diseased or damaged skin where they act as a valuable defence against infection.

References

- Selwyn, S., and Ellis, H. (1972). Skin bacteria and skin disinfection reconsidered. *Brit. med. J.*, 1, 136.
 Selwyn, S. (1965). The mechanism and prevention of cross-infection in dermatological wards. *J. Hyg. (Lond.)*, 63, 59.

Proteus Urinary Infections in Childhood

P. G. MANN (*Manor Hospital, Bath*)

Quantitative urine culture by the dip-inoculum technique of Mackey and Sandys (1965) has shown that the pattern of infection in male children is quite different from that of female children. Among boys under the age of 14 *Proteus mirabilis* is the causative organism in about 75% of cases of active urinary infection. By contrast only 15% of infection in girls is due to *Proteus*, the dominant pathogen being *Esch. coli*.

Proteus mirabilis was found in the preputial sacs of 20/51 boys under 10, without overt urinary infection. In nine instances preputial infestation was associated with the presence of *Proteus* in urine collected without retraction of the foreskin. Although the degree of bacteriuria arising in this way should not often reach levels typical of active infection, nevertheless infestation of the prepuce by *Proteus* may be the source of active infection in boys, thus providing a reason for the contrasting incidence of *Proteus* infection in the two sexes.

Reference

- Mackey, J. P., and Sandys, G. H. (1965). *Brit. med. J.*, 2, 1286.

Experimental Pertussis Infection in the Vaccinated and Unvaccinated Marmoset: Similarities to Natural Infection in the Child

T. N. STANBRIDGE AND N. W. PRESTON
 (*Department of Bacteriology and Virology, University of Manchester*)

Isolates of *Bordetella pertussis* from children were type 1,2,3; 1,2; 1,3; or a mixture of these. Type 1 (apparently a degraded form) was rarely isolated and always grossly outnumbered by other serotypes. Fresh isolates of all four types were avirulent for mice, intracerebrally, but readily colonized the marmoset nasopharynx. Within three days of pernasal inoculation with type 1, the marmoset

colonization had changed to type 1,2 (? rough to smooth mutation).

No marmoset coughed or vomited, or 'whooped', though some became catarrhal. But, like children, they developed circulating antibodies consistent with the agglutinogens in the infecting strain or in a killed vaccine.

Three pairs of marmosets were challenged pernasally with type 1,3 (now prevalent in children). Those previously vaccinated with 1,2,3 eliminated the 1,3 challenge in 10 to 13 days, whilst those vaccinated with 1,2 harboured 1,3 organisms for 22 to 24 days. In unvaccinated animals (with no antibody 2) the 1,3 infection changed to 1,2,3 after two weeks, then to 1,2 after three to four weeks, and persisted until six weeks from challenge.

Three other pairs were challenged with type 1,2,3. Those previously vaccinated with 1,2,3 eliminated the infection in two to two and a half weeks; one, vaccinated with 1,2 took two and a half weeks, but the infection in the other changed to 1,3 and persisted for five weeks. In unvaccinated animals, the 1,2,3 infection changed to 1,3 after two weeks and persisted for five weeks (11 weeks in one animal).

Similar changes of serotype have been found in the child; and, as in these marmosets, type 1,2,3 vaccine appears more effective than 1,2 vaccine in protecting the child.

Brucellosis: the Situation in Britain

R. J. HENDERSON (*Public Health Laboratory, Worcester*)

About 600 cases of human brucellosis occur annually, according to the only reports available. They are virtually all contracted from drinking infected milk or contact with infected cattle. One third of the dairy herds of Britain are infected and the Ministry of Agriculture, Fisheries and Food has embarked upon a scheme to eradicate the disease from cattle. Sub-clinical infection with *Brucella abortus* affects dairy farmers and herdsmen and their families, slaughterhouse men, and veterinary surgeons at some time in their lives, and creates difficulties of diagnosis if it is made by serology alone. The disparity between the annual number of cases (328 for the years 1968-71) in Scotland, where there are only between 5000 and 6000 dairy herds, and in England and Wales (270 for the same period), where there are over 80 000 herds, may be perhaps due to the reporting of serological

findings without a clinical assessment of the patient being made, since reports show that infection in Scottish herds is no higher than that in herds in England and Wales. Legislation is strict; under the Agricultural Act of 1970 anyone selling a cow, otherwise than for slaughter, known to be a reactor, can be fined £400, and the MOH has wide powers under the Food and Drugs Act 1955 and the Milk and Dairies (General) Regulations of 1959 to order pasteurization of milk which he knows to be infected.

Brucellosis in South West Eire

BRIDGET V. FOLEY (*St Finbarr's Hospital, Cork*)

In 1964 Brucellosis eradication commenced in the 26 counties using a milk ring survey of churn samples. The incidence of brucellosis was found to resemble that of tuberculosis, being low in the west and north west and high in the dairy areas of Leinster and the south, areas of greater cattle concentration and habitual movement of dairy cattle. The use of S.19 vaccine was confined to 3-6-month-old calves to ensure protection for herds that would be mature before eradication was complete. In 1966 full-scale eradication commenced in Donegal and movement of cattle in and out of the country was controlled. Market value compensation was given for reactor animals.

In 1968 a complete ban was put on the use of S.19 vaccine, and the 45/50 vaccine was substituted. Later that year eradication extended to Sligo, Leitrim, Monaghan, Cavan, and in 1968 these five counties were brucellosis free. Wholesale clearance is going on along a line from Dublin to Mayo; other counties will not have eradication for some time and this includes our area of the south west.

The first investigation was undertaken in 1967 on three groups of people occupationally exposed to possible infection, ie, veterinarians, dairy farmers, and butchers, using Kerr's questionnaire and doing three sera tests (standard agglutination test, Coombs AHG and CF tests). Seventy-four or 92.5% of the 80 veterinarians, 45 or 44.1% of the 102 farmers, and nine or 18% of the butchers had positive titres. Thirteen veterinarians who were in administration work show that positive titres persist for many years.

The second investigation was carried out in connexion with an epidemic due to *Brucella abortus* in a girls' boarding