toward the margins, and are composed of horizontal parallel layers of horny cells. In most cases they come from an external cause; in rare cases they are idiopathic. The latter often disappear spontaneously. The external cause may be mechanical, as repeated pressure of one point in the skin against the underlying bone; or chemical, as the effect of lye, mineral acids, etc. Pressure callosities are found normally in the skin on the heels and the soles, but may become abnormally thick when the shoes are rough. Similar callosities arise beneath trusses and corsets, and are very frequent in the palm of the hand. They develop often, when the pressure is only occasional but severe, from a recurring vesicle. Such callosities are found, for example, on the palms of young girls who are being initiated into the mysteries of housekeeping. In manual laborers these are very extensive and in their location characteristic for each trade. Although these protect the skin from further harmful influences, they may cause annoyance by lessening the sensibility of the skin or by the production of deep, painful rhagades.

The treatment consists in the softening and removal of the callosities, or more simply in the removal of the cause. The softening is brought about by warm baths, by sweating poultices, by enveloping in impermeable stuffs, finally by all agents which cause swelling or dissolution of the horny substance, such as lyes, acids, etc. The most serviceable treatment consists in bathing the part with a dilute alkaline solution and covering it with gutta-percha cloth impregnated with *acidum salicylicum*, taking care that only the callous parts are covered.

The corn (*clavus*) differs from the callosity in that it is not flat on the skin, but that there exists a circumscribed horny thickening in the skin which resembles a nail. The corn consists, like the callosity, of horny cells superimposed in parallel layers, which here and there appear red or brown from the

blood coloring matter which has escaped. Corns are also usually produced by continued pressure of the skin against the bone and rarely arise spontaneously. The skin of some individuals, however, seems especially disposed to such growths. Corns are found on almost every foot, especially on the toes, over the joints, as well as on many points of the sole where the shoe can press the skin against the bone. Exceptionally corns may be found on the middle finger of the right hand in persons who press the pen too tightly in writing. It is erroneous to suppose that corns are only produced by tight shoes; wide and improperly made shoes may have the same effect. The cutis beneath may be atrophied or the papillæ may hypertrophy. The parts about the corn show often an inflammatory infiltration. Pressure from the shoe or other objects may cause intense pain in the underlying skin. Many individuals with corns are affected by the influence of the weather; those between the toes, which are covered with loosened epidermis, are the most painful. While with callosities the simplest treatment is the removal of the cause, this is not so easy with corns, for the wearing of better shoes only prevents, as a rule, the development of new corns; those already existing must be removed. Chiropodists make use of a great number of instruments which in a skilled hand reduce themselves to a razor with a small blade and a myrtle-leaf knife. The plasters and bandages used by these individuals are often of no value, and may by their pressure cause other callosities or corns. Corns are to be removed either by the use of agents which swell or dissolve the horny substance, as lyes, acidum aceticum, gutta-percha mull with acidum salicylicum, or by shaving them off in layers and then digging them out entirely with a knife after a warm foot-bath. In this latter operation, bleeding vessels of the hypertrophic papillæ must be touched with argentum nitricum. With the knife, wounds may often be caused, which should be treated antiseptically, and which not infrequently give rise to tetanus and other dangerous diseases. The physician should not be above performing these small operations himself, and should not turn the patients over to inexperienced persons for operation. The filing off of corns with a steel file has only a palliative effect. Rings of caoutchouc, leather, or wool are merely prophylactic.

Warts, *verrucae*, are round, elevated, smooth or irregular, colorless or pigmented growths upon the skin. They may be congenital, but are mostly acquired. The former are always dark-colored and provided with hypertrophic hairs. The acquired are divided, according to their form, into flat (*verruca plana*), hemispherical (*verruca glabra*), and glandular (*acrothymion*) warts. They consist of hypertrophied papillae with lengthened and dilated vessels, above which there is a thick mucous layer. They develop under the epithelium; later this is pushed forward and becomes constantly thicker. Warts grow slowly or quickly, on the hands, feet, face, and on the hairy scalp of young persons, and may either last a lifetime or disappear spontaneously. The cause of their development is often obscure. They are not contagious. Their spontaneous disappearance accounts for the fact that often after one is removed by drugs or operative measures, the others disappear of themselves.

Among the agents for the cure of warts are some ancient specifics which are still used by the laity, such as the juice of celandine, of the fig, of ivy, of water-hemlock, etc. Even the dung of goats and of doves stirred in vinegar has been employed. The simplest and best means is the cauterization with caustic potassa, concentrated mineral acids such as *acidum nitricum*, a paste with *acidum sulphuricum*, *acidum chromicum*, or concentrated *acidum aceticum*; further, the application of *ferri chloridum* or *hydrargyri chloridum corrosivum*, and finally, covering the wart with mercurial plaster to which arsenious acid has been added. Cauterization with the stick of *argenti nitras* is as a rule of no service. Because of the unpleasant influences of these agents on the surrounding skin, and because the amount of cauterization cannot be accurately gauged, warts are also removed by tying a strong thread about them, by snipping them off with the curved scissors, or by scraping them out with a sharp spoon; tearing them out with the forceps is a barbarous operation. After the operative removal of a wart, the surface of the wound should be cauterized, both on account of the bleeding and to prevent its return. The cicatrices which ensue must be taken into consideration, and since warts often disappear spontaneously, it is often well not to operate when they are located on the face. The cicatrices after electrolysis are less noticeable,

and this operation is less painful. It is made by transfixing the base of the wart, parallel to the surface of the skin, with a needle-shaped negative electrode, while the positive electrode is held on any portion of the body. The strength of the current must be measured by a galvanometer, and should not exceed five milliamperes. The effect is a chemical one, the alkalies formed, acting as caustics. This employment of electricity has nothing to do with the galvano-cautery.

Perniones, or chilblains, are circumscribed reddening of the skin with or without swelling, which develop in various parts of the body in consequence of exposure to low temperatures. They are most frequently found on the hands and feet, the face, the nose, and the ears. They are round, red spots, livid in the centre, from the size of a dime to a half-dollar, hard or soft, flat or elevated. They may exist but a short time or be of long duration, and in the latter case they become more livid and the skin tissue is filled with dilated vessels, and may be covered with thin, shining scales or may later excoriate and ulcerate. Chilblains cause, mostly in the evening and in a warm room, a severe pricking pain and intense itching, and at times, when on the hands and face, are actually disfiguring. While chilblains occur at times in every person, there are individuals, mostly anæmic and poorly nourished, who seem disposed to them, and in such individuals they may develop with a temperature no lower than 40°. The clothing has a certain influence on the development of chilblains, since they are found often after closely-fitting gloves or shoes, which check circulation, have been worn. For some unknown reason this disposition diminishes as the person grows older.

The treatment of chilblains is both prophylactic and curative. The former consists in having persons in whom the disposition exists, wear warm foot and hand coverings, avoiding those lined with fur. Sudden changes of temperature should be avoided. On this depends the good effect of wearing woollen stockings through the winter and even at night. Warm hand and foot baths, which render the skin more sensitive to changes of temperature, should also be avoided. On the contrary, cold baths and rubbing are to be recommended.

Of the numerous agents used in the treatment of existing chilblains, the astringents and tonics deserve attention. To these belong dilute mineral and other acids, such as acidum

nitricum and acidum citricum, acidum tannicum and its preparations, sodii boras, alumen, salts of lead, and iodine. The other agents recommended, such as balsams, baths of hot glue, hops, etc., only indicate how unreliable are the agents usually employed. Ulcerated or excoriated chilblains are to be treated on general surgical principles. In many cases it will be required to conceal the disagreeable livid, red color, and for this purpose, apart from the acids, it may be necessary to use cosmetic salves and powders.

It will be seen from what has been said that cosmetic treatment varies in different parts of the body.

The cosmetic remedies in general may be divided into two groups. The first comprises the agents serving hygiene and cleanliness and a number of the curative agents, and corresponds to the agents belonging to the *ars ornatix* of the ancients; the second group comprises those agents which conceal that which the first group has been unable to cure. These are the substances which belonged to the *ars fucatrix*.

Many of the agents of the latter group have a curative action as well, and these are intermediate between the simple hygienic agents and the special cosmetics.

The cleansing and hygienic agents are, first, water, soaps, and fats, then alcohol, alkalies and acids; the latter three have special actions.

#### WATER.

Of the agents externally applied, water takes the first place in general medicine as well as in cosmetics. The priest-physicians of the Jews, the Persians, and the Chaldees prescribed simple water-baths for both therapeutic and cosmetic purposes. Baths in the sacred Ganges, in the deified Nile, brought to men and women not only health, but youth and beauty: and although in the course of centuries water and baths were often neglected for long periods, they never lost their importance as the simplest agent for preserving health and beauty. The knowledge of this importance has grown so with the increase of medical and hygienic knowledge that the grade of civilization may be gauged not only according to the use of soap, but according to the use of water.

Water acts on the skin as a chemical and mechanical agent,

as well as a carrier of heat and cold; by its property of dissolving other substances, it makes them active.

It affects the surface of the body in two ways, by dissolving the salts, a portion of the fatty acids, and many albuminous bodies, and again by causing the swelling of some of the tissues.

In short applications, as in dipping the body in cold water or by short baths, the first variety of its action comes but little into play, the second not at all, since the normal epidermis cannot be permeated by the water and no swelling can be caused. If the contact with the water be of longer duration, or if the water be moved, as in washing and scrubbing, or if it be of higher temperature, there ensues, first, the solution of the substances collected on the skin, then the mechanical removal of the superficial epithelial layers which hinder the passage of the water to the deeper layers by the fat which they contain, and finally the swelling of the deeper layers.

This swelling of the tissue, which is at once perceptible, follows the use of water or of steam for another reason.

In a bath of a temperature near that of the skin, the perspiration ceases, no sweat is secreted, but the fluid usually excreted is retained in the skin,<sup>19</sup> and causes a succulence of the latter. A swelling by imbibition and a swelling by decreased excretion may be assumed. The chemical changes in the skin are influenced by the increased swelling, whether it be caused in one way or the other, and by the effect of water of higher or lower temperature on the vessels, causing their dilatation or contraction. The excretion of sweat may be increased or diminished, it being also dependent on the individual differences in the amount of water contained in the skin.

The nutrition of the individual is improved by the methodic employment of water, and this leads to the better nutrition and the beautification of the skin. The contraction or dilatation of the vessels, and in consequence the color of the skin, is changed by long-continued bathing.

The methodic use of cold water has a considerable influence in accustoming one to low temperatures; the skin becomes "hardened," and it as well as the remainder of the body becomes less sensitive to cold.

The forms of disease which are benefited by hydrotherapy are general paleness and bad color of the skin, whether this

be produced by poor nutrition, by anæmia, or by local causes; in such cases warm-water treatment, the employment of warm sitz-baths, rubbing, and packing are beneficial. A too intense color of the skin from overfilling of the vessels indicates, when general, the use of cold, running water; when the overfilling of the vessels is limited to single regions, derivative applications may be made to distant parts of the body; when there exists redness of the face, hot foot-baths are useful. Those transitory hyperæmias of the skin which are frequently produced by the continued influence of too hot or too cold air (erythema fugax) are often cured by cold baths and the local application of cold water. Water is also of service in the hypersecretion of sweat. Rubbing with cold water and a treatment especially adapted to the individual case often effect a speedy cure.

There are few contra-indications to the use of water as a medium for washing. There are persons whose skin will not tolerate hard water or soap and water. This is especially the case with the tender skin of the face. The continued use of cold water as a bath or douche for the hairy scalp leads to the early falling out of the hair. The methodical application of warm and of cold water may be injurious for several reasons. Warm baths taken too frequently relax the skin, dilate the vessels, and lessen the resistance to atmospheric influences. The bad effect of excessive use of cold baths is shown in this description which Winternitz gives of a water fanatic: "The skin is as dry as leather, unelastic, having no fat, being poor in blood, and gives the impression of being a lifeless tissue." The average interval between the baths should be eight to fourteen days; apart from special cases and from cold baths in the hot season, lukewarm baths, followed perhaps by the cold douche, should be taken as a rule, and even the cold baths in the summer should be varied at times by a lukewarm bath.

Seldom is water used which has the chemical constitution  $H_2O$ ; the water of springs or streams contains various salts. Waters which are not suitable for drinking purposes are also often unsuitable for the bath. Waters which contain great quantities of ammonium, acidum nitricum, and nitrates, or organic substances, should be avoided when possible. This is still more the case with waters which contain macroscopically visible dirt, whether it be of organic or of inorganic nature.

Water also which is excellent for drinking purposes may in its natural state be harmful when used for bathing. This is true of hard waters, well waters, and even our excellent high spring water. The salts of calcium and magnesium, on which the great hardness depends, make the fine skin of the hands and face raw and coarse.

The use of rain and river water is to be recommended for washing the face and hands. Where this is not easily obtained, hard water may be freed from its harmful calcium compounds by long boiling or by the addition of soap, soda, or potash.

Often water is not used pure, but has different ingredients mixed with it. These may be substances which serve to make the bath more pleasant, as many aromas; or those which have cosmetic value, as soap, soda, and potash; or those which have a certain value of this sort and serve as well to maintain a certain temperature of the bath, as size or glue.

Water is used in two manners, either to wash with or to bathe in. In the former, fresh water is repeatedly brought to the part by the hand or other means, and a certain amount of force being used, the skin is rubbed. The material to be used must vary according to the sensibility of the skin. This may be flannel, coarse or fine Turkish linen in the form of little sacks, bath gloves, or bath sponges. The latter, on account of their great porosity by which quantities of water are absorbed, are excellent for washing. There are several sorts in the shops, two of which may be used for the toilet. For the face, and especially for a delicate skin, those from the *Spongia mollissima* and the *Spongia zimocca*, fine-pored and very soft, are to be recommended; for the skin of the body the large-pored, rough horse sponges from the *Spongia equina* and *adriatica* are better. By washing a greasy skin or after absorbing soapy water the sponges get a greasy appearance, get doughy, soft on the surface, and are then unfitted for bathing purposes. If they are boiled in a soda solution and then washed with clean water, they are again made fit for use. Lately, in place of sponges, luffa has been introduced into the market. This is the fruit of the *Luffa ægyptiaca* (*Cucurbitaceæ*) cut open, cleaned, and dried, and is similar to the sponge. The peculiarly-webbed, woody fibres of the inner side are dry, hard, and rough, but absorb either cold or warm water ready.

They are not injured by long years of use. The Egyptian women owe their fine complexions to the use of these.

The bath may be local or general, or a douche or a shower-bath. According to temperature, baths are cold from 60° to 70°, cool from 70° to 80°, lukewarm from 80° to 95°, warm from 95° to 100°, hot from 100° to 112°. Roman and Turkish baths are combinations of vapor baths with cool and warm full baths and similar douches.

The duration of the bath should be, for cold and hot, five to ten minutes; for the others, thirty minutes or more.

As to the time and manner of washing, the following may be said. It is best in the evening, before going to bed, to cleanse the body thoroughly from head to foot. In the morning, if the skin be sensitive, only the hands and face should be washed. If there be considerable perspiration, the entire body should be washed, but superficially. The wiping is best done with rough Turkish linen or with hairy, woollen cloths. The skin of sensitive individuals should then be powdered; the skin should at any rate be completely dried in a warm room. The moist skin exposed to the cool morning or evening air soon cracks and becomes rough.

In general, warm baths should be indulged in once a week. The skin is to be cooled before leaving the bath, with a sponge dipped in cold water or by a cool douche. Cold baths and river-bathing, which is common in summer, are permissible, but they should be varied by warm baths. The skin of many individuals will not bear the continued cold baths, and this is especially the case when the water is hard.

Although water is one of the most important cosmetic and cleansing agents, it does not answer all the cosmetic requirements and some more active agent is needed. First in this regard is soap. On account of its importance we shall consider it in detail.

#### SOAPS.

Soaps are combinations of fatty acids with alkalis. Their chemical and physiological properties depend on the latter. On the skin, they act in a manner similar to the alkaline carbonates; like these they soften, swell, and dissolve the epidermis, and cause irritation, redness, and swelling of the under-

lying layers. The best soaps contain free alkaline carbonates, which cause saponification of the sebaceous matter collected on the skin. As long as this saponification and solution of the fats is confined to the surface, it is a desirable action of the alkali and increases the value of the soap. The fat of the skin is not only excreted from the sebaceous glands upon the epidermis, but there is also fat which is formed within the tissues. If sharp alkaline soaps or alkalies be applied to the skin and the tissue become swollen and destroyed, the fat that is in this is extracted; not only cleansing is produced, but also saponification and more or less deep cauterization.

Formerly the whole action of the soap was attributed to the alkali contained in it. The action of the alkali, however, especially in the cosmetic application of it, is not the only one. It is the sum of a number of separate actions, which makes soap the most important of cosmetic agents.

Besides the physiological action, there is also a chemical and a mechanical action. The chemical action depends on the easy decomposition of the soap by water. The soaps, which are neutral alkali salts of the fatty acids, are decomposed by water in such manner that an acid oleic alkali is precipitated, while a basic oleic alkali remains dissolved. The latter performs the chemical portion of the work; it combines with the acid constituents of the skin secretion, with the dirt, and with the fatty acids of the sweat to form a new acid oleic alkali. The insoluble part of the soap, which becomes an acid oleic alkali, has the mechanical task of surrounding the new-formed combinations and keeping them suspended; in this it is aided by the property of the soap of forming with water a permanent foam which takes up not only the new-formed combinations, but also those elements loosened by the friction, such as epidermis-scales, hairs, dust, and dirt, and prevents their adherence to the skin.

The marked physiological action of the soap, the action of its alkalies, is not always desirable; especially in its daily use this action is subordinate to the two others. It is avoided only when completely neutral soaps are used; and by the use of such soaps the other requirements are also better fulfilled.

The chemical work is always performed by the soap; the result, however, is only complete when the mechanical part of the work is well carried out; since this latter depends in

great part on the mode of manufacture of the soap, we must consider this.

Soaps are made by combining different fats with alkalies. These latter do not unite directly with the fats, but a saponification of the latter occurs which produces the glyceride of the fatty acids. This is split up into glycerin and the fatty acids, whereupon the latter unite with the alkalies to form soap. Therefore those fats which contain free fatty acids, such as palm oil and cocoanut oil, are more readily saponified than completely neutral fats, such as tallow and grease. The breaking up of the fat does not occur suddenly, but gradually, after the fat has formed an emulsion with the alkaline lye. The process may be hastened by previously making an emulsion of the fat, either with soaps or with albumen.

We distinguish soaps according as they are soft (fat with potash lye) or hard (fat with soda lye); further, as to the fat used, tallow, oil, palm-oil, cocoanut-oil, train-oil, oleic-acid soaps.

There are the following varieties of hard soaps: (1) Ball soap, produced by the boiling of fat with potash or soda lye; the soap is precipitated with salt, by means of which, when potash lye is used, potassii chloridum is formed; the crumbling masses are boiled into a ball—*i.e.*, a uniform crystallized mass without bubbles. Small amounts of impurities cause a natural mottling. This soap, now not often manufactured, is the purest soap, since the salting frees it from excess of lye, from impurities, and from a great part of its water. If this sort of soap be mixed with water or weak lye, water is absorbed and the soap does not crystallize. This is (2) the ground or smooth soap, which is manufactured like the other, and only differs from it in containing more water. If the soap solution be salted slightly or not at all, the soap remains mixed with the superfluous lye, the water, and the glycerin. This mixture hardens as soon as it is cool if concentrated lye has been used; and after steaming if weak lye has been used. This is (3) the filled soap, which contains an excess of lye, water, and glycerin. If it be kept, the water evaporates, it decreases in weight and volume, and the alkaline salts crystallize on the surface.

The raw materials used are first various fats, some of which have a cosmetic value and will be spoken of later, such as grease, tallow, olive and castor oils.

Others are of interest to us only on account of their use in the manufacture of soap, and will be mentioned briefly.

Palm oil, extracted from the fruit of the *Elais guineensis*, is a fat of buttery consistence, dark or orange-yellow in color, and of an agreeable smell, recalling iris root. It contains many free acids and a yellowish-red coloring matter, which is not disturbed by the process of saponification, and the palm soap made from this oil has, therefore, a yellow color. This coloring material can be destroyed by potassii bichromas or acidum sulphuricum, and oil so bleached makes a white soap.

Cocoa oil and cocoa butter, the fat of the fruit of the *Cocos nucifera*, is of buttery consistence, white, and has an unpleasant odor, which is not lost in the manufacture. It is one of the chief fatty substances used in making soap, since it is especially adapted for the manufacture of the filled varieties.

Other fats less frequently used are red galam or shea butter, from the *Bassia Parkii* and the bassia oil, both yellow, similar to palm oil; and further, vateria tallow, from the fruit of the *Vateria indica*, carapa oil, and mafurra tallow.

In the manufacture of stearin candles, quantities of raw oils, consisting of stearic and palmitic acids dissolved in oleic acid, go into the refuse, and these are used in the manufacture of soap.

Besides the animal oils given above, the train oil from the whale, dolphin, and walrus is used in the manufacture of soap.

Liebreich has recommended the saponification of the oily fruits, pure or mixed with other oils. As an addition to ordinary soaps, colophony and silicic acid in the form of water-glass are used.

The second raw material is the lye, which was formerly prepared from wood ashes or potash, but is not found ready prepared on the market.

The manufacture of soap is effected by adding lye to fats, and heating until saponification occurs. To this fluid is then added salt, and after repeated boiling the lower part of the fluid is allowed to escape. The salting takes place, as was said before, in the manufacture of the filled soaps and the potassium soaps. The salting and boiling has the effect of separating the excess of alkali. That this latter is very injurious in toilet soaps is seen from a statement of Liebreich<sup>20</sup> which deserves notice. According to this author, the fluid soap is first sepa-

rated from the cellulose of the fruits by a centrifugal machine, and then the precipitated ball is separated from the under lye by heating and going a second time through the centrifugal process. In this manner it is possible to obtain soap entirely free from alkalies. If soda lye be used for the saponification, since the salting is done with sodii chloridum, only soda combinations are formed with the oleic acid, and the soda ball soap so obtained is very hard; if potash lye or a mixture of potash and soda lye be used for the saponification, soda and potash combinations are made with the oleic acid; these are soft and mild and impart their characteristics to the soap. The manufacture of cocoanut-oil and potash soaps requires another process; the former is produced, not by boiling, but by treating the melted fat with strong soda lye. The potash soaps cannot be salted with sodii chloridum, since in this way chemical displacements occur and a hard soda soap would be produced. Salting with potassii chloridum may then be employed in order to separate the soap from the lye and other impurities.

The soaps produced in this manner are: 1. Tallow ball soap, made by the saponification of beef tallow with potash lye and salting with sodii chloridum. It is thus a mixture of potash lye and soda soap, white, neutral, odorless, and mild.

2. Soda ball soap or soda soap, of tallow and soda lye, salted with sodii chloridum, very hard, white, neutral, odorless.

3. Oil soap, Marseilles, Venetian, Castile soap, composed of olive oil and soda lye salted with sodii chloridum. This soap is mottled by the addition of ferri sulphas, which becomes darkly colored by the sodii sulphas of the soda lye (mottled Castile soap). If pure lye and pure oil be used, a completely white soap is produced, hard, neutral, and odorless. The alcoholic solutions of the oil soaps prepared hot, differ from the tallow soaps in that they do not become gelatinous on cooling.

4. Cocoanut-oil soap, made of cocoanut oil and strong soda lye or sodii carbonas without salting; filled, having often as much as seventy-five per cent of water, an excess of soda lye and sodium; white, transparent, alkaline, light, lathering well, of unpleasant odor, which cannot be removed. Cocoanut oil is often mixed with other fats, such as palm oil, or artificially mottled by the addition of iron red, brown red, or Frankfort black.

5. Palm-oil soap, of palm oil alone or with beef tallow, with colophony and soda lye; yellow, of agreeable odor.

6. Soft soaps, potash soaps, green, black, train soaps. Olive oil and hemp, rape, linseed, or train oils with potash lye and potassii carbonas; generally filled, honey yellow, green or black (colored by logwood and ferri sulphas); of unpleasant odor, strongly alkaline.

Other soaps, intended for the poor, are the yellow resinous tallow soap, either a soap prepared from colophony and tallow with soda lye, or a German palm-oil soap mixed with resin soap; the oleic-acid soaps, bone soaps, a mixture of resin or cocoanut-oil soap with bone jelly or with the whole bony mass, Liverpool poor soap; silicic soap, an ordinary oil or tallow soap to which silicic acid is added. Instead of mixing in the silicates, these are introduced into the soap in a water-glass solution. Such soaps readily make the skin raw; a white powder is precipitated which is only removed by repeated washing. The manufacture of such soaps still increases, although complaints are made on all sides of the adulteration. Not only the lye, the water, and the glycerin are retained, but resin and water-glass, as well as starch and sugar (10 to 40%), are added, so that from 100 parts of fat, 500 parts of soap are made, or in 2,400 pounds of soap there are 800 pounds of adulterating matter.

Of the soaps named, one may use for washing the body either the German tallow ball soap, the oil soap, or the palm-oil soap; the soda soap is too hard; the cocoanut-oil soaps and the soft soaps are too strongly alkaline, affect the skin, and have an unpleasant odor. The former fill the wants of the public, but often not the requirements of the hygiene of the skin; many a tender face suffers from the use of tallow ball soap.

A good toilet soap must fulfil the following requirements:<sup>21</sup>

1. It must be neutral in reaction; bad soaps, the filled soaps, contain free alkali and are corrosive.

2. The percentage of water in the soap must be neither too great nor too small. The former deceives the purchaser. The latter makes the soap too hard, it does not foam readily, and is consequently less valuable as a toilet soap. A soap having the proper quantities of the ingredients will foam as soon as water is added to it.

3. The lathering of the soap is hindered by the presence of free fat. The soap also gets a rancid odor when kept long. The over-fatty soaps may be of cosmetic value on account of the softness of their lather. Such soaps may be prevented from becoming rancid and sticky by using lanolin in place of the ordinary grease.

4. The soap must be odorless or have a pleasing odor and a constant agreeable color.

5. The soap must cleanse the skin and render it flexible. Substances added for this purpose, as well as the coloring and perfuming matters, may be poisonous.

The manufacturers of toilet soaps seek, or at least should seek, to fulfil these requirements.

In England the soap manufacturer seldom makes his own soaps, but procures these from the real manufacturers and subjects them to various procedures. The toilet soaps made there are generally good. In France and Germany the perfumer makes his own soap, generally by the cold method. The English dealers make their toilet soaps by remelting raw soaps and by the cold perfuming of odorless soaps. The former method consists in melting the soap, then adding the perfume and stirring it well; in the second method the cold soap is broken up, perfumes and coloring matter added, and the whole macerated between cylinders into a uniformly colored and perfumed mass. The whole procedure is done by a machine, and such soaps are called pounded soaps. Soaps so treated become gray, and the method cannot be employed for the production of white soaps. In the direct preparation, the perfume and the pigment are mixed with the soap while it is still soft. This is, however, impossible for the most highly-perfumed soaps. Fine perfumes decompose or evaporate at the high temperatures required for the saponification.

In Germany, therefore, the cold saponification is preferred for this purpose. In this manner a filled soap is produced which is not less valuable on account of the excess of glycerin and the salts produced by the use of the pure lye, but is often harmful on account of the excess of caustic lye. This fault may also cause the gradual decomposition of the perfumes added to it. At any rate it is very difficult, and only possible after long experience, to produce by the cold method an almost neutral soap, not having an excess of fat, lathering well, and not becoming rancid.

The various ethereal oils are used for the perfuming.

For the coloring, red is produced by cinnabar, corallin, and fuchsin (free from arsenic), at times ferri oxidum and also carmin, which can be used only in neutral soaps. Yellow is produced by cadmii sulphas, uranii oxidum, saffron, orleans, and palm-oil soap, which is yellow. Violet is produced by coal-tar colors. Blue is produced by smalt, ultramarine, and indigo. Green is produced by mixing yellow and blue. Brown is produced by a solution of granulated sugar in lye or by caramel or cocoa meal.

In order to make it transparent, dried soap is dissolved in alcohol, cooled, perfumed, and colored with cochineal, aniline, or acidum picricum and martius yellow. Soap is now often dissolved in its weight of glycerin and then treated like the soap dissolved in alcohol.

Transparent soaps only become hard after several weeks. There are great adulterations practised now in the manufacture of transparent soaps; many of the English soaps contain syrup, free alkali, or resin and sugar, without a trace of glycerin.

Since soaps are mostly bought and seldom specially made, only a few recipes for well-known soaps will be given.

The popular brown Windsor soap, which is cheap and serviceable, is made as a ball soap by the saponification of two parts of mutton tallow and one part of olive oil, with soda lye; it should be neutral. It is perfumed with a mixture of caraway, bergamot, lavender, Spanish hop, and thyme oils, and colored with caramel or cocoa from which the fat has been removed.

Another recipe gives three parts of white ball tallow soap, one part each of cocoanut-oil soda soap, yellow palm-oil soap, and grease soap. These are to be melted together, then perfumed and colored. To make white Windsor soap, the yellow soap and the coloring matter are left out.

Rose soap is made by melting together three parts of oil soap and two parts of tallow soap. This is perfumed with rose and geranium oils and colored with cinnabar. It may also be made by perfuming cold rose-red ball tallow soap with rose oil, sandal wood, and geranium oils.

Almond soap is made by melting white ball tallow soap with oil and cocoanut-oil soap, perfuming with the oils of bit-

ter almonds, cloves, roses, and caraway. In place of the bitter-almond oil nitrobenzol is often used.

In this manner most of the toilet soaps are made. The name comes usually from the perfume used, as, for example, *savon à la Violette de Parme*, *à l'Ixora*, etc. That the name is often fanciful and has nothing to do with the ingredients of the soap is shown by the spermaceti soap, which is a simple white tallow soap strongly perfumed with bergamot and lemon oils.

The light or lather soap is made by melting palm or olive oil soap with from one-eighth to one-third its volume of water, and stirring until the foaming mass has reached double its volume; it is then perfumed with various ethereal oils. Tallow soaps cannot be made into lather soaps.

Softer soaps are generally sold as shaving soaps. Such a soap made from pork fat and potash lye with concentrated alcohol and perfumed with the oil of bitter almonds is the *crème de savon à l'amande*, a soap shining like mother-of-pearl. This scented with *oleum menthæ piperitæ* and colored with aniline violet is the *crème d'ambrosie*, fragrant soap for shaving. Soap made from oil and potash lye is transparent.

Soaps are used also in fluid form, and there are two of these worth mentioning. The one, the fluid glycerin soap, is a solution of soap in an excess of glycerin (30:35); Sarg's glycerin soap is an olein potash soap made of very pure materials with two-thirds glycerin, which is filtered and then perfumed with rose oil. It is clear, light brown, having the consistence of honey and containing free alkali. It does not lather much.

The second is the potash soap spirit, *spiritus saponis kalini*, according to the Austrian Pharmacopœia, a filtered solution of two parts of *sapo viridis* in one part of spirits of lavender; in this form it has a not unpleasant odor.

Other fluid forms are the soap essences, concentrated alcoholic perfumed solutions of soap.

Kali-crème, which is the *sapo kalinus albus* of the German Pharmacopœia perfumed, and the *spiritus saponis kalini*, are cosmetic agents in a wider sense than the hard soda soaps, since free alkali or alkaline carbonates, which modify the soap, have their share in producing its action. These are, therefore, properly to be classed with the alkalies. Some believed that the injuriousness of the strong alkaline soaps might be pre-

vented by adding an excess of fat. This, however, as Liebreich has shown, is only partly possible. Unna composed a soda soap with an excess of fat, *sapo superadiposus*, and a similar potash soap, *sapo unguinosus*. The former is made by the saponification of 59.3 parts of beef tallow and 7.4 parts of olive oil with 22.2 parts of soda lye and 11.1 parts potash lye (28° Beaumé's hydrometer). With this composition four parts of fat remain unsaponified. Neither glycerin nor free alkali should remain. While it is possible in this soda soap to take up the free alkali with the excessive fat, this is impossible in the potash soaps. The latter, the *sapo unguinosus*,<sup>22</sup> is made according to Liebreich by stirring together fifty parts of oil of cocoa and fifty parts of fat (*adepts suillus*) with potash lye composed of twenty parts of caustic potassa and forty parts of water. This is left to itself for several hours while saponification is taking place. Within this time seventeen per cent of previously melted fat is added, and finally glycerin also. This soap then contains free alkali like every potash soap, and has an excess of fat.

These soaps having an excess of fat were supposed to allow the free alkali little action, and it was further supposed that they would oil the skin again, which is rendered dry and rough by the use of soap as well as of alkali. They were also thought to dissolve more completely the medicaments added. They do not possess the first property, since the alkali can only be neutralized by boiling the soap, and can only be removed by the centrifugal machine after the salting; but, as said before, the potash soaps cannot be salted. The free alkali is not neutralized in the soaps, but its action somewhat held in check by the presence of the fat. The percentage of free alkali is reduced, however. The action of potash soap is but incompletely obtained in using the preparations described.

The advantage claimed that the skin is at once oiled again after washing is harder to object to from a cosmetic standpoint. This oiling when the skin is sensitive, and in individuals who from their occupation must wash frequently, is very necessary, and Valenta, before the introduction of the *sapo unguinosus*, advised rubbing the hands, before washing with soap, with *crème céleste*. The advantage, however, is imaginary, for in washing off the soap the oily coating is also washed off. The objection to their use for cosmetic purposes

is that the fat easily becomes rancid and the soaps do not keep. The free fatty acids are unbearable to the skin; and for this reason the newly-introduced *sapo superacidus*, having an excess of fatty acids, is to be condemned. Besides this, the fresh soaps with an excess of fat have an unpleasant odor and are not attractive in appearance. Rancidity may be prevented by adding lanolin to the prepared soap.

The long-known glycerin soaps and the potash soap spirit combined with glycerin are to be judged in the same manner. Glycerin in the quantities in which it is added to the soaps (twenty-five to forty per cent) has only the effect which the excess of fat in the *sapo unguinosus* has; it makes the action of the free alkalies milder, since it takes these up and lessens the percentage of the free alkali present. This is especially the case with the potash soap spirit; the preparation given in the Austrian Pharmacopœia lacks almost all the characteristics of a toilet soap; it does not lather well, it attacks the skin, makes it dry, rough, and fissured, and it has a bad odor. By using the better white potash soap, a better perfume, and adding glycerin, a preparation is made which, disregarding its action, is far pleasanter to use than the other. A moderate quantity of glycerin gives a certain consistence to the *spiritus saponis kalini*, which favors its application. The percentage of glycerin may not exceed a certain limit—it may not be greater than the percentage of alcohol; if greater percentages of glycerin be used, the soap dissolves the epidermis less, makes a poorer emulsion, and is, therefore, less adapted to remove the dirt and fat of the skin. The peculiar action of the glycerin is mostly lost when it is combined with a soap. This soap, like the others, cannot be considered a universal cosmetic agent.

Besides the free alkalies and the glycerin, which as such have no action in the soap and merely modify or increase the action of the other constituents, there are other cosmetic and curative agents which may be incorporated into a soap.

For this purpose, fine quartz sand or finely-powdered pumice-stone are used in equal or double the quantity of the soap (ball tallow soap and cocoanut-oil soda soap mixed). Either this mixture, which is similar to and little better than the water-glass above mentioned, or dusting powder is added, which in a different manner from the soap make the skin

flexible, soft, and of a lighter color. Such a soap is the hygienic toilet soap devised by Auspitz, which is made from tallow and cocoanut oil with potash and soda lye, to which is added glycerin, flores zinci, pulv. alumin. plumos., and amyl. oryzæ, and it is then perfumed with oil of lemon and rose oil. In place of this the cosmetic soap given below, prepared from white soap by the apothecary, may be used. I am convinced of its value. Paraffin is also added to soap for this purpose. Ordinarily such toilet soaps are prepared and prescribed in a special form. Among these are the beauty-balls, soap-emulsions, and soap-powders. The latter are made by cutting soap into chips, drying it, and pulverizing in a mortar. Some examples follow:

℞ Talc. venet. præp.,  
 Amyl. oryz.,  
 Sapon. odorat., . . . . . āā q. s.  
 M. f. globuli. S. Savonettes à la Bergamotte.

℞ Furfur. amygdal.,  
 Amyli,  
 Sapon. in pulv., . . . . . āā 3 ij.  
 Pulv. rhiz. irid., . . . . . 3 i.  
 Tinct. benzoini, . . . . . q. s.  
 M. f. pasta in globul. form. S. Beauty-balls.

℞ Sapon. pulv., . . . . . ʒ i.  
 Sodii carbon. sic., . . . . . ℥ ij.  
 Amyl. oryz., . . . . . ʒ iiij.  
 Pulv. irid., . . . . . ʒ iss.  
 Mixt. odorif., . . . . . ʒ i.  
 M. S. Poudre de Fèves.

℞ Sapon. pulv., . . . . . ʒ vi.  
 Borac. venet.,  
 Zinc. oxid., . . . . . āā gr. xvi.  
 Essent. millefl., . . . . . q. s.

M. S. Soap-powder. Recommended for the hands of physicians.

℞ Sapon. alb. in pulv., . . . . .	℥ i.
Acaciæ pulv., . . . . .	℥ ss.
Rhiz. irid. pulv., . . . . .	gr. xv.
Ol. rosæ,	
Ol. bergamii, . . . . .	āā q. s.

