

**Dhananjayrao Gadgil Library**



**GIPE-PUNE-021626**

# RESEARCH AND THE LAND



ADVERTISEMENTS.

# The Lands Improvement Company

Incorporated by Special Acts of Parliament  
for the purpose of

## ASSISTING OWNERS OF LAND TO IMPROVE THEIR PROPERTIES.

**T**HE Company makes **ADVANCES** to Owners of Land for such Agricultural and General Improvements as are approved by the Ministry of Agriculture and Fisheries, including **THE ERECTION AND IMPROVEMENT OF FARM HOUSES, FARM BUILDINGS (HAY BARN; SILOS, etc.), COTTAGES, DRAINAGE, WATER SUPPLY, ROADS, AFFORESTATION, ELECTRIC LIGHT and POWER, CENTRAL HEATING, etc.**

The outlay is charged on the property benefited and repaid by way of Annuity spread over a fixed period not exceeding Forty Years.

The charge is for a **FIXED PERIOD** and **CANNOT BE CALLED IN** by the Company.

The procedure is simple, as there is **NO INVESTIGATION OF TITLE** or deposit of Deeds required.

Advances can be made to either **ABSOLUTE OWNERS** or **OWNERS OF SETTLED ESTATES.**

**Amount advanced exceeds £14,000,000.**

Special attention is drawn to the facilities offered by the Company in connection with structural alterations and improvements necessary under the **MILK AND DAIRIES ORDER, 1926.**

---

### DIRECTORS:

*Chairman*—**COLONEL SIR G. L. COURTHOPE, BART, M.P.**

**THE RIGHT HON. LORD CLINTON.**

**CHARLES E. DASHWOOD.**

**JAMES DONALDSON.**

**H. CREWDSON HOWARD.**

**THE HON. CECIL T. PARKER.**

**A. H. POWELL.**

**A. H. WHITE.**

---

*For full particulars apply to the Secretary.*

## The LANDS IMPROVEMENT COMPANY

58 Victoria Street, Westminster, S.W.1.



## For Successful Calf Rearing

### BRANTOM'S MILK MEAL. Rears Calves without Milk.

The secret of the great success of Brantom's Milk Meal in rearing Calves is that it contains the proper ratio of Vitamins, and there is no other milk substitute that equals or even approaches it in this absolutely important respect.

Young animals cannot grow and develop properly unless these vital forces are present in their food.

The guaranteed analysis also is 10% Fat, 25% Albuminoids, 45% Sugar, etc., which is much higher than any other Calf Meal.

Price 25/- per cwt. carriage paid.

### SUPER MILK MEAL.

This consists of Milk Meal with a guaranteed quantity of 25% of Dried Milk which makes it an ideal food for rearing Calves from birth.

Price 30/- per cwt. carriage paid.

### SMITHFIELD CALF MEAL.

This is our cheapest Calf Meal and is superior to any other meal on the market at the same price.

Price 20/- per cwt. carriage paid.

### CALNUTS FOR CALVES.

A Nutritious, Digestible Follow-on Dry Rearing Food.

Price 18/- per cwt. carriage paid.

*TERMS—All Goods Carriage Paid England and Wales, but 2/- per cwt. extra to Scotland and Ireland,*

**for CASH WITH ORDER.**

**Sold by all Principal Corn Merchants.**

Send for Free Booklet "The Golden Calf": contains useful information and Recipes.

*Sole Manufacturers:*

**J. H. BRANTOM & CO.,**

*Cattle Food Mills,*

**HIGH STREET, LAMBETH, LONDON, S.E.**

**PROFITS can only be Increased**  
BY  
**Reducing Your Cost of Feeding**  
**Increasing Your Yield of Milk**

---

Our

**A. BALANCED MILK RATION CUBES**

fulfil the above facts for you.

**Mr. BOUTFLOUR'S BEST RECOMMENDED RATION:**

- 3 parts Decorticated Groundnut Cake.  
2 „ Linseed Cake. 4 pints Rice Meal.  
4 „ Maize Gluten Feed. 2 „ Treacle.  
4 „ Palm Kernel Cake.  $\frac{1}{2}$  pint Minerals.  
7% oil, 22% alb., under 8% fibre.

**Feed 3 lbs. per gallon—not 3 $\frac{1}{2}$  lbs.**

*Write for Carriage Paid Prices and Samples  
and name of our nearest Agent.*

Our Cubes are being sent to the Royal Farms,  
:: to Col. E. H. W. Bolitho, and to ::  
Mr. A. J. Hosier, the well-known Wilts farmer.

**PIG RATIONS. FATTENING RATIONS. MIDLINGS.**

Prices on application.

**EXAMPLE:**

H.—RATION MILK CUBES. 7% oil, 21% alb.  
F.O.R. London.

**£9 6 3 per ton.**

---

**THE LIVESTOCK FEEDING CO.,**

(Head Office)—MORLEY HOUSE, REGENT STREET, LONDON.

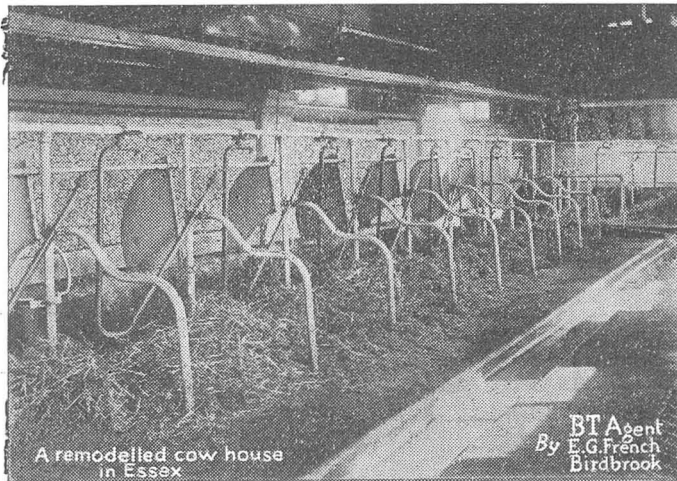
# Fertilisers are Indispensable

Every year fertilisers become more indispensable. They furnish the necessary plant food in the proper proportions.

Nitrate of Soda is the best form in which to supply the Nitrogen. It acts immediately when applied as a top-dressing.

*If you wish to learn how to use it to the fullest advantage, write for special pamphlets, entitled, "Farmer's Handbook on the Use of Nitrate of Soda," "The Improvement of Pastures and Meadows," "Catch Crops and Forage Crops," supplied gratis and post free by THE CHILEAN NITRATE COMMITTEE, Friars House, New Broad Street, London, E.C.2.*

## Nitrate of Soda



A remodelling cow house  
in Essex

BT Agent  
By E.G. French  
Birdbrook

# THE *Beatty* WAY IS YOUR EASIEST AND BEST WAY

BEATTY SANITARY COW HOUSE EQUIPMENT is made of galvanised Steel. It is sanitary because there are no cracks or crevices in the Steel in which dirt can collect, thus giving no fear of disease or filth.

The equipment is no fad or experiment, but it is used by practical farmers all over the World—Because it pays.

It is not expensive, it is within the reach of anyone who keeps cows.

If you are building or remodelling,

## THE *Beatty* BARN BOOK

is worth £ s. d. to you. Send coupon below for free copy

### COUPON

I am building a Cow-house.....or remodelling a Cow-house.....  
for.....(number of cows). Particulars wanted of steel Cow-stalls.....

Water Bowls.....Manure Carrier.....

Send me the Beatty-Barn Book free, as offered in "Research and the Land."

NAME.....

ADDRESS.....

**BEATTY BROS. LIMITED,** 55, HOLBORN VIADUCT  
LONDON, E.C. 1

Manufacturers and Cow Stall Experts.

ADVERTISEMENTS.

**W. J. CURLEY & SONS**  
9, DEVONS ROAD, BOW, E. 3

ESTABLISHED 1890

---

---

**BONE BOILERS AND  
TALLOW MELTERS**

---

---

Bone for feeding purposes,  
Manures and other  
requirements.

Manufacturers of Food for  
Dog biscuits, Graves for  
Poultry, Game, &c.

Waterside facilities for loading  
and unloading.

*Telephones:*

*East 3434 & Maryland 2263.*

**WORKS:**

**BARBERS ROAD &  
MARSHGATE LANE,  
STRATFORD, LONDON, E. 15.**



*Satisfaction*  
FROM  
**DIABOLO**

**CREAM SEPARATORS**

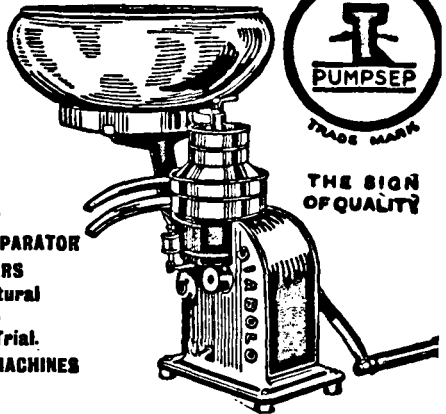
**THE EASY-TO-CLEAN CREAM SEPARATOR**

**GUARANTEED FOR TEN YEARS**

**Awarded the Royal Agricultural  
Society's Silver Medal.**

**Sent on One Month's Free Trial.**

**LIBERAL ALLOWANCES for OLD MACHINES**

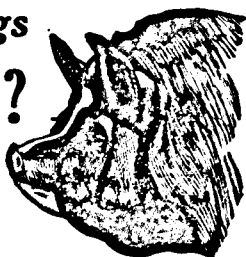


**DIABOLO SEPARATORS, LTD.**

**31-35 BEVENDEN STREET, LONDON, N.1.**

*Do YOU give your Pigs*  
**THORLEY'S FOOD?**

*If not, you should!*



**THORLEY'S FOOD**, a Condiment, which, added to the ordinary food, coaxes the appetite, aids digestion, as it promotes the free flow of digestive juices, that enables animals to extract the whole feeding value of the bulkier food consumed with the least possible strain on the digestion—hence its value.

**PIGS** thus fed thrive to a wish—never have off-feed spells—eat their food with a relish, and afterwards rest in comfort. Nothing has ever been introduced which gives such satisfactory results in pig feeding.

## **PROOF OF THE FEEDING VALUE OF THORLEY'S FOOD**

is obtained when it is realised that more often than not the awards for  
**THE CHAMPION PEN OF PIGS }  
THE CHAMPION SINGLE PIG } at the LONDON CATTLE SHOW  
THE CHAMPION CARCASE PIG }**

that is both in the live and dead classes, the premier awards are won by  
**PIGS fed on food seasoned with THORLEY'S FOOD.**

Mr. ARTHUR HISCOCK, MANOR FRANCE FARM, BLANDFORD, who has won thousands of prizes with pigs, will  
**only use THORLEY'S FOOD as a Condiment for his Pigs,**  
because, as he says, there is nothing to equal it.

Many others who feed pigs profitably and successfully use only  
**THORLEY'S FOOD.**

---

**DO LIKEWISE AND YOUR PIGS WILL PAY PROFITS**

---

THORLEY'S FOOD is sold by Agents everywhere in Packets, Cartons and Bags.

**JOSEPH THORLEY, LTD., KING'S CROSS, LONDON, N.1.**

*(By Appointment to His Majesty the King.)*

ADVERTISEMENTS.

Registered  Trade Mark

*The*  
**A D C O**  
PATENT MANURE PROCESS

*for*  
*Converting the Waste Materials*  
*of the Farm, Plantation & Garden*  
*into*

**SYNTHETIC**  
**FARMYARD MANURE**

One ton of Standard Adco reagent will make upwards of 40 tons of finished manure at a cost of from 4/- to 10/- per ton, according to the nature of the vegetation and analysis required.

*Write for illustrated descriptive Booklet.*

---

Cables : ADCO Harpenden.

Code used : Bentley's.

**A D C O**  
L I M I T E D  
HARPENDEN, HERTS, ENGLAND

ADVERTISEMENTS.

# SULFUROPHOSPHATE

For the development of your crops to their fullest extent, with the lowest outlay for manure, adopt SULFUROPHOSPHATE.

At less cost you can obtain better results, which fact has been proved by actual tests.

SULFUROPHOSPHATE gives quickest germination, more vigorous crops, and, by the action of the Sulphur in its combination, eliminates plant diseases.

It is specially recommended for Sugar Beet, Turnips, Potatoes and Oats. For Pasture Land it has no superior as a Phosphatic dressing.

*Sole Manufacturers :*

**SULFUROPHOSPHATE, Ltd.**

*Sole Agents :*

**The Alsace-Lorraine & General Products Co., Ltd.,  
Pinners Hall, Old Broad Street, London, E.C.2.**

*Kainit and Potash Salts of all grades.*

*Direct importers and agents.*

# GRASSLAND MANAGEMENT!

**NITRAM**

ALL ENQUIRIES TO  
NITRAM LTD., 28-30 GROSVENOR GARDENS, LONDON, S.W.1

ADVERTISEMENTS.

"Plough"  Brand  
Cod-Liver Oil

---

for ANIMAL FEEDING

---

**E**XPERIMENTS have proved that even in small doses this oil has a wonderful effect in promoting the growth and generally improving the condition of stock. For enriching separated milk to render it fit for rearing calves, cod-liver oil has proved to be much superior to oil-cake, linseed oil, etc. Experience proves that the calves fed on milk enriched in this way show a steady increase in weight and develop into strong, healthy animals. Especially during the winter, milch cows should be given cod-liver oil in order to maintain the standard of richness of their milk. Pigs benefit to a remarkable extent from the use of this oil; it increases their weight and improves their condition. The cod-liver oil must, however, be of the highest quality; this can be assured by ordering "Plough" Brand Cod-Liver Oil, which is prepared from the fresh livers of cod and allied species and is rich in vitamins. It does not give rise to fishy taint in the milk or flesh of the animals,

*"Plough" Brand Cod-Liver Oil is supplied in*  
Tins, 1 gal., 6/6    Tins, 5 gal., 30/-    Barrels, 25 gal., 137/6  
Half wine bottles (12 to the gal.) 1/3    Wine bottles (6 to the gal.) 2/-

---

Obtainable through PHARMACISTS AND AGRICULTURAL CHEMISTS

---

*Manufactured by*

**ALLEN & HANBURY'S Ltd.**

Bethnal Green, London, E.2.

ADVERTISEMENTS.

# THE LONDON ASSURANCE

A.D. 1720

FIRE LIFE  
MARINE ACCIDENT



1 King William Street, E.C. 4

Marine Dept. :  
157 LEADENHALL STREET, E.C. 3

---

---

**ASSETS EXCEED**  
**£11,000,000**

THIRD CENTURY OF ACTIVE BUSINESS

---

---

BRANCHES AND AGENCIES THROUGHOUT THE  
WORLD,

APPLICATIONS FOR AGENCIES INVITED.

