being determined by the method of Miller, *et al.*[4] The fatty acids of the control phospholipids were 1.4% tagged fat. This value was subtracted from that found after incubation and the difference expressed as percent increase in phospholipid fatty acids as tagged fat.

The results in Table I show that on incubation there is an increase in the ratio of tagged fat to untagged fat in the mucosal phospholipids (last column). This would suggest an enzymatic replacement of the phospholipid fatty acids in the incubating tissues. However, there is a steady decrease in the total phospholipids during the incubation period so that the total phospholipid tagged fat (second column) remains constant. The total phospholipid tagged fat is a function of the ratio of tagged fat to untagged fat, and the percent phospholipids in the tissues. A lowering of either of these two factors will result in a decrease in the total tagged fat. In the experiments presented in Table I it is seen that the increase in the ratio of tagged fat to untagged fat is just balanced by the decrease in the percent of phospholipids so that the resulting total phospholipid tagged fat does not significantly change. As yet no explanation of this change is offered, although there appears to be a preferential destruction of the untagged phospholipids.

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Effect of Sulfanilamide and Sulfapyridine on Experimental Infections with *Listerella* and *Erysipelothrix* in Mice.

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Within the past few years the literature on the use of sulfanilamide and other related compounds has grown very large. Clinical and experimental results have demonstrated the value of these substances in certain infectious diseases particularly in those infections caused by bacteria of the family *Coccaceæ*. Long and Bliss,[1] Marshall[2] and others have fully reviewed the literature on this subject and no attempt will be made to repeat their work in this short paper.

We[3] noted recently a case of acute meningitis in a small boy resi-

[1] Long, P. H., Bliss, E. A., and Feinstone, W. H., *J. A. M. A.*, 1939, **12**, 115.

[2] Marshall, E. K., Jr., *Physiol. Rev.*, 1939, **19**, 240.

[3] Wagner, G. W., and Porter, J. R., unpublished data.

dent in the University Hospitals, which was caused by *Listerella monocytogenes*. The chemotherapeutic agent, sulfanilamide, was administered and the patient recovered. We thus became interested in the effect of the drug on the infection. To our knowledge no report has been made on drug therapy for *Listerella* or *Erysipelothrix* infections, especially in experimental animals.

The present report deals with the effect of sulfanilamide and sulfapyridine on *Listerella* and *Erysipelothrix* infections in mice. The latter organism was included in our study because Barber[4] reported these two genera and infections to be quite closely related.

The infection of mice with *Listerella* and *Erysipelothrix* produces an acute disease and with a few minor exceptions the symptoms are very similar. We find, as a rule, mice infected with *Listerella monocytogenes* die within 48 to 72 hours, whereas those infected with the same number of *Erysipelothrix* live somewhat longer. The most characteristic post mortem finding in mice infected with *Listerella* is a marked focal necrosis of the liver. Barber[4] observed, and it has been noted by us, that the necrosis is somewhat less marked in mice infected with *Erysipelothrix*. The foci of necrosis are multiple, grayish-yellow in color and scattered throughout the organ. Rarely, if ever, were lesions seen in any of the other organs of animals dead with these diseases.

The organisms used for infecting the animals were cultivated on meat infusion agar slants for 18 to 24 hours and suspended in sterile saline solution to give a nephelometer reading of 15 to 30 million cells per ml. One ml portions were given intraperitoneally to young Swiss mice weighing about 20 to 22 g. Five strains of *Listerella monocytogenes* and 2 strains of *Erysipelothrix* were used in this study.

Sulfanilamide (0.5%) in a 5% glucose-saline solution was administered intraperitoneally in one ml quantities, starting 3 to 4 hours after inoculation with the organisms. The treatment was given approximately every 4 hours thereafter for 5 days. The sulfapyridine was made up as a saturated solution (about 0.1 to 0.2% soluble) and the supernatant administered in 2 ml amounts intraperitoneally. Control animals were kept separate from the treated ones and some of them were injected with a quantity of sterile glucose-saline solution corresponding to that of the treated mice.

The results of this study are presented in Table I and summarized in Table II. The data show that of the total number of mice infected with *Listerella monocytogenes*, 77 out of 80 control animals died,

[4] Barber, M., *J. Path. and Bact.*, 1939, **48**, 11.

TABLE I.

Effect of Sulfanilamide and Sulfapyridine on Mice Infected with *Listerella* and *Erysipelothrix*.

Organism	No. of organisms given intraperitoneally		No. of mice	Deaths, in days							Total Deaths
				1	2	3	4	5	6	7	
		Sulfanilamide.									
Listerella monocytogenes "Seastone"	30 million	Treated	10								0
		Controls	10			3	4				7
" " "Ovine"	15 "	Treated	10			1	1		1		3
		Controls	10		2	4	4				10
" " "Murray"	30 "	Treated	10				2				2
		Controls	10		7	2	1				10
" " "Boston"	30 "	Treated	10			2		1			3
		Controls	10		4	6					10
" " "Iowa"	15 "	Treated	20			2	1	1	2		6
		Controls	20		12	8					20
Erysipelothrix No. 32	15 "	Treated	20		8	4	7	1			20
		Controls	20	1	5	6	4	1			17
" No. 33	15 "	Treated	20		7	3	8	1		1	20
		Controls	20		7	4	4				15
		Sulfapyridine.									
Listerella monocytogenes "Iowa"	15 "	Treated	20			1		1			2
		Controls	20		8	12					20
Erysipelothrix No. 32	15 "	Treated	30		10	10	9	1			30
		Controls	30	1	5	13	5	2			26
" No. 33	15 "	Treated	40		18	12	7	1		1	39
		Controls	40		10	20	5				35

TABLE II.
Summary Showing the Effect of Sulfanilamide and Sulfapyridine on *Listerella* and *Erysipelothrix* Infections.

Organism	Treatment	No. of mice	Deaths
Listerella monocytogenes	Sulfanilamide	60	14
	Sulfapyridine	20	2
	Controls	80	77
Erysipelothrix	Sulfanilamide	40	40
	Sulfapyridine	70	69
	Controls	110	93

while 14 out of 60 treated with sulfanilamide died and only 2 out of 20 treated with sulfapyridine died. It can also be seen that most of the control animals succumbed within 3 days whereas the treated animals did not start to die until the third day. When mice were infected with *Erysipelothrix*, treatment with sulfanilamide or sulfapyridine had no beneficial effects, in fact, the treated animals died faster than the controls.

Summary. As is shown in Table II sulfanilamide and sulfapyridine have given good results in treating mice infected with fatal doses of *Listerella monocytogenes*.

The 2 chemotherapeutic agents tested show no helpful effects in the case of *Erysipelothrix* infections. If anything the agents helped to hasten the death of the animals.

From these data it would seem that the mechanism of infection, as influenced by sulfanilamide and sulfapyridine treatment, is different for the two diseases.

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An Improved Method for the Study of Intestinal Function.

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Thiry[1] described his classical method for the study of intestinal functions. Vella[2] improved this preparation by transforming a blind Thiry pouch into a tube with openings at both ends available for study. From that time many modifications of this basic prin-

1 Thiry, L., *Sitzungsberichte d. Akad. Wien, Mathem.-naturw. Kl.I*, 1864, **50**, 77.
2 Vella, L., *Moleschotts Untersuchungen zur Naturlehre*, 1882, **13**, 40.