M. S. Soap-powder for shaving (Trommsdorff).

℞ Sapon. kalin., . . . . .	℥ vi.
Spir. vini rect., . . . . .	℥ iiij.
Solve et filtra. Dein adde:	
Glycerini, . . . . .	℥ iiij.
Ol. geranii,	
Ol. bergamii, . . . . .	āā q. s.

M. S. Modified potash soap spirit for applications. Recommended for ephelesides.

℞ Spir. jasmin.,	
“ cassiæ,	
“ rosæ, . . . . .	āā ℥ i.
“ flor. aurant., . . . . .	℥ vi.
“ tuberos.,	
“ vanill., . . . . .	āā ℥ ss.
“ ambrae, . . . . .	℥ vi.
Sapon. alb. pulv., . . . . .	℥ ij.
Potassii carb., . . . . .	℥ ss.
Aq. rosæ, . . . . .	℥ i.

M. S. Essence fine de savon.

℞ Sapon. alb., . . . . .	℥ ij.
Spir. vini rect., . . . . .	℥ i.
Aq. rosæ,	
“ naphæ, . . . . .	āā ℥ ij.

M. S. Soap-essence.

℞ Sapon. kalin., . . . . .	℥ vi.
Spir. vini rect., . . . . .	℥ iiij.
Glycerini, . . . . .	℥ vi.
Borac. venet., . . . . .	℥ ss.
Ol. cort. citr.,	
Ol. santali, . . . . .	āā q. s.

M. S. Borax soap spirit.

℞ Zinci oxid.,	
Talci veneti, . . . . .	āā ʒ ij.
Sapon. kalin. alb., . . . . .	ʒ iiij.
Ol. millefl., . . . . .	gtt. x.
Ol. geranii, . . . . .	gtt. v.
Ess. bouquet, . . . . .	ʒ ss.

M. S. Cosmetic soap.

℞ Saponis kalini, . . . . .	ʒ iiij.
Adipis suilli leni calore liquefacti, . . . . .	ʒ iss.—ʒ iiss.
Glycerini, . . . . .	ʒ iiss.

M. S. Potash soap with an excess of fat (Liebreich).

℞ Saponis kalini, . . . . .	ʒ iiij.
Lanolini leni calore liquefacti, . . . . .	ʒ iss.

M. S. Potash-soap with an excess of fat (Liebreich).

Besides these I shall give a few formulæ of soaps which can be had in the shops, some being officinal:

℞ Sebi bovini,	
Terebinth. venet.,	
Liq. sodæ caust., . . . . .	āā ʒ iss.

Calefaciendo paretur sapo, cui adde:

Ol. de cedro, . . . . .	ʒ iiij.
Fiat frust. pond., . . . . .	ʒ iiiss.

S. Turpentine soap (Auspitz).

℞ Ol. cocos,	
Sebi bovini,	
Liq. sodæ caust., . . . . .	āā ʒ iss.
Camphor. in oleo solutæ, . . . . .	ʒ ss.
Fiat via frigida sapo pond., . . . . .	ʒ iiiss.

S. Camphor soap (Auspitz). For perniones.

℞ Ol. cocos,	
Sebi bovini,	
Liq. sodæ caust., . . . . .	āā ʒ iss.
Ol. rosmarini, . . . . .	ʒ i.
Fiat via frigida sapo pond., . . . . .	ʒ iiiss.

S. Rosemary soap (Auspitz). To be used in aromatic baths. If in place of ol. rosmarini, resina benzoini in alcol. solu. ʒ ss. be taken, a benzoic soap is produced, useful for the same purposes as the other.

℞ Potassii carb., . . . . .	Oiiss.
Calcariae ustæ, . . . . .	Oiiss-ij.
Aquæ, . . . . .	q. s.
Adipis suilli, . . . . .	Ox.
Spir. vini rect., . . . . .	Oi.
Coctis adde:	
Glycerini, . . . . .	Oiv.
M. f. Sapo. pond., . . . . .	Oxx.
S. Salve soap (Dieterich).	

Little is to be said of the manner of using soap. It may merely be remarked that the action is increased by rubbing, and that this is to be done with flannel, cambric, or a brush. In bathing, soap is to be dissolved in the water of the bath, or soap essences and alcoholic solutions are to be added to it. As to its local application, when it is wished to produce a marked loosening of the epidermis and the swelling and solution of the superficial layers, the mere washing with soda soap will not suffice. The soap must remain some time in contact with the skin. The soap may be rubbed on, using a small amount of water, and the lather may be allowed to dry in; or applications of soap dissolved in alcohol, and soft soaps spread on flannel or linen, may be used on the parts affected. It should be washed off in the bath or under a douche after one or more days. In all these cases, the after-treatment of the irritated skin with mild, soothing salves must not be neglected. Medicamented soaps are used in the same manner. The methods of using soap on the hairy scalp and in the mouth will be described further on.

As has been stated, the skin of many individuals does not tolerate the ordinary use of water. Still more frequently is soap not tolerated, even the mildest soda soap. In such cases the skin is to be cleansed by means of fats.

#### FAT.

If fat is rubbed on the skin, it makes this slippery, soft, and pliable. Fluid fats, or such as are rendered fluid by the heat of the skin, are absorbed into the superficial layers of the epidermis. This becomes clearer and glossy, and any existing rawness or roughness of the skin is removed, and an abnormal

tension is prevented. After the continued application of fats they may be absorbed by the skin (through the hair follicles, Lassar) and carried into the blood through the medium of the lymph-vessels. In this manner is to be explained the increase in bodily weight and the improved appearance after the methodic inunction of fat. A second property of fat is that of lessening the amount of water given off by the skin, since it forms a thin, impermeable coating which prevents evaporation. This water-tight covering protects the skin from external influences, such as moisture and the low temperature of the air; it serves as a protecting agent, and fats are in fact the best agents for protecting the skin. The secretion of the sebaceous glands and the fatty acids of the sweat are soluble in fat; the dirt of the skin is suspended in this solution as with soap, and in some cases the rubbing with oil or another fat may be sufficient to cleanse the skin and take the place of washing. Finally, the fats are of importance for cosmetic purposes, since they serve as a menstruum for many medications.

The fats are used to protect the skin and the complexion against atmospheric influences, to make the skin slippery and so prevent the rubbing of adjacent portions of the skin, to hinder the secretion of sweat, which loosens the epidermis, to prevent the skin, as that between the toes, from becoming sore; it is also used as a coating to cause the sticking of powders, and as a cleansing agent to remove dust and cosmetics from the skin.

Inunctions of proper fats should have a more general use than they have at present. The ancients recognized their value, and the anointing of the body with oil in the gymnastic games was not only a trick to make the body more difficult for the opponent to grasp, but served as well to increase the manly beauty, just as the inunctions of *œsypus* (lanolin) not only made the massage after the bath more easy and protected the body from the cold, but preserved for the Greek and Roman ladies the beauty of their skins to a ripe age. Beyond the anointing of the face and hands, we are entirely unacquainted with this custom. It should become popular again, at least in so far as to having a light massage with a proper fat after the weekly warm bath.

The exclusive employment of fat as a cleansing agent leads

finally to results exactly contrary to those desired. In place of a fine, pure complexion being produced, the skin becomes irritated, red, and raw, partly from the turning rancid of the fat, partly on account of the impossibility of completely removing the dirt. The never-washed Italian lady of Athenæus (*Μήποτε λελουμένη Ιταλία*) is still to be found among our society ladies.

Fat is contra-indicated as a cosmetic where the skin itself contains much fat, and where the secretion of the sebaceous glands is abundant and there are comedones, since the fats, especially those which harden readily, may easily stop the orifices of the sebaceous glands.

Of the fats, the following are used for cosmetic purposes.

Animal fats: pork lard, *adeps suillus*, *axungia porci*, is made by melting and filtering the spleen and kidney fat of the pig, and is white and salve-like; when pure it is odorless and melts at 100°. For cosmetic purposes it must be entirely odorless and free from free fatty acids. To have it in this condition, it is melted with *sodii chloridum* and *albumen*, filtered, and after being cooled, washed while being kneaded. Its permanency is increased when it is warmed with coarsely powdered benzoin (4:100), *axungia benzoata*.

Beef and mutton tallow, *sebum bovinum et ovile*, are the fats of the cow and of the sheep prepared like lard. The former is white, peculiarly-smelling, hard, and melts at a temperature of 100° to 115°. The latter is harder, has a stronger odor, and melts at 115° to 125°. The purification of tallow for cosmetic purposes is more difficult than that of lard.

Lard is used in pomades of soft consistence, tallow in those which are harder.

Cetaceum, from the semi-fluid matter of the head of the whale. The separating fatty part is pressed out cold and purified by washing and meting. It forms crystalline leaf-like masses, white, melting at 120° to 130°, soluble in oil. It does not become rancid.

An animal fat less often used is beef marrow, *medulla ossium bovis*, of salve-like consistency.

Lanolin, while chemically not a fat, since it does not consist of the glycerides of fatty acids, is still to be mentioned here, because it acts on the skin like a fat. It is made by emulsifying wool fat, wool sweat of the sheep, *œsypus* of the ancients,

with alkalis, treating this in a centrifugal machine and further purifying it. Free from water, it is yellow and transparent, melting at  $98^{\circ}$  to  $105^{\circ}$ . After the absorption of twenty-five per cent of water, it becomes a yellowish-white, salve-like mass, with an odor which, though feeble, always recalls its origin. This lanolin with water can still, if it be kneaded, take up more than its weight of water, without losing its salve-like consistency. Chemically, lanolin is a mixture of cholesterin and ethers of the fatty acids. It forms a permanent emulsion with water and small quantities of alkaline carbonates or borax. For cosmetic purposes only that lanolin should be used which is free from fatty acids. Agnine, manufactured in America, contains thirty-three per cent of free fatty acids.<sup>23</sup> On the skin, its action is similar to that of the animal fats; the skin, however, absorbs lanolin more readily than these, perhaps because, as Liebreich has shown, cholesterin fats are formed even in the horny cells. Under the use of lanolin, the skin becomes tenser and more turgid, as after the inunction with other animal fats. Whether drugs mixed in the lanolin are more quickly absorbed by the skin than in other salves, is still an open question. It has, however, one great advantage over all other salve menstrua, in that it does not become rancid.

The vegetable oils used are as follows.

The fluid oils: almond oil, *oleum amygdalarum dulcium*, obtained from sweet almonds by cold pressure, being settled and filtered, is a yellow oil, very mild and of a peculiar delicate odor.

Olive oil, *oleum olivarum*, obtained by cold pressure from fresh olives, is clear, pale yellow, and very mild.

Ben-nut oil, from the seeds of the moringa tree, obtained by cold pressure, is entirely odorless and almost colorless, and does not easily become rancid.

Besides these, sesame oil and hazel-nut oil are occasionally employed.

The hard oils: Palm oil is obtained from the fruit of the oil palm in tropical Africa. At the ordinary temperature it is of the consistence of butter, of orange-red color, and of agreeable, violet-like odor when fresh, but loses its color when kept and easily becomes rancid.

Cacao butter, *oleum cacao*, obtained by warm pressure

from the hulled and slightly roasted cacao beans, is of a yellowish-white color when fresh, later white, solid, brittle, having a peculiar odor, and melting at  $85^{\circ}$  to  $95^{\circ}$ . It is very permanent.

Wax, *cera*, is obtained from the honey-comb by pressing out the honey, washing and melting, and is a brittle, granular, yellow or yellowish-brown mass, having the odor of honey and melting at  $130^{\circ}$  to  $140^{\circ}$ . By melting and bleaching, it becomes white wax, *cera alba*, which is purer than the other and melts less readily.

Of the so-called mineral oils the following carburetted hydrogen oils are used: The fluid paraffin or vaseline oil, a clear, colorless, odorless fluid, somewhat thick, obtained from petroleum, and which does not become rancid.

The salve-like vaseline, also obtained from petroleum or its products of distillation. The color and the melting-point vary according to the manner of manufacture and the locality from which it is obtained. The American vaseline is dark orange-yellow in color and melts between  $90^{\circ}$  and  $98^{\circ}$ ; the Austrian is honey-yellow; the German is white, either gritty or tough, and has a bluish reflex. Vaseline should be odorless. Often it shows an acid reaction remaining after its purification, and is therefore of no use for cosmetic purposes.

Finally, there is the solid paraffinum solidum, a substance obtained from ozokerite or peat, of whitish-blue color, transparent, of waxy consistence, odorless, melting at  $160^{\circ}$  to  $175^{\circ}$ .

Besides these, there are fatty seeds which may be used either pulverized or in the form of an emulsion. Sweet and bitter almonds are those most frequently used, the latter because of their pleasant odor. The bruised almonds, with their original fat or the refuse material after the oil has been pressed out, is ground up and used under the name of almond bran, which is still rich in oil. Cocoa and pistachio nuts are used in a similar way.

Cucumber juice, obtained by pressing the fresh cucumber, containing its fatty seeds, is also used.

The rule holds for all pure oils that they must be entirely inodorous if they are to be used on the skin. The pure oils are seldom used alone, but different preparations and mixtures are employed according to the place and the manner of their application.

For rubbing on the skin after the bath and for massage, we should use chiefly the vegetable oils and the animal fats alone or mixed, but always in a semi-fluid or salve form, possibly containing a small quantity of perfume. The best agent for this purpose is lanolin in the following form:

R̄ Lanolin anhyd., . . . . . ℥ iiij.  
 Ol. cacao, . . . . . ℥ i.  
 Vanillin, . . . . . gr. viij.

S. Pomade.

R̄ Lanolin, . . . . . ℥ iiij.  
 Sod. bor., . . . . . gr. xvi.  
 Aq. rosæ, . . . . . ℥ iiiiss.

S. Lanolin milk, a very permanent emulsion.

A very popular and valuable salve mixture is cold cream, *crème céleste* or *unguentum emolliens* of the Austrian Pharmacopœia. By *crème* is understood a mixture of wax, cetaceum, and almond oil to which water, pure or aromatic, often glycerin or vaseline, and also potassii carbonas, sodii boras, and *tinctura benzoini* are added. The *crème céleste* of the Austrian Pharmacopœia consists of cetaceum, 2 parts; *cera alba*, 1 part; *ol. amygdal.*, 8 parts; *aq. rosæ*, 2 parts. The fats are first melted and the water mixed in when the mass is half cold. It is then stirred until it becomes white and foamy.

R̄ Olei viol. odor.,  
 Aq. viol., . . . . . āā ℥ xvi.  
 Ceræ, . . . . . ℥ i.  
 Spermaceti, . . . . . ℥ i.  
 Essentiæ amygd., . . . . . gtt. v.

M. S. Cold cream à la violette.

R̄ Ol. amygd. dulc.,  
 Aq. rosæ, . . . . . āā ℥ xvi.  
 Ceræ,  
 Spermaceti, . . . . . āā ℥ i.  
 Camphoræ, . . . . . ℥ ij.  
 Essent. rosmarini, . . . . . ℥ ss.

M. S. Camphor ice (Piesse<sup>24</sup>).

If glycerin be substituted for *aq. rosæ* in the last recipe, we have glycerin cold cream, which is very permanent.

℞ Spermaceti,	. . . . .	℥ ss.
Ceræ alb.,	. . . . .	℥ ij.
Ol. amygd. dulc.,	. . . . .	℥ iiss.
Butyr. cacao,	. . . . .	℥ ss.
Pulvis viol.,	. . . . .	℥ i.
Træ. ambrae,	. . . . .	℥ i.

M. S. Cacao crême (Débay<sup>25</sup>).

℞ Ceræ alb.,		
Cetacei,	. . . . .	āā ℥ iss.
Ol. amygd.,		
Succ. cucum. rec. press.,	. . . . .	āā ℥ iiiss.
Træ. cucum. e succ. (4:5 spir. vini. rect.),		℥ ss.

## M. S. Cucumber pomade (Bernatzik).

℞ Axungiae,	. . . . .	℥ viij.
Cucumer.,		
Melonum concis.,	. . . . .	āā ℥ xvi.
Succ. citri,	. . . . .	℥ iv.
Fruct. mali (reINETTE),	. . . . .	gr. xxx.
Lactis vaccin.,	. . . . .	℥ ij.

Calef. in balneo Mar. 5 hor.; cola.

## M. S. Pommade des concumbres (Débay).

℞ Ceræ albæ,		
Cetacei,	. . . . .	āā ℥ ij.
Ol. amygd. dulc.,	. . . . .	℥ ij.
Vaselini,		
Aq. rosæ,	. . . . .	āā ℥ v.
Borac. ven.,	. . . . .	gr. xvi.
Ol. rosæ,	. . . . .	gtt. ij.

## I. S. Cold cream.

℞ Cetacei,	. . . . .	℥ ij.
Ol. ricini,	. . . . .	℥ ij.
Ol. amygd.,	. . . . .	℥ v.
Ol. odorat.,	. . . . .	℥ xvi.

M. S. Ice or crystal pomade (Bernatzik); a transparent gelatinous pomade.

℞ Ol. cocos.,	. . . . .	℥ iss.
Aq. rosæ,	. . . . .	℥ i.
Ol. rosæ,	. . . . .	gtt. i.

M. S. Cold cream (Hager<sup>26</sup>).

The last prescription most resembles the original cold cream, which consists of

℞ Ol. cocos, . . . . .	℥ i.
Ol. rosæ, . . . . .	gtt. viij.

and is not equalled by any of the other creams if the ol. cocos be fresh and of good quality.

Almonds and other fatty seeds are used in powder as almond bran alone or mixed with other oils; as washing powder when mixed with soaps, alkalies, or sodii boras; and as pastes and emulsions. These are very mild fatty and washing agents and render the rough, raw, dry skin of the face and hands tender and flexible, and at the same time cleanse it thoroughly. They are also entirely harmless.

℞ Amygd. amar. decort. cont., . . . . .	℥ viij.
Mellis, . . . . .	℥ xvi.
Vitell. ovor., . . . . .	No. viij.
Ol. amygd. dul., . . . . .	℥ xvi.
Ess. bergam.,	
" caryoph., . . . . .	āā ʒ ij.
M. S. Honey almond paste.	

℞ Amygd. am. decort. cont., . . . . .	℥ xxv.
Aq. rosæ, . . . . .	℥ xxviij.
Alcoholis, . . . . .	℥ xv.
Ess. bergam., . . . . .	℥ iij.
M. S. Almond paste.	

℞ Farin. amygd. decort., . . . . .	℥ xxxiij.
Rad. irid. pulv., . . . . .	℥ ij.
Ess. citri, . . . . .	℥ ss.
" amygd., . . . . .	℥ iij.
M. S. Almond meal.	

℞ Pistac. decort. cont., . . . . .	℥ xvi.
Pulv. iridis, . . . . .	℥ xvi.
Ess. neroli, . . . . .	℥ xxx.
" citri, . . . . .	℥ ss.
M. S. Pistachio meal.	

R̄ Farin. amygd. decort., . . . . .	℥ xvi.
Amyl. oryz., . . . . .	℥ iv.
Pulv. irid. flor., . . . . .	℥ iss.
Sapon. pulv., . . . . .	℥ iss.
Ess. amygd., . . . . .	gtt. xx.

M. S. Almond powder.

R̄ Semin. excort. hippocast. pulv., . . . . .	℥ iiiiss.
Amygd. amar. pulv., . . . . .	℥ iss.
Rhiz. irid. flor., . . . . .	℥ iss.
Sod. carbon. dil., . . . . .	℥ iiij.
Ol. bergam., . . . . .	℥℥ xxx.

M. S. Washing powder for rough and chapped hands  
(Wiegleb-Hager).

R̄ Amygd., . . . . .	℥ ss.
Cont. misc. c.	
Aq. flor. aurant.,	
" rosæ, . . . . .	āā ℥ ij.

Col. expr. adm.

Sodii bor., . . . . .	gr. xvij.
Tinct. benzoini, . . . . .	℥℥ xxx.

M. S. Eau cosmetique de Vienne (Bernatzik<sup>27</sup>).

R̄ Farin. amygd. amar., . . . . .	℥ vi.
Ol. amygd. amar., . . . . .	℥ iiiiss.
Mellis, . . . . .	℥ xij.
Vitell. ovor., . . . . .	No. viij.
Sod. carb., . . . . .	℥ i.

In Aq. rosæ q. s. solut.

Ft. pasta (Débay).

R̄ Amygd. dulc. decort., . . . . .	℥ viij.
Aq. rosæ, . . . . .	℥ xix.
Succ. rad. taraxac. expr., . . . . .	℥ i.
Spir. tuberos., . . . . .	℥ viij.
Ol. virid.,	
Cerae,	
Sapon. oleac., . . . . .	āā ℥ ij.

M. S. Lait de Pissenlit (dent-de-lion, Piesse).

℞ Cer. alb.,	
Cetacei,	
Ol. amygd.,	
Sap. amygd., . . . . .	āā ʒi.
Subigr. c. Spir. vini rectific., . . . . .	ʒ iss.
Admisce emuls. par. e.	
Amygd. dulc., . . . . .	ʒ ss.
Ad Aq. rosæ,	
Aq. fl. naphæ, . . . . .	āā ʒ v.
M. S. Lait de lilas (Bern.).	

The application of fat to the skin is most frequently made by rubbing it in lightly with the hand; for the face it is better to use a fine cloth, by means of which only a small amount of the fat is rubbed into the skin; the hands are salved by the motions of ordinary washing. Face and hand pomades are best used in the evening, after the skin has been washed and thoroughly dried. In most cases where fat is indicated—that is, when the skin is rough, dry, and dull—the pomade used should be wiped off with a cloth so that only a thin, scarcely perceptible layer is left on the skin. Powder is often dusted over this layer of fat and serves to retain it.

In order to have the fat act more effectually on the skin or to prevent the soiling of the clothes and bed linen, the anointed spots are sometimes covered with light woollen stuff or doeskin. The hands are often oiled and then gloves drawn on and worn either all day or only during the night. The gloves, which should be suède or of doeskin, may be themselves treated with oil or a mixture of almond-oil and yolk of egg. In the first case, the glove is turned wrong side out and coated with a fairly solid salve. In the second, the glove is kneaded in the mixture and then kept in a cool place. The preparations of almond or other oily seeds are used either as washing agents or as combined washing and oiling agents. The almond powder and the thick almond paste are mixed with water and a thin paste made, which may be applied to the face and hands at night, and wiped off with a cloth or washed off with water in the morning.

Associated with the fat on account of its origin is

## GLYCERIN.

It is a clear, odorless, colorless, neutral, syrupy liquid, sweetish in taste, which dissolves readily in water, mixes with alcohol and etheric alcohol in all proportions, and is insoluble in ether, chloroform, and the fatty oils. In the saponification of the fats, which are glycerides of the fatty acids, glycerin is set free, and is found in the excess of lye in the soaps, and in water which has been used for washing. It is obtained for the most part by the breaking up of fats by means of over-heated steam, as in the manufacture of stearin candles. Glycerin is markedly hygroscopic, absorbing as much as fifty per cent of water from the air. It is of special importance on account of its physiological action. Rubbed briskly into the unbroken skin, it causes redness and burning, which is more severe in parts not covered by epidermis, as cracks and fissures in the skin of chapped hands. The burning is caused by the abstraction of water from the skin. Since it does not dry, and forms a regular slippery coating over the skin, it was used in practice, immediately after its introduction, to take the place of the oils. It permeates living animal tissues very readily, and makes these succulent and translucent. It is to be used for this purpose only conditionally, since in many cases not only is an eczema or chapping of the skin made worse, but even a naturally delicate skin is made rough, fissured, and lustreless. For many persons the inunction of glycerin is much more unpleasant than the inunction of oils. Many individuals bear it exceptionally well even on a diseased skin, and especially well when combined with oils or mucous substances.

Its employment for lessening the corroding action of soaps and as an ingredient of soap in general has been spoken of above. Aside from its peculiar cosmetic action, glycerin is much used in cosmetics as a non-drying menstruum in which a number of substances may be dissolved. If it be used alone for cosmetic purposes, it must be entirely pure, free from fatty acids, such as formic and butyric acids, and acrolein, and be applied much diluted. Its supporters say that under its use the skin takes on a high degree of flexibility, softness, and lustre, and that it frees the skin from dirt; they recommend its use as a washing and protecting agent when the

skin is raw, fissured, lustreless, and scaly, and when the lips and nipples are sore.

The manner in which glycerin is commonly used by persons who desire smooth hands is very rational. After washing, while the hands are still damp, diluted glycerin is poured on, and the hands are then dried.

℞ Glycerini, . . . . . ʒ vij.  
 Vitell. ovor., . . . . . ʒ vi.  
 M. S. Salve for chapped lips and hands (glyconin).

℞ Glycerini, . . . . .  $\frac{z}{3}$  xvi.  
 Aq. naphæ, . . . . .  $\frac{z}{3}$  viij.  
 Ol. neroli,  
 Ol. amygd. amar., . . . . . āā gr. vij.  
 M. S. To be rubbed on the hands.

℞ Tragacanth. pulv., . . . . . ʒ iij.  
 Aq. rosæ, . . . . . ʒ vi.  
 Glycerini, . . . . .  $\frac{z}{3}$  iss.  
 Tinct. benzoini, . . . . . ʒ iij.  
 Ol. aurant. flor., . . . . . gtt. v.

M. S. Glycerin paste to be used in place of soap for washing the face and hands (Hager).

℞ Ceræ flav.,  
 Cetacei, . . . . . āā ʒ i.  
 Ol. amygd., . . . . . ʒ vi.  
 Sodii bor., . . . . . gr. xvi.  
 Acid. benzoini, . . . . . gr. viij.

Sol. in

Glycerini, . . . . . ʒ ij.  
 Aq. destil., . . . . . ℥ xxiv.  
 Ol. rosæ, . . . . . gtt. ij.

F. massa mollis (Hager). S. For raw skin, fissures, and chilblains.

The glycerin is the important agent in the unguentum glycerini, which is prepared from tragacanth (German Phar.) or wheat starch and glycerin by warming. The irritating action of the glycerin is almost wholly wanting in this fine transparent salve. The following may be used for cosmetic purposes in the same manner as cold cream:

R Amyli, . . . . .	3 i.
Aq. rosæ, . . . . .	3 i.
Glycerini, . . . . .	$\frac{3}{4}$ ij.
Ol. rosæ, . . . . .	gtt. ij.
F. ungt. S. Glycerin cold cream.	

## ALCOHOL.

As a cosmetic agent to preserve the lustre and freshness of the skin, alcohol is valuable, almost indispensable. This is not true of absolute or slightly-diluted alcohol. Ethyl-alcohol undiluted extracts water from the skin and renders it dry and rough; it also dissolves the secretion of the sebaceous glands and so removes the fat of the skin and consequently its lustre. When the skin is washed with alcohol, its evaporation produces a pleasant feeling of cold. If its evaporation be prevented, it irritates the skin and reddens it. This condition of irritation may be intense, or may become an actual superficial dermatitis, since the alcohol is absorbed by the external skin and acts as a foreign body on the deeper layers. For this reason concentrated alcoholic fluids are seldom used as cosmetics, and only when the skin of the face is unusually oily, or to remove the sweat and fat from the hairy parts of the body. Dilute alcoholic fluids may be used as applications to contused spots; also to wash an eczema madidans and in habitual hypersecretion of sweat. Diluted with three or four times its bulk of water, alcohol serves as a beautifying agent for preserving a fresh and rosy complexion.

Pure alcohol is seldom used for this purpose, but usually it forms the menstruum for the perfumes of toilet-waters, and is occasionally used in the form of wine which is poor in alcohol. The employment of the latter, as well as of the more concentrated alcoholic fluids, is for the purpose of making the skin tenser and of increasing its tone. Bathing with cognac and eau de cologne is indicated in fainting, both because of their intense odor and on account of their tonic action on the skin. Bathing the eyes, cheeks, and wrists is always successful, except in very severe cases. When alcohol or alcoholic tinctures are used for washing, only a small quantity is poured into the water, so that the alcohol has but little effect; when

wine is used, the alcohol has a more considerable action. The action of the alcohol is only got in local bathing of the hands, the breast, the back, etc., with wine; with red wine the tannic acid present is also active. The accounts of the use of undiluted wine for full baths are merely legendary, as for example in the case of one of the most famous singers of our day, who talked of the champagne baths which she enjoyed in the time of her pregnancy.

### THE ALKALIES.

The only alkalies which have a cosmetic use are the oxyhydrates of potassium and sodium and the carbonates of these, and sodii boras in which the action of the acidum boricum is to be considered.

To this group belong also the combinations of potassium and sodium with sulphur, caustic lime, calcii sulphidum, and the soluble calcium salts, as well as the rarely-used ammonia combinations.

The action of the alkalies depends on their power of abstracting water from the tissue, of precipitating living albumin, of dissolving keratin, horny substances, and mucin, and of loosening and destroying tissue and even dissolving it.

The caustic action of the oxyhydrates of the alkalies and of calcium depends upon their property of abstracting water, and on the reaction to living albumin. They are, therefore, in a narrow sense, not cosmetics. The physician occasionally uses one of these agents for removing a wart or a corn, though more suitable remedies are mostly employed; but since unpleasant results may follow the application of dilute solutions of these for cosmetic purposes, it is well to say a word about their caustic properties. After their application the epidermis softens, and after a short time an eschar is formed much larger than the spot to which the agent was applied, since it flows freely; and with the formation of this eschar a severe burning is felt. When caustic lime is used the eschar is not so large. The oxyhydrates of the alkalies have the strongest caustic action; the simple carbonates act in a similar manner, but much less severely.

When, under the application of dilute alkalies, the outer layers of the epidermis become dissolved, further applications irritate the underlying tissues and cause a new formation of cells. Dilute alkalies may also saponify the fatty secretion of the skin and thus serve partly as a cleansing, partly as a curative agent, since they prevent the stopping of the sebaceous follicles and the formation of comedones. In many persons these will remove the oily gloss of the skin; and finally, by combining with free fatty acids they may remove the disagreeable odor of the sweat and other secretions of the skin. All these properties make these not only valuable cosmetic agents, but adapt them for preparatory treatment.

The caustic potassa and soda, on account of their strong caustic action, are to be applied only by the hand of the physician, and are even then but rarely used for the removal of warts and callosities. They are occasionally used diluted for the gradual removal of corns and pigment spots.

The alkaline carbonates, because of their lesser caustic action, are much more frequently used for cosmetic purposes. They serve to remove the fat from the skin and so prevent acne, and they remove also the fat from the hair. Since they cause swelling and casting off of the superficial layers of the skin, they are used to cure warts and corns, and are applied to thickened misformed finger-nails. They are also used for the removal of freckles and similar small pigment spots; they have, however, no bleaching action, and the cure, as with other agents, is apt to be merely temporary.

The continued use of the alkaline carbonates makes the skin and the scalp dry, rough, and sensitive, and the hairs become dry and brittle. They are, therefore, contra-indicated when the skin is delicate, thin, or sensitive. Cosmetic errors, such as dandruff formation, for which these agents are employed, may even be caused by them. The nature of the affection should first be considered.

℞ Potassii carbon.,	. . . . .	3 ss.
Tinct. benzoini,	. . . . .	3 iij.
Aq. rosæ,	. . . . .	ʒ iiiiss.

M. S. Add one tablespoonful to the wash water.

℞ Potas. carb., . . . . .	3 iij.
Aq. destil., . . . . .	℥ iiiss.
Ol. æth. cinnam., . . . . .	gtt. ij.
“ “ rosæ, . . . . .	gtt. i.

M. S. (Substantially the same as the proprietary remedy Lilionèse.) To be used with a damp sponge for hypersecretion of fat from the skin; useful in comedo and acne.

℞ Sodii carb., . . . . .	3 i.
Aq. rosæ, . . . . .	℥ iiiss.
Glycerini, . . . . .	℥ iss.
Extr. mille flor., . . . . .	gtt. x.

M. S. For washing the face when oily, and in acne.

℞ Potassii carb., . . . . .	3 ss.
Sod. silic., . . . . .	3 i.
Sapon., . . . . .	gr. xvi.
Muc. gum. arab., . . . . .	3 i.
Glycerini, . . . . .	3 iij.
Aq., . . . . .	℥ iiiss.
Ess. mirobolan., . . . . .	gtt. v.
Ol. neroli, . . . . .	gtt. ij.

M. S. Birch balsam (Dr. F. Lengyel's proprietary remedy).

℞ Potassii acet., . . . . .	gr. xvi.
Aq. destil., . . . . .	℥ iss.
Spir. vini rect., . . . . .	
Ol. rosæ, . . . . .	ad lib.

M. S. Kimball's remedy for freckles.

To this group belong a number of proprietary remedies which are in reality solutions of potassii carbonas, and are recommended as specifics against freckles, pigment and erythematous spots. The manner of their application is simple. Concentrated solutions are either added to the wash water or applied to the skin with a moist sponge. Dilute solutions can be used for washing the skin, or cloths dipped in these may be laid upon the skin and left there, perhaps, during the night; remedies for removing freckles are generally used in this way. This method may be used for the removal of corns and callosities if concentrated potash lyes are employed, if one does not prefer to remove these growths with pumice-stone dipped in lye, as many of the "corn operators" do.

With the potassa preparations should be classed the potassa crême (when it is not simple potash soap), which according to its concentration is numbered 1, 2, 3, 4.

℞ Glycerini, . . . . . ʒ iss.  
 Ol. rosæ,  
 Ol. flor. aurant., . . . . . āā gtt. ij.  
 Potassii carb. solut., . . . . . ʒ ss.— ʒ i.— ʒ ij.— ʒ iv.

M. S. Potassa crême (Kaposi). To be used in the form of poultices for freckles, etc.

℞ Pot. caust. fusi, . . . . . ʒ i.  
 Aq. dest., . . . . . ʒ ij.

M. S. Add to a quart of warm water, as a foot or hand bath in extensive callosities.

Aqua calcis acts in a similar way, but more mildly. Combined with equal parts of ol. lini or ol. olivar., it is a popular remedy for burns. In fissures of the skin and chapped hands it may be used as follows:

℞ Tragacanth. subt. pulv., . . . . . ʒ ij.  
 Glycerini, . . . . . ʒ iss.  
 Aq. calcis,  
 Aq. rosæ, . . . . . āā ʒ iiss.

M. S. To be painted on in the affections mentioned and in sore nipples.

The caustic lime is mixed with caustic potassa or used alone as a caustic agent on warts and pigment nævi, and occasionally for destroying large pigment blotches.

℞ Potas. caust. sicci, . . . . . ʒ ij.  
 Calc. ust., . . . . . ʒ i.

M. f. bacilli. S. Caustic points to be used on corns, etc.

℞ Calcar. hydr.,  
 Sapon. oleac. pulv., . . . . . āā ʒ i.  
 Spir. sapon., . . . . . ʒ ss.

M. f. pasta mollior. S. To be left on for eight to ten hours and then removed.

℞ Potassii carbon., . . . . . gr. xvi.  
 Borac. venet., . . . . . ʒ ss.

Solv. in

Aq. rosæ,  
 “ rub. idæi,  
 “ colon., . . . . . āā ʒ ss.

Filtr.; adde

Talc. venet., . . . . . ʒ iiij.

M. S. Lilionèse, another prescription (Neumann).

℞ Potas. carb., . . . . . ʒ iiij.  
 “ chlor., . . . . . ʒ iss.  
 Borac. venet., . . . . . ʒ ss.  
 Aq. rosæ,  
 “ naph., . . . . . āā ʒ iss.  
 Sacch. alb., . . . . . ʒ iss.  
 Glycerini, . . . . . ʒ i.

Filtra. S. Water for freckles.

℞ Sodii bor., . . . . . ʒ ss.  
 Aq. rosæ,  
 Aq. fl. naphæ, . . . . . āā ʒ iiiss.

M. S. Water recommended by Hufeland for freckles.

℞ Borac. venet., . . . . . ʒ i.  
 Ungt. emoll., . . . . . ʒ iss.

M. f. ungt. S. Cream for making the hands white and soft.

℞ Amygd. amar., . . . . . ʒ ij.  
 F. c. Aq. rosæ, . . . . . ʒ iiiss.

L. a. emulsio; adde

Sodii bor., . . . . . ʒ i.  
 Træ. benzoin., . . . . . ʒ iiiss.

M. S. Toilet water.

℞ Aq. fl. naphæ, . . . . . ʒ xxxiiij.  
 Glycerini, . . . . . ʒ iss.  
 Sodii bor., . . . . . ʒ iss.

M. S. Lotion à la glycerine (Piesse).

- ℞ Borac. venet., . . . . . ʒ i.  
 Potas. chlor., . . . . . gr. xvi.  
 Spir. resed., . . . . . ʒ ss.  
 Aq. rosæ,  
     " naphæ, . . . . . āā ʒ vi.  
 M. filtra. S. Water for freckles (Neumann).
- ℞ Amyl. oryzæ, . . . . . ʒ i.  
 Sodii bor., . . . . . ʒ iss.  
 Aq. colon., . . . . . q. s.  
 M. f. p. S. Powder.
- ℞ Borac. venet., . . . . . ʒ ss.  
 Lact. vaccin., . . . . . ʒ iiss.  
 Extr. de roses-thé, . . . . . gtt. x.  
 M. S. Milk for washing the face at night.