# Research and Nitrogen Supplies

One of the most practical ways in which scientific research has helped agriculture in recent years, has been the provision of an inexhaustible and comparatively cheap supply of nitrogen in a convenient form for use on the farm.

This result has been obtained by the production of Calcium Cyanamide, which is formed as a result of causing atmospheric nitrogen to unite with a lime base.

Calcium Cyanamide contains 19% nitrogen and about 60% lime. Its unit of nitrogen costs less than that of any other nitrogenous fertilizer, and no charge at all is made for the lime.

# Cyanamide

---

NITROGEN PLUS LIME

---

Registered



Trade Mark.

*Further information will be supplied promptly on request to The Manager, Agricultural Division, Fertilizer Sales Limited, Adelaide House, King William Street, London, E.C.4.*

MINISTRY OF AGRICULTURE AND FISHERIES

(in conjunction with the Board of Agriculture for Scotland  
and the Ministry of Agriculture for Northern Ireland)

RESEARCH AND  
THE LAND

An Account of Recent Progress  
in Agricultural and Horticultural  
Science

By V. E. WILKINS, B.Sc.

*Assistant Principal, Ministry of Agriculture and Fisheries.*



LONDON:

PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE.

to be purchased directly from H.M. STATIONERY OFFICE at the following addresses:  
Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh;  
York Street, Manchester; 1, St. Andrew's Crescent, Cardiff;  
15, Donegall Square West, Belfast;  
or through any Bookseller.

1927

*Prices: In paper covers, 2s. 6d. Net.  
In cloth, 3s. 6d. Net.*

24-90

Gokhale Institute of Politics  
and Economics, Poona.



J - 3, 1/2

F7

21626

## PREFATORY NOTE.

Rather more than four years ago the then Minister of Agriculture introduced to the public a small volume entitled "Agricultural Research and the Farmer" written by a member of the Ministry's staff, of which the object was to give a general account of Agricultural Research in this country—"not exactly a popular account, but at least one which with a little trouble an educated farmer or even townsman might understand." That volume was received with considerable favour. The book now prepared by the same author, Mr. V. E. Wilkins, is mainly intended to bring up-to-date the account then given of the work which agricultural research is doing and proposing.

In spite of strenuous efforts to reduce its bulk, it is twice as long as its predecessor. Apart from the increase due to the inclusion of work done in Scotland and Northern Ireland, the difference is, I will not say a measure, but at least an indication, both of the progress which has been made in organisation and of the number of new problems which each fresh advance opens before the man of science. On the first point, it is enough to say that at Agricultural Research Institutes alone there are now well over 100 trained scientific workers (nearly all full-time) engaged on the various branches of agricultural science. On the second, I may perhaps be pardoned for repeating the truism that the more we know the more there is to know—a truism from which I do not think the leaders of Agricultural Research would dissent.

While this book is partly intended to explain what is being done in this field of knowledge to the lay public, it is intended even more for the farmer. Agricultural Research is a slow business; and its application to practice is equally slow. Discoveries made and confirmed in the laboratory or on an Institute farm may require much testing and adaptation before they can be confidently recommended to the ordinary farmer under widely differing conditions of soil, climate and economic circumstance. That most difficult and important work of testing and adaptation is now largely undertaken by University Departments of Agriculture, Agricultural Colleges, and County Staffs; but their efforts cannot be fully successful without the support of farmers themselves. Support must rest on understanding. The ability and labour spent by Mr. Wilkins on his book will be justified if it leads to a better understanding by farmers of what the Research Institutes are doing, and more than justified if it helps

them also to know what other agencies are doing to interpret the results of research and apply them to practice. During the rather melancholy years since 1920 nothing has been more encouraging to all concerned with agriculture than the changed attitude of farmers generally towards education and research, and nothing is more important than that it should persist and spread. I trust that this book will do something to that end by assisting farmers to understand how the man of science works, what he is "getting at" (if I may be allowed the phrase), and what still requires to be done before the results which he obtains can be absorbed into the ordinary practice of agriculture. It is mainly in that hope that my immediate predecessor and I have caused it to be prepared and published.

(Sgd.) WALTER GUINNESS,  
Minister of Agriculture and Fisheries.

Whitehall Place, S.W.1.  
28th July, 1926.



## CONTENTS.

	Page.
Prefatory Note by the Rt. Hon. Walter Guinness, D.S.O., M.P., Minister of Agriculture and Fisheries	iii
Introduction	xiii
Chapter.	
I.—SOME PHYSICAL PROPERTIES OF THE SOIL	1
Soil colloids. Residual shrinkage of soils. The search for a single-measurement classification. Water movements. Field drain gauges at Rothamsted and Aberdeen.	
II.—SOIL PHYSICS IN RELATION TO LAND CULTIVATION	8
Soil cohesion and friction as influencing resistance to cultivating implements. Effect of electric current on plough draught. The "ideal soil." Dynamometer experiments at Rothamsted. Investigation of speed of ploughing.	
III.—THE CLASSIFICATION OF SOIL TYPES	13
Value of soil surveys. Soil and vegetation surveys at Edinburgh, Glasgow and Aberdeen. Differences between Scottish and English soils. A new method of mechanical analysis. An automatic and continuous recording balance. Relation of meteorology to agriculture.	
IV.—SOIL FERTILITY: THE INVESTIGATION OF PHOSPHATIC FERTILISERS	21
Manurial experiments at Agricultural Colleges and Experimental Farms. Slag and phosphate manurial trials in Northern Ireland, at Edinburgh and at Cockle Park. Research into post-war basic slags. Laboratory tests for phosphate availability.	
V.—SOIL SOURNESS	28
Methods of testing for sourness. Investigation of existing tests. Theory of exchangeable bases. The problem in Scotland, Northern Ireland and North Wales.	
VI.—ORGANIC MATTER IN THE SOIL	35
Origin and nature of "humus." Nitrogen losses through escape of ammonia from soil. Aberdeen drain gauge experiments. Green manuring experiments at Rothamsted. Synthetic farmyard manure.	
VII.—LIFE IN THE SOIL	42
Inoculation of lucerne. Relations between soil protozoa and bacteria. Survey of soil insects. Soil algæ; their functions in the soil. Soil fungi.	

Chapter.	Page.
<b>VIII.—SOME PROBLEMS OF PLANT BREEDING</b>	<b>50</b>
Present indifference to varieties. Need for technical criteria of the commercial value of improvements. "Strength" of wheat: a laboratory test and a chemical investigation. Malting barley experiments at Rothamsted. Need for a method of determining feeding quality of Roots. Analysis of "yield" of cereals. The problem of hardness.	
<b>IX.—THE BREEDING OF CEREAL CROPS</b>	<b>57</b>
Production of Yeoman II and Cambridge Browick wheats. Introduction of disease resistance in new wheat crosses. Barley and oat breeding investigations.	
<b>X.—THE BREEDING OF POTATOES, ROOTS, BEANS, PEAS AND VETCHES</b>	<b>64</b>
Potato-breeding at Cambridge and Corstorphine. Improvement of turnips and swedes at Corstorphine. Improvement of beans, peas and vetches at Cambridge.	
<b>XI.—THE BREEDING OF HERBAGE PLANTS</b>	<b>68</b>
Problems connected with grassland breeding research. Improvement of pasture grasses at Corstorphine. Grass and Clover breeding research work at Aberystwyth. Investigation of seeds mixtures.	
<b>XII.—THE BREEDING OF FLAX, FRUIT AND HOPS</b>	<b>76</b>
Flax growing in the United Kingdom. Formation of the Linen Industry Research Association. Flax-breeding investigations at Stormont and Lambeg. Development of the "J.W.S." strain. Fruit-breeding research at Long Ashton and East Malling. Hop-breeding research at Wye College and East Malling.	
<b>XIII.—THE LINK BETWEEN THE PLANT BREEDER AND THE GROWER</b>	<b>84</b>
Need for sifting new varieties before introduction to agriculture. Establishment of the National Institute of Agricultural Botany, Cambridge; the Plant Registration and Testing Station, East Craigs; and the Plant Breeding and Experimental Station, Stormont. The N.I.A.B. variety testing scheme. Putting Yeoman II wheat on the market. The Ormakirk Wart Disease trials. Potato-testing work in Northern Ireland. Yield and maturity trials in England and Scotland. Work of the Seed Testing Stations.	

Chapter.	Page.
<b>XIV.—THE GROWTH OF A PLANT</b>	<b>89</b>
Seed germination and seedling growth. Influence of carbon dioxide and of the period of daylight on plant growth. Glasshouse studies with cucumbers. Influence of climate on barley growth. Effect of fertilisers on plant growth. Growth of barley plants as influenced by nitrogen and phosphate. Manurial properties of lead nitrate. Studies with Boron, Silicon and Iodine at Rothamsted. Application of electricity to crops.	
<b>XV.—FRUIT GROWING: THE GROWTH OF THE TREE</b>	<b>102</b>
Root-stock research at Long Ashton and East Malling. Sorting out bush fruits. A fruit soil survey. Development of root system in fruit trees. Relation between root growth and shoot growth. Fruit bud formation. Influence of stock on scion and scion on stock. Physiological research on root stock problems.	
<b>XVI.—FRUIT GROWING: THE NUTRITION AND TREATMENT OF THE TREE</b>	<b>114</b>
Fruit tree manuring research at Long Ashton and East Malling. Leaf Scorch. Chlorosis. The Malling pruning experiments with apples and pears.	
<b>XVII.—INTENSIVE CULTURE (GLASSHOUSE CROPS, STRAWBERRIES, BULBS AND WILLOWS)</b>	<b>121</b>
Cultivation investigations with glasshouse crops. Glasshouse crop diseases: Mosaic; Red Spider; Woodlice; White Fly; Root Flies; Cyclamen Wilt. Strawberry investigations at Long Ashton. Red Plant, Small Leaf, Patch and Cauliflower diseases of strawberries. Purple Leaf Blotch. Bulb investigations in the Islands of Scilly. The study of bulb pests. Willow research at Long Ashton.	
<b>XVIII.—THE PRESERVATION OF FRUIT AND VEGETABLES</b>	<b>135</b>
Cider-making research at Long Ashton: fermentation studies. Storage of fresh fruit and vegetables. Temperature and temperature control. Oiled-paper wrapping of fruit. Atmosphere control in fruit stores. Factors determining keeping quality in apples. Storage experiments with apples. Fruit canning and bottling. Jam-making by the cold process. Pickling and curing of vegetables.	

Chapter.		Page.
XIX.	<b>PLANT DISEASES: SOME GENERAL INVESTIGATIONS</b>	145
	Organisation of research and advisory work. Genetical studies with fungi. The problem of immunity. The search for more efficient insecticides. Trials with insecticidal washes. Investigation of tar distillate washes. Oil sprays and oil emulsions. Physical properties of sprays. Fungicidal action of sulphur. Chemical investigation of sprays. Spraying for control of Apple Scab.	
XX.	<b>DISEASES AND PESTS OF FRUITS AND HOPS</b>	163
	<i>Apples and Pears.</i> —"Die Back." Apple Blossom Weevil. Brown Rot. Tortrix Moths. Apple Mildew. Crown Gall of Nursery Stocks. Testing stocks for disease resistance. <i>Plums and Cherries.</i> —Silver Leaf. <i>Soft Fruits.</i> —"Big Bud" and "Reversion" of Black Currants. Gall Mites. Black Currant Leaf Spot. American Gooseberry Mildew. Raspberry Blue Stripe Wilt. Raspberry Cane Spot. Raspberry Mosaic. <i>Hops.</i> —Downy Mildew or Spike Disease. Mosaic Disease. Hop Wilt. Red Spider.	
XXI.	<b>DISEASES AND PESTS OF FARM AND GARDEN CROPS</b>	181
	<i>Potatoes.</i> —Virus Diseases. Wart Disease. Eel-worm. Blight. Black Scurf. <i>Cereals.</i> —Gout Fly of Barley. Frit Fly in Oats. Bunt in Wheat. Crane Flies. Wireworm. Leaf Spot of Oats. <i>Roots.</i> —Dry Rot of Swedes. Black Leg of Mangolds. Use of poultry in controlling farm pests. Finger-and-Toe. Turnip and Swede Seed Beetle. <i>Garden Crops.</i> —Seedling diseases of Celery. Celery Blight. Turnip canker. White Rot of Onions. Root-feeding maggots. Cabbage Gall Weevil. Control of slugs.	
XXII.	<b>THE FUNDAMENTAL PRINCIPLES OF STOCK FEEDING</b>	203
	Modern conception of principles of stock feeding. Nutrition of very young animals—calorimeter experiments at Cambridge. Production of "baby beef." Rate of growth and body development in sheep. Importance of the mineral constituents of feeding stuffs. Influence of ultra-violet rays on animal health.	
XXIII.	<b>INVESTIGATIONS OF FEEDING STUFFS.</b>	218
	Food value of pasture grass. Nutritive studies with grass and clovers. Cooking of feeding stuffs. Classification of wheat offals. Chemistry of silage. Importance of accurate experimental methods.	

Chapter.	Page.
<b>XXIV.—REPRODUCTION AND BREEDING PROBLEMS IN ANIMALS</b> - - -	<b>227</b>
Control of parturition. Use of ovarian extract in influencing the "heat" period. Effect of removing ovary on period of lactation. "Supernumerary" teats. Degeneration of fetuses in sow. Physiology of milk secretion. Reproduction in the male: the study of artificial insemination. <i>Animal Breeding</i> .—Sex-linkage in poultry. Inheritance of fecundity, pattern and weight. Improving the wool of Welsh sheep. Causes of barrenness in hill sheep.	
<b>XXV.—PIGS, POULTRY AND BEES</b> - - -	<b>239</b>
<i>Pigs</i> .—Feeding trials at Harper Adams. Pig-keeping investigations at Wye. Proposed pig-breeding research scheme. <i>Poultry</i> .—The National Poultry Institute Scheme. Economic breeding experiments at Reaseheath. Poultry nutrition research at Cambridge. Poultry-feeding experiments at Wye. Feeding and husbandry experiments at Harper Adams. Investigation of poultry diseases at the Ministry's Veterinary Laboratory. <i>Bees</i> .—Use of artificial metal combs. Position of combs with reference to the hive front. Bee feeding for winter stores. Bee research work at Glasgow. Study of bee diseases at Aberdeen.	
<b>XXVI.—THE PRODUCTION OF MILK</b> - - -	<b>254</b>
Management of the dairy farm at Reading Research Institute. Examination of milk records. Dairy cattle feeding and management experiments at Kilmarnock. The Wiltshire dairy cow rationing scheme. The rôle of vitamins. Research in clean milk production. Effect of heating milk. Oiliness. Physical ropiness. Coagulation of sterilised milk.	
<b>XXVII.—THE MANUFACTURE OF MILK PRODUCTS</b>	<b>266</b>
Discoloration problems in cheese-making. Red Spot in cheese. Condensed milk troubles. Research with cheese-making "starters" at Kilmarnock. Blue vein cheese-making. Black spot in cheese. The Kilmarnock butter investigations. A creamery butter-making demonstration in Ulster. Disposal of Whey.	
<b>XXVIII.—ANIMAL DISEASES</b> - - -	<b>276</b>
Joint-ill in foals. John's disease of cattle. Epizootic Abortion. Mastitis or Garget in cows. Parasitic Gastritis and Enteritis. Scrapie in sheep. Poisons in stock food.	



