

PARAFFIN FILMS AND OIL DRESSINGS.*

BY WILLIAM J. BONISTEEL.

The war has brought out a number of new things which are of great interest to pharmacists. The value of the Carrel-Dakin solution is well known while the new method of treatment of burns by paraffin films and oil dressings is not so generally known. The history of paraffin films no doubt dates back to the first use of carron oil for burns. We know that in this treatment the action and principle is superficial, merely keeping the affected parts free from direct contact with the air. Recently it has been found that a similar action is obtained through the use of thin films of paraffin which, when applied to the skin, offer the maximum of protection to the burned areas or exposed tissues. In addition to protecting the skin the use of paraffin films offers certain other advantages, *viz.*, ease of removal as well as acting as a sort of scaffolding for feeble granulations.

Recently there has appeared on American markets a French preparation, called "Ambrine," of secret composition. Some very sensational reports have been circulated relative to its marvelous properties. In this country, as was to be expected, certain proprietary preparations of secret composition have also appeared upon the market, all more or less alike in composition and the principle of action the same. If the principle of the films is a good one, the question arises: are the above named preparations the best? Being of secret composition we know of no place to start to improve them. Therefore we have to start in with paraffin and work on them as we go along.

The object of this paper is to show the method of manufacture and the simplicity with which they may be employed. The most important work in this country on the paraffin films is the work of Dr. Torald Sollmann,¹ of Western Reserve University, who has carefully investigated the subject and reported his results. The films should be simple and consist at most of not more than two ingredients so they can be prepared independently and if possible extemporaneously by any pharmacist and thus be available to any physician or surgeon who cares to try them. In working with films experimentally it is advisable to refrain from adding any deodorant, antiseptic or coloring matter since the first step should be the suitability from a mechanical standpoint. After suitable types are found then it is an easy matter to modify them by such additions as one deems necessary.

The melting point of paraffin films should not be lower than 48° C. nor more than 53° C. Within this range the melting point is immaterial, it being well to bear in mind that the harder the wax the more firm the support, while the softer ones are more soothing. The ductility or resistance of a film against stretching may be determined by comparative tests. Pliability or resistance to fracture on bending is important also. The more fragile films will break at a relatively high temperature while the more plastic films can be bent at a relatively low temperature.

General methods of preparation: Paraffin alone is seldom used since it easily crumbles. Mixtures of paraffin and related mixtures are generally used. Such

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¹ See June 1917, issue, p. 555.

substances have the property of giving the film their elasticity and durability. The mixtures are prepared by melting the ingredients on a water bath, after which the mixtures are heated to 145° C. for sterilization. After the preparations are melted on a water bath a teaspoonful of melted wax can be poured upon the surface of water at the temperature of about 40° C. This makes very satisfactory films suitable for small area. For larger sheets a piece of plate glass can be used which has been warmed in a water bath to a temperature of about 40° C., then melted paraffin is poured on the glass and spread with a hot spatula, then immersing the plate immediately into water at a temperature of about 40° C., the film softens and then can be lifted off with a spatula. However, any method that will yield satisfactory films can be employed.

The melting-point determination can be carried on by the U. S. P. method or any other melting-point method which yields satisfactory results. Hardness can be determined by a comparative method, *viz.*, by seeing which cake will indent the other. The strength can be determined by immersing them in a water bath of 38° C., kneading and pulling, noting their coherence, etc. The temperature at which the film breaks can be determined by the same method. At high temperatures the films can be doubled without breaking. This temperature varies for different films. The lower the temperature at which the film begins to break on bending or pulling the greater is the pliability or ductility. It is quite desirable that the film should have a low melting point and thus remain pliable at a low temperature. Clinical trials will introduce new conditions so that the usefulness of the various preparations cannot be judged altogether from physical results. The cost is relatively low. Paraffin, the main ingredient, is at present about 20 cents a pound. Dr. Sollman has made a very extensive classification and divided them into five large classes arranged in the order of hardness, giving a number of formulas under each class in the order of preference. However, for this paper I will take but one of each class.

Class 1.—Simple paraffin. Any suitable brand on the market will do, the softer varieties being preferred. It would be well to experiment with many of the makes on the market. The membranes detach beautifully and it seems very promising, except that it is very brittle and crumbles easily. This should be used where a very stiff film is desired.

Class 2.—Paraffin wax and related mixtures, consisting of about 90 percent of paraffin and the balance can consist of resin, spermaceti and stearic acid. The proprietary mixtures usually belong to this class.

Class 3.—Paraffin-asphaltum mixtures. These are more pliable, more adhesive, and can be made into thinner films. Whether advantageous or not is open to question. Paraffin and asphalt do not form perfect mixtures, hence must be stirred. Ten percent of asphalt varnish is mixed with the paraffin but since the composition of asphalt is complex no further experiments were made.

