

dispensable to adopt fitting precautions against the decomposition of which it is naturally susceptible.

The purer chloroform is, and the greater its freedom from alcohol, the more readily and the more rapidly does it undergo decomposition when exposed to light in vessels of white glass containing air. It is to this decomposition that is to be ascribed the danger attending the use of chloroform for medicinal purposes. The decomposition is brought about by atmospheric oxygen displacing, under the influence of light, a portion of chlorine while at the same time there is a formation of phosgene gas and water.

It is to the presence of free chlorine and phosgene gas in chloroform that Biltz attributes the danger attending the use of chloroform, and on that account he considers that it should be protected from light, and the decomposition prevented by a sufficient addition of alcohol.

The protection afforded by the presence of alcohol, however, is but limited. The joint action of air and light still causes decomposition, but while alcohol is present it takes up the prejudicial products of decomposition, forming with them products which are harmless and even suitable for producing anesthesia. When the alcohol has been exhausted in this way the liberation of chlorine and the formation of phosgene gas are no longer counteracted. The time that may elapse before this decomposition commences is dependent upon the intensity of the light to which the chloroform is exposed, also to some extent upon the quantity of air with which it is in contact. Consequently in diffused daylight the alteration is more rapid in summer than in winter, and it is still more rapid in direct sunlight. In the latter case chloroform absolutely free from alcohol will be decomposed within one or two hours in summer time, and in diffused daylight within one day, while in winter it may take ten days, according to the clearness of the atmosphere.

In regard to the protection offered by alcohol Biltz finds that with one part of alcohol in four hundred decomposition is prevented only for a few weeks or months. With double that proportion the preventive effect lasts for eleven months, and with one per cent. it continues much more than a year. He is of opinion that all the statements made as to the keeping quality of certain kinds of chloroform point only to the circumstance of failure to detect the presence of alcohol to which the permanence of the chloroform was due.

The method recommended by Biltz for that purpose is treatment with the chromic acid solution prepared by dissolving potassium dichromate in 2000 parts of water containing one eighth its volume of sulphuric acid. The chloroform to be tested for alcohol is well shaken with half its volume of this solution and then allowed to rest. With one per cent. of alcohol the chromic solution soon becomes paler in color and at last appears quite colorless; since the green color of the

chromic salt produced by the alcohol is not perceptible in that degree of dilution. With less than a quarter of one per cent. the reduction takes place much more slowly, and with a tenth of one per cent. an entire day is requisite. In such cases the reduction of the yellow tint must be determined by comparison with a portion of the test solution in a second tube of the same dimensions. When the chloroform is absolutely free from alcohol the tint of the solution is not altered after several days. Lieben's iodoform test may also be applied by shaking the chloroform with water and adding to the separated water a colorless solution of iodine in caustic potash.

As the result of a great number of observations made by Schacht and Biltz with different kinds of chloroform, as to the action of concentrated sulphuric acid upon them the following conclusions have been arrived at:—

1. That chloroform prepared from alcohol and chloride of lime, when perfectly purified by concentrated sulphuric acid and completely freed from alcohol by copious washing with water, does not communicate any colour to concentrated sulphuric acid either before or after its decomposition by air and light.

2. When chloroform that does not colour sulphuric acid gives, after undergoing decomposition, a colour to sulphuric acid, that result can only be due to the action of a product of the decomposition—especially free chlorine upon some foreign substance, *i. e.*, either ethyl chloride or alcohol. If therefore, in decomposing chloroform free from alcohol and in contact with a layer of sulphuric acid, a drop of alcohol be added, the free chlorine and the phosgene gas disappear immediately and the sulphuric acid is coloured brown owing to the alcohol having been converted into ethyl chloride.

3. When chloroform that is absolutely free from alcohol and that does not colour sulphuric acid is left to undergo decomposition and the acid after that becomes brown, this coloration indicates the presence of ethyl chloride that has been converted by the free chlorine into a higher chlorinated product.

Applying these results to Pietet's chloroform Biltz comes to the conclusion that it is in regard to purity one of the best, if not the best, to be met with. He thinks this should have been the limit of its recommendation, and that it was a mistake to have attempted, on the basis of the antiquated belief that the susceptibility of chloroform to decomposition is simply due to its containing those impurities which are removed by Pietet's process, to recommend it still further as having been less susceptible of decomposition than ordinary chloroform. The demonstration by Schacht and Biltz, at the February meeting of the Berlin Pharmaceutical Society, that the Pietet chloroform undergoes decomposition precisely in the same way and at the same rate as ordinary chloroform, showed that in this respect there was no difference, and that the

precaution of adding alcohol and keeping in the dark are as indispensable in the one case as in the other.

The Filtration of Syrups.

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This is a class of preparations that are very troublesome to filter, and I believe they are more so than any other class in the Pharmacopœia unless it is the Mucilages, and it is very seldom we have to filter them. I have for the past few years tried several ways; but they were nearly all too slow indeed, sometimes requiring twenty or thirty hours to filter one pint of syrup.

For instance syrup Ipecac when first prepared is a nice clear syrup, but on standing a few days it precipitates and looks badly. Syrup Tolu should also be filtered, as made by the Pharmacopœia it does not look clear as a crystal.

Nearly all our syrups would look much nicer if they were filtered, but as it requires so much time we very often neglect to do so.

I think one of the best and quickest ways to filter them is as follows: Take a conical percolator, and put a small layer of clean excelsior in it so as to entirely cover all the percolator, then fold your filtering paper, and place it inside the excelsior, by doing this the syrup will pass through the paper on the sides as well as it will at the bottom, the excelsior preventing the paper from touching the percolator. In this way one can filter syrups, say a pint in an hour.—*Pacific Drug Review.*

The Russian government has caused a census to be taken of the pharmacists of the empire with respect to their nationality. In the report the result is given with the greatest minuteness, but very curiously enumerates, as one class, "true believers." This has been interpreted to mean that all foreigners are to be got rid of in the near future. But it is also observed that twenty-five per cent. of the pharmacists are Jews, and it is argued by some that this census and its publication are only a preliminary step to an attempted attack on that element. However, the Cossack rulers are not in the habit of beating around the bush in this manner—when they want a thing they take it. It is also given out that the Russian government contemplates the nationalization of all the pharmacies in the empire.—*Western Druggist.*

A phrenologist feels a good many hard bumps in his life.

If excuses had a market value the money market would be glutted.

A great many giants become very small when you get close to them.

Benzoic acid in vanillin may be detected by adding soda solution, neutralizing with hydrochloric acid after filtering, and then adding ferric chloride, whereby ferric benzoate will be precipitated.