Chapter.	Page
<p>Foot-and-Mouth disease. The Cambridge field laboratory. Worm parasites of animals. Veterinary Advisory Scheme in England and Wales. Fluke or Liver rot in sheep. Control of Warble flies. Braxy in sheep. Trembling or louping ill in sheep. Lamb dysentery. Milk fever in cattle. Animal disease research in Northern Ireland.</p>	300
<p><b>XXIX.—AGRICULTURAL ENGINEERING</b> - -</p> <p>Drainage trials and demonstrations. Sub-solling. Dehydration research, including crop drying investigations. Sugar beet: the De Vecchis process of extraction. Electricity from windmills.</p>	300
<p><b>XXX.—ECONOMICS OF AGRICULTURE</b> - -</p> <p>Cost accounting. An Agricultural Accounting Society. Production costs of farm products. Agricultural surveys. Farming in smoke areas. Farm labour organisation. An agricultural atlas. Rural industries. Maintenance of arable farming. Marketing and co-operation.</p>	309
<p><b>Appendix :—</b></p>	
<p>I.—Research Institutions and Advisory Centres in the United Kingdom - - -</p>	325
<p>II.—Titles of Research Papers published in the four years 1922 to 1925 - - -</p>	329
<p><b>Index</b> . - - - - -</p>	381

## LIST OF ILLUSTRATIONS.

---

FIG.	<i>Facing page.</i>
1.—Field drain gauges at Rothamsted and Aberdeen - - - - -	6
2.—Variation in soil resistance on Broadbalk wheat field, Rothamsted - - - - -	10
3.—Automatic and self-recording balance, Rothamsted - - - - -	19
4.—Inoculation of lucerne - - - - -	44
5.—Loaves made from Yeoman ("All-English") flour - - - - -	50
6.—A stage in the selection of "Cambridge Browick" wheat - - - - -	56
7.—Ear types in an oat hybrid - - - - -	60
8.—Flax stems of different fibre value - - - - -	79
9.—Effect of temperature on growth of cucumbers - - - - -	94
10.—Effect of Boron on plant growth - - - - -	95
11.—Aeroplane photographs of Rothamsted experimental plots - - - - -	98
12.—Influence of root stock on growth of apple trees - - - - -	104
13.—Influence of soil type on growth of apple trees - - - - -	105
14.—Nutrition experiments with fruit trees - - - - -	114
15.—Effect of winter pruning on growth of apple trees - - - - -	118
16.—Influence of method of planting on the growth of strawberry plants - - - - -	128
17.—Fruit Laboratory, Low Temperature Research Station, Cambridge - - - - -	140
18.—Benefits of using oiled-paper wrappers for storing apples - - - - -	141
19.—"Die Back" in fruit trees - - - - -	164
20.—Rôle of Aphis in transmitting virus diseases of potato - - - - -	183
21.—Effect of mineral deficiency in ration of pig - - - - -	208
22.—Effect of mineral deficiency in ration of ram - - - - -	209
23.—Effect of mineral deficiency in ration of breeding sow - - - - -	214
24.—Improvement of flock of Welsh Mountain sheep - - - - -	236
25.—Mite disease of bees - - - - -	252
26.—Calf-feeding experiments at Reading Research Institute - - - - -	262
27.—Braxy in sheep - - - - -	295
28.—A crop-drying demonstration - - - - -	304
29.—Instrument panel used in recording wind measurements at Oxford Engineering Institute - - - - -	305

## INTRODUCTION.

Little need be added, by way of introduction to this volume, to the remarks of the Minister of Agriculture and Fisheries in the Prefatory Note which he has kindly written. It should be explained, however, that although the book contains a general account of agricultural and horticultural research throughout the United Kingdom, administratively the schemes in the four countries are dealt with separately: in England and Wales, by the Ministry of Agriculture and Fisheries; in Scotland, by the Board of Agriculture for Scotland; and in Northern Ireland, by the Ministry of Agriculture for Northern Ireland. In England and Wales, and in Scotland, the Research Institutes, each dealing with one or other of the principal subjects into which agricultural science may be divided, such as soil problems or animal nutrition, are under the control of independent Bodies, usually attached to Universities; but their funds are provided either wholly or mainly by the State. In Northern Ireland, the work is under the direct control of the Government of that country and the research workers are permanent civil servants. The scheme in England and Wales, and in Scotland, has been supplemented by the appointment of "advisory officers" at the Provincial Agricultural Colleges. These officers are scientifically trained to investigate difficult problems which are perplexing farmers in their areas, notably in relation to crop pests, and their time is occupied partly with research and partly with advisory work. Finally, research is carried out as opportunities permit by the members of the teaching staffs of the agricultural and veterinary colleges.

A list of Research Institutions and Advisory Centres, and a bibliography of the scientific papers in agriculture and horticulture published during the past four years, are included as Appendices to this volume.

The writer would take this opportunity to thank very sincerely the research workers throughout the United Kingdom

who have been good enough to discuss their work with him and give him the material on which this review is based. If the book is successful in earning the appreciation of readers, the merit is due to the excellence of the investigations. If the result is not so happy, the writer's chief regret will be that he has failed to secure for the investigators the esteem which their work so well deserves.

V. E. W.

September, 1926.

## APPENDIX I.

## RESEARCH INSTITUTIONS AND ADVISORY CENTRES IN THE UNITED KINGDOM.

## ENGLAND AND WALES.

## Research Institutions.

Institute (with the Director's name).	Subject.
Rothamsted Experimental Station, Harpenden, Herts. ( <i>Sir E. J. Russell.</i> )	I. Soil Problems and Plant Nutrition.
Plant Physiology Research Institute, Imperial College of Science, London, ( <i>Professor V. H. Blackman.</i> )	II. Plant Pathology. Plant Physiology.
Plant Breeding Institute, Cambridge University. ( <i>Sir R. H. Biffen.</i> )	Plant Breeding (special reference to Cereals).
Welsh Plant Breeding Station, University College of Wales, Aberystwyth. ( <i>Professor R. G. Stapledon.</i> )	Plant Breeding (special reference to Grasses and Forage Crops).
National Institute of Agricultural Botany, Cambridge. ( <i>W. H. Parker.</i> )	Development of new and selected varieties of Crops.
Agricultural and Horticultural Research Station, Long Ashton, Bristol. ( <i>Professor B. T. P. Barker.</i> )	Fruit Growing and related questions.
Horticultural Research Station, Cambridge University. ( <i>Sir R. H. Biffen.</i> )	Fruit and Vegetable Growing.
East Malling Research Station, East Malling, Kent. ( <i>R. G. Hatton.</i> )	Fruit Growing and Hops.
Nursery and Market Garden Crops Research Station, Cheshunt, Herts. ( <i>Dr. W. F. Bewley.</i> )	Nursery and Market Gar- den Crops.
Institute of Agricultural Parasitology, London School of Hygiene and Tropical Medicine, London. ( <i>Professor R. T. Leiper.</i> )	Agricultural Parasit- ology.
Research Institute in Animal Pathology, Royal Veterinary College, London. ( <i>Sir John McFadyean.</i> )	Animal Pathology.
Institute of Animal Pathology, Cambridge University. ( <i>Professor J. B. Buxton.</i> )	Animal Pathology.
Veterinary Research Laboratory of Ministry of Agriculture and Fisheries, Weybridge. ( <i>The Director.</i> )	Animal Pathology.

Institute (with the Director's name).	Subject.
Animal Nutrition Institute, Cambridge University. ( <i>Professor T. B. Wood.</i> )	Animal Nutrition.
Small Animal Breeding Institute, Cambridge University. ( <i>Professor R. C. Punnett.</i> )	Small Animal Breeding
National Institute for Research in Dairying, Shinfield, Reading. ( <i>Dr. R. Stenhouse Williams.</i> )	Dairying.
Institute for Research in Agricultural Economics, Oxford University. ( <i>C. S. Orwin.</i> )	✓ Agricultural Economics.
Agricultural Engineering Institute, Oxford University. ( <i>Dr. B. J. Owen.</i> )	Engineering.

## Advisory Centres.

Institution.	Subjects in which Specialist Advice* is available.
Armstrong College, Newcastle-on-Tyne.	Chemistry. Dairy Bacteriology. ✓ Economics. Entomology. Mycology. Veterinary Science.
University of Leeds,	Chemistry. ✓ Economics. Entomology. Mycology.
Midland Agricultural and Dairy College, Sutton Bonington.	Chemistry. ✓ Economics. Entomology. Mycology.
School of Agriculture, Cambridge University.	Chemistry. Dairy Bacteriology. ✓ Economics. Entomology. Mycology.
School of Rural Economy, Oxford.	Chemistry. ✓ Economics. Entomology. Mycology.
South Eastern Agricultural College, Wye.	Chemistry. Dairy Bacteriology. ✓ Economics. Entomology. Mycology.

---

\* Apart from the normal advisory work in agriculture undertaken by the Institutions.

Institution.	Subjects in which Specialist Advice* is available.
University College, Reading.	Chemistry. Dairy Bacteriology.
Seale-Hayne Agricultural College, Newton Abbot.	✓Economics. Entomology. Mycology. Chemistry. Dairy Bacteriology.
Bristol University.	✓Economics. Entomology. Mycology. Chemistry. Dairy Bacteriology.
Harper-Adams Agricultural College, Newport, Salop.	✓Economics. Entomology. Mycology. Chemistry. Dairy Bacteriology.
Manchester University.	✓Economics. Entomology. Mycology. Chemistry.
University College of North Wales, Bangor.	✓Economics. Entomology. Mycology. Chemistry. Dairy Bacteriology.
University College of Wales, Aberystwyth.	✓Economics. Entomology. Mycology. Veterinary Science. Chemistry. Dairy Bacteriology.
University College of South Wales and Monmouth, Cardiff.	✓Economics. Entomology. Mycology. Veterinary Science.

## SCOTLAND.

## Research Institutions.

Institute (with the Director's name).	Subject.
Rowett Research Institute, Aberdeen. ( <i>Dr. J. B. Orr.</i> )	Animal Nutrition.
Animal Diseases Research Association. ( <i>W. A. Pool.</i> )	Animal Pathology.

\* Apart from the normal advisory work in agriculture undertaken by the Institutions.

Institute (with the Director's name).	Subject.
Animal Breeding Research Department, Edinburgh University. ( <i>Dr. F. A. E. Crew.</i> )	Animal Breeding.
Scottish Society for Research in Plant Breeding, Edinburgh. ( <i>W. Robb.</i> )	Plant Breeding.
Seed Testing and Plant Registration Station (Board of Agriculture for Scotland), Corstorphine. ( <i>T. Anderson.</i> )	Development of new and selected varieties of Crops.

#### Advisory Centres.

Institution.	Subjects in which Specialist Advice* is available.
East of Scotland College of Agriculture, Edinburgh.	Agricultural Bacterio- logy. Soil Fertility.
West of Scotland Agricultural College, Glasgow.	Dairying. Soil Fertility. Plant Diseases.
North of Scotland College of Agriculture, Aberdeen.	Soils and Drainage. Bee Diseases.

#### NORTHERN IRELAND.

##### Agricultural Research Divisions of the Ministry of Agriculture Northern Ireland.

Division and Director.	Headquarters of Branch.
Chemical and Animal Nutrition. ( <i>Professor G. S. Robertson.</i> )	Queen's University, Belfast.
Seed Testing and Plant Diseases. ( <i>Professor S. P. Mercer.</i> )	Queen's University, Belfast.
Plant Breeding. ( <i>I. W. Seaton.</i> )	Stormont, Belfast.
Animal Diseases. ( <i>Captain J. P. Rice.</i> )	Stormont, Belfast.
Crop and Animal Husbandry. ( <i>R. Rae.</i> )	Queen's University, Belfast.
Poultry. ( <i>Miss M. J. Sheedy.</i> )	Stormont, Belfast.
Agricultural Zoology. ( <i>J. G. Rhynhart.</i> )	Queen's University, Belfast.

---

\* Apart from the normal advisory work in agriculture undertaken by the Institutions.



## APPENDIX II.

TITLES OF PAPERS DEALING WITH AGRICULTURAL AND HORTICULTURAL RESEARCH PUBLISHED BY MEMBERS OF RESEARCH AND ADVISORY INSTITUTIONS IN THE UNITED KINGDOM, 1922 TO 1925 INCLUSIVE.\*

## RESEARCH INSTITUTIONS.

## Rothamsted Experimental Station, Harpenden.

- Russell, Sir E. J.  
Soil Conditions and Plant Growth. (*London: Longmans, Green and Co., 4th ed., 1921, 16s.*)  
Farm Soil and its Improvement. (*London: Benn Bros., Ltd., 1923, 7s. 6d.*)
- Russell, Sir E. J., and Staff.  
The Micro-Organisms of the Soil. (*London: Longmans, Green and Co., 1923, 7s. 6d.*)
- Brenchley, W. E.  
Manuring of Grassland for Hay. (*London: Longmans, Green and Co., 1924, 12s. 6d.*)
- Davidson, J.  
A List of British Aphides (including notes on their recorded distribution and food-plants in Britain, and a food-plant index). (*London: Longmans, Green and Co., 12s. 6d.*)
- Imms, A. D.  
A General Textbook of Entomology. (*London: Methuen and Co., 1925, 36s.*)
- Fisher, R. A.  
Statistical Methods for Research Workers. (*Edinburgh: Oliver and Boyd, 15s.*)
- Rew, Sir H., and Russell, Sir E. J.  
The Possibilities of British Agriculture. (*London: John Murray, 1923, 8d.*)
- Thornton, H. G.  
On the Development of a Standardised Agar Medium for Counting Soil Bacteria, with especial regard to the Repression of Spreading Colonies. (*Ann. Appl. Biol., 1922, IX, pp. 241-274.*)  
On the Vibration Method of obtaining a Suspension of the Bacteria in a Soil Sample, Developed by C. L. Whittles. (*Journ. Agric. Sci., 1923, XIII, pp. 352-353.*)
- Thornton, H. G., and Gangulee, N. N.  
Seed Inoculation of Lucerne (*Medicago Sativa*) and its Relation to the Motility of the Nodule Organism in Soil. (*Nature, Dec., 1924.*)

---

\* The Research Institutions are arranged in the order in which the subjects are dealt with in the text of the book. The Advisory Centres follow (from p. 368 onwards) in alphabetical order, those in England and Wales preceding those in Scotland.

