2. That injury to spermatozoa capable of fertilizing ova may cause the development of monsters from the ova thus fertilized.

47 (139). "**A vago-esophageal reflex**": **S. J. MELTZER** and **JOHN AUER.**

The general knowledge of the contractions of the esophagus is confined to the peristaltic movements, that is, the consecutive contractions of the successive parts of the esophagus following a normal deglutition, or, as it was described by Meltzer at a previous meeting of this society, after an injection of liquid or insufflation of air directly into the esophagus. A simultaneous contraction of the entire esophagus can be produced only by stimulating the peripheral end of the vagus when cut in the neck.

The authors discovered that in dogs a tetanic contraction of the entire esophagus can be caused also by reflex ways. When the vagus is cut in any part of the neck, an electric stimulation of its central end causes a prompt longitudinal and circular contraction of the entire esophagus, which lasts as long as the stimulation continues. Particulars and other interesting facts connected with this observation will be reported later.

48 (140). "**Ion protein compounds,**" with exhibition of products: **WILLIAM J. GIES.**

About five years ago the author found that "when the electric current is passed through neutral or alkaline mucoid solutions (consisting of sodium or calcium salts of mucoids) turbidity results within a short time, and flocks eventually form and can be filtered off." This observation was included in a preliminary report of work then in progress.[1] About the same time Huiskamp had been making similar observations in connection with salts of nucleoprotein from thymus.[2] Shortly afterward, in preparing material for work in another connection,[3] the author precipitated from an alkaline solution (Na_2CO_3) of mucoid, with the aid of acetone

[1] Mead and Gies: *American Journal of Physiology*, 1902, vi (*Proc. Amer. Physiol. Soc.*, 1901, p. xxviii); also Gies and collaborators: Biochemical Researches, 1903, i, p. 53.

[2] Huiskamp: *Zeitschrift für physiologische Chemie*, 1901–'02, xxxiv, p. 32.

[3] Gies: *Loc. cit.*, 1903, viii (*Proc. Amer. Physiol. Soc.*, 1902, p. xliii); Biochemical Researches, p. 54.

after failure with alcohol, a water-soluble compound — apparently sodium mucoid. This fact has not been published hitherto, although it was stated at that time that organic compounds, such as gelato-mucoid, had been obtained.[1]

The author has lately prepared calcium, sodium, potassium and ammonium salts of mucoid by the following process: The gluco-protein was obtained in slightly alkaline solution. This solution was dialyzed until neutral and then was poured into a large excess of 95 per cent. alcohol, by which treatment the mucoid was immediately precipitated. Initial purification was effected by resolution, dialysis and reprecipitation. The products were rendered anhydrous by treatment with absolute alcohol and ether. Probably all bases yield such salts, although the author confined his remarks to salts of inorganic hydroxids.

The comparatively pure inorganic salts of the mucoids thus prepared are light, snow-white powders. They dissolve in water very readily and are dissociable products. The concentrated solutions resemble mucus. The aqueous solutions are neutral to litmus and acid to phenolphthalein. Ammonium compounds have been prepared that were acid to litmus also. The calcium salt yields about 12 per cent. of ash, whereas the corresponding mucoid is practically ash free. It is very probable that the mucins in the secretions occur in the form of such salts, as Müller has already suggested. Yeast nucleoprotein has yielded similar products. Presumably other nucleoproteins will do so also.

The author believes these observations clear the way for important discoveries connected with the glucoproteins, nucleoproteins, proteinates and similar protein products. Numerous studies in this connection were suggested in the oral communication to the Society and are proceeding with the coöperation of the workers in the author's laboratory. The best method of preparing the compounds referred to has not yet been definitely ascertained, but the author hopes to describe it in detail at an early date.

[1] Gies: Loc. cit., 1903, viii (*Proc. Amer. Physiol. Soc.*, 1902, p. xliii); *Biochemical Researches*, 1903, i, p. 54. Also Posner and Gies, *American Journal of Physiology*, 1904, xi, p. 404.