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Rôle of Decreased Amount of Gastric Secretion in Production of Pernicious Anemia.

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In addition to the failure to secrete hydrochloric acid, patients with pernicious anemia secrete very little fluid into their stomachs, either while fasting or after the subcutaneous injection of histamin hydrochloride. The average secretion in 32 collections from 5 patients with true pernicious anemia was 20 cc. per hour, as compared with an average of about 150 cc. per hour for normal individuals. To note the part played by the diminished *amount* of secretion, as opposed to a *qualitative* difference from normal, gastric juice from 5 untreated patients with pernicious anemia in relapse (red blood cell counts varying from 1.5 to 3.3 millions per cu. mm.) was collected during a period of 8 weeks and stored in a refrigerator until 1500 cc. had been collected. A daily dose of 150 gm. of gastric juice was incubated with 200 gm. of meat for 2 hours, at a pH of 2.0 and later made pH 5. This was fed for 10 days to a patient with typical pernicious anemia, whose initial red blood cell count was 1.93 million, white blood cells 4200 per cu. mm., hemoglobin 51% (Sahli) 7.14 gm. %. The chart shows that a rise in the percentage of reticulocytes started on the tenth day, and reached a maximum of 9.8% on the thirteenth day. This was accompanied by an increase in the number of red blood cells and in the hemo-

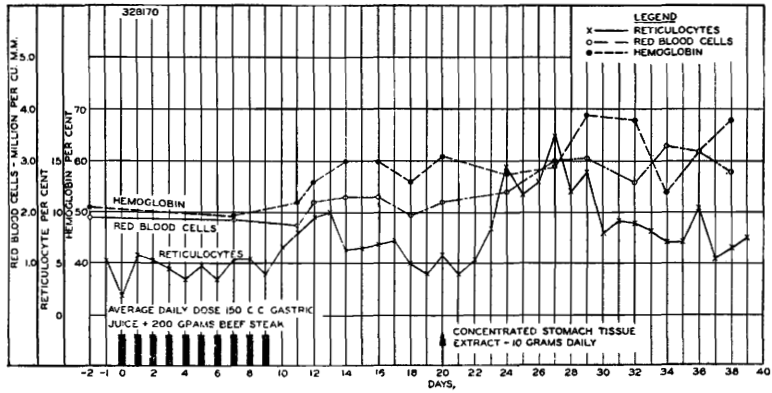

FIG. 1.

globin percentage. From the 10th to the 19th day no further treatment was given and the reticulocyte percentage fell to the pretreatment level. Starting on the 20th day, a daily dose of 10 gm. of a concentrated dried extract of gastric tissue was fed with a subsequent reticulocyte response with a maximum of 17%. The experiment suggests that if pernicious anemia gastric juice, in quantities similar to that secreted by a normal person, is fed (after incubation with beef steak) hematopoietic activity develops. The experiment is now being repeated with various modifications to verify the conclusions.

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Effect of Ultracentrifuging on Paramecium.

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The introduction of the air-driven ultracentrifuge described by Beams and his associates[1] affords a means of testing the viscosity and relative specific gravity of many cell components. The authors have been able by the use of this ultracentrifuge to establish the fact that the Nissl bodies of rat ganglion represent a definite material in the cell and are not the result of the action of the fixative used on homogeneous cytoplasm; likewise, for the Golgi apparatus in the uterine gland cells of the guinea pig. In general the nuclei of the cells mentioned above usually show a clearly marked separation of the chromatic from non-chromatic materials in such a way to show that the chromatin is the heavier. The details of this work are to be reported elsewhere. McClendon[2] and Yancey[3] have reported the effect on the division rate of centrifuging various species of Paramecium. McClendon has also described some of the nuclear effects of such treatment.

The ultracentrifuge used in this work was obtained from Professor J. W. Beams of the University of Virginia; the 1⅛ inch rotor was operated by an air pressure of approximately 15 pounds. *Paramecium caudatum* and *P. multimicronucleata* were centrifuged in gum solutions of approximately their specific gravity for varying

[1] Beams, J. W., Weed, A. J., and Pickels, E. G., *Science*, 1933, **78**, 338.

[2] McClendon, J. F., *J. Exp. Zool.*, 1909, **6**, 265.

[3] Yancey, Patrick H., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 877.