- Gray, P. H. H., and Chalmers, C. H.  
On the Stimulating Action of Certain Organic Compounds on Cellulose Decomposition by Means of a New Aerobic Micro-organism that Attacks both Cellulose and Agar. (*Ann. Appl. Biol.*, 1924, *XI*, pp. 324-338.)
- Brenchley, W. E.  
Effect of Weight of Seed upon the Resulting Crop. (*Ann. Appl. Biol.*, 1923, *X*, pp. 223-240.)  
The Effect of Iodine on Soils and Plants. (*Ann. Appl. Biol.*, 1924, *XI*, pp. 86-111.)
- Brenchley, W. E., assisted by Singh, K.  
Effect of High Root Temperature and Excessive Insolation upon Growth. (*Ann. Appl. Biol.*, 1922, *IX*, pp. 197-209.)
- Singh, K.  
Development of Root System of Wheat in Different Kinds of Soils and with Different Methods of Watering. (*Ann. Bot.* 1922, *XXXVI*, pp. 353-360.)
- Jackson, V. G.  
Anatomical Structure of the Roots of Barley. (*Ann. Bot.*, 1922, *XXXVI*, pp. 21-39.)
- Warrington, K.  
The Effect of Boric Acid and Borax on the Broad Bean and certain other Plants. (*Ann. Bot.*, 1923, *XXXVII*, pp. 1-44.)  
The Influence of Manuring on the Weed Flora of Arable Land. (*Journ. Ecol.*, 1924, *XII*.)
- Puri, A. N.  
Effect of Methyl and Ethyl Alcohol on the Growth of Barley Plants. (*Ann. Bot.*, 1924, *XXXVIII*, pp. 745-752.)
- Brenchley, W. E., and Thornton, H. G.  
The Relation between the Development, Structure and Functioning of the Nodules on "Vicia Faba" as influenced by the Presence or Absence of Boron in the Nutrient Medium. (*Proc. Roy. Soc., B.*, 1925, *Vol.* 98.)
- Bristol, B. M., and Page, H. J.  
A Critical Enquiry into the Alleged Fixation of Atmospheric Nitrogen. (*Ann. Appl. Biol.*, 1923, *X*, pp. 1-30.)
- Page, H. J.  
The Part Played by Organic Matter in the Soil System. (*Trans. Far. Soc.*, 1922, *XVII*, pp. 272-287.)  
On the Perchlorate Method for the Estimation of Potassium in Soils, Fertilisers, &c. (*Journ. Agric. Sci.*, 1924, *XIV*, pp. 133-138.)
- Page, H. J., and Williams, W.  
Studies on Base Exchange in Rothamsted Soils. (*Trans. Fara. Soc.*, 1925, *XX*, pp. 573-585.)
- Sen-Gupta, N. N.  
Dephenolisation in Soil. II. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 497-515.)
- Eden, T.  
A Note on the Colorimetric Estimation of Humic Matter in Mineral Soils. (*Journ. Agric. Sci.*, 1924, *XIV*, pp. 469-472.)
- Warren, R. G., Gimmingham, C. T., and Page, H. J.  
The Chemistry of Basic Slag. I. The Determination of Fluorine in Basic Slag. (*Journ. of Agric. Sci.*, 1925, *XV*, pp. 516-528.)
- Tattersfield, F., and Roach, W. A.  
The Chemical Properties of Derris Elliptica (Tuba Root). (*Ann. App. Bio.*, 1923, *X*, pp. 1-17.)

- Tattersfield, F., and Morris, H. M.  
An Apparatus for Testing the Toxic Values of Contact Insecticides under Controlled Conditions. (*Bull. Entom. Research*, 1924, *XIV*, pp. 223-233.)
- Tattersfield, F., Gimingham, C. T., and Morris, H. M.  
Studies on Contact Insecticides. Part I. Introduction and Methods. Part 2. A Quantitative Examination of the Toxicity of *Tephrosia Vogelsii*, Hook, to *Aphis Rumicis*, L. (The Bean Aphis). (*Ann. App. Bio.*, 1925, *XII*, pp. 61-76.)
- Studies on Contact Insecticides. Part 3. A Quantitative Examination of the Insecticidal Action of the Chlor-, Nitro-, and Hydroxyl Derivatives of Benzene and Naphthalene. (*Ann. App. Bio.*, 1925, *XII*, pp. 218-262.)
- Cutler, D. W., Crump, M., and Sandon, H.  
A Quantitative Investigation of the Bacterial and Protozoan Population of the Soil. (*Phil. Trans. Roy. Soc. Lon.*, *B.*, 1922, *CCXI*, pp. 317-350.)
- Cutler, D. W.  
The Action of Protozoa on Bacteria when Inoculated into Sterile Soil. (*Ann. App. Bio.*, 1923, *X*, pp. 137-141.)
- Nasir, S. M.  
Some Preliminary Investigations on the Relationship of Protozoa to Soil Fertility with Special Reference to Nitrogen Fixation. (*Ann. App. Bio.*, 1923, *X*, pp. 122-133.)
- Cutler, D. W., and Crump, L. M.  
The Rate of Reproduction in Artificial Culture of *Colpidium Colpoda*. (*Biochem. Journ.*, 1923, *XVII*, pp. 174-186.)
- Cutler, D. W., and Crump, L. M.  
The Rate of Reproduction in Artificial Cultures of *Colpidium Colpoda*. Parts II and III. (*Biochem. Journ.*, 1923-24, *XVII*, *XVIII*, pp. 878-886, 905-911.)
- The Influence of Washing upon the Reproductive Rate of *Colpidium Colpoda*. (*Biochem. Journ.*, 1925, *XIX*, No. 3.)
- Perey, M.  
Les Protozoaires du Sol. (*Ann. Sci. Agron.*, 1923, *LXIII*, pp. 333-352.)
- Sandon, H.  
Some Protozoa from the Soils and Mosses of Spitsbergen. (*Journ. Linn. Soc.*, 1924, *XXXV*, pp. 449-475.)
- Sandon, H., and Cutler, D. W.  
Some Protozoa from the Soils Collected by the "Quest" Expedition. (*Journ. Linn. Soc. (Zool.)*, 1924, *XXXVI*, pp. 1-12.)
- Allison, R. V.  
The Density of Unicellular Organisms. (*Ann. App. Biol.*, 1924, *XI*, pp. 153-168.)  
A Note on the Protozoan Fauna of the Soils of the United States, (*Soil Sci.*, 1924, *XVIII*, pp. 339-352.)
- Crowther, E. M.  
Soil Acidity in its Physico-Chemical Aspects. (*Trans. Fara. Soc.*, 1922, *XVII*, pp. 317-320.)
- Haines, W. B.  
The Volume-Changes Associated with Variations of Water Content in Soil. (*Journ. Agric. Sci.*, 1923.)
- Keen, B. A., and Raczkowski, H.  
The Relation between the Clay Content and Certain Physical Properties of a Soil. (*Journ. Agric. Sci.*, 1921, *XI*, pp. 441-449.)

Keen, B. A.

The System Soil-Soil Moisture. (*Trans. Fara. Soc.*, 1922, *XVII*, pp. 228-243.)

Evaporation of Water from Soil. II. Influence of Soil Type and Manurial Treatment. (*Journ. Agric. Sci.*, 1921, *XI*, pp. 432-440.)

On the Moisture Relationships in an Ideal Soil. (*Journ. Agric. Sci.*, 1924, *XIV*, pp. 170-177.)

The Odén-Keen Automatic Balance. (*Proc. Fourth Intern. Conf. Soil Sci. Int. Inst. Agric.*, Rome, 1924.)

Recent Advances in Soil Physics. (*Proc. Fourth Intern. Conf. Soil Sci., Int. Inst. Agric.*, Rome, 1924.)

Keen, B. A., and Haines, W. B.

On the Effect of Weaf on Small Mesh Wire Sieves. (*Journ. Agric. Sci.*, 1923, *XIII*, pp. 467-482.)

Coutts, J. R. H., Crowther, E. M., Keen, B. A., and Odén, S.

An Automatic and Continuous Recording Balance. (The Odén-Keen Balance.) (*Proc. Roy. Soc. A.*, 1924, *CVI*, pp. 33-51.)

Crowther, E. M., and Coutts, J. R. H.

A Discontinuity in the Dehydration of Certain Salt Hydrates. (*Proc. Roy. Soc. A.*, 1924, *CVI*, pp. 215-222.)

Crowther, E. M., and Puri, A. N.

The Indirect Measurement of the Aqueous Vapour-pressure of Capillary Systems by the Freezing-point Depression of Benzene. (*Proc. Roy. Soc. A.*, 1924, *CVI*, pp. 232-242.)

Puri, A. N., Crowther, E. M., and Keen, B. A.

The Relation between the Vapour Pressure and Water Content of Soils. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 68-88.)

Puri, A. N., and Keen, B. A.

The Dispersion of Water in Water under Various Conditions. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 147-161.)

Puri, A. N.

A Critical Study of the Hygroscopic Coefficient of Soil. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 272-283.)

Haines, W. B.

Studies in the Physical Properties of Soils. I. Mechanical Properties Concerned in Cultivation. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 178-200.)

Crowther, E. M., and Haines, W. B.

An Electrical Method for the Reduction of Draught in Ploughing. (*Journ. Agric. Sci.*, 1924, *XIV*, pp. 221-231.)

Crowther, E. M.

Studies in Soil Reaction. III. The Determination of the Hydrogen Ion Concentration of Soil Suspensions by Means of the Hydrogen Electrode. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 201-221.)

Studies in Soil Reaction: IV. The Soil Reaction of Continuously Manured Plots at Rothamsted and Woburn. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 222-231.)

Studies in Soil Reaction. V. The Depth-distribution of Reaction and Flocculation in Continuously Manured Soils. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 232-236.)

Crowther, E. M., and Martin, W. S.

Studies in Soil Reaction. VI. The Interaction of Acid Soils, Calcium Carbonate and Water, in Relation to the Determination of "Lime Requirements." (*Journ. Agric. Sci.*, 1925, *XV*, pp. 237-255.)

The Volumetric Determination of Total Carbonic Acid in Dilute Solutions of Calcium Bicarbonate. (*Journ. Chem. Soc.*, 1924, *CXXV*, pp. 1937-1939.)

- Puri, A. N.  
Some Experiments on the Interaction between Soils and Dilute Acids. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 331-342.)
- Keen, B. A., and Haines, W. B.  
Studies in Soil Cultivation. I. The Evolution of a Reliable Dynamometer Technique for Use in Soil Cultivation Experiments. II. A Test of Soil Uniformity by means of Dynamometer and Plough. III. Measurements on the Rothamsted Classical Plots by means of Dynamometer and Plough. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 375-406.)
- Crowther, E. M.  
A Note on the Availability of Organic Nitrogen Compounds in Pot Experiments. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 300-302.)  
Further Experiments on the Effect of Removing the Soluble Humus from a Soil on its Productiveness. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 303-306.)
- Coutts, J. R. H., and Crowther, E. M.  
A Source of Error in the Mechanical Analysis of Sediments by Continuous Weighing. (*Trans. Fara. Soc.*, 1925, *XXI*, Part 2.)
- Haines, W. B.  
Studies in the Physical Properties of Soils. II. A Note on the Cohesion developed by Capillary Forces in an Ideal Soil. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 529-535.)  
Studies in the Physical Properties of Soils III. Observations on the Electrical Conductivity of Soils. (*Journ. Agric. Sci.*, 1925, *XV*, pp. 536-543.)
- Fisher, R. A.  
On the "Probable Error" of a Coefficient of Correlation deduced from a small Sample. (*Metron*, 1921, 1, 4, pp. 1-32.)  
On the Interpretation of  $X^2$ , from Contingency Tables, and the Calculation of P. (*Journ. Roy. Statist. Soc.*, 1922, *LXXXV*, pp. 87-94.)  
On the Mathematical Foundations of Theoretical Statistics. (*Philosoph. Trans. Roy. Soc.*, 1922, *CCXXII*, pp. 309-368.)
- Fisher, R. A., and Mackenzie, W. A.  
The Correlation of Weekly Rainfall. (*Journ. Roy. Met. Soc.*, 1922, *XLVIII*, pp. 234-242.)
- Fisher, R. A.  
The Goodness of Fit of Regression Formula and the Distribution of Regression Co-efficients. (*Journ. Roy. Stat. Soc.*, 1922, *LXXXV*, pp. 597-612.)  
On the Dominance Ratio. (*Proc. Roy. Soc. Edin.*, 1922, *XLII*, pp. 321-341.)  
The Systematic Location of Genes by means of Crossover Observations. (*Amer. Nat.*, 1922, *LVI*, pp. 406-411.)
- Fisher, R. A., Thornton, H. G., and Mackenzie, W. A.  
The Accuracy of the Plating Method of Estimating the Density of Bacterial Populations. (*Ann. App. Biol.*, 1922, *IX*, pp. 325-359.)
- Fisher, R. A., and Mackenzie, W. A.  
The Manurial Response of Potato Varieties. (*Journ. Agric. Sci.*, 1923, *XIII*, pp. 311-320.)
- Fisher, R. A.  
Appendix to "Biological Studies of *Aphis Rumicis*," by J. Davidson. (*Ann. App. Biol.*, 1922, *IX*, pp. 142-145.)  
Statistical Tests of Agreement between Observation and Hypothesis. (*Economica*, 1923, *III*, pp. 139-147.)  
Note on Dr. Burnside's recent Paper on Errors of Observation. (*Proc. Camb. Phil. Soc.*, 1923, *XXI*, pp. 655-658.)

