

NORFOLK
AGRICULTURAL STATION.

Guide to Experiments



CONDUCTED AT THE
Station Farm, Little Snoring,

1911-12.

ANNUAL REPORT.

LIST OF SUBSCRIBERS.

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Agricultural Station.

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PROFESSOR T. B. WOOD.

Honorary Secretary:

JAMES B. FORRESTER,
32, Prince of Wales Road, Norwich.

Farm Manager:

A. C. DAWSON,
Little Snoring, Fakenham.

Postal and Telegraphic Address of Farm—
Dawson, Little Snoring, Fakenham. (Porterage 3d.)

Stations—
Fakenham—G.E.R. & M. & G.N.E. (3 miles).
Thursford—M. & G.N.E. (3 miles).

NORFOLK AGRICULTURAL STATION, LITTLE SNORING, NORFOLK.

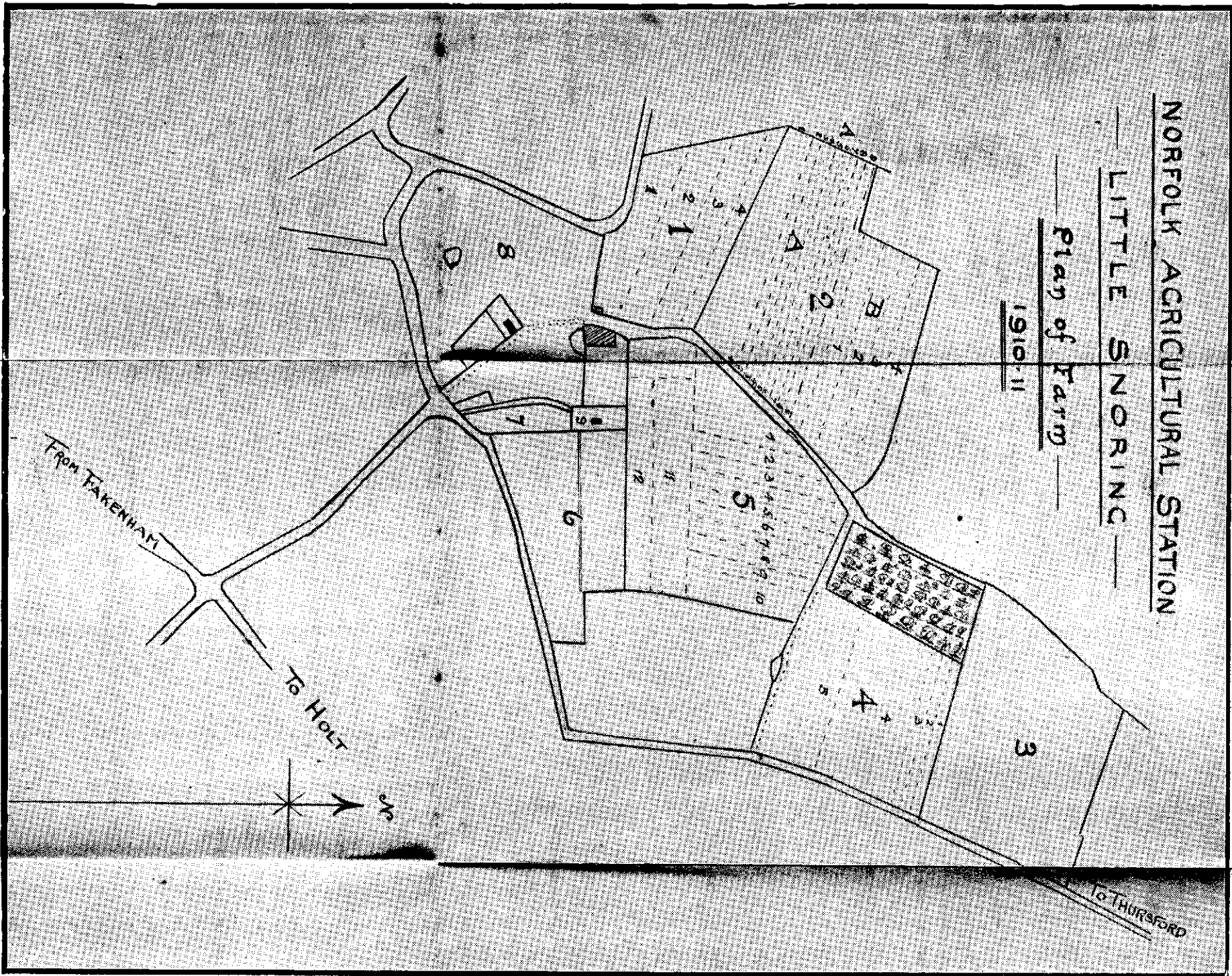
SCHEDULE.

