INTRODUCTION

In Indonesia it is a common practice until now, to formulate a poultry diet based on nutrient requirements that are mostly recommended for poultry in the temperate and subtropical region. This is due to the fact that most of the investigations of nutrient requirements of poultry have been conducted in the above mentioned regions.

Payne argued that keeping hens in a high temperature environment decreased their basal metabolic rate, and in consequence reduced their energy requirement (Phelps, 1970a).

Since Indonesia is located in the tropical region, there should be a different pattern of energy requirements of poultry.

Although hens kept in a high temperature environment have a lower dietary energy requirement, they still need the same daily intake of protein, vitamins and minerals to maintain a level of egg production as high as hens kept at 60°F/15.5°C (Phelps, 1971). The percentage of protein needed in a ration for poultry is related to the energy level (Winter and Funk, 1956). So in formulating
a poultry diet, it is not only important to consider the energy content of the ration, but also the calorie-protein ratio.

The energy content of the diet, the environmental temperature, the level of production and the body size of the hens were among several factors which influenced the feed consumption (Baldwin, 1972). Prince et al. (1965) reported that feed consumption was significantly higher at 12.6°C than at 23.8°C.

The problem of feed intake of the laying hens in the tropics might clearly influence the extent and the validity of the protein and energy theory; so there is still doubt whether in hot climates the low levels or the high levels of energy and protein in the ration will be more adequate for layers.

Indonesian poultry farmers to date use either the floor litter system or the cage system for the laying hens. Because there is no information about the energy requirement and suitable housing system for the laying hens in Indonesia, it is necessary to conduct such an experiment.

Siregar (1972) reported that according to the data of 1970 - 1971, the average performance of White Leghorns in Indonesia is far below the average performance of White Leghorns in the United State in 1968 - 1969. There is a great need to improve the performance of laying hens if
the poultry industry is to be expanded in Indonesia; because a better efficiency will depress the cost of production and hence it will influence the profit of the farmers. The experiment conducted in this study was designed to study the effect of various energy and protein levels on the performance of laying hens under cage and floor systems.