INTRODUCTION

The experiment was designed to determine which of three breeds of chickens had the greatest degree of heat tolerance, and the factors affecting the rectal temperature of the chicken maintained under Trinidad conditions of climate. The temperatures in Trinidad show little seasonal variation. The mean daily maximum is 86.0°F. and the mean daily minimum 70°F.

Parmenter Rhode Island Red, Dryden White Leghorn, and Trinidad Common Fowl hens were used in the experiment. The two former breeds because they form the whole of the I.C.T.A. poultry farm stock, and the latter because it was thought to be well adapte to the Trinidad climate and therefore would have a high heat tolerance.

If the environmental temperature affected the birds to an extent that was economically significant, then the results of the analysis would indicate which breed to concentrate upon in the chicken improvement programme. It would also indicate which individuals of the breed had the greatest degree of heat tolerance.

Hutt (1938), Fox (1951), and Lee (1942) have all shown that heat tolerance differences do occur between breeds at temperatures over 90°F.

The results of Ajaegbu (1956) indicated a breed heat tolerance difference in mature chickens maintained under Trinidad conditions of climate, but they were not subjected to statistical analysis. His recordings of maximum rectal temperature were made at 12.00 noon, and because the maximum heat stress was thought to occur later, it was probable that the breed heat tolerance difference would be significant.

The experiment discussed in Part II of the report was

originally designed to incorporate the results of this work to test whether or not there was any relationship between Basal Metabolic Rate and Heat Tolerance in chickens maintained in the tropics.

Rectal temperature was recorded in the experiment because it is a fairly reliable index of body temperature especially under hot conditions. Maximum body temperature, and the daily range of body temperature were both used as indices of heat tolerance.