PROBLEMS OF THE MANUFACTURING PHARMACIST DIRECTLY RESULTING FROM WAR CONDITIONS.*

BY C. H. BRIGGS.

Manufacturing pharmacists, like all other manufacturers, have encountered some serious problems resulting from the War. Some of these problems have been solved but others are becoming more serious. The encouraging part of it all lies in the fact that we are facing these problems squarely and doing things now that we would have thought impossible before the war.

One of the most serious problems which confronts us at the present time is the shortage of chemists and pharmacists and the loss of our trained and skilled men. This is becoming very acute, and as the war goes on, it will become more and more serious. Skilled chemists and pharmacists are indispensable for the proper manufacture of pharmaceutical products. They are necessary for manufacturing, for assaying and control work, and for research. The Government has generously provided for exemptions for chemists to control products being made for the Army and Navy. But experience shows that even men so exempted frequently believe that they are not doing their full duty to the Government and later enlist for war work. This is particularly true with research chemists, and research work is necessarily much reduced at present.

In the past there have been a large number of chemists and pharmacists graduated every year from our many universities and colleges. This source has supplied our increasing demand for such men, but under present conditions comparatively few men are being graduated as chemists and pharmacists, and even these are wanted for war work as soon as they are ready. We are really facing a serious shortage in chemists and pharmacists and both men and women should be urged to take these courses and carry them to completion, as they will be greatly needed in the future.

A second problem that confronts us is the increase in the cost of the various products that we manufacture. I do not recall a single item that can be made for anywhere near the same cost it was made for before the war and many products cost several times as much. This is due of course to several causes:

1st. Increase in cost of crude drugs, chemicals and raw materials due to the scarcity of these products.

2nd. Increase in cost of labor.

3rd. War taxes, for these must necessarily be added on to the cost of manufactured products if the manufacturer wishes to continue in business.

If to the total of these costs is added a fair profit for the manufacturer and then the increased freight and express charges, is it any wonder that the druggist is surprised at the cost of his goods, or that the consumer thinks he is being robbed when the druggist has added on his cost and profit? But these are war times and we are coming to expect higher prices on everything we buy and we are never disappointed.

A third problem that has been acute ever since the war started is the shortage of certain drugs and chemicals. Drugs which are produced only in Germany, Austria and Turkey are now practically out of the market, while drugs which were

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produced in Russia, France and Italy are obtainable in limited quantities. In fact crude drugs from all foreign sources are scarce and high priced. Some crude drugs which are unobtainable from usual sources are being supplanted by similar drugs from other sources—as for example in place of Russian Ergot, Levant Scammony and Turkish Gum Opium, we are now able to obtain Spanish Ergot, Mexican Scammony and Persian Opium. Genuine Liquid Styrax is practically out of the market, but a similar gum from South America is quite plentiful and is being used with satisfactory results.

There is a real shortage of some of the rare alkaloids. Arecoline Hydrobromide, Physostigmine Salicylate and Scopolamine are unobtainable. Sparteine Sulphate and Pilocarpine are very scarce. Atropine is being produced in this country and is becoming more plentiful. Other alkaloids are all very high in price.

The shortage in pharmaceutical chemicals is improving steadily and thanks must be extended to American manufacturers for their earnest efforts to make these chemicals. At times important chemicals have been practically unobtainable, as for example—barium peroxide, benzoic acid, resorcin and cinnamic acid, but American chemical manufacturers are now making a good quality of these chemicals in sufficient quantities to supply the demand. Prices, however, are still high. Cinnamic acid, for example, was plentiful before the war at $1.00 per lb. Not long ago it sold at nearly $20.00 per lb., but can now be obtained at $10.00 per pound.

Potassium salts have necessarily been scarce and much in demand ever since the war started, as Germany was the principal source of their supply. Limited quantities are now being produced in this country, but hardly sufficient to supply the demand. The U. S. P. IX has provided alternate formulas for certain preparations such as Blaud's Pills, Compound Solution of Cresol, etc., so that sodium salts may be used where potassium salts were formerly employed. These formulas work satisfactorily and products so made give the same therapeutic results.

Another problem which is rapidly becoming very important is the conservation of glycerin, sugar and alcohol. In the past manufacturing pharmacists have used these items freely with only the thought in mind of producing the best and most stable pharmaceutical preparations possible. But with the increasing demand for glycerin for war purposes, the present shortage of sugar and the high cost of alcohol, manufacturers have been curtailing the use of these items wherever possible. In some products, where glycerin has been used freely, it has been entirely eliminated and replaced with the equivalent amounts of sugar. In others, where the glycerin was necessary for preservative purposes, some preservative has been added. Glycerin, alcohol and sugar are very important in most preparations for their preservative properties and for their action as solvents, and it would be false economy indeed for manufacturers to so restrict their use that the preparations would eventually ferment or spoil with a total loss of all the ingredients. There has been some consideration of placing government restrictions on the use of glycerin and sugar in pharmaceutical preparations, but such restrictions would be apt to lead to much greater losses in the spoiling of finished products, and it is to be hoped that such restrictions will not be imposed until they are found to be absolutely necessary. When we need drugs and medicines,

we want the best, and we can better afford to curtail on candy, sodas, etc., than on drugs and medicines.

In some of the U. S. P. preparations the use of glycerin could be readily eliminated, as, for example, Fluidextract Cascara Aromatic, which contains 20 percent of glycerin, and Syrup of Hypophosphites. The fluid glycerates might well be dispensed with until after the war, and fluidextracts used instead. Such changes would be of real value and help to reduce the consumption of glycerin materially.

As a final problem, I might mention the difficulties in transportation both in obtaining supplies and in shipping finished products. Delays of this kind are very annoying, both to the manufacturer and to the consumer, but we must expect such delays and so regulate our affairs as to produce as little inconvenience as possible.

In conclusion, then, we would ask for all the help you can give in increasing the number of graduates in chemistry and pharmacy, in regulating your selling prices to conform to the present cost of goods, in avoiding unwise restrictions on the use of sugar and glycerin and alcohol in pharmaceutical products which are liable to spoil, and in allowing for delays in transportation in ordering your supplies.

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THE CONSERVATION OF CRUDE DRUGS.*

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Much has been said and written of late regarding the conservation of glycerin, alcohol, syrup, etc., products which are used as solvents for drugs and their active principles, but practically nothing has been said about the conservation of the crude drugs themselves. To-day there is a shortage of very many botanicals, some are practically unobtainable, others are scarce, and all have increased more or less in price. These conditions are due partly to the shortage of help restricting the collection, partly to the enormous quantities bought by our and the allied governments, but largely because Europe is the habitat or source of supply of a great many of our official drugs. Much, of course, has been done to overcome this shortage by encouraging both the collection of native drugs as well as the cultivation of drugs which up to the present time were chiefly imported from Europe. Nevertheless, any means which might conserve the supply at hand ought to receive attention.

It has come to the author's attention that drugs often contain a much higher percentage of active constituents than the U. S. P. requires. Many official drugs will contain only slightly more than the requirements call for, but some may be obtained on the market which contain entirely too much active constituent. Jalap, for instance, has been found to contain as much as 15 percent resin instead of the 7 percent required, ipecac with 3 percent soluble alkaloids instead of

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