leprosy serum showed such a marked toxicity, as compared with the less than normal toxicity of tuberculosis and syphilis, that the phyto-pharmacological examination may be utilized to great advantage in differentiating leprosy from the other two diseases, which may simulate it.

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Action of Predigested Corpus Luteum Extract on Excised Vas Deferens.

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Macht and Matsumoto[1] called attention to the peculiar sensitiveness of smooth muscle from the excised surviving vas deferens to extracts of corpus luteum. Such extracts produce a marked contraction of the vas deferens which is exceeded only by contractions produced by epinephrin. Extracts of numerous other glands, applied to the excised surviving vas deferens in the same doses, produced only slight contractions of its smooth muscle. This peculiar selective effect of corpus luteum extract on the vas deferens is not exhibited by the follicular hormone of the ovary but is specific for the hormone of the corpus luteum. For this reason, the authors suggested its employment in the evaluation of corpus luteum products, especially as clinical experience seemed to point to a parallelism between the therapeutic potency of corpus luteum products and their degree of activity as expressed by the degree of contraction of the vas deferens.[2]

More recently Macht, Stickels and Seckinger have found that the vas deferens reaction gave results which were parallel to the inhibitory effects of corpus luteum extracts on the oestrus cycle of the guinea pig as judged by a microscopic study of vaginal smears.[3]

Inasmuch as some hormones, as epinephrin, exert their characteristic effects only on injection, while others, like thyroid glands, for instance, produce their specific therapeutic effects on oral administration as well as after injection, it was considered worth while to investigate whether the effect of digestive juices will destroy the activity of the ovarian hormones or not. This was deemed especially de-

[1] Macht and Matsumoto, PROC. SOC. EXP. BIOL. AND MED., 1919, xvi, 86.

[2] Macht and Matsumoto, *J. Urol.*, 1919, iii, 63.

[3] Macht, Stickels and Seckinger, *Am. J. Physiol.*, 1929, lxxxviii, 65.

sirable in view of a recent statement made by Novak on purely *a priori* speculative grounds, unsupported by any experimental data, that "there is much reason to believe that the active principle of the ovary is destroyed by the alimentary juices."[4] In the present investigation, a careful comparison between extracts of corpus luteum, prepared from the normal and predigested gland substance, was made in respect to its activity on the contractions of the vas deferens.

Three kinds of corpus luteum extracts were studied. Extract No. 1 was an ordinary stock extract of corpus luteum, prepared by extraction of the dried gland substance with 60% alcohol and deproteinizing with lead subacetate and removing the excess of lead with alcoholic sulphuric acid. Such an extract is evaporated to a small volume, neutralized and then filtered and gives an aqueous solution with a pH 6.2. Extract No. 2 of corpus luteum was prepared by first extracting the dry gland with ether in a Sohxlet apparatus and then treating as in the preceding case. Extract No. 3 was prepared by first extracting dry corpus luteum substance with ether, then digesting 200 gm. in 600 cc. of N/12 hydrochloric acid, plus 1 gm. of pepsin (1:3,000) for 3 hours at 37°C.; then again, for one hour at 40°C.; and for a third time for one hour at 52°C. After digestion with pepsin, the substance was neutralized with sodium bicarbonate and 6 cc. of N/10 sodium hydroxide were added. Then the digestion was carried on further with the addition of 9 gm. of pancreatin, plus 3 gm. of purified ox bile, for one and a half hours at 40°C. After this second digestion, alcohol was added in sufficient quantity to make a 60% solution and the precipitate was filtered off. The solids were reextracted with alcohol and the combined filtrates were treated with lead subacetate, then filtered again. The excess of lead in the filtrate was removed as in extract No. 1 and, finally, an aqueous extract was obtained as in the case of the other preparations.

The corpus luteum extracts, mentioned above, were tested in regard to their activity on the isolated surviving vas deferens of the white rat suspended in oxygenated Locke solution at 38°C. The figures show the results obtained. In Fig. 1 is shown, first the effect of 1/10 cc. of adrenalin solution (1:1,000) added to the 50 cc. of Locke in the chamber (A). After the maximum contraction was obtained, the preparation was washed with warm Locke solution until it was writing again at its original level. One cc. of preparation No. 2 was then introduced into the chamber in the Locke solution, producing the contraction indicated (B). The preparation was then washed again and treated with an equivalent amount of predi-

[4] Novak, *J. Am. Med. Assn.*, 1928, xci, 607.

