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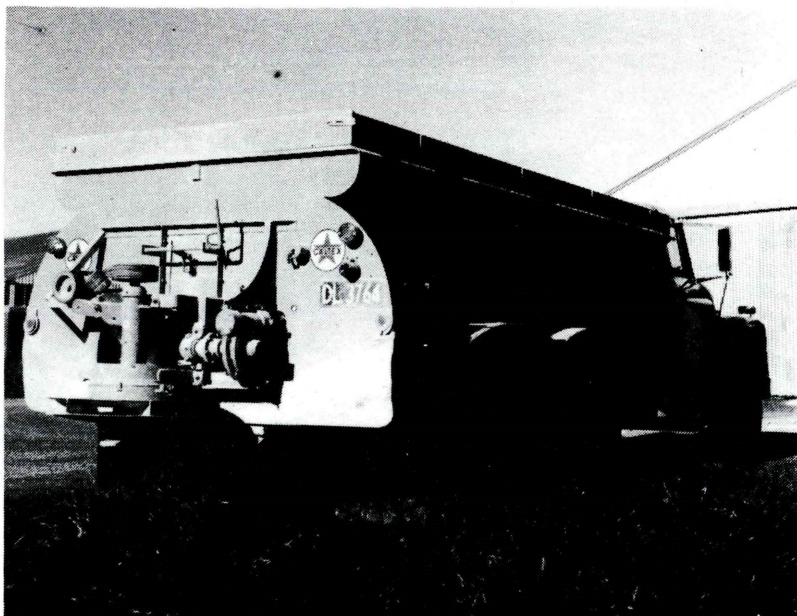
Public

TEST REPORT NO. T/41

STILL AIR LABORATORY TEST ON THE DOHERTY BULK
FERTILISER DISTRIBUTOR SPREADING GRANULATED SUPERPHOSPHATE

MANUFACTURER OF MACHINE: Doherty Bros Ltd, Grange Street, WINTON.

TEST ENTRANT: Wilson & Kennard, MILTON.



TEST PROCEDURE:

A full description of the test procedure and equipment is contained in Project Report P/6 to be issued by the New Zealand Agricultural Engineering Institute. In the interim see NZAEI Project Report P/5.

BRIEF DESCRIPTION OF THE MACHINE:

The Doherty Bulk Fertiliser Distributor is a truck mounted spinning disc machine, the spinning disc being driven by auxiliary motor.

The hopper delivery system of the machine tested was of the scraper chain type, driven from the drive shaft of the carrying vehicle via an auxiliary gear box.

The distributor is available in a range of hopper capacities built to suit the carrying vehicle. The machine tested is described as a Doherty 16 ft 6 ton chassis mounted type bin.

The transverse and longitudinal distribution patterns illustrated in this test report were obtained after modification of the scraper chain to spinner feed chutes of the distributor as originally supplied for testing. For a description of the modification see N.Z.A.E.I. Test Report T/42.

The spinner was designed by Dibble Bros, Te Awamutu.

SIEVE ANALYSIS OF THE MATERIAL (GRANULATED SUPERPHOSPHATE):