- The Distribution of the Partial Correlation Coefficient. (*Metron* 1924, III, pp. 329-332.)
- The Conditions under which  $X^2$  measures the Discrepancy between Observation and Hypothesis. (*Journ. Roy. Stat. Soc.*, 1924, LXXXVII, pp. 442-450.)
- The Influence of Rainfall on the Yield of Wheat at Rothamsted. (*Phil. Trans. Roy. Soc. London, B.*, 1924, Vol. 213, pp. 89-142.)
- Theory of Statistical Estimation. (*Proc. Camb. Phil. Soc.*, XXXII, Part 5.)
- Fisher, R. A., and Odén, S.  
The Theory of the Mechanical Analysis of Sediments by Means of the Automatic Balance. (*Proc. Roy. Soc. Edin.*, 1924, XLIV, pp. 98-115.)
- Ansell, P. R., and Fisher, R. A.  
Note on the Numerical Evaluation of a Bessel Function Derivative. (*Proc. London Math. Soc.*, 1925, June.)
- Mackenzie, W. A.  
Studies in Crop Variation. III. An Examination of the Yield of Dressed Grain from Hoos Field. (*Journ. Agric. Sci.*, 1924, XIV, pp. 434-460.)
- "Mathetes."  
Statistical Study of the Effect of Manuring on Infestation of Barley by Gout Fly. (*Ann. App. Biol.*, 1924, XI, pp. 220-235.)
- Imms, A. D.  
Recent Research on the Head and Mouth-parts of Diptera. (*Entom. Month. Mag.*, 1920, VI, pp. 106-109.)
- Davidson, J.  
Biological Studies of *Aphis Rumicis* Linn. IV. Reproduction on varieties of Vicia Faba—with a Statistical Appendix by R. A. Fisher. (*Ann. App. Biol.*, 1922, IX, pp. 135-145.)
- Biological Studies of *Aphis Rumicis* Linn. V. The Penetration of Plant Tissues and the Source of the Food Supply of Aphids. (*Ann. App. Biol.*, 1923, X, p. 35-54.)
- Davidson, J.  
The Penetration of Plant Tissues and the Source of the Food Supply of Aphids. (*Int. Conf. Phytopath. Econ. Entom., Wageningen (Holland)*, 1923, pp. 72-74.)
- Factors which Influence the Appearance of the Sexes in Plant Lice. (*Sci.*, 1924, p. 364.)
- The Bean Aphis. (*Journ. Min. Agric.*, 1925, XXXVII.)
- Morris, H. M.  
The Larval and Pupal Stages of the Bibionida. Part I. (*Bull. Entom. Res.*, 1921, XII, pp. 221-232.)
- On the Larva and Pupa of a Parasitic Phorid Fly—*Hypocera incassata* Meig. (*Parasitology*, 1922, XIV, pp. 70-74.)
- The Larval and Pupal Stages of the Bibionida. Part II. (*Bull. Ent. Res.*, 1922, XIII, pp. 189-195.)
- On a Method of Separating Insects and other Arthropods from Soil. (*Bull. Ent. Res.*, 1922, XIII, pp. 197-200.)
- The Insect and other Invertebrate Fauna of Arable Land at Rothamsted. (*Ann. App. Biol.*, 1922, IX, pp. 281-305.)
- Frew, J. G. H.  
On the Morphology of the Head Capsule and Mouth-parts of *Chlorops taniopus* Meig. (Diptera). (*Journ. Linn. Soc.*, 1923, XXXV.)
- On the Larval Anatomy of the Gout-fly of Barley (*Chlorops taniopus* Meig) and two Related Acalyprate Muscids, with Notes on their Winter Host-Plants. (*Proc. Zool. Soc., Lond.*, 1923, LIV, pp. 783-821.)

- On *Chlorops tenuipus* Meig. (The Gout Fly of Barley). (*Ann. App. Biol.*, 1924, XI, pp. 175-219.)
- Morris, H. M.  
Note on the Wheat Bulb Fly (*Leptohylemyia coarctata*). (*Bull. Entom. Res.*, 1925, XV, pp. 359-360.)
- Brierley, W. B.  
On Mutation of Species. (*Brit. Med. Journ.*, Oct. 21, 1922.)  
Some Aspects of Vegetable Pathology in Relation to Human Disease. (*Brit. Med. Journ.*, Nov. 18, 1922.)  
Comparative Pathology of Plants and Animals. (*Brit. Med. Journ.*, 1922.)  
The Relation of Plant Pathology to Genetics. (*Report Imp. Conf. Bot.*, London, 1924 (*Cambs. Univ. Press*), pp. 111-119.)  
Some Research Aspects of the Wart Disease Problem. (*Intern. Potato Conf.*, London, 1921.)
- Smith, J. H.  
The Killing of Botrytis by Heat, with a Note on the Determination of Temperature Co-efficients. (*Ann. App. Biol.*, 1923, X.)  
On the Apical Growth of Fungal Hyphae. (*Ann. Bot.*, 1923, XXXVII, pp. 341-343.)  
On the Early Growth Rate of the Individual Fungus Hypha. (*New Phyt.*, 1924, XXIII, pp. 65-78.)
- Jewson, T., and Tattersfield, F.  
The Infestation of Fungus Cultures by Mites. (*Ann. App. Biol.*, 1922, IX, pp. 213-240.)
- Roach, W. A.  
Studies in the Varietal Immunity of Potatoes to Wart Disease (*Synchytrium Endobioticum* Schilb., Perc.). Part I. The Influence of the Foliage on the Tuber as shown by Grafting. (*Ann. App. Biol.*, 1923, X, pp. 142-146.)
- Glynn, M. D.  
Infectious Experiments with Wart Disease of Potatoes, *Synchytrium Endobioticum* (Schilb). (*Ann. App. Biol.*, 1925, XII, pp. 34-60.)
- Roach, W. A., Glynn, M. D., Brierley, Wm. B., and Crowther, E. M.  
Experiments on the Control of Wart Disease of Potatoes by Soil Treatment, with Particular Reference to the use of Sulphur. (*Ann. App. Biol.*, 1925, XII, pp. 152-190.)
- Russell, Sir E. J.  
Les Micro-Organismes du Sol dans leurs rapports avec la croissance des plantes. Position actuelle du probleme. (*Ann. de la Sci. Agr.*, 1921, pp. 49-67.)  
The Physico-Chemical Problems relating to Soil. (*Trans. Fara. Soc.*, 1922, XVII, pp. 219-223.)  
Institute of Brewing Research Scheme. Second Report on the Experiments on the Influence of Soil, Season and Manuring on the Quality and Growth of Barley 1923. (*Journ. Inst. Brewing*, 1924, XXX, No. 9 (XXI, N.S.))  
The Institute of Brewing Research Scheme. 3rd Report on the Experiments on the Influence of Soil, Season and Manuring on the Quality and Growth of Barley, 1924. (*Journ. Inst. Brewing*, 1925, XXXI, No. 11 (XXII, N.S.))
- Russell, Sir E. J., and Keen, B. A.  
The Effect of Chalk on the Cultivation of Heavy Land. (*Journ. Mis. Agric.*, 1922, XXVIII, pp. 419-422.)
- Hind, H. L.  
Report on the Analyses of the Barleys of 1922 and of the Malts made from them. (*Journ. Inst. Brewing*, 1924, XXX, pp. 969-986.)

- Haines, W. B.  
A Comparison of the Radiation Recorders at Rothamsted. (*Journ. Roy. Met. Soc.*, 1925, *LI*, pp. 95-100.)
- Christmas, W. D.  
Notes on the Weather at Rothamsted. (" *Nature*," Oct. 27th, 1921; Jan. 16th, 1922; " *The Times*," Jan. 26th, July 4th, Aug. 2nd, Sept. 3rd, Oct. 1st, Nov. 2nd, Dec. 2nd, 1923; Jan. 2nd, Mar. 1st, June 2nd, Sept. 1st, 1924; Jan. 1st, 1925.)
- Eden, T.  
The Edaphic Factors Accompanying the Succession after Burning on Harpenden Common. (*Journ. Ecol.*, 1924, *XII*, pp. 267-286.)
- Lancaster, H. M.  
Institute of Brewing Research Scheme. 2nd Report on the Influence of Soil, Season, and Manuring on the Quality and Growth of Barley, as indicated by the Malts made therefrom. (*Journ. Inst. Brewing*, 1925, *XXXI*, No. 3 (*XXII*, N.S.))
- Roach, W. A.  
A Laboratory Apparatus for the Wet Grinding of Plant Tissues out of Contact with Air. (*Biochem. Journ.*, 1925, *XIX*, No. 5.)
- Russell, Sir E. J.  
The Place of Science in Rural Life. (*Pres. Addr. Trans. South-Eastern Union Sci. Soc.*, 1925.)  
The Barley Crop. A Study in Modern Agricultural Chemistry. (*Journ. Inst. Brewing*, 1922, *XXVIII*, pp. 697-717.)  
Report on the Experiments on the Influence of Soil, Season and Manuring on the Quality and Growth of Barley, 1922. (*Journ. Inst. Brewing*, 1923, *XXIX*, pp. 624-654.)  
The Possibility of Using Town Refuse as Manure. (*Journ. Min. Agric.*, 1922, *XXIX*, pp. 685-691.)  
Recent Changes in Artificial Fertilisers. (*The Field*, 1922.)  
The Economical Use of Artificial Manures on the Farm. (*Address Bath and West and Southern Counties Society*, June, 1921.)  
Phosphatic Fertilisers. (*Journ. Min. Agric.*, 1923, *XXIX*, pp. 234-240.)  
Manures for Milk: Lime, Slag, and How to Use Them. (*Milk Industry*, 1922.)  
The Dairyman and his Grass Land. (*Milk Industry*, 1923.)  
Manurial Dressings Worth Trying. (*Modern Farming*, 1922.)  
Top-dressing as a Modern Farming Operation. (*Modern Farming*, pp. 1-22.)  
Soil Sterilisation: Why and How to do it. (*Fruit Grower*, 1923.)  
Agricultural Chemistry and Vegetable Physiology. (*Ann. Rep. Chem. Soc.*, 1921, *XVIII*, pp. 192-209 (1921: Sir E. J. Russell, 1922: H. J. Page).)
- Annual Report on Soils and Fertilisers. (*Soc. Chem. Industry. Ann. Repts. App. Chem.* (1921: Sir E. J. Russell; 1922: H. J. Page).)
- Science and Modern Farming. (*Journ. Newcastle Farm. Club*, 1921.)  
Modern Application of Chemistry to Crop Production. (*Inst. Chem. Lect. Publ.*, 1921.)  
Science and Crop Production. (*Scott. Journ. Agric.*, 1922, V.)  
The Work of the Rothamsted Experimental Station. (*Journ. Min. Agric.*, 1922, *XXVIII*, pp. 777-787.)  
Rothamsted and Agricultural Science. (*Evening Disc. Roy. Inst.*, February, 1923.)  
The Artificial Feeding of Crops. (*Discovery*, 1923.)  
The Influence of Geographical Factors on the Agricultural Activities of a Population. (*Geograph. Teacher*, 1923.)



- Richards, E. H., and Sawyer, G. C.  
Further Experiments with Activated Sludge. (*Journ. Soc. Chem. Ind.*, 1922, *XLI*, pp. 62T-71T.)
- Page, H. J.  
Green Manuring. (*Journ. Min. Agric.*, 1922, *XXIX*, pp. 104-112, 240-248.)  
Saving Expense by Green Manuring. (*Mod. Farm.*, 1923, *VI*, 9.)  
The Agricultural Value of Modern Fertilisers. (*Raw Materials Review*, 1923, pp. 111-112.)  
The Chemistry of the Soil and of Crop Production (in "*Chemistry in the XXth Century*," Benn Bros., 1924.)
- Keen, B. A.  
Soil Tilth in Relation to Mechanical Tillage. (*Agric. Gas.*, 1924, pp. 297-298.)
- Crowther, E. M., and Haines, W. B.  
An Electrical Method for the Reduction of Draught in Ploughing. (*Impl. Mach. Rev.*, 1924, *L*, pp. 1003-5.)
- Crowther, E. M.  
The Determination of Lime Requirements. (*Agric. Prog.*, 1924, *II*, pp. 80-84.)  
The Soils of Tropical Africa. (*Empire Cotton Growing Review*, 1925, *II*, pp. 35-39.)
- Page, H. J.  
The Utilisation of Waste Products in Agriculture. (*Journ. Min. Agric.*, 1924, *XXX*, pp. 910-918.)  
Annual Reports on Soils and Fertilisers. (*Soc. Chem. Ind. Ann. Rep. Appl. Chem.*, 1924, *VIII*, and 1925, *IX*.)  
Agric. Chem. and Veg. Physiol. (*Ann. Rep. Chem. Soc.*, *XX*, 1924.)  
Sections on "Soils" and "Chemistry of the Living Plant" in "Biochemistry," by H. J. Page and J. C. Drummond. (*Ann. Rep. Chem. Soc.*, 1925, *XXI*.)
- Russell, Sir E. J.  
Monthly Notes on Manures. (*Journ. Min. Agric.*, *XXIX*, *XXX*, and *XXXI*.)  
Soil Improvements. (*Journ. Min. Agric.*, 1924, *XXXI*, pp. 120-127.)  
Soil Improvement: Fertilisers and their Use. (*Journ. Min. Agric.*, 1924, *XXXI*, pp. 217-223.)
- Garner, H. V.  
Monthly Notes on Manures. (*Journ. Min. Agric.*, *XXX* and *XXXI*.)
- Imms, A. D.  
The Gout Fly of Barley. (*Journ. Min. Agric.*, 1925, *XXXI*, pp. 1137-1140.)
- Gray, P. H. H.  
Bacteria of the Soil, and the Utilisation of Organic Antiseptics. (*Discovery*, 1923, *IV*, pp. 153-156.)  
Bacteria of the Soil, and the Decomposition of Cellulose. (*Discovery*, 1925, *VI*, pp. 56-59.)
- Tattersfield, F., and Gimmingham, C. T.  
Experiments with Sodium Fluosilicate as an Insecticide. (*Journ. Ind. Eng. Chem.*, *XVII*, p. 323.)
- Russell, Sir E. J.  
British Association for the Advancement of Science. (1924, *Pres. Addr.*, Section M.)  
La relation entre les organismes du sol et sa fertilité. (1923, *Tr. Cong. de Chim. Ind.*, Paris.)  
A Visit to the Gezira. (*Journ. Agricola Club*, No. 35, 1925.)