Borax is one of the best cosmetic agents. Its advantages consist not only in its entire harmlessness, but also in its very mild action, which, though similar to that of the dilute alkaline carbonates, has still an individual action like that of a neutral soap. Washing with solutions of sodii boras is almost never contra-indicated. To obtain the desired effect, a solution as nearly concentrated as possible should be used. It dissolves in twelve to fifteen parts of cold water. It is pencilled on the skin and left to dry, or fomentations are made with it. For the cure of ephelides, or of moderate seborrhœa of the face, one of the previously-mentioned waters should be used. In hyperidrosis, cold applications of five to eight per cent solutions of sodii boras, foot-baths with this, and the use of a powder like the following are recommended:

- ℞ Alumin. plumosi, . . . . . ʒ iv.  
 Sodii bor. pulv., . . . . . ʒ i.  
 M. S. Dust into the stockings.

Salves of borax are indicated when the skin is dry and cracked and when there is visible exfoliation.

#### ACIDS.

The agents previously mentioned are mostly cleansing agents; they may have at times, however, a curative action also. The acids are not indifferently-acting substances, and

most of them require care in their employment, although many have long been used by the laity for cosmetic purposes. In the local application of the acids, the degree of concentration is of importance. Concentrated mineral acids coagulate the albumin, abstract water from the tissues, oxidize and destroy them more or less deeply and extensively.

The destroyed tissue and the combinations which the acid makes with it form at the spot of application an eschar, which varies with the different acids. Organic acids have a similar effect. The eschar after the use of acidum sulphuricum is moist and brown; bright yellow and dry after acidum nitricum; yellowish-brown and dry after acidum chromicum. Lactic acid produces a gray or brown moist eschar; the acetic acids a white eschar, often red or brown on its surface from superficial extravasations of blood. Acidum salicylicum forms a white eschar, and phenol, which may be put here on account of its similar action, forms a white eschar, later becoming leathery-brown. The color of the eschar is to be considered when applications are to be made to the face or scalp. The acids are used for the removal of *nævi*, warts, callosities, and papillomata. After their careful application, only superficial cicatrices remain. Care must be taken of the surrounding skin when fluid mineral acids are employed, and this must be protected by plaster, or the fluid must be dropped a drop at a time on the spot wished and not be allowed to spread. In this manner are to be used concentrated acidum sulphuricum, fuming acidum nitricum, acidum lacticum, acidum aceticum, acidum carbolicum, and crystallized acidum chromicum or concentrated solutions of the latter. In using concentrated solutions of acidum salicylicum, the healthy skin must be protected, since this, like the other acids mentioned, irritates the skin and causes inflammation and the formation of vesicles.

These unpleasant symptoms are often observed after the use of tourist's plaster (salicylate adhesive plaster), or salicylate gutta-percha plaster, when the corn or callosity is not so much affected as the surrounding skin, which is raised in the form of a white blister.

Intelligently applied, acidum nitricum and acidum chromicum, as well as acidum lacticum and acidum aceticum, act mildly.

For caustic purposes these acids are applied with a glass

rod, *e.g.*, acidum sulphuricum, or with a stick, *e.g.*, acidum nitricum, or are made up into the form of convenient pastes and salves. Such are the mixture of concentrated acidum sulphuricum with carbon, the acidum sulphuricum solidificatum, jestingly called by Ricord *pâte d'amandes douces*, and a mixture of acidum nitricum with oil or *adeps oleum*, unguentum oxygenatum. Acidum chromicum is to be applied in crystals or in very concentrated aqueous solution; acidum lacticum and aceticum are to be used pure; acidum salicylicum in concentrated alcoholic solution or in collodion or gutta-percha plaster mull (20, 40, 50%).

℞ Acidi chromici, . . . . . 3 iss.  
Aq. destillat., . . . . . 3 iij.

M. S. Apply with a glass rod to flat warts.

℞ Acid. salicyl., . . . . . 3 i.  
Alcoh. absol., . . . . . 3 v.

M. S. To be painted on *nævi* with a brush.

As to the manner of application, it should be said that corns and callosities are first to be softened by warm baths, soda or potash being added in some cases, then loosened with a dull knife, and finally acidum salicylicum or aceticum applied with a brush.

The loosening of the horny layers and the caustic effect are both gotten by the employment of acidum salicylicum in plaster form; after a few days of such application the warts may be lifted off, together with the plaster.

The acids are more extensively used largely diluted. Acidum boricum, tartaricum, and citricum are used in both concentrated and dilute solutions. Continued washing with these removes the fat from the skin, dries the epidermis, and makes the skin rough, dry, and fissured; longer application of stronger solutions causes superficial reddening of the skin and slight burning; when used for a short time only they act as astringents, increase the tone of the skin, and contract the superficial vessels.

These acids also lessen the secretion of the sweat glands, and prevent in part the decomposition of the sweat, thus preventing the odor.

They are used in practice to remove erythematous spots from the skin of the face, hands, and feet. The oldest and most

useful of these agents is vinegar; the toilet vinegars, *aceta cosmetica*, *vinaigres de toilette*, are important agents in perfumery. The vinegar in perfumes, however, has little specific effect; in the concentration which is generally used, little more is noticed than the stimulating odor.

Even in these small quantities, such as a teaspoonful to a basin of water, they have a certain therapeutic value when used daily, since they have an astringent action on the skin. For this reason, blondes with a fine and sponge-like skin prefer these to eau de cologne, which, as a rule, is chosen by brunettes with a warmer and stronger complexion.

Toilet vinegars are usually bought from the perfumers; they may, however, be prescribed by physicians and prepared by the apothecaries. The first requisite of a toilet vinegar is that it must be pure and good, free from acetone and other impurities. Either vinegar or *acidum aceticum* may be used. This requirement is fulfilled by mixing dilute *acidum aceticum* with rose or orange-flower water. *Acidum aceticum* in alcoholic solutions of ethereal oils, or resinous and balsamic substances, may be used as toilet vinegar; the ethereal oils and balsams dissolved in glacial acetic acid may be added to the vinegar. The vinegars prepared with ethereal oils and balsams are made cloudy by adding water, and form fluids similar to emulsions (*lait virginal*).

℞ Bals. peruv., . . . . .	3 i.
Tinct. benzoini, . . . . .	3 i.
Bals. vit. Hofmanni,	
Spir. vini dil., . . . . .	āā 3 viij.
Aq. rosæ, . . . . .	3 v.
Acid. acet. dil., . . . . .	3 ij.

Macera p. hebdom.; filtra. S. Vinaigre de toilette (Hager).

℞ Acid. acet. conc., . . . . .	3 ij.
Træ. lavand. angl., . . . . .	gr. xvi.
“ rosmarini angl., . . . . .	gr. viij.
“ caryophyll., . . . . .	gr. viij.
Camphoræ, . . . . .	3 ij.

M. S. Vinaigre aromatique (Piesse).

℞ Aq. coloniens., . . . . .	3 xv.
Acid. acet. conc., . . . . .	3 ss.

M. S. Vinaigre de Cologne.

℞ Spir. vini rect., . . . . .	℥ x.
Resin. benzoini, . . . . .	℥ i.
Acet. arom. conc., . . . . .	℥ ij.
Bals. peruv., . . . . .	℥ ij.
Tinct. neroli, . . . . .	gtt. viij.
Tinct. nuc. mosch., . . . . .	gtt. viij.

M. S. Vinaigre cosmétique (Lubin).

℞ Fol. menth. pip.,	
" rosmarini,	
" salviæ, . . . . .	āā ℥ i.
Rad. angelic.,	
" zingib.,	
Caryophyll., . . . . .	āā ℥ i.
Aceti, . . . . .	℥ iiiss.

Mac. p. 3 dies in vas. bene clauso. S. Acetum quatuor  
latronum s. aromaticum (Austrian Phar.).

℞ Bulb. narciss., . . . . .	℥ iss.
Semin. urtic., . . . . .	℥ i.
Aceti, . . . . .	℥ xxxiij.

Mac. p. 3 dies, exprime; filtra. S. Vinaigre déterrif (Débay).  
For acne pustules of the face.

In order to remove blotches from the skin, these vinegars must be pencilled on undiluted, rubbed in, or used as applications. In place of these, lemon juice has long been used, which is painted on, or fresh slices of lemon are laid on the erythematous spots, chilblains, and freckles, and left during the night; dry, scaly eczema of the face is also treated in this way with good results.

Washing with acidum hydrochloricum or nitricum is also of service in these cases. James has used the former in the treatment of erythematous blotches and the various sorts of acne of the face. He uses for this purpose the liqueur styptique, a mixture of acidum hydrochloricum, alcohol, aqua rosæ and a gum, which is pencilled on the affected spot and lightly wiped off again with a bit of cotton, so that only a thin layer remains. The itching caused by this ceases in a few seconds, and the redness does not last over a half-hour. The spots are considerably paler even on the following day. In a similar manner Hebra, junior, used a two to five per cent solution of

acidum salicylicum or carbolicum; an equally strong salve of acidum salicylicum may be rubbed on the spot in the evening. The form of acid employed must vary according to the nature of the healthy skin of the individual. Acidum salicylicum is a less irritating agent than acidum carbolicum and tar preparations, in cases where formerly the latter were used, as in moist eczema of the face. According to Unna it has a marked dermoplastic action; it irritates, and stimulates in this way the new formation of the cellular elements of the cutis. The irritation which it produces prevents its extensive use as a cosmetic in the form of toilet water.

If the skin be once injured in this way by the acid, the further application of it is very painful. On the other hand, the removal of freckles and ephelides is only to be expected after an intense application of the acid. By rubbing the skin with alcoholic solutions of acidum salicylicum, it is inflamed, the superficial layers are cast off, and the spots vanish for a time.

℞ Acid. muriat., . . . . . 3 ss.—3 iiss.  
 Alcohol,  
 Aq. rosæ, . . . . . āā ʒ i.  
 Muc. gumm. arab., . . . . . ʒ i.

M. S. Liqueur styptique, after James. The weaker solutions are to be employed in the manner described for erythematous blotches, the stronger solutions for acne rosacea every second or third day. For the intervals the patient should wash with weakly alkaline water.

℞ Acid. salicyl., . . . . . 3 ss.—3 iss.  
 Spir. vini conc., . . . . . ʒ iiss.  
 Træ. neroli, . . . . . gtt. iv.

M. S. Erythematous patches on the face are to be rubbed with a bit of cotton dipped into the solution, and then sprinkled with powder.

℞ Acid. salicyl., . . . . . 3 ss.  
 Cold cream, . . . . . ʒ iiss.

M. ft. ungt. S. A salve for erythema and light moist eczemas of the face. To be used after washing with soap, and to be followed by the dusting on of powder.

Partly on account of their anti-putrid properties, partly because of their sharp odor, the acids are used to prevent and

conceal the odor of local sweating. They are also used on the overheated skin, as in insolation, when there is no secretion of sweat, to replace this in cooling the skin and making it pale. Washing with dilute vinegar moderates the secretion of sweat and removes its odor if this be not too intense.

If the odor be very bad, or there be abundant secretion of sweat, as in the axillæ, on the feet, and about the genitalia, these washings are not sufficient. The opinion commonly held by women that highly perfumed toilet vinegars are to be used in such conditions is very erroneous. Apart from the ineffectiveness of the procedure against the hypersecretion, the mixture of the odor of the sweat and that of the perfume is unbearable, and the suspicion is at once aroused that the strong odor has been employed to conceal an offensive one.

Especially unpleasant for the patient and for his associates is the abundant sweating of the feet, which, as already said, is often offensive and a frequent subject of cosmetic treatment. Apart from other remedies which are used in local sweating, there are some acids in general use. These are acidum sulphuricum, acidum tartaricum, and acidum salicylicum. The first is used in the form of a foot-bath; acidum tartaricum is used as such or as cream of tartar, by itself or mixed with an indifferent powder, such as amyllum and alumen plumosum, or in the form of a solution in which the feet are to be washed. The stockings may also be soaked in this solution and worn when dry.

The surest acting for sweating of the feet and axillæ is the acidum salicylicum, which is included in the official sweat powder of the German Pharmacopœia, pulvis salicylicus cum talco. In later times, washing with acidum chromicum has been recommended, not only, like the other agents mentioned, as a palliative remedy, but for the definite cure of the sweating. The experience with this remedy is still too limited to allow of a definite decision regarding it; the toxic properties of the acidum chromicum must not be forgotten, and it must not be used where there are breaks in the skin, or in too concentrated solutions, which may cauterize. If the agent be used cautiously and according to the rules which serve for the treatment of hyperidrosis in general, with cleanliness and frequent changing of the clothes, it must be followed by good results.<sup>28</sup>

℞ Acid. sulphur., . . . . . ʒ iss.  
 Aq. calidæ, . . . . . Ovi.

M. S. Foot-bath for sweating of the feet. The feet should remain ten minutes in the bath, which is to be repeated every third or fourth day.

℞ Acid. salicyl., . . . . . ʒ i.  
 Amyl. tritici, . . . . . ʒ iiij.  
 Talc. præp., . . . . . ʒ iiij.

M. S. Pulv. salicylicus cum talco (German Pharm.).

℞ Potassii tartratis, . . . . . ʒ vi.  
 Talc. venet. præp., . . . . . ʒ iiij.  
 Træ. lavandul. angl., . . . . . ʒ ss.

M. S. Sweat powder.

℞ Acid. salicyl., . . . . . ʒ ss.  
 Talc. pulv. alcohol., . . . . . ʒ iiiiss.  
 Ol. rosæ, . . . . . q. s.

Ad odor.

M. S. Powder for local sweating, better than the official.

℞ Acid. chromici, . . . . . ʒ ij.—ʒ iiij.  
 Aq. destill., . . . . . ʒ iiiiss.

M. S. To be pencilled before going to bed on the feet previously washed and dried, and when necessary repeated after eight to fourteen days. One should commence with the weaker solution.

Acidum boricum takes a position among the acids similar to that of sodii boras among the alkalies. It produces neither the cauterization nor the irritation which the other acids do. Acidum boricum may be applied to the skin in any form whatsoever, for as long a time as necessary, without producing any injurious effect. Its action is similar to that of the soaps, but much milder, and it may be used as well in acute hyperæmia as in chronic inflammatory conditions of the skin. It may be given with good effect in erythema, in hypersecretion of the sebaceous glands, and in hyperidrosis. The form in which it is to be applied depends here also on the condition of the healthy skin. It is not used often enough for cosmetic purposes, perhaps because it is so insoluble, requiring three parts of boiling or twenty-six parts of cold water for its solution.

℞ Acid. borici, . . . . . ℥ij.  
 Aq. rosæ, . . . . . ʒ iiii.

M. S. For application in erythema, small compresses are to be dipped in the fluid, and left over night on the reddened places.

℞ Acidi borici, . . . . . ʒ iss.  
 Lanolini,  
 Ungt. emoll., . . . . . āā ʒ i.

M. ft. ungt. S. For sunburnt skin it is to be spread on cloth and applied.

℞ Acid. borici, . . . . . ʒ iss.  
 Vaselini,  
 Empl. diach., . . . . . āā ʒ iij.

M. f. emplast. S. For a similar purpose on skin less sensitive.

Although chemically they do not belong here, we shall speak of some substances containing acidum tannicum, and some allied to acidum salicylicum.

The substances containing tannin, as whose representative we must take tannin itself, acidum tannicum from galls, produce, in a manner not satisfactorily explained, a thickening of the skin similar to that produced in the skin of dead animals by tanning. This thickening is the most important element in the astringent action of tannin on the superficial vessels, although it probably also affects these directly. Hypersecretion is affected in different manners by acidum tannicum. It is used in chronic hyperæmia with relaxation of the tissues of the skin—*e.g.*, in chronic erythematous blotches, in chronic inflammatory chilblains, in seborrhœa and hyperidrosis. It has also been used in teleangiectases and varices, and in superficial excoriations. In the latter case its action depends on the protecting covering formed by the coagulation of the albumin. Its application is somewhat restricted by the fact that the portions of the skin so treated turn dark brown or black under the influence of air and light.

Tannin, and less frequently oak bark and galls, are prescribed in aqueous solution, in alcohol, glycerin, collodion, and in salves and soaps. The latter, *sapo tannini*, should be

made from one part tannin and nine parts soap, and is recommended as a wash in intertrigo.

℞ Acid. tannici, . . . . . gr. xvi.  
 Spir. vini rect.,  
 Glycerini, . . . . . āā ʒi.  
 Aq. destil., . . . . . ʒ iss.  
 M. S. To be used with a sponge in seborrhœa.

℞ Acid. tannici, . . . . . ʒi.  
 Sulph. præc., . . . . . ʒij.  
 Ungt. emoll., . . . . . ʒij.  
 M. S. To be rubbed on blotches in the skin.

Phenol and its contained tar, allied to the acidum salicylicum, have, as is well known, the property of moderating inflammatory symptoms of the skin and of contracting the vessels of the skin.

β Naphthol, lately introduced, seems analogous in its action. These substances may then be used for the same cosmetic errors as the acidum salicylicum—*i.e.*, in hyperidrosis and in seborrhœa, in a fitting form of application. The odor of acidum carbolicum unfits them for many purposes; for others, such as sweating of the feet, it makes them more useful. Naphthol does not irritate the skin, and is especially good in many cases.

℞ Acid. carbol., . . . . . ʒ iij.  
 Spir. vini rect.,  
 Aq. destil., . . . . . ʒ viij.

M. S. For washing the feet.

℞ β Naphtholi, . . . . . ʒ iij.  
 Spir. vini gall., . . . . . ʒ vi.  
 Spir. colon., . . . . . ʒ i.

M. S. As a wash in sweating of the soles and palms (Kaposi).

℞ β Naphtholi, . . . . . gr. xvi.  
 Amyli seu talci veneti, . . . . . ʒ iiiss.

M. S. Powder for sweating of the feet.

Following these are a number of substances frequently used for cosmetic purposes, whose action resembles the action of the foregoing agents on the skin. These are the

## BALSAMS AND RESINS.

Although cosmetically these are mostly used on account of their pleasing odor, they still have an action of their own. This is due partly to the resinous acids and ethereal oils, and partly to the carburetted hydrogens contained in them. The least active are the resinous acids. The ethereal oils, on the contrary, so far as they do not act as agents improving the odor, have an irritating action on the skin and cause redness, and even, in some cases, dermatitis. Used in a proper dilution they stimulate the skin moderately, and cause an increased circulation of the blood, by which the skin is reddened slightly and made tenser—*i.e.*, its tone is increased.

The action of tar may be taken as a type of that of the hydrocarbons contained in a number of balsams. The action in some cases is one directly opposed to that of the ethereal oils. In many cases of chronic or subcutaneous hyperæmia of the papillary layer, tar acts as a direct astringent to the vessels and destroys them. In a manner similar to tar, acts also the creosote contained in it, which is regarded as an astringent disinfecting agent, which dissolves the superficial layers of the skin.

After tar, come Peru and tolu balsam, fluid storax, benzoin, myrrh, and other resins.

Tar, beech tar (*P. liquida*), is a thick, oily, black fluid of peculiar odor, obtained by dry distillation of beech wood. In place of this is often used cade-oil (*oleum juniperi empyreumaticum*), yellowish-brown, of disagreeable odor, and birch tar (*oleum rusci*), reddish-brown, thinly fluid, and having the odor of Russia leather.

Peru balsam is a thick, reddish-brown or black fluid of pleasant, vanilla-like odor. The semi-fluid, bright yellow tolu balsam has a similar odor.

Benzoin is a fragrant, reddish-gray, resinous mass, in which almond-formed, milky-white resinous bodies are deposited.

Apart from the uses which tar and similar substances find in a great number of severe skin diseases, tar is an excellent remedy for many forms of hyperæmia of the skin, such as chilblains, and for exfoliation of the skin, for seborrhœa, and often for simple itching. It may also be remarked that all the substances of this group are very excellent anti-parasitic reme-

dies. The other balsams may be used for the same purposes as tar, being much milder, less caustic, and less inclined to cause itching. They are often applied as a protection to slightly excoriated spots, and in cracked and fissured skin.

It cannot be said that the resins and balsams may be used unconditionally. They are often followed by results particularly unpleasant from a cosmetic standpoint. Tar is here also more marked in its action than the others. While it is capable of curing hyperæmia in some cases, there are skins which have such an idiosyncrasy against it that its use causes even a local inflammation. When tar is used on hairy parts a tar acne often follows, which consists of hard, inflammatory elevations with a black centre. The possibility of the absorption of the tar and of intoxication following its use should be borne in mind.

The other resins (in alcoholic solution) and balsams also, if used too long, may injure the skin by becoming deposited in the creases and in the ducts of the sebaceous glands, thus causing the formation of comedones and making the skin rough and scaly. This depositing of the resin in the creases is intended, when this is used for concealing the wrinkles, a mechanical filling of the depressions taking place. In this manner benzoin and myrrh are used, it being formerly believed that if the face were smoked with the latter evenings after washing, the formation of wrinkles would be prevented.

The substances mentioned are seldom used alone, but generally in solutions and pomades, and frequently combined with other agents of energetic action. A very popular form is that of lait virginal (*lac virginis*), which is made by mixing alcoholic tinctura benzoini with water, and from the precipitation of the resin in fine drops it forms a milky emulsion-like fluid. In this manner vinaigre virginal and numerous other milky cloudy fluids may be produced by diluting resin or balsam solutions (in alcohol or acidum aceticum) with water. Such mixtures may be used of course as menstrua for active substances. This is generally the case with the cosmetic fluids (*laits*) of this sort in the market, which usually, besides the resin, contain salts of lead and mercury. Very often toilet waters of this sort are only cloudy, aromatic solutions of plumbi acetat, or soap emulsions, which contain this or other injurious preparations of lead. Although the unadulterated

lait virginal, as said before, may injure the complexion when used for a long time, it is a very innocent toilet water in comparison with these other preparations.

In preparing toilet waters of this sort, which may be done at home, the resin solutions are to be added gradually to the water and shaken continually.

℞ Tinct. benzoini, . . . . . ʒ iiss.  
Aq. rosæ, . . . . . ʒ iiiss.

M. S. Lait virginal.

℞ Tinct. bals. tolut., . . . . . ʒ ss.  
Aq. rosæ, . . . . . ʒ vi.

M. S. Lait virginal à la rose.

℞ Tinct. benzoini, . . . . . ʒ ij.  
Aq. flor. sambuci, . . . . . ʒ viij.

M. S. Extrait de fleurs de sureau (Piesse).

℞ Træ. benzoini, . . . . . ʒ i.  
Potas. carbon.,  
Spir. camphor., . . . . . āā gr. xvi.  
Aq. coloniens., . . . . . ʒ viiss.  
Tinct. ambr. mosch., . . . . . ʒ iv.

M. S. Eau de princesse.

In a similar manner, lait virginal is to be prescribed together with some other distilled water, such as aq. naphæ. In order not to do harm, it is so prescribed that one or two spoonfuls may be put into the wash water. Exceptionally, when active substances have been dissolved in the milk, it may be pencilled on or used as an application, like the eau de princesse just given. The following mixture may be pencilled on chilblains:

℞ Bals. Peruviani, . . . . . ʒ i.  
Mixt. oleosobalsam.,  
Aq. coloniens., . . . . . āā ʒ i.

M. S. For external application (Rust).

This agent may also be combined with soap, as for example:

℞ Sebi bovini,  
 Picis nigr.,  
 Liq. sod. caust., . . . . . āā ʒ vi.  
 Calefac, coque ad spissit. Sapon. pond., . . . ʒ iss.  
 M. S. Tar soap (Auspitz).

℞ Sebi bovini,  
 Ol. cocois, . . . . . āā ʒ iiiss.  
 Liq. potas. caust. sp. gr. 1.45, . . . . . ʒ vi.  
 Calefac f. sapo cui adde  
 Pulv. lapid. pumicis, . . . . . ʒ iiiss.  
 Creosoti puri, . . . . . ʒ ij.  
 Ol. cinnamomi, . . . . . gr. xvi.  
 Ol. citri, . . . . . ʒ ss.  
 F. frust. pond., . . . . . ʒ ij.  
 S. Creosote soap (Auspitz).

This creosote soap is at the same time a pumice-stone soap, and may be prescribed as such without the creosote. A benzoin soap has already been mentioned. In the application of this, the action of the soap should not be lost sight of, and with the tar soap, the possibility of the unfavorable action of the tar. Many of these substances may also be prescribed in the form of pastes or powders and be used as washing agents.

℞ Amygd. dulc., . . . . . ʒ i.  
 “ amar., . . . . . ʒ iiss.  
 Bals. peruviani,  
 Mellis albi, . . . . . āā ʒ i.

M. ft. pasta. S. A piece as large as a hazel-nut should be rubbed with water in the hand and then on the face and hands. For removing wrinkles.

℞ Benzoini, . . . . . ʒ vi.  
 Sapon. domest., . . . . . ʒ ij.  
 Sodii bor.,  
 Sodii carb., . . . . . āā ʒ iiiss.  
 Rhiz. ir. flor.,  
 Talci veneti, . . . . . āā ʒ ij.  
 Ol. bergam., . . . . . ʒ ij.

M. f. pulv. subtilis. S. To be used in the wash water in cases of comedones (Hager). The sodii boras and the sodii carb. are here the active ingredients.

Ichthyol should be mentioned here. This is a fluid oil obtained by the dry distillation of a bituminous mineral of Tyrol, or in a narrower sense the salts of the sulphichthyolic acid contained in the oil. Formerly ammoniæ hydrochloras was improperly called ichthyol. This is a repulsive smelling and appearing substance which probably has the action described by Unna, and on this account is not adapted for cosmetic purposes. Ichthyol is but seldom employed with us. The following mixture might theoretically be prescribed for pigmentation of the skin:

℞ Ammon. sulfoichthyol.,  
 Bol. rubr.,  
 Træ. curcumæ, . . . . . q. s.  
 Ut f. pasta.

This paste is meant to exclude the chemical effect of the light. Since, as said before, the ephelides are at least not entirely due to the action of the sun, this paste will not have a more marked effect than sulphur-tar pastes, which are often of value in cases of pigmentation, and to which the ichthyol is allied.

#### AGENTS IRRITATING THE SKIN.

The agents coming in this category act mostly by producing first a hyperæmia of the skin, then, if continued, a dermatitis, and finally a deep ulcer. Many of these are used in therapy merely as skin irritants. If the action stops at the hyperæmia, as with veratrine, and with the cosmetic agent tinctura veratri albi, there is no objection to the application of these, since, apart from the general action, which can easily be prevented, there are no bad effects to be feared. For this reason the results obtainable are very slight, for since these agents affect only the sensory nerves of the skin and the superficial vessels in a transitory manner, the removal of pigment spots, for example, is impossible.

It is otherwise with the application of such substances as may cause dermatitis and the formation of vesicles. In this case the skin is destroyed down to the corium, and the pigment masses collected there are also destroyed. Agents like cantharides, mezereum, croton oil, and mustard oil, might be used for destroying new growths and pigment spots, if it were not known that after this destruction great collections of pig-

ment form in the new rete Malpighi. We have seen before that this new formation of pigment caused these agents to be used when there was a lack of pigment in the skin, as in small circumscribed vitiligo spots; yet this employment has the disadvantage that the new-formed pigment varies both in quantity and kind from the normal. This is least the case with mustard oil, which, because it has a transitory reddening effect on the skin that is not injurious when small quantities are used, is often employed to redden the face and hands. For this purpose a solution of ethereal mustard oil 1:250 in water or dilute alcohol is sufficient. For the removal of freckles stronger solutions must be used.

℞ Spir. sinapis,  
 Aq. coloniensis, . . . . . āā ʒ i.  
 Aq. rosæ, . . . . . ʒ iiiss.

M. S. To be painted on the freckles.

℞ Sodii bor. pulv., . . . . . ʒ i.  
 Acid. salicyl., . . . . . ʒ ss.  
 Aq. ros.,  
 Aq. flor. aur., . . . . . āā ʒ iiss.

Liqu., filtr., admisce

Tinct. benzoini,

Bals. vitæ Hoffm.,

Spir. sinapis, . . . . . āā ʒ i.

M. S. Shake. Parisian water for freckles (Hager).

In this mixture the sodii boras and the acidum salicylicum are the chief active substances. Mixtures of mezereum and croton oil might be used, but are not to be recommended. Cantharides is also unadapted for this purpose. Since the last-named agent may cause a more or less deep destruction of the skin, it can be employed for the removal of warts, corns, etc.

℞ Empl. plumbi comp., . . . . . ʒ iss.  
 Empl. galbani, . . . . . ʒ iiij.  
 Picis naval., . . . . . ʒ i.  
 Ammon. muriat. subt. pulv.,  
 Æruginis subt. pulv., . . . . . āā gr. xxv.  
 Cantharidum, . . . . . gr. xvi.

M. ft. empl. S. Corn plaster (Hager).

## IODINE PREPARATIONS.

In its action on the skin, iodine resembles the last-named agent. If iodine be applied to the skin, immediately if the solution be concentrated, after a time if it be dilute, the skin takes on a yellow or dark brown color, which may be removed by the alkalies while it is still fresh, but which, if not disturbed, continues until the superficial layers of the epidermis are cast off. If iodine be used in substance and its evaporation be prevented, there is produced a dermatitis with the formation of vesicles and a pricking, burning pain. This pain and the dermatitis frequently do not come on after a single application of dilute iodine solution; but after repeated pencillings a more or less severe pain comes on, and a great vesicle is formed over the whole extent of the surface pencilled. If the application be now suspended, the elevated superficial skin, with the exudate, dries to a parchment-like elastic sheet, beneath which the delicate new-formed epidermis presents itself. If the application be continued after the formation of the vesicle, the dermatitis may increase and, extending into the corium, cause a very painful, slow destruction of the skin. Iodine then, in small quantities, diluted, and used for a short time, acts as a slightly irritating agent to the skin, which may relieve a superficial hyperæmia in a relaxed and loosened skin; in larger quantities, applied more concentrated or for a longer time, it acts as a destructive agent on the superficial layers of the skin. For our purposes, the action of iodine and its preparations in hastening absorption is of no importance. As a gently stimulating and detergent agent, iodine may be used in cases of chilblains which show dilated vessels in a relaxed, scaly and bluish-red skin.

℞ Træ. iodi,

“ gallar., . . . . . āā 3 iiiss.

M. S. To be pencilled on chilblains.

℞ Iodi, . . . . . 3 i.

Collodii, . . . . . ʒ iiiss.

M. S. Iodine collodion. To be used like the preceding.

℞ Tinct. iodi, . . . . . ʒ iiij.

Liq. sodii chlor., . . . . . ʒ i.

M. S. Like the preceding.

℞ Iodi, . . . . . ʒ ss.  
 Glycerini, . . . . . ʒ iiiss.  
 M. S. Like the foregoing.

For this purpose a combination of iodine and tannin may be used, or a tinctura iodi decolorized by sodii hyposulphis. In this tinctura iodi decolorata, it is no longer the iodine, but the hydrate of iodine, which is the active agent, but this has the same effect on the skin as the former. Cotton wool dipped in liquor iodi compositus may also be applied to chilblains. The deeper action of iodine makes it useful for the destruction of pigment. For the removal of freckles either the tincture or a concentrated solution may be applied until a vesicle is formed, the surrounding skin being protected. The freckles disappear with the casting off of the old epidermis.

℞ Iodinii,  
 Potas. iodati, . . . . . āā ʒ i.  
 Glycerin., . . . . . ʒ ij.  
 M. S. To be pencilled on the skin (Kaposi).

This treatment is also of advantage in acne which has arisen from comedones. A delicate, sensitive skin contra-indicates the use of iodine. It is further to be looked to that after the energetic application of iodine dark diffuse pigment spots do not remain.

#### SULPHUR AND ITS PREPARATIONS.

Sulphur is one of the most important agents in the therapy of skin diseases, and especially in cosmetics. Very little, however, is known of its action; this is only to be learned by its effects. If powdered sulphur be brought in substance into contact with the skin, it produces no effect; if it be energetically rubbed in, alkaline sulphites are formed and it acts like these. That such a process must occur is shown by the fact that after rubbing in pure sulphur salve, the odor of hydrogen sulphide is perceived. The fact that the sulphur has a more intense effect on the skin when it is applied combined with alkalies, also speaks for the action of the sulphur as an alkaline sulphide. In the other manners of its application in which the sulphur is mixed with alcoholic or acid fluids, these form

merely the vehicle, and its action in these mixtures depends on the manner and the period of its application. While the alkaline sulphides formed have in general an action on the epidermis similar to that of the caustic alkalies, since they swell and dissolve the horny substance, this is not exactly the case with the alkaline sulphides, which are first formed on the skin. These act much more mildly, although they have a certain action in contracting the vessels of the skin. Because of this action, sulphur is used in all those cases in which it is wished to destroy the epidermis to a certain depth; further, in abnormal exfoliation of the epidermis, in seborrhœa, and in certain affections of the skin which are associated with dilatation of the capillaries and increased vascularity. If a more intense action be desired, either alkaline sulphides or a mixture of sulphur with alkalies would be used; if a milder action be wished, the application of sulphur alone is often sufficient.

For this purpose pure sulphur is used in the form of milk of sulphur, a fine, yellowish amorphous powder, which is obtained by precipitating a solution of *calcii sulphis* with acids. In place of this, when a more extensive action is desired, *calcii sulphidum* or *sodii hydrosulphydras* is used. The latter is used in the form of a solution. Pure sulphur is used either shaken in alcohol, or made into a paste with acids, or mixed with alkaline fluids.

The manner of its application is as follows: Solutions of alkaline sulphides are used as applications, and where a more intense action is desired, rubbed in with a stiff brush. Sulphur pastes are rubbed into the skin or spread on cloths and applied. Mixtures which contain only sulphur as an active agent are applied directly to the skin after being shaken; those which contain also soaps or alkalies are either applied in the same manner or only so that the precipitate from the fluid is applied to the skin. The sulphur should be left some time on the skin, and the following day, perhaps, wiped off with a cloth. If alkaline sulphides or sulphur in conjunction with alkalies are used, there is generally a slight inflammation or a hyperæmia of the skin produced, which must be treated with indifferent salves, powders, and the like. It goes without saying that when sulphur is used, metallic substances are not to be employed on the skin at the same time, or dark-colored sulphur combinations will be formed.

As examples of the methods of prescribing sulphur, the following may serve:

R Sulphuris loti, . . . . .  $\frac{3}{4}$  ss.  
 Ol. amygd. dulc., . . . . . 3 iij.  
 Axung. benzoini, . . . . .  $\frac{3}{4}$  i.  
 M. S. Sulphur pomade (Dorvault<sup>29</sup>).

R Sulphuris sublimati, . . . . . 3 ss.  
 Glycerini, . . . . . 3 iij.  
 Spir. camph., . . . . . 3 i.  
 " lavand.,  
 Aq. coloniens., . . . . . āā 3 iij.  
 Aq. destil., . . . . .  $\frac{3}{4}$  iv.

M. S. Shake and pencil on the skin or add to the wash water (Hager).

There are a great number of prescriptions for this justly popular remedy; those already given contain but little sulphur. The following are more adapted for an energetic treatment, because of the greater amount of sulphur contained and on account of the addition of lime:

R Sulphur. præcip., . . . . . 3 iiiss.  
 Camphor., . . . . . gr. xvi.  
 Mucil. g. arab., . . . . . 3 iss.  
 Subige, admisce  
 Aq. calcis,  
 Aq. rosæ, . . . . .  $\frac{3}{4}$  iiiss.  
 M. S. Like the foregoing.<sup>30</sup>

R Sulphur. præcip.,  
 Glycerini,  
 Spir. vini dil.,  
 Potas. carb.,  
 Ætheris, . . . . . āā 3 iij.  
 M. S. Cosmetic cream (Hebra).

The thick mixture after being shaken is to be applied with a brush in the evening and washed off with water or a solution of sodii boras in the morning.

This mixture is to be recommended for comedones, especially when the skin is very fatty, and also in seborrhœa of the face.

℞ Sulph. præcip.,  
 Glycerini,  
 Spir. sapon. kalini, . . . . . āā ʒ iij.  
 M. S. As above (Hebra).

℞ Sulph. præcip., . . . . . ʒ i.  
 Acid. acet., . . . . . q. s.  
 Ut f. pasta mollis.

M. S. Sulphur paste; to be used evenings on pigment spots, ephelides, and chloasmata (Neumann).

Sulphur may also be given in the form of sulphur soap, but it should be remembered that here its action is most intense in consequence of the alkalinity of the soap. Sulphur may be either added to a manufactured cocoa soap or be added in the process of manufacture; if a more intense action be desired, the sulphur is to be replaced by calcii sulphidum; and if a mechanical action be desired also, sand or pumice-stone may be added, or the sulphur may be combined with other agents, such as iodine or naphthol.

℞ Sapon. cocoini rec., . . . . . ʒ iiiss.  
 Ol. citronellæ, . . . . . gr. xvi.  
 Sulphur. depur., . . . . . ʒ iij.  
 M. f. frust. pond., . . . . . ʒ iiiss.  
 S. Sulphur soap.

℞ Ol. cocos,  
 Sebi bovini,  
 Liq. sodii caust., . . . . . āā ʒ iss.  
 Hepat. sulph. lixiv. in aqua tep. soluti, . . ʒ ij.

F. via frigida sapo.  
 Ol. anisi,

Ol. rosmarini, . . . . . āā ʒ i.  
 M. f. frust. pond., . . . . . ʒ iiiss.

S. Sulphur soap (Auspitz); to be rubbed in with water, evenings, the lather left on overnight and washed off in the morning. For ephelides.

