the RR-colonies. Neither the SR- nor the RR-cultures were susceptible to inhibition or lysis by the original, the S- or the R-lytic filtrates. Thus, by the combined action of dissociation and the lytic principle, the Friedländer cultures were split into at least four sub-types. The biological characteristics of these have not yet been fully studied.

In conclusion it may be said that, at least in the case of the Friedländer bacillus, as also in the instance of *B. ozenæ* and *B. rhisclerom atis,* there is no evidence that capsule formation offers any hindrance to the inhibitive or the lytic action of the bacteriophage. This conclusion confirms the observation of Paul Caublot[1] who has also recorded the existence of a lytic agent for the pneumo-bacillus.

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Studies on the state of the serum calcium.

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In low phosphorus rickets, the animal is unable adequately to utilize its calcium in spite of the fact that the blood contains a normal amount of calcium. In low calcium rickets the total calcium of the blood is low but, as shown by the addition of the fat soluble organic factor, the diet supplies enough calcium to provide for a normal amount in the blood. These facts make it seem of importance to determine the ratio of diffusible and colloidal serum calcium in the blood in the two conditions.

Three litters of rabbits were used, as indicated in Table I. The diffusible serum calcium was separated by negative pressure filtration through a collodion membrane as described by Moritz.[1] The rabbits were fed through a stomach tube twice daily throughout

[1] *Compt. rend. Soc. de Biol.,* 1924, xc, 622.

[1] Moritz, Alan R., The Effect of Ultra-Violet Irradiation on the State of the Serum Calcium. *J. Biol. Chem.,* 1925, lxiv, 81.

TABLE I.
The State of the Serum Calcium in Experimental Rickets in Rabbits.

Litter	Diet	Animal No.	Total Ca.	Diff. Ca.	% Diff. Ca.	In. Phos.	Rickets
I	—P—A	1075	13.5	7.31	54	3.25	Severe
		1076	13.0	6.45	50	3.1	Severe
		1077	11.55	6.06	52	3.1	Severe
	—P+CLO	1073	11.9	6.54	55	8.9	None
		1074	10.5	6.06	58	8.17	None
II	—P—A	1082	13.7	8.62	63	3.8	Slight
		1088	13.08	7.39	52	3.8	Moderate
		1089	10.85	6.00	51	3.6	Osteoporosis
	—P+CLO	1083	13.47	7.90	59	10.3	None
		1085	13.23	8.00	61	8.6	None
		1086	12.54	8.23	66	6.1	None
III	—Ca—A	1161	7.7	5.6	72	Not determined	Osteoporosis
		1162	8.2	4.9	59	"	Osteoporosis
		1163	8.8	5.1	55	"	Osteoporosis
	—Ca+CLO	1160	12.0	7.9	65	"	Osteoporosis

the course of the experiment as in the studies of Goldblatt and Moritz.[2]

Litter I and Litter II were placed on a diet deficient in phosphorus and the fat soluble organic factor. Two animals of Litter I and three animals of Litter II served as controls and received five drops of cod liver oil daily. At the end of thirty days all animals of litter I were killed. The three experimental animals had developed severe rickets while the controls showed no evidence of rickets.

Litter II were killed at the end of eighteen days. Two of the experimental animals had developed moderate rickets while the third showed only severe osteoporosis. The controls showed no evidence of rickets.

Litter III received for 23 days a diet deficient in calcium as well as the fat soluble organic factor. One animal served as a control and received five drops of cod liver oil daily. Although these animals received a diet which is rickets-producing in a rat, it was found that a severe degree of osteoporosis masked any rachitic changes that might have been present.

Table I shows that all of the experimental animals of litters I and II showed a marked diminution of the inorganic phosphorus of the serum as compared with the controls, while there was no significant alteration in the amount of the serum calcium. The per cent of the diffusible serum calcium in experimental and control animals did not differ significantly. In litter III the serum calcium of the three experimental animals was greatly reduced as compared with the control. However, there was no significant difference in the per cent of the diffusible serum calcium in the experimental and control animals.

In low phosphorus rickets of rabbits, where the total calcium of the serum is normal, the percentile ratio of diffusible and colloidal calcium remains essentially undisturbed. In rabbits fed on low calcium diet deficient in the fat soluble organic factor the percentile ratio of diffusible and colloidal calcium also remains essentially normal in spite of a great reduction of the total serum calcium.

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[2] Goldblatt, Harry, and Moritz, Alan R., Experimental Rickets in Rabbits. *J. Exp. Med.*, 1925, xlii, 499.