except to assist in emulsifying fats. But of late, through the researches chiefly of Corvisart and Bernard in France, and Kühne and Haidenhain in Germany, our estimate of the pancreas has been revolutionised. The pancreas is now known to be rich both in the quantity and variety of its digestive ferments. Extract of pancreas—and we may presume also the natural pancreatic secretion—has at least four distinct kinds of action on food-stuffs, namely: 1. It converts proteids into peptones in alkaline media; 2. It curdles the casein of milk; 3. It transforms starch into sugar; and, 4. It emulsifies fats. I shall have a word to say about each of these modes of activity.

*Proteolytic Ferment of Pancreas.*—This has been named trypsin by Kühne. It differs from pepsine in requiring an alkaline (instead of an acid) medium for the exercise of its powers. Although the action of pepsin and trypsin on proteids is the same in its ultimate result—*i.e.*, both convert proteids into peptones—certain differences have been noted between them, not only in the reaction of the medium suitable to each, but also in their manner of achieving their work, and in the by-products which attend their action. I am also led to believe that an important practical distinction between pepsin and trypsin will prove to be the difference in the facility of their attack on the different kinds of proteids. Thus, I found it more easy to peptonise milk by trypsin than by pepsin; on the other hand, egg-albumen was attacked more energetically by pepsin than by trypsin.

The mutual reactions of pepsin and trypsin, when present together in solution, are of some practical interest. Kühne has stated that pepsin in an acid medium destroys trypsin, but that trypsin in an alkaline medium has no such effect on pepsin. The latter part of this statement is, I believe, incorrect. My own experiments on this point gave the following results. When pepsin and trypsin were infused together in a large dilution of simple water, at blood-heat, they proved mutually indifferent, and retained their respective activities even after three hours' companionship. But when the mixture was acidified with a few drops of hydrochloric acid, the trypsin was speedily destroyed; and conversely, when the mixture was feebly alkalised, with sodium bicarbonate, the pepsin was quite as speedily destroyed. But I found, further, that pepsin was destroyed apparently as quickly in the simple alkaline solution, without any trypsin; and similarly, that trypsin was speedily destroyed in the same simple acid solution when no pepsin was present.

These reactions involve a point of practical interest in regard to the medicinal administration of pancreatic preparations. They lead directly to the inference that acid gastric juice is destructive of the proteolytic activity of pancreatic preparations, and that it is useless to administer such preparations by the mouth, unless means be adopted to safeguard them against the action of the gastric acid. It is also plain that some of the new digestive remedies which are being sent out by eminent firms of druggists, and which are recommended expressly on the ground that they contain the combined energies of the gastric and pancreatic juices (two of these are styled respectively peptocolos and peptodyn) are compounded on erroneous principles. Pepsin and trypsin cannot possibly be combined in action. If the two ferments be present together in solution, there is no work to be got from either so long as the reaction is neutral; if you acidify, so as to waken the pepsin into activity, the trypsin is thereby rendered permanently inert; and conversely, if you quicken the trypsin into activity by adding an alkali, the pepsin loses its powers.

*The Curdling Ferment of the Pancreas.*—The property of curdling milk has hitherto been regarded as the special appanage of the gastric ferment; and I was surprised to find a curdling agent also associated with the pancreatic ferments. All extracts of pancreas, however made, were found to have this power. The action seems identical with that of rennet made from calf's stomach, and takes effect both in neutral and in alkalised milk.

I found that a piece of perfectly fresh pancreas infused in warm milk had only the feeblest possible curdling power. The extract of fresh pancreas, likewise, when newly prepared was inert, but after the lapse of a few