

Analoea in Pepsin Testing.

By J. B. NAGELVOORT, Professor of Applied Pharmaceutical Chemistry in Northwestern University School of Pharmacy

Every man has a right to be heard if he has something to say, and this is especially true if he has to defend himself.

Mr. Snow's principle laid down in the *Era*, in his recent article furnishing results of tests of the prominent pepsin of the market, is praiseworthy. All druggists ought to follow his example and examine what they dispense. It would do much good if they did.

What I want to be heard about is in regard to the expression: *Loco citada*, pepsin—Parke, Davis & Co., claimed, 1:3000; found, 1:1875.

I cannot understand how a man of the ability of Mr. Snow, a gentleman as well posted in our literature as he has frequently proved himself to be, should revive the unsavory pepsin war.

It is my duty, however, to ask permission to take up the glove thrown down by Mr. Snow, since I am personally involved in the controversy.

In the first place, from an experience as their chemical adviser, covering a good many years, and in this case covering the whole history of pepsin manufacturing on the modern basis, I know too well that no pepsin manufactured by Parke, Davis & Co., is allowed to leave the house, as the business term is, which has not been fully verified as to its strength as represented; furthermore, that if the pepsin was found to be 1:1875, the analyst in charge would reject it. Every dealer with said manufacturing concern must testify to the fact that my late employers did not hesitate to express their disapproval of, and to reject, material, supplies, etc., not, in every particular, satisfactory to their chemical adviser. And never was any distinction made between their own products and those of others; it came to the expression of an opinion.

It is irrelevant what an anonymous author states in a recent pharmaceutical journal. American druggists are not governed by directions of the B. P. It would be just as lame an excuse for failure to say that the whole matter of testing the converting power of pepsin is a delusion.

There is but one question at issue. According to the established American standard this question is, "How much coagulated egg albumen is dissolved by a certain quantity of pepsin?"

A stranger to the seller, I bought four samples of the pepsin in question in the open market in Chicago, and received the original packages labeled, in part: "Pepsin, 1:3000. Parke, Davis & Co., manufacturers." I selected twelve students of the Ph. C. class of '95 of the School of Pharmacy of Northwestern University, assigned to two of them one of the four original packages, directed and superintended their work, and had them assay the pepsin according to the directions of the U. S. P.; instructed them to report to me in writing, and to enter their reports in a

journal kept in the school for such purpose. One day one of them made the pepsin solution and prepared the diluted hydrochloric acid, while the other boiled the eggs, divided the coagulated albumen, and attended to further details. The required labor of shaking the coagulated albumen with the acid and the pepsin was divided between the two. The second day the labor was reversed, the gentleman who attended to the eggs the previous day making the pepsin solutions, and vice versa. I managed it that all the four samples were treated in like manner.

Their reports are on record in my school and read: "Claimed, 1:3000; found, 1:3500, between four and five hours."

Having thus secured an impartial trial as I could possibly give to the case, I did the testing myself, and found that the four samples referred to possessed a dissolving power for coagulated egg albumen, assayed according to the U. S. P., of 1:3500.

Now, I proceeded differently. I took four quantities of 10 grams each of coagulated egg albumen obtained as before; transferred to proper test tubes; divided each equally with 90 cc. of water; added 5 cc. of 2-per-cent. hydrochloric acid to the mixtures; introduced into the acid fluids respectively 2.8 cc. and 3 cc. of a solution of 0.100 gm. of pepsin No. 1, 2, 3, and four in 100 cc. of water, and agitated the test automatically and evenly, during four to five hours, at a temperature constantly kept at 40° C. By this *modus operandi*, I found that the four samples of pepsin above referred to had a dissolving power of 1:3500; claimed, 1:3000.—*The Western Druggist*.

Practical Uses of Liquid Oxygen.

G. Buchner ("Pharm. Centralh.") states that liquefied oxygen is now employed for various purposes, and points to the possible uses to which it may further be put with increased facilities for its production. By introducing pure oxygen into the flames produced by hydrogen, illuminating gas, carbon monoxide, acetylene, etc., a degree of heat is attained which cannot be reached in any other way. We might, thus, employ pure oxygen instead of air in the various processes in which heat is necessary. Above all, however, the chemical industry, metalurgy, and metal techniques will reap the greatest benefit from the use of liquid oxygen. Steel, forged iron, gold, platinum, and other difficultly fusible metals can, in a few minutes, be melted in a current of oxygen. This will be of particular value to the iron industry, where oxygen bellows, instead of air bellows, as at present, might be used in the production of the heat necessary to melt this metal. In the cast steel industry it could also be employed to advantage. For the purpose of lighting ships, lighthouses, etc., it may be used in the production of Drummond's calcium light and of the zirconium light. In the glass industry, oxygen is now used

to advantage to melt and clear the glass flux; by means of the oxy hydrogen blow pipe it is used to solder lead and glass plates in making large glass reservoirs for accumulators. Oxygen is used in large quantities in the manufacture of anhydrous sulphuric acid. For this purpose a mixture of sulphuric dioxide and oxygen is lead over red hot platinum asbestos. In the chemical laboratory oxygen has also long been used to facilitate combustion in various processes. Oxygen will probably some day be employed in oxidizing drying oils in the paint industry, for inhalations, and in the production of ozonized oxygen, which latter might some day play an important part in the bleaching industry. This gas, the author states, might, in the future, be conducted into our houses for the purpose of enriching our rooms with oxygen.—*Merck's Report*.

Simple Method of Preparing Hydrogen Phosphide.

As Fourcroy and Vauquelin have shown (says *Naturwissenschaftliche Rundschau*), phosphorous and free (molecular) hydrogen cannot be combined. Retgers, proceeding under the idea that the melting point of yellow phosphorus (44° C.) is too low for such a reaction to occur, repeated the experiments of the French chemists, using red phosphorus, whose melting point is considerably above that of the yellow, and obtained, on heating a glass tube to the former in a stream of hydrogen, a great quantity of hydrogen phosphide (phosphorous trihydride, PH_3). The gaseous result gave out the characteristic odor, and when mingled with phosphorous hydride, P_2H_4 , gave the conclusive reaction of spontaneous ignition. With both reactions a by-product of solid phosphorous hydride P_2H_2 was formed, in the shape of a yellow efflorescence in the tube. Out side of any chemical or economic uses that this action has, it will furnish a most valuable lecture demonstration of a simple method of showing at once the formation of the three hydrides, as well as an example of the direct union of two elementary substances. *National Druggist*.

Cumarin.

This excellent body, of which the usefulness as a perfume-material is as yet insufficiently appreciated, is now supplied at a somewhat reduced rate, owing to an improvement in the mode of manufacture. The use of cumarin in the manufacture of toilet soaps is said to be steadily growing. There is, in fact, no better preparation for softening down different odors and blending them into a harmonious whole.

CITRAI IMPROVED BY CITRONELLON.—Experiments have shown (*Schimmel's Report*) that 1 part of citronellon (a natural constituent of lemon oil) added to four parts of citrai greatly enhances the lemon flavor of the latter.