

For this study anesthetic ether was packaged as follows:

- $\frac{1}{4}$ -lb. cans: 200 of each of 2 types of cans.
- $\frac{1}{2}$ -lb. cans: 100 of each of 2 types of cans.
- 1-lb. cans: 50 of each of 2 types of cans.
- One 50-gallon metal drum.

The 50-gallon drum was closed with the usual screw plug and the cans were stoppered with corks. All the samples were stored during the summer at atmospheric temperatures. From each of the cans and from the drum, portions of ether were removed daily, thus simulating conditions of use. The ether removed from the cans in each series was mixed and this composite was used for the assays; thus one composite was obtained each day representing each of the two series of  $\frac{1}{4}$ -lb. cans, etc.

The aldehyde and peroxide tests recorded in the following table show that:

(a) After one day all the ethers excepting that in the small cans of Type A had developed peroxides and after two days none of the ethers was peroxide-free. In all cases except one the peroxide content was higher after two days than after one day. The rate of peroxide development in cans of Type B was practically the same as in the 50-gallon drum. Although the rate was slower in cans of Type A, peroxides did form in these cans as well as in the other containers.

(b) Aldehydes formed in every case. No difference, at least no significant difference, was caused by difference in type of can. Aldehydes developed more slowly than peroxides, but on the third day the amount in the cans had become appreciable. The formation of aldehydes in the drum was greater than in the cans.

TABLE I.

	Aldehydes in P. P. M.				Peroxides in P. P. M.		
	Original Ether.	Days' Storage.			Original Ether.	Days' Storage.	
		1.	2.	3.		1.	2.
$\frac{1}{4}$ -lb. cans							
Type A	0	1	1	2-5	0	0	8
Type B	0	$\frac{1}{2}$	1	5-10	0	20	26
$\frac{1}{2}$ -lb. cans							
Type A	0	1	2	5	0	0	6
Type B	0	2	1	5	0	25	28
1-lb. cans							
Type A	0	2	$\frac{1}{2}$	5	0	14	4
Type B	0	1	1	2-5	0	18	24
50-gal. drum	0	2	2-5	10-20	0	18	27

## IS DISPENSING AND PREPARATION OF MEDICINAL SUBSTANCES A LOST ART?\*

BY MAX N. LEMBERGER.

Two decades ago the first intimation of a separation between the professional and commercial interests of pharmacy had been discussed freely. It was evident at that time that such an undertaking would be important, necessary and essential to return, and to preserve a professional recognition by the pharmacists of old:

\* Section on Practical Pharmacy and Dispensing, A. PH. A., Dallas meeting, 1936.

however, the general attitude and opinion was that such a departure would be an arduous and difficult task to accomplish. We have learned by sad experience that commercialism has largely destroyed the prestige a pharmacist enjoyed in his community and at present is regarded by them as "just another merchant." We are beginning to realize that the thoughts of our forefathers in pharmacy were motivated by anticipations, that their actions were sincere and that the developments as evident in their times would lead to a near annihilation of pharmacy as a profession.

Those who had the courage and proceeded slowly with this new idea taught us that pharmacy had then, and now, a great deal in store for us, and that, professionally, pharmacists ranked equally with their allied professions. This adventure was the birth of our professional pharmacies of to-day. These types of stores promote a more intimate contact and feeling of interdependence between physician and pharmacist. Close coöperation has brought the pharmacist into his true position as an important helper. The prescription pharmacy offers a trained pharmacist full opportunity to develop his capabilities and above all appreciates the opportunity for a dignified employment and contentment in the situation for which he was trained.

It is my contention that it is not wholly necessary to operate an exclusive prescription pharmacy; while advantageous as previously expressed, it can be accomplished by every pharmacist in paying closer attention and devoting more time to his prescription room. This statement is borne out by the fact that during the past few years hundreds of stores have remodeled their prescription laboratories and are drawing extra dividends. These individuals are realizing and becoming more conscious of the fact that their prescription laboratories are the back-bone of their business.

Let us ask ourselves this question, "What is pharmacy?" and immediately the answer will be given in the form of the first definition taught in schools of pharmacy that "pharmacy is the art which treats of the preparation in dispensing of medicinal substances, also the testing, preservation and identification of same." To elaborate individually on these points would be too lengthy a discourse; therefore, I will confine myself to dispensing and preparation of medicinal substances in relation to modern prescription service.

This art is the most important to our profession because no individual is more fastidious than one not feeling well; and as most prescription packages are unwrapped in the presence of the patient, the neatness and correctness is not only pleasing and impressive in the mind of the patient but, usually, comments are heard from other members of the family. The impression created exemplifies in their minds the interest being shown to the patient. The illness of a beloved one always creates the desire for the best and those in charge turn to the physician and pharmacist to restore health as quickly as possible, each acting in his respective field, coöperating and having uppermost in his mind the common interest and welfare of the patient. It is therefore a natural sequence that great pride be taken in preparing and dispensing those medicinals required, and strive to protect the confidence placed in him, as the pharmacist.

The use of cartons as enclosures for liquid preparations adds considerable prestige to the store. These may be imprinted with a special message and store

card or plain; they are inexpensive and when wrapped make a neat prescription package. A uniform color scheme for all prescription boxes, capsule vial boxes, eye dropper service, suppository, pill and tablet boxes should be adopted and should be exclusive whenever possible.

