United States Food Administration at any time in the future deem it advisable to further restrict the supply of sugar, the proposed method will serve as the basis of a sliding scale, which can be readily adjusted from time to time.

Great Britain, according to the *Lancet*, has taken control of the entire output of British saccharin which is to be distributed under supervision of the British Food Administration, having in mind its sweetening power; therefore its availability to displace the sugar employed by the British public in the use of tea and coffee, and with no reference to its food value.

INVERSION OF SUGAR IN U. S. P. SYRUP.*

BY G. W. LLOYD PLETTE.

Observing that certain concentrated sugar solutions developed more or less invert sugar after standing for a time, when at first they contained none of the single sugar or at least a mere trace, the question arose as to the cause of the inversion of the sugar: whether it was due to the action of molds or bacteria, or whether conditions of storing with reference to light and temperature might have been responsible for the change.

Simple Syrup, or the *Syrupus* of the U. S. P. IX, is a 64.7 percent by weight solution of sugar in water. It seems that the best quality of cane sugar—"Crystal A"— is preferred for the manufacture of this syrup.

In the investigation of this question, samples of syrup were made up by both methods mentioned in the U. S. P., *viz:* the "hot" and "cold" methods, and stored under as large a number of different heat and light conditions as possible. The samples were prepared on the 10th of February, this year (1917), and were analyzed for glucose at regular intervals until June the 9th, the volumetric estimation of glucose with Fehling's solution being the method employed. The following results were obtained:

The first sample, made by the cold method and stored in a warm, dark place, showed 45.5 percent glucose after the four months.

The second, made by the cold method and stored in medium light and changeable temperature (almost exact drug store conditions), showed 25.5 percent glucose.

The third, made by the cold method and stored in a cold, dark place, showed only 10.7 percent glucose.

The fourth sample was lost.

The fifth, made by the "hot" method and stored in a cold, dark place, showed only 8.93 percent glucose.

The sixth, made by the hot method and stored in a warm, light place, showed 11.1 percent glucose.

The seventh, made by the hot method and stored in a dark, warm place, showed 16.67 percent glucose.

The eighth, made by the hot method and stored in a cold, light place, showed 15.15 percent glucose.

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*Read before Scientific Section, A. Ph. A., Indianapolis meeting, 1917.

The samples were stored in 4-oz. bottles and were shaken daily, in order to prevent a dilution of the top of the liquid, which would serve as a good medium for the growth of any kind of bacterial or mold contamination.

The first observation worth noting is that the syrup, made by either hot or cold method, seemed to be freer of glucose when stored in a cold, dark place.

In spite of the fact that the bottles were shaken daily, all of them developed a fungus growth after a few weeks, and this continued to develop regardless of the high concentration of the syrup. The first bottle gave off a slight alcoholic odor, and the cork "popped" when drawn, suggesting CO_2. The second showed CO_2, but the alcohol was not noticeable. Neither of these were noted in the others, all of which contained a lesser amount of glucose than the first two.

When cultures were made of the different syrups both on agar and gelatin, the latter showed practically no growth, but the agar showed much gas formation and a strong alcoholic odor, signifying the presence of yeast, which was later verified by the microscope. The gas formed under the agar in both aerobic and anaerobic cultures, and was sufficient in each case to raise the agar up in large lumps. The anaerobic culture showed some short, thick rods when stained with methyl violet. These seem to have been a contamination of some kind, as there were very few and there was no fetid odor characteristic of most bacterial growth.

In addition to the yeast cells there was a mold, which proved to be *Penicillium glaucum*. It seems that the mold was almost, if not entirely, responsible for the inversion, as the mold was most abundant in the samples which showed the largest amount of glucose, and these bottles were also the ones which were stored under conditions most favorable to the growth of the fungus, both as to light and temperature.

Therefore it would appear that the best conditions for the storage of syrup are as follows:

The syrup should be stored in full bottles in a cold, dark place, and shaken daily or perhaps twice in a day, in order to preserve the highest degree of concentration and thus keep a thoroughly sterile preparation. There is probably no advantage as far as inversion prevention is concerned in either the hot or cold method of preparing the syrup.

WANTED—THE OLD-FASHIONED PHARMACIST.*

BY J. W. ENGLAND.

Under the caption of "Wanted—The Old-Fashioned Doctor," the following editorial has recently appeared in the Philadelphia *Public Ledger:*

"As the shortage of doctors continues to make itself manifest in civilian life, it is being made clear to the most thoughtless that what the medical schools should turn out in greater numbers and what the country needs is the good, old-fashioned, all-round general practitioner. In many ways the tendency of medical education of recent years toward concentration in the matter of schools and extreme specialization and standardization has not only reduced the number of doctors as a whole, but seriously cut down those who cared for or were trained for general

*Read at meeting of Pennsylvania Pharmaceutical Association, June 1918.