Five were given the diacetyl derivative of 4,4′-diaminodiphenylsulfone orally in doses of 0.1 to 1.0 g per kilo daily (divided into 2 doses at 10 a.m. and 3 p.m.). Doses of 0.1 to 0.5 g per kilo produced no clinical effects and lesion cultures were positive throughout; doses of 0.8 and 1.0 g per kilo produced some healing on the fourth to fifth days of treatment which resulted in sterile lesion cultures on the tenth day.

Summary. (1) Sulfanilamide by oral administration to rabbits showed curative effects upon local intradermal streptococcus lesions but did not result in complete bactericidal effects in the dosage employed. (2) The acetyl derivative of sulfanilamide was practically without curative effects. (3) 4,4′-diaminodiphenylsulfone was more curative than sulfanilamide and produced complete bactericidal effects in the larger doses. (4) The diacetyl derivative of 4,4′-diaminodiphenylsulfone was without curative effects in the same dosage as sulfanilamide but produced some curative effects in higher dosage. (5) The results with sulfanilamide, 4,4′-diaminodiphenylsulfone and its diacetyl derivative by oral administration to rabbits with experimental intradermal streptococcus infections have not been as good as reported in the treatment of experimental streptococcus infections of mice by parenteral administration; the differences in results may be due to the difference in the species of animals employed and partly to the routes of administration.

10104

Ineffectiveness of Sulfanilamide in the Treatment of Canine Filariasis.

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Recent reports indicate that sulfanilamide is ineffective in the treatment of several animal parasites.[1, 2] However, as helminths vary so greatly in habitat, morphology and physiology, it appears possible that sulfanilamide may have a selective action upon certain species just as it appears to have on the coccal group of bacteria.

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1 McCoy, O. R., PROC. SOC. EXP. BIOL. AND MED., 1938, **38**, 461.

2 Keil, E., *Arch. f. Schiffs. u. Trop. Hyg.*, 1936, **40**, 400.

Further, as the treatment of a number of helminthic infections is unsatisfactory, any therapeutic agent which may aid is welcome. Canine filariasis (heartworm) due to *Dirofilaria immitis* is a helminth infection which is very difficult and sometimes impossible to cure with the drugs now used. It was therefore thought worth while to test the value of sulfanilamide in *Dirofilariasis.*

Four infected dogs were treated with varying amounts of sulfanilamide† (para-amino-benzene-sulfonamide). The drug was administered orally for periods ranging from 15 to 36 days. It was given as a single daily dose. The dosage of sulfanilamide varied from 0.057 to 0.137 g per kilo weight of dog. These amounts were all well tolerated, no evidence of toxicity manifested, and all the dogs gained weight during the experiment. Microfilaria counts on 0.1 cc amounts of blood from the infected dogs were made before, during, and after treatment. In order to avoid variations due to periodicity of the parasite, blood for these counts was all secured at the same hour of the day.

In general it appears that the course of sulfanilamide treatment was without significant effect on the microfilaria content of the blood, Table I. The microfilaria counts of dogs 1, 3, and 4 remained rather constant during and for as long as 10 days after the

TABLE I.
Sulfanilamide Treatment of Dogs Infected with *Dirofilaria immitis.*

Dog	No. days of treatment	Daily dose of drug, g	Total dose, g	Microfilariæ per cc of blood	
1	9	0.97	61.1	Before treatment	210
				9th day of "	190
17 kg	27	1.94		18th " " "	260
				26th " " "	340
				36th " " "	250
				7th " after "	230
2	15	2.92	43.8	Before treatment	415
				9th day of "	260
21.8 kg				15th " " "	210
				10th " after "	230
3	15	2.92	43.8	Before treatment	90
				9th day of "	55
21.0 kg				15th " " "	110
				6th " after "	100
				10th " " "	60
4	15	2.92	43.8	Before treatment	2500
				6th day after "	2200
21.8 kg				10th " " "	2610

† The drugs used in this study were kindly supplied by the Winthrop Chemical Company.

conclusion of the treatment. In the case of Dog 2, however, the microfilaria count fell approximately 45% after 9 days of treatment. Subsequent counts during the continuation of the treatment and 10 days post treatment confirmed this larval reduction. It is possible that this apparent reduction in microfilaria was not due to the drug but to normal physiological variations. That such variations may occur is indicated by the microfilaria counts of Dog 1, which increased during treatment with Prontosil.

A week after the conclusion of the sulfanilamide therapy by mouth, Dog 1 was given a series of intramuscular injections of a soluble sulfonamide. This treatment consisted of 2 daily intramuscular injections of 10 cc of a 2.5% solution of disodium 4-sulfamidophenyl-2-azo-7-acetyl-amino-l-hydroxynaphthalene 3,6-disulphonate (Prontosil, Winthrop). The drug was administered over a period of 9 days. The microfilaria count which was 250 per cc before treatment rose to 420 on its completion.

It is apparent from the results obtained that sulfanilamide in the amounts given and over the time continued is without effect on *Dirofilaria immitis* as judged by microfilaria counts.

10105 P

Ocular Rotation. Influence of Anesthetics and Operations on Various Parts of the Central Nervous System.

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In experiments on the brainstem of cats the appearance of a striking oblique position of the pupils was observed, indicating an asymmetrical inward rotation of the eyeballs. The question presented itself as to how far this rotation was due to the anesthetics used. In experiments on 67 cats before and during the course of anesthesia the position of the pupil or of a linear scar burnt into the anesthetized cornea as closely as possible to the vertical diameter, was recorded. The smallest range of rotation (8½° outward to 7½° inward) was noticed under the influence of ether, chloroform, and Gréhant's mixture (5% chloroform in 50% alcohol). A variety of effects could be observed: in or outward rotation of one eye only or of both eyes, but also rotation of both eyes in the same