The simple washing with sulphur soap has scarcely any other effect than washing with any other soap; if the action of the sulphur be desired, the soap must be rubbed with water into the skin, and the lather left on overnight. The following day it is to be washed off with water or with almond bran,

and the red macerated skin is to be treated with various agents, such as the solution of sodii boras in seborrhœa, unguentum zinci and powder in acne. Much more intense in their action than mixtures of sulphur with alkalies and soaps are the alkaline sulphides, in using which the odor of hydrogen sulphide is to be expected. Calcii sulphis (solutio Flemingkx) acts as a caustic on the skin and, like sodii sulphhydras (1:10 water), is only to be used on the back.

R	Sodii bor. pulv.,	.	.	.	.	.	.	.	3 i.
	Glycerini,	.	.	.	.	.	.	.	̄ ss.
	Sodii sulphid.,	.	.	.	.	.	.	.	3 iij.
	Aq. ros.,	.	.	.	.	.	.	.	̄ xvi.
M.	S. To be used as a wash for blotches on the skin.								

#### METALLIC SALTS.

The metallic salts which have a cosmetic use are salts of aluminium, lead, zinc, bismuth, and mercury. The physiological action of all these, excepting the soluble salts of mercury, is that of the astringent agents in general. Local superficial inflammations and hyperæmia of the skin are cured by these; they contract the capillary vessels which are passively dilated by acne, perniones, etc. By contracting the vessels of the skin they lessen the secretion of the glands, and principally of the sweat glands. Some of these agents when used long or in large doses, even when they are insoluble in water, by their continuous irritation cause more or less inflammation of the skin, and may be followed by an increased exfoliation of the epidermis, or a casting off of this down to the pigmentary layer. A number of these agents, when used in the form of powders and salves, may have a drying effect, while others, because of their intense white color, may serve as concealing agents.

The salts of aluminium and lead belong to the class of light astringents. Of the former, the well-known alum and the aluminii acetas are used in solution for chilblains, redness of the face and hands, and local hyperidrosis. For this purpose the solutions are used as a wash, or in continued applications. Since the alum and especially the aluminii acetas

lessen the secretion of sweat, they are adapted for the cases with offensive odor, and the former is used in the form of powders, the latter in solution, for bromidrosis. For this purpose, *aluminium chloras*, also called *chloralum*, is much used. The deodorizing action of the latter is due in great measure to the chlorine set free. Used in the form of white clay for a protecting application, the astringent properties of aluminium do not come into action.

The soluble lead salts, especially *plumbi acetas*, may be used in the same manner as the salts of aluminium. They also have an astringent action, cure hyperæmia of the skin, and lessen the secretion of sweat. Many preparations of lead serve as drying and slowly acting caustic agents for the removal of thickened and calloused skin, especially with ingrown nails, where the dusting on of *plumbi subnitras* is of service. Other preparations of lead such as white lead, *plumbi hydrocarbonas*, are used as protecting agents to the skin, and they are also used in powders for the same purpose as the solutions. *Unguentum plumbi subcarbonatis* and *emplastrum plumbi subcarbonatis* are useful in erythematous chilblains. An unusually important preparation of lead which is adapted for use in most of the cases considered here is the *unguentum diachylon* (*Hebra*), which may be used not only in the various forms of eczema, but also in hyperidrosis, and in acne, as a mildly acting grease for the softening of indurated portions of the skin in general, and for the removal of crusts and scales. Besides the *plumbi acetas* and the *plumbi subcarbonas*, other preparations are occasionally used, as, for example, *plumbi nitras* 1, *glycerinum* 40, three times a day on chapped hands. While the lead salts have the astringent action of the metallic salts, they are seldom used, even externally, on account of the possibility of a toxic effect being produced.

Next to these in their action stand the combinations of zinc. The soluble salts, such as *zinci sulphas*, *zinci acetas*, and *zinci sulphocarbonas*, are used in solution as applications for chilblains, pigmentation of the skin, freckles, and chloasmata. They may also be used as local or general baths in hyperidrosis. Even the insoluble *zinci oxidum*, when applied for a long time to the skin, has an astringent and drying action. In a powdered form it is very often added to dusting powders,

and in the form of Wilson's salve is an excellent and well-known agent for the skin.

Among the bismuth preparations, bismuthi subnitras has but a feeble action on the skin. Although a small quantity of the salt may become dissolved in the secretion of the skin, its action is chiefly mechanical, and, from its white color, concealing. The fact that after energetic application of bismuth salves a slight dermatitis may ensue, would seem to indicate a chemical action of this agent, though perhaps very slight. The basic bismuthi nitras is used for the removal of freckles and other forms of pigmentation of the skin, and combined with white precipitate in the form of a salve, it is a justly popular face pomade for beautifying the complexion. The action of this latter depends no doubt on the fact that the superficial layers of the epidermis are more readily cast off under its employment.

Of the mercurial preparations only two have an extensive cosmetic use, the hydrargyri chloridum and the hydrargyri bichloridum ammoniatum. Sublimate, which is soluble in water, alcohol, and ether, when applied to the skin in concentrated solution acts as a caustic and may cause a severe purulent inflammation of the skin. When a very dilute solution is applied for a long time, it causes a dermatitis also, but this remains superficial, although under its use the epidermis is raised in vesicles filled with serum. It cannot be said that the sublimate hastens the exfoliation of the epidermis scales, but it always causes a more or less severe inflammation of the skin, which leads at least to the detachment of the superficial layers of the epidermis. Because of this action, sublimate has but a limited sphere of application. It may be used either as a caustic agent for warts, etc., or as a washing agent in different varieties of pigmentation of the skin. Its use for the removal of freckles has already been described. On account of its exact action on the skin, sublimate has unfortunately received great attention from the vendors of beautifying agents, and it is sold as a panacea for all possible disfigurements, such as acne, comedones, erythema, and any efflorescence of the skin. This is the more to be deprecated since these readily soluble preparations of hydrargyrum may be absorbed by the skin and cause poisoning, and this may also follow the careless use of hydrargyrum in other cases.

Sublimate and other preparations of hydrargyrum should only be used for cosmetic purposes under a physician's prescription.

The white precipitate, hydrargyrum bichloridum ammoniatum, has in reality the same action as the sublimate, it is, however, much slower and milder; when energetically applied to the skin, it is dissolved by the sweat. The action of this preparation is threefold. First, it produces a superficial dermatitis; second, it has a mechanical action on account of its powder form; and, third, it serves as a concealing agent because of its white color. The white precipitate is employed in all those cases in which sublimate is used, when a slower and a milder action is desired, as in pigmentation of the skin, obstinate acne, etc. For the same purpose as the others, we may employ with similar results other salts of hydrargyrum, such as hydrargyri oxidum rubrum, oxidum nigrum, acetas, and the submurias. The latter has none other than a mechanical and concealing action.

The gray plaster should be mentioned as a very important agent, which in the diseases that we are considering has no mercurial action, but merely that of the plasters, in shutting off the air and preventing the evaporation of the moisture of the skin, so that the epidermis becomes swollen and is more easily thrown off. With this intention, emplastrum hydrargyri may be used on callosities and corns, and for induration or pigmentation of the skin.

℞ Zinci sulph.,  
 Acid. tannici, . . . . . āā ʒ ss.  
 Aq. rosæ, . . . . . ʒ iij.  
 Ungt. emoll., . . . . . ʒ i.

M. ft. ungu. S. Salve to be rubbed on erythematous blotches on the face and on chilblains, to be left on over night and dusted with zinc powder in the morning.

℞ Benzoin. pulv., . . . . . gr. xvi.  
 Axung. porci, . . . . . ʒ i.  
 Digere, cola, adde  
 Zinci oxid., . . . . . ʒ i.

M. ft. ungu. S. Wilson's salve.

℞ Zinci sulphocarb., . . . . .	3 ss.
Glycerini, . . . . .	3 vi.
Aq. rosæ, . . . . .	3 i.
Spir. colon., . . . . .	3 i.

M. S. Water for freckles. To be painted on in the evening and let dry; to be washed off in the morning with borax water.

℞ Boli alb.,	
Ol. lini, . . . . .	āā 3 i.
M. exact., adde	
Zinci oxid.,	
Liq. plumb. subacet., . . . . .	āā 3 vi.
Ol. neroli, . . . . .	q. s.

Ad odorat.

M. ft. pasta. S. To be painted thickly on the affected skin; to be rubbed off with zinc powder in the morning.

℞ Tutia, . . . . .	3 ij.
Ungt. rosæ, . . . . .	3 ss.
Butyri c. aq. ros. loti, . . . . .	3 ss.

M. ft. ungt. S. Pommade de Tuthie (French Pharm., Dorvault).

℞ Ol. amygd. dulc., . . . . .	3 ij.
Spermaceti, . . . . .	3 i.
Ceræ alb., . . . . .	3 ij.
Liquef. admisce	
Zinci sulph., . . . . .	gr. xvi.
in Aq. rosæ, . . . . .	3 ij.
Soluti.	

M. exact. f. ungt. S. For cracked hands and nipples (Débay).

℞ Alumin. cr., . . . . .	3 i.
Aq. dest., . . . . .	3 iiiss.

M. S. Application for chilblains and red nose.

℞ Alumin.,	
Sodii bor., . . . . .	āā 3 ss.
Aq. rosæ, . . . . .	3 v.
Tinct. benzoini, . . . . .	3 i.

M. S. Like the foregoing.

℞ Alumin. cr., . . . . . ʒ ss.  
Acet. arom., . . . . . ʒ iiiiss.

M. S. Like the foregoing.

℞ Sodii bor., . . . . . ʒ ss.  
Alumin., . . . . . ʒ iiij.  
Acid. tan., . . . . . ʒ iiij.  
Amyli, . . . . . ʒ ij.  
Ol. æth. cort. aur., . . . . . gtt. xxv.

M. S. Sweat powder, also recommended for beginning chilblains.

℞ Alumin. acetico-tartar., . . . . . ʒ ij.  
Aq. destil., . . . . . ʒ iv.

M. S. To be painted undiluted on chilblains; three to four tablespoonfuls to be added to cool foot-bath for sweating of the feet.

℞ Alumin., . . . . . ʒ i.  
Vitell. ovi cocti unius,  
Glycerini, . . . . . ʒ ss.

M. ft. ungt. S. For chilblains (Husemann).

℞ Alumin. usti, . . . . . ʒ iiij.  
Magnes. carb.,  
Pulv. irid. florent., . . . . . āā ʒ iiiiss.  
Pulv. caryophyll., . . . . . gr. xvi.

M. S. For filling muslin sachets to be worn in the axillæ in excessive sweating (Débay).

℞ Liq. alumin. acet. (Burowi), . . . . . ʒ i.  
Aq. destil., . . . . . ʒ viij.

M. S. For applications and as a wash in hyperidrosis.

℞ Bismuth. subnitr., . . . . . ʒ i.  
Zinci oxid., . . . . . ʒ i.  
Ungt. emoll., . . . . . ʒ iss.  
Ol. naphæ, . . . . . gtt. v.

M. ft. ungt. S. Salve for sunburned face and hands.

℞ Bismuth. subnitr., . . . . . gr. xvi.  
Tinct. benzoini, . . . . . ʒ i.  
Glycerini, . . . . . ʒ vi.  
Aq. fragor., . . . . . ʒ iiiiss.

M. S. After shaking to be used for scaly skin.

℞ Bismuth. carbon. basici, . . . . .	3 iij.
Talci veneti, . . . . .	3 vi.
Aq. rosæ, . . . . .	5 iiss.
Spir. colon., . . . . .	℥ij.

M. S. As before; if it is used as a cosmetic the moist precipitate is to be pencilled on.

℞ Hydrarg. bichlor. corr., . . . . .	gr. i.
Aq. ceras., . . . . .	5 xx.
Spir. vini rect., . . . . .	5 i.
Plumbi acet., . . . . .	5 ss.
Tinct. benzoini, . . . . .	gtt. xxx.

M. S. Eau de Gerlain; for painting on blotches.

℞ Hydrarg. bichl. corr., . . . . .	gr. i.
Emuls. amygd. amar., . . . . .	5 xij.
Tinct. benzoini, . . . . .	5 ss.

M. S. Aqua orientalis (Hebra). To be used as a wash in red, scaly, but not inflamed skin.

℞ Hydrarg. bichlor. corr., . . . . .	gr. xvi.—3 i.
Aq. naphæ,	
Spir. vini rect., . . . . .	aa 5 iss.

M. S. To be used with care as above, for the quick removal of epheles.

℞ Hydrarg. bichlor. corr., . . . . .	3 ss.
Collodii elastici, . . . . .	5 vi.

M. S. For destroying warts and corns.

As the collodion covering presses the vesicle and causes pain, it may be replaced by ether. In the latter case, as in the employment of sublimate in general, care must be taken that the agent does not get into the mouth.

℞ Aq. colon., . . . . .	5 i.
Spir. ammon. comp., . . . . .	3 ss.
Potas. iod., . . . . .	gr. xxiv.
Sodii carb., . . . . .	3 iiss.
Hydrarg. iod. rub., . . . . .	gr. x.
Aq. camphor., . . . . .	ad 5 ivss.

M. S. As a wash for blotches.

℞ Liq. hydrarg. nitr. oxid. (19% Germ. Pharm.), . . . . . gr. xvi.  
 Aq. rosæ, . . . . . ʒ vij.

M. S. Water for freckles (Hager). Single ephelides or chloasmata to be touched every second or third day.

℞ Hydrarg. præc. alb.,  
 Bismuth. subnitr., . . . . . āā ʒ i.  
 Ungt. glycerini, . . . . . ʒ iv.

M. S. Salve for freckles (Hebra). To be rubbed in energetically for two or three consecutive days; then to be stopped.

The reaction following the use of this mixture is considerable; the skin reddens and scales off in large patches. In the intervals, applications of a solution of sodii boras or of Goulard's water are to be made, or the part anointed with a bland salve.

Milder and correspondingly slower in action is the following face pomade:

℞ Hydrarg. præc. alb.,  
 Bismuth. subnitr., . . . . . gr. xvi.—ʒ ss.  
 Ungt. pomadinum, . . . . . ʒ ij.

M. S. Pomade which may be rubbed in every day for a time, and is of service in sunburn. Calomel may be used in the same manner as the white precipitate (Oppolzer).

℞ Hydrarg. chlor. mitis, . . . . . gr. xvi.  
 Bismuth. subnitr., . . . . . ʒ i.  
 Aq. fragor., . . . . . ʒ iss.

M. S. After shaking, to be used on liver spots and erythematous portions of the skin.

Of the metallic salts should also be mentioned acidum arseniosum, which possesses the property, valuable from a cosmetic point of view, of cauterizing abnormal portions of the skin, such as hypertrophy and granulations, without affecting the sound portions. In the form of pulvis cosmi or of Hebra's arsenic salve it is extensively used in lupus. According to Unna, the acidum arseniosum is a useful agent for the removal of warts, and is most applicable in the form of a plaster of the ordinary variety, or of gray plaster.

℞ Empl. hydrarg. cin., . . . . .	3 iij.
Acid. arsen., . . . . .	gr. iij.-viiij.
M. ft. emplastrum. S. Plaster.	
℞ Oleini crudi, . . . . .	3 iij.
Plumbi oxid., . . . . .	3 ss.
Ft. empl. adde	
Arsen. albi., . . . . .	gr. xvi.
S. Plaster (Lang).	

## POWDERS AND COSMETICS.

The numerous agents of this group are employed for two different purposes, either as protecting and moisture-absorbing agents or as concealing and coloring agents. For the former, vegetable substances are chiefly used; for the latter, mineral substances.

*Starch and other Vegetable Powders.*—When the fine skin of the face and hands is exposed to the atmosphere after being washed with soap or with simple water, even when thoroughly dried, it becomes rough and fissured. Persons endeavor to combat this by using all sorts of creams and powders on the skin. The powdering of the face after shaving is for the purpose of protecting from the influence of the air the skin which has been irritated by the soap, the razor, and the washing. The powders of this group are here serviceable.

Starch is to be considered the most important representative of these. Pure starch finely powdered and applied to the skin makes it smooth and cool, lessens the irritation and pain of sensitive superficially excoriated spots, and protects them from the influence of too high or too low temperatures, and from the rubbing of neighboring portions of the skin. All fine powders, and especially the vegetable ones, absorb fluids which have been poured on the skin. Mixed with these fluids or the sweat, starch forms a thick, tenacious paste, which becomes detached in the form of blackish masses. At the same time a chemical change occurs and the paste becomes sour from the formation of acidum lacticum.

Other vegetable, indifferent or fragrant, powders are added in considerable quantities to starch, to form face powders. What was said of starch applies also to these. Mixed with the sweat, they decompose, forming products of acid reaction

and odor, and since their woody parts swell in the fluid of the sweat, they cause what they should prevent, the maceration of contiguous portions of the skin. The swollen and adhering masses of such powders, and of starch as well, irritate the skin on which they lie like a foreign body, and by the pressure which they exert, favor the formation of callosities and corns. I have seen from the employment of orris powder, used as a perfume in powders for sweating of the feet, enormous loosening of the epidermis between the toes, with great pain, and even erosions and ulcerations. The use of orris powder should be condemned on this account, although for other purposes it is harmless. It is added to washing powders, in order to make them finer and more pleasing in appearance and in odor. On account of their containing albumin and starch, these powders are mild and cleansing like the almond powder, while many of them are excellent since they contain a little fat. In the form of soft pastes they have, like the fatty agents, a soothing and cleansing action.

The most important of these is rice starch, *amylum oryzae*, *poudre de riz*. It is a fine, smooth-feeling powder of pure white color, lighter than water, and mixed with this it forms, like the other starches, a sticky mass or paste.

But very little of the powder which is sold as rice starch is in reality such. It is adulterated with other starches, or mixed with talc, chalk, etc., to make it whiter and more concealing, as will be shown later in treating of cosmetics. Rice powder is but seldom used; in place of it other powders are employed, although a moderate amount of rice powder forms an excellent protecting agent. When society ladies appear to-day with bare necks and arms, these parts are not encompassed in a cloud of powder, but covered with a heavy coat.

Wheat starch, *amylum tritici*, may be used in place of rice powder. It is a very fine, smooth, bluish-white powder. This bluish-white color is not suited for all complexions.

Potato starch, *amylum solani*, is a coarse yellowish-white powder, shining in the light, which cannot well be used pure for cosmetic purposes.

Wheat powder is occasionally used in place of starch in the composition of washing powders and pastes prepared *extempore*. The powder for this purpose must be pure, white, and of good quality. The powder of vegetables such as beans

may be used in face powders, washing powders, and pastes in the same manner as wheat starch. Wheat bran, which contains fat, and the powder of marsh-mallow root, which is mucilaginous and softens the skin, may be used in washing powders and pastes. Instead of a paste made of meal or bran, the popular poultices of white bread and milk may be used, which, like the bean meal, have long been used by the laity.

“. . . multo  
Pane tumet facies,”

says Juvenal. Orris-root powder is used only for perfuming. The following will serve as examples:

℞ Amyl. oryzæ, . . . . . ℥ iiiss.  
Pulv. ir. fl., . . . . . ℥ i.  
Ol. geranii, . . . . . gtt. v.  
M. S. Rice powder.

℞ Farin. legum. (fabar.),  
“ oryzæ, . . . . . āā ℥ iiiss.  
“ amygd. am., . . . . . ℥ vij.  
Ol. æth. lavandul., . . . . . ℥ ij.  
M. S. Washing powder for the hands.

℞ Farin. trit.,  
Pulv. melilot., . . . . . āā ℥ viij.  
Pulv. violar., . . . . . ℥ iiss.

M. S. To be mixed with rose water into a paste, with which the face is to be covered for the night. “This paste lends the skin a freshness, and removes red blotches and pimples” (Débay).

℞ Pulv. althææ subt.,  
Farin. amygd. am., . . . . . āā ℥ iiiss.  
Essent. portug.,  
“ bergam., . . . . . āā gr. xvi.  
M. S. Face paste.

*Cosmetics* (concealing and coloring agents).—If the skin of the visible portions of the body be completely clean, if it have neither red nor other colored blotches, if it be neither too oily nor too dry, it is to be considered normal. It may be white, or red, or yellow, providing that the color be not too

intense, and still satisfy the average man. But this does not satisfy artistic taste or fashion. Artificial lighting, the intense yellow and yellowish-red light of hundreds of gas flames or incandescent lamps, the glaring white or bluish-white light of the arc lamps, make the normal skin appear of tints which are by no means pleasing. Time and pleasure as well as grief and sorrow not only engrave deep wrinkles in the face and neck, but destroy the color of youth and cause the skin to wilt like a flower deprived of water. Fashion, the ruler of all times and peoples, demands to-day a blooming, youthful countenance with rosy cheeks, to-morrow a pale, sentimental, spirituelle, almost sickly beauty—the morbidezza.

The desire to be conspicuous causes a woman to choose to-day the complexion of a robust peasant, to-morrow the bronze color of an Ethiopian, and another time the sallow yellow of the southern races.

For this purpose cosmetics are used, which have the function of giving to the exposed parts of the body another color than that which nature has provided, generally a more youthful one; occasionally, as with actresses, they serve for changing the expression of the face, and for concealing defects of every sort. Since it is the purpose of the cosmetic to deceive the beholder, the first requirement of such an agent is that this deception be the most complete possible—*i.e.*, that the color be the most natural possible, a requirement which is fulfilled not only by the selection of a proper agent, but much more by the skill of its application. Even when the most innocent materials are used in the preparation of these paints, they are the most injurious of cosmetics.

The simplest cosmetic agent is the white powder called by the collective name *poudre de riz*, which, as before stated, seldom consists of rice powder, but oftener contains talc or even chalk. On account of its finely-powdered form it absorbs the moisture of the skin and is called, therefore, an absorbent powder. Even these cosmetics, which when occasionally used are harmless, when continually used may injure the skin so severely as to preclude the possibility of its restoration. The complexion loses its natural gloss and freshness; the skin appears dry and rough; the orifices of the sebaceous and sweat glands are clogged by the cosmetics which have taken up the atmospheric dirt; countless comedones are formed, and in time

these become pustules which can no longer be concealed by these light cosmetics, and more dangerous agents are employed for this purpose. The moister and more oily the skin—and it is individuals with such skins who in their ignorance use absorbent powders—the more harmful is their action.

If the cosmetics are made from metallic salts, the changes which the skin suffers are still more considerable. The salts are soluble, in a measure at least, in the sweat, and by constant use these solutions, little active in themselves, become drying and astringent agents. To the symptoms described may be added the cracking of the skin and an extreme sensitiveness to atmospheric influences. Wrinkles, usually a symptom of age, appear in the skin, and those already existing become deeper; the skin becomes stiff and inelastic, and the muscles of the face lose their mobility; the expression of the face comes to be sad, suffering, and dark. The dazzling white lead which the perfumers add to their cosmetics is in reality dangerous. It is well known that when energetically rubbed in, lead may be absorbed by the unbroken skin from these preparations; and the chronic poisonings, with nervous symptoms, chiefly caused by the cosmetic use of this metal, have been made public often enough. This poisoning is not caused by the absorption into the skin alone, but from the presence of these cosmetics in the mouth and stomach.

In spite of the danger incurred, cosmetics, and especially toilet powders, are always to be found on the toilet-tables of our women and young girls, and the habit of using powder is indulged in from early childhood. Used in the beginning only as an agent for absorbing moisture, as a simple rice powder, it becomes more indispensable as a cosmetic, a beautifying agent, combined with various substances, as in the *poudre de riz décorative*. It is, however, not to be wondered at that the women of our time are not more rigorous than their ancestors; this cosmetic agent, as well as many others, having been used thousands of years ago by the ancient Egyptians.

The colors of these paints vary according to the purpose for which they are to be used; they are white, red, blue, and of other colors. They are further divided, as to form, into paint powders, grease paints—*i.e.*, salves and cerates—and fluid colors. The most simple classification is according to their color.

1. White cosmetics. Talc, *calcii carbonas* and *sulphas*, and *magnesii carbonas*, serve as a base for face powders and white cosmetics. The two first mentioned are those most frequently used; in fact, talc may be said to be the general base of all the cosmetics.

Talc, *magnesii silicas*, is an oily-feeling, white, crystalline mineral, which is prepared in various ways for different purposes.

It is finely powdered, cleaned by pressing through a fine cloth and washed, then dried and ground up; or the powder is macerated with vinegar, then washed with water and dried. Talc powder prepared in this way has a gloss; to prevent this it is heated (calcined talc). In the same manner as the talc well-cleaned *lapis baptistæ* or *alumen plumosum* may be used. The finest talc is called Venetian chalk. Craie de Briçon, or Spanish chalk, is the same. The fine purified and cleansed talc is called *blanc français*, French white.

Chalk, *calcii carbonas*, the well-known white earthy mineral, is prepared in the same manner (*creta elutriata*); the natural chalk produces a powder which is less white than that obtained by the precipitation of *calcii chloridum* with *sodii carbonas*.

*Magnesii carbonas* is a fine white powder obtained by precipitating *magnesii chloridum* with *sodii carbonas* and treating it like the foregoing.

*Acidum silicicum* was recommended some years ago as a base in place of those commonly employed. An aqueous solution of *sodii silicas* is precipitated with *acidum sulphuricum* or *hydrochloricum*. In this way a jelly-like *acidum silicicum* is obtained, which is washed with water after from ten to twenty filterings. In this gelatinous form the *acidum silicicum* may be used in soaps and pastes; and dried and finely pulverized, it may be used for toilet purposes and white cosmetics.

The agents named form merely the base of the white cosmetics; since, however, they conceal too slightly the natural color of the skin and pigmentation, other strongly white coloring matters are added. As such should be mentioned *zinci oxidum*, which is obtained by heating zinc, or by precipitating *zinci sulphas* with *sodii carbonas* and heating this. The first-named product is the zinc white, *flores zinci*, of the shops.

Zinci oxidum is a fine, white, loose powder, insoluble in water, but soluble in acids. It should only be used after having been carefully cleaned. An excellent preparation is sold under the name of zinc white.

Bismuthi subnitras, bismuth white, is a very white, fine, crystalline powder obtained by dissolving bismuth in acidum nitricum and precipitating with water. It is insoluble in water and is of acid reaction. The magisterium bismuthi prepared according to the German and Austrian Pharmacopœias does not contain arsenic; in the market many preparations are found containing arsenic, and they are of variable composition. They are called Spanish white, pearl white, blanc de perles. Under the same name and for the same purpose other salts of bismuth are used, such as bismuthi chloras, acetas, and carbonas.

Barii sulphas, permanent white, blanc fixé, is obtained by the decomposition of barii chloridum with sodii sulphas, and is found in the market combined with water in the form of a paste, since it loses in fineness and concealing power by becoming dry; barii carbonas is also used in cosmetics.

Plumbi carbonas, cerussa, céruse, is made in various ways. The white leads of different manufacturers have a different concealing power. Usually it consists of sixty-six per cent of plumbi carbonas. It is glaring white, insoluble in water, and soluble in many acids, among these acidum nitricum and aceticum, and in dilute potash-lye. The finest sort is called Kremser white; pearl white is white lead made slightly blue with indigo. Other salts of lead, such as plumbi chloridum, are used, but are less white and concealing.

Of the preparations named, talc powder is the simplest and most innocent. It is insoluble, is affected neither by the skin secretion nor by the atmospheric moisture, does not stick together, and has a pure white color which is not changed under the influence of chemical agents. It acts on the skin only as dust; its disadvantage is its weak color and slight concealing power. Magnesii carbonas and chalk are also innocent; the latter, long used for this purpose, colors strongly and conceals well. The white produced by this agent is dull and earthy. Of the metallic agents, white lead is the strongest, finest, and best concealing white. As said above, however, it is so poisonous that it cannot be employed in cosmetics

even for occasional use. Although the sale of cosmetics containing lead is forbidden in Germany and Austria, new cosmetics containing lead are continually being sold under attractive names. But apart from the poisonous properties of lead preparations, their habitual use should not be permitted, since they often color the skin black by forming a plumbi sulphidum with the free hydrogen sulphides of the air or with the sulphur combinations secreted by the horny tissue in many individuals. Women who use cosmetics containing lead are often surprised, after taking sulphur baths, to see their faces turn gray or black. Barium white is almost equal in color and concealing power to white lead; it is innocent, and is not changed by hydrogen sulphide. Bismuth white, which is commonly supposed to be innocent, has not so strong a color nor so great a concealing power. The preparations containing arsenic are of course poisonous. The soluble bismuth compounds, such as the acetate, because of their caustic or at least strongly astringent action, are injurious impurities of the bismuth white. It should be mentioned that pure bismuthi subnitras concentrated in salve form and rubbed energetically into the skin may cause irritation and superficial dermatitis with unsightly scaling of the skin, an effect which may be employed for the removal of ephelides, as we have seen before. It would seem that this action depends on the solubility of the preparation in the secretions of the skin, the slightly caustic action of the solution being increased by the mechanical irritation of rubbing. In this manner may be explained the harmfulness of the continued application of zinci oxidum, the most frequently used coloring and concealing agent, and one comparatively uninjurious.

The base of the cosmetic is, as a rule, talc when a good concealing or coloring cosmetic is wished. In toilet powders for every-day use, for keeping the skin dry and protecting the complexion, since the talc powder betrays its presence, a quantity of some starch is added to it. In most cases the best composition for a concealing powder is zinci oxidum 6, talc 10, and magnesii carbonas 1; a stronger white is talc 5, zinci oxidum 8; much smaller quantities of bismuth or barium salts are sufficient. For toilet powder the composition should be amyllum 2 and mineral substances (not metallic salts) 3.

In the selection of the agent, attention is given to the

degree of adherence to the skin; in a toilet powder adherence is not a desirable quality, the powder should brush off lightly from the skin; in coloring powders, a considerable degree of adherence is desirable.

Zinci oxidum and gypsum, which adhere strongly, should be added to toilet powders in but small quantities; talc and magnesia do not adhere well. Often, when the skin is very dry, even the best adhering agents, such as zinci oxidum and barii carbonas, are not sufficient; in such cases a small amount of grease, such as spermaceti, or cocoa butter in the winter-time, may be added, forming a grease powder.

Finally, a word should be said of the color of the white cosmetics. Very white powders or cosmetics disfigure the skin; parts of the skin normally delicate rose or chamois colored appear as if coated with flour (clown face); darker colored parts appear bluish-white from the color of the skin showing through. In order to prevent the second, a trace of indigo is added to very white powders; in the first case, the powder is colored slightly with carmine or with carmine and ochre.

2. Red cosmetics. The red cosmetics have as a base the simplest of white cosmetics, talc powder, which may have zinci oxidum added to it, in order to lessen a too lively red. Of the numerous coloring matters, carmine is most extensively employed.

This is the red coloring matter of cochineal, coccionella (the female of the coccus cacti, dried), which consists chiefly of carmine acid with small quantities of alumina and lime.

To obtain carmine, cochineal is boiled in ten parts of rain-water, heated again several times after the addition of alumen, and left standing exposed to the air in shallow vessels, in which manner the best sort of carmine is gotten. After another method cochineal is boiled in seventy-five parts of water, and then potassii nitricum, and later potassii oxalas, is added, the mixture is again boiled, and the further steps in the process are as in the preceding method. Since the carmine acid, like alumina, forms colored compounds with the metallic oxides, carmine may also be obtained by adding these. Alkaline water may be used to make an extract of the cochineal, possibly with the addition of acidum citricum. The carmine remaining in the cochineal decoction after the precipitation with

alumen may be got by boiling with albumen and is an especially fine carmine for cosmetics (Débay). The action of sunlight is supposed to increase the beauty of carmine.

Carmine is odorless, insoluble in water, soluble in ammonia, and is injured by soaps and alkaline fluids. A solution of carmine in five or six parts of ammonia is the so-called fluid carmine. Carefully heated in small quantities, carmine may be obtained as a dark purple-red or violet powder. In thin layers dry carmine gives a fine green reflex.

Much older and more extensively used as a cosmetic agent is saffron. This is the flower of the *carthamus tinctorius*, which, besides a yellow pigment soluble in water, has a red pigment carthamine or saffron red, soluble in alcohol.

The latter is used in place of saffron, and is obtained from this by extracting with soda solution and precipitating with *acidum aceticum*, perhaps purified by being dissolved a second time in soda, and precipitated with *acidum citricum*; it is a brownish-red powder having a greenish reflex.

Carthamine seems to have been employed in the most ancient times; at any rate, the word *karthami* appears in the Hebrew. In the renaissance and baroque periods, Spanish or Portuguese red was the most important red cosmetic agent. Carthamine is also called *rouge* or *rose végétal*.

Less red cosmetic paints are produced from Pernambuco wood.

The extracts of Pernambuco, red Brazil wood, and *caesalpinia* contain the chromogen *brasilin*, of a carmine color and soluble in alkalis, which with metallic salts forms a lake. Pernambuco lake is generally dissolved in water and precipitated with *acidum citricum*.

Alloxan is less frequently used. It is a product of the oxidation of uric acid, in the form of colorless rhomboidal crystals, soluble in water and giving to the skin a purple-red color and an unpleasant odor. Alloxan has a more intense color than the other agents mentioned.

In later times, red cosmetics have been made from eosin. It is probable, however, that eosin itself (tetrabromide of fluorescin) is not often used, but its compounds with potassium and barium, which are in the form of crystals dissolving in water and alcohol with a play of colors, red and gold-green. Cosmetics prepared with this coloring matter, as well as those

prepared with cinnabar, have a peculiar rose color with a trace of yellow, and therefore are not used like the ordinary red cosmetics. I believe that these are adapted for use under the light of an electric arc lamp.

Cinnabar, hydrargyri sulphidum, is yet to be mentioned, a color valued in painting for its fire, but because of its yellowish tone it is scarcely adapted for imitating the natural red of the skin even when mixed with considerable white. It is used, nevertheless, as a cosmetic color; it is entirely insoluble in water and is poisonous.

3. Besides the red and white cosmetics there are those of other colors and of minor importance.

All have as a base the simple white cosmetics.

Blue is gotten by indigo, which is soluble in water, or by Berlin blue, which is insoluble in water.

Brown and yellow cosmetics are made by adding ochre, umber, burnt sienna, or Armenian bole. UMBER, the well-known mineral color used in painting, is in reality ferri silicas with manganese and some aluminium. The best sort is the Turkish, which comes from Cyprus. Ochre is a natural ferri oxyhydras mixed with clay and lime. The others have very much the same composition, lacking, however, the manganese and having more clay. The chestnut-brown terra di Sienna comes from Tuscany; the finest sort of red bole, the Armenian, has often a trace of yellow. Other colors, such as minium and chrome yellow, are used only as stage cosmetics. Lamp-black and boneblack are used in salve form without the addition of white cosmetics.

In order to color cosmetics with soluble colors, these are dissolved in alcohol or water and thoroughly rubbed up with a little of the cosmetic; then more of the cosmetic is added gradually and mixed until the whole is colored and dry. Insoluble colors, which must be finely pulverized, are also rubbed up gradually with the white cosmetic. In order to get a powder as fine as possible, the color is moistened with alcohol or water during the rubbing; after it is entirely dry it is again rubbed up and pressed through sieves and fine cloths. For perfuming, essences and extracts are used, which are also rubbed into the powder.

*Toilet Powders.*

- ℞ Amyl. pulv., . . . . . ℥ viij.  
 Lapid. baptist.,  
 Talci veneti,  
 Alum. plumosi, . . . . . āā ℥ iv.  
 Ol. rosæ, . . . . . gtt. xxv.  
 Ol. neroli, . . . . . gtt. xij.
- M. S. Pulvis cosmeticus albus cum amylo.
- ℞ Amyl. oryzae, . . . . . ℥ xvi.  
 Bism. subnitr., . . . . . ℥ iiiss.
- M. S. Face powder (Piesse).
- ℞ Amyl. pistaciae, . . . . . ℥ xvi.  
 Talci veneti, . . . . . ℥ xvi.  
 Ess. rosæ, . . . . . gtt. iij.  
 “ lavandul., . . . . . gtt. i.
- M. S. Poudre de toilette à la pistache (Piesse).

As with perfumes, cosmetics are often given names which have no connection with the principal ingredients of the cosmetic. Snow,<sup>31</sup> who analyzed a number of face powders, says of pistachio powder: “It is made of fine talc which is colored slightly lavender, well perfumed, put in elegant sachets, marked with a French label, and sold at an exorbitant price.”

- ℞ Talci veneti alcohol, . . . . . ℥ iss.  
 Zinci oxidati, . . . . . ℥ iiiss.
- F. c. pauxillo indigo et essent. odor. pulv. cosmet.
- S. White powder.
- ℞ Zinci oxidati, . . . . . ℥ vij.  
 Talci veneti, . . . . . ℥ xi.  
 Magnes. carb., . . . . . ℥ i.  
 Ol. millefleurs, . . . . . gtt. xxv.
- M. S. Pulvis cosmeticus albus.
- ℞ Pulv. cosmetici albi, . . . . . ℥ xviss.  
 Carmini soluti, . . . . . gr. viij.
- M. S. Rose powder (pulv. cosm. rubr.).
- ℞ Pulv. cosmetici albi, . . . . . ℥ iiiss.  
 Carmini sol., . . . . . gr. i.  
 Ochre, . . . . . gr. xvi.
- M. S. Powder (Rachel).

