

was necessitated by the action taken by the Association at its final session at the Detroit, Mich., meeting, where an apparently diplomatic move to dispose of it was taken, with the result that the Council could not make any move to inaugurate a movement to give the publicity of the N. F. IV that its superiority over the N. F. IV warrants.

Possibly the A. M. A. may have facilities at their command which they will offer upon solicitation of the A. Ph. A. officials, whereby the desired publicity for the N. F. IV can be obtained. I make this suggestion for whatsoever merit it may contain.

PRACTICAL DRUG CONSERVATION.*

BY AMBROSE HUNSBERGER.¹

The question of conserving drug store supplies during a national war crisis such as the one through which we are passing at the present time would seem to demand the most profound consideration and unflagging persistence of the practicing pharmacist in its solution. It is peculiarly a problem for the pharmacist, inasmuch as he ought to be in the best position to recognize the limitations which will maintain drug conservation within the bounds of common sense without sacrificing efficiency, and he should further be able, by virtue of his practical experience, to determine the line of least resistance to be followed in order that the most helpful results may be achieved in the shortest possible time.

When we stop to consider the close relationship of the pharmacist with the public, we are readily able to recognize his obligation in that direction, and it becomes apparent that whatever he can do in the way of curtailing the communal encroachments involved in the practice of his calling, should be done without the slightest delay. Of course, the thought suggests itself concerning a reciprocal obligation on the part of the public. If it is not a recognized principle now, it will be, probably soon, that many things which are considered indispensable necessities under normal conditions of living, become distinctly non-essentials, if not positive luxuries, during periods of stress and strife. This principle is quite as applicable to the production of drug supplies as to that of any other commodity consumed by the public, and so applied, means relegating to the back top shelf, for the period of the war, many of the "elegant pharmaceuticals" and nostrums, some of which are said to make therapeutic efficiency a secondary consideration at best. What if the tonic elixir does appeal a little less to the eye, nose, and palate, or the cough syrup is only half as cloyey, or the stomachic loses a part of its alcoholic tang, and the favorite digestant temporarily foregoes its emulation of the far-famed cordial of the Benedictine monks—the esthetic must sacrifice itself on the altar of practicability, and it is reasonable to presume that our loyal public will accept its obligation in the matter of conserving drug supplies, which are difficult to secure, when it is made clear that the heaviest demand upon the restricted substances is created by the effort to appeal to its finicky palate.

As regards the problem before us, it may be said that practical conservation in the drug store includes restriction in the use of many articles which under normal conditions are used in enormous quantities without any special thought being given to the availability of future supplies. A brief list (excluding substances employed

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¹ President Philadelphia Branch A. Ph. A., 1917-1918.

in the manufacture of galenicals) includes bottles, jars, tins, glass and paper boxes, paper and metal caps, extra wrappers, outer cartons, special seals, etc., some of the latter are designed to provide greater security of contents, but perhaps most of them calculated to lend an air of distinctiveness to the package—a commendable procedure normally but one that should be eliminated in war time. Conservation of containers may be practiced by reducing the variety of sizes in bottled or boxed substances, since in most instances the public will adjust itself to a small emergency package intended for immediate use and a larger so-called family size for continuous use. This would do away with the myriad of intermediate-sized packages of household drugs and chemicals, toilet articles, etc., and would release a large volume of paper, glass, and tin containers, allowing the material and labor required in their construction to be used for more urgent purposes. Where is the need of offering cold cream in four sizes, or talcum powder in two sizes of four odors each, or skin lotions and creams in 25 cent, 50 cent, and \$1.00 sizes? Why not, as regards the latter, eliminate the medium size; or still better as a war measure, retain the medium size and release the other two? In other words, instead of applying the old maxim about making “two blades of grass grow where one grew before,” reverse its principle and paraphrase it to have “one bottle blown where two were blown before” and apply the principle to each detail of pharmaceutical practice. To be sure, this may not seem to accomplish a great deal in the way of conserving the resources of our country when viewed from the individual standpoint, but if we stop to consider that fifty thousand pharmacists throughout the country can put the plan into operation within a very brief period, the potentialities of the suggestion become more apparent.

While the shortage of materials needed for the manufacture of containers and other drug store accessories is serious in itself, it is second in importance to a consideration of ways and means of curtailing the use of substances which directly affect our supply of food, munitions, and essential medicinal substances. Chief among these may be mentioned alcohol, glycerin, sugar, and certain vegetable drugs and chemicals.