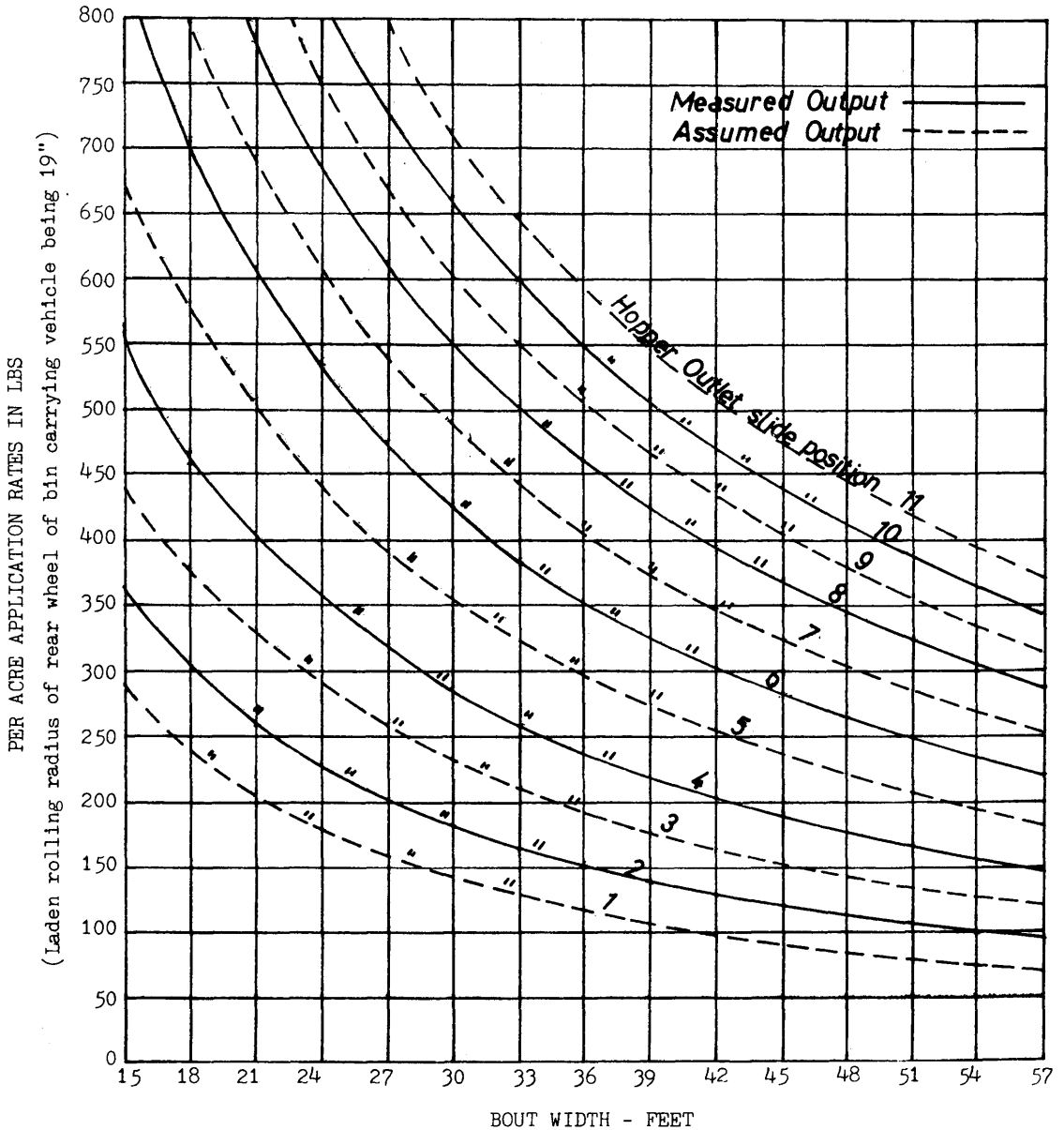
B.S. Sieve No.	% by weight
3/16"	4.7
4	7.4
6	21.3
8	25.7
12	19.1
16	9.2
22	4.1
30	2.5
Pan	6.0

BULK DENSITY OF THE MATERIAL (GRANULATED SUPERPHOSPHATE):

The bulk density was 68 lbs 4 oz per cubic foot.

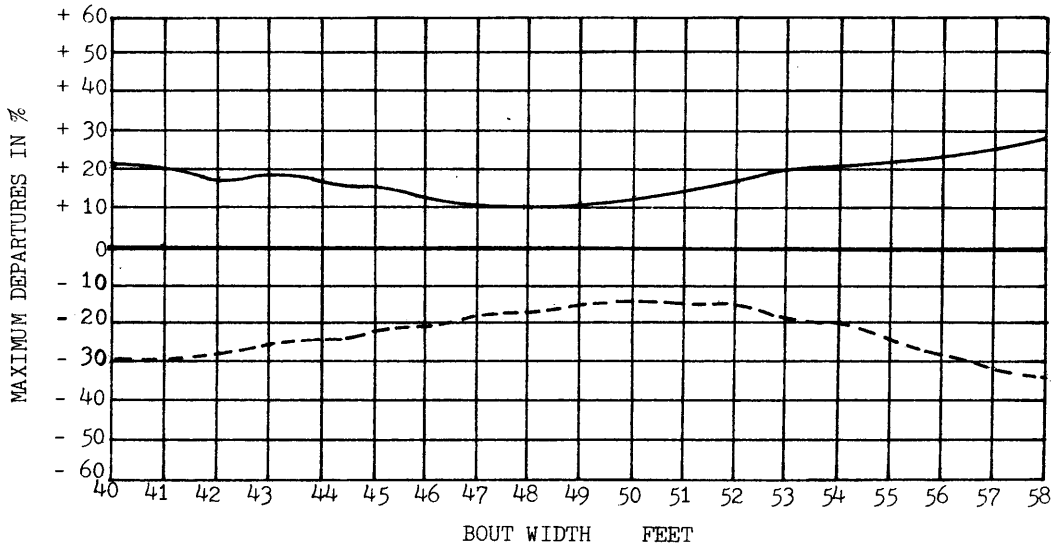
HOPPER OUTPUT OF MACHINE TESTED:

Drive Shaft to Scraper Chain Auxiliary Gear Box
Set in 2nd Gear

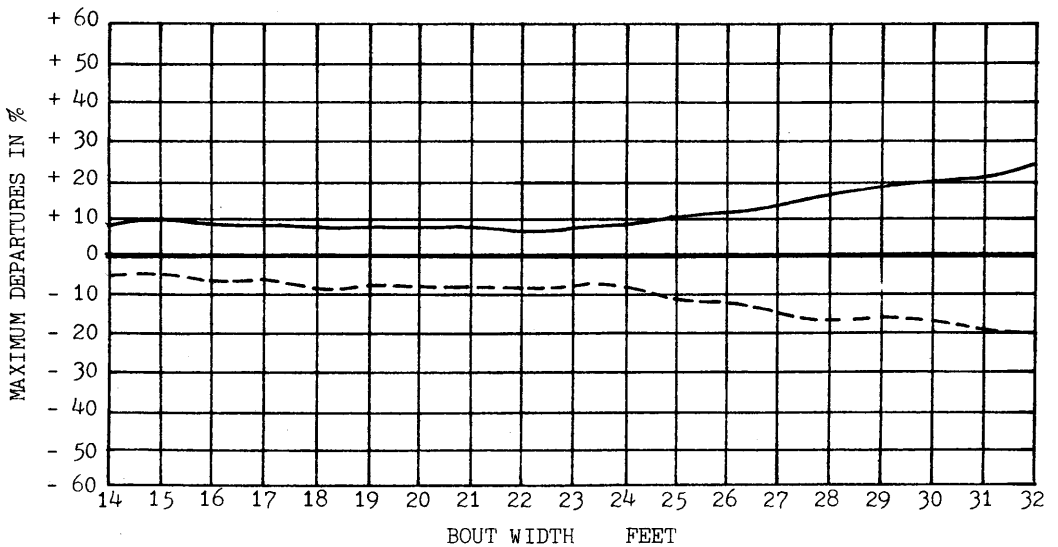


MAXIMUM DEPARTURES FROM THE MEAN APPLICATION RATE
OVER A SELECTED RANGE OF BOUT WIDTHS:

Mode of Travel: Round & Round
Above Mean Rate: _____
Below Mean Rate: - - - - -



Mode of Travel: To & Fro
Above Mean Rate: _____
Below Mean Rate: - - - - -



TRANSVERSE DISTRIBUTION PATTERN:

Name of Machine: Doherty Bin with Dibble
Spinner

Disc Speed: 650 R.P.M.

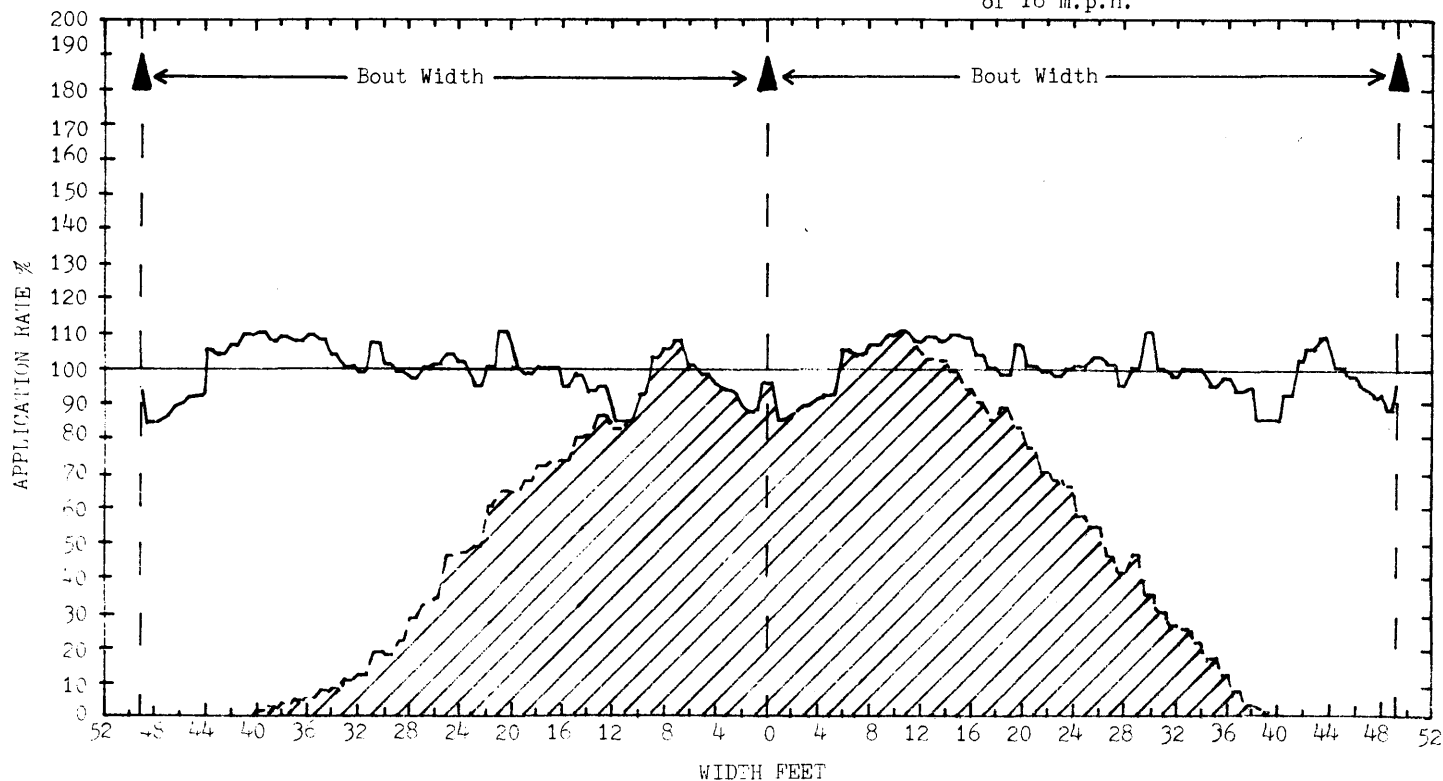
Disc Setting: See modification to feed
chutes on page 2

Bout Width: 49 feet

Material: Granulated Superphosphate

Mode of Travel: Round & Round

Hopper Outlet Setting: To simulate a
rate of flow of material onto
the spinning disc equivalent
to an application rate of 2 cwt
to the acre at a ground speed
of 16 m.p.h.



TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Doherty Bin with Dibble Spinner

Material: Granulated Superphosphate

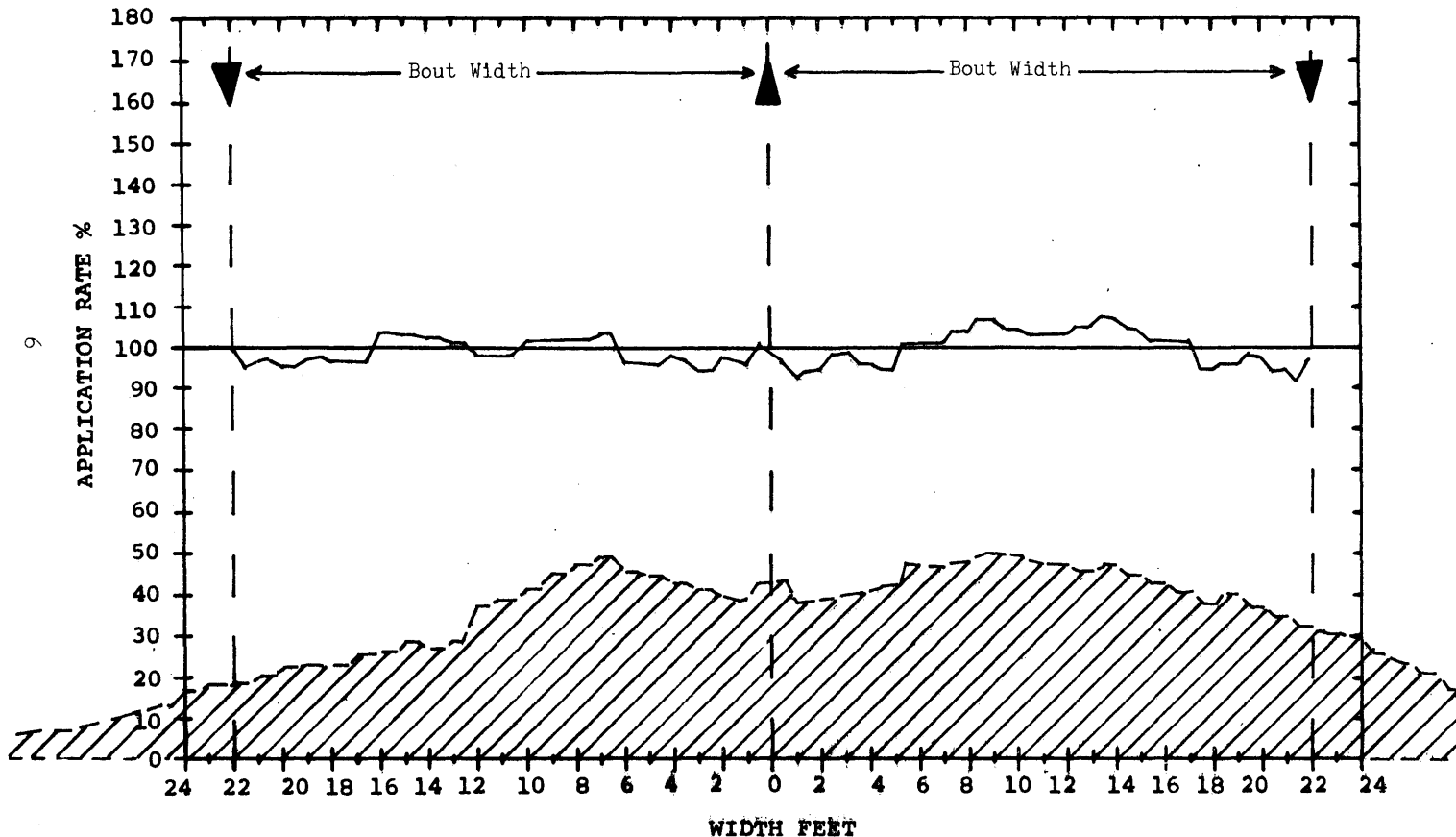
Mode of Travel: To & Fro

Disc Speed: 650 R.P.M.

Hopper Outlet Setting: To simulate a rate of flow of material onto the spinning disc equivalent to an application rate of 2 cwt to the acre at a ground speed of 16 m.p.h.