These and the preceding powders cannot be called color cosmetics; they are really only slightly-colored white cosmetic powders. Even the following powders cannot be considered color cosmetics. I have used them on brunettes, where they looked as white as the skin of the hands; in very pale persons, however, they appear brown:

- ℞ Pulv. cosmetici albi,  
 Pulv. cosmetici rubri, . . . . . āā ʒ i.  
 Ochre, . . . . . ʒ iss.  
 M. S. Powder (Rachel—dark).

Other white powders are as follows:

- ℞ Talc. venet. alcohol., . . . . . ʒ xviss.  
 Bismuth. oxid.,  
 Zinci oxid., . . . . . āā ʒ i.

M. S. Poudre de perle (Piesse).

- ℞ Silicia subt., . . . . . ʒ iij.  
 Tal. ven. alcohol., . . . . . ʒ iss.

M. S. Blanc nouveau (Débay).

- ℞ Bismuth. subnitr., . . . . . ʒ ss.  
 Cretæ gallic. (talci), . . . . . ʒ iss.  
 Amyl. tritici, . . . . . ʒ ij.  
 Terræ albæ (gypsi), . . . . . ʒ iij.

M. S. Swan's down (Snow).

- ℞ Bismuth. subcarb., . . . . . ʒ vi.  
 Zinci oxid., . . . . . ʒ ij.  
 Talc. venet., . . . . . ʒ iiss.  
 Cretæ præcip., . . . . . ʒ iiss.  
 Amyl. tritici, . . . . . ʒ iiiss.

M. S. Saunders' Bloom of Ninon (Snow).

- ℞ Zinci oxid., . . . . . ʒ ij.  
 Talc. venet. alc., . . . . . ʒ vi.

Aquæ sapon. modice gummos. q. s. f. pasta ex qua form. trochisci.

S. White in tablets (Débay).

- ℞ Cretæ præcip., . . . . . ʒ iss.  
 Talc. veneti, . . . . . ʒ ij.

F. c. s. qu. aquæ tabulæ.

S. Lily white tablets (Snow).

- ℞ Barii sulph., . . . . . ʒ x.  
 Zinci oxid., . . . . . ʒ xvij.  
 Talc. venet., . . . . . ʒ v.  
 M. S. Barium white (Blanc de cygne—Débay).

*Red Cosmetics.*

- ℞ Carmini opt., . . . . . gr. xvi.—ʒ ss.  
 Talci ven. alcohol., . . . . . ʒ ij.—ʒ iij.  
 M. S. Simple red powder.  
 ℞ Carmini opt., . . . . . ʒ ij.  
 Talci venet. alcohol., . . . . . ʒ iv.—v.  
 Solut. gummi. trag., . . . . . gtt x.—xxv.  
 Ol. amygd. dulc., . . . . . ʒ iss.—iij.  
 M. D. in oll. S. Rouge en pot.

Similar to the toilet powders are the cosmetics in the form of paste or tablets, and those which are found in the market in the form of impregnated cotton wool or crêpe. To make the first sort, the finely-powdered cosmetic is mixed with gum tragacanth and a little oil or water to form a paste, and then dried in a fitting shape by gentle heat. Colored cosmetics of this sort are made from strongly-colored talc powder.

Such paste preparations are carmine, rouge en pâte; a paste colored with carthamine and put into little cups, rouge en tasses; and brasilin mixed with talc and put in little pots, rouge en pot. Red impregnated cotton is called Spanish cosmetic wool, laine d'Espagne; crêpe prepared in a similar way is called crépons. Carmine may be spread on cardboard and in this form is called rouge in feuilles, rouge de Chine.

For preparing fluid cosmetics the insoluble white mineral powders are suspended in perfumed water; in order to make the suspension more permanent, alcoholic resinous solutions, such as tinctura benzoini, or solutions of ethereal oils, such as aqua coloniensis, are added. Active skin agents such as sodii boras are often added, but to no purpose. Carmine is dissolved in aqua ammoniæ and perfumed for the most part with rose.

*Fluid White Cosmetics.*

- ℞ Bismuth. subnitr., . . . . . ʒ iiiiss.  
 Aq. rosæ, . . . . . ʒ x.  
 M. S. Blanc de perles liquid.

R̄	Zinci oxid., . . . . .	℥ iiiss.
	Talci veneti, . . . . .	℥ vi.
	Aq. coloniens,	
	Aq. rosæ, . . . . .	āā ℥ v.

M. S. Blanc de neige.

R̄	Talc. præpar., . . . . .	℥ iiiss.
	Glycerini, . . . . .	℥ iiij.
	Sodii bor., . . . . .	gr. viij.
	Aq. colon., . . . . .	℥ iiiss.
	Aq. destil., . . . . .	℥ iiiss.

M. S. Oriental cream.

R̄	Calc. carb. præp., . . . . .	℥ ss.
	Bismuth. oxychlor., . . . . .	℥ ij.
	Rad. ir. flor., . . . . .	℥ ij.
	Glycerini, . . . . .	℥ i.
	Aq. destil., . . . . .	℥ iiiss.

M. S. Liquid pearl (Snow).

#### Fluid Red Cosmetics.

R̄	Potassii oxalati, . . . . .	gr. viij.
	Aq. destil., . . . . .	℥ viij.
	Spir. vini rect., . . . . .	℥ ss.
	Carmini opt., . . . . .	gr. viij.
	Amm. p. liq., . . . . .	gr. iv.

S. Rose liquide (Débay).

R̄	Carmini opt., . . . . .	℥ i.
	Amm. p. liq., . . . . .	℥ i.
	Aq. destil., . . . . .	q. s. ad ℥ iss.

M. S. Fluid red. This solution, given by Martindale, may be added to cosmetics, or one teaspoonful to a tablespoonful added to one-half pint of water makes a very good red cosmetic.

R̄	Zinci oxid.,	
	Calc. præp., . . . . .	āā ℥ ss.
	Ol. bergam., . . . . .	gtt ij.
	Carmini, . . . . .	gr. iiij.
	Aq. destil., . . . . .	℥ iv.

M. S. Fluid red.

In preparing grease cosmetics, the finest powder is used as in the preparation of the others; the salves used must be made from the purest fats. Since the grease cosmetics are chiefly rather hard pomades, tallow or wax is the best base. The grease cosmetics are either put in little pots, the historic rouge en pot, petit pot, or rolled into sticks. Fat powders have already been described.

*White Grease Cosmetics.*

- ℞ Pulv. cosmet. alb., s. rub., s. Rachel, . . . . . ʒ iss.  
 Spermaceti, . . . . . ʒ i.  
 M. exactissime. S. Fat powder.
- ℞ Bismuth, subnitr., . . . . . ʒ iiij.  
 Talc. præp., . . . . . ʒ iss.  
 Ol. bergam., . . . . . gr. xvi.  
 Ung. cerei, . . . . . ʒ i.  
 M. S. Pomade for whitening the skin.
- ℞ Talc. ven. alcohol, . . . . . ʒ iiss.  
 Zinci oxidi subt., . . . . . gr. xvi.  
 Spermaceti, . . . . . ʒ iiij.  
 Ol. amygd. dulc., . . . . . ʒ vi.  
 M. ft. pasta. S. White cosmetic.
- ℞ Bismuth. subchlor., . . . . . ʒ iiij.  
 Barii sulph. præc., . . . . . ʒ vi.  
 Ceræ alb. liquef., . . . . . ʒ iss.  
 Ol. amygd. dulc., . . . . . ʒ ss.  
 M. S. White theatrical cosmetic.

*Red Grease Cosmetics.*

- ℞ Carthamini, . . . . . gr. xvi.  
 Talc. ven. alcohol, . . . . . ʒ iiss.  
 Spermaceti, . . . . . ʒ iiij.  
 Ol. amygd. dulc., . . . . . ʒ vi.  
 M. S. Red cosmetic (James).
- ℞ Eosin, . . . . . gr. xvi.  
 Ceræ alb., . . . . . ʒ ij.  
 Spermaceti, . . . . . ʒ ij.  
 Saxolini, . . . . . ʒ iss.  
 M. S. Rosalinde (Mrs. Pray).

℞ Alloxani, . . . . . gr. viij.  
 Cold cream, . . . . .  $\frac{3}{4}$  ij.  
 M. S. Schnouda,

As to the method of the application of cosmetics, every one is guided by his own experience. In general, the choice of the cosmetic and the manner of its application must depend on the part to which it is to be applied and on the purpose for which it is worn—*i.e.*, whether it must serve for the house, for subdued daylight; or for the street, for full daylight; or for the stage, for artificial light; and whether the person is to be seen at a distance or near by. As a rule, dry cosmetics are used; these are serviceable for daylight as well as artificial light, especially when white and red are to be used. For this purpose the face is first greased with one of the solid pomades, such as paraffin, cold cream, or glycerin. No part of the face may be omitted and special attention is to be given to the entrance of the nose, the eyelids, and both surfaces of the auricle; the superfluous grease should be removed with a soft cambric cloth. White powder is then dusted on, and the superfluous amount also wiped off with a cloth. Next a more or less saturated red is put on near the mouth and nose and rubbed toward the ear. Since rosy ears are admired, these also must be covered. The cosmetic when applied must be exactly as desired; corrections are not often successful. If it be not altogether right, it is better to remove it and begin anew. For laying on the white powder, a hare's foot is used or a bit of down from the skin of a swan or goose; for the actual cosmetics a tampon is preferred, made of white plush or a very soft thin cambric. For artificial light and when the face is pale only red is used, a red grease cosmetic being applied to the previously oiled skin. For this purpose a cloth is used, or simply the fingers. The red cosmetic is best made by rubbing up fine carmine and glycerin with the finger. This is then applied to the cheek and spread out with a soft cloth; with some experience this is very successful. Blondes should not use too much red. Moist cosmetics are applied with a soft camel's-hair pencil, left until dry, and the excess then wiped off with a cloth. Experienced persons never use these on the face—at the most on the arms and neck, since the white that they give is too intense and makes the complexion sallow and

yellow under artificial light. Of all the cosmetics, the most harmful are the moist ones, since they are more sure to cause comedones; for this reason they should not be used on the face.

As a rule, this broad use of the cosmetic is not enough; detail must be added later. The nostrils are made red with grease cosmetic, the internal canthus of the eye is reddened, and the palpebral fissure is lengthened by a black stripe outward from the external canthus. A similar stripe is drawn on the hairy border of the lower lid, to make the eye brilliant and conspicuous. In order to give the face a certain *je ne sais qua* of revery or wantonness, a weak, black shadow is laid on the lower lid corresponding to the orbital margin, and this makes the eye seem deeper and more languishing. All these little deceptions are necessary for the appearance on the stage,<sup>32</sup> but often enough they are made use of in the common comedy of our daily life, and when not artistically applied, they appear like flecks of powder when seen in the house or on the street, and like hollows in the cheeks when seen on the stage. The eyebrows and the lips must also be spoken of. The former, when too short or thin or light, are lengthened and darkened with brown or black (lampblack) grease cosmetic applied with a soft brush. The shape and direction is also improved and the deception is made more complete by the fine marks of the brush. If not too great an effect be required, this may be gotten by means of an almond half-burnt over a candle, or the black cosmetic may be applied with a pin when it is only wished to give a better arch to the brows; in this manner may be drawn the line on the border of the lid next the lashes, or the line for the purpose of lengthening the palpebral fissure. Lips which are too narrow and too pale are often treated with cosmetics. Only red grease cosmetics and such as are not poisonous, cinnabar being excepted, are to be used. The paint must never reach beyond the margin of the mucous membrane. The broadening of the red line of the lips with paints is practised only on the upper lip, and there only in the middle at either side of the *filtrum*. A lengthening of the mouth would hardly be undertaken by any woman in her right mind.

In removing cosmetics, water may be used for simple powders and moist cosmetics. Grease paints, and powders which

have been applied to the previously greased skin, are to be removed by rubbing them with grease; after this is accomplished the skin may be cleaned with soap and water.

#### PERFUMES.

Perfumes, odoramenta, are considered cosmetic agents only in so far as they serve to give a pleasing odor either to the surroundings of an individual, his clothes and toilet articles, or to his person itself. We shall not discuss the question here whether the indescribable, scarcely perceptible odor of a fresh, sound, and cleanly skin be not better than any artificial odor. From principle we should prefer the former: "Male olet, qui bene olet." No one, however, will deny that the odor from many faint perfumes combined, used by a lady of taste, that odor which is indefinable yet having its own peculiar character, may be pleasing and agreeable. This perfume is composed of a number of odors which the linen, the dress, the gloves, the soap, and the house, give a woman without she herself having been directly perfumed. In this way all perfumes are to be reckoned with the embellishing agents. Perfumes for the toilet have been used from the most ancient times. The agents now employed are mostly old, but great progress has been made in the matter of preparation and preservation of these, with the assistance of chemistry and an improved technique. In diluted form, as perfuming agents are commonly employed, they have merely an agreeable effect on the organ of smell; in concentrated form, whether taken internally or applied to the skin, they have a physiological effect, irritating the part to which they are applied and antiseptically preventing decomposition. Whether a given odor be pleasant or not is a matter of individual taste; for many persons, excluding those with a morbid sense of smell, hysterical usually, certain odors may be unbearable, while to others they are agreeable. Many perfumes which are disagreeable when concentrated are pleasing when diluted; others which are unpleasant when used alone combine to form pleasant mixtures. In the proper mixture of different perfumes consists the art of the perfumer. It is rare that even a trained nose can pick out the individual odors from such a mixture. To discover differences of quality in perfumes of one sort, or to distinguish substances which

have a similar odor, is not possible to any great degree, since the sense of smell in man is, in our day at least, very little practised or developed.

The substances used as perfumes are either contained in animal excretions and secretions or in plants. Some of the latter may also be artificially produced, and some may be made by chemical processes.

Drugs of animal origin used in perfumery are the following:

Ambergris, a light, dark, or ash-gray mass, softened by heat and melting into an oil, of peculiar, not exactly pleasant odor. Its origin and composition and its odorous principle are not fully known; its origin and composition are the subject of much conjecture.

Musk, *moschus*, granules and lumps of dark red color and peculiar, penetrating persistent odor.

The Empress Josephine, wife of Napoleon I., was a great lover of musk. Her toilet chamber in Malmaison, although washed, scraped, and painted repeatedly, still emitted the odor of musk forty years after her death (Piesse).

Musk is the secretion of special glands in the region of the umbilicus in the male musk-deer (*moschus moschiferus*, L.). The *moschus tonquinensis* is more valuable than the *moschus cabardinus*. The odorous principle of musk is scarcely known; we know only that the odor is more intense when the musk is moistened or when combined with weak alkalis.

Civet is a yellow or brown salve-like mass, which when undiluted has a disagreeable odor, found in the anal pouch of the civet-cat, *vivena civetta*. The nature of the odorous principle is unknown.

The odorous principles of these three drugs dissolve in alcohol; the tinctures so made (ambra 1:50, musk 1:150, civet 1:150) are too intensely odorous to be used directly as perfumes, but are added as odoramenta to soaps and smelling powders. Musk is adapted as a perfume for soaps when they are not too alkaline. These agents are important in perfumery, since they render fine, delicate, and fugacious perfumes permanent, and so serve as a fixing agent. Castoreum, the secretion of the inguinal sacs of the beaver, is used for this purpose, and also the scaly tail of the muskrat, *fiber zibethicus*, which has an odor similar to musk.

In the vegetable kingdom the number of perfumes is very

considerable, and their preparation offers no difficulties except as to the matter of expense.

Some genera of plants are very rich in odors, as the Labiatae, which contain the *Lavandula* sp., *Origanum majorana*, *Melissa offic.*, *Mentha viridis* and *piperita*, *Rosmarinus offic.*, *Salvia off.*, *Thymus serpyllum* and *Pogostemon Patchouly*; the Umbelliferae, among which are the *Anethum graveolens*, *Pimpinella anisum*, *Foeniculum vulg.* and also the *Opopanax chironium*; the Leguminosae, to which belong the *Myroxylon peruiferum*, *Myroxylon toluiferum*, *Acacia farnesiana*, *Dipterix odorata*, and *Santalum album*; of the Irideae, the *Iris florentina*; of the Orchideae, the *Vanilla planifolia*; of the Liliaceae, the *Polyanthes tuberosa*; of the Coniferae, the *Juniperus virginiana*; of the Lauriaceae, the *Cinnamomum camphora*, *Laurus*, *Cassia*; of the Graminaceae, the *Andropogon Schoenanthus*, *muricatus*, *nardus*; of the Caprifoliaceae, the *Sambucus nigra*; of the Magnoliaceae, the *Illicium anisatum*; of the Rosaceae, the *Rosa centifolia* and *damascena*; of the Geraniaceae, the *Pelargonium odoratissimum*; of the Convolvulaceae, the *Convolvulus scoparius*; of the Resedaceae, the *Reseda odorata*; of the Violaceae, the *Viola odorata*; of the Styraceae, the *styrax benzoin.* and *officin.*; of the Myrtaceae, the *Myrtus communis*, *Caryophyllus aromaticus*; of the Aurantiaceae, the *Citrus Bergamia*, *medica*, *aurantium*; and of other orders, the *Acorus Calamus*, the *Narcissus odor.*, *poeticus*, the *Heliotropium peruivium*, the *Jasminum odorat.*, and the *Plumeria alba*.

In some plants the perfumes are in the blossoms, as in the acacia, heliotrope, violet, etc.; in others in the herb itself, as in the mints, patchouly, etc., or in the fruits and seeds, as in most of the Umbelliferae, in the rind, as in cinnamon, or in the root, as in the iris. In many plants the odor pervades the whole plant, and in others the flower, the leaf, and the fruit each have their peculiar odor. In some plants, as the balsams and resins, the natural or artificially obtained secretion furnishes the perfume.

These odorous principles have the general name of ethereal oils; these are, as a rule, mixtures of at least two substances, a hydrocarbon like turpentine and oxygenated compounds—camphors, phenols, aldehydes, ketones, esters. The latter substances produce the odor in most cases. The ethereal oils are mostly fluid at the ordinary temperature; many of them when

cooled separate crystalline substances called stearoptens, while the parts remaining fluid are called elæoptens. It is now possible to prepare the ethereal oils in bulk, almost free from turpentine, and these are, therefore, more intense in odor.

Such ethereal oils are called concentrated or patented. All ethereal oils partly decompose under the influence of light, air, and heat; they become oxidized, and their color and odor are altered. They must be protected from the air and light.

The ethereal oils are found in most cases already formed in plants or dissolved in the cell contents; in a few cases the ethereal oil is formed by fermentation with water.

To obtain the oils from the plant, either the part containing them must be destroyed by pressing and distilling it, or the oils must be extracted by suitable solvents. The parts can only be subjected to high pressure when they are rich in oils, as in the case of the rind of the fruits of the *Aurantiaceæ*. The oil which escapes is separated by settling from the watery mucilaginous fluid of the tissue of the rind.

In distilling, the parts or the whole of the plant is put into an iron, copper, or glass retort, heated either with water over an open fire or with steam, the vapor cooled in the usual manner, and the distillate received in so-called Florentine bottles when the oil is specifically light, or in bottles with a lateral opening near the top when the oil is heavy. In the water which has passed over a quantity of the oil usually remains suspended, and may be obtained by dissolving it in a suitable agent. This, however, is not usually done, and the distillates, which have taken on the peculiar odor of the ethereal oil, are used as *aquæ destillatæ*. If the quantity of the oil obtained be too small, the whole distillate is poured over new parts of the plant, and distilled a second time. This procedure is called *cohobation*. In most cases an ordinary water, poor in salt, is used; in many cases, however, it is well to add salt to the water. Finally, very dilute alcohol may be used for the distillation. This operation should be used for materials which are not easily decomposed by heat.

With many plants whose ethereal oils are not obtained fine enough or in sufficient quantities by distillation, maceration is employed. In this process the flowers are thrown into tallow and lard or olive oil heated over a water-bath, and left here from twelve to forty-eight hours. This may be repeated

with fresh flowers. The oils take up the odorous substances, which can then be extracted by treating with alcohol. Oils so prepared are called huiles antiques. Orange blossoms, roses, acacias, violets, and mignonettes are treated in this way. This process is often combined with the following.

Absorption or enfleurage is chiefly used for such substances as do not tolerate the temperature of 104° to 122° F. which is required for the maceration; for these a layer of fat two and one-half inches deep is placed on inclosed glass tables and the flowers are strewn on this. After from twelve to seventy-two hours the flowers are replaced by new ones. In order to perfume oils, bits of coarse cotton wool are dipped in pure olive oil, laid on suspended nets, and strewn with the flowers, which are changed after a certain time. The perfumed oil is then pressed out of the cotton wool.

The so-called pneumatic method consists in passing a current of air or carbonic oxide gas through a vessel filled with flowers, and letting the perfumed air pass into a second vessel in which fluid fat is kept in constant motion.

The odorous substances may also be taken up with ether, chloroform, or petroleum ether. This is done in an extraction or displacement apparatus. The solutions are then subjected to distillation at as low a temperature as possible, and the remainder of the solvent removed from the odorous substance by passing a current of air or carbonic acid gas through it.

From these perfumed fats, by means of long-continued maceration with pure alcohol free from fusel oil, alcoholic solutions of the odorous substances are obtained, which are called extracts or essences. These essences are either used directly as perfumes or in their preparation, or for perfuming other cosmetic preparations. Even after long maceration, the fats do not give up all their perfumes to the alcohol, but a certain delicate odor is always retained, and such fats may be employed in the preparation of pomades and hair oils. The pureness and fineness of the odor of the extract depends on the quality of the alcohol used; certain perfumes are best obtained by being dissolved or distilled in spirits of wine, while for others corn spirits are preferred.

One must not imagine that the essences prepared from the plants named above are always of a pleasing odor, even though the natural perfume of the plant was such. Many of

these perfumes, especially in alcoholic solution, are much too weak and do not last; several of them are, therefore, mixed together, one, a strong perfume, serving as the basis. For such fixation, tinctures of the animal perfumes are used, as well as the essence of vanilla, tonka bean, etc. Many of the extracts sold have no more to do with their flaming plant names than this, since the production of their ethereal oils or essences would be much too dear. The ethereal oils of *Lonicera caprifolia*, *Gaultheria procumbens*, *Cheiranthus Cheiri*, and *Syringa vulgaris* may be obtained. The extracts of these, however, are generally made by mixing other odorous substances. Genuine extracts of the wild rose, the lily, the jonquille, the magnolia, and the garden pink are not to be obtained. The similarity of the odor of the mixtures to that of the plants named is certainly considerable, but for an educated nose not so great as the perfumers would have one to believe.

Products of chemical industries are also employed, artificial varieties of ether such as valerianic acid ether, benzoic acid ether, etc., and their mixtures.

The form in which the perfuming agent is to be used depends on the purpose for which it is to serve, and has been already treated of in part.

Drugs having a strong and lasting odor are pulverized and mixed in sachets of paper or elegant fabrics, and serve for perfuming the linen, the gloves, and the clothes in the drawers. For this purpose may be used iris root, vanilla, tonka bean, vetiver root, cedar and sandal wood, pinks, lavender and acacia blossoms, benzoin, ambergris, and musk. The odor of such mixtures may be intensified by the addition of strong-smelling, fine ethereal oils. These powders may be made into a pasty mass by means of tragacanth mucilage, and put in boxes with a perforated cover (cassolette, boule de senteur) and used for a similar purpose. For perfuming the linen and clothes *peau d'Espagne* is also used. This consists of two pieces of wash leather soaked in ethereal oils and gummed together with a mixture of balsams and resins of pleasing odor.

Perfumes are also used in fluid form. These waters serve not only for perfuming the clothes, but as solvents, since they are strong alcoholic solutions. What was said of alcohol and of balsams and resins applies also to the application of these waters.

The spirituous fluid perfumes may be added to the wash water, but it should be mentioned that this produces a milky emulsion-like fluid.

The aquæ destillatæ and the alcoholic aqueous distillates may be added to the wash water or used in place of this.

The toilet vinegars, which consist of solutions of ethereal oils in concentrated acidum aceticum, or of mixtures of essences with vinegar, since their chief constituent is vinegar and their action depends on this, have been spoken of in another place.

Finally, we should mention smelling salts, pastilles, incense papers and powders. Smelling salts, which are in reality perfumed ammonia and are used in nausea and fainting, come on this account within our sphere; the other preparations, since they are only used for perfuming the dwelling, do not.

#### DEODORIZING AGENTS.

Apart from those agents which were mentioned among the acids and soaps, only chlorine and its preparations and potassii permanganas need be mentioned. We have already considered the action of both in hyperidrosis. Pure chlorine is seldom used, on account of its stifling odor; the same may be said of the eau de Labarracque and the eau de Javelle, which are solutions of potassii chloridum. These used in concentrated form are too caustic. They can be only used very much diluted as an addition to foot-baths, etc. A five to ten per cent solution of calcii chloridum, however, may be used, and since in itself it has little deodorizing power, it may be strengthened by the addition of a few drops of acid. All these chlorine preparations act well on skins which from any cause emit a bad odor; their effect is only momentary, and the treatment of the underlying disease must follow the deodorization.

Potassii permanganas is as efficacious as the others for temporary deodorization, but it has the disadvantage that the skin becomes brown after its use. It is, however, a preparation otherwise innocent, and is to be recommended for the removal of accidental bad odors on the hands and elsewhere, and should be on the washstand of every physician. The brown color of the skin may be removed by a solution of acidum oxalicum.

## CHAPTER III.

### THE HAIR AND NAILS.

#### THE HAIR.

The entire surface of the human body, with the exception of the upper lid, the lips, the inner surface of the hands and feet, and the distal phalanx of the fingers and toes, is covered with partly fine, partly coarse hairs. The former are woolly hairs, lanugo. These are either thin, flexible, and small, or larger, longer, and either more flexible or stiffer. The shorter hairs are not always the weaker; the hairs of the eyebrows and lashes and those about the openings of the nose and ears are strong.

The hair is a thread-shaped structure formed of epidermoidal tissue. It is divided into the point, the shaft, and the root. The latter is an obliquely-situated inversion of the skin, reaching, when the hair is large, into the subcutaneous cellular tissue, and provided with a number of sheaths. At the bottom of the hair follicle is an elevation, a papilla, on which the hair bulb rests. The papilla contains a vascular network and nourishes the hair. The hair itself contains a thin, cortical layer or cuticula, the fibrous part, and the medulla. The cuticula consists of cells arranged like overlapping tiles, the finer end directed toward the point of the hair; the fibrous part consists of spindle-formed cells running in an axial direction. These cells are not immediately joined; there are in the fibrous part numerous small, regularly-arranged spaces, which in health are filled with the fat of the sebaceous glands. In this layer is also the pigment, in solution and deposited in granules. The medulla, occupying one-fourth or one-third of the thickness of the hair, consists of large cells running in an axial direction; in the fine hairs this part is often wanting.

According to Pincus, the coarseness of the hair in general depends on the number of single hairs which contain a marrow. The hairs are arranged either singly or in groups. The groups consist of two, three, or possibly four hairs developing

together. On the hairy parts of the body the number of hairs varies not only according to their locality, but also according to the race and individual. In the fourth part of a square inch 293 hairs were found on the scalp, 39 in the beard, and 13 on the anterior surface of the thigh. According to Witop, a square inch contains 790 blond, 608 chestnut, 572 black, and 493 red hairs. The hair is solid, elastic, and hygroscopic.

The color of the hair depends on the quantity and quality of the pigment in the fibrous part. The intensity of the color decreases with the diameter. The color is often different in a single hair through disturbances in its nutrition. As the hair becomes gray, the pigment in the hair bulb changes from black to brown, red, or yellow, and finally disappears; the root is the first part of the hair to become gray. The hair turns gray first on the temples, then on the scalp, and later on the face and genitalia. As a rule, it is a sign of old age, but it may come on in younger life in consequence of hereditary disposition, or of severe diseases, or of sorrow and grief or sexual excess. Cases of the sudden turning gray of the hair are not rare in the literature. I shall merely refer to the case of Landois-Mosler, in which black hair turned gray with an attack of madness; the case of Brown-Séquard, whose beard turned suddenly gray; the case of Schenkel, in which the ciliae became gray after a traumatic irido-cyclitis, and a number of cases reported by Pincus. The color of the gray hair depends often on the original color of the hair. Black or dark hair becomes silver white; blonde and light brown hair become yellow or yellowish-white. I have observed a case, however, in which both varieties came on together. The silver-gray hairs, apart from their diminished thickness, showed the configuration and the gloss of normal hair, while the yellowish-white hairs were of normal size, but flattened into a band form, twisted in long spirals, and had a slightly waxy gloss. Many of the latter pulled out easily. I have observed this change most frequently in dark beards, while the hair of the head remained black or showed here and there a silver-gray hair. There is also a milky-white decolorization of single bunches of the hair, partly with a lack of pigment in the underlying skin, partly with normal pigment. The former, vitiligo, is found in round or irregular patches in the hair of the head, the eyebrows, lashes, beard, and the hair of the genitalia. These spots may

appear as early as the tenth year and last through life. Since this, like the corresponding anomaly of the skin, resists all remedies, and is in many cases very disagreeable, it is an indication for dyeing the hair.

A cosmetic question of more importance is the falling out of the hair. According to Pincus, the average hair lives from two to six years, then falls out and is replaced by another. Every day a number of hairs fall out, the typical normal change. Among these are many hairs which are short and apparently young, yet which fall out under normal physiological conditions. In the normal change these short hairs should not form over one-fourth of the total number falling out each day. The daily number is usually from fifty to sixty. If it be greater it is anomalous. The hairs which fall out are provided with their bulbs for the most part. A bad barber, however, may break the hair above its root. One-fifth of the long hairs which fall out have a normal root; in the others this is clearer and thinner. In old age and in many diseases of the skin, the absolute number of the hairs falling out daily is larger, and the percentage of the short hairs is greatly increased. The hair then soon becomes thinner. In the ordinary chronic falling out of the hair, the individual hairs lose in length but not in thickness, and this stage passes as a rule unnoticed by the patient, while in the second stage the individual hairs become shorter as well as thinner, and the loss is readily recognized. In the further course of this trouble the amount of hair is lessened, and the individual hairs become thin, delicate, and poorly colored; later, nothing but lanugo hairs develop. Finally even these cease to grow, and an epidermal plug rests in the hair follicle. When the papillæ and the hair follicles atrophy, the baldness is permanent and incurable. This falling of the hair occurs usually on the forehead and at the vertex of the head, while the occipital portion below the level of the points of the ears remains, as a rule, hairy. There are, however, variations from this, as when the baldness extends symmetrically on both sides from the frontal protuberances toward the vertex, leaving a tuft of hair in the middle of the forehead.

Rapid baldness follows both severe general diseases and various skin affections. Such an alopecia prematura symptomatica appears after typhus and in simple syphilides of the

scalp. These cases get well, as a rule, after the cure of the underlying disease. Alopecia after deep inflammatory processes in the skin is usually permanent, and always so when the follicle has been destroyed by suppuration, by cicatrix formation, by pressure or cellular infiltration. In other diseases a scaling off of the skin occurs together with the loss of hair; this is called alopecia furfuracea. Although such a baldness comes on in many general diseases, together with an exfoliation of the skin, the former cannot be considered as dependent on the latter, but both come from a disturbance of nutrition. These cases of alopecia get well usually, but may last for months.

The true alopecia furfuracea is caused by a chronic seborrhœa of the scalp. This is entirely idiopathic, corresponding to the seborrhœa of other parts of the body, and comes on in both sexes, but more frequently in the male, without an ascertainable cause. It usually exists some time before it is noticed; the seborrhœa may get well of itself and permanent baldness remain. Since in thick hair there is naturally a formation of scales on the scalp, an alopecia seborrhoica cannot be easily differentiated from a simple alopecia in the first stages. The growth of new hair is hindered in seborrhoic alopecia by the seborrhoic process. By the overproduction of sebaceous matter and epidermis, the sheaths of the hair roots connected with the glands are either loosened or atrophied by compression, which is followed first by the formation of lanugo hairs, later by the destruction of the hair follicle. Seborrhœa and alopecia may develop in the eyebrows of persons of either sex, and rarely in the scalp of women and the beard of men. The duration of both affections is long, the prospects of recovery are unfavorable, and especially so in the alopecia seborrhoica in its subacute form.

Apart from seborrhœa and the causes mentioned here, the reason for the development of alopecia is obscure. Doubtless nationality and heredity play an important rôle, as well as the quantity and quality of the hair originally. Thick, coarse hairs not close together seem less inclined to fall out, while slender, delicate, and soft hairs fall more readily. It may depend in part on the difficulty of cleansing the hair in this latter case. The rareness of alopecia of the beard may depend on the same cause. That heredity has its influence is clearly

seen in many cases in which persons from fifteen to twenty years old become bald suddenly without appreciable cause, while the same thing has occurred in several generations. The care of the hair and of the scalp has certainly a great influence on the persistence of the growth of hair. The unsuitability of our head covering, with its lack of ventilation, is one of the causes of premature baldness, as is shown in the Orientals, who wear the fez constantly; the depravity of the modern youth may also favor the development of alopecia. Water in the form of washes or douches is another cause which may dispose to alopecia.

Another disagreeable variety of baldness is alopecia areata. The hair here falls out suddenly within a small area. The hairs in the neighborhood of these circular spots loosen and fall out, so that the bald patch may increase greatly within a few days; and when several of these develop and the disease progresses, the whole head may become bald within a few months. The bald scalp does not appear changed as a rule, but is smooth and white. The duration of this disease may be from a few weeks to two years; it gets well spontaneously, the hairs ceasing to fall out, lanugo hairs developing on the bare spots, and finally normally pigmented hairs. This is the ordinary course. In some cases the disease does not limit itself, the eyebrows, the lashes, the beard, and the hair of the body falling out. No definite cause has been ascertained for this disease. The idea of Kaposi that it is a trophic neurosis is plausible, but does not explain the disease altogether.

Microbes have also been supposed to be capable of causing all the varieties of alopecia; in alopecia furfuracea in particular, Lassar and others have accepted a pathogenic organism and have demonstrated the contagious nature of the disease. While no fault can be found with the observations of so good an investigator, still it must be remembered that there are a great number of cases of alopecia furfuracea which are not contagious, since under all the combined evils which this author speaks of, and especially the common use by the family of the same comb and brush, no contagion occurs. I hold the same opinion as the representative of the Vienna dermatological school in regard to alopecia areata, which Kaposi says definitely is not contagious. The hygienic rules which Lassar lays down should certainly be followed, since by the

use of common instruments by the barber, in public bathing places, and even in families, infections of other natures might occur; and the other injurious practices, such as the use of pure fats, etc., may favor the simple falling out of the hair without any bacteriological complication. The fact that antiparasitic treatment may cure an alopecia areata is no evidence of its parasitic nature, since this disease, as said above, will often get well of itself.

Alopecia areata and idiopathic alopecia do not preclude the existence of each other. I have seen both together, and have also observed cases in which, shortly after the complete cure of an alopecia areata, an idiopathic baldness came on.

The treatment of baldness depends of course on the nature of the affection. Although Pohl-Pincus, Lassar, and others give therapeutic treatment for each variety, we are only certain of a result in alopecia seborrhoica. A proper caring for the hair and proper hygienic habits may prevent in many cases the idiopathic premature alopecia. The therapy of alopecia seborrhoica is, with slight exceptions, that of seborrhœa in general. However, the scales, which consist of fat and epidermis, must be first removed. When they are numerous, oil or grease should be applied in large quantities; when the crusts are softened, agents are to be employed which saponify the sebaceous matter and the crusts and emulsify the dirt. These agents are either alkalis or soaps; when the scalp is resistant, barrel soap, and when it is tender, fluid glycerin soap.

These soaps and the spiritus saponatus kalinus should be rubbed in vigorously, with the assistance of a flannel cloth or a bath glove. The soapsuds are to be washed off with lukewarm followed by cooler water or, better, with a douche. If the scalp become sensitive and fissured from this application, it may be protected by oils and pomades, which must of course be pure. Following this comes the actual treatment of the alopecia, which for the most part must be directed toward raising the tone of the sebaceous glands and hair follicles. For this purpose are adapted most alcohols and alcoholic tinctures to which acidum carbolicum, acidum salicylicum, etc., are added; balsamic agents and ethereal oils such as benzoin, Peru balsam, tar, and naphthol have a tonic action and are especially indicated when the underlying skin is hyperæmic

and tender. Tannin and quinine are also tonics. If there be no hyperæmia of the scalp, irritating agents like cantharides, capsicum, and veratrina may be used.

This method of treating alopecia seborrhoica is, with slight variations, given by most authors for the various sorts of alopecia. It is quite unimportant whether the scalp be first washed with an alkaline or tar soap, or with the mixture of soaps, potash, and soda recommended by Lassar, or with the solution of sodii bicarbonas recommended by Pincus. The effect desired is the saponification of the sebaceous matter of the scalp and the emulsification and consequent removal of the epidermis crusts. If one prefer, like Lassar, to substitute sublimate for the alcohol or alcoholic solution of an irritant, this is almost a mere matter of taste; and in the same way acidum salicylicum may be added to the oil which is rubbed in later. Neither sublimate nor acidum salicylicum are specifics in the treatment of any of these alopecias, as is shown by the great numbers of remedies recommended, of which one or the other had in a certain case a beneficial effect. Pilocarpine, either locally applied or injected subcutaneously, was recommended first by Schmitz, later by Lassar, as an agent increasing the growth of the hair. If any principle of treatment for alopecia is to be established, it consists in the employment of alkali, alcohol, fat, and irritants as we have described. The chief point in this, as in cosmetic treatment in general, is a rational hygienic care of the skin, which will be spoken of later.

