these signs of pain were aroused, was found by experiments in which partial cross-sections of the cord were made, to run not in the posterior, but in the lateral columns. The pain pathway from either side of the body runs up both halves of the cord, but more largely up the opposite half.

31. "An experimental study of the cause of shock": WILLIAM H. HOWELL. [Presented by **S. J. MELTZER.**]

Professor Howell's experiments were made upon dogs anæsthetized with morphin and ether, and brought into a condition of shock by operations of various kinds. Blood-pressure records were obtained in the usual way during the experiment. The following general conclusions were reached:

1. The most important and dangerous feature of severe shock is a long continued, practically permanent fall in blood-pressure to about 20 mm. to 40 mm. of Hg. This condition is designated as vascular shock and is due to a long lasting loss of activity of the vasoconstrictor center.

2. A second important result of shock is a very rapid and feeble heart-beat. This condition is designated as cardiac shock; since, although it may result secondarily from the permanent fall in blood-pressure, it may also occur quite independently of the vascular shock as a primary result of the operations. Cardiac shock, so far at least as the rate of beat is concerned, is due to a more or less permanent loss of activity of the cardioinhibitory center.

3. Intravenous infusions of alkaline salt solutions (NaCl, 0.6% — Na_2CO_3, 0.5%) cause a rise of pressure by increasing the force of the heat-beat. The effect is more durable than with salt solution alone and may be renewed by repeating the injection.

4. The fundamental cause of vascular and cardiac shock is not exhaustion of the vasomotor and cardioinhibitory centers from over activity, but a more or less permanent inhibition of these centers from excessive stimulation of the inhibitory paths.

Sixth meeting.[1]

Bacteriological Laboratory of the Department of Pathology of Columbia University, at the College of Physicians and Surgeons. April 20, 1904.

[1] Reprinted from *Science*, 1904, xix, p. 828; *American Medicine*, 1904, vii, p. 789; *Medical News*, 1904, lxxxiv, p. 1101.

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