- A Three-Thousand Mile Journey up the Nile. (*Geo. Teacher, Autumn, 1925.*)  
 Field Experiments at Rothamsted during 1923 and 1924. (*Journ. Min. Agric., 1925, XXXII, 5.*)
- Keen, B. A.  
 Experiments upon the Wheat Crop at Rothamsted. (*Essex Farm. Journ., 1923, II.*)  
 Recent Work at the Rothamsted Experimental Station. (*Essex F. U. Year Book, 1924.*)  
 The Border-Line between Meteorology and Soil Physics. (*Mst. Mag., 1925.*)
- Maskell, E. J.  
 The Technique of Plot Experiments. (*Rep. Imp. Bot. Conf., London, July, 1924.*)
- Page, H. J.  
 The Value of Calcium Cyanamide as a Fertiliser. (*Fert. Feed. Stuffs Journ., Nov. 18th, 1925.*)

#### Plant Breeding Research Institute, Cambridge.

- Armstrong, S. F.  
 The Mendelian inheritance of susceptibility and resistance to yellow rust (*Puccinia glumarum, Eriks. et Henn.*) in Wheat. (*Journ. Agric. Sci., XII, 1, 1922.*)
- Engledow, F. L., and Shelton, J. P.  
 An Investigation upon certain metrical attributes of wheat plants. (*Journ. Agric. Sci., XII, 2, 1922.*)
- Engledow, F. L.  
 The Inheritance of Glume Length in a Wheat Cross. (*Journ. Gen., XIII, 1, 1923.*)
- Engledow, F. L., and Wadham, S. M.  
 Investigations on Yield in the Cereals, 1st instal. (*Journ. Agric. Sci., XIII, 4, 1923.*)  
 Investigations on Yield in the Cereals. 2nd instal. (*Journ. Agric. Sci., XIV, 1, 1924.*)  
 Investigations on Yield in the Cereals. 3rd instal. (*Journ. Agric. Sci., XVI, 2, 1924.*)  
 Investigations on Yield in the Cereals. 4th instal. (*Journ. Agric. Sci., XIV, 3, 1924.*)
- Engledow, F. L.  
 Inheritance in Barley. (*Journ. Gen., XIV, 1, 1924.*)
- Watkins, A. E.  
 Genetic and Cytological Studies in Wheat. I. (*Journ. Genetics, XIV, 2, 1924.*)
- Engledow, F. L.  
 Investigations on Yield in the Cereals. II. A Spacing Experiment with Wheat. (*Journ. Agric. Sci., XV, 2, 1925.*)
- Watkins, A. E.  
 Genetic and Cytological Studies in Wheat. (*Journ. Genetics, XV, 3, 1925.*)
- Engledow, F. L.  
 English Wheat Growing Prospects from the Plant Breeding Point of View. (*Proc. Brit. Ass., 1925.*)

#### Welsh Plant Breeding Station, Aberystwyth.

- Stapledon, R. G.  
 The Uses of " Rape Pastures." (*Modern Farming, Jan., 1922.*)

- Stapledon, R. G., Jenkin, T. J., Williams, R. D., and Sampson, Kathleen.  
Preliminary Investigations with Herbage Plants. (*P. B. Sta. Bull.*, H., 1, March, 1922.)
- Williams, R. D.  
Depth of Sowing Grass and Clover Seeds. (*Journ. Min. Agric.*, April and May, 1922.)
- Marquand, C. V. B.  
Varieties of Oats in Cultivation. (*P. B. Sta. Bull.*, C, 2, May, 1922.)
- Stapledon, R. G.  
Germination of Indigenous Grass and Clover Seeds. (*Journ. Min. Agric.*, May, 1922.)
- Stapledon, R. G., and Davidson, J. D.  
Failure of Black Yeo Oats in Glamorgan in 1921. (*Ibid.*, Aug., 1922.)
- Stapledon, R. G.  
The Growing and Marketing of Improved Strains of Herbage Plants. (*Sci. Agric.*, II, 12, 1922.)
- Jenkin, T. J.  
Notes on Vivipary in *Festuca ovina*. (*Bot. Exch. Club Report*, 1921, Sept., 1922.)
- Stapledon, R. G.  
Real Grassland Problem. (*Western Mail Agr. Supp.*, Jan. 29, 1923.)  
Crops and Plant Breeding: Research Methods in North America. (*Journ. Min. Agric.*, Feb., 1923.)
- Williams, R. D.  
Method of Covering Grass and Clover Seeds. (*Ibid.*, March, 1923.)
- Stapledon, R. G.  
White Clover. (*Ibid.*, April, 1923.)
- Jones, M. G.  
Investigations Relative to the Yielding and other Properties of Oat Varieties under different Conditions of Soil and Climate. (*P. B. Sta. Bull.*, C., 3, May, 1923.)
- Sampson, Kathleen.  
Seed Treatment for Bunt and Smut in Cereals. (*Ibid.*)
- Sampson, Kathleen, and Davies, D. W.  
Incidence of Fungus Diseases on Oat Varieties in seasons 1921-1922. (*Ibid.*)
- Stapledon, R. G.  
Seeds Mixtures for Grassland. (*Journ. Min. Agric.*, May, 1923.)  
Red Clover. (*Ibid.*, June, 1923.)  
Alsike Clover. (*Ibid.*, July, 1923.)  
Lucerne. (*Ibid.*)  
The Cultivation and Varieties of Oats. (*Bath and West Agric. Soc.*, 1923.)
- Stapledon, R. G., and others.  
Sowing Land Down to Grass. (R.A.S.E., Nov., 1923.)
- Stapledon, R. G.  
Native Oats and Clover. Early Results of Researches at the Welsh Plant Breeding Station. (*Western Mail—Agric. Supp.*, Feb. 5, 1924.)
- Davies, D. W.  
Disease of Crops. Influence of Heavy Rainfall on Oats and Potatoes. (*Ibid.*)
- Jones, M. G.  
Grain v. Forage Crop. New Practice gains ground in Cardiganshire. (*Ibid.*)

- Williams, R. D.  
 Methods of Covering Grass Seeds. (*Journ. Min. Agric.*, XXX, p. 1134.)
- Jenkin, T. J.  
 The Artificial Hybridization of Grasses. (*P. B. Sta. Bull.*, H, 2, Apr., 1924.)
- Stapledon, R. G., and Jones, Rhoda.  
 Lucerne. (*Journ. Min. Agric.*, Apr., 1924.)
- Stapledon, R. G.  
 Nomenclature of Grasses and Clovers. (*Ibid.*, May, 1924.)  
 Seasonal Productivity of Herbage Grasses. (*P. B. Sta. Bull.*, H, 3, June, 1924.)
- Fagan, T. W., and Jones, H. Trefor.  
 The Nutritive Value of Grasses as shown by their Chemical Composition. (*Ibid.*)
- Williams, R. D.  
 Productivity of Different Strains and Nationalities of Red Clover. (*Ibid.*)
- Williams, R. D., and Davies, W.  
 A Note on Subterranean Clover (Australian Variety). (*Ibid.*)
- Stapledon, R. G., Fagan, T. W., and Williams, R. D.  
 Grassland and the Grazing Animal. (*Ibid.*)
- Stapledon, R. G.  
 Strains of Herbage Plants. (*Year Book Essex F. U.*, 1924.)
- Williams, R. D.  
 Importance of Strain in Red Clover. (*Agric. Prog.*, I, 1924.)
- Stapledon, R. G.  
 Putting Land Down to Grass. (*Bath and West Agric. Soc.*, 1924.)  
 Value of Clovers: Aids to Fertility. (*Daily Telegraph*, June, 1924.)  
 Business Aspects of Farming. Temporary Grass: Laying Down. (*Farmer and Stockbreeder*, June 30th, 1924.)  
 Improvement of Crop Plants: Selection work on Herbage Plants. (*Proc. Imp. Bot. Conf.*, July, 1924.)  
 The Economic Significance of the Concepts, Nationality, Variety and Strain as applied more particularly to Herbage Plants. (*Journ. N.I.A.B.*, Camb., Aug., 1924.)
- Tincker, M. A. H.  
 Effect of Length of Day on Flowering and Growth. (*Nature*, 114, 2862, p. 350.)
- Stapledon, R. G., and Jones, Rhoda.  
 Seeds Mixtures for Temporary Grass: Investigations conducted in Denmark and Sweden and Observations on Trials of a similar nature in progress at Aberystwyth. (*Welsh Journ. Agric.*, 1, Jan., 1925.)
- Jenkin, T. J.  
 Natural Crossing in Wheat. (*Ibid.*)
- Sampson, Kathleen, and Davies, D. W.  
 Dry Treatment for Smut Diseases of Cereals. (*Ibid.*)
- Williams, R. D.  
 Winter Keep. (*Ibid.*)
- Stapledon, R. G.  
 Problems of Field Husbandry. (*Oxf. Univ. Press*, March, 1925.)  
 Improvement of Very Poor Pastures. (*Journ. Min. Agric.*, Apr., 1925.)
- Davies, William.  
 The Relative Palatability of Pasture Plants. (*Ibid.*, May, 1925.)

- Williams, R. D.  
Studies concerning the Pollination, Fertilization and Breeding of Red Clover. (*P. B. Sta. Bull.*, H, 4, May, 1925.)
- Jenkin, T. J.  
Pasture Plants. ("Farm Crops," III.)
- Stapledon, R. G.  
Temporary Grass. (*Ibid.*)  
Permanent Grass. (*Ibid.*)  
Seed Testing and Seed Production. (*Ibid.*)
- Sampson, Kathleen.  
Some Infection Experiments with Loose and Covered Smuts of Oat, which indicate the existence in them of Biological Species. (*Ann. App. Bio.*, July, 1925.)
- Stapledon, R. G.  
Grassland Research. (*Farmer and Stockbreeder*, Aug. 3rd, 1925.)  
Pasture Competitions, 1925.
- Jones, Martin G.  
Effect of Weather on Oats at Aberystwyth. (*Min. Agric. Mo. Met. Rept.*, Sept., 1925.)
- Stapledon, R. G.  
Nationality Trials with Strains of Red Clover. (*Journ. Min. Agric.*, Oct., 1925.)
- Tincker, M. A. H.  
Effect of Length of Day upon the Growth and Reproduction of some Economic Plants. (*Ann. Botany*, Oct., 1925.)  
Physiological Pre-determination Experiments with Certain Economic Crops: The Relation between the rate of Germination and Subsequent Growth. (*Ann. App. Biol.*, Nov., 1925.)
- Stapledon, R. G., and Davies, William.  
Seeds Mixture Experiments in Central and West Wales, 1915-1925. (*Adv. Bull.*, 1, Nov., 1925.)

**Research Institute in Plant Physiology, Imperial College of Science and Technology, London.**

- Blackman, V. H.  
On the Similarities and Dissimilarities between the Diseases of Plants and of Animals. (*Brit. Med. Journ.*, Oct., 1922.)  
Field Experiments in Electroculture. (*Jour. Agric. Sci.*, XIV, 1924.)  
Physiological Aspects of Parasitism. (*Rep. Brit. Assoc. Sci.*, 1924.)  
Electroculture Work in 1922 and 1923. (*Journ. Min. Agric.*, 1923.)  
Physiology of Crop Yield. (*Rep. Imp. Bot. Conf.*, 1924.)  
Atmospheric Electric Currents, Normal and Abnormal, and their Relation to the Growth of Plants. (*Journ. Roy. Met. Soc.*, L, 1924.)
- Blackman, V. H., and Legg, A. T.  
Pot-culture Experiments with an Electric Discharge. (*Journ. Agric. Sci.*, XIV, 1924.)
- Blackman, V. H., Legg, A. T., and Gregory, F. G.  
The Effect of a Direct Electric Current of Very Low Intensity on the Rate of Growth of the Coleoptile of Barley. (*Proc. Roy. Soc.*, B, 95, 1923.)
- Blackman, V. H., and Bolas, B. D.  
A Simple Device for the Gaseous Circulation in a Closed System. (*Ann. Bot.*, 1926.)
- Brown, W.  
Studies in the Physiology of Parasitism. VIII. On the Exosmosis of Nutrient Substances from the Host Tissue into the Infection Drop. (*Ann. Bot.*, 1922.)

- On the Germination and Growth of Fungi at Various Temperatures and in Various Concentrations of Carbon Dioxide. (*Ibid.*, 1922.)
- Studies in the Physiology of Parasitism. IX. The Effect on the Germination of Fungal Spores of Volatile Substances arising from Plant Tissues. (*Ibid.*, 1922.)
- On the Preparation and Use of Collodion Osmometers. (*Ibid.*, 1922.)
- Experiments on the Growth of Fungi on Culture Media. (*Ibid.*, 1922.)
- Boyle, C.  
Studies in the Physiology of Parasitism. (*Ibid.*, 1923.)
- Gregory, F. G.  
Physiology of Crop Yield. (*Rep. of the Imp. Bot. Conf.*, 1924.)  
The Effect of Climatic Conditions on the Growth of Barley. (*Ann. Bot.*, 1925.)
- Knight, R. C.  
Further Observations on Transpiration, Stomata, Leaf Water Content and Wilting of Plants. (*Ibid.*, 1922.)
- Haynes, D.  
Diaphasic Liquid Systems and Bio-electric Phenomena. (*Ann. Botany*, 1923.)  
Chemical Studies in the Physiology of Apples. I. (*Ibid.*, 1925.)
- Archbold, H. K.  
Chemical Studies in the Physiology of Apples. II. (*Ibid.*, 1925.)  
Chemical Studies in the Physiology of Apples. III. (*Ibid.*, 1925.)
- Brown, J. M.  
Chemical Studies on the Physiology of Apples. (*Ibid.*, 1926.)
- Carré, M. H.  
Investigations on the Pectic Constituents of Apples. (*Ibid.*, 1925.)  
The Relation of Pectin and Pectose in Apple Tissue. (*Biochem. Journ.*, 1925.)  
An Investigation of the Changes which occur in the Pectic Constituents of Stored Fruit. (*Ibid.*, 1922.)

**Agricultural and Horticultural Research Station (University of Bristol), Long Ashton.**

(*The Papers mentioned are additional to those published in the Annual Reports of the Institute.*)

- Barker, B. T. P.  
West Country Orchards and their Possibilities. (*Bath and West Journ.*, XVII, 1922.)
- Barker, B. T. P., and Grove, O.  
Sulphur Dioxide as a Preservative for Fruit. (*Journ. Pomol.*, V, 1, Dec., 1925.)
- Ballard, E., and Peren, G. S.  
Red Plant in Strawberries and its Correlation with Cauliflower Disease. (*Journ. Pomol.*, III, 3, 1923.)
- Briton-Jones, H. R.  
Strains of *Rhizoctonia Solani* Kühn—*Corticium vagum* Berk. and Curt. (*Trans. Brit. Myc. Soc.*, IX, 4, Aug., 1924.)
- Gilchrist, Grace G.  
Bark Canker Disease of Apple Trees caused by *Myxosporium Corticolum* Edgert. (*Brit. Myc. Soc. Trans.*, VIII, 4.)
- Grove, O.  
Notes on Cider. (*Brew. Tr. Rev.*, April, 1925.)  
Bacterial Disorders of Cider. (*Brew. Tr. Rev.*, Oct., 1925.)

