of the white subjects and as the higher elevations are reached the percentage difference progressively becomes more marked.

From these observations we may conclude that there is a quantitative difference in the blood pressure reaction to a standard vasomotor stimulus in the white and negro races. This finding indicates that a hypersensitive vasomotor mechanism is more frequently encountered in the negro than in the white race. In view of the greater incidence of hypertensive cardiovascular disease in the negro race, these results seem to add support to the newer neurogenic concept of the development of the disease.

7773 P

Action of Ovarian Follicle Hormone in Ovarian Insufficiency in Women as Indicated by Vaginal Smears.*

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The treatment of women with ovarian insufficiency by ovarian follicular hormone (OFH) has fallen short of the expectations aroused by its successful use in animals. It is possible that the amounts of hormone necessary to produce comparable changes in man are so large[1] as to be out of the question except for occasional brief studies in humans.[2] On the other hand the failures may have been due to the lack of objective criteria for estimating dosage and evaluating effects; or the choice of ineffective modes of administration.

The aim of this study was the development of an objective method for evaluating OFH action in ovarian insufficiency. The study of vaginal smears has been of great value in observing the effects of OFH in rodents and other mammals. Recent studies[3] have demonstrated a cycle in the vaginal fluid of the human comparable to that in animals. The applicability of the vaginal smear method to the study of the effects of OFH in the human is briefly described in this report.

* This work has been aided by grants from the Committee for Research on Sex Problems, of the National Research Council, and the Council on Therapeutics of the American Medical Association.

1 Parkes, A. S., and Zuckerman, S., *J. Anat.*, 1931, **65**, 272.

2 Kaufmann, C., *Proc. Roy. Soc. Med.*, May, 1934.

3 Papanicolaou, G. N., *Am. J. Anat.*, 1933, **52**, supplement.

Fifteen women with ovarian insufficiency, following either bilateral ovariectomy or the menopause, were observed over periods of several weeks to a year. After a control period to establish the character of the vaginal smear and the absence of OFH in the urine, treatment was begun. Smears were taken regularly over long periods and at varying intervals after administration of the hormone. The dose of OFH was adjusted from time to time until changes occurred in the smear. Subjective symptoms, such as hot flushes, headaches, nervousness, mental depression, and libido were also noted.

Treatment was aimed at the production of the vaginal smear associated with the follicular (copulative) phase in the normal female.[3] This is characterized by leucopenia, and epithelial cells of the squamous type, largely cornified, with small pyknotic nuclei. It corresponds to the smear obtained in ovariectomized rodents with OFH. Vaginal smears of women who have been ovariectomized or are in the post-menopausal state are usually characteristic. There are many leucocytes and a predominance of either non-cornified squamous cells with larger nuclei, or of compact cells derived from the deeper layers of the vaginal epithelium, with large, well-preserved nuclei. These latter cells are rarely noted in the normal subject.

Preparations of OFH in oil for hypodermic use, and for oral administration, were chiefly employed in this study.†

Results. OFH in oil given subcutaneously produced specific changes in the vaginal fluid of all but one of fifteen women with ovarian insufficiency following bilateral ovariectomy or menopause. There was an increased vaginal secretion, and a gradual replacement of the epithelial cells characteristic of these conditions by squamous cells, largely cornified, with small pyknotic nuclei. A relative or absolute leucopenia often superseded the usual leucocytosis.

The amount of OFH in oil required to produce this effect by subcutaneous injection varied, in different patients, from 100 to 2000 rat units per day. The majority of patients responded to 500 RU/day. One failed to react to 2000 RU/day. OFH in oil was given by mouth to 6 of this same group of patients, in amounts of 2000 to 4000 RU/day. An increase in the vaginal secretion of mucus was often noted, but no specific cellular changes, except in one case receiving 4000 RU/day, in whose smear slight cellular alterations occurred. The effects of OFH were slightly cumulative, and disappeared within a few days after treatment was stopped.

† The ovarian follicular hormone preparations used in this study were kindly furnished by Dr. J. J. Durrett of E. R. Squibb and Sons.

With the changes in the smears there occurred subjective improvement, with diminution in the severity and number of hot flushes and headaches, lessened nervousness and depression, increased well-being, and occasionally increased libido.

7774 C

Effect of X-Ray on Experimental Encephalitis in Mice Inoculated with the St. Louis Strain.*

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Since perivascular lymphocytic infiltration is the essential lesion in encephalitis and since lymphocytes are highly sensitive to irradiation, it seemed logical that small doses of X-ray should be effective as a therapeutic measure. The treatment by X-ray of 3 cases of encephalitis in human patients has been reported.[1] Since then 4 other cases have been treated. One was an early case and recovered completely in a short time. Two others were more protracted, having had the disease for 3 months before treatment was instituted. In these 2 latter cases various groups of muscles were showing progressive paralysis. The patients showed marked improvement after a series of X-ray treatments and are symptom-free to date. The fourth case, one of 6 months' duration with early Parkensonian syndrome, is still under treatment but shows improvement.

Although the clinical evidence is very suggestive the findings are empirical and since the clinical studies can not be controlled, it was decided to carry out the treatments under experimental conditions. Mice are known to be highly susceptible to the St. Louis strain of virus.[2] The infective dose has been standardized and the incubation period is known.[3] If mice that were treated with X-ray after inoculation with the virus recovered or had the period of incubation

* X-ray exposures were under the supervision of Doctors C. F. Baker and W. J. Marquis in the Department of Radiology, Presbyterian Hospital, Newark, N. J.

[1] Goldberg, S. A., Baker, C. F., and Hurff, J. W., *Radiology*, 1934, **22**, 663.

[2] Webster, L. T., and Fite, G. L., *Science*, 1933, **78**, 463.

[3] Brodie, M., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 1227.