Besides the changes described which affect the head of hair, there are also anomalies of the individual hairs which may accompany alopecia or which may come on alone. As a forerunner of alopecia, the single hairs become thin, brittle, dry, and lustreless, which changes may also be found in general diseases. A peculiar variety of atrophy of the hair is trichoptilosis. In such hairs the point is split up into fibres. This condition found in the long hair of women and in the beard of men may depend on a partial dryness of the hair (Kaposi) or on abnormal nutritive relations. It seems to me that the hairs in the partially whitening beard, which lose their cylindrical form and become flat, are especially disposed to this splitting. Another form of this disease, called trichorrhexis nodosa by Kaposi, shows spherical or spindle-formed swellings on individual hairs of the beard and more rarely of

the scalp. At these places the hair is brittle without apparently being loosened at its root. The cause of this disease, which certainly depends on a disturbance of nutrition, is not known.

While trichoptilosis may be cured by frequent cutting and rational care of the hair, trichorrhesis is hardly to be cured by any agent if the hair is retained, and only in a few cases has it been cured by repeatedly shaving the hair.

Another frequent anomaly of the hair is its hypertrophy. By this is not meant the new development of hair, nor the excessive length and closeness of it in localities where naturally long and close hair grows. The long rich hair of some females cannot be called hypertrichosis, nor can the excessively long beard of some men. But those cases are called hypertrophy of the hair in which many parts of the body and the unbearded portion of the face are covered with soft, close blond or dark lanugo hairs, and the deformity, unpleasant in the female, where thick, dark, veritable beard hairs develop on the upper lip, chin, and other parts of the face. The hairy growth on warts and *nævi* belongs here also. These latter are the most frequent objects of cosmetic treatment, and next to these the more or less close, woolly hair on the face of females. Small, dark beard hairs on the upper lip of women are often considered piquant or even supposed to be becoming.

The cause of hypertrophy, leaving out of consideration heredity and race, is obscure. Women with dark skins, and southerners in general, frequently show the anomaly of a coquettish mustache. The abnormal development of this hair may depend in many cases on irregularities in the sexual sphere, in many cases perhaps on a local irritation.

The therapy of hypertrophy of the hair may vary. Simple shaving leaves the stump of the hairs visible, and habitually indulged in leads to pigmentation of the skin. When the hairs are present in considerable number it is best to remove them by means of depilatories. When the number is small they may be pulled out with the forceps; but since this method is painful and since it must be frequently repeated, it is not much used.

The newest method and one to be recommended is the epilation by electrolysis.

This operation is simple, and when made according to the

rules laid down by Lustgarten,<sup>33</sup> is entirely innocent. A positive sponge electrode is placed in the patient's hand, a negative needle electrode is pushed into the hair follicle. In the negative current a galvanometer and a rheostat are included. The current used is from one-half to one milliampère. After the introduction of the needle, the handle of the rheostat is turned and the current is allowed to act twenty to thirty seconds.

The action of the current is, as was said before, merely chemical. In consequence of the electrolysis, a frothy fluid escapes from the follicle. The reaction is slight and not very painful. The skin about the needle becomes first pale and later red. After a day or two, small brownish, dry crusts form at the point of entrance of the needle, which soon disappear without leaving a trace. From twenty to forty hairs may be removed at each sitting, repeated perhaps three times a week.

The bad effects of the operation are too strong or too extensive cauterization, and in consequence of this reddening and inflammation of the skin. These are to be treated in the usual fashion, and if proper care be taken, chiefly in regard to the strength of the current, they may easily be prevented.

The agents acting on the hair may affect the hair itself or the scalp. The scalp, like all skin, is elastic, of a color varying in different individuals and containing a certain amount of fat. The elasticity of the scalp is somewhat less than that of the remainder of the skin, since it is connected with the periosteum of the skull by a stiff connective tissue poor in fat, and by a very thin muscular layer. The more this tissue disappears with advancing age, the more its elasticity and turgescence diminish. The color of the scalp is always paler than that of the surrounding skin. In black-haired individuals it is more bluish, in blondes more reddish-white. If the hair disappears from the scalp or if it be shaved regularly like the beard, the color of the scalp comes to be more like that of the face. When the hair is regularly removed, either by the scissors or chemical agents, the color of the scalp becomes darker. The scalp is normally more oily than the remainder of the skin; the fat of the sebaceous glands serves to oil the hair, but under some circumstances the removal of the fat is prevented, and it remains on the scalp mixed with epidermis

scales as a seborrhœa capillitii furfuracea. On the other hand, especially in old age, the scalp may lack the necessary fat. The hypersecretion of the sweat of the scalp comes within our sphere and also the anomalies of elasticity of the skin and of the amount of fat contained in it, anomalies which affect the hair as well as the scalp. What is said here of the scalp will serve for the skin of other hairy parts.

The hair, the chief adornment of the human head, owes its beauty in part to the condition of the underlying skin and suffers with its anomalies. To the turgescence of the skin they owe their position and in part their secure fixation; to the fat of the skin they owe their lustre and their flexibility. The color alone does not depend on the skin but on the race to which the individual belongs, although, as already stated, pigmentary anomalies of the skin as a rule cause anomalous pigmentation of the hair or complete lack of pigment. If the turgescence of the skin grows less in age, the hair falls out; if the sebaceous glands produce too little fat, the hairs become dry and brittle; if there exists seborrhœa, the hair falls out with the epidermis scales; if the scalp is kept damp by hypersecretion of the sweat, the hairs become rough and lustreless and finally fall out.

Therefore hair cosmetics must be such as protect the hair from the bad influences of the atmosphere and other agencies, such as remove the foreign matter in an innocent way, such as give the hair a lustre and fine color and prevent its falling out. This latter, and further, that of making the hair grow again are the weak points in the cosmetic treatment of the hair. From the standpoint of the physician, it is clear that in most cases the hair can only be protected from injurious agencies.

A rational care of the hair will accomplish much; this consists first in the washing of the head. The intervals should vary according to the condition of the scalp as to whether it be too oily or too dry, from fourteen days to a month. When soap water has an unpleasant effect, the yolk of egg may be used for the washing. Too frequent washing or douching of the head is to be avoided. The hair is to be carefully dried after washing. To prevent dryness and tension of the scalp after washing, it should be oiled with pomades or pure oils. Combing or brushing the hair in the wrong direction is injurious, as is also the use of curling irons.

## FATS.

The physiological action of these has been explained; they prevent the evaporation of water from the scalp and from the hair and so preserve the lustre, smoothness, and natural position of the hair. Hair which lacks these should have hair-oils and pomades used upon it. Grease protects the hair from dust, from the heat, from the wind, from moisture, and from sudden changes of temperature which injure the hair immediately or after a time. It is a much better preservative and cleansing agent for the hair than soap and water. Grease is the more indicated where the scalp is not oiled enough by the natural sebaceous matter. In diseases of the hair, when they split, or when they fall out, grease is frequently indicated. It is used with other agents in the treatment of seborrhœa capilitii, and alone in many parasitic affections of the head.

The use of grease on the hair is only contra-indicated in exceptional cases; when there is a normal secretion of fat, and the hair has its natural lustre it should not be used, as here it may make the hair fall out more quickly. On the other hand, very shiny hair is not pleasant to see. Laborers often use machine oil when they have no other fat, and I have seen one man who greased his head with petroleum. There are hairs which will not tolerate the use of grease. As a rule, pomades and hair oils should not be used oftener than two or three times a week, and when frequently used, the hair and scalp should be thoroughly cleaned each time with soap and water.

For purely cosmetic purposes, such as making the hair shiny, curling it or smoothing it, small quantities of the grease are to be applied to the hair. For curative purposes, as in many cases of the falling out of the hair, the scalp alone is to be rubbed with the grease; and in some cases, as for driving away parasites, both hair and scalp are to be rubbed with the grease.

Many fats are especially popular as hair pomades, since they are supposed to strengthen the scalp and increase the growth of the hair. These are the medulla ossium bovis, the fat combed from the mane of a horse, etc., and in ancient times the bone marrow of the stag (*cervæ medullæ*, Ovid) and *ursinus adeps* which Cleopatra is said to have used, and which many ladies suppose they use in the pommades à la graisse

d'ours. In place of most of these fats, lard is now used, apparently with the same results.

The first rule in prescribing hair oils and pomades is to be certain that only pure fat is used. The same reasons serve here as in the application of fats to the skin; the fats which may be used on the hair need, therefore, not be mentioned here. As a basis for pomades purified lard should be used, to which, in order to make it more permanent, one to five per cent. of acidum salicylicum or benzoin may be added. In place of this, fine resins and balsams may be used, which at the same time give a perfume to the pomade.

As the basis of hair-oils should be used one of the freshly-pressed seed oils, of which the simplest and best is the oleum amygdalar. dulc. By mixing solid fats with oils, pomades may be made of any consistence desired; for the summer the consistence is best increased by adding wax. In order to make pomades more pleasing to the eye, melted spermaceti or paraffin mixed with oil is allowed to cool slowly, producing a crystalline pomade; wax and spermaceti dissolved in fatty oils furnish transparent pomades. For perfuming pomades and hair oils, ethereal oils or lard fats, or fatty oils (huiles antiques) are used, which have served for extracting odorous substances. These fats which by maceration in alcohol have given off the greater part of their odor, have still enough remaining to make them serviceable in the preparation of hair pomades (pommades épuisées). Many pomades are also colored. Rose pomades are colored with carmine or henna; beard pomades with lamp-black or umber; stick pomades are often colored green.

In order to make pomades more transparent and more solid, agar-agar is added. Other pomades which are to be used for fixing the hair are mixed with gums, glycerin, and alcohol. Apart from the fact that gums, agar-agar, and the like, stick to the hair and give it an unpleasing appearance, these are all injurious from the decomposition which they undergo. As for glycerin, *mutatis mutandis*, what was said of its injurious action on the skin, applies here. When glycerin is applied to the hair, it not only extracts water from the hairs and renders these less elastic and more brittle, but it catches the atmospheric dust and forms with it a thick paste which prevents the evaporation of the water and dis-

poses the hair to take up the infectious matters floating in the air.

Hair fats may have the consistence of salve, as in ordinary pomades; or the consistence of wax, as in the roll pomades (fixateurs); or they may be fluid, as in hair oils; or finally viscid, as in most brillantines. The following are serviceable:

- ℞ Adip. suilli,  
 Axung. benzoin., . . . . . āā ʒ iv.  
 Pomat. rosat. gallic. (de Grasse), . . . . . ʒ ij.  
 Ol. amygd. dulc., . . . . . ʒ viij.
- C. alcanna tinct.,  
 Ol. rosæ, . . . . . ʒ ss.
- M. S. Crème circassienne (Piesse),
- ℞ Axung.,  
 Sebi oval., . . . . . āā ʒ ij.  
 Ol. amygd. dulc., . . . . . ʒ ij.  
 Bals. Peruv., . . . . . ʒ i.  
 Træ. benzoin., . . . . . ʒ ss.
- M. S. Pomade (Débay); a simple and serviceable pomade.
- ℞ Pomat. tuberos. gall., . . . . . ʒ iv.  
 Ol. ricini,  
 Ol. amygd., . . . . . āā ʒ ij.  
 Ol. æth. berg., . . . . . ʒ ij.
- M. S. Castor-oil pomade.
- ℞ Ol. ricini, . . . . . ʒ i.  
 Spir. vini rect., . . . . . ʒ iss.  
 Ol. æth. flor. aur., . . . . . gtt. ij.
- M. S. Brillantine.

Castor oil is supposed to increase the growth of the hair. After its frequent use the hair gets a thick, greasy coating, as after the use of glycerin. In using these pomades and oils the hair must be very carefully cleansed.

- ℞ Medull. oss. bovis, . . . . . ʒ i.  
 Ol. amygd. dulc., . . . . . ʒ ij.  
 Ol. rosæ. . . . . gtt. iv.
- M. S. Pomade.

℞	Ceræ alb., . . . . .	3 vi.
	Ol. antiq. ros., . . . . .	℥ iss.
	“ “ acac., . . . . .	
	“ “ jasmini, . . . . .	āā 3 vi.
	“ “ flor. aur., . . . . .	
	“ “ tuberosæ, . . . . .	āā ℥ vi.

## M. S. Pomade philcome (Piesse).

℞	Ol. antiq. rosæ,	
	“ “ tuberos., . . . . .	āā ℥ iss.
	“ “ flor. aurant., . . . . .	
	Cetacei, . . . . .	āā 3 vi.

## M. S. Huile crystallisé (Piesse).

℞	Ceræ alb., . . . . .	3 i.
	Cetac., . . . . .	3 ij.
	Liquef. misce c.	
	Ol. amyg. d., . . . . .	℥ viij.

## Semirefrig. agit. c.

	Aq. rosæ,	
	Glycerini, . . . . .	āā 3 ss.
	Ol. rosæ, . . . . .	gtt ij.

## M. S. Crème neige. (On account of its small amount of glycerin, serviceable but not popular.)

℞	Cetacei, . . . . .	3 i.
	Paraffini, . . . . .	3 ss.
	Ol. antiq. rosæ,	
	“ “ violar., . . . . .	
	“ “ tuberos., . . . . .	āā 3 iij.
	Ol. flor. aurant., . . . . .	3 i.

## M. S. Huile crystallisé (Bernatzik).

℞	Ol. amygd. dulc., . . . . .	℥ iss.
	Ol. antiq. jasm., . . . . .	3 iij.
	“ “ tuberos., . . . . .	3 i.
	“ “ flor. aurant., . . . . .	3 i.
	Ol. amygd. amar., . . . . .	gtt. ij.

## M. S. Hair oil.

℞	Ol. behen., . . . . .	℥ iiiss.
	Ol. æth. bergam., . . . . .	gr. vi.
	Træ. ambraë, . . . . .	gtt. ij.

## M. S. Hair oil.

℞ Axung. benzoin.,  
 Cerae albæ, . . . . . āā ̄ iss.  
 Pomat. jasmini,  
 " tuberos., . . . . . āā ̄ vi.  
 Ol. rosæ, . . . . . gtt. v.  
 M. S. Roll pomatum (Piesse).

℞ Cerae alb., . . . . . 3 i.  
 Sapon. oleac.,  
 Gummi arab., . . . . . āā ̄ vi.  
 Aq. rosæ, . . . . . ̄ iss.  
 Ol. bergam., . . . . . ʒij.  
 Ol. thymi, . . . . . gtt. iiss.  
 M. S. Hungarian pomade for the mustache (Piesse).

#### AGENTS USED FOR DRYING THE HAIR AND REMOVING ITS FAT.

*Agents Used for Dandruff.*—In individuals in whom by nature the scalp is very oily, where there is an overproduction of sebaceous matter, and where this matter, together with the atmospheric dust and the cast-off epidermis, produces the disagreeable condition called dandruff, all varieties of fat-removing agents are indicated, and the choice depends on the degree of the trouble.

These agents are the alkalies, the soaps, and alcohol. They act here very much as on the skin, the two former by saponifying the fat and emulsifying the dirt, the latter by dissolving the fat and extracting the water. The action is somewhat different, however. The scalp is much more sensitive and delicate than the remainder of the skin, and is much more easily injured by harmful influences. Continued washing with alkaline fluids, the energetic application of these in concentrated form, and the use of too caustic alkalies dry the scalp, the skin seems too tight, and an annoying feeling of tension comes on. After the more intense application of these, the scalp becomes red, sensitive, and painful. The application of alcohol causes effects similar but not so intense. The hairs are very thin, horny structures which have nearly completed their term of life, and when frequently treated with alkaline

solutions, as may be seen in a simple test-tube experiment, they swell up, become transparent, lose their lustre and color, become partly dissolved and brittle; on this action depends the employment of depilatories. Alcohol affects the hair in a milder manner; it removes the fat completely, abstracts the water, and when its use is continued makes the hair rough. The caustic alkalies are here seldom employed, and even the simple alkaline carbonates are used only in weak concentration. The neutral soda soaps and sodii boras as well have a much milder action, but do not remove the fat completely.

These conditions furnish the indications for the use of the individual remedies. Soaps and sodii boras are used for simple cleansing, and for removing some of the fat from the normal hair and scalp, and the excess of fat after the use of oils and pomades. Solutions of the alkaline carbonates, weak solutions of the caustic alkalies, strong alkaline soaps, potash soaps, and spiritus saponis kalini are indicated in seborrhœa capillitii and when there is excessive formation of dandruff; alcohol and alcoholic fluids are indicated for drying the hair and removing its fat. The stronger agents are also used as preparatory agents before dyeing the hair, since here the fat must be entirely removed.

Since the dilute acids act in some respects like the alkalies, acidum aceticum and salicylicum may be used for dandruff, and also aromatic substances and balsams, such as benzoin and Peru balsam.

Soaps may be prescribed either in fluid form, as fluid glycerin soap, or in alcoholic solutions. In order to lessen the subjective symptoms which the washing with alcoholic fluids alone may cause, glycerin may be added. But since the latter is injurious to the hair, only small quantities of it should be used. The acids and the aromatic substances are given in alcoholic or in ethereal solutions. Alkalies and sodii boras are used in aqueous solution and only in small quantities; they are sometimes mixed with alcohol, which has no purpose.

Drying powders are given as such. They should not be strongly perfumed, chiefly since strong odors on the head are disagreeable, and also because cases are recorded in which a considerable addition of iris has caused nervous attacks and even epilepsy. For the removal of dandruff these powders,

especially the more active ones, may be prescribed in the form of salves.

Prescriptions for soaps may be found under the heading of soaps. For the other agents some prescriptions are given here:

℞ Potassii carb., . . . . . ʒ ss.  
Aq. destil., . . . . . ʒ̄ iiiss.

M. S. Dandruff water.

℞ Sodii bor., . . . . . ʒ i.  
Aq. destil., . . . . . ʒ̄ iiiss.

M. S. Idem.

℞ Sapon. oleac., . . . . . ʒ iiij.  
Spir. vini gall., . . . . . ʒ̄ iiiss.  
Aq. colon., . . . . . ʒ̄ iss.

M. S. Hair water; a mildly-acting remedy for dandruff.

℞ Potassii carb., . . . . . ʒ iiij.  
Aq. destil., . . . . . ʒ̄ viij.  
Vitell. ovar., . . . . . No. iiij.

M. S. Water for washing the hair. (The yolk of egg must be beaten until fully mixed.)

℞ Potas. carb., . . . . . ʒ̄ ij.  
Aq. rosæ, . . . . . ʒ̄ iiiss.  
Glycerini, . . . . . ʒ̄ iiij.

M. S. Dandruff water.

The following are to be rubbed energetically into the scalp in the evening; in obstinate cases they may be left to dry and removed some days later with yolk of egg and lukewarm water or with yolk-of-egg soap.

℞ Ol. cocos,  
Sebi bovini,  
Liq. sod. caust., . . . . . āā ʒ̄ iss.  
Vitell. ovar., . . . . . No. vi.  
Ol. de cedro, . . . . . ʒ i.  
Fiat via frigida sapo pond., . . . . . ʒ̄ iiiss.

M. S. Yolk-of-egg soap (Auspitz).

This may also be used alone in seborrhœa and dandruff formation.

℞ Acid. salicyl., . . . . . gr. xvi.—3 ss.  
Spir. vini gallic., . . . . .  $\frac{7}{3}$  iiiss.

M. S. Dandruff essence.

℞ Acid. carbol., . . . . . gr. iiss.  
Spir. vini rect., . . . . .  $\frac{3}{3}$  iiiss.  
Glycerini, . . . . .  $\frac{3}{3}$  ss.

M. S. Water for dandruff (Kaposi).

℞ Acid. borici, . . . . . 3 iij.  
Glycerini, . . . . . q. s. ad sol.  
Spir. vini, . . . . .  $\frac{7}{3}$  x.  
Ol. caryophyll., . . . . .  $\frac{7}{3}$  ss.

M. S. Water for washing in pityriasis capitis (Neumann).

℞ Acid. carbol.,  
Bals. peruv.,  
Spir. lavandul., . . . . . āā 3 i.  
Spir. vini gallic., . . . . .  $\frac{7}{3}$  x.

M. S. Idem (Neumann).

℞ Spirit. ætheris, . . . . .  $\frac{7}{3}$  iiiss.  
Træ. benzoini, . . . . .  $\frac{7}{3}$  ss.

M. S. Dandruff water (Hebra).

Among these agents are to be included a number of powders, some indifferent, some slightly astringent. For drying hair which is by nature oily, where the scalp is not over fatty, simple absorbent powders, such as rice meal and alumen plumosum, may be used in one of the forms already given.

Hair powders are used for hygienic purposes and as preventive agents, especially by women in severe diseases and in child-bed. The tangling of the hair and its loss in consequence of this may be prevented by the proper use of powder. In such cases a little acidum salicylicum should be added to prevent decomposition and its bad odor. To prevent the chilling of the scalp after the bath, powder may be used in many cases in place of fat. Since dry and rough hair appears thicker than that moist and oily, many women use powder to make a thin head of hair appear fuller. Nothing is to be used, however, when the hair is very oily, except the necessary cleaning. Powdering the hair for cosmetic purposes is not much done in our day, but is, however, practised by some women and indeed not to the detriment of their beauty. Those who are discon-

tented with the color of their hair and who do not wish to use dyes, powder their chestnut or red hair to make it appear blond. The use of gold or copper dust (gold powder) or glass dust (diamond powder) is now very rare.

If a strong astringent be indicated, as in severe seborrhœa or hyperidrosis of the scalp, the metallic salts already mentioned may be added to the powder, as for example zinci oxidum, plumbi acetas and carbonas, hydrargyrum præcipitatum, and bismuthi subnitras. These agents are more frequently employed in the form of salves. The prescriptions given may be used on the hairy scalp.

℞ Zinci oxid.,  
 Plumbi carb., . . . . . āā ʒi.  
 Ungt. pomad., . . . . . ʒ iss.  
 M. S. Salve.

℞ Hydrarg. præcip., . . . . . ʒi.  
 Tinct. benzoini, . . . . . ʒij.  
 Cera alb.,  
 Ol. amygd. dulc., . . . . . āā ʒi.  
 M. S. Salve.

The application of these agents is very simple. The alkaline fluids are applied two or three times a week with a soft brush; alcoholic solutions are applied with a sponge. If the hair itself is to be treated, single strands are separated with a coarse comb, moistened with a sponge, and dried with a soft cloth. To pour a quantity of fluid over the head and then to dry it by rubbing it energetically with a cloth, as persons with short hair are accustomed to do, is directly injurious. When crusts are present these are to be softened with oil, either by pouring oil on directly, or by rubbing it on by means of a bit of flannel. After the removal of these, soap should be applied with a shaving-brush or with a piece of flannel and finally washed off with warm water; in most cases the scalp should then be greased with salves or oils. When there is only a moderate amount of crust formation, the scalp should be rubbed every two weeks with spiritus saponis kalini in the evening and washed in the morning; besides this, the scalp should be washed with alcohol two or three times in the week, and once a week it should be greased. Salves are to be

rubbed on with the palm of the hand after the head has been thoroughly cleaned with soap.

#### AGENTS FOR INCREASING THE GROWTH OF THE HAIR.

In the sense understood by the laity and perfumers we do not recognize such agents. There are, however, cases in which, with a rational care of the hair, proper agents may stop or lessen or delay the falling out of the hair. The active agents are but few, however, and only two or three need be mentioned. A number of these have been spoken of in the preceding, viz., alcoholic, balsamic, and alkaline medicaments.

They are softening and loosening in their action, like the alkalis, or of tonic action such as cinchona and quinine; others contain tannin; others alcoholic and balsamic agents; others are irritants, such as cantharides, sabina, veratrum, capsicum, hellebore, and ammonia; sublimate may be mentioned here, although not properly an agent increasing the growth of hair. Besides these, there are substances which are said to have a direct influence on the growth of hair, such as potassii iodidum and pilocarpine. A number of other substances having no specific action, such as the fats and bardana root, are also employed.

The agent to be chosen depends on the nature of the falling out of the hair; some of these, especially the alcoholic and irritant agents, may be injurious when long used, and since the course of the disease is often chronic and the application of the remedies must be long continued, they often do harm. They may either cause the hairs to become brittle or may give them an abnormal color. When alkalis are used, dark hair becomes lighter or reddish-brown, cinchona and tannin pomades make the hair darker, sabina makes it dirty gray or grayish-brown. The agent used must be often changed, and irritants are to be used alternately with emollients. Frequently agents of different sorts are combined.

Alkalis are indicated when the falling out of the hair depends on the formation of crusts; sodii bicarbonas has been recommended by Pincus in the first stage of the chronic falling out of the hair; tonics are, however, often useful in this condition. When the scalp is pale and the hairs do not grow long, further, in the infrequent cases in which the baldness

begins with the rapid falling out of the hair, cinchona in tincture or salve form is good. Although it is not proven that quinine is absorbed by the unbroken skin, experience shows the value of the application of quinine. It should, however, be added that the favorable results are observed especially after the use of preparations of the bark itself, which also contains tannin. A marked action of the alkaloid when used alone is seldom observed. With pomades of quinine and quiniæ tanas the effect depends mostly on the action of the fat, and the peculiar action of the salt is seen only after energetic inunction with the pomade. The alcoholic agents are indicated in the hypersecretion of sebaceous matter and should not be used long, since they cause the hairs to break off. The irritants are rarely indicated; in torpid falling out of the hair, with a loose and oily scalp, in alopecia areata, the tar preparations, ethereal oils, cantharides, and sabina may be used to advantage. The ethereal oils and also oleum sabinæ cause headache when long used. The latter lessens the rapidity of the growth of the hair, but increases the average life of the hairs. Balsamic and resinous agents make the hairs less brittle. Care must be taken in adding glycerin to the agents named; with the alcoholic agents and alkalies which themselves make the hair rough, the glycerin increases this effect and is to be avoided. When the scalp is very raw and the formation of crusts is marked, salves may be used in place of the solutions or alternating with them. Whether the agents of the last-named group are of any value is questionable. At any rate, besides the use of these the hair must be rationally taken care of, as was stated in the beginning of this section.

From what has been said, it will be understood that the following prescriptions are not all equally efficacious in increasing the growth of the hair.

℞ Sodii bicarb., . . . . . ʒ iij.  
 Ungt. emoll., . . . . . ʒ iss.

M. S. Salve (Pincus).

℞ Sodii bicarb., . . . . . ʒ ss.- ʒ i.  
 Aq. destil., . . . . . ʒ vi.

M. S. Hair water (Pincus).

- ℞ Cort. quiniæ reg., . . . . . ʒ iij.  
 Digere c.  
 Spir. vini rect., . . . . . ʒ iiiiss.  
 p. 3 dies; filtra; dein adde  
 Spir. sacchari opt., . . . . . ʒ ij.  
 Ol. æth., . . . . . q. s. ad odor.

M. S. Spirits of quinine for the hair. After removing the fat from the scalp with soaps or alkalies, this is to be rubbed on energetically three or four times. The head should not be dried afterward.

- ℞ Ext. quin. frig. parat., . . . . . ʒ iij.  
 Quiniæ muriat., . . . . . ʒ i.  
 Vini rubri optimi, . . . . . ʒ ss.  
 Coque ad remanent., . . . . . ʒ i.  
 Ol. rusci, . . . . . ʒ iij.  
 Tinct. malat. ferri, . . . . . ʒ ss.  
 Tinct. myrrhæ, . . . . . ʒ i.  
 Ungt. rosæ, . . . . . ʒ iss.

M. exactissime. S. Hair pomade.

- ℞ Ol. macidis,  
 Ol. terebinth.,  
 Ol. amygd., . . . . . āā ʒ ss.

M. S. Hair oil (for alopecia areata).

- ℞ Tinct. formic., . . . . . ʒ ij.  
 Quiniæ sulph., . . . . . gr. xvi.  
 Aq. coloniens., . . . . . ʒ i.

M. S. Spirits for the hair.

- ℞ Quin. sulph., . . . . . gr. xvi.  
 Acid. acet.,  
 Acid. carbol., . . . . . āā ʒ viij.  
 Mixt. oleos. bals., . . . . . ʒ vi.  
 Glycerini, . . . . . ʒ i.  
 Ol. ricini, . . . . . ʒ iiiiss.

M. S. Liquor trichopathicus (Hager).

- ℞ Tinct. quiniæ, . . . . . ʒ vi.  
 Ol. sabinæ, . . . . . gtt. x.  
 Spir. vini gall., . . . . . ʒ iss.

M. S. Spirits for the hair.

℞ Tinct. gallar., . . . . . ʒ iij.  
 Tinct. cantharid., . . . . . ʒ ss.  
 Aq. coloniens., . . . . . ʒ i.

M. S. Spirits for the hair.

℞ Acid. tannici, . . . . . gr. xvi.—ʒ i.  
 Spir. vini rect., . . . . . q. s. ad solut.  
 Ol. amygd., . . . . . ʒ iss.

M. S. Hair oil.

℞ Tinct. capsici, . . . . . ʒ ss.  
 Aq. coloniens., . . . . . ʒ iiss.

M. S. Spirits for the hair (for alopecia areata).

℞ Tinct. hellebori albi, . . . . . ʒ i.  
 “ benzoini, . . . . . ʒ iss.  
 “ myrrh., . . . . . ʒ ss.  
 Spir. vini gall., . . . . . ʒ viij.

M. S. Spirits for the hair.

℞ Bals. peruv., . . . . . ʒ ss.  
 Ungt. pomadin., . . . . . ʒ iij.

M. S. Hair pomade (Hebra).

℞ Tinct. hellebori,  
 Tinct. canthar., . . . . . āā ʒ ij.  
 Spir. vini rect., . . . . . ʒ viij.

M. S. Spirits for the hair.

℞ Veratrin., . . . . . gr. ij.—viij.  
 Spir. vini gall., . . . . . ʒ iv.  
 Spir. lavandul.,  
 Glycerini, . . . . . āā ʒ vi.

M. S. Spirits for the hair.

℞ Sol. hydrarg. bichlor. (gr. viij. ad ʒ v.),  
 Glycerini,  
 Spir. colon., . . . . . āā ʒ iss.

M. S. For washing the head.

℞ Ol. sabinæ, . . . . . gtt. xv.  
 Spir. vini rect., . . . . . ʒ iss.

M. S. Spirits for the hair (Pincus).

℞ Acid. salicyl., . . . . . ʒ ss.  
 Tinct. benzoini, . . . . . ʒ ij.  
 Ol. ped. tauri, . . . . . ad ʒ iiiss.

M. S. To be rubbed into the scalp after the fat has been removed.

℞ Inf. frond. sabinæ, . . . . . ʒ iiij. : ʒ iiiss.  
 Ext. quiniæ frig. parat., . . . . . ʒ i.

M. S. Hair water.

℞ Acid. carbol., . . . . . ℥ xvi.  
 Sulph. sublim., . . . . . ʒ i.  
 Adip. colli equini, . . . . . ad ʒ iss.  
 Ol. bergam., . . . . . gtt. x.

M. S. Hair pomade (Lassar).

℞ Pilocarpin. mur., . . . . . ʒ ss.  
 Quin. muriat., . . . . . ʒ i.  
 Sulph. præc., . . . . . ʒ iiij.  
 Bals. peruviani, . . . . . ʒ vi.  
 Medull. bovin., . . . . . ad ʒ iiiss.

M. S. Hair pomade (Lassar).

The treatment of the falling out of the hair is tedious and requires care and patience both on the part of the physician and on the part of the patient. It must be methodically carried out, and every agent used must be carefully applied. If any result at all is to be obtained, it is only through the alternation and combined employment of the various agents.

It is best to divide the treatment into three periods. In the first the scalp is completely freed from grease, from crusts and scales, by the use of soap, spiritus saponatus kalini or alkaline solutions with or without the previous use of fats, according to circumstances. To wash the scalp with alkaline or alcoholic solutions, the hair is parted at different points with a coarse comb (*démêloir*) and the fluid rubbed in for some moments with a shaving-brush. The evening is preferable for this. After the washing with soap the hair is to be washed with a shower-bath, first with warm, then with cooler, and finally cold water. It should be then dried and left for an hour. The soap treatment may be completed in one or two days; the alkaline treatment is continued two or three times a week for several weeks. Following this comes the treatment

with irritant, tonic, astringent, or specific agents, that is to say, with the agents for increasing the growth of hair in general. In simple or premature alopecia, these should be applied from once to three times a week with a soft brush or sponge; in alopecia areata they are to be rubbed in energetically with a stiff brush and left to dry.

Salves may be rubbed in either with a stiff brush or with the finger. Quinine and tannin preparations must always be energetically rubbed in. After the application of alcoholic or aqueous solutions of irritating substances, fat inunctions should be made, either with simple oil and pomade or with preparations to which medicaments such as acidum salicylicum have been added. Such inunctions may also at times be necessary in the course of irritant treatment, when the scalp becomes rough, raw, and red. During such treatment and also during the fat treatment, soap washings are to be employed once or twice a week.

#### HAIR DYES.

Only the free part of the hair outside the follicle can be dyed. In the ordinary methods the color affects for the most part only the epithelial layer of the hair. In rarer cases in which a coloring matter has been a considerable time in contact with the hair, a staining of the cortical substances occurs by imbibition. It is impossible to dye the hair from the root outward in any manner. The color becomes less intense after some time on account of the washing, combing, and brushing of the hair. For this reason and because of the new growth of gray hair the dyeing process must be repeated from time to time. As a rule, only gray or red hair is dyed. The requisites of a good dye are that it should be easy to apply, that the color should be natural, should appear quickly and should be durable, and that it should contain no injurious substances. It is difficult to fulfil all these requirements, and it cannot be said that any one of the agents used does this. The most natural coloring is obtained by the use of black dyes, although it is out of the question to try to get the peculiar tone of bluish-black hair. The middle colors, light brown and blond, are much less natural; growing hair is never dyed white. Most agents cause a rapid coloring, yet many persons,

in order to make the deception as great as possible, prefer a gradual dyeing; this is only undertaken with dark or semi-dark hair. A weak, gradually-appearing dark color is obtained by using hair oils and certain animal fats, which contain a small quantity of sulphur or iron, such as freshly extracted oil of eggs and neat's-foot oil. It is commonly believed that the former, if used soon enough, will prevent grayness. Other agents which form colored combinations with the acids of the atmosphere or the sulphur of the hair, such as extract of nut hulls, tannin, acidum pyrogallicum, and many metals, especially in pomades or hair oils, cause a gradual darkening of the hair. Dilute acids when long employed make the hair lighter. Mothers who wish to keep their children blond avoid the use of oil and wash their heads with vinegar, lemon juice, or camomile tea.

No artificial hair dye is permanent in its effects in the sense which the laity believe, since the color gets weaker as time elapses and the new growing hair, which has another color, must be dyed in its turn. The conditions being the same, the dyeing with henna, lead, silver, and other metals is the most permanent.

The vegetable and organic dyes are generally innocent; next to these are iron and potassii permanganas; then copper, bismuth, and potassii bichromas; next peroxide of hydrogen, silver, and finally lead. The bad effects are either local, causing the destruction of the hair or skin, inflammation of the eye, and nasal catarrh, or general, as in the case of lead, which used in the form of cosmetics or dyes may produce a severe intoxication. The local affections are produced by the organic and metallic agents as well as by the agents later to be mentioned.

The organic and vegetable hair-dyeing agents commonly used are as follows:

1. Fresh walnut hulls. The fresh juice and the fresh parenchyma of the hulls or of the unripe nuts, color light or gray hair gradually dark brown. The coloring substance is not known, but is probably a phloroglucide; it is extracted by means of fats and alcohol, but is not active in these solutions.

2. Henna. The leaves of the *Lawsonia inermis* contain a material belonging to the phloroglucides and soluble in water, which stains the epidermis, especially the horny portion,

orange-red; the color may be made darker by the use of alkalis, and may be removed, though only with difficulty, by means of acids. All hair, even the naturally dark, is colored red by henna. In order to get the black color desired, the hair, after being colored red by henna, must be treated with indigo. The color so obtained is a beautiful black.

The process is as follows: After the fat is removed from the hair by means of soap, single strands of it are smeared with a paste made of henna powder and warm water. The hair is then left for an hour, after which time it is washed with warm water. After being dried, it is smeared in a similar manner with a paste prepared from indigo powder and water, which after an hour is washed off. The hair which was colored orange-red by the henna appears at this stage greenish-black, and later, through the oxidation of the indigo, it becomes intensely bluish-black. This dye is very permanent; it is months before the hair requires redyeing. According to J. E. Polak, to whom we owe the description of the dyeing methods used in Persia, by the application of a paste consisting of one part henna and three parts indigo with water, the hair can be colored any shade from light to dark chestnut-brown by varying the length of the period of application. One hour is sufficient for light brown, an hour and a half is required for dark brown. According to my experiments, which were made only on dead gray hair, the tints obtained are not black, but more or less brown, having no likeness to a natural color of the hair.

Neither of these powders is injurious; according to the Persians they even increase the growth of the hair. Henna is a drug which was employed as a medicinal agent in the earliest times, being used as an application for headache, etc. It is not difficult to get; it may be had in quantities, as I have convinced myself, in the Egyptian bazaar in Constantinople, at a fairly reasonable price. Both powders, when dried and protected from the air and light, are very permanent. I have obtained an excellent dye with preparations twenty years old. This is especially true of henna, which becomes red under the influence of light—it is originally yellowish-green—without losing its coloring power. Indigo is readily injured by moisture, and Polak recommends in place of it a mixture consisting of—

Indigo,	
Grape sugar,	
Pease-flour,	. . . . . āā gr. viij.
Aqua, . . . . .	. . . . . ʒ ij.