NORFOLK AGRICULTURAL STATION

LITTLE SNORING

Plan of Farm

1910-11



| No. | Quantities. | | Cropping and Manuring for the Year 1910-11. |
|-----|-------------|----|--|
| | A. | P. | |
| 1 | 13 | 14 | <p>MANGOLDS AND SWEDES.</p> <p>Plot 1. 3 2 0 Smith's Green Top Swede. " 2. 4 0 0 Cannell's Giant Tankard Swede. Both plots manured with 4 cwt. Superphosphate. ½ cwt. Sulphate of Potash. ¼ cwt. Sulphate of Ammonia. } per acre.</p> <p>Plot 3. 3 0 0 Cannell's New Century Mangolds. " 4. 1 0 0 Mammoth Long Red Mangolds. Both plots manured with 9 loads of farmyard manure. 2 cwt. Superphosphate. 2 cwt. Kanite. 1 cwt. Nitrate of Soda (after singling). } per acre.</p> <p>Headlands 1 3 14 Sown with Wright's Hardy Green Top Turnips.</p> |
| 2 | 21 | 14 | <p>VARIETIES OF BARLEY.</p> <p>A. Plot 1. 4 1 23 Cambridge Medium Wide (own stock) " 2. 0 3 0 Bevan's x 14/107. " 3. 1 0 0 Pedigree Archer (own stock). " 4. 0 3 0 Bevan's x 14/183. " 5. 1 0 0 G. W. Cannell's Archer. " 6. 0 3 0 Bevan's x 14/145. " 7. 1 0 0 F. J. Cannell's Archer. " 8. 1 0 0 Bevan's x 5 b a. " 9. 1 0 0 Pedigree Archer (own stock).</p> <p>B. Plots 1., 2., 3., 4. 8 2 14 Pedigree Archer (own stock), manured 1910, with farm-yard manure. Plots 1. and 3. No cake manure (out of open yard). " 2. and 4. Cake manure (out of open boxes).</p> |
| 3 | 18 | 11 | <p>NEW LAYER.</p> <p>Plot 1. 1 0 0 Archer (own stock). Plot 5. 4 2 4 Cambridge Wide (own stock).</p> |
| 4 | 17 | 36 | <p>BARLEY.</p> <p>A. T. P. 1. 1 0 0 Archer (own stock). " 2. 1 0 0 Rape " 3. 1 0 0 Vetches</p> |
| 5 | 27 | 32 | <p>SPECIAL MANURING.</p> <p>Plot 1. 1 0 0 1910 Mustard which was ploughed in for manure " 2. 1 0 0 Rape " 3. 1 0 0 Vetches</p> |
| 6 | 9 | 34 | <p>VARIETIES OF WHEAT AND OATS.</p> <p>Plot 1. 2 2 0 Brownick. " 2. 1 2 0 Red Marvel. " 3. 1 1 16 Square Head Masters. " 4. 0 3 25 Red Marvel. " 5. 1 1 25 Biffen No. 1. " 6. 1 1 15 Little Joss. " 7. 1 2 16 Red Marvel. " 8. 1 1 5 Sensation. " 9. 1 1 16 Treasurer. " 10. 2 3 21 Triumph Oats. All plots manured with 9 loads of farmyard manure per acre.</p> <p>Plot 11. 5 3 33 Olland. " 12. 2 0 38 Cannell's Mammoth Long Red Mangolds manured with 9 loads farmyard manure; 2 cwt. Superphosphate; 2 cwt. Kanite; and 1 cwt. of Nitrate of Soda, after singling, per acre.</p> |
| 7 | 0 | 13 | <p>TURNIPS.</p> <p>Plot 1. 3 0 0 Wright's Golden Melon. " 2. 5 1 10 Hardy Green Round. Manured with 4 cwt. Superphosphate, per acre.</p> |
| 8 | 20 | 17 | <p>MANGOLDS. Cannell's Red intermediate, manured with 9 loads farmyard manure; 2 cwt. Superphosphate; 2 cwt. Kanite; and 1 cwt. Nitrate of Soda, after singling, per acre.</p> |
| 9 | 0 | 31 | <p>Farm House and Garden Cottage and Garden. Roads.</p> |
| | 138 | 2 | |

NORFOLK AGRICULTURAL STATION.

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3rd ANNUAL REPORT.
— : o : —

The Executive Committee have the pleasure to submit their Third Annual Report.

There have been five meetings of the Committee during the year, two of which were held in Norwich, and three at the Station. The Annual Inspection of the Station took place on July 31st, 1911, and was attended by a large number of Donors and Subscribers. The Annual General Meeting was held in Norwich on Saturday, January 20th, 1912.

The term of office of the Superintendent (Mr. Mordaunt) came to a close at the beginning of the year, and the Committee appointed Mr. A. C. Dawson to succeed him.

The Committee have to report, with much regret, the resignation, through ill-health, of their Chairman (Mr. B. C. Perowne), and they desire to express their great appreciation of the valuable services he has rendered to the Station. Mr. Horace Sheringham, of South Creake, has been elected an additional member of the Committee, and is assisting in the active management of the Station.

Included in this Report is the Annual Statement of Accounts and Balance Sheet, with the List of Donors and Annual Subscribers, and the Committee desire to make an appeal for additional help to carry on and, if possible, to enlarge the work of the Station.

The year which has passed has seen several improvements carried out on the farm. Most notable among these is the purchase of a small thrashing outfit. This consists of a Hornsby oil engine (6½ h.p.), and a small drum, so constructed that it can be satisfactorily cleaned. By the use of this machine, combined with careful roguing of the plots just before harvest, the Executive Committee hope to ensure the purity of the seed which they distribute. The outfit was purchased and set up at a cost of nearly £120 of this £75 was provided by a donation from the Norfolk and Norwich Local Fund of the Royal Agricultural Society of England.

The following is an account of what has been undertaken during the year, with the results arrived at. This is the work of Professor Wood, and his colleagues on the Committee are greatly indebted to him for it.

- Wheat. Field 5.

During the last three years, thirteen varieties have been tested on the farm. The results for 10 of these are included in the following table. Three other varieties, Dreadnought, Victoria, and Perfection, grown in 1911, produced such a poor plant that they had to be ploughed up.

| VARIETY. | BUSHEL PER ACRE. | | |
|------------------------------|------------------|------|------|
| | 1909 | 1910 | 1911 |
| Treasure | 41 | — | 26½ |
| Sensation | 46 | — | 37½ |
| Red Marvel | 44 | 25 | 28 |
| White Marvel | 40 | — | — |
| Biffen's Hybrid No. I | 41 | 34 | 37 |
| „ Burgoyne's Fife | 33 | — | — |
| „ Little Joss | — | 42 | 41½ |
| Carter's Stand-up | 37 | — | — |
| Square Head's Master | — | 33 | 41½ |
| Browick | — | 38 | 43 |

The French wheats have not given any very striking results. Sensation gave a good crop in both the years it was grown. Red Marvel gave a good crop the first year when Autumn sown, but has not succeeded as a Spring wheat. Dreadnought last year failed to produce a plant, and will be tried again.

