

it was found that the absorption had removed all group-antibodies capable of reacting with the GS 10-1S culture as well as with stock cultures of Types 1 to 10. This absorption had not, however, removed the specific Type 5 antibodies capable of reacting with the TS 10-2S culture. A second absorption with the GS culture left the type-antibody content still unchanged. These results, as shown in Table I, again demonstrated the absence of type-substance in the smooth variant, 10-1S.

These results appear to suggest that a detailed examination of smooth-colony variants of other serological types of Group A *beta* hemolytic streptococci, isolated upon reversion from the rough, might result in the discovery of highly type-specific and group-specific lines whose employment would facilitate preparation of type- and group-serums appropriate for identification of streptococcal cultures.

### 10271 P

#### Permanent Diabetes Insipidus Possible in the Absence of the Pars Anterior.\*

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von Hann,<sup>1</sup> on the basis of pathological material, suspected that a functional pars anterior of the hypophysis was essential for a deficiency in the antidiuretic principle to be evident in the form of d.i. This contention has been championed particularly by Richter<sup>2</sup> and Ingram and Fisher<sup>3</sup> on the basis of experimental material. The experiments reported below reinforce data already on record,<sup>4</sup> which demonstrate that a moderate d.i. can obtain in the total absence of the pars anterior.

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<sup>1</sup> von Hann, F., *Frankfurt. Z. f. Path.*, 1918, **21**, 337.

<sup>2</sup> Richter, C. P., *Am. J. Physiol.*, 1936, **117**, 46, and *A. E. N. M. D.*, 1938, **17**, 392.

<sup>3</sup> Ingram, W. R., and Fisher, C., *Anat. Rec.*, 1936, **66**, 271.

<sup>4</sup> (a) Richert, F. L., and Dandy, W. E., *Bull. Johns Hopkins Hosp.*, 1936, **58**, 418; 1925, **37**, 1; (b) Keller, A. D., *Proc. Soc. Exp. Biol. and Med.*, 1938, **38**, 31; *Am. J. Physiol.*, 1938, **123**, 111; (c) White, H. L., and Heinbecker, P., *Am. J. Physiol.*, 1938, **123**, 213.

The water exchange was followed in 8 adult dogs for 6 months or longer after total hypophysectomy. Total hypophysectomy was made certain at operation by deliberate encroachment upon the ventral hypothalamus and cauterization of the base of the pituitary fossa. The dogs were maintained on a constant daily food intake, 50 g of baloration per kilo of body weight per day. Water was available to them 22 hours of each 24. The food given and water drunk was calculated for the duration of the experiments on the basis of the operation weight, which ranged from 6 to 10 kilo.

Without exception, there was a decided increase in the water exchange following operation which persisted indefinitely (10 months). In some instances the increase was immediate with no subsequent tendency to a "latent period". In other instances the rise occurred progressively over a period of several days. Usually the polydipsia was maintained at a higher level during the immediate 2-3 weeks after operation than it was in the final stationary state (after 3 to 6 weeks). The magnitude of the polydipsia present in the final state varied among the animals from 150 to 350 cc per kilo per day, the mean being around 300 cc. The preoperative water intake was in the neighborhood of 50 cc per kilo per day. There was always a corresponding polyuria of like magnitude, the urine being sugar-free and of low specific gravity.

Post operative evidence of the absence of the pars anterior was a marked increase in insulin sensitivity (20x), an appreciable reduction in basal metabolism, and degenerative changes in the suprarenals and thyroids of the animals that have been sacrificed.

The maximal polydipsia encountered in this series in the final state is below the maximal encountered in dogs under the same regime, where d.i. was precipitated by hypothalamic lesions; *e. g.*, the pars anterior remained intact.

These experiments demonstrate beyond possible doubt that a moderate d.i. (35,000 cc per day for a 10 kilo dog) is possible in the absence of the pars anterior. They further, coupled with experiments already reported,<sup>4b</sup> are interpreted as verifying the conclusions of Trendelenburg<sup>5</sup> and Sato,<sup>6</sup> namely, that the absence of a d.i. following any hypophysectomy procedure is evidence that functional antidiuretic secretory tissue remains intact. Whether or not the elaboration of the antidiuretic principle is confined solely to hypophysial tissue is not clear.

Although a moderate d.i. is possible in the absence of the pars an-

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<sup>5</sup> Trendelenburg, P., *Klin. Wschr.*, 1928, 7, 1679.

<sup>6</sup> Sato, G., *Arch. Exp. Path. Pharm.*, 1928, 131, 45.

terior, there is much data<sup>7</sup> which suggests that von Hann's concept holds to the extent that the functional presence of the pars anterior normally intensifies the severity of the d.i. resulting from a given deficit in the antidiuretic principle. However, White and Heinbecker<sup>4c</sup> report that in certain instances hypophysectomy did not reduce the magnitude of the d.i. induced by hypothalamic lesions. This may indicate that the above relationship does not hold when the animal is entirely antidiuretic-free.

### 10272 P

#### Are the Groups of Beta Hemolytic Streptococci Inter-Transformable?

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It has been reported<sup>1</sup> that fibrinolysis by Group A hemolytic streptococci was a character of diminishing intensity as one proceeded from the S-culture phase through the R and finally to non-hemolytic colonies showing an exclusively diphtheroid cell-morphology. Moreover, these feebly fibrinolytic diphtheroids possessed an unusual lability, as indicated by their occasional reversion to the identical S-colony type of hemolytic streptococcus (Stoddard strain) from which they had originally dissociated. Such a "reverted" diphtheroid culture agglutinated significantly in the antistreptococcal S-serum and absorbed from this serum the antibodies specific for it.

Subsequently the cultures of this diphtheroid, started from a single cell, have undergone further changes that appear to determine the Lancefield group into which the streptococcus redissociated from this diphtheroid shall fall. These changes have occurred under the following conditions. When this strain was kept for several months in our desiccated stocks and then transferred to semi-solid blood agar at room temperature, 4 transfers being made at monthly intervals, it lost practically all of its fibrinolytic ability. The same strain

<sup>7</sup> (a) Barnes, B. O., Regan, J. F., and Bueno, F. G., *Am. J. Physiol.*, 1933, **105**, 559; (b) Biasotti, A., *Compt. rend. Soc. de biol.*, 1934, **115**, 329; (c) Mahoney, W., and Sheehan, D., *Am. J. Physiol.*, 1933, **112**, 250; and (d) Keller, A. D., *PROC. SOC. EXP. BIOL. AND MED.*, 1937, **36**, 787; 1938, **38**, 31; and *Am. J. Physiol.*, 1938, **123**, 111.

<sup>1</sup> Mellon, R. R., and Cooper, F. B., *PROC. SOC. EXP. BIOL. AND MED.*, 1935, **33**, 451.