much more numerous. There was a marked direct luteinization of most of the follicles. and they all contained varying amounts of blood. The intensity of the luteinization varied with the amount of the blood present. For example, when a greater amount of blood was present on one side of the cavity, almost invariably there was also a greater amount of lutein tissue on that side. When there was only a small amount of blood in the follicle, it was almost invariably in or near the cumulus. This suggests that the first rupture of capillaries usually occurs at this position. This observation is based on the study of serial sections of more than 100 follicles in which only a small amount of blood was present and which showed an early stage of luteinization. In the animals which received intraperitoneal injections, the smallest follicles, which contained luteinized cells and free blood in the cavity, averaged 1.41 mm. in diameter, while the largest follicles, which did not contain any blood and did not show any evidence of luteinization, averaged 1.01 mm. in diameter. Luteinization has always been accompanied by free blood in the cavity of the follicle, except where the follicle has been completely luteinized.

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Small Doses of Anesthetics.

CHAPMAN REYNOLDS.

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It was previously noted that, while ordinary concentrations of sodium amytal diminished or abolished tone and activity of isolated intestine and uterus, minute doses seemed to be pressor.[1] Is the same "reversal" effect to be found in whole intact animals? Picrotoxin causes convulsions in mice. The convulsions may be stopped or prevented by a proper dose of anesthetic. Indeed a method for biological assay of the hypnotics has been based on this antagonism,[2] and picrotoxin has been suggested as an antidote for barbiturate poisoning.[3] Thus it seems that wherever the points

[1] Reynolds, C., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 656.

[2] Wieland, H., and Pulewka, P., *Arch. Exp. Path. u. Pharm.*, 1927, **120**, 174 and 186.

[3] Maloney, A. H., Fitch, R. H., and Tatum, A. L., *J. Pharm. and Exp. Therap.*, 1931, **41**, 465.

of action of these 2 types of poisons may be, they are sufficiently the same to exhibit a mutually antagonistic effect. Knowing that a convulsant dose of picrotoxin would be "neutralized" by a sufficient amount of anesthetic, would a sub-convulsant dose of picrotoxin become convulsant in the presence of a small, or excitatory, or stimulant dose of anesthetic?

The minimal convulsant dose of picrotoxin was determined in about 60 mice to be between 2.75 and 3.0 mg. per kg.; 2.75 mg. per kg. did not cause convulsions. Solutions of sodium pentobarbital (sodium ethyl-methyl-butyl barbiturate) and sodium amytal (sodium iso-amyl-ethyl barbiturate) were used interchangeably in equivalent doses to represent the anesthetics, since ether, alcohol or chloroform would have introduced the complicating factor of peritoneal irritation. In each experiment 3 mice were given a minute dose of a barbiturate intraperitoneally and a fourth mouse (control) approximately the same quantity of normal saline. Ten to 15 minutes later each animal received a subconvulsant dose of picrotoxin, and the group were then allowed to run freely about a table without handling or disturbance and watched for convulsions. A mouse going into unmistakable convulsions was recorded as +, otherwise, —. A typical protocol follows:

Mouse	Wt.	Barbiturate (fraction of MAD)	Time inj.	Picrotoxin (mg. per kg.)	Time inj.	Result
RA	18.2	0	1:15	2.75	1:30	—
RP	19.4	1/1000	1:17	2.75	1:32	+ 1:55
BA	19.2	1/1000	1:20	2.50	1:35	+ 1:59
BP	17.5	1/1000	1:22	2.25	1:37	+ 2:10

Results are summarized in Table I.

It is seen that convulsions are induced by non-convulsant doses of picrotoxin if these have been preceded by minute amounts of barbiturate. Apparently convulsions do not occur, however, if too little picrotoxin is used or too little or too much (*i. e.*, approaching the depressant range) barbiturate.

In terms of Bancroft and Richter's interpretation of their interesting ultramicroscopic observations of the effect of anesthetics on cell colloids,[4] one might say that the cells of the nervous system are made more irritable by the minute amounts of barbiturates here used; but the hypothesis of a "decreased stability" state of colloids is as yet too untested to be offered as more than a tentative explanation of the herein reported phenomena.

[4] Bancroft, W. D., and Richter, G. H., *J. Phys. Chem.*, 1931, **35**, 215.

TABLE I.

Picrotoxin (mg. per kg.)	Preceded by Barbiturate (fraction of MAD)	CONVULSIONS (Number of trials) +	—
3.00	0	8	0
2.75	0	0	32
2.75	1/10	4	12
2.75	1/50	6	2
2.75	1/100	16	0
2.75	1/500	8	0
2.75	1/1000	12	0
2.75	1/2000	6	0
2.75	1/3000	2	8
2.75	1/5000	0	12
2.5	1/10	0	8
2.5	1/50	6	4
2.5	1/100	12	1
2.5	1/500	16	0
2.5	1/1000	12	0
2.5	1/2000	12	2
2.5	1/3000	0	8
2.25	1/100	4	0
2.25	1/500	6	0
2.25	1/1000	4	2
2.25	1/2000	0	10
2.0	1/100	0	6
2.0	1/1000	0	6

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Glucose Tolerance in Lipoid Nephrosis.

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The behavior of patients with lipoid nephrosis to the glucose tolerance test has apparently not been extensively studied. Linder, Hill and Van Slyke[1] in their studies of carbohydrate metabolism in chronic nephritis studied 2 cases but found nothing abnormal in their response to the glucose tolerance test. These observers employed for their tests cutaneous blood obtained by a clean deep prick and made their blood determinations by the method of Hagedorn and Jensen.

We have recently studied the response of 4 patients with typical lipoid nephrosis to the glucose tolerance test and have obtained atypical curves in all these patients. Venous blood was employed

[1] Linder, G. C., Hill, A., and Van Slyke, D. D., *J. Clin. Invest.*, 1925, **1**, 247.