Of Biffen's hybrids, Little Joss is the best. It has produced a good crop both years when it was grown. The Committee have received the following statistics regarding its behaviour at 28 places, where it was grown in 1911, side by side with a standard variety, such as Square Head's Master. The average yield of Little Joss at the 28 places was 44 bushels per acre, as against 39 bushels of Square Head's Master. This seems to prove conclusively that Little Joss is a safe wheat to rely on for a crop. Its grain is usually plump, and weighs well, owing to its freedom from rust, but it is not appreciably better than the ordinary varieties for baking.

Burgoyne's Fife does not seem to suit the soil and climate of Norfolk, though it is proving a useful wheat elsewhere. The Committee are no longer growing it or Biffen's No. 1, which has been discarded because of its inferiority to Little Joss. It is unnecessary to comment on such standard varieties as Stand-up, Square Head's Master, and Browick. They are well-known to everyone. The object in growing them is to provide a standard of comparison for the newer and untried varieties.

The wheat plots this year include the following varieties:— Little Joss, Wilhelmina, Standard Red, Sensation, Coronation, Dreadnought, Browick, Square Head's Master.

Barley. Field 2.

Last season's barleys have now been thrashed, and the crop on the whole has exceeded the Committee's expectations. In the following table the yields given are the total yields of corn per acre, in coombs of 16 stone; the "tail" is included, as it

was quite good corn, and only differed from the "best" in being slightly thinner.

YIELDS OF BARLEY.

| Name of Variety. | Area of Plot. | Previous Treatment. | Yield per acre Coombs of 16 st. |
|--|---------------|-----------------------------------|---------------------------------|
| | Acres. | | |
| Medium Wide | 4½ | Swedes | 8·0 |
| Pedigree Archer (Beaven's)... | 1 | " | 12·2 |
| " " " | 1 | " | 12·2 |
| " " " | 2·1 | Sugar Beet, Headlands, &c. | 11·3 |
| Pedigree Archer (G. W. Cannell's) | 1 | Swedes | 10·5 |
| Pedigree Archer (F. J. Cannell's) | 1 | Swedes | 9·7 |
| Plumage x Archer Hybrids:— (Beaven's) No. 14/107 | 1 | Swedes | 12·0 |
| " " No. 14/183 | | " | 12·0 |
| " " No. 14/145 | | " | 11·7 |
| Pedigree Sprat (Beaven's) | | " | 9·7 |
| Pedigree Archer (Beaven's) .. | 3·1 | Mangles, Cake Manure | 11·9 |
| " " " | 3·1 | Mangles, no Cake Manure | 11·8 |

The Committee have decided to discard the variety known as Medium Wide. It has not turned out on repeated trials to be a particularly good cropper, and its straw is inclined to be what the farmer calls lazy, and to give trouble at harvest. Beaven's Pedigree Archer has enhanced its reputation. On five different plots it yielded on the average over 12 coombs per acre; quite an extraordinary performance for such a season. It is noteworthy, too, in producing a sample which is of distinctly finer quality than one usually expects to obtain from any strain of Archer barley. The skin is distinctly less coarse, and the usual grey colour is almost absent.

The two strains of selected Archers presented by Messrs. Cannell are sturdy barleys of the old-fashioned type. They did not yield so well as the Committee judged them likely to do from inspection of the plots. Possibly they may do better next year,

when they have got acclimatised. Beaven's Archer distinctly improved in yield in its second season, and this is by no means an uncommon occurrence with barleys.

Beaven's Plumage x Archer Hybrids all gave excellent yields, and are being tried again.

The results of the "cake" and "no cake," plots will be discussed later.

The Committee found a ready sale for Beaven's Pedigree Archer, chiefly among subscribers.

The Sprat Barley, a coarse, short-strawed variety, suitable only for fenlands, has been sold for trials in that district.

The Hybrids are being tested again. The Committee are unwilling to distribute seed on the result of a single trial.

Barley. Field 4.

The crop on field 4 was by no means so satisfactory. Three plots on which mustard, rape, and vetches, had been ploughed in last year yielded respectively 5.1, 5.1, and 5.4 coombs per acre. This shows a slight increase in favour of the vetches, but the results are not such as to inspire confidence. The variety was Beaven's Archer, the crop was low, and the sample poor and thin.

Of the rest of the field, $7\frac{1}{2}$ acres was sown with Beaven's Archer, and yielded 7 coombs per acre, most of which was very poor and thin. The remaining $4\frac{1}{2}$ acres grew $6\frac{1}{2}$ coombs per acre of Medium Wide; also a poor sample.

It is not surprising that this field, under most of which there is a hard pan quite near the surface, failed to produce a crop in so dry a season. The Committee are still seeking a method of improving the fertility of this very undesirable field.

The corn from this field was for the most part sold for feed, or used for that purpose on the farm.

Oats. Field 5.

Garton's Triumph Oats were sown in the spring on two of the plots on which the wheat had failed. They yielded 69 bushels per acre, a very good crop for the season.

Roots. Field 1.

The Committee were fortunate in obtaining crops of roots which, in spite of the drought, fell little, if any, short of the average. The mangels came out about 20 tons per acre, the swedes between 10 and 11 tons.

It may be of interest to place on record the particulars of the growing of these crops. The mangels were Cannell's New Century, Long Red, and Red Intermediate (Field 7). They were grown with 9 loads per acre of farmyard manure, supplemented by 2 cwt. superphosphate, 2 cwt. kainit, and 1 cwt. nitrate of soda.

The swedes were Smith's Green Top and Cannell's Giant Tankard. They were grown without farmyard manure. The mixed artificials they received were 4 cwt. superphosphate, $\frac{1}{2}$ -cwt. sulphate of potash, and $\frac{1}{2}$ -cwt. sulphate of ammonia.

Bullocks.

