32. "On the secretion of human bile": PHŒBUS A. LEVENE, W. G. MELVIN, and B. MICHAILOWSKI.

The bile was obtained from a patient with a biliary fistula. The patient had been operated upon for gallstones, and was in comparatively good health at the time of the experiment.

Attention was directed to (1) the influence of diet on the quantity of bile secreted in 24 hours, (2) the permeability of the biliary ducts for certain substances like methylene-blue and sodium salicylate, (3) the influence of these substances and of some salts and acids on the secretion, and (4) on the nature of so-called "bile mucin."

The quantities of bile secreted under different conditions, together with other data, are briefly summarized below:

Diet and Dosage.	Volume—24 Hours. c.c.	Total Solids. Percent.	Organic Matter. Percent.	Ash. Percent.
Mixed diet	780	1.57	0.76	0.82
Animal diet	785	1.68	0.60	1.08
Milk diet	845	1.61	0.56	1.05
Vegetable diet	835	1.64	0.80	0.84
Sodium carbonate	461	1.62	0.71	0.92
Hydrochloric acid	461	1.53	1.08	0.45
Calcium chlorid	687	1.63	0.56	1.08
Sodium salicylate	642	1.40	0.42	0.98
Methylene-blue	864	1.58	0.54	1.04

For methylene-blue and sodium salicylate the bile ducts proved less permeable than the kidneys. There was observed a marked increase in secretion after subcutaneous injections of methylene-blue. The "mucin" was found to be a phosphorized proteid, but no purin bases could be detected in its molecule.

33. "Experiments with certain nitriles and their antidotes": REID HUNT.

Experiments (carried out in the laboratory of Professor Ehrlich) on the toxicity of a number of nitriles, and the antidotal action of certain sulfur compounds toward them, were described. Most of the nitriles studied are poisonous in virtue of the HCN which is split off in the body; in the case of some of the nitriles of the aromatic series and of certain amino nitriles, the molecules themselves seem to be poisonous. Although each of nearly all of the compounds studied is capable of splitting off one molecule of

HCN, it was found that the toxicity of the various compounds differed greatly. The toxicity depends in general upon the ease with which the HCN is split off; in some cases this seems to bear a relation to the ease with which the residue that is united to the CN group is oxidized in the body. Benzonitrile, containing the group C_6H_5, which is oxidized with difficulty in the body, is scarcely more poisonous than phenol. Acetonitrile, also containing a group, CH_3, which is oxidized with difficulty, is also but slightly toxic. Propionitrile and formaldehydcyanhydrin, which contain easily oxidizable groups, C_2H_5 and CH_2OH, are very poisonous.

The toxicity of the molecules of a few nitriles is greater than that of HCN itself, although the latter was the only toxic agent involved. Thus the molecule of chloralcyanhydrin, CCl_3 CH (OH) CN, is nearly twice as toxic as that of HCN. The probable explanation of this is that the chloral residue with which the CN is in combination causes the compound to be distributed especially to the central nervous system; the HCN is thus split off in greater concentration in these important organs than is the case after the administration of a compound which is distributed more uniformly to important and unimportant organs. Through the application of this principle it may be possible to modify the distribution in the body of a remedial agent, so that the active principle may be present in especially great concentration in the organs which it is desired to affect. It was suggested that the powerful action of nitroglycerin upon the bloodvessels may be explained on a similar hypothesis. The view of Hay, that the dilation of the bloodvessels caused by nitroglycerin is due to the formation in the body of nitrites from this substance, has been generally accepted, although the objection has been made that the production of a given effect requires two hundred times as much sodium nitrite as nitroglycerin. This criticism may be met by the hypothesis that the glycerin residue of the nitroglycerin causes this compound to be distributed especially to the arterial walls, and that the nitrite will be formed in greatest concentration at the point where it exerts its action.

The work of Heymans and Masoin on the antagonistic action of sodium thiosulfate toward certain nitriles was extended to many new cyanogen compounds. In addition to the thiosulfate, several

other compounds, containing a sulfur atom which is easily split off, were tested (the sulfur unites in the body to form a little poisonous sulfocyanate). The most efficient of these new sulfur compounds were thialdin, carbothialdin, and potassium xanthogenate. Great differences in the extent of the antidotal action of these bodies toward the various nitriles were noted. Thus thialdin protected against nitriles toward which potassium xanthogenate was without action ; toward other nitriles potassium xanthogenate was the more efficacious. Many of these differences can be easily explained on the hypothesis that the various nitriles and sulfur compounds are differently distributed in the body. Unless both the sulfur compound and the nitrile reach the same cells, and unless the conditions in these cells are favorable for the formation of the sulfocyanate, no neutralization will take place.

Especially interesting are the experiments on the antidotal action of alcohol toward certain nitriles. It was found that small doses of alcohol protected an animal against three to five times the fatal dose of acetonitrile and formaldehydcyanhydrin, and that after otherwise fatal doses of these substances, the animal recovered if small doses of alcohol were given. It was suggested that the explanation for this action may be that, because it is easily oxidized, alcohol consumed the oxygen usually available for the oxidation of the CH_3 and CH_2OH groups of these compounds, and for the consequent liberation of the HCN. Support for this hypothesis was found in the fact that dextrose (another easily oxidizable substance) also protects against acetonitrile.

This seems to be the first case in which alcohol has been clearly shown to have an antidotal action toward a poison. It was suggested that alcohol may have an analogous action in certain pathological conditions, in which physicians have long claimed a beneficial result from its use. Toward HCN itself, and several other nitriles, alcohol has no antidotal action ; in fact, in some cases the toxicity of the nitrile was increased by it.

34. "Toxicity of certain quinin derivatives": REID HUNT.

In one of the side chains of the quinin molecule there is, according to the commonly accepted view, a vinyl group : $— CH = CH_2$. As the toxicity of many compounds (*e. g.*, neurin