with normal blood sera and with sera from various other pathological eye conditions, particularly acute and chronic conjunctivitides. These uniformly gave readings of from 70 to 75%, or the same phytotoxic index as normal blood. Specimens of blood from three cases of glaucoma also gave normal readings of 75%.

From the standpoint of etiology and pathology of trachoma, these findings are of considerable interest, especially as the causation of that disease is still in dispute. They tend to support the view that the disease is not a simple local affection of the eyelids but is associated with profound systemic derangement in metabolism, which produces a sort of toxemia, at least as far as the toxicity of the blood serum for living plant protoplasm is concerned. Here it may be well to observe that Macht and Pels have examined the blood sera from a number of cases of pemphigus of the eye, which also gave a phytotoxic reaction. On the basis of the blood examination alone, differential diagnosis between pemphigus of the eye and trachoma is rather difficult to establish. However, pemphigus can be easily distinguished from trachoma if, on further examination, lesions are revealed on other parts of the body. A more detailed account of the present investigation will appear in the *Folia Ophthalmologica Orientalia.*

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Parasympathetic Drugs and Ovulation.*

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Studies on the nervous mechanism involved in copulatory ovulation have disclosed several interesting facts. First, the sympathetic chain has been shown not to be essential for ovulation and pregnancy in the cat[1] or rat.[2] Secondly, mid-brain removal or section of the brain stem immediately after copulation does not prevent ovulation in the rabbit if the anterior pituitary is left intact.[3] These facts suggest that a nervous stimulus reaches the pituitary during copulation and that the pathway is probably independent of the sympathetics.

* Aided in part by a grant from the National Research Council, Committee on Problems of Sex.

[1] Cannon, W. B., *et al., Am. J. Physiol.*, 1929, **89**, 84.

[2] Bacq, Z. M., *Am. J. Physiol.*, 1932, **99**, 444.

[3] Fee, A. R., and Parkes, A. S., *J. Physiol.*, 1927, **67**, 383.

The purpose of this study has been to determine the effect of parasympathetic drugs on the process of ovulation. The first step was to determine whether or not these drugs alone would cause ovulation.

Adult female rabbits having been isolated 2 to 5 weeks and showing the typical vulval swelling and purple congestion of full oestrus were used. Four were treated with atropine sulfate (2½ mg./kg. intravenously); 2 with pilocarpine (1-3 mg./kg. every 2 hours for 6 hours); and 3 with physostigmine (¼ mg./kg. every hour for 6 hours). Laparotomy was performed in each case 48 hours after the last injection. Ovulation was not induced in any case. Ovaries in many animals showed signs of a decrease in oestrin secretion as was indicated by paling of the uteri and vulva. These rabbits, instead of ovulating, went out of oestrus immediately and refused to copulate for several days. This indicates that these drugs are inhibitory in their action rather than stimulatory.

TABLE I.
Atropine Series.

Animal	Dosage	Time of copulation after injection	Results
582	2½ mg /Kg.	10 to 30 sec.	3 to 4 ovulation† points in each ovary
A1	1.7 mg./Kg.	3 min.	4 to 5 points on each ovary†
574	2½ mg./Kg.	3½ "	no points, hemorrhagic cysts
584	"	4 "	4 points in both ovaries†
581	"	5 "	No points, ovary normal
579	"	6 "	
579B	"	9 "	
580	"	9 "	
A2	"	10 "	
583	1¼ mg./Kg.	15 "	
580B	2½ mg./Kg.	20 "	

†These females ovulated after copulation, but never bore young.

To test this hypothesis, a series of 11 rabbits was injected with atropine as in the former series and allowed to copulate. The time which elapsed before copulation was different for each individual (1, 3, 4, 5, 7, 10 minutes, etc.), so that a complete series was obtained in which the time of drug action varied from 1-30 minutes. From the results shown in Table I it is evident that ovulation occurs normally if the drug acts for less than 4 to 5 minutes. Longer action completely inhibited ovulation in all cases. This suggests 2 possibilities for the mechanism of inhibition. Either the drug is acting directly on the graafian follicle or on the pituitary. To test the former possibility minimal and subminimal ovulating dosages of purified pituitary extracts were injected into atropine-treated ani-

mals. In all cases the ovulation reactions were normal, thus showing the follicles were capable of ovulating. However, the M.O.D. for atropine-treated animals was higher than normals.

A group of 6 rabbits was treated with pilocarpine (3 mg./kg. and 2 mg./kg.). Ovulation was inhibited with the larger dosage in 3 cases out of 4 after it had acted 18 minutes or longer, but since this dosage approaches the M.L.D. these results may be questioned. No inhibition was obtained in 2 cases on a lower dosage of 2 mg./kg. Physostigmine acts similarly to pilocarpine.

It is of interest to note that even though ovulation occurred in 6 rabbits which copulated within 1-4 minutes after atropine injection no young were born. The same was true of one case treated with 3 mg./kg. of pilocarpine in which ovulation occurred.

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Antuitrin-S Effect upon Blood Elements.*

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Novak[1] has stated that the good results he has obtained from the administration of the anterior pituitary-like hormone (Antuitrin-S) in cases of functional uterine bleeding were possibly due to changes produced in the blood by the action of this substance. To determine the presence or absence of such changes, 6 patients were given Antuitrin-S by hypodermic injection, using 1 cc. 3 times weekly. Three of these were injected for a period of 2 weeks, the other 3 for 3 weeks. Complete blood examinations (involving the formed elements only) were made before the injection of the product was begun, and again after all the injections had been completed. These examinations included the hemoglobin, red blood count, white blood count and differential, platelet count, bleeding time, coagulation time, and tourniquet test. It was felt that comparison of the figures obtained before and after treatment might throw some light upon the effect of Antuitrin-S upon the blood elements, as well as explain any improvement in functional uterine bleeding noted, if dependent on blood changes. The patients selected were all fertile women who

* The authors wish to express their gratitude to Dr. Nathan Rosenthal who carried out the blood examinations.

[1] Novak, E., Hard, G. B., *Am. Gynecological Soc.*, 1931, **56**, 146.