Twenty bullocks were fed during the winter 1910-1911 from November 8th to May 4th. Half of them were English, half Irish. All were fed on the same daily ration: 3-lb. linseed cake, 3-lb. cotton cake, and as much roots and chaff as they would eat.

The 10 English bullocks weighed, on November 8th, 99 $\frac{1}{2}$ cwt., or practically an average of 10 cwt. each. They cost £16 per head, which works out at 32s. per cwt. On May 4th they weighed 132 cwt., or nearly 13 $\frac{1}{2}$ cwt. per head on the average. They were sold on that day for £239, or £23 18s. 0d. per head. The gain per head is therefore £7 18s. 0d., or per head per week for 27 weeks' feeding, 5s. 10 $\frac{1}{2}$ d. The gain in weight for the 10 bullocks was 32 $\frac{1}{2}$ cwt., which works out at 13'4 lb. per head per week.

The 10 Irish bullocks, on November 8th, weighed 94 $\frac{1}{2}$ cwt., or just under 9 $\frac{1}{2}$ cwt. per head. They cost £17 per head, which

works out at 36s. per cwt. On May 4th they weighed 126 cwt., or just over 12½ cwt. per head. They were sold on that day for £227 10s. Od., or £22 15s. Od. per head.

The gain per head is therefore £5 15s. Od., or per head per week for the 27 weeks' feeding, 4s. 3d.

The gain in weight was 31½ cwt., or per head per week, 13 lb.

These figures are tabulated below for easier comparison:—

| | Cost per head £. | Cost per cwt. | Return per head per week. | Gain in weight per head per week. | Sold at per cwt. |
|-------------|---------------------|---------------|---------------------------|-----------------------------------|------------------|
| English ... | 16 | 32/- | 5/10½ | 13.4 lb. | 36/3 |
| Irish ... | 17 | 36 | 4/3 | 13.0 lb. | 36/2 |

From the money point of view the English bullocks appear to have been much more profitable, but the reason evidently is not that the Irish bullocks made smaller increases in weight, for they agree with the English in this respect within a fraction of a pound per head per week. The apparent failure of the Irish bullocks is due to the fact that they were bought at 36s. per cwt., whilst the English ones cost only 32s. The extra 4s. per cwt. makes a difference of nearly £2 on a 9½ cwt. bullock. If the Irish bullocks had been bought at 32s. per cwt., the same price as the English, they would have cost £15 2s. 6d. per head, and the return from them for 27 weeks' feeding would have been £7 12s. 6d., or 5s. 8d. per head per week, which is practically the same as the English bullocks paid. There was no difference in quality in the two lots of bullocks at the finish. All were sold by auction. The average price per cwt. of each lot works out at a shade over 36s. per cwt.



THE FARM YARD MANURE EXPERIMENT.

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This experiment was commenced in the winter of 1909-1910, when two lots of bullocks were fed on high and low rations.

One lot were fed in boxes on roots and chaff, with cake and meal, rising finally to the large ration of 10 lb. per head.

The other lot were fed in an open yard on roots and chaff, but their ration of cake never exceeded 1 lb. per head.

The first lot would certainly make rich dung: the second lot poor dung.

This is borne out by analyses made at the time, which showed that the dung when removed from the boxes contained 11 lb. of nitrogen per ton, as compared with only $5\frac{1}{2}$ lb. of nitrogen per ton in the dung from the store-fed cattle in the open yard.

These preliminary stages of the experiment are fully described in the annual report for 1909-10.

In the spring of 1910, two plots, each measuring about $1\frac{1}{2}$ acre, were manured with the rich dung from the cake-fed bullocks in the boxes, and other two adjoining plots with an equal quantity of the poor dung from the store cattle in the open yard. All four plots were sown with mangels, and treated all through in exactly the same way.

The mangels were weighed off the plots, when the rich dung plots were found to yield $2\frac{1}{4}$ tons per acre more roots than the poor dung.

In the spring of 1911 barley was drilled over all the plots. An excellent crop was grown. The rich dung plots gave an average yield of 11.9 coombs per acre, as compared with 11.8 coombs per acre on the poor dung plots. The experiment has still two years to run: clover in 1912, and wheat in 1914.

The results up to date are summarised in the following table:—

SUGAR BEET SLICES AS FOOD FOR CATTLE.

— : 0 : —

The feeding value of sugar beet slices has been a subject of much enquiry during the last few years since the growing of sugar beet in Norfolk became a reality.

In order to have first-hand information on this point, the Executive Committee of the Norfolk Agricultural Station determined to carry out a feeding trial during the past winter at their experimental farm at Little Snoring, near Fakenham. They were enabled to do this by the generosity of the National Sugar-Beet Association, Limited, who presented free of cost 5 tons of dried sugar-beet slices. The Executive Committee wish to acknowledge the advice and assistance they have received from time to time during the course of the experiment from Lord Denbigh, the Chairman of the Association, and from Mr. R. N. Dowling, the Association's expert.

The slices used were imported from the Continent, and on analysis were found to contain the ingredients shown in the following analysis:—

| | | | | | |
|----------------|-----|-----|-----|-----|-------|
| Water | ... | ... | ... | ... | % |
| | | | | | 9.5 |
| Crude Proteins | ... | ... | ... | ... | 10.6* |
| Carbohydrates | ... | ... | ... | ... | 61.8† |
| Fibre | ... | ... | ... | ... | 15.3 |
| Ash | ... | ... | ... | ... | 2.8 |
| | | | | | <hr/> |
| | | | | | 100.0 |
| | | | | | <hr/> |

* Containing 1.7 % Nitrogen.

† Including 7.0 % Sugar.

The slices contained therefore 90.5% of dry stuff. The roots with which they were compared were swedes in the early part of the experiment, and mangels at the finish. They contained on the average just over 11% of dry matter, that is to say $\frac{1}{9}$ th of the amount contained in the slices. The rations used aimed at giving equal weights of dry matter in slices and roots; consequently 1 stone of slices were used for each 1 cwt. of roots.

