rabbit that phenol red is excreted in a manner similar to urea in so far as the relation of the urine rate to the plasma concentration is concerned. This has led us to examine the possibility of using phenol red in place of urea in performing the Addis test of renal function[4] which has been referred to. The results presented in Table I which were obtained from a subject without renal disease after the injection of 1 gm. phenol red* during an urea diuresis indicate that it may be feasible to use phenol red in place of urea to determine the Addis excretory ratio. The difference between the urea and phenol red ratios which is apparently constant will be discussed elsewhere. There are certain advantages over urea in the use of the dye, particularly in the determinations in the plasma and urine. The actual concentrations need not be measured. After appropriate dilution and alkalinization the serum and plasma are compared in the 2 cups of a good colorimeter and the ratio calculated from the readings and respective dilutions. The clinical application of the use of phenol red in this manner is being investigated.

5104

Inactivation of Staphylococcus Bacteriophage by Toluidine Blue.

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The inactivation of staphylococcus bacteriophage by methylene blue was reported by Schultz and Krueger.[1] Further tests in this laboratory with various samples of methylene blue* have given practically the same results, concentrations of 0.05% of the dye inactivating the bacteriophage within 24 hours. In higher dilutions longer periods of time were required for inactivation, whether the tests were carried out at room temperature or at 37°C. In only a few isolated cases was an inactivation obtained with concentra-

* We are indebted to the firm of Hynson, Westcott and Dunning of Baltimore for making this study possible through their very generous cooperation in supplying strong phenol red solutions suitable for intravenous use.

1 Schultz, E. W., and Krueger, A. P., PROC. SOC. EXP. BIOL. AND MED., 1928, xxvi, 101.

* Merck's U. S. P. Methylene Blue (3 samples); Coleman and Bell, U. S. P. Methylene Blue; National U. S. P. Methylene Blue (2 samples); Grubler's Methylene Blue.

tions below 0.005%, when the ordinary bacteriophage suspensions were used or when such suspensions were diluted 1-10 with Martin's broth.

Similar tests have been carried out with various other dyes including toluidine blue, methylene violet, methylene green, methylene azur, thionin, eosin B, and phenol red. These dyes were added in relatively high concentrations to bacteriophage filtrates which were then incubated at 37°C. for 24 hours or longer and tested for lytic activity. Of the series tested in this way only one, *toluidine blue,* served to inactivate the staphylococcus bacteriophage.

Several individual samples of the same brand of toluidine blue† have given results which in all respects were similar to those obtained with methylene blue. When incompletely inactivated dye-phage mixtures were plated out with susceptible organisms a diminution in the number of plaques was noted, both in the case of methylene blue and of toluidine blue.

Tests were made with the dye-phage mixtures which were incubated in an atmosphere of hydrogen, nitrogen, or oxygen. The results obtained were identical with those described above, while controls incubated under the same conditions retained their lytic activity.

Inactivation was not obtained with either methylene blue or toluidine blue when added to an anti-coli bacteriophage. The results, therefore, indicate that the inactivation is a specific phenomenon, affecting particularly the staphylococcus bacteriophage. Filtration studies suggest that the inactivation is probably due to an adsorption phenomenon.

5105

The Hearts of Wild Animals in Captivity.

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Comparative anatomical studies of the heart in various mammals, with reference especially to the relation of the heart weight to the body weight, have yielded much interesting information. It was shown previously[1] that the heart of the racing greyhound averaged 13.8 gm. per kilo of body weight and stood at the top of the animal

† National Toluidine Blue (3 samples).

[1] Herrmann, George, PROC. SOC. EXP. BIOL. AND MED., 1926, xxiii, 856.