can not be explained as a purely additive effect. The clinical results indicate that one-third to one-seventh of a unit dose of liver or liver products treated with one-tenth to one-thirtieth of a unit dose of raw stomach or stomach products will exert an effect equal to that of a unit dose of liver or a unit dose of stomach.

These results find support in the report of Reimann[1] that the efficacy of raw liver in the treatment of pernicious anemia is markedly increased by admixture with normal human gastric juice prior to administration.

We desire to express our indebtedness to Dr. John H. Warvel, to Dr. L. G. Zerfas and Dr. P. J. Fouts, and to Dr. Howard L. Alt for conducting tests on pernicious anemia cases in relapse with the above described materials. The detailed clinical results will be reported in the near future.

6125

Value of Desiccation and Identification of Blood Typing Serums.*

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The accuracy of the determination of the blood group depends essentially upon the sterility of the typing serums and the freedom from formation of precipitates. The usual method of preserving stock typing serums is in a liquid form with the addition of 0.5% phenol. Lattes[1] has shown that serums preserved with phenol as well as many other preservatives, become turbid and form precipitates, and advises the use of sterile serums. The length of time that these aseptically collected serums will remain uncontaminated is variable and indefinite. Prati,[2] Grove and Crum[3] have demonstrated that liquid typing serums are very subject to contamination by a mustard bacillus and thus develop in the contaminated serums a non-specific property of human blood cell agglutination.

Desiccation may offer a desirable means of preservation. The value of desiccation is dependent upon its effect in time on the

[1] Reimann, Von, Dr. F., *Med. Klinik*, June 12, 1931.

* Jr. article No. 94 (n.s.) from the Mich. Agr. Exp. Sta.

[1] Lattes, L., *L'individualite du sang*, Paris, 1929, Masson.

[2] Prati, *Z. f. Immunitatsf*, 1928, **57**, 1.

[3] Grove and Crum, *J. Lab. and Clin. Med.*, 1930, **16**, 259.

agglutinins in the serums. Slides were prepared as follows: Near the end of the slide was placed 0.01 cc. of type II serum, according to the Moss classification, containing 0.5% phenol and allowed to dry as a drop in the open air. Similarly near the other end of the slide 0.01 cc. of type III serum containing 0.5% phenol was placed. Each serum was marked below the drop to identify its group. The slides were divided into 2 lots, one lot being held at room temperature and the other at 8°C. Liquid phenolized typing serums were prepared at the same time for controls. These were tested at intervals.

Rosenthal[4] demonstrated that typing serums could be preserved in a liquid form by staining and that they required no particular aseptic precautions in handling and storing. He[5] furthermore demonstrated that the agglutinating titre of stained serums remained practically the same as his aseptic controls kept at ice box temperature, and even at room temperature the stained serums did not lose their transparency. Recognizing the value of stained typing serums in identification and preservation, similar serums were prepared and dried on slides to determine the added value of desiccation. To each cc. of type II serum was added 0.01 cc. of a 1.0% aqueous solution of neutral acriflavine and 0.01 cc. of a 0.5% aqueous solution of basic fuchsin. To each cc. of type III serum was added 0.02 cc. of a 1.0% aqueous solution of brilliant green. As before, 0.01 cc. of each serum was placed on opposite ends of a microscopic slide and allowed to dry as a drop. The colors of the dyes are the essential means of identification and remain evident after the addition of the cells during the typing of a blood. These slides were divided into 2 groups as before, one group being held at room temperature and the other group at 8°C. As a control, liquid stained serums were prepared.

The condition of the preserved serums was determined at intervals by cross-agglutination with cells of known groups.

To insure the best results in using the desiccated serums the following technic is advised. Two medium-sized drops of blood to be typed are collected and mixed in 2 cc. of physiological salt solution. Approximately 0.01 cc. of this cell-salt-suspension is added to both type II and type III desiccated serums on the slide. A tooth-pick is used to mix, reversing ends for each serum. The slide can be gently rotated to facilitate agglutination. Observations are then made either macroscopically or microscopically.

[4] Rosenthal, L., *J. Lab. and Clin. Med.*, 1931, **16**, 1123.

[5] Rosenthal and Hornick, PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 515.

The use of dessication of typing serums makes it unnecessary to use precaution as to sterility in handling and storage and simultaneously eliminates the possibility of precipitate formation, which causes confusion in interpreting results in stored liquid phenolized serums. This method makes it possible for the practicing physician to carry the typing serums in his case for emergencies, and hospital technicians can also rely on more accurate results from these preserved serums.

Slides of phenolized serums have been kept at room temperature and 8°C. without deterioration for 11 months, whereas the liquid phenolized serums give a very confusing precipitate in that time. Desiccated and liquid stained serums have kept perfectly to date or 7 months. This study is being continued to determine the maximum length of time the serums can be desiccated and still give accurate results.

6126

Independence of Ventricular Arhythmia from Insufflations to Coronary Flow in Rabbits.

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In a previous paper[1] it was demonstrated that a left ventricular arhythmia produced from insufflations of benzol in tracheotomized animals was contingent on impulses which descend the median part of the lateral columns of the spinal cord and reach the heart by way of the stellate ganglia. The purpose of this report is to record some observations which suggest that this arhythmia is not dependent on the nutrient supply of the heart. This arhythmia is normally preceded by a moderate rise in carotid pressure, a change which Markwalder and Starling,[2] Anrep and Segall,[3] Hochrein, Keller and Mauke[4] would place first, as a means for producing an increased coronary supply. The arhythmia never appeared when blood pressure was low (40 mm. and below). Double vagotomy in no way delayed the onset or shortened the interval of this arhythmia, except possibly for a short interval immediately after sectioning.

[1] Allen, W. F., *Am. J. Physiol.*, 1931, **96**, 243.

[2] Markwalder and Starling, *J. Physiol.*, 1914, **47**, 275.

[3] Anrep and Segall, *Heart*, 1926, **13**, 239.

[4] Hochrein, Keller und Mancke, *Arch. Exp. Path. u. Pharm.*, 1930, **151**, 146.