The experiment lasted from January 8th to March 18th, a period of ten weeks. The rations consisted of 2 lb. common cotton cake, 2 lb. linseed cake, and as much chaff as the bullocks would eat. Ten bullocks received in addition 1 cwt. of roots, while the second 10 received 1 st. of slices, which, some hours before being fed to the bullocks, were moistened with about twice their weight of water, 14 lb. of slices requiring about two gallons of water.

During the first month of the experiment, whilst the "roots" bullocks were on swedes, the "slices" bullocks made the greater increase in weight, 20 lb. per head per week as compared with 16 lb. per head per week. This was to be expected, as the swedes contained only 9 per cent. of dry matter, and 1 cwt. would correspond to about 11 lb. of slices. During the latter part of the experiment, whilst the "roots" bullocks were on mangels containing 12 per cent. of dry matter, the position was reversed, and the bullocks on roots gained weight more rapidly than those on slices. This again was to be expected, for 1 cwt. of mangels containing 12 per cent. of dry matter should correspond to 16 lb. of slices.

On the average of the whole period the weekly gains per head were practically the same—13.6 lb. per head per week on slices, 13.1 lb. per head per week on roots. The bullocks thrived well throughout the experiment, and the results may be taken as quite reliable.

Prospective users of dried slices may take it that they are good food for fattening cattle as a substitute for roots, and that

1 stone of ordinary dried slices of the composition quoted above is just about equivalent to 1 cwt. of ordinary mangels, and rather better than 1 cwt. of swedes. This result is quite in accord with experience in the Continental countries where dried slices have been a staple food for many years.

The supply of slices ran short before the bullocks were judged to be ready for market. They were therefore finished on mangels and chaff, with 5 lb. of decorticated cotton meal and 2 lbs. of barley meal per head per day. After 5 weeks on this ration 8 bullocks were sold by auction at Fakenham Market, when the 4 bullocks which had been fed on slices realized 41/6 per cwt., whilst the four fed on roots, all through, realised only 39/- per cwt.

The weighings throughout the experiment are given below:—

| No. | Weight on Jan. 8th. | | Weight on Feb. 5th. | | Weight on March 4th. | | Weight on March 18th. | | Gain per head. | | Weight on April 22nd. | | Weight on May 13th. | |
|---------------|---------------------|---------|---------------------|---------|----------------------|---------|-----------------------|---------|----------------|---------|-----------------------|---------|---------------------|---------|
| | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. |
| VI. | 11 | 5 0 | 12 | 2 6 | 12 | 2 5 | 12 | 5 5 | 1 | 0 5 | 13 | 0 7 | — | — |
| VII. | 10 | 4 4 | 10 | 7 5 | 11 | 4 5 | 11 | 7 1 | 1 | 2 11 | 12 | 4 12 | — | — |
| I. | 10 | 6 5 | 11 | 2 3 | 11 | 5 0 | 11 | 7 4 | 1 | 0 13 | 12 | 2 7 | — | — |
| II. | 11 | 1 0 | 11 | 6 0 | 12 | 0 12 | 12 | 3 5 | 1 | 2 5 | 13 | 1 2 | — | — |
| XI. | 9 | 2 10 | 9 | 7 4 | 10 | 0 9 | 10 | 1 2 | 0 | 6 6 | 10 | 6 11 | 10 | 6 2 |
| XV. | 9 | 6 3 | 10 | 2 10 | 10 | 4 5 | 10 | 6 0 | 0 | 7 11 | 11 | 2 10 | 11 | 2 6 |
| XIX. | 10 | 6 11 | 11 | 4 4 | 11 | 7 6 | 12 | 0 7 | 1 | 1 10 | 12 | 5 8 | 12 | 6 4 |
| XII. | 8 | 2 8 | 9 | 0 4 | 9 | 3 7 | 9 | 2 10 | 1 | 0 2 | 10 | 0 4 | 10 | 2 7 |
| XVI. | 9 | 0 3 | 9 | 5 2 | 10 | 5 0 | 10 | 6 12 | 1 | 6 9 | 11 | 2 7 | 11 | 4 12 |
| XVII. | 9 | 1 4 | 9 | 4 8 | 9 | 7 8 | 10 | 2 2 | 1 | 0 12 | 10 | 3 1 | 10 | 6 7 |
| Total | 100 | 4 6 | 106 | 2 4 | 110 | 1 1 | 112 | 2 6 | 11 | 6 0 | 117 | 5 13 | — | — |
| Gain | — | — | 5 | 6 12 | 3 | 6 11 | 2 | 1 5 | — | — | 5 | 3 7 | — | — |
| Gain per head | — | — | 0 | 4 8 | 0 | 3 1 | 0 | 1 10 | 1 | 1 5 | 0 | 4 5 | — | — |

