toxicity of strychnin is definitely reduced not only when it is administered in great dilution, but also when saline or water is administered nearly simultaneously in other parts of the body, thus, perhaps, diluting the poison within the circulation. These results are of general theoretical interest and have obviously also a practical bearing, neither of which we shall discuss here.

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The influence of the infundibular portion of the hypophysis upon the pupil.

By **S. J. MELTZER.**

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The action of the extract of the hypophysis is similar to that of adrenal extract in the first place by the influence which both exert upon blood pressure. There seems to be also some similarity in their action upon the uterus and intestines. With regard to the action of hypophysis upon the frog's pupil which, as is well known, becomes definitely dilated by adrenalin, opinions differ. While Cramer and others report a dilatation, Kepinow and Gottlieb recently stated that in their hands the extract of the hypophysis caused a constriction of the frog's pupil. In my own observations upon the enucleated bulbi from *Rana pipiens*, heated and unheated *pituitrin* (Parke Davis & Co., prepared from the infundibular portion of the hypophysis) *in most instances caused a dilatation of the pupil.* The extent of the dilatation varied greatly in various eyes and was never as striking as is observed under the influence of adrenalin. In a smaller number no dilatation of the pupils took place; *but in no instance have I observed a miosis following the bathing of the bulbi in pituitrin.*

A very striking test is the action of adrenalin on the pupil of mammals (rabbit or cats) on the side on which the superior cervical ganglion had been removed 24 hours or longer. If a sufficient dose was used, that pupil showed a maximal dilatation which may last for hours, while the pupil on the normal side remains unchanged. I have studied this test with pituitrin. In six rabbits

in whom one superior cervical ganglion had been removed, either on the right or on the left side, I have injected at various times various doses of pituitrin—1 c.c., 2 c.c. and 3 c.c.—through the marginal ear vein. *At no time did a dilatation of the pupil on the operated side follow these injections, neither soon nor late. Both pupils, however, and especially that of the eye on the operated side, showed a constriction of short duration immediately after the injection.*

Here we meet, then, with a definite difference between the action of adrenalin and pituitrin which, in some cases, might assist in the identification of the nature of the blood-raising principle found to be present in some fluids.

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Observations on the relation of carbon dioxide and oxygen to the development of certain amphibian embryos.

By **A. M. BANTA.**

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The following observations were made during the past two seasons upon material kept for other purposes.[1]

Eggs of all the species mentioned below were placed when fresh or in early cleavage in artesian water containing 1.32 per cent. of CO_2, the amount normal to large open ponds here being only about 0.04 per cent.

Ambystoma punctatum.—Development was at the normal rate with no mortality of embryos traceable to the CO_2 in the water. The larvæ likewise lived fairly well, though in many cases not so well in the CO_2 water as in pond water.

Spelerpes bilineatus.—Cleavage and later development were probably at the normal rate, but there was a large mortality percentage in standing or running artesian water. The mortality was less in standing water from ponds but thoroughly oxygenated water comparatively free from CO_2 was necessary to get the highest percentage of developing embryos.

[1] Observations on *Spelerpes*, *Rana pipiens* (?), and *Rana sylvatica* were made on material kept in collaboration with Dr. R. A. Gortner, of this station.