ion decrease the germicidal efficiency. The effect of the KCl, however, is very slight. Since fairly high concentration of Na_3PO_4 has to be used to get any germicidal effect, fairly large amounts of the other electrolytes can be added in this case without obtaining the effect of the mass action as was experienced with the phenol.

Since *Staphylococcus aureus* is very difficult to kill by the phosphates alone, we used for some of these experiments young cultures of *Staphylococcus auranticus,* a less resistant organism. If the *Staphylococcus aureus* were used there would be such a large number of surviving organisms that the experimental error in counting would be too great.

The following data illustrate typical results:

TABLE IV. *Effect of electrolytes on germicides.*

Germicide			Organisms surviving			
	No salt	+NaCl 2%	+KCl 2.55%	+NH_4Cl 1.81%	+$CaCl_2$ 3.78%	
8% Na_3PO_4	540	300	630	10,000	10,000	
*2% Na_3PO_4	760	360	450	2,400	10,000	
	No salt	1% NaCl	5% NaCl	1% KCl	5% KCl	.01%KCl
4% Na Phenate	38	18	26	17	60	100

*For this *Staphylococcus aurenticus* was used.

In view of these results we believe that the evidence is in favor of the hypothesis that the concentration of the unionized portion of an antiseptic is the factor of prime importance in determining germicidal efficiency.

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An Experimental Study of Plasma Protein Regeneration.

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The object of this paper is to study the restoration of the several fractions into which the plasma globulins and albumins may be divided, after severe bleeding of dogs. No general anesthetic was used in the experiments. The dogs were bled from a large vein either in the hind or front leg. Plasma-pharesis was employed to maintain the cell volume and blood viscosity at a high level.

The fractionating of the plasma proteins was done by various concentrations of sodium sulphate at a pH of 7. The nitrogen in each fraction was determined by the macro-Kjeldahl method and titration carried out with N/20 alkali.

TABLE I—Dog No. 5.
The distribution of the protein fractions in the plasma.
Results expressed as mg. nitrogen in 100 cc.

Date	Weight kg.	Cell vol. %	Total plasma nitrogen	Non-protein nitrogen	Fibrinogen	Euglobulin	Pseudoglobulin	Albumin I	Albumin II	Albumin III	Globulin albumin ratio
7-19	17.5	41.0	1011.6	29.6	86.7	15.5	201.9	102.4	40.9	564.2	2.31
7-21	17.4	37.6	614.5	21.0	75.9	13.6	90.7	60.4	39.1	334.8	2.41
7-22	17.0	30.0	761.2	14.0	51.7	19.6	123.8	76.0	67.3	422.8	2.90
7-26	16.5	24.0	943.2	71.5	160.6	22.4	144.3	182.3	74.2	359.4	1.88
7-29	15.9	26.0	954.2	38.0	161.5	30.2	160.7	164.8	45.8	385.2	1.66

The average results from the successful experiments on six dogs indicated that all the globulin fractions decrease more rapidly during and immediately after bleeding. After a lapse of 3 to 4 days, depending upon the severity of the bleeding, the globulins appear to be restored more rapidly. This shift in regeneration greatly influences the albumin-globulin ratio.

The total protein nitrogen was determined by the macro-Kjeldahl method; the non-protein nitrogen, by the technique of Folin. The fractionation of the proteins into fibrin, euglobulin, pseudoglobulin, and the three albumin fractions was carried out according to an unpublished method of Berglund. The nitrogen in each fraction was determined by a macro-Kjeldahl digestion and titration with N/20 alkali.

Table I is illustrative of the type of result obtained in the experiments.

It is to be clearly understood that the fractions of globulins and albumins shown in Table I are not to be considered as definite protein entities. Hersfeld and Klinger[1, 2, 3] believe that the protein fractions do not have a chemical individuality but are an interrelated series of colloidal particles of different degrees of dispersion, which can be transposed one into the other. In other words, the evolution begins with the lowest dispersed particles, fibrinogen, and extends to the albumins and non-coagulable substances.

Our results seem to be somewhat in accord with this view. It can be said, however, that there seems to be a definite shift in the values toward the globulins as the regeneration takes place. This fact brings about a definite change in the globulin-albumin ratio (G/A). Instead of being 2.5, it changes to 1.6.

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[1] Herzfeld, E., and Klinger, R., *Biochem. Z.*, 1917, lxxxiii, 228.

[2] Herzfeld, E., and Klinger, R., *Biochem. Z.*, 1919, xcix, 204.

[3] Herzfeld, E., and Klinger, R., *Ergebn. Hyg., Bakt., Immunitätsf. exper. Therap.*, 1920, iv, 282.