| No. | Weight on Jan. 8th. | | Weight on Feb. 5th. | | Weight on March 4th. | | Weight on March 18th. | | Gain per head. | | Weight on April 2nd. | | Weight on May 19th. | |
|---------------|---------------------|---------|---------------------|---------|----------------------|---------|-----------------------|---------|----------------|---------|----------------------|---------|---------------------|---------|
| | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. | cwt. | st. lb. |
| III. | 11 | 0 11 | 11 | 6 11 | 12 | 1 6 | 12 | 1 7 | 1 | 0 10 | 13 | 0 9 | — | — |
| IV. | 10 | 4 10 | 11 | 5 1 | 11 | 6 12 | 11 | 7 1 | 1 | 2 5 | 12 | 4 5 | — | — |
| V. | 10 | 3 7 | 11 | 2 4 | 11 | 6 0 | 11 | 6 6 | 1 | 2 13 | 12 | 6 5 | — | — |
| VIII. | 10 | 7 3 | 11 | 6 0 | 12 | 1 3 | 12 | 2 3 | 1 | 3 0 | 13 | 0 3 | — | — |
| IX. | 9 | 4 8 | 10 | 2 5 | 10 | 6 3 | 10 | 6 3 | 1 | 1 9 | 11 | 2 0 | 11 | 2 13 |
| X. | 9 | 1 2 | 9 | 4 12 | 9 | 7 7 | 10 | 0 11 | 0 | 7 9 | 10 | 2 3 | 10 | 4 10 |
| XIII. | 9 | 6 3 | 10 | 0 2 | 10 | 5 3 | 10 | 4 7 | 0 | 6 4 | 10 | 7 5 | 11 | 2 11 |
| XIV. | 8 | 4 0 | 9 | 0 11 | 9 | 4 1 | 9 | 6 12 | 1 | 2 12 | 10 | 0 10 | 10 | 2 12 |
| XVIII. | 8 | 7 6 | 9 | 4 0 | 10 | 0 5 | 10 | 0 0 | 1 | 0 8 | 10 | 3 4 | 10 | 3 9 |
| XX. | 9 | 1 2 | 10 | 1 0 | 10 | 6 4 | 10 | 6 7 | 1 | 5 5 | 11 | 4 0 | 11 | 5 7 |
| Total | 98 | 0 10 | 105 | 1 4 | 109 | 5 2 | 110 | 2 1 | 12 | 1 5 | 115 | 7 2 | — | — |
| Gain | — | — | 7 | 0 8 | 4 | 3 12 | 0 | 4 13 | — | — | 5 | 5 1 | — | — |
| Gain per head | — | — | 0 | 5 9 | 0 | 3 8 | 0 | 0 7 | 1 | 1 10 | 0 | 4 7 | — | — |

ANALYSES OF THE SOILS.

The following table gives analyses of the soils of the different fields by Mr. H. K. Clayden, B.A., of the Cambridge University School of Agriculture:—

| | FIELD 1. | | FIELD 3. | | FIELD 4. | | FIELD 6. | FIELD 7. |
|--------------------|-------------------|-------------------|---------------------------|--------------------------|--------------------|----------------------|---------------------|----------|
| | N. side of drain. | S. side of drain. | N. W. wood side of drain. | Side of drain next road. | Top soil near pan. | Where pan is absent. | Road side of drain. | |
| Water | 1.94 | 2.10 | 1.80 | 2.13 | 1.58 | 2.01 | 1.84 | 2.04 |
| Loss on Ignition | 4.53 | 5.05 | 5.25 | 5.95 | 5.28 | 6.21 | 5.80 | 5.57 |
| Calcium Carbonate | 1.97 | 2.12 | 2.28 | 2.01 | 1.52 | 2.24 | 1.49 | 1.16 |
| Fine Gravel | 3.25 | 4.15 | 3.10 | 2.35 | 4.65 | 2.80 | 4.80 | 4.85 |
| Coarse Sand | 44.55 | 46.85 | 44.05 | 44.60 | 54.35 | 41.80 | 39.80 | 42.70 |
| Fine Sand | 26.40 | 23.05 | 26.45 | 26.05 | 18.30 | 26.10 | 27.65 | 24.85 |
| Silt | 5.65 | 5.65 | 5.95 | 7.70 | 7.75 | 11.05 | 7.20 | 3.75 |
| Fine Silt | 5.65 | 6.20 | 3.65 | 4.92 | 4.57 | 3.45 | 6.75 | 2.42 |
| Clay | 5.00 | 4.25 | 2.70 | 5.00 | 2.65 | 3.60 | 3.60 | 4.80 |
| Insoluble Matter | 84.25 | 83.11 | 85.32 | 83.06 | 86.77 | 85.29 | 85.32 | 83.92 |
| Nitrogen | 0.19 | 0.20 | 0.17 | 0.20 | 0.20 | 0.20 | 0.23 | 0.20 |
| Phosphoric Acid | 0.13 | 0.11 | 0.07 | 0.07 | 0.08 | 0.03 | 0.08 | 0.12 |
| Potash | 0.27 | 0.28 | 0.22 | 0.22 | 0.22 | 0.20 | 0.20 | 0.20 |

The analyses of the soils of the different fields show a very striking uniformity. They are all light sandy soils derived like most of the soils of the district from the glacial drift. Their chief constituent is sand, of which they all contain about 70 per cent., mostly very coarse in character. Their percentage of clay is in all cases very small. They are well supplied with chalk, and contain a moderate amount of vegetable matter and nitrogen. Like most light sandy soils, they are characteristically deficient in phosphoric acid and potash.

Provided they lie on a suitable subsoil, such soils can usually be farmed satisfactorily on what may be called sheep and barley lines. This is the case in Field 5 and the higher portion at the north end of Field 2. In the lower portion to the south of this field, and in Fields 1, 3, 4, 6 and 7, the subsoil conditions are unfavourable. Here the top-soil lies on a bed of chalky clay, which forms a shallow basin under the whole or part of each field. Under these conditions drainage is bad, the soil becomes black from formation of peaty substances and the land can be farmed with difficulty. Fields 1 and 2 have already been drained, and at present carry promising crops. Fields 3, 4, 6, and 7, will be attended to as opportunity offers. Field 4 presents a very difficult problem. Owing to continued deficient drainage caused by the presence of a band of chalky clay near the surface, a hard pan has been formed in a large part of the field at a depth of about a foot. This greatly diminishes the root range of the crops, and increases the difficulty of obtaining proper drainage.



NORFOLK AGRICULTURAL STATION.

