Table II shows the times of survival of all the mice which in this laboratory are observed hourly. From data thus obtained, statistical analyses can be made which show definitely the significance of the experimental observations. It is believed that observations of this type are of more value to workers in this field than previous investigators have recognized.

Summary. With subcutaneous inoculations of 4000 to 8000 average lethal doses of a Type II pneumococcus in mice, the survival rates at both 30 and 60 days were (1) with 0.5% sulfapyridine in the food, 44%, and (2) with 1.0% sulfapyridine in the food, 63.4%. It is believed that the slight variations in drug-intake from day to day are more than counterbalanced by a more or less continuous drug-absorption from ingested food plus drug.

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Character of Phospholipid (Acetone Insoluble) Fatty Acids of Serum in Infantile Eczema.*

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In 1933[1] the author observed that the total fatty acids of the serum tended to be less unsaturated in infants suffering from eczema than in control infants with clear normal skin. In the follow-up studies which were made to determine which fraction or fractions of the serum lipids were involved in this phenomenon, great difficulty was encountered in finding a satisfactory method. The success in the development of a microgravimetric technic[2] for the determination of the phospholipid fatty acids offered the opportunity to resume the study of the serum lipids presented in this communication, in which we attempted to determine whether or not the fats of this fraction were responsible for the decreased unsaturation of the serum fats in eczema.

Seven infants ranging in age from 6 to 12 months, suffering from severe, generalized eczematous eruptions of several months' duration sufficiently refractory to necessitate hospitalization, were used in this study. Care was taken to avoid the possible interference of any

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1 Hansen, Arild E., PROC. SOC. EXP. BIOL. AND MED., 1933, **30**, 1198; *Am. J. Dis. Child.*, 1937, **53**, 933.

2 Hansen, Arild E., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 376.

TABLE I.
Concentrations of Phospholipid (Acetone Insoluble) Fatty Acids and Total Fatty Acids in Serum with Their Respective Average Molecular Weights and Iodine Numbers in 7 Infants with Intractable, Generalized Eczema.

	Phospholipid (Acetone Insoluble) Fatty Acids			Total Fatty Acids		
Case No.	Mg %	M.W.	I.N.	Mg %	M.W.	I.N.
1	77	297	81	452	285	71
1	104	298	—	478	277	71
2	138	—	90	448	—	77
3	124	312	96	344	302	89
4	96	302	96	331	290	82
5	139	—	87	546	278	72
5	135	302	102	657	280	81
6	84	310	98	316	299	89
7	119	300	94	477	285	79
7	150	290	87	546	285	79

factors known to alter the character of the serum lipids, such as abnormalities of the dietary regimen, recent infection with fever and various therapeutic procedures, especially the topical application of ointments containing crude coal tar. Blood specimens were taken uniformly after a fast of 14 hours. The total fatty acids were determined by the microgravimetric method of Wilson and Hansen[3] and the phospholipid (acetone insoluble) fatty acids by the technic described briefly in an earlier report.[2] In all, 10 determinations were made, the results of which are presented in Table I.

It was found that the fatty acids in the phospholipid fraction of the serum in this series of infants with eczema constituted about one-fourth (range 17% to 36.6%) of the total fatty acids. The average molecular weights of these fatty acids were found to be definitely higher than those of the total fatty acids, the difference in length of the fatty acid chain being equivalent on the average to one extra carbon atom. It was further observed that the degree of unsaturation of the phospholipid fatty acids was also greater than that of the total fatty acids. In order to determine the possible significance of these findings it is necessary to consider these data in relation to the observations published recently concerning a similar study of fourteen essentially normal infants and children.[2] For the sake of brevity the average values from the previous study and those presented here are summarized in Table II.

Examination of these data reveal that the values for the total fatty acids tended to be higher in the infants with eczema than in the control group. However, in a more extensive study previously made in which the oxidative method of Bloor was used, this difference was

[3] Wilson, Wm. R., and Hansen, Arild E., *J. Biol. Chem.*, 1935-6, **112**, 457.

TABLE II.
Average Concentrations of Phospholipid (Acetone Insoluble) Fatty Acids and Total Fatty Acids in Serum with Their Respective Average Molecular Weights and Iodine Numbers in 7 Infants with Generalized, Intractable Eczema as Compared with Those in 14 Essentially Normal Infants and Children.[1]

	Phospholipid (Acetone Insoluble) Fatty Acids			Total Fatty Acids		
	Mg %	M.W.	I.N.	Mg %	M.W.	I.N.
Normal infants and children (18 determinations on 14 subjects)	107.7	303.0	112.8	350.1	288.0	107.4
Infants with eczema (10 determinations on 7 subjects)	116.6	301.4	92.3	457.5	286.8	79.0

found to have little or no statistical significance. The average molecular weights of the total fatty acids in the 2 series were the same, being 288 in one group and 286.8 in the other. On the other hand, the iodine numbers of the total fatty acids in the eczematous group were significantly lower than those of the control series. This finding has been presented and discussed previously.[1]

Concerning the phospholipid fatty acids, we find that on the average they comprised 26% of the total fatty acids in the eczema cases and 31% in the normal infants and children. It is noteworthy that the average molecular weights of the phospholipid fatty acids were essentially the same in both groups of subjects. However, they were definitely higher in the phospholipid fraction than in the other lipid fractions. As shown in Table I, the iodine number of the fatty acids of the phospholipid fraction was higher in each instance than that of the total fatty acids. From the data summarized in Table II, it is apparent that the phospholipid fatty acids of the eczematous patients were not only less unsaturated than those of the control series, but have even lower iodine numbers than the total fatty acids of the normal children.

Summary and Conclusions. In a study of the serum lipids of 7 infants with severe, generalized eczema by a microgravimetric method, the phospholipid (acetone insoluble) fatty acids were found to be more unsaturated and to have higher average molecular weights than the total fatty acids. When these findings were compared with similar information obtained in a previous study on fourteen essentially normal infants and children, the degree of unsaturation of both the total fatty acids and the phospholipid fatty acids was found to be definitely less in the eczematous subjects. These data confirm a previous finding of the author that the iodine numbers of the serum lipids tend to be lower in infants with severe eczema. In addition, they reveal the fact that the fatty acids in the phospholipid (acetone insoluble) fraction of the serum lipids partake in this reduction.