

TABLE I.
Human Portal and Ankle Venous Pressures Determined Simultaneously at
Laparotomy (cm saline).

Case	Portal venous pressure	Ankle venous pressure	Difference
(a)			
1	18	9	9
2	17	8	9
3	21	10	11
4	16	6	10
5	20	7	13
6	17	9	8
7	14	7	7
8	18	5	13
9	20	11	9
10	17	9	8
11	21	12	9
12	19	6	13
13	22	11	11
14	15	8	7
15	18	7	11
16	17	9	8
			Avg 10
(b)			
17	40	8	32
(portal cirrhosis)			

pressure was 10 cm saline higher than the average normal ankle venous pressure (Table I a). This value is what may be expected in order that the resistance in the portal capillaries may be overcome. In this series, normal portal pressures ranged between 14 and 22 cm saline. Normal ankle venous pressures ranged between 5 and 12 cm saline. In a case of advanced portal cirrhosis with ascites (Table I b), the portal venous pressure was 40 cm saline, and the ankle venous pressure 8 cm saline, a difference of 32 cm saline.

13765 P

Influence of Metrazol, Insulin Hypoglycemia, and Electrically Induced Convulsions on Reestablishment of Inhibited Conditioned Reflexes.

E. GELLHORN,* M. KESSLER AND H. MINATOYA.

From the Departments of Physiology and Psychiatry, University of Illinois, Chicago, Ill.

In a series of studies it was shown that convulsions induced by metrazol and other convulsant agents or by electroshock as well as insulin hypoglycemia are accompanied by an increased excitability

* Aided by a grant from the John and Mary R. Markle Foundation.

of autonomic centers at the hypothalamic and medullary level.¹ It was thought that this action is of greatest importance for the shock therapy of psychoses and may explain the fact that these procedures have similar therapeutic effects although their action on the cortex as measured by the electroencephalogram is quite dissimilar.²

It seemed probable that hypoglycemic coma and convulsions may have in addition to their temporary influence on the cortex as revealed by the electroencephalogram far reaching effects on cortical processes which would be detected best by chronic experiments. Therefore the effects of these procedures on the conditioning process were studied.

The experiments were performed on 17 rats which received as an unconditioned stimulus a shock inducing them to jump from a compartment A across a small partition into the compartment B. This reaction was established by a few shocks. Thereafter a bell was sounded 2 seconds prior to shock. The sound continued during the shock. After the conditioned response (C.R.) was established at nearly 100% for 1 to 3 days the C.R. was inhibited by lack of reinforcement. When the C.R. response had either completely disappeared or was present only in 10-20% of the tests the rats were subjected either to metrazol convulsions, electroshock or insulin coma. Whereas control animals not subjected to these procedures showed no spontaneous recovery of the C.R. it was observed that the experimental group treated with coma or convulsions regained the inhibited C.R. in spite of continued lack of reinforcement. The duration of this effect was variable and depended on the number of "treatments" and in the case of insulin probably on the depth and the duration of the coma. After the effect had disappeared for several days the induction of a new coma or convulsions restored again the C.R. Fig. 1 gives a typical example for the effects of insulin, electroshock and metrazol. The fact that these procedures in spite of their different action on the electroencephalogram influence the C.R. in a similar manner suggests that increased autonomic discharges demonstrated in previous investigations under these

¹ Gellhorn, E., *Arch. Neurol. Psychiat.*, 1938, **40**, 125; *Am. J. Psychiat.*, 1941, **97**, 944, 1204; Gellhorn, E., Ingraham, R. C., and Moldavsky, L., *J. Neurophysiol.*, 1938, **1**, 301; Kraines, S. H., and Gellhorn, E., *Am. J. Psychiat.*, 1939, **95**, 1069; Gellhorn, E., and Darrow, C. W., *Arch. Inter. Pharmacodyn.*, 1939, **62**, 114; Yesinick, L., and Gellhorn, E., *Am. J. Physiol.*, 1939, **128**, 185; Domm, S., and Gellhorn, E., *Arch. Neurol. Psychiat.*, 1940, **43**, 726; Gellhorn, E., Kiely, W. F., and Hamilton, S. L., *Am. J. Physiol.*, 1940, **130**, 256; Gellhorn, E., Feldman, J., and Cortell, R., *Am. J. Physiol.*, 1940, **131**, 281; Gellhorn, E., and Kessler, M., *Proc. Soc. Exp. Biol. and Med.*, 1941, **46**, 64.

² Kessler and Gellhorn, unpublished observations on unanesthetized rats.

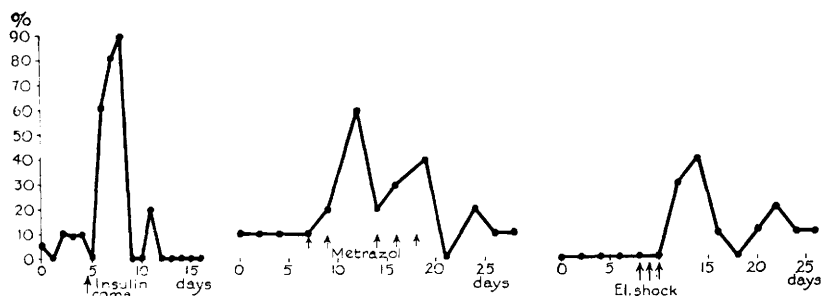


FIG. 1.

The effect of insulin coma, metrazol and electric shock on the restoration of inhibited conditioned reflexes. All rats were conditioned to the bell and after a conditioned reflex was established it was inhibited by lack of reenforcement. The records show that these inhibited reflexes are restored by insulin coma (5 units insulin per kilo intraperitoneally and 5 units subcutaneously), metrazol convulsions (45 mg per kilo) and electric shock applied to the head.

conditions may be responsible for these cortical effects. It appears to be significant for the understanding of the mechanism of shock therapy to point out that the procedures studied in this paper presumably act on the cortex by removing inhibitory processes. Rose and collaborators³ described a single sheep which for unknown reasons had lost its previously established C.R. and found that repeated insulin comas restored the C.R. The present work confirms and extends this observation, suggests the mechanism involved and indicates that convulsions as well as insulin coma may restore inhibited C.R.

13766

Antagonism of Anti-sulfonamide Effect of Methionine, and Enhancement of Bacteriostatic Action of Sulfonamide by Urea.*

HENRY M. TSUCHIYA, DANIEL J. TENENBERG, WILLIAM G. CLARK
AND ERNEST A. STRAKOSCH.

From the Department of Bacteriology, Department of Zoology, the Division of Dermatology and Syphilology, University of Minnesota, and the Department of Dermatology and Syphilology, Minneapolis General Hospital.

Holder and MacKay¹ have recently reported the use of a mixture of strong urea with sulfonamides topically applied to infected

³ Rose, J. A., Tainton-Pottberg, A., and Anderson, O. D., *PROC. SOC. EXP. BIOL. AND MED.*, 1938, **38**, 653.

* Supported by a grant from the General Research Fund of the University of Minnesota.

¹ Holder, H. G., and MacKay, E. M., *Military Surg.*, 1942, **90**, 509.