larity in the rhythm and ultimately arrest in about 5 minutes. Subsequent application of normal perfusing solution results, in time, in complete recovery of the normal rhythm. In order to test the further relationship of Ca and Sr in their effect upon the heart rhythm of the crayfish, a 0.020% solution of $SrCl_2$ was substituted for the 0.024% $CaCl_2$ in the normal perfusing solution. Upon the application of such a solution to the heart a slight increase in tone generally occurs, coupled with a slight decrease in rate. With continuous perfusing this rhythm will continue in some cases for as long as 5 hours. It is therefore concluded that Ca and Sr have somewhat analogous effects upon the heart rhythm of the crayfish.

The power of Ba to replace Ca in this respect is undoubtedly very much more limited, although it is probably not entirely lacking. $BaCl_2$ always produces an increased tone of the heart which leads ultimately to systolic standstill.

Upon the application of a 0.024% $BaCl_2$ solution an increase in tone occurs, followed by an irregularity in the pulsations. Systolic arrest is generally obtained in less than 2 minutes. When 0.020% $BaCl_2$ is substituted for the 0.024% $CaCl_2$ in the normal perfusing solution and perfused through the heart a slight increase in tone occurs. With continued perfusion there is a slow decrease in the amplitude and force of the beats resulting ultimately in arrest in a few minutes.

NH_4Cl likewise has a depressor effect upon the heart rhythm of the crayfish. Upon the application of a perfusing solution containing 1% NaCl + 0.040% NH_4Cl + 0.028% KCl + 0.024 $CaCl_2$, there occurs an increase in tone, a decrease in rate and amplitude, with systolic arrest within a few minutes. No recovery can be obtained.

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Inhibition of Oestrus in the Rat by Extracts of Corpus Luteum.*

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Although no data are recorded, Pereyra[1] (on the guinea pig) and Hisaw[2] (on the rat) pointed out the fact that inhibition of oestrus was obtained by acid alcoholic extracts of *corpus luteum*, but neither

* The expenses of this investigation were defrayed by a grant from the National Research Council, Committee on Research in Problems of Sex.

gave details of procedure. Parkes and Bellerby,[3] working on mice, obtained an active preparation by extracting freshly dissected luteal tissue with ether. Macht, *et al.*,[4] obtained active preparations from de-fatted desiccated luteal tissue both by dilute ethyl alcoholic and by ethyl acetate extraction.

Extraction of the oestrus-inhibiting principle from *corpora lutea* by means of organic solvents has met with varying degrees of success in this laboratory. Press juice gave positive results but there was a severe local reaction and the activity rapidly disappeared. Consistent positive results were obtained with both methyl alcoholic extraction and acidified methyl alcoholic extraction of fresh luteal tissue obtained from sow ovaries. The luteal tissue was hand dissected within 8 hours after removal of the ovaries. A typical experiment is included to show the general method of extraction which has given the most striking results: 250 gm. freshly shelled *corpora lutea* are thoroughly hashed and treated gradually with 625 cc. methyl alcohol. After standing from 12 to 15 hours at room temperature with frequent agitation the mixture is strained through muslin and the glandular residue thoroughly expressed. The strained fluid is filtered and the filtrate evaporated before a fan. The residue is suspended in normal saline solution so that 1 cc. represents 10 gm. of fresh *corpora lutea*. An active extract was also obtained using methyl alcohol containing 1% acetic acid. Control extracts were prepared in the same manner from fresh muscle tissue.

Each test animal received the equivalent of 5 to 10 gm. of tissue per day administered subcutaneously. Only animals displaying normal cycles were used. Cycles were followed by means of the vaginal smear method.

Experimental dioestrous intervals ranging from 8 to 22 days were observed in 4 of the 8 test animals receiving extract prepared as described. The remaining 4 animals responded with dioestrous intervals of 6 to 13 days. Of the 8 animals on extract prepared with acidified methyl alcohol all but one responded, none of them coming into oestrus during the period of injection; control extracts did not disturb the oestrus cycle.

Further work on the purification of these extracts is in progress.

[1] Pereyra, A., *Anat. Rec.*, 1928, xxxviii, 57.

[2] Hisaw, F. L., *Physiol. Zool.*, ii, 59.

[3] Parkes, A. S., and Bellerby, C. W., *J. Physiol.*, lxiv, 233.

[4] Macht, D. I., Stickels, A. E., and Seckinger, D. L., *Am. J. Physiol.*, lxxviii, 65.