

Kastle and Loevenhart observed that the hydrolytic action of lipase on ethyl butyrate can be reversed. Taylor synthesized triolein from olive acid and glycerine by means of a lipase extracted from castor oil bean. He also showed that a jelly-like protein substance can be produced by the action of a proteolytic ferment on a solution of albumoses. These results, together with similar observations of other investigators, such as Emil Fischer, Emmerling, Wroblewski, and Hanriot make it very probable that the great majority of ferment actions are reversible.

The hypothesis that the chemical changes of the cell are caused by enzymes affords an explanation of many of the phenomena observed in dead and living matter. The "ripening" of meat may be looked upon as autolysis due to a proteolytic ferment. The changes which take place in the alveoli during the third and fourth stages of pneumonia are no doubt principally due to enzymes. In phosphorus poisoning the destruction of liver cells, with the appearance in the urine of leucine and tyrosine is probably due to acute autolysis of the hepatic parenchyma. And it appears probable to the writer that the toxic symptoms, frequently observed in acute hepatitis, are due to the same cause.

Inasmuch as the liver is believed to be such an important organ in metabolism, one should expect it to be laden with chemically activating agents. As referred to above, the liver has been shown to have the power of changing ammonium carbonate into urea. It has also been shown by Herter and Wakeman that living liver cells have the power of altering indol and phenol in such a way that they cannot be recovered by distillation. And recently Dakin and Kossel observed that the juice of liver cells rapidly converts arginine into ornithin and urea. These last two reactions are quite distinct in character, the changes observed by Herter and Wakeman being condensations, whereas that noted by Dakin and Kossel, hydrolytic. The writer has recently been investigating the power of the liver as an activating agent in producing chemical changes. One experiment, the power to combine salicylic acid and glycine into salicylyl glycine or so-called salicylic-uric acid, gives promise of being successful.

In studying the chemical changes of the animal body I think it well to approach the subject in a manner similar to that which has been found useful in chemistry in general. The laws which govern chemical changes in a test tube may be