

OILS, FATS, FATTY ACIDS AND WAXES IN COSMETICS

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MR. CHAIRMAN and members of the American Oil Chemists Society:

When your committee very graciously invited me to talk to you about the use of "oils, fats, fatty acids and waxes in cosmetics" they stated the length of time allotted each speaker. I knew immediately that at best only an outline with suggested applications could be given.

I was reminded of the fellow who wrote his dearest friend a very lengthy letter concluding with the sentence "kindly pardon this long letter as I didn't have time to write a short one." Conscious of the value of your time, I have prepared a short paper. Accordingly, will you bear with me as I read this short paper rather than give you an easier to listen to and far easier to deliver informal lengthy talk?

First, a few qualifying statements. The very word "cosmetic" ordinarily is associated with the fair sex. Woman relatively openly seeks to beautify and adorn herself to attract the male of the species by fair means or foul. The male, whatever his motive, and secretive though he be, is using more of and more varied cosmetics so those with an appeal to, if not prepared especially for, the sterner sex will be included.

A seeming digression will be the inclusion of certain preparations that may appear to be remedies. But where do cosmetics end and remedies begin? If a woman uses a corn preparation to remove a corn so that she doesn't have to dangle her foot half in and half out of her shoe at the dinner table, it's a remedy. If she uses it to remove a corn so that her appendages are more attractive on the stage and at the beach or pool, it's a cosmetic. If a woman uses a lotion to attain the skin you love to touch, it's a cosmetic, while if a football player uses it to remove foot-prints from his complexion, it's a remedy. Or is it?

Speaking generally, if you manufacturers and refiners are looking for large tonnage outlets for products of mediocre or average quality,

simply forget cosmetics. If you can deliver quality products (and usually the best is none too good for cosmetic work), then cosmetics offers a fertile field to cultivate. You will find cosmetic manufacturers a pretty decent lot to deal with and to cater to.

Starting with the oils. The mineral oils have enjoyed the advantage over vegetable oils due to better color, odor and keeping quality, so have been the more widely used. With the coming of the so-called "treatment lines" of cosmetics and the application of suitable anti-oxidants and preservatives, the vegetable oils are again gaining in favor.

Suggestive of their uses. Peach kernel oil, sesame oil and peanut oil are often used as the base of sunburn and sun tan preparations. Corn oil and salad or cottonseed oil find application as the base of baby oils and sometimes of baby ointments.

Castor oil is the base of the so-called muscle oil so popular in treatment lines. It is used too as a plasticizer in corn remedies and liquid nail polishes. Advantage is taken of its solubility in alcohol in the manufacture of hair dressings and the like. A pause is made to stress the importance of quality for in this instance it is readily understood. For use in alcoholic solutions, the vendor's usual suggestion is the tasteless castor oil, in fact, it is often the manufacturer's first thought also. Obviously, in use, the alcohol evaporates leaving a thin film of oil on the hair. Conditions are practically ideal for oxidation and the development of rancidity. Extensive tests have demonstrated that the C. P. grade stands up better than any of the so-called tasteless samples evaluated.

Cocoonut oil finds application not as such, of course, but after saponification usually with potash or mixed lyes, in shaving cream, shaving soap, liquid soap and shampoo. The oil must be clean and sweet with a free fatty acid content under one-tenth of one per cent and have a good color.

Olive and castor oils find appli-

cation after sulphonation in the so-called "soapless shampoos." Since sulphonated castor oil is quite sticky and sulphonated olive oil rather light in body, a mixture of the two in the ratio of about three of the former to one of the latter makes a better shampoo than either alone. They should be neutral or very slightly on the acid side. Then on dilution with distilled water for packaging, the shampoo will remain sparkling clear.

Sulphonated oils also are the base for that greatest of bath luxuries known as bath oil. The oil has any perfume compound of good to fine quality dissolved in it in high concentration. Enough bath oil for from eight to twelve baths sells at retail for \$2.00 or more, hence the reference to it as a great luxury.

Sweet almond oil is used in the United States Pharmacopoeia ointment of rose water, which is the daddy, or is it the mother of the myriad cold creams to be had at the drug stores and toilet goods counters. It has long since been replaced by light viscosity white mineral oil for cold creams generally. With the advent of the various treatment lines, and all-purpose type creams, almond oil is again in favor. It is present in amounts from 20 to 55 per cent of such formulations.

Benzoinated lard finds a place in such creams also in as high a concentration as fifty per cent. It also finds limited use in hand lotions in concentrations of three or four per cent, being emulsified, of course.

Cocoa butter finds application in various hand and facial creams and lip and underarm deodorant sticks. Obviously, it is used sparingly due to its relatively high cost and in popular priced and dime store items it likely will be omitted entirely.

Lanolin, usually the anhydrous and invariably the best quality, having a good color and odor, is quite widely employed for astringent, lubricating and other facial creams as well as cuticle cream. From six to fifteen per cent lanolin, rubbed up with an equal to one and one half

times the quantity of water before incorporation with the other ingredients is generally used. Addition of limited amounts to certain shaving cream and brushless shaving cream formulations improves them. Spermaceti, the concrete fatty substance obtained from the head of the sperm whale, is of value in the manufacture of lotions and both vanishing and greasy type creams. It is usually saponified along with beeswax and/or stearic acid to form the emulsion in which the active ingredients are incorporated. In the case of lotions, a direct addition of a small percentage of neutral white soap may be made or the mucilage of tragacanth, quince seed or other mucilagenous material may be employed to impart the desired body.