- Hutchinson, H. P.  
The Basket Willow Crop as a Means of Utilising Wet Land. (*Bath and West Journ.*, 1924.)
- Lees, A. H.  
Leaf Character in Reverted Black Currants. (*Ann. App. Biol.*, IX, 1, Apr., 1922.)  
A Note on the Effect of Sulphur on Black Currant Mite. (*Journ. Pomol.*, III, 2, Nov., 1922.)  
Egg Killing Washes. (*Journ. Pom.*, III, 4, Jan., 1924.)  
Egg Killing Washes. (*Journ. Pom.*, IV, 2, Jan., 1925.)  
Reversion Disease of Black Currants—Means of Infection. (*Ann. App. Biol.*, XII, 2, May, 1925.)
- Lees, A. H., and Briton-Jones, H. R.  
Plum Aphis and Brown Rot Control. (*Journ. Pom.*, IV, 3 and 4 June, 1925.)
- Mann, C. E. T., and Wallace, T.  
The Effects of Leaching with Cold Water on the Foliage of the Apple. (*Journ. Pom.*, IV, 3 and 4, June, 1925.)
- Miles, H. W.  
Control of the Apple Blossom Weevil. (*Journ. Pom.*, III, Nov., 1922.)  
Observations on the Biomonics of the Apple Blossom Weevil, *Anthonomus pomorum*, Linn. (*Ann. App. Biol.*, X, 3 and 4, Dec., 1923.)
- Peren, G. S., and Grubb, N. H.  
A Note on the Impurity of Raspberry Stocks. (*Journ. Pom.*, III, Nov., 1922.)
- Peren, G. S.  
Spraying for the Control of the Logan Beetle. (*Journ. Pom.*, III, Nov., 1922.)  
Data on the Lateral Spread of the Roots of Fruit Trees. (*Journ. Pom.*, III, April, 1923.)
- Ridler, W. F. F.  
Investigation of the Structure of Reverted Black Currants. (*Ann. App. Biol.*, XI, 2, July, 1924.)
- Spinks, G. T.  
Breeding Commercial Varieties of Fruit. (*Fruit Tr. Journ.* March 5th, 1924.)  
The Treatment of Seedling Apple Trees to Induce Early Fruiting. (*Journ. Pom.*, IV, 3 and 4, June, 1925.)
- Summers, F.  
Factors Governing Fruit Bud Formation. (*New Phyt.*, 1924.)
- Tutin, F.  
A Note on the Hydrolysis of Pectin. (*Biochem. J.*, 1923, XVII, 83.)  
Pectin and its Hypothetical Precursor, Protopectin. (*Biochem. J.*, 1923, XVII, 510.)  
Chemical Investigations of Fruits and their Products. I. Apple Juice as a Source of Sorbitol. (*Biochem. J.*, 1925, XIX, 416.)  
Chemical Investigations of Fruits and their Products. II. The Fate of Sugar during "Cider Sickness." (*Biochem. J.*, 1925, XIX, 418.)  
The Pectin Content of Normal and "Silvered" Apple Leaves. (*Biochem. J.*, 1925, XIX, 414.)
- Wallace, T.  
The Improvement of Poor Pastures, with Special Reference to the Eradication of Bracken—Progress Reports. (*Bath and West Journ.*, 1922, 1923 and 1924.)  
Experiments on the Manuring of Fruit Trees. (*Journ. of Pom.*, IV, 3 and 4, June, 1925, and V, 1, Dec., 1925.)

Wiltshire, S. P.

Studies of the Apple Canker Fungus. II. Canker Infection of Apple Trees through Scab Wounds. (*Ann. App. Biol.*, IX, 1922.)

**East Malling Research Station, East Malling, Kent.**

Hatton, R. G.

The Influence of Root Stock upon the Tree Fruits. (*Fruit Grower*, Oct. 18th and 25th, 1923, and Nov. 1st, 1923; also *Verslag V. H. Intern. Tuinbouw-Congress, Amsterdam, Sept. 17th-23rd, 1923.*)

Some Notes on Stocks for Plums. (*Journ. Kent F.U.*, Nov., 1923.)

Grubb, N. H., and Witt, A. W.

Cherry Stocks : their Behaviour in the Nursery. (*Ann. Rep. E.M. Res. Sta.*, 1924.)

Hatton, R. G., Amos, J., and Grubb, N. H.

The Choice of Young Fruit Trees. (*Journ. Kent F.U.*, Oct., 1924, and *Ann. Rep. E.M. Res. Sta.*, 1924.)

Hatton, R. G., Amos, J., and Witt, A. W.

Some Problems of Propagation. Part I. (*Ann. Rep. E. M. Res. Sta.*, 1923.)

Grubb, N. H.

Winter Pruning Experiments with Apple Trees. (*Journ. Roy. Hort. Soc.*, Sept., 1922.)

Notes on Apple Pruning. (*Journ. Kent F. U.*, March, 1923.)

Apple Pruning, Summary of Deductions from Experiments at East Malling. (*Journ. Kent F. U.*, Nov., 1925.)

Hatton, R. G., Grubb, N. H., and Amos, J.

Some Factors Influencing Root Development. (*Ann. Rep. E. M. Res. Sta.*, 1923.)

Hatton, R. G., and Grubb, N. H.

Field Observations on the Incidence of Leaf Scotch upon the Apple. (*Journ. Pom. Hort. Sci.*, Jan., 1925; *Ann. Rep. E. M. Res. Sta.*, 1924.)

Some Factors Influencing the Period of Blossoming of Apples and Plums. (*Ann. Rep. E. M. Res. Sta.*, 1924.)

Hatton, R. G., Grubb, N. H., and Knight, R. C.

Black Currant Variety Trials : Reliability of Results. (*Journ. Pom. Hort. Sci.*, June, 1925; *Ann. Rep. E. M. Res. Sta.*, 1924.)

Grubb, N. H.

Commercial Raspberries and their Classification. (*Journ. Pom. Hort. Sci.*, Nov., 1922.)

Grubb, N. H., and Peren, G. S.

A Note on the Impurity of Raspberry Stocks. (*Journ. Pom. Hort. Sci.*, Nov., 1922.)

Grubb, N. H.

Raspberry Investigations. (*Ann. Rep. E. M. Res. Sta.*, 1923)

Raspberry Varieties and their Cropping. (*Ann. Rep. E. M. Res. Sta.*, 1924.)

Knight, R. C.

The Carbohydrate-Nitrogen Ratio. (*Sci. Prog.*, XIX, 1924.)

Grubb, N. H.

Tests of Fungicides on Apple Trees. II. (*Journ. Pom.*, Jan., 1924.)

Grubb, N. H., and Bagenal, N. B.

Fungicidal Spraying of Apples. (*Ann. Rep. E. M. Res. Sta.*, 1923.)

Wormald, H., and Grubb, N. H.

The Crown Gall Disease of Nursery Stocks. I. Field Observations on Apple Stocks. (*Ann. App. Biol.*, XI, Oct., 1924.)



- Notes on the Control of Nursery Stock against Crown Gall. (*Gard. Chron., Apr., 1922.*)
- Field Observations on the Crown Gall of Nursery Stocks. (*Ann. Rep. E. M. Res. Sta., 1924.*)
- Harris, R. V.  
The Blue Stripes Wilt of the Raspberry. (*Journ. Pom. Hort. Sci., June, 1925; Ann. Rep. E. M. Res. Sta., 1924.*)
- Grubb, N. H., and Masee, A. M.  
Raspberry "Mosaic." (*Ann. Rep. E. M. Res. Sta., 1923.*)
- Wormald, H.  
The Mulberry Blight in Britain. (*Ann. App. Biol., July, 1924.*)  
Mulberry Bacterial "Blight." (*Ann. Rep. E. M. Res. Sta., 1924.*)
- Harris, R. V.  
An Unusual Form of Pear Canker. (*Ann. Rep. E. M. Res. Sta., 1924.*)
- Wormald, H., and Harris, R. V.  
Note on the Bacterial Soft Rot of Turnips. (*Ann. App. Biol., July, 1925.*)
- Wormald, H.  
Notes on Plant Diseases in 1924. (*Ann. Rep. E. M. Res. Sta., 1924.*)  
Parasitic Fungi of Cereals. (*Farm Crops, I, 1925.*)  
A Leaf Blotch of the Shasta Daisy. (*Gard. Chron., Oct. 31st, 1925.*)
- Masee, A. M.  
The Control of the Apple Blossom Weevil. (*Journ. Pom., July, 1924.*)
- Worsley, K. P.  
Apple Blossom Weevil Experiments. (*Journ. Kent F. U., July, 1922.*)
- Masee, A. M.  
The Resistance of Apple Stocks to Attacks of the Green Apple Aphis. (*Journ. Pom., Jan., 1924.*)
- Tydeman, H. M.  
The Control of Big Bud Mite in the Field. (*Ann. Rep. E. M. Res. Sta., 1923.*)
- Hatton, R. G., Amos, J., and Tydeman, H. M.  
The Control of the Big Bud Mite in the Field. (*Ann. Rep. E. M. Res. Sta., 1924.*)
- Masee, A. M.  
The Leaf and Bud Mite of Raspberry. (*Journ. Pom., July, 1924.*)  
Abnormal Leaves of the Himalaya Berry and the Raspberry. (*Gard. Chron., Nov. 11th, 1922.*)  
Preliminary Field Trials of Tar Distillate Washes. (*Ann. Rep. E. M. Res. Sta., 1924.*)
- Hatton, R. G., and Amos, J.  
Hop Experiments: The Testing of New Varieties of Hops. (*Ann. Rep. E. M. Res. Sta., 1924.*)
- Amos, J.  
Manurial Scheme of Trials with Hops. (*Ann. Rep. E. M. Res. Sta., 1924.*)  
Variety Trials with Potatoes, 1921. (*Journ. Kent F. U., Jan., 1922.*)
- Hatton, R. G., and Amos, J.  
Potato Trials at East Malling Research Station, 1924. (*Journ. Kent F. U., Nov., Dec., 1924; Ann. Rep. E. M. Res. Sta., 1924.*)  
Potato Trials at East Malling Research Station, 1923. (*Journ. Kent F. U., Nov., 1923.*)

Amos, J.

Winter Corn Trials (Wheat and Oats), 1921-22. (*Journ. Kent F. U., Nov., 1922.*)

Winter Oat Trials, 1922-23. (*Journ. Kent F. U., Nov., 1923.*)

Hatton, R. G., and Amos, J.

Corn Trials, 1923-24. (*Journ. Kent F. U., XVI, 3, Sept., 1924.*)

Tydeman, H. M.

Weather Conditions during 1924. (*Ann. Rep. E. M. Res. Sta., 1924.*)

Hatton, R. G.

Fruit Growing in Small Gardens. (*The Garden, Feb. to Mar., 1924.*)

The Control of the Fruit Tree through its Roots. (*Country Life,*

*June, 1924, No. 1430.*)

Grubb, N. H., and Witt, A. W.

Pruning Neglected Fruit Trees. (*The Garden, Feb. 16th, 1924.*)

#### Experimental and Research Station, Cheshunt, Herts.

Bewley, W. F.

Diseases of Glasshouse Plants. (*Benn Bros., Ltd., 1924.*)

Anthraxnose of the Cucumber under Glass. (*Journ. Min. Agric., Aug. and Sept., 1922.*)

"Sleepy Disease" of the Tomato. (*Ann. App. Biol., IX, 2, June, 1922.*)

Tomato Diseases. (*Journ. Roy. Hort. Soc., XLVII, 2 and 3, 1922.*)

"Sleepy Disease" of the Tomato. (*Journ. Min. Agric., Aug., 1923.*)

Bewley, W. F., and Shearn, J.

A Root Disease of the Tomato caused by *Colletotrichum tabificum* (Hallier pro parte) Pethybridge. (*Ann. App. Biol., XI, 2, July, 1924.*)

Speyer, E. R.

Mycetophilid Flies as Pests of the Cucumber Plant in Glasshouses. (*Bull. Ent. Res., XIII, 3, Jan., 1923.*)

Speyer, E. R., and Owen, Owen.

The Action of some Organic Compounds upon the Cucumber-house Woodlouse. (*Ann. App. Biol., XI, 2, July, 1924.*)

Owen, Owen.

Carbon Dioxide in relation to Glasshouse Crops. Part I: Investigation of Carbon Dioxide in Glasshouse Atmospheres. (*Ann. App. Biol., X, 3 and 4, Dec., 1923.*)

Owen, Owen, and Williams, P. H.

Carbon Dioxide in Relation to Glasshouse Crops. Part II. The Preparation of an Atmosphere Rich in Carbon dioxide. (*Ann. App. Biol., X, 3 and 4, Dec., 1923.*)

#### Food Investigation Board.

##### Department of Scientific and Industrial Research.

Kidd, F., and West, C.

Brown Heart: A Functional Disease of Apples and Pears. (1923; 4s. 6d.)

Savage, W. G., and Hunwicke, R. F.

Canned Fruit. (1923; 1s. 3d.)

The Problems of Apple Transport Overseas. (1924; 9d.)

The "Gas" Content and Ventilation of Refrigerated Holds carrying Apples. (1925; 1s. 3d.)

"Brown Heart" in Australian Apple Shipments. (1925; 1s. 3d.)

- Kidd, F., and West, C.  
Functional Diseases of Apples in Cold Storage. (1925; 1s.)
- Smith, A. J.  
Experiments on the Leakage of Carbon Dioxide Gas from "Unventilated" Holds of Ships. (1925; 9d.)
- Carré, M. H., and Haynes, D.  
The Estimation of Pectin as Calcium Pectate and the Application of this method to the Determination of the Soluble Pectin in Apples. (*Biochem. Journ.*, 1922, *XVI*, 1.)
- Brown, W.  
On the Germination and Growth of Fungi at various Temperatures and in various Concentrations of Oxygen and of Carbon Dioxide. (*Ann. Bot.*, 1922, *XXXVI*, 142.)
- Carré, M. H.  
An Investigation of the Changes which occur in the Pectic Constituents of Stored Fruit. (*Biochem. Journ.*, *XVI*, 5, 1922.)
- Haynes, D.  
A Criticism of Beutner's Theory of the Electromotive Force of Diphasic Liquid Systems and their relation to Bio-electrical Phenomena. (*Ann. Bot.*, *XXXVII*, 145, 1923.)
- Granger, K., and Horne, A. S.  
A Method of Inoculating the Apple. (*Ann. Bot.*, *XXXVIII*, 149, 1924.)
- Brown, W., and Horne, A. S.  
Studies of the Genus *Fusarium*. (*Ann. Bot.*, *XXXVIII*, 150, 1924.)
- Delf, E. M.  
The Antiscorbutic Value of Fresh and Canned English Tomatoes. (*Biochem. Journ.*, *XVIII*, 3 and 4, 1924.)
- Onslow, M. Wheldale.  
Oxidising Enzymes. VII. The Oxygenase of the Higher Plants. (*Biochem. Journ.*, *XVIII*, 3 and 4, 1924.)
- Kidd, M. N., and Beaumont, A.  
Apple Rot Fungi in Storage. (*Trans. Brit. Myc. Soc.*, *X*, 1 and 2, 1924.)  
An Experimental Study of the Fungal Invasion of Apples in Storage, with particular reference to Invasion through the Lenticels. (*Ann. Appl. Biol.*, *XII*, 1, 1925.)
- Haynes, D.  
Chemical Studies in the Physiology of Apples. I. The Change in the Acid Content of Stored Apples and its Physiological Significance. (*Ann. Bot.*, *XXXIX*, 153, 1925.)
- Archbold, H. K.  
Chemical Studies in the Physiology of Apples. II. The Nitrogen Content of Stored Apples. (*Ann. Bot.*, *XXXIX*, 153, 1925.)  
Chemical Studies in the Physiology of Apples. III. The Estimation of Dry Weight and the Amount of Cell-Wall Material in Apples. (*Ann. Bot.*, *XXXIX*, 153, 1925.)
- Horne, A. S.  
Fungal Diseases of Stored Apples. (*Imp. Botan. Conf.*, July, 1924.)
- Delf, E. M.  
The Influence of Storage on the Antiscorbutic Value of Fruit and Vegetable Juices. (*Biochem. Journ.*, *XIX*, 1925.)
- Carré, M. H.  
The Relation of Pectose and Pectin in Apple Tissue. (*Biochem. Journ.*, *XIX*, 2, 1925.)
- Kidd, F., and West, C.  
Temperature and Metabolic Balance in Living Plant Tissues. (*Proc. 4th Int. Congr. Refrign.*, 1, 1924.)

