1. Introduction
Since Eason (1955) defined the criteria of significant bacteriuria in human urinary tract infections, the use of qualitative estimations of the bacterial population as an aid to the differentiation between infections and contamination of the urine has gained wide acceptance. A quantitative plate count is recognized as the standard technique for performing viable counts on urine, but requires trained staff for setting up the cultures. If misleading results are to be avoided, urine specimens must be cultured within an hour or two of collection, or be refrigerated. In general practice it is often difficult, if not impossible, to fulfill these requirements.

The introduction by Mackay and Sanders in 1953 of a dip-inoculum transport medium which had to be inoculated simply by dipping in the specimen, led to industrial production of such diagnostic aids, called dipsticks; one of these is "Jucubor vet.", which is manufactured and sold by Roche.

2. Principle
Jucubor vet. Roche is a dip-slide for the cultivation of microorganisms, consisting of a sterile plastic tube and a plastic carrier. The carrier is coated with three different agar layers. The plastic slide is built into the screw cap. The front side of the dip-slide is covered with a gel for the determination of the total bacterial count, growth of urea-positive and gram-negative bacteria. The rear side of the plastic carrier is divided in two by a plastic ridge, and the back half is ag for the selective growth of gram-negative bacteria, and as a third culture medium a Cefotax aerogel for the selective growth of some strains of Proteus, especially Proteus aerogenes.

The culture media are inoculated by dipping the slide into the fresh urine specimen.

3. Investigations
Ferner, H. (1957). A comparison of the bacterial content of the urine tract in the colonies of the urinary tract with pathogenic microorganisms. The prevalence of urinary tract infections in cows, as recognized by Eason, is usually correlated with a higher incidence of pyelonephritis. Examination of the fresh urine of cows, by means of a dip-slide, has proved to be a practical and simple diagnostic aid in early detection of urinary tract infections, before appearing (late, Martin).

4. Sampling of urine
Inoculation and interpretation
To achieve good urine samples the collection of mid-stream is the easiest and most practical method. After sampling, the dip-slide is inoculated by dipping it in the specimen. Thus the inoculated tube can be sent to a microbiological laboratory, since the original number of germs at the time of sampling is found or the slide is incubated overnight at 37°C in the veterinary's own laboratory. Findings can be interpreted by comparing the microbiological growth on the agar with pictures of reference as indicated in the package insert. Bacterial counts of 10¹⁵ indicate an infection of the urinary tract.

5. Differentiation of microbes
In cases of therapy, failure or to ensure the most efficient treatment, it may be necessary to isolate and differentiate the microorganisms found. The prevalence of gram-negative bacteria in urinary tract infections of cows makes it possible to apply rapid-to-use identification systems, such as "Jucubor vet."

6. Summary
Roche have proved to be very useful diagnostic aids for the early detection of urinary tract infections in cows.

The early detection of such infections, together with appropriate and timely therapeutic control, has to avoid such losses. Eason was able to demonstrate impressively in practice.

Selected references: