successive mowings was greater than twenty days, the samples were analysed singly. Where bulking of two samples was resorted to the final samples were made up from the original samples mixed in proportion to the plot yields.

The work on pasture samples from Marton has involved the chemical analyses of some two hundred samples and dry-matter determinations on about four hundred and fifty samples.

Mowing Trial A. (Experiment No. 16/2/8.)

Dry-matter determinations were carried out on the herbage from the various treatments. The variation in the percentages of dry matter of the herbage from the various plots when cut on the same date was not great, the extreme range representing about 2·3 per cent. of dry matter, or a variation of approximately 10 per cent. The variation in the percentages of dry matter at different times of cutting was much greater, the extreme values for the percentage of dry matter being 15 per cent. and 25·2 per cent. This difference tends to be seasonal in nature, but is variable, depending on the local weather conditions. This is shown in the following table :—

Date of cutting.	Average Percentage of Dry Matter.	Range of Percentage of Dry Matter.
12th May, 1930	24·5	22·9–25·2
28th August, 1930	15·8	15·1–17·0
23rd September, 1930	19·4	18·9–20·2
17th October, 1930	17·1	16·3–18·2
6th November, 1930	16·5	15·9–17·3
17th November, 1930	16·5	16·2–16·9
28th November, 1930	18·4	17·9–18·8
11th December, 1930	17·8	17·6–18·6
29th December, 1930	21·9	21·4–22·5
16th January, 1931	21·6	20·4–22·1
30th January, 1931	17·5	17·0–18·1
27th February, 1931	20·3	19·8–21·0

Similar differences have been observed in the dry-matter percentages in the case of the other trials. This shows the necessity for making dry-matter determinations on samples from every mowing.

The differences in dry-matter contents due to the applications of phosphatic manures (super or basic slag in winter, spring, summer, and autumn applications) are small, but there is a tendency for the slag applications to reduce the dry-matter content—relative to the control—less than do super applications.

Mowing Trial B. (Experiment No. 16/2/72.)

Dry-matter determinations on samples of herbage from this trial show similar variations to those noted in the case of mowing trial A above. It has not been possible to carry out chemical analyses on samples from this trial yet, but samples are being stored until the coming winter, when it is hoped that it will be possible to carry out the analyses.

Mowing Trial C. (Experiment No. 16/2/74.)

Chemical analyses of samples from treatments 1 (control), 2 (8 cwt. super every second year), 3 (4 cwt. super annually), and 6 (three applications each of 1⅓ cwt. of super yearly). Work on this trial has not been carried on sufficiently long to enable definite conclusions to be drawn, but the indications are that the more frequently the phosphate applications are made the more nutritious is the herbage obtained. Thus treatment 6, receiving 4 cwt. super per acre per annum in three applications each of 1⅓ cwt., produces, in general, herbage that is highest in lime, phosphate, protein, and ether extract and lower in fibre and carbohydrates than the other treatments, while treatment 3 (4 cwt. super per acre per annum in one application) yields herbage that is next highest in nutritive value. All treatments in this trial show a marked improvement over the control so far as chemical composition is concerned. It would appear that on land which shows a fairly marked phosphate response applications of super may be expected to improve considerably the chemical composition of the herbage.

The following table shows a typical set of analyses. The analyses were made on a sample prepared by bulking samples from mowings of 23rd January, 1931, and 2nd February, 1931, the bulking being in proportion to the yields. Results are expressed as percentages of moisture-freed material.

Laboratory No.	234	235	236	237
Treatment No.	1 Control.	2 8 cwt. Super biennally, One Application.	3 4 cwt. Super annually, One Application.	6 4 cwt. Super annually, Three Applications.
Lime, CaO	1·26	1·26	1·27	1·31
Phosphoric acid, P_2O_5	0·63	0·71	0·79	0·81
Potash, K_2O	2·82	2·70	2·59	2·68
Soda, Na_2O	0·44	0·57	0·57	0·57
Nitrogen, N	4·61	4·98	5·08	5·12
Total ash	9·47	9·60	9·75	9·79
Soluble ash	7·47	7·77	7·97	8·12
Insoluble ash	2·00	1·83	1·78	1·68
Ether extract	3·68	3·69	3·97	4·14
Crude fibre	16·21	16·08	15·72	15·74
Crude protein	28·81	31·10	31·74	32·00
Nitrogen-free extractives	41·82	39·53	38·83	38·33