Statement of Receipts and Payments for the Year ending October 11th, 1911.

| THIRD YEAR. | | | |
|--|-------|----|----|
| RECEIPTS. | £ | s. | d. |
| Donations | 46 | 11 | 0 |
| Subscriptions | 106 | 17 | 0 |
| Live Stock | 714 | 19 | 3 |
| Corn | 228 | 12 | 7 |
| Sundries | 29 | 10 | 3 |
| | 1127 | 10 | 1 |
| Balance in hand brought from last year's account | 44 | 18 | 11 |
| Balance due and carried to next year's account | 98 | 7 | 10 |
| | £1270 | 16 | 10 |

| PAYMENTS. | £ | s. | d. |
|---|-------|----|----|
| Live Stock | 521 | 0 | 0 |
| Implements and Harness | 25 | 15 | 8 |
| Seeds | 66 | 8 | 7 |
| Feeding Stuffs and Straw | 166 | 0 | 11 |
| Manures | 25 | 3 | 0 |
| Labour, including Superintendent's Salary and Allowances | 362 | 15 | 10 |
| Tradesmen's Bills and Insurances | 39 | 16 | 8 |
| Carriage and Travelling | 6 | 13 | 11 |
| Advertising, Printing, Stationery, & Postage | 36 | 9 | 3 |
| Rates, Taxes, and Bank Interest | 20 | 12 | 0 |
| The nominal rent of the Little Snoring Farm, paid to Lord Hastings for the year ended October 11th, 1911 (the third of eight years) | 0 | 1 | 0 |
| | £1270 | 16 | 10 |

BALANCE SHEET 1910-11.

| Dr. | £ | s. | d. |
|---|-------|----|----|
| Donations as per last year's Balance Sheet... | 1248 | 9 | 1 |
| Added this year | 46 | 11 | 0 |
| Advance by the Bank | 98 | 7 | 10 |
| | £1393 | 7 | 11 |

| Cr. | £ | s. | d. |
|--|-------|----|----|
| Stock and crop on Farm at Michaelmas, 1911 | 1176 | 13 | 6 |
| Loss on the three years' occupation | 216 | 14 | 5 |
| | £1393 | 7 | 11 |

Examined with the Vouchers and found to be correct,
(Signed) B. B. SAPWELL, Auditor.

NORFOLK AGRICULTURAL STATION.

LIST OF DONATIONS.

| | £ | s. | d. | | £ | s. | d. |
|--------------------------|-----|----|----|-----------------------------|----|----|----|
| His Majesty King | | | | Soames, A. W., M.P.... | 10 | 10 | 0 |
| Edward VII. | 52 | 10 | 0 | Straohan, C. E. | 10 | 10 | 0 |
| Leicester, Earl of K. G. | | | | Bacon, N. H. | 10 | 0 | 0 |
| (the late) | 100 | 0 | 0 | Barclay, Hugh G. | 10 | 0 | 0 |
| Harker, W. (in 4 years) | 100 | 0 | 0 | Barry, W. J. | 10 | 0 | 0 |
| Barclay & Co. | 52 | 10 | 0 | Beauchamp, Sir R., | | | |
| Norfolk Chamber of | | | | Bart. | 10 | 0 | 0 |
| Agriculture | 50 | 0 | 0 | Birkbeck, Henry | 10 | 0 | 0 |
| Ditto 2nd donation) ... | 10 | 10 | 0 | Forrester, James B. ... | 10 | 0 | 0 |
| Ditto (3rd donation) ... | 10 | 10 | 0 | Hoare, Sir Samuel, Bart. | 10 | 0 | 0 |
| Norfolk Agricultural | | | | Horsfall, R. E. | 10 | 0 | 0 |
| Experiments Fund, | | | | Le Strange, Hamon ... | 10 | 0 | 0 |
| Balance | 16 | 6 | 1 | Lombe, E. H. Evans ... | 10 | 0 | 0 |
| Cator, John, M.P. (in | | | | Meade, Captain | 10 | 0 | 0 |
| 5 years) | 50 | 0 | 0 | Noble, Sir Andrew | 10 | 0 | 0 |
| Albamarle, Earl of ... | 25 | 0 | 0 | Pratt, E. R. | 10 | 0 | 0 |
| Calthorpe, Lord (the | | | | Price, Sir R. J., M.P. ... | 10 | 0 | 0 |
| late) | 25 | 0 | 0 | Rider-Baggard, Sir H. ... | 10 | 0 | 0 |
| Lindley, Lord | 25 | 0 | 0 | Rippingall, F. T. S. (the | | | |
| Spencer, Earl (the late) | 25 | 0 | 0 | late) | 10 | 0 | 0 |
| Stafford, Lord | 25 | 0 | 0 | Salter & Simpson, | | | |
| folkes, Sir W. H. B., | | | | Messrs. | 10 | 0 | 0 |
| Bart. | 25 | 0 | 0 | Sparke, E. Bowyer (the | | | |
| Mann, Sir Edward, Bart. | 25 | 0 | 0 | late) | 10 | 0 | 0 |
| Colman, Messrs. J. J., | | | | Upcher, H. M. | 10 | 0 | 0 |
| Ltd. | 25 | 0 | 0 | Unthank, Col., C. W. J. | 10 | 0 | 0 |
| Colman, Russell | 25 | 0 | 0 | Wood, John M. | 10 | 0 | 0 |
| Gurney, Sir Eustace ... | 25 | 0 | 0 | Ireland, Messrs. | 5 | 5 | 0 |
| Holmes, J. Saneroff ... | 25 | 0 | 0 | Spurrell, J. T. | 5 | 5 | 0 |
| De Ramsey, Lord | 20 | 0 | 0 | Amherst of Hackney, | | | |
| Fellowes, the Right Hon. | | | | The Baroness | 5 | 0 | 0 |
| Sir Ailwyn E., K.C.V.O. | 15 | 0 | 0 | Astley, Captain Delaval | | | |
| Overman, H. & Brother | 15 | 0 | 0 | G. | 5 | 0 | 0 |
| Bright, Rev. J. T., D.D. | 10 | 10 | 0 | Barratt-Lennard, T. ... | 5 | 0 | 0 |
| Carr, W. | 10 | 10 | 0 | Berney, Mrs. Catherine | 5 | 0 | 0 |
| Champion, W. N. L. ... | 10 | 10 | 0 | Birkbeck, W. J. | 5 | 0 | 0 |
| Gonville and Caius | | | | Boileau, Sir Maurice, | | | |
| College, Cambridge ... | 10 | 10 | 0 | Bart. | 5 | 0 | 0 |
| Green, Sir Edward, | | | | Buxton, Mrs. (Bolwick) | 5 | 0 | 0 |
| Bart. | 10 | 10 | 0 | Buxton, Geoffrey F. ... | 5 | 0 | 0 |
| Gurney, John H. | 10 | 10 | 0 | Bygrave, John | 5 | 0 | 0 |
| Hall, Mrs. T. S. | 10 | 10 | 0 | Coaks, I. B. (the late) ... | 5 | 0 | 0 |
| Norfolk News Co., Ltd. | 10 | 10 | 0 | Christie, Jas. A. | 5 | 0 | 0 |