Class 4.—These are paraffin oil mixtures and the most promising is the mixture with the addition of 10 percent oil of theobroma. Then comes liquid petroleum and olive oil. Venice turpentine and castor oil do not seem to yield good films, although their application might be desirable. As high as 20 percent of cacao butter and the same percent of olive oil is mixed with paraffin. These films

being somewhat emolient, would be perhaps desirable in the early stages of treatment.

Class 5.—Paraffin and petrolatum mixtures. They are somewhat different, being very soft, greasy and crumble easily. Ten parts of paraffin and two parts of petrolatum form weak but manageable films. On very sensitive surfaces this might be desirable.

Application to the skin: The series of preparations were applied to the skin in the same manner in which they would be used clinically. A strip of skin about an inch wide was painted with the melted wax, on this was laid a very thin layer of cotton, and over this was painted another layer of the wax. The adjacent strip of the skin is now painted with the second preparation, and so on. This is a very suitable method for clinical comparisons. However, in actual practice the whole area is covered with the melted paraffin and covered with a thin layer of cotton and then more melted wax is added.

The preparation and properties of paraffin film mixtures suggests their most important properties from a therapeutic standpoint. Several degrees of hardness might possess advantages under various conditions. Pharmacists should call to the attention of the physician this method of treatment and urge him to use simple preparations of known composition so that results can be compared, deficiencies met and improvement made. Clinical experiences may show the advantages of the addition of simple combinations such as scarlet red, resorcin, eucalyptol, and other healing essential oils.

In the same field of paraffin films comes up the question of the use of paraffin oil on surgical dressings. These are prepared by saturating the gauze with a soft paraffin mixture made by the addition of liquid petroleum, lanolin or stearic acid to paraffin. Perhaps the best results that are on record are obtained by the use of liquid petroleum. The great advantage of a non-adhering surgical gauze is due to the fact that the blocking of the fibers prevents matting from secretion and the non-adherence of the gauze. These gauzes can be easily prepared and can be sterilized with heat after impregnation.

This same principle can be used to make cotton sponges. Demonstration shows that cotton sponges wrapped in oiled gauze absorb viscous fluids much better than when wrapped in plain gauze. The technic of making of absorption tests is as follows: One gramme absorbent cotton as a sponge is wrapped in a piece of gauze 12 cm. square; egg white and egg yolk were used to represent wound discharges. This is placed in a flat bottom pan to a depth of 2 to 3 mm. and in this were placed the sponges previously weighed. Results can be recorded upon a chart and the number of grammes absorbed recorded. The result of a few summaries from a chart based on the above technic is as follows:

1—Sponges made of compressed cotton (cotton can be easily compressed in a letter press) absorb much better than those made of loose cotton.

2—Sponges wrapped in loose-mesh fabric absorb better than those in close-mesh fabric.

3—Sponges covered with gauze impregnated with liquid petroleum absorb better than those with plain gauze.

4—Sponges with cotton absorb better than those filled with powdered charcoal.

The most favorable influence of the oil gauze is explained by the protection that the oil furnishes against swelling of the thread and the consequent obstruction of the mesh.

The above uses of paraffin immediately suggest its use as a covering for bandages. The bandages can be dipped in melted paraffin and applied directly to the wound, this being somewhat analogous to a paraffin film although it differs in some essential respects. The finished dressings can be painted with melted paraffin, the bandages stiffened so as to form a support and this in some cases may take the place of a splint or even a cast. However, it is somewhat weaker and more pliable but has the advantage of lightness. The edges of dressings can be painted with melted paraffin so that bandages do not slide upon themselves. Moisture and dirt are kept out. The fraying that one notices on bandages after being worn a little while can be prevented by coating the edges with paraffin. These bandages can be easily removed with the scissors. The end of a bandage can be sealed by paraffin, doing away with the use of adhesive plaster. Countless other uses can be made of paraffin, such as the coating of labels on bottles. It is hoped that the ideas set forth here will be of service to pharmacists in presenting new ideas to the medical profession and at the same time be a source of revenue to them, not only from a financial standpoint but from the added prestige gained through presenting something to aid suffering humanity in general.

DR. FRANK CRANE'S COMMANDMENTS OF SALESMANSHIP.

9. Think Success.—Success begins in the mind. Why think fifty cents, when it is just as easy to think fifty dollars? Tell success stories, not incidents of failure and hard luck. Radiate prosperity. Feel prosperous. It's catching. Keep your chin up.

10. Be Human.—The reason you are hired to sell goods is that you are a human being. Otherwise your employer would have sent a catalogue. So be a human being, likable, engaging, full of human electricity. For I patronize as a rule the salesman I like.

Selling goods is the greatest business in the world. It takes all there is in a man. You need to know psychology, you need tact, intelligence, self-control, courage, persistence and inexhaustible good humor. It is not a job for a second rater. You simply have to make good or go under.

I admire a good salesman because I never was able to sell anything in my life. But I'm a good buyer.—Dr. Frank Crane.
