TABLE I.
Effect of Administration of Methionine on Urinary Nitrogen Excretion.

	First 5 days			Second 5 days		
	Intake g	Urine, N. g	Diff. g	Intake g	Urine, N. g	Diff. g
			No methionine			
1	32.8	62.2	—29.4	33.6	50.9	—17.3
2	35.3	61.8	—26.5	32.0	47.1	—15.1
3	35.3	49.3	—14.0	32.4	44.7	—12.3
4	33.5	57.6	—24.1	33.1	57.1	—24.0
	Mean diff.		—23.5	Mean diff.		—17.1
			Methionine first 5 days—6.0 g daily			
5	35.9	36.3	—0.4	32.8	31.1	+1.7
6	35.0	69.1	—34.1	32.8	72.2	—39.4
7	35.1	68.1	—33.0	32.1	54.7	—22.6
8	32.2	63.0	—30.8	33.9	79.2	—45.3
9	35.7	71.6	—35.9	31.2	60.7	—29.5
	Mean diff.		—26.8	Mean diff.		—27.7
			Methionine second 5 days—6.0 g daily			
10	32.4	63.4	—31.0	36.0	51.7	—15.7
11	33.0	38.8	—5.8	35.5	44.1	—8.6
12	31.9	57.9	—26.0	35.4	62.7	—27.3
13	32.9	46.1	—13.2	33.9	44.1	—10.2
14	30.1	39.5	—9.4	32.9	46.6	—13.7
	Mean diff.		—17.1	Mean diff.		—15.1

Controls—First 5 days — mean difference 23.5 g
Second 5 " — " " 17.1 g

Diff. between means = 6.4 g S.E. diff. = 4.1

Methionine Exper.—Period with methionine M.D. 21.0 g
" without " M.D. 22.4 g

Diff. between means = 1.4 g S.E. diff. = 5.9

be presumed that their protein stores were not depleted.

Conclusion. Under the conditions of this experiment the administration of 6.0 g of methionine daily to men receiving a low caloric diet failed to show a significant protein-sparing action as indicated by the effect on urinary nitrogen excretion.

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Effectiveness of Streptomycin in Arthritis of Rats.

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Two years ago we reported that penicillin was ineffective in the chemotherapy of arthritic rats infected with pleuropneumonia-like organisms, while myochrysine was effective in this respect, but at the same time quite toxic and hazardous to use in these animals.[1] Electron morphology of the micro-organisms we used was dealt with at about

[1] Powell, H. M., and Rice, R. M., *J. Lab. and Clin. Med.*, 1944, **29**, 372.

the same time in a report by Weiss[2] from this laboratory. Recently Dienes[3] has reviewed the morphology and nature of the entire pleuropneumonia group of organisms including rat strains such as we have used.

During the last 2 years we have tried out a rather long list of drugs, etc., in experimental chemotherapy in this field with no positive results until we recently tried streptomycin with what seems to be considerable success. The purpose of this report is to present these results showing effectiveness of streptomycin in this type of arthritis of rats.

In a routine screening test of various drugs, 0.05 cc of the same pleuropneumonia culture as used previously, and grown as described,[1] was injected intravenously into a group of white rats each of about 100 g weight. Four of these rats were treated hypodermically with streptomycin, while 6 were left as controls. Streptomycin therapy was started about an hour following infection, and 3 doses were given the first, second, and third days, or a total of 9 doses. Each dose comprised 1000 units. In this test, the 4 treated rats remained entirely free of symptoms. Five of the 6 controls developed pleuropneumonia infection, and one remained free of perceptible symptoms. Two of the 5 controls which developed infection had an overwhelming disease and were dead in 5 days, before very definite gross arthritis could appear. The other 3 controls developed disabling arthritis. All surviving animals were observed for 3 weeks. This kind of chemotherapeutic showing had not been seen previously in any pleuropneumonia-infected rats except those treated earlier with myochrysine, and the drug in this case was very toxic. By contrast the 4 streptomycin-treated rats in the present experiment appeared bright and alert, and entirely normal for 3 weeks after infection.

This initial experiment was repeated using 20 rats injected with pleuropneumonia culture as before. Ten of these were treated hypodermically with streptomycin and 10 were left as controls. Three doses of streptomycin were given on the first, second, third, and fourth days, or a total of 12 doses. Each dose comprised 3000 units. In this test 8 of the 10 treated rats remained entirely free of symptoms, while the remaining 2 showed a questionable trace of swelling in one toe of each animal for 2 days only. All 10 treated rats were bright and alert throughout the test and exhibited no evidence of drug toxicity. All 10 of the control rats, however, showed early and pronounced symptoms of pleuropneumonia infection. Three of these died in 5 days of overwhelming disease before visible arthritis usually appears. The other 7 developed disabling polyarthritis and died before the 3-weeks observation period was over. It is believed that the good showing of streptomycin in this experiment has not been equalled previously with myochrysine in our tests.

A third experiment is in progress using 33 rats injected with pleuropneumonia culture as before. Sixteen of these were treated with streptomycin and 17 were left as controls. None of the 16 treated rats show any symptoms, while all of the controls show evidence of infection (rapid respiration, loss of weight, and disinclination to move about), and beginning arthritis is apparent in these.

Further details concerning the effectiveness of streptomycin in rat arthritis are under study.

Our thanks are due Miss Dorothy McKay for cooperation and interest in the experimental chemotherapy set forth in this report.

Summary. Streptomycin appears chemotherapeutically effective against pleuropneumonia infections and resultant polyarthritis in rats, and better in this respect than certain gold salts. The streptomycin which we used contained 250 units per mg, and was supplied by Dr. J. A. Leighty.

2 Weiss, L. J., *J. Bact.*, 1944, **47**, 523.

3 Dienes, L., *J. Bact.*, 1945, **50**, 441.