All labels should be typed and always renewed when brought in to be refilled, whether soiled or not. The practice of bringing back bottles or boxes to be refilled should be discouraged, advising the customer that new containers are always used. The information on the label should furnish the prescription number, doctor's name, directions for taking, patient's full name and date of filling. Extra labels with specific designation such as eye-drops, ear-drops for the baby, nose-drops and gargle should be affixed to the bottle and outside carton. When dispensing tablets or capsules, the designation—tablet or capsule—should be used in connection with the general directions. It does happen that in filling two prescriptions for the same patient, one calling for tablets and the other for capsules, that labels may be placed on the wrong container. However, when specifically stated as tablet or capsule, the patient will readily discover this error and, probably, prevent serious consequence.

In preparation of medicinal substances for the eye, extra care and skill should be exercised. A special prescription counter or section of regular counter should be set aside for the preparation of these prescriptions. A torsion balance capable of weighing one-tenth grain and up should be part of equipment and should never be used to weigh more than the rider on scale reads. Glass scale pans should be used because they can be easily sterilized after being used and should be done after each weighing. Bottles and dropper outfits should be sterile and all operations should be carried on in as sterile a manner as possible. Hypodermic tablets of alkaloids should not be used in preparing eye-drops, but pure alkaloids only. All solutions should, whenever permissible, be heated to boiling over a Bunsen burner flame and filtered through previously prepared and sterilized filters directly into bottles used in dispensing. Eye-drops prepared in this manner will avoid any fungi growth, characteristic in all aqueous solutions of alkaloidal salts.

In liquid preparations, when soluble salts are added to a vehicle the nature of vehicle is to be taken into consideration and then the proper type filter selected—paper, cotton, gauze, glass wool or filter cloth. In dispensing proprietary market products marketed, especially those easily recognized as an over-counter sales item, the identity should be destroyed by removing them from these original containers and placing them in containers suitable for the purpose; granular salts and agar emulsions can be dispensed in screw-cap, wide-mouth bottles; for liquids of fluid consistency regular prescription ware is to be employed.

Tablets of hygroscopic nature, gland products, uncoated tablets and capsules should be dispensed in capsule vials or wide-mouth bottles. Labels with complete directions should be placed on the inside of the container. This can be done if the container is of good flint glass, and then this vial or bottle is placed in a suitable prescription box. A hand capsule filling machine aids considerably in the preparation of capsules; it insures greater accuracy, eliminates all finger printing or dull finish on the capsule. There are many substances, particularly gland products, that become sticky when exposed to air and then there is the problem to prevent a contact of this material with the outer portion of the capsule which

cannot be polished off with towel or brush. This is all eliminated by use of the machine.

Suppositories should be wrapped in wax or parchment paper or lead foil and then placed in the customary suppository boxes. Ointments should be thoroughly milled to smoothness and dispensed in collapsible tubes. Jars, while practical, are being generally used, however, they always present possibility of contamination. Ointments should always be prepared on weight basis and not volume. After putting in jar, concaving slightly, the top should be flamed to present a smooth surface. This eliminates adherence of ointment to the cap. The author prefers the use of collapsible tubes, because of simplicity in filling, are easily sterilized, thus eliminating contamination and, also, because of the general custom of proprietary manufacturers to market ointments in this manner. The people have become accustomed to this style of ointment medication. A very simple but practical method of filling tubes is suggested: place the ointment on a sheet of heavy parchment paper, roll as making a cigarette, place into the empty tube, compress lower end of tube with spatula handle and withdraw the paper slowly, roll over the end and seal with a clip.

Label moisteners should be plentiful on the prescription counter. No labels should be licked or drawn over tongue; it is vulgar and unsanitary and displays carelessness. Probably the most important factor to consider is that the constant irritation to the tongue and lips and cuts because of the thinness of paper is possible of producing a carcinoma of tongue or lip.

The success of pharmacy as a profession demands the practice of the art of dispensing and preparation of medicinal substances. The elevation of pharmacy to its proper professional recognition is contingent on the practices of this art. True, the passage of prerequisite legislation, the selection of students of good moral character, of good citizenship, proper technical training, make better pharmacists; but, if in their practices of the art of dispensing and preparation, they are careless, neglectful, nonchalant, pharmacy will suffer a retrogression rather than an advance in its recognition as a professional group.

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## PHARMACY FROM THE STANDPOINT OF HOSPITAL ADMINISTRATION.\*

BY B. T. HOWLER.<sup>1</sup>

The use of medicines in the care of the sick is the oldest practice of the healing art, in fact a knowledge of herbs and of the physiological effect of drugs and potions has in some periods of history been the chief qualification of primitive healers, for instance, the term "medicine man" of the primitive people. But medical care has moved a long way from the brews and incantations of the witch doctor and the secret distillations of the ancient alchemist. Indeed, the doctor has long since relinquished the function of preparing drugs and medicines he uses in his practice.

Medicines and the economic problem their distribution entail may be considered from three different standpoints:

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\* Section on Practical Pharmacy and Dispensing, A. Ph. A., Dallas meeting, 1936.

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