as to the mechanism of chemical decomposition or of bacterial disinfection. They both illustrate the operation of the law of mass action.

The extended report of these experiments will be published soon in the *Journal of Bacteriology.*

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A modified Hellige colorimeter for the comparison of solutions containing two colors.

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By introducing an additional standard wedge in the Hellige colorimeter it has been found possible to greatly extend the usefulness of this instrument. With the instrument thus modified, the determination of the hydrogen ion concentration may be very quickly and accurately made by the colorimetric method, since with the two wedges it is possible to obtain all the shades of color from the acid to the alkaline side of the indicator. To aid in reading, the instrument has been provided with an eyepiece with lens.

With the aid of Sørensen's phosphate solutions (standards of P_H 5.2 and 7.4 for brom cresol purple and standards of P_H 6.4 and 8.4 for phenol red) it is possible to cover the range of P_H 5.3 to 8.3 with an accuracy in reading of $\pm$ P_H 0.02 to 0.04. This covers the most used range in the determination of the hydrogen ion concentration of urine, blood and bacteriological culture media. The phenol red standards also serve excellently for the Marriott alveolar carbon dioxide test.

It is a matter of common observation that it is rarely possible to obtain an exact color match with the standard in the phenolsulphonephthalein renal function test. By using the acid (yellow) phenol red standard in conjunction with the 'phthalein standard it is always possible to obtain an exact color match. If desired correction may be made for the rather small error introduced by the "off" color.

With thymol blue standards the determination of the P_H of gastric juice may be very easily and quickly made.

Other uses of this instrument are being considered.

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The effect of pancreatic rennet on blood coagulation.

By ALBERT A. EPSTEIN and NATHAN ROSENTHAL.

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At the last meeting of this society, one of us[1] presented certain observations on pancreatic rennet. Particular stress was laid on the state in which the rennet probably exists in pancreatic extract, and its intimate chemical association with trypsin. In speaking therefore of the pancreatic rennet we wish it understood that it is the rennet-trypsin unit and not the rennet alone that we are dealing with. Mention was also made of the absolute dependence of the milk coagulating function of rennet on the calcium ion.

The theoretical considerations which have prompted the present investigation will be discussed fully at another time and place. Suffice it to say for the moment that rennet (as a class) appears to be widely distributed in nature, in the animal as well as in the vegetable kingdom. In the latter, its native function often seems to be that of a coagulant of the sap of the plant in which it exists, a process comparable, in some respects, to that of blood coagulation.

Our first attempt to discover the effect of pancreatic rennet upon the coagulation of the blood consisted in the following simple experiment. A small quantity of the purified pancreatic rennet was added to a portion of blood freshly drawn from the cubital vein of an hemophilic individual, and the coagulation time noted. We found that whereas the blood in the control tube required 1 hour and 20 minutes for coagulation, the specimen to which the rennet was added clotted in 90 seconds. The result was so striking that we determined to make a careful investigation of the phenomenon.

In a study of the effect of various tissue extracts on blood coagulation, Mills[2] found that a saline extract of pancreas has very

[1] Epstein, A. A., PROC. SOC. EXPER. BIOL. AND MED., 1921, xix, 3.

[2] Mills, C. A., *J. Biol. Chem.*, 1919, xl, 425.