

II. The fasting level of blood lipoids in normal man has been determined and a moderate increase in these values has been shown to occur following the ingestion of 70 gms. of fat. In cases of mental depression the fasting blood lipoids are increased and a greater response occurs following the fat meal.

Fasting causes a preliminary decrease followed by an increase in plasma fatty acids, and the ingestion of 100 gms. of glucose a marked decrease in both normal and mentally depressed cases.

III. The changes occurring in the fat content of arterial and venous blood, muscle and liver due to muscular exercise, have been determined in the starved, phloridzinized and depancreatized animal.

Following exercise, the venous fats are lowered in the depancreatized animal while only slight differences occur between the arterial and venous fats in the fasted and phloridzinized animal. All the results are obscured by changes occurring in the concentration of the blood during exercise.

The muscles of these animals show a decrease in their fat content following exercise. No significant change in the fat content of the liver of the 24-hour fasted rat could be detected.

IV. The reported increase in plasma fatty acids following adrenalin injections have been shown to be due to faulty methods. Adrenalin has no effect upon the level of plasma fatty acids in the intact, decerebrated, or eviscerated cat. The changes occurring in the liver fats in rats following adrenalin injections are not great enough to warrant any positive conclusions.

V. The changes occurring in the blood fats following hepatectomy have been studied. The plasma fatty acids and cholesterol decrease at a faster rate in the hepatectomized than in the control cats. The iodine number rises sharply following hepatectomy, to a peak, and falls off again, and there is a rapid decrease in the phospholipids. No changes could be detected in the muscle fats.

PH. D.

PHYSIOLOGY

ARTHUR M. VINEBERG

#### SOME ASPECTS OF THE MECHANISM OF GASTRIC SECRETION.

It was found that, when electrical induction currents of varied strengths were applied to the vagus nerves of a dog, different types of gastric secretion were obtained. A weak stimulation produced a scanty flow of gastric secretion which was composed largely of alkaline mucus. A strong stimulus, on the other hand, resulted in a copious secretion of gastric juice having a high acid and enzyme content. Similarly certain chemical stimulants were found to activate special groups of cellular elements in the gastric mucosa. Thus histamine stimulated chiefly the acid-producing, pilocarpine mainly the pepsin-producing group. A histological study of the gastric mucosa before and after strong vagal or histamine stimulation showed marked changes in the peptic cells after prolonged vagal stimulation with only slight changes after histamine stimulation. The oesophagus was proved to be a source of the mucus found in the gastric secretion. This oesophageal mucus is produced in response to strong vagal stimulation and the mechanism of its production was shown to be a true secretory process. It was found that there is a blood chemical mechanism which exerts a general influence upon gastric secretion. When the CO<sub>2</sub> content of the blood is lowered below 30 vols. per cent., either by means of hyperventilation or by the production of a condition of acidosis, vagal or histamine stimulation fails to produce secretion.

PH. D.

CHEMISTRY

FRANKLIN BURNHAM WELLS

#### PART I.—THE CYANOCYCLOPROPANES.

1. Cyanoacetamide, malononitrile, and cyanoacetic acid added to vinyl phenyl ketone to form tri-molecular compounds.
2. Benzyl cyanide and p-nitrobenzyl cyanide did not add to vinyl phenyl ketone.
3.  $\alpha$ -phenyl cinnamonitrile and p-nitrobenzyl cyanide reacted to form 1,3-dicyano-1,2-diphenyl-3-p-nitrophenyl propane, but this substance was intractable.
4. Benzaldehyde and benzyl cyanide did not react to form benzal bis benzyl cyanide.
5. The addition product of anthrone and benzal acetophenone had two carbonyl groups but would form a monoxime only.

#### PART II.—TRIVALENT ASYMMETRIC ARSENIC.

Three cyclic chloriarsines have been prepared, two of which gave evidence of optical activity while the third did not.

7-chloro-7,12-dihydro- $\gamma$ -benzo-phenarsazine, prepared from phenyl- $\alpha$ -naphthylamine and arsenic trichloride, gave two diamers on treatment with silver- $\alpha$ -bromocamphorsulphonate.

When 12-chloro-7,12-dihydro- $\alpha$ -benzo-phenarsazine, prepared from phenyl- $\beta$ -naphthylamine and arsenic trichloride, was treated with silver- $\alpha$ -bromocamphorsulphonate, two inactive compounds resulted.

One optically active compound was produced by the action of silver- $\alpha$ -bromocamphorsulphonate on 7-chloro-9-methyl-7,12-dihydro- $\gamma$ -benzo-phenarsazine which was prepared from p-tolyl- $\alpha$ -naphthylamine and arsenic trichloride.