Add yeast and put the mixture in a warm place. When it effervesces, the hair, previously colored with henna, may be brushed with this mixture and in this way a similar color be obtained. It is not possible to produce a blond color of the hair by henna alone, as Alpinus thought; the hair becomes orange-red, which possibly might be made paler by treating it with an acid.

The scalp may be also colored red with henna, but since this occurs only after intense and long-continued application, it may easily be avoided. The women of the Orient, with a taste quite incomprehensible to us, color their nails and fingertips and even the whole palms of the hands with henna. The manes and tails of the Turkish and Bosnian horses are also dyed red with henna.

The process requires at least half a day. It should be stated that in case the hair is not redyed, the color gradually disappears and the most incredible tones appear, such as bluish-violet, wine-red, etc. If the dyeing be not continued up to old age, the individual must remain concealed for weeks or only appear with the head covered.

3. An agent which colors the hair in a worse manner than henna alone is curcuma, an alcoholic tincture of which colors the hair at once pale yellow. The coloring matter of curcuma is turned brown by alkalies, for which reason the hair is to be washed with soda after the fat is removed. The yellow color is not that of a natural blonde, and curcuma is used only in the theatre or in subdued lights. It is used, as James says, by individuals who wish to escape recognition. The color can be removed again by simple washing.

4. While treating of cosmetics a very simple and uninjurious agent was mentioned which is used to darken the eyebrows. This is lampblack, which is prepared as a cerate with wax and fats, or used as India ink, which is in reality nothing but lampblack suspended with mucilage in rose water. The latter preparation is sold as kohol (Piesse), teinture Chinoise. Under this name kohol a finely-powdered antimonii sulphidum

is used for blacking the brows and lashes by Egyptians of high and low condition. The use of this goes back to the most ancient times. An effect similar to that of the French kohl is gotten by a number of agents, which are dark-colored alkaline extracts of peat, etc.

5. Acidum pyrogallicum is one of the organic agents which is used alone and in combination with metallic substances or alkalis. The hair moistened with solutions of acidum pyrogallicum and the epidermis as well become dark gray or black under the influence of air and light. The color so obtained is not pleasing, and appears only in the course of some days or possibly weeks. With alkalis it causes a brownish-black color. The color obtained by the use of acidum pyrogallicum alone may be fixed with alkalis, and is then removed with difficulty by water, but easily removed by dilute acids, vinegar, or lemon juice. It is much more frequently employed in combination with metals.

#### INORGANIC DYES.

1. Iron. Various combinations of this agent are employed, and even its internal use has been recommended for premature grayness. Soluble salts of iron alone make the hair darker by forming ferri sulphidum, but usually a second substance is added which is either sulphur or an agent like tannin or acidum pyrogallicum, which form dark-colored combinations with iron. Pfaff recommended a pomade composed of oil of egg which contains sulphur, and ferri lactas; Eble gave ferri acetas with balsam sulphuris. Besides these, dyes are used which contain a salt of iron and tinctura gallarum or a solution of acidum pyrogallicum. Any salt of iron may be used. A combination of ferri sulphas and acidum pyrogallicum may be recommended as simple and harmless; the same may be said of mixtures containing salts of iron and copper. Here belongs also a Turkish hair dye. For its production, pounded galls are roasted with oil by which acidum pyrogallicum is produced; the mass so obtained is pulverized and kneaded with water to a paste and dried over a fire. To this is added a powdered mixture of the oxides of copper and iron, rasticopetra or rastic-yuzi; the paste is to be kept in a moist place, and small quantities of it rubbed into the hair with the

fingers. The paste is often mixed with perfumed powders. The color of the hair becomes a permanent and glossy black. Stains on the skin from ink made with galls may be removed by acids.

2. Manganese. A solution of potassii permanganas is reduced by organic substances and forms a hyperoxide of manganese. Hair and skin are colored an intense brown by a concentrated solution of this salt. The color is, however, not permanent and must be frequently renewed. It is more permanent when the hair has been previously moistened with a solution of hyposulphuret of soda. When dead hair is treated with a concentrated solution of potassii permanganas and afterward with warm concentrated acidum oxalicum, it loses its color and becomes white. This decoloration does not take place in living hair, as I have demonstrated on myself. Stains produced by manganese may be removed by washing them in dilute acids.

3. Copper. Salts of copper form dark brown combinations with various substances. Such substances are the solution of potassii ferrocyanidum, sulphur in the form of the sulphurate of potassium or calcium, and acidum pyrogallicum. Of the salts of copper, cupri sulphas dissolved in ammonia is most frequently employed, or, more rarely, cupri chloridum.

The brown stains on the skin may be removed by the solution of potassii cyanidum. The hair is dyed a fine brown by these salts; agents which color the hair black have often added to them salts of copper, and the black then produced is not of an inky tone, but brownish. Other substances, such as iron or nickel, are added to the copper solutions to make these dye more darkly.

4. Lead. All the salts of lead turn black from the action of the hydrogen sulphide of the atmosphere, which forms plumbi sulphidum. Even the repeated combing of the hair with a lead comb makes it darker; but the action of so small a quantity of lead is slight. The action of all the salts of lead is slow; if sulphur præcipitatum be added the process is hastened; immediate coloring is only obtained, however, when the hair, after being treated with the lead preparation, is exposed to hydrogen sulphide, calcii sulphidum, etc. The preparations most employed are composed of litharge mixed with calx viva, sodii sulphyras, or plumbi oxyhydras in alkaline solution;

plumbi acetas with calcii carbonas and calx viva, sulphur, sodii hyposulphis, and salts of silver and bismuth; plumbi nitras, chloridum, hyposulphis, and carbonas. The lead salts are used almost exclusively for coloring the hair brown or black. On account of their poisonous action, their sale is forbidden by law in Germany and Austria.

5. Silver. Argenti nitras in the presence of organic substances and under the influence of light is reduced; black metallic silver separates in the form of granules. This reduction is produced much more quickly by acidum pyrogallicum.

With hydrogen sulphide, the silver salts give a black precipitate of argenti sulphidum. Epidermis and hair become brown or brownish-black after being simply wet with silver solutions. The color appears more quickly when the hair is treated previously with acidum pyrogallicum or afterward with sulphhydrate of sodium or potassium. The color obtained by argenti nitras is very permanent; if the hair goes for a long time without redyeing, it takes on a greenish, then a reddish tone. This occurs also when the fat has not been entirely removed from the hair before the application of the dye. By using an ammoniacal mixture of argenti chloridum and cupri sulphas, and with this sodii sulphhydras, a bright reddish blonde color is obtained. Argenti nitricum is applied in solution with ammonia. The less ammonia there is present, the darker will be the color obtained. Stains on the skin may be removed by potassii cyanidum, saturated solution of potassii iodidum, or potassii ferrocyanidum.

6. Cadmium. The salts of cadmium form yellow compounds with sulphur. If the hair be moistened with cadmii sulphas and then treated with ammonia sulphas in solution, it takes on a yellow or blonde color. If the cadmium predominate, the color is darker; if more ammonia be added, the color is lighter. The skin is also colored yellow; the stains may be removed by acids.

7. Chromium. Acidum chromicum and the neutral and acid potassii chromas are reduced by acidum pyrogallicum. The product is of dark, reddish-brown color. Gray hair may be colored reddish-brown by means of this. Acidum chromicum is very caustic and should be used only in dilute solution; the acid potassii chromas has a similar action. Care must be taken in the employment of salts of chromium, since they are poisonous.

8. Hydrogen peroxidum. Organic substances are bleached by this. Dark or red hair is colored reddish-yellow or blonde by it. The color, or rather the bleaching, does not come on at once, but the agent need be reapplied but rarely. Small spots are made on the skin by this agent. It exists only in aqueous solution which must be fairly concentrated (15 to 20%). The solution retains always some acidum nitricum and decomposes easily when exposed to the air and light, after which it cannot be used. Acidum nitricum alone gives a yellow color to epithelium, which, before hydrogen peroxide came into general use, was strengthened by a solution of acidum picricum, which also gives a yellow color. The yellow obtained in this way is very different from the natural yellow of the hair.

The mineral dyes are given in the form of pomades and hair oils when a gradual dyeing is desired, in other cases in concentrated aqueous solution (5 to 20%). The metallic salts are given together with the coloring substances, such as sodii hyposulphis and sulphur, or without these, as acidum pyrogallicum, tinctura gallarum, sodii sulphyras. This depends partly on the necessity of their separation for producing the color, and partly because certain mixtures, such as that of iron and tannin, produce the color or precipitate in the bottle, and this dye would then have little effect on the hair. Many drugs are added to these mixtures which have no purpose whatsoever. The mordant or precipitating agent is often chosen at will and from time to time replaced by another agent. The different mixtures are usually given in separate bottles. Even when one mixture alone suffices for the production of the color, the necessary mixture for removing the fat is given in a second bottle. A third mixture is often given for removing the stains that the dye leaves on the hands. In prescribing dyes the purpose of each separate bottle should be clearly understood by the patient. From what has been said, the reader may compose the various hair dyes as he wishes, remembering only that the solutions are to be concentrated. A perfume is generally to be avoided.

℞ Acid. pyrogal., . . . . . ℥ xvi.  
 Spir. vini rect.,  
 Aq. destil., . . . . . āā 3 vi.  
 M. S. Hair dye.

℞ Ferri sulph., . . . . . 3 ss.  
Aq. destil., . . . . . 3 v.

M. S. No. I.

℞ Acid. pyrogallici, . . . . . ℥ xvi.  
Aq. coloniens., . . . . .  $\frac{3}{4}$  iss.

M. S. No. II.

℞ Ol. ovar. rec. press.,  
Medull. oss. bov., . . . . . āā 3 i.  
Ferri lactic., . . . . . 3 ss.  
Ol. cassiæ æth., . . . . . ℥ xxiv.

M. S. Pomade (Pfaff).

℞ Cupri sulph., . . . . . gr. xxiv.  
Aq. destil., . . . . .  $\frac{3}{4}$  i.  
Ammon. p. liq., . . . . . q. s.

ad solut. sedim. enasc.

M. D. in vitr. cœrul. S. No. I.

℞ Potassii ferrocyan., . . . . . 3 i.  
Aq. destil., . . . . . q. s.

ad perf. solut.

M. S. No. II. Or,

℞ Calcii hydrosulph., . . . . . 3 ss.  
Aq. destil., . . . . .  $\frac{3}{4}$  iss.

M. S. No. II. or acidum pyrogal. 1:50.

D. Teinture brune française.

℞ Bismuth. subnitr., . . . . . 3 ss.  
Sodii subsulph., . . . . . 3 i.  
Aq. destil., . . . . .  $\frac{3}{4}$  iss.

M. S. Hair water.

℞ Bismuth. nitr., . . . . . 3 i.  
Ærugin., . . . . . gr. xvi.  
Ol. amygd., . . . . . q. s.

ut f. ter. mass. tenerr.

Ungt. emoll., . . . . .  $\frac{3}{4}$  i.

M. S. Hair pomade (Neumann).

℞ Sodii hydrosulph., . . . . . 3 ss.  
Aq. destil., . . . . .  $\frac{3}{4}$  iss.

M. S. No. I.

- ℞ Potassii hypermang., . . . . . gr. xvi.  
 Aq. destil., . . . . . ℥ iss.
- M. S. No. II.
- ℞ Potassii oxalati, . . . . . ℥ ss.  
 Aq. destil., . . . . . ℥ iss.
- M. S. No. III. For removing stains caused by the preceding.
- ℞ Argenti nitr., . . . . . ℥ ss.  
 Aq. destil., . . . . . ℥ vi.
- D. in vitr. cœrul. S. No. I.
- ℞ Potassii sulph., . . . . . ℥ ij.  
 Aq. destil., . . . . . ℥ vi.
- M. S. No. II.
- ℞ Potassii cyanati, . . . . . ℥ ss.  
 Aq. destil., . . . . . ℥ vi.
- M. S. No. III. For removing stains—poison!
- ℞ Acid. pyrogal., . . . . . gr. xvi.  
 Aq. destil., . . . . . ℥ ij.
- M. S. No. I.
- ℞ Argenti nitr., . . . . . ℥ ss.  
 Aq. destil., . . . . . ℥ ss.  
 Ammon. p. liq., . . . . . q. s.
- ad solut. enasc. sedim.
- D. in vitr. cœrul. S. No. II.
- ℞ Potassii iodidi, . . . . . ℥ ss.  
 Aq. destil., . . . . . ℥ i.
- M. S. No. III. For removing stains.
- ℞ Argenti nitr.,  
 Tartari depur., . . . . . āā gr. xvi.  
 Ammon. p. liq., . . . . . ℥ ss.  
 Ungt. rosæ, . . . . . ℥ i.
- M. S. Hair pomade.
- ℞ Cadmii sulphat., . . . . . gr. xvi.  
 Aq. destil., . . . . . ℥ ss.
- M. S. No. I.
- ℞ Solut. ammon. hydrosulphurati, . . . . . ℥ iss.
- M. S. No. II. Teinture blonde américaine.

- ℞ Potassii bichrom., . . . . . ʒ ss.  
 Aq. destil., . . . . . ʒ vi.  
 M. S. No. I. As No. II. use acidum pyrogal. as above.  
 ℞ Solut. hydrogen. superoxid., 10-20%, . . . ʒ iss.  
 M. S. Hair water.

The application of the hair dyes is very simple. When pomades or preparations of lead are employed—which latter, however, should not be used—the preceding removal of the fat may be dispensed with. In the latter case the fat should be left, for the reason that the sulphur of the fat causes the formation of plumbi sulphidum and thus the color. In all other cases, the hair is to be cleaned by means of a sponge or a soft shaving-brush with a solution of soap 1 to 2%, or soda or ammonia solution 1 to 2%, and afterward washed with warm water. The hair should then be carefully and quickly dried by fanning and combed with a coarse comb. The color is made better and more uniform by the thorough drying. This procedure need not be so carefully gone thorough with, especially with the alkaline sulphides. The solution of the metallic salts may be rubbed into single strands of the hair from the point toward the root by means of a soft tooth-brush. The thoroughly dried hair is then treated with the fixative agent, the mordant. The hair is then left to dry, and afterward combed regularly to obtain a mixture of the various shades, and finally greased to give it a gloss. In dyeing the beard and the hair when it is short, it must be thoroughly washed with water in order to remove the excess of the coloring or fixing agent. The hair should be redyed every eight or ten weeks, the beard and the mustache every four weeks at least. Most dyes produce stains on the skin and linen which are hard to remove. In order to avoid these it is well to put a rubber or oil-cloth covering about the shoulders, to wear gloves, and to oil the face with glycerin or fat.

Of the injurious effects which I have myself observed, I would mention pustular eczema following the use of ammoniated cupri oxidum and acidum nitricum. In one case I have seen severe herpes conjunctivæ appear at each dyeing of the hair with argenti nitricum in a man of sixty, and disappear when the use of the agents was stopped or when it was replaced by potassii chromas.

## DEPILATORIES.

It is easier to destroy the hair than to replace it, and while we possess but few agents which increase its growth, we have a number of excellent agents for removing it.

These act either mechanically or chemically. The mechanical procedures, apart from shaving, singeing, and rubbing with pumice-stone, are barbaric. These are the tearing out of the hair by means of tightly-sticking plaster and the extraction by means of broad-jawed forceps. Of shaving it need only be said that the soap used beforehand has a chemical action in softening and swelling the hairs by means of the alkali which it contains. Singeing, practised in ancient times by means of nut shells, is still employed to-day on parts of the skin which are not very sensitive and which are covered with coarse hairs; for example, the calves are singed with a candle flame. Rubbing with pumice-stone is not done in our day. The application of tightly-sticking plasters which tear out many of the hairs in their removal is very painful. The extraction by means of the forceps is still more painful, and on this account can only be repeated at long intervals. The two last methods have the disadvantage that not all the hairs can be removed at one sitting.

This is easily obtained by using chemical agents. At the present time sodii sulphyras, calcii sulphyras, and arsenici sulphidum are used for this purpose. Potassii sulphidum is seldom used because of its severe action on the skin, barii sulphidum seldom because of its weak action.

Sodii sulphyras is a salt readily soluble in water, which is obtained by passing sulphuretted hydrogen into soda lye.

Calcii sulphyras is insoluble in water, and is obtained by passing sulphuretted hydrogen into a preparation of freshly-slaked lime. It is a greenish jelly-like mass. For a similar purpose other combinations of sulphur and lime may be used, such as the solutio Vlemingx and sulphuret of potassium with lime. The latter has a weak action and only gives perceptible results when mixed with slaked lime, while the solutio Vlemingx irritates the skin severely and produces often a dermatitis.

Orpiment is a combination of sulphur and arsenic found in nature which, mixed with caustic lime, is used as a depilatory.

The action of the alkaline sulphides and of the calcii sulphidum on epithelium is about the same as that of the caustic alkalies. If hair, epidermis scales, or the like be treated with alkaline sulphides or with solutio Flemingkx, they turn in a short time into a soft gelatinous mass and partially lose their color. If these be applied to the living hair the effect is the same, and the partially-destroyed hair may be easily brushed off. The skin may also become swollen if the application be long continued, and after the removal of the agent, appear dry, rough, and inflamed. In the use of arsenici sulphidum, the chief part of the action is due to the calcii sulphidum, since arsenici sulphidum is always mixed with caustic lime. As the arsenici sulphidum contains always acid combinations with arsenic, the action is also partly due to these, since they may cauterize the surface of the hair follicle. The inflammatory irritation and cauterization of the interior of the follicle, which is caused in less degree by other chemically acting depilatories, may occasionally cause a complete cure by destroying the follicle.

The alkaline sulphides and the calcii sulphidum are suspended in water, or mixed to a paste with starch or lime water; orpiment is made into a similar paste with lime water or albumen. The manner of their application will be seen in the following prescriptions:

℞ Sodii hydr. sulph., . . . . . ℥ iv.  
 Solv. in aq. calc., . . . . . ℥ x.  
 Calc. hydr. pulv., . . . . . ℥ iiiss.

Misce, dein sensim adde

Amyli, . . . . . ℥ i.

M. f. pasta.

℞ Solut. concentr. barii sulphurat., . . . . . ℥ iiiss.

Amyli, . . . . . q. s.

ut f. pasta (Redwood).

It is to be prepared extempore, since the agent readily decomposes.

℞ Calc. caust. pulv., . . . . . ℥ iiij.

Sodii hydr. sulph., . . . . . ℥ ij.

Amyli, . . . . . ℥ iiij.

M. f. p. Some of this powder is to be rubbed to a thin paste (Boudet).

℞ Barii sulphd., . . . . . ʒ iij.  
 Zinci oxid.,  
 Amyli, . . . . . āā ʒ ss.

M. S. To be mixed with water to a paste.

℞ Calc. hydr. sulph. in aqua, . . . . . ʒ vi.  
 Ungt. glycerini,  
 Amyli, . . . . . āā ʒ ij.  
 Essent. citr., . . . . . gtt. x.

M. S. To be spread one line thick on the parts from which the hair is to be removed, and after ten to thirty minutes washed off (Reveil, Martius, Boettger).

℞ Sodii hydr. sulph., . . . . . ʒ iij.  
 Cret. præp., . . . . . ʒ i.  
 Aq., . . . . . q. s.

ut f. pasta.

S. To be spread on as thick as a knife-blade and washed off after some minutes.

℞ Calc. hydrat., . . . . . ʒ i.  
 Orpiment pulv., . . . . . ʒ i.

M. exact. S. To be mixed with water to a thin paste (Rhusma).

℞ Calc. hydrat., . . . . . ʒ iss.  
 Orpiment, . . . . . ʒ iij.  
 Amyli, . . . . . ʒ i.  
 Aq. calc., . . . . . q. s.

ut f. pasta mollis.

S. Paste (Neumann).

℞ Calc. caust. pulv., . . . . . ʒ i.  
 Pulv. irid., . . . . . ʒ ij.  
 Orpiment, . . . . . ʒ i.

M. S. Like the preceding (Débay).

℞ Calc. viv., . . . . . ʒ i.  
 Gumm. pulv., . . . . . ʒ ij.  
 Orpiment, . . . . . ʒ i.

M. S. Like the preceding (Delacroix).

- ℞ Calc. ust., . . . . . ʒ ij.  
 Orpiment, . . . . . gr. xvi.  
 Liq. potassii caust.,  
 Album. ovar., . . . . . q. s.  
 ut f. pasta mollis.  
 M. S. Dépilatoire (Débay).
- ℞ Orpiment, . . . . .  $\frac{z}{3}$  ss.  
 Calc. viv., . . . . .  $\frac{z}{3}$  i.  
 Coque c.  
 Liq. potas. caust., . . . . .  $\frac{z}{3}$  xvi.  
 M. S. Depilatory water (Débay).
- ℞ Orpiment, . . . . . gr. xvi.  
 Amyli, . . . . . ʒ iiij.  
 Calc. vivæ, . . . . .  $\frac{z}{3}$  ss.  
 M. S. As above.
- ℞ Orpiment, . . . . . ʒ iiss.  
 Sodii hydrosulph., . . . . .  $\frac{z}{3}$  iss.  
 Coque c. Aq., . . . . . q. s.  
 Calc. hydrat., . . . . . q. s.  
 ut f. pasta mollis.  
 M. S. Paste.

The preparation as well as the application of the remedies employed as depilatories is very simple. These agents are mostly used in the form of soft pastes, which are either to be prepared by the apothecary or made into a fine powder, which immediately before using is to be mixed in water or other fluids, such as potash lye, into a paste. They need seldom be boiled. The alkaline sulphides, as well as the calcii sulphidum, have an unpleasant odor of sulphuretted hydrogen. This odor is hard to remove, and when a perfume is added, the resultant odor is even worse than the original one. However, if a penetrating odor be desired, essent. citri may be used. The mixture with iris flor. given above is not unpleasant.

The indications for use vary with the different authors and the different preparations. The pastes are applied in a layer as thick as a knife-blade. The waters are applied until the parts are quite wet. The length of time for the application of the alkalies of sulphur, barium, and calcium is from ten to thirty minutes; for orpiment, two to five minutes. Many of

the pastes, such as the rhusma, are left until dry. The best indication is the feeling of the patient; as soon as the slight itching which the application causes gives place to an intense burning, the remedy is to be stopped; if the remedy be applied too long the skin becomes inflamed, and since it is robbed of its epidermis in places, it appears spotted. After the application, the paste and the softened hair are removed together by means of a dull knife, a paper-knife, or spatula of ivory, bone, or horn. The skin is then to be carefully washed with warm water, and since tender portions of the skin are always reddened and inflamed by the procedure, inunctions of almond oil, cold cream, or zinc salves should be made after the skin has been thoroughly dried with cotton wool. When the hair is dark, powder is to be applied after the inunction.

The selection of the agent depends on the locality from which the hair is to be removed, on the sensibility of the skin, and on the quality of the hair. Boettger's depilatorium is indicated for the face, and in females, when soft, light hair is to be removed, since this remedy irritates least and acts so energetically that its application need not be repeated for months. The most severe in its action is orpiment with lime, whether in paste or in decoction. The latter must be so strong that when a feather is dipped into it the vanes fall off. This agent, if used at all, should be applied only to the less sensitive parts, such as the arms and the lower portion of the thigh, and where the hairs are coarse, as in the beard.

All these depilatories are only palliative in their action; the hair grows again after a longer or shorter time, and only after repeated application of the remedy is atrophy of the follicle produced, and thus complete healing secured. This is only to be gotten with certainty by means of electrolysis.

#### THE NAILS.

The nails are spheroidal quadrilateral plates, shield-formed, and convex upward, which rest on the terminal phalanges of the fingers and toes. They are made up of horny epidermis cells, in the superficial layers overlapping each other like tiles. The nail is implanted on three of its sides into a groove in the skin, and projects, with its anterior border, beyond the fingertip. The portion of the finger on which the nail rests is called

the bed of the nail. The portion of this bed further back beneath the root of the nail is called the matrix. The body of the nail is separated from the root by the lunula, a curved line parallel to the outline of the finger-tip, beneath which the root of the nail appears of a rose or milky white color, sharply cut off from the red of the body of the nail. The white color is caused by the slighter transparency of this part of the nail, which latter depends upon the unusual thickness of the root and upon the regular arrangement of the cells in the mucous layer at this point (Toldt). The lunula is the boundary between the part of the matrix having large papillæ and the part toward the free edge of the nail with smaller papillæ. According to H. Hebra, only the lateral and posterior portion of the matrix deserves this name, since it alone has large papillæ and may be regarded as concerned in the production of the nail. The nail becomes gradually thicker from its posterior boundary up to the lunula; from this it continues forward uniformly thick. The bed of the nail is richly supplied with vessels and nerves. The under surface of the groove is covered with epidermis which extends somewhat over the surface of the nail.

The nails grow from behind forward, faster in summer than in winter; in the course of a year about half a drachm of nail substance is produced. The growth is slow, and several weeks are required for the nail to be completely replaced. If a nail be cut it grows rapidly, but beyond a certain length it does not grow.

The cells of the nail substance are chemically like other horny epidermis cells; they swell up in lye. They are in general very resistant to chemical processes, but are easily stained by certain agents. These stains can only be removed with difficulty. If the nails become unusually dry they get brittle; if they take up water, as in bathing, in sucking the fingers, or in excessive sweat secretion of the toes, they become soft.

The beauty of the nail lies in its color, its curve, and its length. The body of the nail should be smooth, glossy, and translucent, and should show a regular white crescent posteriorly. Children from one black and one white parent show a reddish-brown pigmentation of the lunula, and even in quadrans this peculiarity throws light on the color of the progenitors. The free margin of the nail should be smooth, para-

bolic, and extend as far as the finger pulp itself, to which it should serve as a protector. If the nails are kept too short, as in pianists or when the individual has the habit of biting the nails, the finger-tips become broad and flat. If they are worn too long they break off easily. The Chinese custom of wearing the nails long, signifying that the individual has nothing to do, is inconvenient and ugly. The groove and the thick cutis should be regular as well as the epidermis covering the root of the nail, which latter should not extend too far outward on the nail. Very beautiful finger-nails are much rarer than beautiful hands: they are usually ruined by the use of cosmetics. While the present methods of covering the feet remain in use, no beauty can be expected in the toe-nails. If the nails are not beautiful by nature, they may at least be kept clean and pure.

The cosmetic treatment of the healthy nails is a proper hygienic care of them. The cutting is best done with blunt scissors curved on the flat. The edges at the sides are not to be cut in too deeply, since in the first place it looks ugly and in the second it permits the growing-in of the nail.

For this reason and since experience teaches that the nail cut on the sides grows fastest, the nail of the great toe should be cut squarely across or concavely, differing thus from the other nails, which should be cut in a parabolic line. If the cut surface be not altogether smooth, it should be made so with a file.

In the space under the nail in the hands of persons who do nothing, even in those who wear gloves the whole day, and of course much more in laborers, a yellow-gray or black dirt collects, composed of epidermis scales, dust, fat, etc. The removal of this dirt is a consideration of beauty, of cleanliness, and of hygiene in many cases, such as in the finger-nails of physicians. If the cleaning be not too long delayed, soap and water applied with a brush will accomplish it except in the case of blood.

At times the dirt must first be removed with a blunt-pointed instrument. The common nail-files of steel or ivory are not good, since they often wound the epidermis lying under the free margin of the nail. A blunt-pointed flexible stick is the best. After the nail has been cut, cleaned, and washed, the epidermis should be pushed back on the root of the nail by

means of the spatula and of the nail-file. The ordinary steel nail-files are bad here also, since they often cut and tear the epidermis.

An ivory spatula or the finger-nail is better adapted for this procedure. Various agents are recommended to make the nails smooth, rosy, and glossy. The simplest method is rubbing the nail with lemon juice, vinegar, or dilute mineral acids. All these, and especially the lemon juice, have the effect desired; it should, however, be remarked that these agents dry the surrounding skin, wrinkle it, and produce erosions, etc. Besides these are employed the softening agents used for the hands, mostly in the form of pastes, such as almond and honey pastes.

A prescription for these would be

℞ Farin. amygd. decort., . . . . . ℥ i.  
 Mellis rosati, . . . . . q. s.  
 ut f. pasta mollis.

The direct polishing agents are emery, a fine granular form of corundum, cinnabar, and oxide of tin powder, varying according to the method of its manufacture from a white granular, amorphous powder to a crystalline or a brownish-yellow amorphous powder. The use of emery as a polishing agent is well known; oxide of tin is used for polishing tortoise shell or even marble. The two former are used in the form of pastes, the oxide of tin as a powder. The white oxide of tin often scratches the nail in place of polishing it. Since this depends upon the coarseness of the powder, it should be previously sifted. If very tender nails are scratched by the white or the yellow powdered oxide of tin, this may be mixed with twenty to thirty per cent of talc. venet. I prefer the yellow oxide of tin.

℞ Lapid. smiridis pulv.,  
 Cinnabar factit. subt. pulv., . . . . . āā ʒ iij.  
 Ol. amygd. dulc.,  
 Ol. adorat., . . . . . āā q. s.  
 ut f. pasta mollis (Tromsdorff, 1804).

S. The nails are to be covered with this paste after washing before going to bed, and it is to be rubbed off in the morning with doeskin and almond paste.

℞ Stanni oxidati lævigati, . . . . . ʒ iij.  
 Essent. lavandul.,  
 Carmino tinct., . . . . . q. s. ad. odorat.

M. S. After washing, the nail is to be rubbed with this powder by means of the fingers, doeskin, or a polissoir. The latter is a bit of wood, ivory, or the like covered with leather.

The nails become diseased in various ways. They are affected in consequence of a number of general diseases, syphilis, scrofulosis, etc.; and after skin diseases like psoriasis, eczema, lichen ruber, etc. Besides this, abnormalities in size, thickness, and color are found which come within our scope.

A beautiful rose color of the nails (*ροδοδάκτυλος Ἥως*—rosy-fingered dawn) is rare. New-grown nails after a trauma are often cheesy-white or brown; with the change in color the gloss disappears. I have seen cases where all the nails, without any apparent disease, became reddish-brown and furrowed longitudinally, and this appearance was permanent. In such cases all treatment is useless. A new-growing nail is often helped wonderfully by covering it with white wax. Subungual hemorrhages, which often occur from pressure and punctured wounds, need no special treatment. The bluish-black spot extends forward with the growing nail and is cut off with the nail when it reaches the free margin.

White spots are often found in the body of the nail; these probably owe their existence to an anomalous secretion of the corium. They vary from the size of a pin-point to that of a poppy-seed. Often, however, a number of these spots coalesce and form a figure of irregular outline. I am not able to say what causes them; they appear at times periodically, often on all the finger-nails, sometimes only on a single nail. These spots also extend forward as the nail grows, and are finally cut off. Various remedies have been recommended for their removal, as for example:

℞ Picis,  
 Terebinth., . . . . . āā ʒ ss.  
 Sal. culin.,  
 Potassii sulph., . . . . . āā ʒ ij.  
 Aceti, . . . . . ʒ iiss.

M. S. The nail is to be covered with this.

As far as I know, all remedies are useless in this condition.

An important anomaly which concerns as well the size as the shape of the nail is the hypertrophy called onychia, onychographosis, onychauxesis.

We shall not consider here those cases due to general diseases or to affections of the skin, and there remain only those cases in which the hypertrophy is due to a congenital deformity or to trauma. A nail of this sort, if not cut, grows to many times its normal length and is bent once or more times at its end. Often the nail is thin and very brittle, or it may increase in breadth in place of length and many layers of nail substance lie superimposed, so that the nail stands obliquely or almost perpendicularly upward. The layers may also be irregular and the nail thus be bossy, or there may be hollows and longitudinal and transverse furrows. The nail may only increase in its lateral diameter, and in the course of this an inflammation of the bed of the nail, paronychia, come on. In chronic forms the papillæ of the matrix increase also, and when the nail is cut these bleed. These diseases affect more frequently the toe-nails, and chiefly in consequence of trauma caused by improper shoes or in consequence of acquired or congenital twisting of the toes so that one overlies the other. The hypertrophy in breadth affects most frequently the nail of the great toe, which is, therefore, the one most frequently affected with paronychia, ingrowing nail. In the idiopathic diseases of the nails treatment is frequently of service. Gryphotic nails are often cast off spontaneously and the new nail may be sound. Cutting the nail deeply and cauterizing the bleeding papillæ often does good. When the nail is abnormally thick it may be scraped with a bit of glass or filed and then be cauterized, or applications of potash lye or soap made, or the nail be enveloped in emplastr. diachyli, hydrarg.

Here belongs also the frequent superficial wounding of the skin in the neighborhood of the groove for the nail. These shallow but often painful splits in the skin, called hangnails, are usually due to improper hygienic measures. When the epidermis is not pushed back for some time, the surrounding skin is stretched and tense, or it tears into little flaps which at one end still adhere to the epidermis. Many individuals are especially disposed to this. These wounds, though slight, may be a source of infection in the hands of physicians and

midwives; careful attention to the nails is the prophylactic treatment.

Ingrown nails deserve a special notice. For the cure of this painful affection surgical procedures have been resorted to, such as the tearing or cutting out of the nail, which are so painful that usually they must be done under narcosis. In place of this, simpler and less painful measures may be used, which, especially in the beginning of the affection, are easily carried out and are followed by good results. The simplest treatment is to introduce charpie bit by bit under the edge of the nail by means of a sound and retain it in position by means of adhesive plaster. This dressing should be renewed daily; the ulcer at the margin heals either by itself or after being cauterized. This latter may be dispensed with and the healing hastened by adding plumbum subnitricum to the charpie. This is a dry powder which has a weak caustic action, producing a dry eschar. Lately, enveloping the nail in tin-foil and raising it from its bed by means of this has been recommended. After it is once cured, care must be taken to cut the nail always square across or slightly concavely.

## CHAPTER IV.

### THE MOUTH.

THE lips, the teeth, the gums, and in certain cases the cavity of the mouth also require cosmetic consideration.

The lips are two horizontal, very movable folds which surround the fissure of the mouth and on whose margin the external skin passes over into mucous membrane. The red part of the lips, though in reality belonging to the mucous membrane, retains in its outer portion some of the characteristics of the skin; it is dry, with a peculiar gloss, since it contains sebaceous glands, and is covered with an epithelium which is dry from the action of external influences and which, in the normal condition, cannot be seen to exfoliate. The beauty of the lips consists in the outline of the margin, in the regular swelling of their tissue, and in the freshness of their color, as well as in the gloss of the red portion of the lip, which is not visibly moist nor yet altogether dry. The lips are connected with the gums by means of a fold of mucous membrane, the frenulum; a too deep and broad attachment of this band to the upper lip makes the opening of the mouth appear divided into two portions when it is drawn laterally, as in smiling or laughing.

The gum, gingiva, is the mucous membrane inclosing the neck of the teeth. The beauty of the gum depends on its firmness, its regular contour—the pyramids formed between two teeth must not be too prominent and the boundary line of the gum must form a delicate, wavy line; finally on the redness and also on the purity of the gum.

The teeth are hard, bone-like bodies set into the upper and lower jaws, running in the normal condition in a regular curved line. The number is not constant, but on an average perhaps twenty-eight. Three portions of the tooth are recognized, the crown, the most important part from our point of view; the neck, which is inclosed by the gum; and the root,

lying in a corresponding hollow of the jaw. The most important teeth cosmetically are the four incisors, the two canines, and the first bicuspid of either jaw, since these are the ones which usually are visible when the mouth is opened. The other teeth are of importance in another way, since they help to produce the roundness and fulness of the face and the tension of the cheeks. The enamel which covers the crown is of greater interest to us than the dentine or bone of the tooth which forms its proper body, and the cement which covers the outer surface of the root. The hard and brittle enamel covers the crown like a cap, becoming thinner toward the neck and ceasing with a sharp border. The surface of the enamel is covered by a thin, homogeneous, structureless membrane, the enamel skin. The color of the teeth is yellowish-white. To be beautiful, the number of the teeth must be complete; there must be no cavities between the teeth, and they must be normally placed. The individual teeth must not be turned on their axis, but must stand straight. The surface must be smooth, shining, and not partially covered with tartar. Although the normal color should be yellowish-white, a clearer milky-white or a color with a trace of gray is not undesirable.

Finally, the cavity of the mouth should exhibit no stringy saliva when opened, and the breath should be entirely odorless. The cosmetic errors of the lips are those of color, form, and condition of the epidermis. The lips may be too broad and too much arched, or on the other hand too thin and narrow. Against too broad and too prominent lips (negro lips) the *ars fucatrix* is powerless. Bad outlines in the lips may, however, be corrected by a line or a point of paint at the angle of the mouth, so that a small mouth will appear larger and a mouth with the corners drawn down may be made to look smiling. In rare cases, bathing the lips with tannin mixtures and other astringents or cerates of this sort will accomplish something. Swelling and too large lips are not a great fault. Small and drawn-in lips which have taken on this form after frequent pinching of the lips together and drawing-in of the mouth, may be improved by frequent sucking and by applications of irritants such as Spanish pepper or mustard. I would recommend, however, neither the one procedure nor the other. The only purpose of the lip paints is to make the lips appear broader, and for this a stroke half a line broad is sufficient.

