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Detection of Lactosuria by a Simplified Bacterial Method.

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The following is a simplified technic of the so-called Castellani-Taylor mycological method,¹ which I have found most useful in practice. The urine is collected in a clean bottle or other clean vessel, if possible sterile, but this is not essential; if it cannot be examined at once, it can be kept for some hours or even a day or two in the ice-box.

A portion of the urine is boiled for 2 minutes; I have found that boiling for 2 minutes does not apparently alter the chemical structure of lactose in the urine; the boiled urine is then distributed into 2 fermentation tubes, 1 and 2. As soon as the urine has cooled down, No. 1 tube is inoculated with *B. coli* from an agar culture: 2 or 3 large loopfuls; No. 2 tube is inoculated with *B. paratyphosus* B in the same way. The 2 tubes are placed in the incubator at 35-37° for 12-24 hours. The results are then read. If tube No. 1 (*B. coli*) shows presence of gas and tube No. 2 (*B. paratyphosus* B) does not show presence of gas, the inference is that the urine contained lactose.

The explanation is the following: with regard to Fehling reducing sugars which may be found in the urine, *viz.*, glucose, levulose, maltose, galactose, pentose—*B. coli* and *B. paratyphosus* B have the same fermentative reactions except on lactose which is fermented by *B. coli* and not by *B. paratyphosus* B. If a Fehling reducing sugar, therefore, is fermented by *B. coli* and not by *B. paratyphosus* B the inference is that it is lactose. The test may be employed also as a roughly quantitative test using graduated fermentation tubes.

If both tubes show fermentation there are several possibilities: as a rule it is glucose, but it may be levulose or galactose or maltose or pentose or a mixture of them or it may be one or several of these sugars + lactose. It will suffice to say here that if it is suspected that lactose is present in addition to some other Fehling reducing sugar the urine is exhausted with *B. paratyphosus* B and after filtration through a Chamberlain filter is inoculated with *B. coli*; if fermentation takes place the inference is that lactose was present in addition to some other Fehling reducing sugar.

During January and February of this year, thanks to the kind-

¹ Castellani, Aldo, and Taylor, F. E., *Brit. Med. J.*, 1917, ii, 855.

ness of Professors C. Jeff Miller and E. L. King and Doctors Thomas B. Sellers and C. D. Dawson, I have been able to investigate 12 cases of nursing women presenting Fehling reducing urine. In most cases the reaction was slight and disappeared after a few days. The bacterial method showed that in every case the Fehling reducing substance was lactose; no glucose or any other sugar apart from lactose was present.

I shall be pleased to supply workers interested in the subject with cultures of the strains of *B. coli* and *B. paratyphosus* B I use.

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Some New Bacilli: *Bacillus Metaflavus*, *Bacillus Flavoides*, *Bacillus Multiformis*, *Bacillus Canalensis*, *Bacillus Pomodoriferus*.

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Bacillus metaflavus Castellani. This bacillus I have grown several times from scrapings of the skin of the axillary and pubic regions. It is a most peculiar organism, and it is very doubtful whether it is a bacillus at all; it is gram-negative.

In preparations from agar cultures the organism appears as a long straight, or more often curved, large-sized bacillus; in preparations made from glucose agar cultures 48 hours old globular bodies, cryptococcus-like, 3-7 microns in diameter, are seen in addition to short, thick, bacillary forms. The growth on agar and glucose agar is of a bright yellow color, the surface of the growth may be smooth and shiny or may be crinkled. In stained preparations the organism at times appears as a diplo-bacillus with a large capsule.

Bacillus flavoides Castellani. This bacillus has been isolated by me from scrapings of the skin of the axillary and pubic regions. It is Gram-negative. It grows well on all ordinary media, it does not produce gas in any sugar. The growth on glucose agar is yellow, but after repeated transplanting the power of producing pigment is almost lost. It is easily differentiated from *B. metaflavus* as in preparations from glucose agar cultures no cryptococcus-like bodies are found in addition of the bacillary forms.

Bacillus(?) multiformis Castellani. This is a most peculiar organism isolated from scrapings of human skin. It is gram negative, not acid fast, is easily stained by the ordinary aniline dyes. The