The control of these supplies is perhaps best discussed by a classification of methods, as follows:

Conservation by elimination,

Conservation by substitution,

Conservation by coöperation of medical profession.

In the first classification is included the suggestion above outlined as regards containers, etc., and also certain remarks to follow under the last classification.

Conservation by substitution presents several angles, *viz.*, the substitution of sweetening agents such as honey, glucose, etc., for syrup, and the use of saccharin for the same purpose, and the substitution of glycerin for alcohol, syrup for glycerin, aromatic waters for syrup, etc. The first angle does not appear to accomplish much more than to shift the burden from the right hand to the left, inasmuch as either or all of the substances suggested as sugar substitutes are equally as adaptable to domestic use and should therefore be left available for that purpose. In the second angle it may be said that the judicious substitution of saccharin as a sweetening agent for medicinal substances is perhaps permissible in some instances because this substance is not fitted for indiscriminate use in food products. The third angle of the proposition is discussed later.

Conservation by coöperation of the medical profession appears to offer the solution that promises to achieve the quickest and most beneficial results. Since the art of pharmacy exists primarily for the purpose of supplying the needs of the sick as seen through the eyes of the medical profession, does it not seem feasible and proper to ask coöperation of that body in the campaign for conservation of drug supplies, and can there be a lurking doubt that the coöperation asked for would not be granted, enthusiastically and freely. It is probably safe to assume that the medical profession would welcome any suggestion which might point a way for them to still further advance the interests and safeguard the physical welfare of the citizens of our country.

The best reason for this assumption of coöperation rests upon the fact that the medical profession of our country has outstripped any other single body of citizens in its devotion to our country's cause in the present war. Medical practices developed by years of application, lucrative incomes which they yielded, near realization of ambitions for professional advancement, fond domestic and social ties, assurance of comfortable futures—all were relinquished promptly and unselfishly by thousands of our medical practitioners when the call came and they placed their abilities and energies unreservedly at the disposal of our Government. To make such acknowledgment of the splendidly patriotic attitude of our medical men, in and out of the service, is directly related to our discussion, and were it pure digression, it would still be entirely pardonable because one would have to be churlish, indeed, to have enjoyed the cordial friendship of many of these manly men and fail to fully and freely commend the fine quality of their citizenship.

Assuming, then, the patriotic coöperation and receptive attitude of the medical practitioners of the United States in the matter of conservation, it becomes incumbent upon the pharmacist to furnish the information that comes to him in his daily practice regarding fluctuations in supplies and prices of drugs, to direct attention to declining stocks of certain ones and the possibly increasing supplies of others previously curtailed, to discuss tested substitute products for those unavailable as well as for those which, by virtue of controlled supplies achieve extortionate, if not, prohibitive prices, to advocate reductions in the size of prescriptions calling for scarce drug and chemical products and to encourage curtailment and, whenever possible, entire elimination from prescriptions of such ingredients as syrup, glycerin, and alcohol, singly or in combination, when they serve no more laudable purpose than an appeal to a frivolous or jaded palate.

Personal experiences furnish concrete examples of the practical results which may be obtained through intelligent and (in these times) patriotic coöperation between physician and pharmacist. For years a well-known oculist ordered one grain of his favorite mydriatic in a fluidrachm of distilled water. When informed that supplies of the substance were running low and the cost mounting high, he changed his formula to one-third grain mydriatic in twenty minims of distilled water, with entire satisfaction to himself and his patients and proud of his achievement in conserving two-thirds of his normal consumption of a rare chemical. Another practitioner was in the habit of prescribing from four to six ounces of compound tincture of benzoin, with the directions to the patient to "add two teaspoonfuls to a pint of boiling water and inhale the steam." When informed of the difficulty involved in procuring cer-

tain ingredients contained in this preparation, he reduced his order to *one* ounce of tincture with directions to "add *fifteen* drops to *one* cup of boiling water."

Another changed his favorite combination of ammonium chloride and syrup of lactucarium to one containing an equal dose of the active ingredient in a vehicle consisting of one part syrup and three parts anise water, with no noticeable sacrifice of therapeutic efficiency, according to his statement. Still another has been securing results with a capsule of terpin hydrate and heroin that are quite comparable with those he formerly observed when using the elixir containing the same substances. He is justly proud of the fact that he is a practical conservationist, and the available supply of alcohol, glycerin, and sugar, is automatically maintained.

A final reference to the ready compliance of still another practitioner with the suggestion that an ointment used in rather generous quantity might serve equally well as a protective coating if petrolatum were employed as a vehicle in place of benzoinated lard, points the way to conservation of animal fats.

It is said to be difficult indeed, to attempt to measure the relative difference in therapeutic value between a dose of terpin hydrate and heroin administered, in pill, powder, or capsule form, and a dose of the same substance administered in the vehicle provided in the formula for Elixir Terpin Hydrate and Heroin, and it would seem to require equal temerity to attempt to demonstrate that ammonium chloride was any less effective as an expectorant given in cinnamon water than it is when dissolved in syrup of lactucarium, or that pepsin extemporaneously dissolved in compound infusion of gentian lacked any of the digestant qualities ostensibly possessed by the same substance when exhibited in more delectable vehicles. Indeed, the deeper one delves into the question of conservation in the drug store, the more one is inclined to the thought that, while upon the surface the necessity for conserving certain supplies may require more or less readjustment, as a matter of fact, rational therapeutics properly supported by rational pharmaceutical practice, to a great extent solves the problem, and if the rational practice of these two arts shall become a fixed habit, the national emergency that actuated the readjustment will have been, indeed, a blessing in disguise to the practice of pharmacy.

While it is perhaps true that all medical practitioners will not receive this method of applied drug conservation with enthusiasm, or even with cordiality, it is probably a fact nevertheless that an inestimably greater number will be governed by the need of the hour and welcome this additional opportunity to promote the interests of our country by assisting in the conservation of its resources as far as lies in their power.

Space does not permit a systematic arrangement of the most prescribed substances but a suggestion as to the possibilities involved is obtained by a brief reference to but a few classes of substances, with conservation forms of administration.

Salts of ammonium, potassium, sodium, calcium, strontium can be dispensed in aromatic waters, with or without the addition of from 10 to 25 percent of syrup. Salts of mercury, strychnine, etc., opium and alkaloids, etc., can be dispensed in pill or capsule form; cinchona alkaloids, etc., in capsule pill or wafer; digestive agents in powder or capsule; vegetable drugs, in capsule, powder, pill, or infusion; antipyretics (coal tar) in capsule, powder, or wafer.

This brief scheme is, of course, susceptible of unlimited extension and numberless variations, and from that standpoint may be criticized as being cumbersome and complex. The fact is, however, that the individual medical practitioner is interested only in the remedial agents which he is in the habit of prescribing, and the facility with which he will master a system which will eliminate the restricted substances from his prescription will be governed by his interest in the matter. It is not to be gainsaid that here and there substances exist which, by virtue of their physical characteristics, render imperative the use of alcohol or glycerin in their preparation for use, or the addition of sugar to facilitate administration; but their number is negligible and the quantity of the above-mentioned substances can probably be spared to that extent for pharmaceutical purposes. Under any plan of conservation a portion of these substances will have to be retained for certain pharmaceutical uses, such as solvents, preservatives, etc., if the practice of pharmacy is to continue throughout the war; and the pharmacist's title to this portion is less likely to be questioned if he limits his requirements thereto and refrains from encroaching upon the domestic domain for substitute sweetening agents such as honey, molasses, glucose, etc. It is among the possibilities that domestic need for the latter may even become acute, pending the termination of the war.

The foregoing thought suggests the chief objection to be found with the proposed plan of conserving drug supplies by adopting War Emergency Formulas to be used in place of our official standards. Many of the suggested substitute formulas provide for the use of substances which are no more plentiful nor any less in demand than are the articles they are designed to replace. This plan of conservation seems therefore to be not altogether an unselfish one. The second objection to War Emergency Formulas lies in the cumbersomeness of the plan and the endless complications likely to result from extemporaneous prescription combinations of these more or less untried formulas. The final count against the plan is the fact that if it is to be successfully operated, precisely the same effort will be needed to enlist medical coöperation as in the writer's plan, without securing nearly as beneficial results.

As a concrete example of the potentialities of the conservation plan proposed by the writer, Elixir Terpin Hydrate serves well. Only one four-ounce prescription for this preparation dispensed in each drug store in the United States consumes between seven and eight hundred gallons of alcohol, more than three tons of glycerin, and about one ton of syrup. If the active ingredient of the preparation, terpin hydrate, is administered according to the writer's suggestion, in powder, pill, or capsule form, there is saved to the country a volume of the ingredients composing the elixir proportionate to the number of prescriptions so changed. And therein lies the principle of conservation by coöperation with the medical profession. It presents an obligation for rational pharmacy and therapy. How shall the obligation be met?