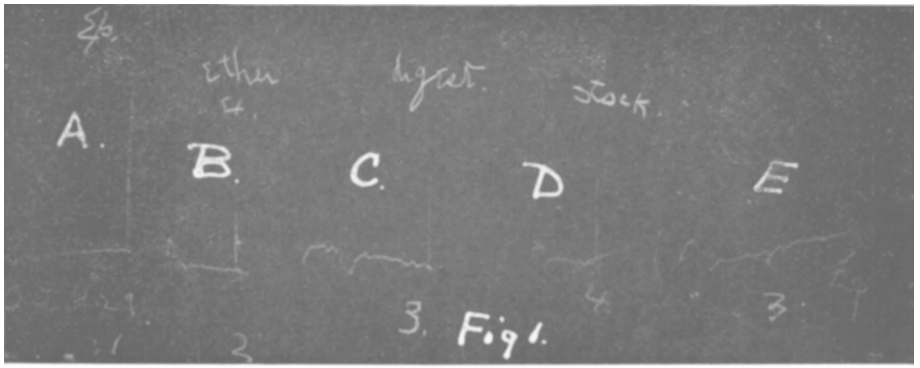

FIG. 1.

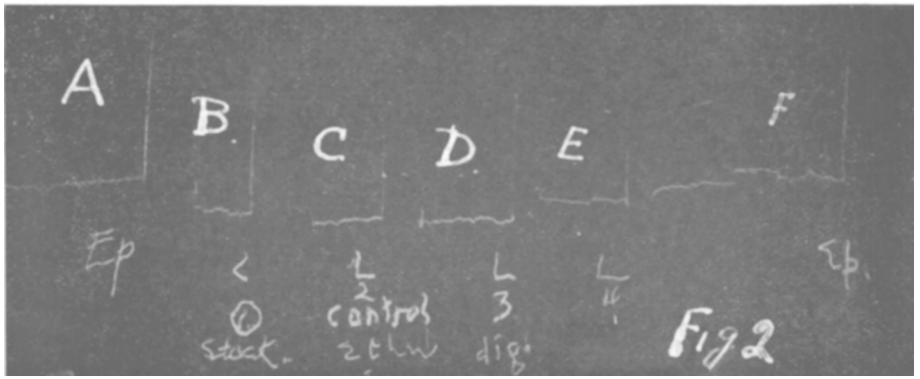

FIG. 2.

gested corpus luteum extract, again producing contraction, in this case slightly greater than the preceding (C). The preparation was washed again and treated for a third time with extract No. 1, again producing contraction (D). Finally, after another washing, the activity of the vas deferens was again tested with 1/10 cc. of adrenalin solution (E). In Fig. 2, the other vas deferens of the same animal was treated as follows: First, 1/10 cc. of epinephrine (A); second, 1 cc. of corpus luteum extract No. 1 (B); third, 1 cc. of corpus luteum No. 2 (C); fourth, predigested corpus luteum extract (D); fifth, a weaker corpus luteum extract preparation as in No. 1 (E); and sixth, 1/10 cc. of adrenalin (F).

The results obtained in the experiments described above, as well as in numerous others, indicate that even the most vigorous digestion of corpus luteum substance with pepsin, on the one hand, and with pancreatin and bile on the other, does not impair the activity of the

corpus luteum extracts as far as their action on the vas deferens is concerned. Indeed, there seemed to be an indication that the predigested extracts were often more stimulating to the contractions than extracts obtained from undigested gland substance.

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On the Transmissibility of the Leucemia of Fowls.*

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Among approximately 190 fowls received between November and May from a poultry dealer for postmortem examination, 4 birds had a neoplasm and 2 others exhibited the pathological changes commonly termed leucemia of the fowl. One of these, a white Leghorn hen, showed on gross examination moderately enlarged, grayish kidneys and heart and on microscopic examination, an extensive diffuse infiltration of the kidney, heart, and thyroid gland, and a nodular infiltration of the liver with mostly mononuclear cells of medium size. The character of these cells could not be determined with certainty; the numerous transitional cells to red cells suggest that they may be hemoglobin-free precursors of erythrocytes. The number of white cells in the blood stream, as seen in sections, was not increased.

Emulsions of organs of this chicken have been injected (Passage I) into the veins of 4 white Leghorn and 3 barred Rock chickens. In about two and a half months one of the injected barred Rock chickens developed a severe anemia. There were many polychromatophile erythrocytes, numerous large lymphocyte-like cells in the blood stream and transitional forms between them. On microscopic examination the capillaries of several organs, particularly those of the liver and kidney, were found to be studded with such cells, which, in all probability, are progenitors of erythrocytes. This picture corresponds to what was called by Ellerman[1] "leucostasis" and the disease may be termed with him erythroleucosis.

The blood of this bird was injected (passage II) into the vein of 6 chickens, of which one developed in about 8 weeks a disease

* This investigation has been supported by a Fund for the Study of Leucemia and Related Diseases.

[1] Ellerman, W., The Leucosis of the Fowls and Leucaemia Problems, English edition, London, 1921.