SECTION I
INTRODUCTION

The subject of this project formed a part of the present grassland research programme at The Imperial College of Tropical Agriculture. In recent years the emphasis in these investigations has changed from soilage grasses to pasture grasses, especially since the introduction of Pangola grass to the West Indies which has shown that cattle can be satisfactorily grazed on tropical pastures. Attention is now being paid to introductions of exotic species to Trinidad and their evaluation as pasture grasses, both in pure stands and in mixed leys. The first stage in such work consists of fairly simple observational studies on many species and strains, with the object of eliminating those less suitable before putting the promising strains forward for more formal trials. This report gives an account of observational studies carried out at the College Old Farm on the following species and strains:

Section 2 (of the report) Digitaria spp.
- D. decumbens Stent. Pangola grass. S.R.633
- D. pentzii Stent. (or D. decumbens). Pangola River Strain. S.R.924
- D. pentzii Stent. Wooly Finger Grass. S.R.908
- D. smutsii Stent. Hoenderspoor. S.R.908

Section 3 - Panicum spp.
- P. maximum Jacq. Silk Guinea grass. S.R.681
- P. maximum var. trichoglume - Slender Guinea grass. S.R.682
- P. coloratum L. Coloured Guinea grass. S.R.689

Section 4 - Paspalum notatum Flügge
- Argentine Bahia grass. S.R.918
- Argentine Bahia grass. S.R.926
- Tifhi-1 Bahia grass. S.R.927
- Wilmington Bahia grass. S.R.928
In this section of the report, the methods used in the studies will be described and discussed, and in the following sections, each strain will be described and its potential assessed.

OBJECTIVES

The following requirements were borne in mind in examining the grasses in order to determine their possible value as pasture for use in pure stands or in leys:

1. Establishment
   (a) By seed. Other promising or proven pasture grasses in Trinidad are substantially non-seeding, and vegetative propagation must be used.
   (b) By vegetative planting.

2. Yield - Including recovery from clipping (as a small scale practical alternative to grazing), dry matter content, leaf/stem ratio and the factors affecting palatability.

3. Drought resistance.

LAYOUT OF PLOTS

The standard observational plot at the College consists of thirty plants, in three rows of ten, planted at 18" spacing. A pathway of 3' is allowed between plots. Because some variation in soil fertility, structure, and water retention was believed to occur, two plots of each of the Digitaria were laid down in most cases. This policy was justified when it was found that the Northern plots of Digitaria were consistently weaker than those in the South.

PLANTING

Planting material consisted of either seedlings or groups of 3-4 tillers taken from earlier observation plots. Before planting, the sets were trimmed off to 1-1/2" of roots and 4" of stem and leaf. Rainfall had been lower than usual in the week before planting and the soil had dried out to a depth of about three inches. Immediately after planting, two or three gallons of water were given to each plot and thereafter
daily watering until growth began.

**OBSERVATIONS**

A rather long list of measurements was drawn up which was intended to be comprehensive enough to cover foreseeable requirements, but only those believed to be most useful in each section of the work were used. All the measurements made are summarised in Appendix III on cyclostyled proformae, the design of which can be readily modified for field use.

In making observations, five typical plants were selected from the centre row of each plot and measurements made on these, at first at about weekly intervals, then less frequently as the plants reached maturity. Some of the observations, such as average width, length and number of leaves and number of tillers per plant are likely to be biased, especially in the later stages, as careful sampling within each plant was not possible in the time available. All observations were made by the same person, (and hence the error is constant,) so that comparisons between the plots are still valid.

In addition to the listed measurements (Appendix II), a field notebook was kept in which the general appearance of the plots was noted together with other relevant observations. A simple morphological study was made of each strain in order to add to or amend standard botanical descriptions and describe the differences between the strains. An estimation of seeding and germination was made for those strains which flowered. This consisted of bagging several heads in mosquito netting and sowing the 'seed' in boxes of "bamboo soil" (which contains very few weed seeds).

Unfortunately it was found that the netting used was not fine enough and many spikelets dropped to the ground. Many inflorescences were also examined in the field to give a rough idea of the number of full caryopses produced.

Graphs have been prepared for many of the strains showing the changes in number and height of leaves, number and length of stolons, number of inflorescences, etc. These graphs are necessarily complex, but they are included to show their use to the author as well as to present a composite