

increases considerably after splenectomy. This further supports the evidence presented in our study of the copper metabolism of rats regarding the rôle of the spleen in the utilization of copper.

7657 P

Shwartzman Phenomenon with B. Pertussis Culture Filtrates.

LEWIS HENRY KOPLIK. (Introduced by Gregory Shwartzman.)

From the Laboratories of the Mount Sinai Hospital, New York.

Attempts to reproduce the Shwartzman phenomenon with *B. pertussis* have been reported by several authors. (Gross,¹ Shwartzman,² Mishulow, Mowry and Scott.³) However, the potency of the filtrates seemed to have varied for unknown reasons and always remained low as compared to similar preparations from *B. typhosus*,⁴ meningococcus⁵ and other organisms.⁶

During some work with serum neutralizations of *B. pertussis* toxic substances it occurred to the author of this paper to employ Toomey and McClelland's brain veal infusion medium⁷ for the preparation of the toxic factors necessary for the production of the Shwartzman phenomenon.

In these experiments the brain medium was prepared essentially according to the method of Toomey and McClelland with various peptones (neopeptone, proteose-peptone (Difco), Witte's peptone). The H-ion concentration was adjusted either to pH 7.3 or 7.8. The media were seeded with 24-hour-old cultures on "chocolate agar" slants. The strain used was subcultured for at least 3 successive days preceding these inoculations.

The organisms grew luxuriantly in the brain media similar to Toomey and McClelland's description. The strain employed was M 12 (group B), kindly supplied to us by Miss Mishulow of the New York City Board of Health Laboratories.

¹ Gross, Louis, personal communication.

² Shwartzman, Gregory, *J. Exp. Med.*, 1930, **51**, 581.

³ Mishulow, Lucy, Mowry, Isabelle W., and Scott, Eleanor B., *J. Immunol.*, 1930, **19**, 227.

⁴ Shwartzman, Gregory, *PROC. SOC. EXP. BIOL. AND MED.*, 1929, **26**, 843.

⁵ Shwartzman, Gregory, *J. Inf. Dis.*, 1929, **45**, 232.

⁶ Shwartzman, Gregory, *PROC. SOC. EXP. BIOL. AND MED.*, 1928, **26**, 207.

⁷ Toomey, John A., McClelland, Joseph E., *PROC. SOC. EXP. BIOL. AND MED.*, 1933, **31**, 34.

Berkefeld filtrates of 4, 7 and 17 days' brain medium cultures were tested in rabbits for the elicitation of the Shwartzman phenomenon. 0.25 cc. undiluted filtrate was injected intradermally into rabbits and followed in 24 hours by a single intravenous injection of the same filtrate undiluted or in varying dilutions. Comparative studies of the brain culture filtrate with "chocolate agar" culture washings were made. The results may be described in brief as follows:

It was possible to elicit the phenomenon under discussion in prepared rabbits by an intravenous injection of the brain filtrate in dilutions ranging from 1:40 to 1:400 and recently 1:1500. The chocolate media culture filtrates in our hands could never be diluted higher than 1:5, and usually were active only undiluted. It is interesting to note that some of the brain media culture filtrates when retitrated 2-4 months after preparation showed a rise in effective titer of 5 to 20 fold. This was not observed with "chocolate agar" culture filtrates. The optimum incubation period for brain infusion cultures seemed to be about 17 days, while 4 and 7 day cultures yielded filtrates of lower potency. The H-ion concentration in the range employed had no effect. Neopeptone and proteose-peptone (Difco) appeared superior to Witte's peptone.

This report seems to be justified because of the ease with which *B. pertussis* filtrates in large quantities can be obtained for the elicitation of the Shwartzman phenomenon; and because of the considerable potency of these preparations, *i. e.*, 5-20 times higher than with preparations hitherto described.

Experiments on specific serum neutralizations are under way in order to determine the nature and antigenicity of the toxic substances described above.

7658 P

Blood Changes Following Gastrectomy in Monkeys.

S. MILTON GOLDHAMER. (Introduced by C. C. Sturgis.)

*From the Thomas Henry Simpson Memorial Institute for Medical Research,
Ann Arbor, Michigan.*

There has been considerable speculation as to whether the "pernicious anemia-like" blood picture following gastrectomy in man¹ is the result of the operation, or is an independent phenomenon. In-