Experimental conditions with regard to kind of cages, basal diet, care, location in the animal room and seasonal factors were practically identical for the rats on diets deficient in riboflavin and those fed diets devoid of vitamin B_6 and related factors.

Pediculosis became apparent in about 20% of the animals that were kept for a sufficient length of time (more than 8 to 10 weeks) on the riboflavin-free diet. Therapeutic administration of riboflavin was followed not only by growth in the rats but also by complete disappearance of the pediculi, often accompanied by replacement of the diseased patches by new fur.

That it is possible to cure pediculosis in rats by nutritional means is in itself a significant finding and adds further weight to the conclusion that pediculosis and riboflavin deficiency in rats are interrelated.

Summary. Chronic riboflavin deficiency in rats is often accompanied by pediculosis. This disease has never been observed in rats manifesting symptoms of a deficiency of other factors of the vitamin B_2 complex. Administration of riboflavin by mouth has a curative effect on this type of pediculosis in rats.

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Treatment of Spontaneous Canine Distemper with Sulfanilamide.*

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Para-aminobenzene sulfonamide (sulfanilamide) and disodium 4-sulphamido-phenyl-2-azo-7-acetylamino-1-hydroxynaphthalene 3, 6-disulphonate (prontosil) have been used successfully in the treatment of beta hemolytic streptococci infections, and more or less good results have been reported on the use of these compounds in the treatment of meningococcal, pneumococcal, and gonococcal infections, gas gangrene, and as a urinary antiseptic.

Carré[1] reported that distemper in dogs is caused by a filtrable virus and this work was subsequently corroborated in carefully

* Aided by a grant from John Roesing and the Oscar Aberle Fund.

1 Carré, H., *Compt. rend. Acad. d. Sc.*, 1905, **140**, 689, 1489.

controlled experiments, by Dunkin and Laidlaw.[2] Our experience with canine distemper and a large number of autopsies with bacterial cultures of the organs led us to believe that in many cases a superimposed infection was more fatal than the virus infection itself. In most instances this superimposed infection is due to streptococcus, staphylococcus, pneumococcus, and the bacillus bronchiseptus. Since in many of our fatal cases streptococci were the prevailing organisms, an attempt seemed justified to treat distemper with sulfanilamide. It has been our experience that the mortality of dogs with distemper varies between 40-100% in normal dogs and between 90-100% in postoperative dogs.

The virulence of the virus seems to undergo periodic variations; therefore we are reporting 2 series of dogs with distemper, kept in our laboratory during the winter of 1937-38. One group was not treated and served as control; the other group was treated with sulfanilamide or prontosil.

Sulfanilamide was given by mouth in doses of 0.33 gm. t.i.d. and later by subcutaneous injection of 100 cc. of a 1% solution in saline with 5-10% glucose when necessary, b.i.d. Prontosil† was administered intramuscularly, 1 cc. per kg. body weight, of the 5% solution b.i.d.

The clinical signs of distemper are a warm, dry nose, fever, apathy, loss of appetite, serous and later purulent nasal discharge, conjunctivitis, loss of weight, anemia, leucocytosis and frequently, diarrheas. Treatment was instituted when nasal discharge was observed and continued until it ceased; this period varied from 3 days in the mild cases to 18 days in the very severe ones. Relapses occurred in all cases where treatment was discontinued before cessation of nasal discharge The success of the treatment was usually noticeable on the third day: appetite returned, the apathy diminished, the low red blood count and hemoglobin rose, while the high white blood count began to return to normal.

The single fatality in the group of treated animals was due to

TABLE I.
Comparison of Untreated and Treated Groups of Dogs with Distemper.

	Controls			Treated		
	Stock	Operated	Total	Stock	Operated	Total
No. of Dogs	13	7	20	7	10	17
Mortality	13	5	18	1	0	1

[2] Dunkin, G. W., and Laidlaw, P. P., *J. Comp. Path. and Therap.*, 1926, **39**, 201, 213.

† Prontosil was generously supplied by the Winthrop Chemical Company.

the intentional interruption of therapy before cessation of nasal discharge. The lower mortality of the operated dogs in both groups may be attributed to the careful postoperative treatment which they received.

Since the above treatment was instituted as a routine measure the previously high incidence of distemper in our animal house has dropped so rapidly we feel confident that we are able to stamp out epidemics of distemper among our dogs. We would like to mention that many stock dogs appear perfectly well, yet following an operation they will often develop a fatal case of distemper.

Autopsies. From the lungs of untreated dogs all or some of the above named pathogenic organisms could be cultured in most instances. In the case of our single fatality in the treated series a nonhemolytic streptococcus was found in cultures from the lungs. Two other dogs which were cured were sacrificed 5 and 9 days respectively after clinical recovery. In the first, extensive consolidation was found in both lungs but no organism could be cultured. This animal had not been able to regain strength as the other treated dogs did. In the second dog, the lungs were normal and no other pathology was noticed.

One of the dogs who had been cured of distemper was operated upon 18 days afterwards, and then had a mild attack, possibly a relapse, of distemper, which was cured in the course of 5 days.

In 2 dogs recovered with therapy nervous tics were observed, similar to those we sometimes see in animals cured spontaneously or by treatment with distemper immune serum. We therefore believe that the tic was not due to the drugs used, but to central nervous involvement observed in distemper. So far we have not been able to find evidence of disorders to the dogs following the above therapy. Sulfanilamide by subcutaneous injection (in saline and with glucose) was preferred in cases when the dog refused food and water. Prontosil had the advantage of easier administration. We feel justified to publish this preliminary report in order to draw attention of other laboratories to this effective method of treatment. At the conclusion of our work our attention was called to the fact that Dochez and Slanetz[3] succeeded in curing distemper in ferrets and dogs with sodium sulfanilyl sulfanilate.

Summary and Conclusions. Sulfanilamide and prontosil have been used successfully in the treatment of distemper in dogs. Both drugs seem to be equally effective.

We are obliged to the Department of Bacteriology of Michael Reese Hospital for advice and help.

[3] Dochez, A. R., and Slanetz, C. A., *Science*, 1938, **87**, 142.