| £ | s. | d. | £ | s. | d. | | |
|---|----|----|---|---|----|----|---|
| Crisp, J. E. | 5 | 0 | 0 | Day, H. A. | 2 | 2 | 0 |
| Cubitt, E. G. | 5 | 0 | 0 | Hall, W. | 2 | 2 | 0 |
| Custance, Col., C. B. | 5 | 0 | 0 | de Pass, J. | 2 | 2 | 0 |
| Digby, Algernon | 5 | 0 | 0 | Jex-Blake, very Rev. T. W., D.D. | 2 | 2 | 0 |
| Dunell, Owen R. | 5 | 0 | 0 | Johnson, W. | 2 | 2 | 0 |
| Edwards, H. W. B. (the late) | 5 | 0 | 0 | Kenyon, J. G. | 2 | 2 | 0 |
| Falcon, M. | 5 | 0 | 0 | Sheringham, H. | 2 | 2 | 0 |
| Poster, Sir W., Bart. (the late) | 5 | 0 | 0 | Sutton, Lincoln | 2 | 2 | 0 |
| Frank, F. Bacon (the late) | 5 | 0 | 0 | Underdown, H. | 2 | 2 | 0 |
| Gurdon, the Right Hon. Sir Brampton (the late) | 5 | 0 | 0 | Fletcher, B. E. | 2 | 0 | 0 |
| Gurney, Robert | 5 | 0 | 0 | Sewell, P. E. | 2 | 0 | 0 |
| Hare, Sir T. L., Bart.... | 5 | 0 | 0 | Bird, Rev. M. C. H. | 1 | 1 | 0 |
| Hollway, Calthrop H. C. | 5 | 0 | 0 | Blofeld, J. C. | 1 | 1 | 0 |
| Jodrell, Neville Paul | 5 | 0 | 0 | Cannell, G. W. | 1 | 1 | 0 |
| Jones, Sir Lawrence, Bart. | 5 | 0 | 0 | King, Robert | 1 | 1 | 0 |
| Lancaster, Sir W. J. | 5 | 0 | 0 | Lee Warner, H. | 1 | 1 | 0 |
| Masters, C. W. | 5 | 0 | 0 | Littlewood, Harry | 1 | 1 | 0 |
| Newcome, F. D. A. | 5 | 0 | 0 | Robinson, Lionel | 1 | 1 | 0 |
| Paul, J. J. Dawson | 5 | 0 | 0 | Stimpson, A. | 1 | 1 | 0 |
| Perowne, B. C. | 5 | 0 | 0 | Underdown, H. C. B.... | 1 | 1 | 0 |
| Petre, Major | 5 | 0 | 0 | Cobon, Geo. | 1 | 0 | 0 |
| Sapwell, B. B. | 5 | 0 | 0 | Digby, Captain H. A., R.N. | 1 | 0 | 0 |
| Scott-Chad, Charles | 5 | 0 | 0 | Eagling, W. J. | 1 | 0 | 0 |
| Sewell, J. W. | 5 | 0 | 0 | Gaymer, E. T. | 1 | 0 | 0 |
| Seymour, C. D. | 5 | 0 | 0 | Gaymer, John | 1 | 0 | 0 |
| Sheringham, H. V. | 5 | 0 | 0 | Harvey, W. | 1 | 0 | 0 |
| Smith, Henry (the late)... .. | 5 | 0 | 0 | Hamond, C. | 1 | 0 | 0 |
| Sutton, Francis | 5 | 0 | 0 | Haywood, R. | 1 | 0 | 0 |
| Taylor, Garrett (the late) | 5 | 0 | 0 | Key, E. S. | 1 | 0 | 0 |
| White, Sir Geo., M.P.... | 5 | 0 | 0 | Kemp, Sir K., Bart. | 1 | 0 | 0 |
| White, Woolmer, W. | 5 | 0 | 0 | Lane, W. A. | 1 | 0 | 0 |
| Mott, John S. | 3 | 3 | 0 | Norris, W. E. | 1 | 0 | 0 |
| Kerrison, Colonel | 3 | 0 | 0 | Poll, C. H. | 1 | 0 | 0 |
| Collison, A. | 2 | 2 | 0 | Shipley, W., F.R.C.V.S. | 1 | 0 | 0 |
| | | | | Ditto (additional) | 1 | 1 | 0 |
| | | | | Ward, E. F. | 1 | 0 | 0 |
| | | | | Cobon, H. (the late) | 0 | 10 | 6 |
| | | | | Littlewood, C. J. | 0 | 10 | 6 |

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| Holmes, J. Saneroff | 10 | 0 | 0 | | | | |

| | £ | s. | d. | | £ | s. | d. |
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| Gurney, John Hy. | 5 | 0 | 0 | Littlewood, H. | 1 | 1 | 0 |
| *Gurney, Sir Eustace | | | | Buxton, Noel, M.P. | 1 | 0 | 0 |
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| scription | 25 | 0 | 0 | Frank, T. Bacon (the | | | |
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