

For the final Table 14 examples have been specially selected from C.O.R. data, and serve to show how remarkably some cows test.

#### CONCLUSIONS.

To sum up, there appear to be only five factors which materially influence monthly-test variations. They are (1) the breed; (2) time of commencement of lactation during year; (3) length of period of gestation during test; (4) nature of season; and (5) condition of cow, feeding, &c.

NOTE.—Unless otherwise stated the C.O.R. data used in the case of each breed include all first-class records from the year 1913 up to 31st December, 1923. The figures quoted for the Jerseys in each case are for the 1918-19 season, with the exception of Tables 11, 12, and 13, which are for all Jerseys up to 31st December, 1923.

*(To be continued.)*

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## THE MAKING OF ARTIFICIAL FARMYARD MANURE.

### TRIALS AT LINCOLN.

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WHILE the efficacy of farmyard manure has been variously attributed to its manurial constituents, its colour-producing capacity and consequent warming, its water-holding capacity, its mechanical effect, &c., there appears to be no doubt that its most useful feature in the soil is the giving-off of gas by the action of bacteria which feed on it. Just as yeast feeding on the sugars in dough gives off a gas (carbon dioxide) which causes the bread to rise, so bacteria with an abundant supply of organic matter give off the same gas in the soil, thus aerating it. Further, experience has shown that farmyard manure has a very decided value, and in pre-war England 35,000,000 tons of it were used annually. With the advent of motors and the war demand on pasture lands for the production of cereals, and the consequent decline in the production of fat beef, a considerable falling-off in output of this manure resulted—so much so that the Food Ministry, realizing its economic importance, were at pains to find a means of supplementing the supply. Dr. Hutchison, of the Rothamsted Experimental Station, was able to demonstrate that the bacteria which decompose organic matter in the soil were distributed everywhere, and required for growth only moisture and adequate food-supply.

Since 1919 artificial farmyard manure has been made at Rothamsted and used on various crops. In no case did the yields therefrom differ materially from those obtained from the use of bullock-made dung. This being so, sufficient encouragement from the farming community was forthcoming to warrant the formation of a syndicate consisting of the original investigators and others, calling themselves the Agricultural Development Company (A.D.C.O.), for the making of artificial farmyard manure on a large scale. The process of making, or perhaps the chemicals used for treating the straw, have been patented in England,