

*Reservoirs of Infection During Dry Period.*—As a means of possibly reducing the risk of subsequent reinfection of treated cows, various possible sources of infection during the dry period have been investigated.

Agalactiæ organisms have been found in vaginal discharge of one New Zealand cow, confirming a similar finding in Great Britain. Organisms were also found on the teats of dry cows, some 45 cows out of 316 examined harbouring agalactiæ on the outside of the teats. Seven herds were involved in this investigation and all contained cows with infected teats. The need for efficient teat disinfection is obvious, and various methods are under study.

Shed fittings in a dairy well above average in its general efficiency from a cleanliness point of view were tested during the dry period for presence of agalactiæ. Apart from the handle of one strip cup, all fittings gave negative results. Data are being sought from the average and below-average sheds.

*Studies of Penicillin Concentration and Distribution in the Udder.*—Work mainly with cerate has been carried out to assess the period during which a satisfactory concentration of penicillin can be maintained in the udder by various dosages in lactating, drying-off, and dry cattle. Marked variations occur between quarters of the same cow and between cows. In general, with lactating cows three injections with 25,000 units of cerate penicillin at twenty-four hour intervals maintained a satisfactory level for four days and was superior to other systems tested. With drying-off cows a single injection with a cerate tube could not be relied on to maintain a satisfactory level for more than forty-eight hours. With dry cattle a similar single injection maintained desirable concentration for five to six days.

In a preliminary experiment with cerate penicillin in which cows were slaughtered after treatment it was shown that twenty-four hours after injection the level of penicillin was lower in the distal portion of the udder than in the main ducts; at forty-eight hours the levels were approximately equal; from forty-eight hours to seventy-two hours the distal concentrations fell markedly. These observations were made on slaughtered cows. The results indicate that the milk sample from an udder gives only an approximate index of penicillin concentration within the udder system as a whole. This situation is probably exaggerated in lactating cattle.

*Penicillin Sensitivity and Resistance.*—The testing of sensitivity of mastitis organism to penicillin has not been entirely satisfactory, but it appears that the bacterio-static level of *Streptococcus agalactiæ* is about 1 unit per millilitre. Samples from 167 cows reported not to be responding to penicillin were obtained from herds under supervision. These have been classified as follows: 64 samples showed no organisms and normal cell counts; 27 samples showed no organisms but high cell counts. The most common organism was *Streptococcus agalactiæ* (33 samples), but under test these did not appear to be of enhanced resistance. It would appear that the problem of "resistance" of agalactiæ is more one of host or methods of treatment than of parasite. Fourteen samples showed a "greening" streptococcus which demonstrated true resistance to penicillin, and a further 14 cases carried organisms which could not be expected to be affected by penicillin. Fifteen samples yielded indeterminate results because of possible contamination.

At present, therefore, data do not support the idea that resistant strains of agalactiæ exist. It is, of course, too early to expect any reliable evidence on the possible development of resistant strains.

*Ruakura Herds.*—For the first time since the beginning of control measures, No. 1 and No. 2 herds can be reported clear of infection. After treatment of all cows when dry only one formerly-infected cow revealed trouble this season, although new cases have occurred. In No. 1 herd (87 cows) one cow calved with infection and six developed infection during the year. All yielded to treatment. In addition, one cow died from coliform mastitis. No cases of staphylococcal mastitis occurred. In No. 2 dairy (91 cows), infection with agalactiæ did not appear during the season.