Disc Setting: See modification to feed chutes on page 2

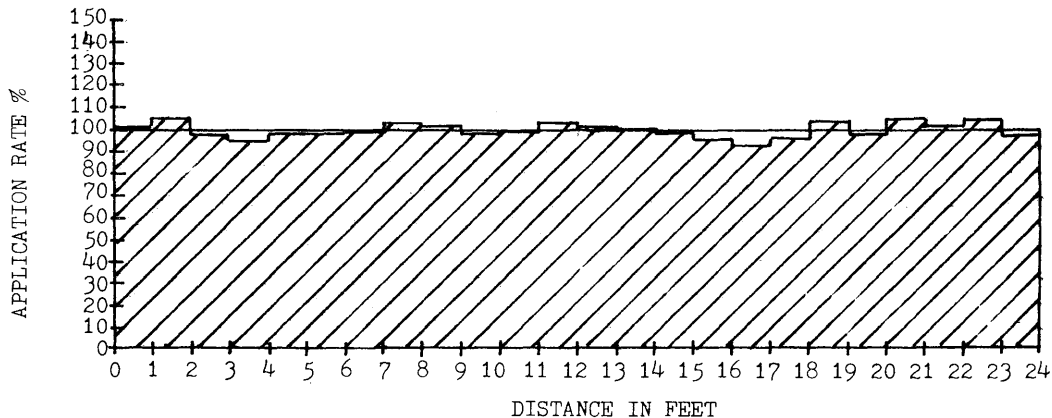
Bout Width: 22 feet



LONGITUDINAL DISTRIBUTION PATTERN

Name of Machine: Doherty Bin with
Dibble Spinner
Disc Speed: 650 R.P.M.

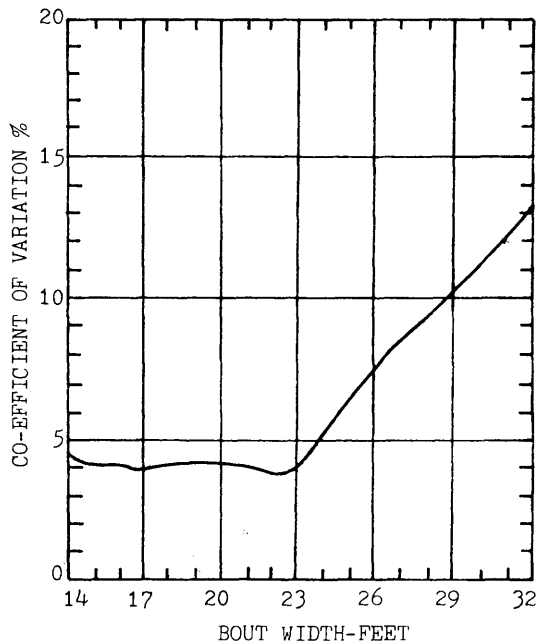
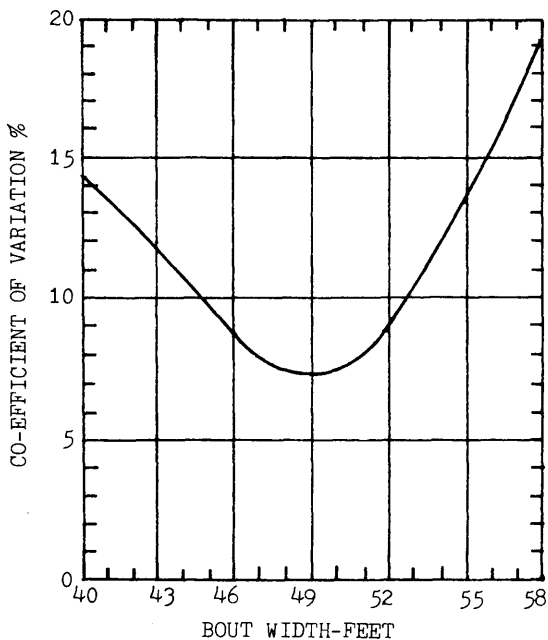
Material: Granulated Superphosphate
Actual Test Speed: 3 m.p.h.



SENSITIVITY TO FLUCTUATIONS IN BOUT WIDTH

Mode of Travel "Round & Round"

Mode of Travel "To & Fro"



COMMENTS ON PERFORMANCE:

The Co-efficients of Variation at the illustrated bout widths of 22 feet and 49 feet for the Modes of Travel "To & Fro" and "Round & Round" were 3.7% and 7.3% respectively. (N.B. The lower the Co-efficient of Variation is the more even will be the distribution, perfect spreading being 0.0%, see Project Report P/6).

The shape of the curve on the Sensitivity to Fluctuations in Bout Width graph for the Mode of Travel "Round & Round" indicates a machine/material combination sensitive to fluctuations in bout width. To achieve the spreading pattern displayed on the Transverse Distribution Pattern graph for "Round & Round" maintenance of the correct bout width involving accurate driving will be required.

MANUFACTURERS COMMENTS:

The manufacturer of the Bin considered that no comment was required on this machine/material combination.

Testing Officer

Date 22-10-70.

DIRECTOR