Colorless, faded lips can scarcely be restored except in cases where this condition is due to severe general disease, and here the natural tendency to convalescence, and the remedies suitable for the general disease may cause an improvement. A favorable prognosis may be made in those cases caused by a transient atony of the muscles and anæmia, while those caused by debilitating diseases and excess in venery are often incurable and require lip paints.

A very important error is the chapping of the lips. In many individuals of either sex the epithelium comes off in larger or smaller scales without an apparent cause. In many cases this is due no doubt to atmospheric influences, in others to the influence of irritants such as tobacco and sharp spices, but besides these there are a number of cases—perhaps the majority—in which no cause can be discovered. The lips are pale and covered with smaller or larger partially-attached scales, or they are red and appear dusty from the presence of the scales; in many places the surface is eroded and suffused with blood, in others covered by a reddish-brown crust. In the middle of the upper and lower lip, more rarely in other positions, the erosions cause deep rhagades which bleed readily and are cured with difficulty. If these last for a long time, as they commonly do, the lips become thick and the cure is more difficult. The duration of the affection when it is caused by external influences is from two to three weeks; in many cases it lasts for months or years, or recurs after being healed, so that a chronic chapping of the lips may be spoken of. In many cases a herpes labialis may be the immediate cause. These rhagades are to be distinguished from the sore spots at the angles of the mouth. These also have a twofold manner of development. The most frequent is by an eczema, which in children especially is moistened by the saliva dribbling from the half-opened mouth, and continuously irritated in this manner leads to excoriations at the exterior angle of the mouth and later to the formation of deep rhagades. In other cases there is first a superficial fissure at the interior angle, which by being torn wider leads, especially when neglected, to the formation of a rhagade.

We should also mention an actual dermatitis, herpes labialis. This is the familiar form of herpes in which one or more groups of vesicles unsymmetrically arranged appear on

the lips, generally with febrile symptoms or accompanying acute febrile diseases. Left to themselves, the vesicles dry in two or three days to a yellowish or reddish brown crust, which falls off several days later; the underlying skin appears normal.

The treatment of chapped lips consists in avoiding the injurious influences mentioned and in the application of one of the cerates or salves given below. The chronically-chapped lips are annoying to both patient and physician. The first precaution is to see that the epithelial flaps are not bitten off, since the tearing so produced leads to excoriations. If these be present, a salve containing acidum salicylicum, or better acidum boricum, should be used. This is not merely to be used at night, but the lips are to be covered with the salve during the day when they are more exposed to atmospheric influences. Lip salves and cerates are to be made only from pure unrancid fats. The use of aqueous or alcoholic fluids is not to be recommended. Glycerin even when diluted is especially harmful; it not only causes pain, but delays the healing. For rhagades a simple covering plaster may be applied by which the edges of the wound are approximated; in many cases, even where syphilis does not exist, mercurial plaster mull has acted very well for me; cauterization with argenti nitras is only occasionally necessary.

The rhagades at the angles of the mouth require merely cleanliness; they may, however, be covered by a protecting plaster or with a pomade.

Herpes labialis also needs no treatment. As long as the vesicles exist a cosmetic powder may be applied. After they dry nothing need be done for them, except to caution the patient against the use of sticking-plaster, which irritates, tears off the crusts, and leads to excoriations.

℞ Ol. amygd., . . . . . ℥ iij.

Digere c.

Rad. alkann., . . . . . ʒ i.

Cola, adde

Ceræ alb., . . . . . ℥ ij.

Spermaceti, . . . . . ʒ iij.

Ol. bergam.,

Ol. citri, . . . . . āā ʒ i.

M. S. Ceratum labiale rubrum (German Pharm.).

R Ceræ alb.,  
Spermaceti,  
Ol. amygd. d., . . . . . āā p. æ.

M. S. Spermaceti cerate (Austrian Pharm.).

R Ceræ alb., . . . . . ʒ iij.  
Ol. amygd., . . . . . ʒ vi.  
Carmini, . . . . . gr. iss.  
Ol. rosæ, . . . . . gtt. ij.

M. S. Ceratum rosatum. Pommade pour les lèvres  
(French Pharm.).

R Acid. borici,  
Ceræ alb., . . . . . āā ʒ iss.  
Spermaceti,  
Ol. amygd. c. alkannin tinct., . . . . . āā ʒ iij.

M. S. Boric acid lip pomade.

R Ol. rosat., . . . . . ʒ i.  
Spermaceti, . . . . . ʒ ij.  
Ceræ alb., . . . . . ʒ ij.  
Rad. alkann. . . . . ʒ ij.  
Ol. rosæ, . . . . . gtt. xv.

M. S. Rose lip pomade (Piesse).

The cosmetic errors of the gums do not depend on general or local diseases. They need be treated of here only in so far as they may be removed by hygienic care, which is at the same time the best cosmetic. The laxness of the gum, a looseness of its tissue, may be called idiopathic, and frequently gives rise to other more severe diseases. Such a gum is either very pale and anæmic or redder than normal, relaxed, loose, and sponge-like, here and there puffy, and bleeding on the slightest provocation. The treatment of this condition will be spoken of later, since it can scarcely be separated from the cosmetic treatment of the teeth.

The teeth are the most worthy object of cosmetic treatment. Fine teeth and fine feet are the chief attributes of human beauty, and although a beautiful female mouth is the essence of all that is charming, even an ugly mouth may be beautified by a smile which discloses a pearly row of teeth. Perfect teeth are unfortunately as rare as perfect diamonds. No department of cosmetics is in such good hands

as that department which concerns the teeth. Medical science and technical skill have united to correct their frequent faults. This is not done altogether for æsthetic reasons, since the teeth have a very important function to perform in the process of digestion. The diseases of the teeth are many; the greater part, and caries in particular, demand the special assistance of the dentist, who stops cavities in their substance, removes those which are altogether bad, and replaces them by artificial ones. Even this important department of cosmetics has rapidly improved in late years, although it was known even to the ancient Egyptians. Apart from the diseases and the substitution of the teeth, the incrustations on the teeth and their bad color remain for us to consider.

By incrustations we understand deposits on the teeth of different varieties and colors, which have a varying consistence and require, therefore, different methods for removal. The chief ingredient is *calcii phosphas*, with which are mixed *calcii carbonas*, *magnesii phosphas*, and organic substances. The material is often hard and is only found in mouths having alkaline saliva; if the calcium salts be wanting entirely or in great part, it is soft and pasty, as in children. The soft form is found only where the saliva is acid. The hard, mostly brown or black deposits are found in men and especially in smokers; the soft, yellow or white colored deposits are found mostly in young women. Besides these, deposits of green, brown, and other colors have been described which depend in part on the presence of a microbe, the *leptothrix buccalis*. The deposits appear first on concealed portions of the inner surface of the front teeth and on the outer surface of the molars. Later the extent may become greater, and under some circumstances a whole row of teeth may be covered by it, so that they have the appearance of a single giant tooth (*m. cur. dentatus*). Only the soft deposits may be removed by the proper care of the mouth; the hard forms and the green incrustations require the instrumental interference of the dentist, and so shall not be treated of here.

In regard to the color of the teeth, it must be remembered that not only the yellow, but also the yellowish-white, the bluish-white, and the mottled teeth may be normal, and that the norm does not always correspond to what we consider the beautiful. The bluish-white teeth are by far the most beautiful, but in quality they occupy the third place.

Besides this principal color, a number of tints may be found. These latter may often be altered by proper chemical agents. This is not to be practised as a rule, since the teeth are injured by it. Other colors appear on single teeth or groups in consequence of diseases. These are called discolorations. The diseases which cause them are chiefly those of the pulp; temporary discolorations may also be caused by caries and some filling materials. Discoloration may also be found in general diseases. When the color is not due to the shining through of the filling, it depends on the coloring matter of the blood, or rather on bodies which owe their tint to the pure or altered coloring matter of the blood. Just as these under the skin give rise to all the tones from light red through yellow to blue or brown, they may produce the same effect in the teeth; there are a whole series of discolorations, of which the most frequent are light and dark red, blue, and dark gray. To cause these discolorations to disappear is a difficult task for the dentist. This is usually secured by filling the cavity with proper chemical agents and then stopping it with gutta-percha. All bleaching matters, such as chlorine and acidum sulphuricum, may be used; unfortunately, however, the effect is rarely all that could be desired.

Caries of the teeth, which will not be spoken of further here, is usually considered the cause of fœtor ex ore. The breath should have normally no odor, or when such is present it should only be that of the individual, and not the odor of carrion or of spoiled eggs. When a number of the teeth are extensively carious, the collections of necrotic tissue in the cavities may give the breath a foul odor. This is more often the case with particles of food which remain in the mouth. It should not be forgotten that there are also a number of other processes which may give rise to the fœtor. Dyspepsia and various other diseases of the stomach, especially carcinoma, as well as diseases of the mouth, nose, and pharynx, have the same effect. Many forms of ozæna which are localized in a small portion of the nasal mucous membrane are not recognized, and the fœtor is referred to another cause. Hypertrophy of the tonsils when the surface contains lacunæ which may give lodgment to particles of food may produce a very repulsive odor. Not less disagreeable is that caused by the plugs in the glands in follicular tonsillitis. Various diseases

of the gums and anomalous secretion and anomalous composition of the saliva may cause a fœtid breath. Simple toxic salivation is not so instrumental in causing this as the accompanying stomatitis and hypersecretion of saliva where it remains in the mouth, and the peculiarly viscid, tenacious saliva which shows itself in mucous bands stretching from lip to lip when the mouth is opened. This latter, as well as the diseases of the tonsils, pharynx, nose, and mouth, and more rarely the teeth, are proper objects for therapeutic treatment and especially for cosmetic. The fœtor caused by other diseases can only be removed by treating the disease, and then not in every case. Often the odor is but temporary; many women have during the menses a bad breath, which disappears in a few days. At any rate the cause of the fœtor must be searched for, and in many cases something may be accomplished in the matter of improving it.

The beginning of the cosmetic treatment is the exact carrying out of the hygienic treatment, and this reduces itself in healthy individuals with normal mouths to the simple care of the mouth.

First of all the mouth and the pharynx are to be washed out before the cleaning of the teeth takes place. This washing out is in most cases improperly done. To wash out the mouth thoroughly, it must be done in three steps. First, the pharynx and the tonsils are to be washed. To accomplish this the head should be thrown back, and while the mouth is kept open the first act of swallowing is performed and the water then ejected. Gargling is of no service. After the posterior cavity of the mouth has been freed from mucus by the procedure described, the middle cavity, limited behind by the soft palate, before by the teeth, is to be washed by bending the head to one side after the other. Lastly, the anterior cavity between the teeth and the lips is washed out. Here, in order to cleanse well the interstices between the single teeth, it should be recommended to force the water back and forth through the closed teeth by alternately contracting and relaxing the muscles of the cheeks and lips. The composition of the water used is of little importance when the mouth is healthy, providing only that directly injurious agents be not used. As a rule, simple water is sufficient, which to suit the taste of the individual may be flavored with any ethereal oil, or better with an alco-

holic solution of an ethereal oil. The temperature of the mouth water is of much greater importance. The laity believe in the virtue of very cold water, but it is better to use a temperature which is pleasant to the mouth.

In the simple washing of the mouth only the loose particles of food and mucus are removed; those between or on the teeth remain. In order to remove these latter the finger alone or enveloped in a bit of linen may be used. This procedure is worse than the simple washing, since soft deposits on the teeth and mucus are rubbed over the surface of the teeth and even pressed into the interspaces. The teeth, as a rule, are thoroughly cleaned by means of a tooth-brush. Many individuals do not require this. Those are such as have teeth very close together and such as only take hard articles of food, which act as a cleansing agent for the teeth. Apart from laborers and peasants, brandy-drinkers have, as a rule, fine teeth; in these persons the alcohol acts as a cleansing and disinfecting agent. Persons in better circumstances and the inhabitants of cities in general require the tooth-brush more, since they eat softer food. The form of the brush is of no importance, but the breadth and the hardness is. The laity believe that hard brushes are injurious, since the gum is often torn by them. In general hard brushes should be used where the gums are normal; for milk teeth, or those with white enamel, softer brushes may be used. One may become accustomed to hard brushes, and gradually go over to such. If the gum bleed when the teeth are brushed, this indicates disease of the gum, hyperæmia, loosening, or inflammation. The energetic brushing of the gum is the best therapy for it, since under this treatment it becomes harder and more solid. For this reason narrow brushes should not be used, since they do not touch the gums. Besides this, they have the disadvantage that they wound the gums easily, since they do not completely fill out the canal and may readily be misdirected. The hardest brushes are made of pig bristles, medium hard of the bristles of young pigs, and soft of horse or badger hair. Four rows of bristles should be used by adults and two or three by children. Tooth-brushes are also generally improperly used. The brush is rubbed horizontally back and forth, and the individual believes that this is all that is necessary. In this way the deposits between the teeth are left. The teeth should be

brushed first in a vertical direction, those of the upper jaw from above downward, those of the lower jaw from below upward, and then brushed horizontally. The grinding surface should next be brushed and finally the posterior surface.

The mouth should be cleaned at least twice a day, morning and evening; more frequent washing, however, after the meals and after smoking is advantageous. After the cleaning of the mouth and teeth comes the use of the tooth-pick. This procedure although disagreeable to the beholder, is certainly good and even necessary for most persons. The laity err for the most part in believing the use of the tooth-pick to be unhealthy; while for removing particles of food it serves not only a cosmetic purpose, but a hygienic one as well. The tooth-pick should be made of elastic wood, or tortoise-shell which is not too hard, or ivory; a pointed quill answers the same purpose. If the picking the teeth with steel instruments or with a fork or needle be condemned, it is chiefly because wounds may easily be produced in this way.

The number of cosmetics used in the mouth is very great. Many of these act excellently, many indifferently, and many in a harmful manner. The indications for and the manner of employment of various drugs will be given here, although it should be said that the cosmetic care of the mouth, since mostly mechanical, must consist principally in the use of great quantities of fluid, mostly pure water, and the brush. When other medicinal agents are used this should be but rarely, as at intervals of from one to two weeks, or only when absolutely required, as in the case of most deodorizing agents.

#### NEUTRALIZING AGENTS.

##### *Acids and Alkalies.*

The acids act as moderate astringents on the mucous membrane, and as neutralizers of the alkaline saliva. If concentrated acids be long used they may attack the enamel and so give rise to caries. The acids have also some disinfecting property, although they would hardly be employed for this purpose. And for neutralization even they need be but rarely and temporarily employed. Of these should be mentioned acidum hydrochloricum, phosphoricum, oxalicum, and lacti-

cum. Acidum oxalicum would hardly be used on account of its acid properties, but rather on account of its bleaching properties, if it were not to be avoided altogether on account of its poisonousness. The acids are usually prescribed in from two to four per cent. solution and their injurious nature called attention to.

The use of alkalies is more often indicated than the use of acids, and the former are given in solution or in the form of tooth powders. In the first case they have only the purpose of neutralizing the acid saliva; in the second they act as a mechanical cleansing agent. In powder or in concentrated solution they may finally extract the fat present in the teeth, as is shown by the fact that teeth naturally yellow become as white when alkaline tooth powder is used as if they had been soaked in ether. Caustic and carbonate alkalies can do harm by loosening the epidermis.

℞ Acid. phosphor., . . . . . gr. xvi.  
Aq. destil., . . . . . ℥ iiss.

For removing the black edges of the teeth after the water of iron springs has been used. Acidum oxalicum may also be used for this purpose.

℞ Acid. hydrochlor. dil., . . . . . gr. v.  
Aq. destil., . . . . . ℥ iiss.

M. S. Mouth water when the saliva is alkaline and stringy.

℞ Sodii bicarb., . . . . . ℥ ij.-℥ iss.  
Aq. destil., . . . . . ℥ iiss.

M. S. To be used when the saliva is acid, or after the use of strongly acid foods.

℞ Cretæ alb., . . . . . ℥ i.  
Magnes. carb.,  
Sodii bicarb., . . . . . āā gr. xvi.

M. S. Tooth powder; to be used every two weeks when the saliva is acid.

#### ASTRINGENT AGENTS.

Acidum tannicum and the allied acidum gallicum are the most important of these. They both raise the tone of the tissues, harden softened gums, and decrease the secretion of saliva. The alcohols are also astringent agents, which in the

beginning increase the secretion of saliva by their local irritation and then decrease it. Since these latter possess antiseptic properties, the tannin containing agents are given in alcoholic solution as mouth water or as tooth tinctures. The astringent agents commonly used are cortex cinchonæ, cortex salicis, rad. ratanhæ, catechu, liq. campechianum, fol. salviæ, fol. cochleariæ, and vinum rubrum. These drugs are given in decoction, in infusion, in tincture, and also in the form of tooth powder and pastilles. Alumen is a very important astringent which is employed in hypersecretion of mucus or saliva, and in inflammations and swellings of the mucous membrane of the mouth and the gums. It is used in solution or more rarely in powder.

℞ Acid. tannici, . . . . . ℥i.  
 Tinct. pyrethri, . . . . . ℥iij.  
 Aq. rosæ, . . . . . ℥vi.  
 M. S. Gargling water (Stocken<sup>34</sup>).

℞ Tinct. cinchonæ,  
 Tinct. ratanh., . . . . . āā ℥ss.  
 Ol. caryophyll., . . . . . gtt. v.  
 M. S. Tooth tincture (Scheff<sup>35</sup>).

℞ Tinct. gallar.,  
 Tinct. ratanh.,  
 Tinct. spilanth. oleac., . . . . . āā ℥iij.  
 Ol. menth. pip., . . . . . gtt. v.  
 M. S. To be pencilled on the loosened gums.

℞ Tinct. ratanh.,  
 Tinct. myrrhæ, . . . . . āā ℥iij.  
 Aq. colon., . . . . . ℥ij.

M. S. A teaspoonful in a glass of water for rinsing out the mouth. It has a red color and by dilution with water becomes milky and foamy.

℞ Aluminis, . . . . . ℥ij.  
 Decoct. fol. salviæ, . . . . . ℥x.  
 M. S. To be used lukewarm for sensitive gums.

- ℞ Extr. rad. liquor.,  
 Aq. calid., . . . . . āā ̄ iiss.  
 Catechu pulv., . . . . . ̄ i.  
 Gum. acaciæ, . . . . . ̄ ss.  
 Evapora in balneo Mar. ad consistent. extracti, dein adde  
 Cort. cascarill. pulv.,  
 Mastiches pulv.,  
 Carbon. veget. pulv.,  
 Rad. irid. flor. pulv., . . . . . āā ̄ ss.  
 Semirefriger. adde  
 Ess. (ol.) menth. pip., . . . . . ̄ ss.  
 Tinct. moschi,  
 Tinct. ambr., . . . . . āā gtt. v.  
 M. f. pastill. Obduce fol. argent. S. Cachou de Boulogne  
 (Dorvault).

- ℞ Extr. ratanh., . . . . . ̄ i.  
 Roob. ribium, . . . . . ̄ ij.  
 Sacch. alb., . . . . . q. s.

ut f. pastill. No. 35.

S. Pastilles.<sup>36</sup>

- ℞ Vini rubri, . . . . . ̄ vi.  
 Succu citri,  
 Sacch. alb., . . . . . āā ̄ ss.

M. S. Mouth water (Kleinmann).

#### ANTISEPTIC AGENTS.

The agents of this group prevent in most cases the decomposition of the bits of food remaining in the mouth, the mucus, and the bits of tissue thrown off in caries of the teeth and other diseases. In consequence of this action they are capable of removing the bad odors arising in such cases and may, therefore, be used as deodorantia.

All these deodorizing agents conceal the odors from other diseased organs only by their more powerful smell, and this holds also in the cavity of the mouth.

Among these antiseptic agents are most of the ethereal oils and the drugs containing them. The amount introduced at one time into the mouth is too small to be really disinfecting, but the odor is so strong that it often conceals the foetor

completely; in many cases, however, only a mixed odor is produced, which is unpleasant. Ethereal oils introduced into the mouth have an astringent action and also increase the flow of saliva, and on account of this latter action are very popular. Apart from these effects produced, it can hardly be supposed that they have a special action on the mucous membrane of the mouth. They have been used for the mouth and teeth for many centuries (myrrha, mastix, mentha). Such agents are rad. pyrethri, fructus capsici, hba. spidanthis, caryophylli, hba. menthæ, rhiz. iridis, calamus, zingiberis, cinnamomum, camphor, benzoin, mastix, musk, and myrrh. The astringent fol. salviæ and cochleariæ also contain ethereal oils.

℞ Tinct. myrrhæ,  
 Tinct. benzoini, . . . . . āā ʒ i.  
 Spir. cochlear., . . . . . ʒ iss.

M. S. Tooth tincture.

℞ Rad. irid. flor., . . . . . ʒ iss.  
 Myrrhæ,  
 Coccionell., . . . . . āā ʒ ss.  
 Ol. caryoph., . . . . . ℥ viij.  
 Ol. cinnamom., . . . . . ℥ v.  
 Mell. rosati, . . . . . ʒ ss.

M. S. Dentifrice.

℞ Tinct. pyrethri,  
 Tinct. calami, . . . . . āā ʒ i.  
 Tinct. mastiches, . . . . . ʒ ss.  
 Spir. frumenti, . . . . . ʒ ij.  
 Ol. caryophyll., . . . . . gtt. iij.

M. S. Ten to twenty drops in a glass of water for washing out the mouth.

℞ Rad. calami,  
 Cort. salicis, . . . . . āā ʒ ij.  
 Tartar. depur., . . . . . ʒ ss.  
 Ol. caryoph., . . . . . ℥ viij.

M. f. pulv. subtilis. S. Tooth powder (Kleinmann).

Directly antiseptic in their action are phenol, creosote, pyroligneous acid, and salicylic acid. The first three, in the concentration in which they are generally employed, overcome

the fœtor by their specific odor. Agents which would be really antiseptic cause unpleasant symptoms of irritation, may cauterize, and can even produce intoxication. Acidum salicylicum is not to be used, although at the time of its introduction it was regarded as a specific for fœtor in the mouth, caries of the teeth, and affections of the gums. It not only produces inflammation of the mouth and gums, but when used as tooth powder attacks the enamel of the teeth.

℞ Creosoti, . . . . .	℥ xvi.
Aq. destil., . . . . .	℥ vij.
M. S. Mouth water.	
℞ Acidi carbol. cryst., . . . . .	gr. xvi.
Aq. destil., . . . . .	℥ vij.
M. S. Mouth water.	

The chemically-acting agents are the most powerful disinfectants. Such are chlorine in the form of chlorine water and calcii chloridum. These are very energetic in their action and are the surest deodorantia. They cannot often be used, however, since the chlorine and acidum hydrochloricum which it forms act on the enamel of the teeth, and besides this, the odor and the taste of the two agents are very unpleasant and difficult to correct. Potassii permanganas is more often used. Its deodorizing action in the mouth is excellent and surpasses its antiseptic action, which, since the agent is so soon reduced, does not accomplish much. The unpleasant feature of its use is the brown discolouration of the teeth and tongue which it produces. Its metallic astringent taste also prevents its use somewhat.

℞ Calc. chlor., . . . . .	℥ i.
Aq. destil., . . . . .	℥ vij.
Post hor. 12 filtra, adde,	
Ol. menth., . . . . .	℥ ss.
M. S. Mouth water.	

℞ Potassii permangan., . . . . .	gr. xvi.
Aq. destil., . . . . .	℥ ij.

M. S. Two to three teaspoonfuls in a glass of water as a deodorizing agent.

℞ Aq. chlor.,  
Mell. despum., . . . . . āā ̄ i.

M. S. To be pencilled on the gums.

℞ Acid. oxalici, . . . . . gr. viij.  
Aq. destil., . . . . . ̄ vi.

M. S. Mouth water for removing the stains of potassii permanganas. Acidum hydrochloricum may also be used for this purpose.

The simplest, most convenient, and most innocent antiseptics are potassii chloras and sodii boras. Both prevent decomposition, disinfect the mouth, and remove the fœtor. The latter action is slow and is only noticed after continued use. They may, however, be used for a long time and in concentrated form. The taste of both is not specially agreeable and may be corrected by an ethereal oil. Both have a marked action in lessening the secretion of saliva, especially in cases of salivation. The most energetically acting of the two, the potassii chloras, being an oxidizing agent, has the property of increasing the normal secretion of saliva and of making it more consistent.

℞ Potassii chlorat., . . . . . ̄ ij.  
Aq. destil., . . . . . ̄ viij.  
Aq. menth. pip., . . . . . ̄ iss.

M. S. Mouth water.

℞ Sodii boratis, . . . . . ̄ ss.  
Aq. destil.,  
Aq. salviæ, . . . . . āā ̄ iiiss.

M. S. Mouth water (Scheff).

Carbon belongs to the disinfecting agents and may also be considered a mechanical cleansing agent. It deodorizes promptly and under its use the teeth become very white. Although one of the oldest and most used tooth powders, its use is in some degree harmful, since besides marked cosmetic faults, like most of these agents, it attacks the enamel and even the dentine when long used. The brushing with powdered carbon, especially in the horizontal direction, produces a defect in the neck of the tooth and the gum is tattooed dark blue from the particles of carbon being rubbed in and healing in the gum. This color is permanent. It is quite indifferent

what sort of carbon is used, whether it be wood charcoal, or animal carbon, or bread carbon from burnt bread-crusts. It should be remarked that the beneficial effects appear soon after its use is commenced, and that the injurious effects only come on after its continued use.

℞ Cinchonæ,  
Fol. salviæ,  
Carb. ligni dep., . . . . . āā ℥i.

M. ft. pulv. subtil. S. Pulv. dentifricius niger (Austrian Pharm.).

℞ Sacch. alb. pulv., . . . . . ℥ iiiiss.  
Carb. veget. (aut panis) loti et porphyris., ℥ i.  
Vanillæ, . . . . . ℥ i.  
Mucil. gum. traganth., . . . . . q. s.

ut f. pastill. pond. gr. xiv.

M. S. Pastilles de charbon (Dorvault, after Chevallier) for fœtor of the breath.

#### POLISHING AGENTS.

These act mechanically. The coarser the grain of the powder used, the more easily is the enamel scratched, and under its continued use this may even be destroyed. Even when fine powders are used the enamel becomes thinner, and cracks in consequence of its lessened resistance. Many of these agents have also a chemical action like the alkalies and alkaline earths. To this group belong sodii carbonas, magnesii carbonas, and calcii carbonas, which latter is used in the various forms which are found in nature. It is indifferent whether burnt marble, chalk, os sepia, oyster shells, or red coral, be used as tooth powder; the cost is all that determines the choice. On account of their chemical action these agents cannot be used continuously, but only from time to time, and on account of their mechanical action they should only be used as the finest sifted powders. This latter is particularly the case with pumice-stone, which whitens the teeth, but injures the enamel if long employed. The soaps should also be considered as belonging to these agents, since, as on the skin, the suds suspend the dirt and deposits which occur on the teeth and so render the removal of these easy. It goes without

saying that only neutral and hard soaps, such as soda soap, should be used.

℞ Pulv. oss. sepiā, . . . . . ʒ iss.  
 Pulv. irid. flor.  
 Pulv. magnes. carb., . . . . . āā ʒ i.  
 Ol. menth. pip., . . . . . gtt. v.  
 M. S. Heider's tooth powder.

℞ Oss. sepiā,  
 Lap. cancer., . . . . . āā ʒ vi.  
 Cort. cinnam.,  
 Rad. irid. flor., . . . . . āā ʒ ss.  
 Carb. tiliā, . . . . . gr. xvi.  
 M. exactis. S. Gray tooth powder (Carabelli).

℞ Sapon. amygd.,  
 Magnes. carb., . . . . . āā ʒ ss.  
 Pulv. rad. ir. flor., . . . . . ʒ i.  
 Carmini p., . . . . . gr. iij.  
 M. exactis. S. Tooth powder.

℞ Sapon. medic., . . . . . ʒ vi.  
 Carmini, . . . . . gr. iss.  
 Sol. in Spir. vini, . . . . . ʒ ss.  
 Myrrh. pulv., . . . . . gr. xvi.  
 Ol. menth. pip., . . . . . ʒ ss.  
 Calc. carb. præc., . . . . . ʒ iss.  
 M. c. Glycerini, . . . . . ʒ i.  
 S. Tooth soap.

The form in which these agents are used, as well as the manner of their application, is seen from these examples. Mouth waters are perfumed or sweetened solutions or mixtures; undiluted or diluted with water, they are used for washing out the mouth. The tooth tinctures are alcoholic solutions of ethereal oils or extracts from drugs containing such. They are either pencilled on the gums or added in small quantities to ordinary water, whereby as a rule a cloudy emulsion-like fluid is obtained which foams when washed about or brushed in the mouth. Tooth powders are in solid or semi-solid form, mixtures of one or several fine powders, to which is added a perfume in the shape of an ethereal oil or a fragrant vegetable

powder, and a coloring matter such as carmine, cochineal, extr. campech., extr. santali rubri, or sanguis draconis. They are applied, as a rule, by means of a brush moistened in water, and rubbed unfortunately in a horizontal direction for the most part. In this way they injure the enamel much more than when brushed vertically. What was said of the others will serve also for the tooth powders and pastes. They should not be used oftener than once in two weeks. The tooth pastes are tooth powders which are made into soft pastes with glycerin, syrup, or honey, and into hard with alcohol. Soap is often added to these pastes; if this be the chief constituent the paste is called tooth soap, by which is also understood ordinary strongly perfumed soaps or solutions of such in alcohol. Pastilles should also be spoken of. These are either used as simple astringent agents in place of mouth water or to remove or conceal a fœtor of the breath. The latter go under the general name cachou, since their chief constituent is often catechu, but even those are called by this name which contain no trace of terra japonica. Pastilles are dissolved in the mouth; cachoux are chewed up but not swallowed.

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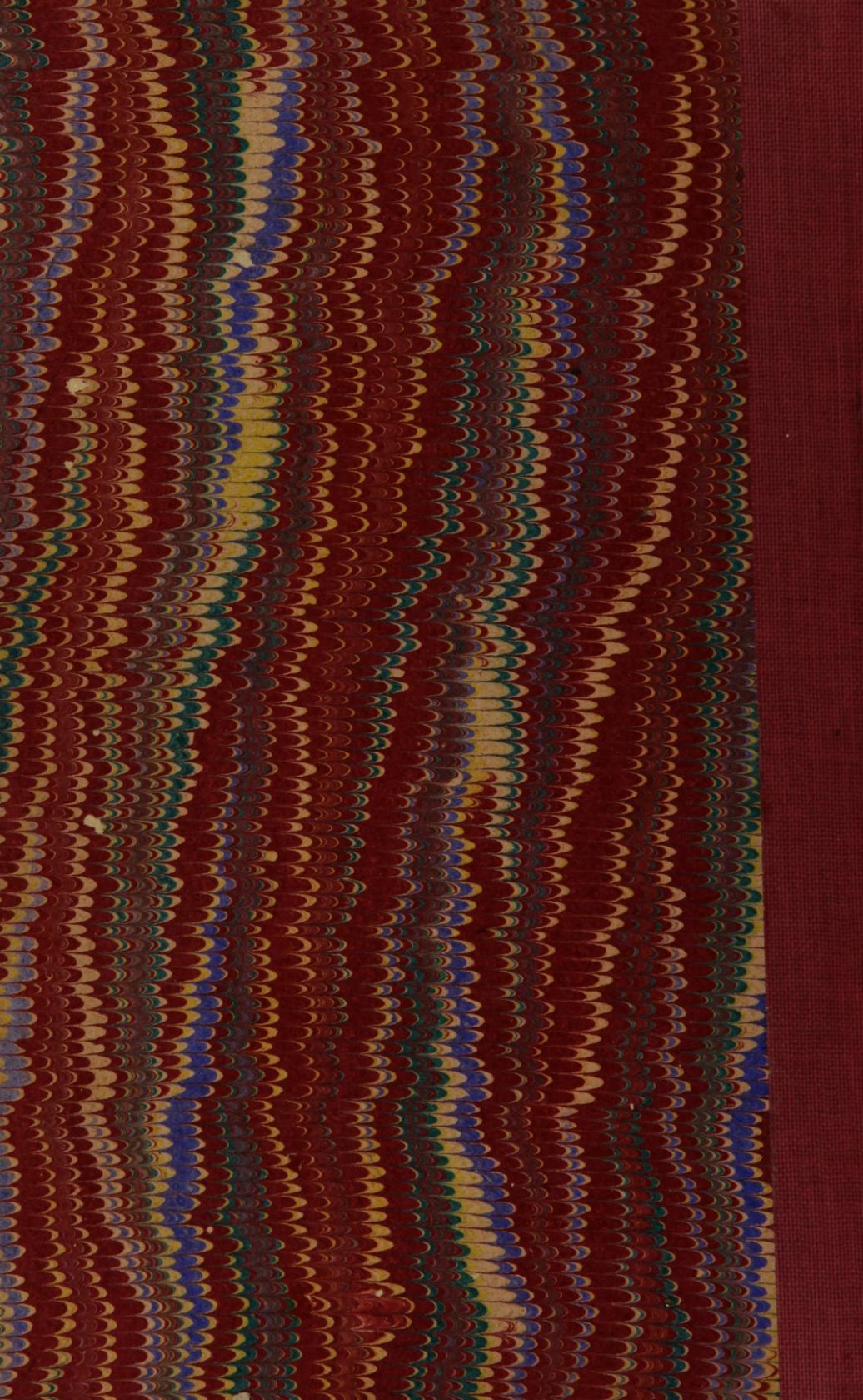
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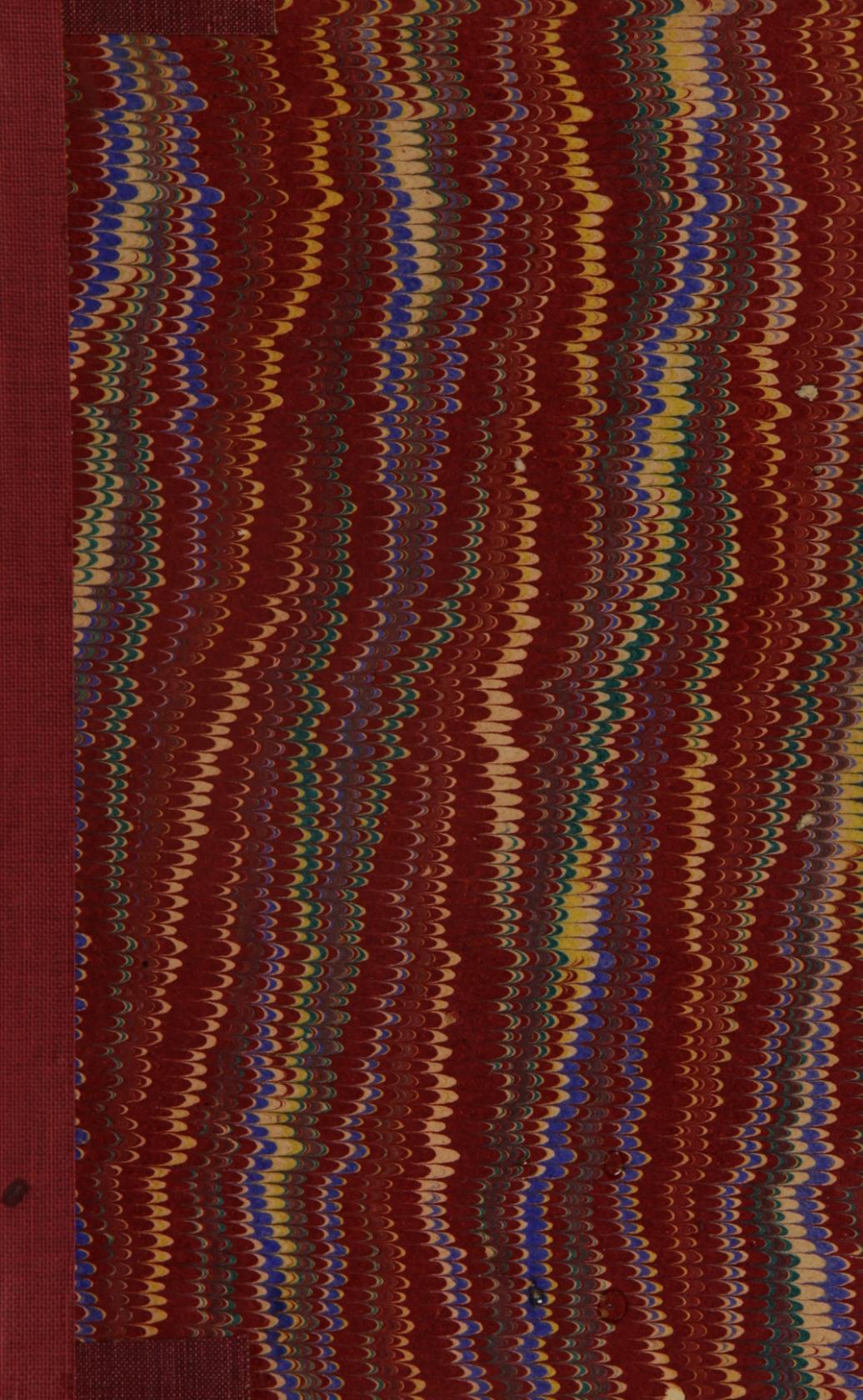
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