the same amount of corticosteroids through their cuticle in either situation on the host. However, they probably ingest more blood when fixed, which may be significant. The relationship between the hormone, maturation, increased defæcation rate and feeding behaviour of the fleas requires further investigation.

It should be noted that on hosts injected with large doses of cortisone, maturation proceeds more rapidly and is maintained for a longer period than on hosts receiving smaller doses. In view of this fact the observations made on the course of maturation in Nature, when fleas mature in 8–10 days on the doe and in 3 days on baby rabbits[4], suggest that the corticosteroid-levels in the rabbit's blood follow a somewhat similar course to that said to be found in man[7]; a sharp rise possibly occurs during the last 10 days of pregnancy in the female rabbit, which gradually increases or at any rate is maintained until parturition, when it falls abruptly; the level in the blood of the new-born young would appear to be higher than in the doe immediately before parturition.

It was noticed that when the fleas were sprayed *in situ*, on the tip of an unshaved ear of the castrated buck rabbit, with 2 measured doses (0·4 mg of hydrocortisone) from the 'Hydrocortisyl' skin spray, their ovaries matured and had failed to regress after a period of 4 weeks on the host. New batches of fleas were afterwards introduced on to the head of the same rabbit and their ovaries matured although seven weeks had elapsed since the initial spraying of the host. It would thus appear that extremely small amounts of hydrocortisone, which presumably reached the skin via the covering of hairs on the rabbit's ears, remained active for considerably longer periods than the cortisone (5 mg) which was injected intramuscularly for periods of 10–11 days.

Experiments are now in progress with other groups of blood-sucking insects using the Roussel spray technique.

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MICROBIOLOGY

Host-range of Temperate *Serratia marcescens* Bacteriophages

It has been reported[1] that phages isolated from sewage against *Serratia marcescens* lyse a single strain each of *Escherichia coli* and *Shigella flexneri*. *S. marcescens* can receive[2,3] lac$^+$ genes from *E. coli* and *Salmonella typhosa* via an episomic vector and may in turn transmit these genes to *S. typhimurium* and *Sh. dysenteriae*.

As part of an investigation to determine whether genes of *S. marcescens* can be transferred interspecifically via phage vectors the host-range of temperate *S. marcescens* phages was investigated. Sixteen N.C.T.C. strains, 1 American Type Culture Collection strain and 14 local strains of *S. marcescens* were examined for lysogeny by methods previously[4] used. Fifteen of the strains (including the American and 7 of the British) proved lysogenic for one or more of the 31 *S. marcescens* cultures. Twelve of the phages were obtained by ultra-violet induction and 3 were present in the supernatants of 10-day broth cultures. The 15 phages could be differentiated by means of their host-ranges.

The action of the 15 phages was tested on a series of *Proteus hauseri*, *P. morganii*, *P. rettgeri* and *Providence* cultures previously used[4] as well as on 12 *S. typhosa* Vi types, 28 other *Salmonella* serotypes, 48 strains of *E. coli* and 24 *Shigella* serotypes. The methods used have been described[4]. Although none of the *S. typhosa* cultures was affected 11 other *Salmonella* serotypes were productively lysed by one or more of all 15 phages. No abortive infections were encountered and the efficiency of plating was unity in all cases. The 11 sensitive *Salmonella* strains belong to the *B*, C_1, *F* and unclassified groups of the Kauffmann-White schema. No action was noted on strains of the other genera tested.

Many strains of *S. marcescens* are bacteriocinogenic and kill *E. coli* cultures[5,6]. This property of *S. marcescens* has been used[6] as an argument in favour of the classification of *S. marcescens* among the Enterobacteriaceae. The results reported here support this opinion.

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Antibacterial Interaction between Bromthymol Blue and Polymyxin *B*

Polymyxin *B* and bromthymol blue have been used in various selective and differential bacteriological media[1–3]. In the course of recent investigations of various experimental selective media for use in the enumeration and isolation of staphylococci from foods, it was noticed that *Staphylococcus aureus* and *Bacillus subtilis* grew on the surface of plates poured with polymyxin *B* media containing bromcresol purple and phenol red, but did not grow, or grew poorly, on plates of polymyxin *B* media containing bromthymol blue.

A number of experiments have since been carried out to enlarge on these observations because of the possibilities for useful employment of the polymyxin *B*–bromthymol blue interaction in selective media and for other purposes.

A basal-plating medium consisting of: 'Bacto'*-tryptone, 10 g; 'Bacto'-yeast extract, 5 g; *d*-glucose, c.p., 5 g; NaCl, c.p., 5 g; 'Bacto'-agar, 15 g; and distilled water, 1,000 ml., was utilized. Before autoclaving, the reaction of the basal medium was adjusted to *p*H 7·2 and 'Bacto'-bromthymol blue (BTB) was added in the form of a 1 per cent alcoholic solution[3]. The medium was sterilized at 121° C for 15 min and cooled slowly to 45°–50° C. Polymyxin *B* (PB) (obtained from Nutritional Biochemicals Inc., Cleveland, Ohio) was added aseptically as a Seitz-filtered 1 per cent solution. The final reaction of the medium was approxim-

* Trade name for Difco Laboratories, Inc., Detroit, Michigan. The names of the manufacturers are given for materials solely for the purpose of identification and not as endorsement thereof by the Public Health Service.