If the same dose of toxin is overneutralized with antitoxin in vitro before injection, it does not protect the sensitized guinea pigs from immediate death when even a single minimal lethal dose of antigen is introduced intravenously. On the contrary the same dose of toxin heated for thirty minutes at 80° C. protected guinea pigs from anaphylactic shock just as unheated toxin did. Heating of the toxin for 30 minutes at 100° C., however, destroys this property of toxin even if much a larger amount of such toxin is injected.

Since the culture medium containing toxin contains also 1 per cent. peptone, a control sensitized guinea pig, instead of toxin received peptone in the amount ten times that present in culture medium carrying the toxin. This guinea pig died immediately after the intravenous injection of antigen, thus showing no protection. It seems thus that the clinical observation concerning apparent diminution of anaphylactic reactivity during diphtheria intoxication is borne out by this preliminary experiment.

71 (1653)

Studies in the physiology of vitamins: Is water soluble vitamin identical with secretin?

By GEORGE R. COWGILL.

[*From the Sheffield Laboratory of Physiological Chemistry in Yale University, New Haven, Conn.*]

A similarity in the physiological effects of vitamin B and substances which promote secretion has been alleged by several investigators.[1] We have examined a number of solutions such as extracts of rice polish, wheat embryo, navy bean and yeast, and neutralized tomato juice, demonstrated to contain vitamin B, for their possible action on the secretory function of the pancreas and liver. The products used were tested for vitamin B content on polyneuritic pigeons, and on dogs which had lost their appetite for several days after having been fed a diet lacking this dietary

[1] Voegtlin and Myers: *Jour. Pharm. Exper. Therap.*, 1919, xiii, 301. Uhlmann; *Zeitsch. f. Biol.*, 1918, lxviii, 3.

essential. Vitamin B has been shown to restore appetite in such animals.[1] The effect of the products on the flow of pancreatic juice and bile was noted in anesthetized dogs in which the pylorus was ligated to prevent secretion due to discharge of acid chyme from the stomach, and the gall bladder bile was prevented from discharging by ligation of the cystic duct. Normal dogs and dogs fed a diet lacking vitamin B were used. It is planned to experiment upon polyneuritic dogs as well. Fresh secretin solutions prepared by the usual method were injected as a control.

Except in the case of tomato juice, all of these products gave negative results. The secretin solutions, however, in comparatively small amounts always produced a characteristic and vigorous flow.

72 (1654)

Theoretical considerations bearing upon the chemotherapy of arsenical compounds.

By GEORGE W. RAIZISS, JAY F. SCHAMBERG and JOHN A. KOLMER.

[*From the Dermatological Research Laboratories, Philadelphia, Pa.*]

Chemotherapy is essentially the study of the toxic and therapeutic properties of chemical compounds. Its main purpose is to establish the maximum tolerated and minimum curative doses. The numerical value representing the ratio of these two doses is the chemotherapeutic index. Chemical compounds possessing the highest chemotherapeutic indices in experimental infection are usually the best adapted for the treatment of disease in man.

Ehrlich, Bertheim and Hata[2] were the first to engage in systematic chemotherapeutic work, in the course of which numerous new chemical bodies were synthesized. They were all derivatives of one certain compound called atoxyl, selected because it was the only organic arsenical known at that time which possessed trypanocidal properties, although to a very small degree. The changes in the chemical constitution of atoxyl led finally to the

[1] Karr: *Jour. Biol. Chem.*, 1920, xliv, 255.

[2] Ehrlich, P., and Hata, S. "Die Experimentelle Chemetherapie der Spirillesen."