Spermaceti is also frequently incorporated in the base of certain lipsticks, cream rouges and eye shadow preparations. In these products, it is of course used as such and not saponified.

Bleached beeswax, known in the United States Pharmacopoeia as white wax, has been an almost indispensable ingredient in most greasy type creams. It is ordinarily saponified with a mild alkali, usually borax, to form the emulsifier. The various new emulsifying agents, both natural and synthetic, have been making some inroads on its use, but they have a long way to go to supplant it entirely.

Unsaponified beeswax finds wide application in ointment bases to impart the characteristic and highly desirable "pull." It is also an important ingredient in lipsick, rouge, eye shadow and camphor ice.

Unbleached beeswax is used in epilating, i.e., hair removing wax. Incidentally, rosin is also employed in such formulas, and this is the only application of rosin in cosmetic work that comes to mind.

Stearic acid finds many applications in cosmetic work, in fact, probably finds wider use than any other animal or vegetable fatty substance. Fourteen to twenty per cent of stearic acid, saponified with a deficiency of potash or soda lye, or occasionally with triethanolamine or ammonia make up the body or base of all creams of the vanishing type. This type includes the day, or vanishing creams, peroxide creams, foundation creams and powder bases.

Some glycerin may be incorporated as an emollient and to retard drying out of such creams. A good vanishing cream upon the addition of a little more glycerin and of two

to five per cent of mineral, peanut or sesame oil, or five to ten per cent sulphonated olive or castor oil, becomes the modern brushless or latherless shaving cream.

Resort is made to stearic acid, saponified with a deficiency of potash so as to leave one-half to three and one-half per cent free fatty acid in the finished product, to push up the titre of shaving soaps and creams to the desired point. Thus the free lathering coconut oil soap in shaving cream and the tallow coconut soap base in shaving soaps are put on their good behavior to make a small bubble, rich, creamy lather that softens the beard, lubricates the razor and if it doesn't soothe the skin, at least it does not irritate it.

Powdered stearic acid finds application in powder nail polish. It is the "speed" ingredient, that is, the lubricant that reduces the amount of buffing required. It also reduces the bite of the abrasive in any given formula, the bite that otherwise starts the chills running down one's back. Incidentally, powdered stearic acid is also sometimes employed as a lubricant for the tablet granulations from which bath tablets, etc., are compressed on suitable machines.

Stearic acid is used in the manufacture of zinc, calcium and magnesium stearate. These stearates, particularly the first named, are used to impart smoothness and adhesion in talc, body and bath powder as well as in face powder formulas. Obviously, the quality of stearic acid used is the determining factor in the final color, odor and keeping quality of the stearate.

Stearic acid is another instance that forcefully demonstrates that the insistence by this industry on quality is no mere whim. Four different stearic acids, representing the top quality of four different manufacturers, were each made up in commercial batches over a standard vanishing cream formula. The creams were so dissimilar in consistency, appearance and odor that one might question the accuracy of the work. The difference in physical appearance, odor and color, both solid and molten, and in the titre of the acids themselves was not marked. The titres, for example, ran 54.3°, 54.7°, 55.1° and 55.7° C and the quoted prices followed the titre up naturally.

Had the cheapest stearic acid been adopted, not only would the quality and appearance of the cream have suffered, but it actually would have

cost more. Enough more perfume was required to properly scent the cream prepared from the cheapest stearic acid to offset the saving in stearic acid cost twice over. More accurately, it required appreciably more odor to cover the fatty odor of the cream made of the cheap stearic acid.

To attain a high gloss or sheen, or even a metallic luster, in all these various stearate creams, various substances have been added and a number of various manufacturing methods have been advocated. No better method to impart this attractive and inviting appearance has been found than the addition of a fraction of 1 per cent of superfine oleic acid.

Most aggressive toilet goods manufacturers of any size and consequence employ a chemical staff or at least a single capable cosmetic chemist. Some others who are primarily merchandisers try to function without one and look to various vendors for ideas, suggestions and formulas. The essential oil houses, in particular, among the vendors have erred in trying to provide cosmetic manufacturers with free formulas and free technical service.

In your laboratory work, when the analysis is finished or the reaction has gone to completion and the end products are identified, you usually have the information you sought. In cosmetic work, after a formula is developed of inviting odor, appearance and consistency, the work has only begun. Practical tests by people outside the laboratory must be depended upon to evaluate any formulas resulting from research.

My employers maintain a closely knit, geographically widely scattered group of over 300, which includes a few of the upper crust, many of the rank and file, and a dozen or so of colored women to do the practical testing.

To sum up, you will doubtless find dabbling in cosmetic work interesting, even fascinating, if you happen to have a flair for it. It is the part of wisdom, however, to let the cosmetic specialists and consultants make any developments for your customers and prospective ones, rather than undertake to do it yourself.

I have thrust upon you what I thought *might be* of interest, and now I understand you will have the opportunity to ask questions about that which *is* of interest.