

physiologists for generations. By means of the Buchner press it is possible to compress the juice out of all the cells of any gland or fibre of any tissue. In this way he secured quantities of juice from the pancreas and muscles of cats and dogs. With each of these juices he first experimented separately. Each juice when added alone to a solution of glucose is inactive. When, however, muscle juice and glucose solution were first mixed together, and then the juice of the pancreas added, there was a rapid and complete conversion of the glucose into carbonic acid and alcohol. Cohnheim at first thought that the chemical change that occurred was analogous to Pawlow's researches concerning the relationship between trypsinogen, the proteid enzyme of the pancreas, and proteid digestion in the intestine. Pawlow found that trypsinogen itself was inactive on proteids, but when it came into contact with the "enterokinase" of the intestinal juice it was converted into trypsin, which then caused rapid digestion of the proteids. Cohnheim believes that the ingested carbohydrates are finally burnt up in the muscles. He holds that both the pancreas and the muscles produce substances that are necessary for normal carbohydrate metabolism. He was led at first to the belief that these substances were of the nature of enzymes or ferments. According to this hypothesis, he held that the muscles produced a proenzyme which requires the action of another ferment, produced by the pancreas and contained in its internal secretion, before it can become active on carbohydrates. Later researches convinced Cohnheim that the activating body produced by the pancreas was really not a ferment. It withstood boiling, and was soluble in 96 per cent. alcohol, but not in ether. He consequently concluded that it was closely related in its characteristics to such other well-known secretions as adrenalin, iodothyryn, and secretin. An interesting feature is that an excess of this pancreatic product hinders, and, when present in large quantities, absolutely prevents, carbohydrate combustion. Cohnheim suggests two explanations for this remarkable finding. The first is that the pancreas produces two substances, one of which favors and the other hinders sugar combustion. For various reasons he sets this aside as a possible explanation. The second is based on the observation of Neisser and Wechsberg, that the destruction of bacteria by a bactericidal serum is due to the combined action of amboceptors and complement, and that an excess of amboceptors destroys the bactericidal action of the serum. By analogy, he suggests that by adding an excess of pancreas juice to a mixture of glucose solution and muscle juice, an overabundance of amboceptors is provided, thus destroying the glycolytic action of the two juices.

Cohnheim's work seems to have pretty well withstood the attacks of various workers up to the present time. The claims of Claus and