Carré, M. H.

Chemical Studies in the Physiology of Apples. IV. Investigations on the Pectic Constituents of Apples. (*Ann. Bot.*, XXXIX, 1925)

Ministry of Agriculture and Fisheries (Plant Pathological Laboratory).

Cotton, A. D.

Potato Leaf Curl Demonstrations. (*Journ. Min. Agric.*, Feb., 1922.)

Potato Pink Rot: A disease new to England. (*Journ. Min. Agric.*, March, 1922.)

Fryer, J. C. F.

A new Apple Pest (*Anthonomus pyri*, Boh. = *A. cinctus*, Kollar). (*Journ. Min. Agric.*, Nov., 1922.)

Fryer, J. C. F., Stenton, R., Tattersfield, F., and Roach, W.

A Quantitative Study of the Insecticidal Properties of *Derris elliptica* (Tuba Root). (*Ann. App. Biol.*, X, 1, Feb., 1923.)

Fryer, J. C. F., and Stenton, R.

Notes on the Control of Cutworms by Poisoned Bait. (*Ann. Appl. Biol.*, X, 2, July, 1923.)

Fryer, J. C. F., and Collin, J. E.

Certain aspects of Damage to Oats by Frit Fly. (*Ann. App. Biol.*, XI, 3 & 4, Oct., 1924.)

Fryer, J. C. F., and Cunliffe, N.

Oscinella frit, Linn. An investigation to determine how far varietal differences may influence infestation of the Oat Plant. (*Ann. App. Biol.*, XI, 3 & 4, Oct., 1924.)

Fryer, J. C. F., and Pethybridge, G. H.

Phytopathological Service of England and Wales. (*Journ. Min. Agric.*, July, 1924.)

Pethybridge, G. H.

Potato Leaf-Roll. (*Journ. Min. Agric.*, Dec., 1924.)

Buckhurst, A. S.

Notes on Bulb Mites and Eelworms. (*Journ. Min. Agric.*, Nov., 1925.)

Stenton, R.

Introduction of a parasite of the Woolly Aphis. (*Journ. Min. Agric.*, July, 1925.)

Fryer, J. C. F., and Cunliffe, N.

Studies on *Oscinella frit*, Linn. Supplementary data on the relation between varietal differences of Oat Plants and Susceptibility to Infestation. (*Ann. App. Biol.*, XII, 4, Nov., 1925.)

Fryer, J. C. F., Cunliffe, N., and Gibson, G. W.

Studies on *Oscinella frit*, Linn. The correlation between stage of growth of stem and susceptibility to infestation. (*Ann. App. Biol.*, XII, 4, Nov., 1925.)

Alcock, N. L.

A Disease of Narcissus Bulbs caused by a Sclerotium-producing Fungus. (*Trans. Brit. Myc. Soc.*, X, Sept., 1924.)

A Die-back in Sussex. (*Trans. Brit. Myc. Soc.*, VIII, 1923, p. 190.)

Protection against Fungi from Abroad. (*Journ. Min. Agric.*, Oct. 1922.)

Stenton, R.

Spring Tails attacking Mangolds. (*Journ. Min. Agric.*, XXIX, p. 828.)

## Pathological Laboratory.

- A Weevil Destructive to Snowdrop Bulbs (*Brachycerus* sp.). (*Journ. Min. Agric.*, XXIX, p. 951.)  
 The Rhododendron Bug. *Leptobyrsa (Stephanitis) rhododendri*, Horv. (*Journ. Min. Agric.*, XXIX, p. 555.)

## Animal Nutrition Research Institute, Cambridge.

- Crowther, C., and Woodman, H. E.  
 A Study of Nitrogen Metabolism in the Dairy Cow. (*Journ. Agric. Sci.*, XII, 1, Jan., 1922.)
- Woodman, H. E., and Hammond, John.  
 Note on the composition of a fluid obtained from the udders of virgin heifers. (*Journ. Agric. Sci.*, XII, 1, Jan., 1922.)
- Woodman, H. E.  
 Comparative Determination of the Digestibility and Metabolisable Energy of Green Oats and Tares, Oat and Tare Hay and Oat and Tare Silage. (*Journ. Agric. Sci.*, XII, 2, April, 1922.)
- Wood, T. B.  
 The School of Agriculture of the University of Cambridge. (*Journ. Min. Agric.*, June and July, 1922.)
- Deighton, T.  
 Some Investigations on the Electrical Method of Soil Moisture Determinations. (*Journ. Agric. Sci.*, XII, 3, July, 1922.)
- Woodman, H. E.  
 The Chemistry of the Strength of Wheat Flour. (*Journ. Agric. Sci.*, XII, 3, July, 1922.)
- Capstick, J. W., and Wood, T. B.  
 The Effect of Change of Temperature on the Basal Metabolism of Swine. (*Journ. Agric. Sci.*, XII, 3, July, 1922.)
- Capstick, J. W., and Wood, T. B.  
 The Progress of Metabolism after Food in Swine. (*Proc. Roy. Soc., B.*, Vol. 94, 1922.)
- Amos, A., and Woodman, H. E.  
 An Investigation into the Changes which occur during the Ensilage of Oats and Tares. (*Journ. Agric. Sci.*, XII, 4, Oct., 1922.)
- Hammond, John.  
 On the relative Growth and Development of various breeds and crosses of Pigs. (*Journ. Agric. Sci.*, XII, 4, Oct., 1922.)
- Wood, T. B.  
 Home Grown Corn and Potatoes for Live Stock. (*Journ. Min. Agric.*, Dec., 1922.)
- Hammond, J., and Sanders, H. G.  
 Some Factors affecting Milk Yield. (*Journ. Agric. Sci.*, XIII, 1, Jan., 1923.)
- Amos, A., and Woodman, H. E.  
 Sunflower Silage. (*Journ. Agric. Sci.*, XIII, 2, April, 1923.)
- Sanders, H. G.  
 The Shape of the Lactation Curve. (*Journ. Agric. Sci.*, XIII, 2, April, 1923.)
- Woodman, H. E., and Hammond, J.  
 The Composition of Secretions obtained from the Udders of Heifers during Pregnancy. (*Journ. Agric. Sci.*, XIII, 2, April, 1923.)
- Woodman, H. E.  
 The Nature of the Pigment of Silage. (*Journ. Agric. Sci.*, XIII, 2, April, 1923.)

- Marshall, F. H. A.  
The Internal Secretions of the Reproductive Organs. (*Phys. Rev. Baltimore, U.S.A., July, 1923.*)
- Woodman, H. E.  
Grading, Composition and Feeding Values of Wheat Offals. (*Journ. Min. Agric., Oct., 1923.*)
- Deighton, T.  
The Effect of Movement of Soil Salts on Standardisation Values of Electrodes used in Moisture Determinations. (*Journ. Agric. Sci., XIII, 4, Oct., 1923.*)
- Woodman, H. E.  
Wheat Offals: Their Grading, Composition and Digestibility. (*Journ. Agric. Sci., XIII, 4, Oct., 1923.*)
- Marshall, F. H. A., and Wood, W. A.  
On the Ovarian Factor concerned in the Occurrence of Oestrus. (*Journ. Phys., LVIII, 1, Oct., 1923.*)
- Hammond, J.  
Changes in the Reproductive Organs of the Cow during the Sexual Cycle and Pregnancy. (*Proc. XIth Intern. Phys. Congr., Edin., 1923.*)
- The Corpus Luteum of the Domestic Rabbit and the Changes in the Reproductive Organs in relation to Lactation. (*Proc. XIth Intern. Phys. Cong., Edin., 1923.*)
- Halnan, E. T.  
Notes on Feeding Stuffs. (*Journ. Min. Agric., Jan.-Dec., 1923.*)
- Asdell, S. A.  
Some Effects of Unilateral Ovariectomy in the Rabbit. (*Brit. Journ. Exp. Biol., I, 1924.*)
- Fecundity in Pigs. (*Brit. Berk. Pig Soc. Y. B., 1924.*)
- Woodman, H. E., and Amos, A.  
Further Investigations into the Changes which occur during the Ensilage of a Green Crop. (*Journ. Agric. Sci., XIV, 1, Jan., 1924.*)
- Wood, T. B.  
The Feeding of Animals. (*Journ. Min. Agric., May, 1924.*)
- Woodman, H. E.  
A Method for the Estimation of Uric Acid in Poultry Excreta. (*Journ. Agric. Sci., XIV, 3, July, 1924.*)
- Critical Note on the Method of Correcting Protein Digestion Coefficients. (*Journ. Agric. Sci., XIV, 3, July, 1924.*)
- Woodman, H. E., and Amos, A.  
Maize Silage. I. (*Journ. Agric. Sci., XIV, 3, July, 1924.*)
- Wood, T. B., and Woodman, H. E.  
Digestion Trials with Swine. (*Journ. Agric. Sci., XIV, 4, Oct., 1924.*)
- Woodman, H. E., and Engledow, F. L.  
A Chemical Study of the Development of the Wheat Grain. (*Journ. Agric. Sci., XIV, 4, Oct., 1924.*)
- Wood, T. B.  
Feeding for Winter Beef Production. (*Journ. Min. Agric., Dec., 1924.*)
- Dixon, W. E., and Marshall, F. H. A.  
The Influence of the Ovary on Pituitary Secretion: A Probable Factor in Parturition. (*Journ. Phy., LIX, 4 and 5, Dec., 1924.*)
- Halnan, E. T.  
Monthly Notes on Feeding Stuffs. (*Journ. Min. Agric., Jan.-Dec., 1924.*)

- Woodman, H. E.  
 Digestion Trials with Swine. IV. Note on the Utilisation of Whole Milk by Swine. (*Journ. Agric. Sci.*, XV, 1, Jan., 1925.)  
 Digestion Trials with Swine. II. Comparative Determinations of the Digestibility of dry-fed maize, soaked maize, cooked maize and proprietary cooked maize. (*Journ. Agric. Sci.*, XV, 1, Jan., 1925.)  
 Digestion Trials with Swine. III. The Digestibility of a coarse grade of Middlings. (*Journ. Agric. Sci.*, XV, 1, Jan., 1925.)
- Mackenzie, K. J. J., and Marshall, F. H. A.  
 On the Presence of Supernumerary Mammary Glands in Cows and on their Functional Activity. (*Journ. Agric. Sci.*, XV, 1, Jan., 1925.)
- Woodman, H. E.  
 Maize and Barley for Pig Feeding. (*Journ. Min. Agric.*, March 1925.)
- Woodman, H. E., and Hammond, J.  
 The Mucous Secretion of the Cervix of the Cow. (*Journ. Agric. Sci.*, XV, 2, April, 1925.)
- Woodman, H. E.  
 Ensilage. VI. Chemistry of Silage. (*Journ. Min. Agric.*, May, 1925.)  
 The Nutritive Value of Stack Silage. (*Journ. Agric. Sci.*, XV, 3, July, 1925.)  
 Critical Examination of the Methods Employed in Silage Analysis. (*Journ. Agric. Sci.*, XV, 3, July, 1925.)
- Asdell, S. A.  
 The Inception of Lactation in the Cow and Goat. (*Journ. Agric. Sci.*, XV, 3, July, 1925.)
- Halnan, E. T.  
 The Calcium, Phosphorus and Nitrogen Balance of the Non-Laying and Laying Pullet. (*Journ. Nat. Poult. Inst.*, X, 9, Aug., 1925.)
- Amos, A., and Woodman, H. E.  
 A Study of the Process of Making Clamp Silage. (*Journ. Agric. Sci.*, XV, 4, Oct., 1925.)
- Halnan, E. T.  
 A Note on the Function of the Gizzard in Fowls. (*Journ. Nat. Poult. Inst.*, X, 12, Nov., 1925.)
- Davidson, H. R.  
 The Value of Minerals in Fish Meal for Fattening Pigs. (*Journ. Min. Agric.*, Nov., 1925.)
- Halnan, E. T.  
 Monthly Notes on Feeding Stuffs. (*Journ. Min. Agric.*, Jan.-Dec., 1925.)
- Rowett Research Institute, University of Aberdeen.**
- Rothlin, E., Plimmer, R. H. A., and Husband, A. D.  
 The Action of Hypophysin, Ergamine, and Adrenaline upon the Secretion of the Mammary Gland. (*Biochem. Journ.*, XVI, 1922.)
- Plimmer, R. H. A., Rosedale, J. L., Crichton, A., and Topping, R. B.  
 The Rearing of Chickens on the Intensive System. Part I. The Vitamin Requirements: Preliminary Experiments. (*Biochem. Journ.*, XVI, 1922.)
- The Rearing of Chickens on the Intensive System. Part II. The Effect of Good Protein. (*Biochem. Journ.*, XVI, 1922.)
- Plimmer, R. H. A., and Rosedale, J. L.  
 Distribution of Enzymes in the Alimentary Canal of the Chicken. (*Biochem. Journ.*, XVI, 1922.)

Rosedale, J. L.

The Amino-acids of Flesh. The Di-amino-acid Content of Rabbit, Chicken, Ox, Horse, Sheep, and Pig Muscle. (*Biochem. Journ.*, XVI, 1922.)

Orr, J. B.

The Vitamin Hypothesis and its Practical Significance in Stock-feeding. (*Trans. Highland Agric. Soc. Scotland*, 1922.)

Elliot, W. E., Crichton, A., and Orr, J. B.

The Importance of the Inorganic Constituents of the Food in Nutritional Disorders. I. Rickets in Pigs. (*Brit. Journ. Exp. Path.*, III, 1922.)

Taylor, W., and Husband, A. D.

The Effect on the Percentage Composition of the Milk of (a) Variations in the Daily Volume, and (b) Variations in the Nature of the Diet. (*Journ. Agric. Sci.*, XII, 1922.)

Orr, J. B., and Innes, I.

The Effect on Arterial Hypertension of Increased Fluid Intake. (*Brit. Journ. Exp. Path.*, III, 1922.)

Orr, J. B., Crichton, A., and Green, J. J.

The Value of Fish Meal as a Feeding Stuff. (*Scott. Journ. Agric.*, V, 1922.)

Orr, J. B., and Husband, A. D.

The Importance of Mineral Matter for Growing Animals. (*Scott. Journ. Agric.*, V, 1922.)

McGowan, J. P., and Smith, W. G.

On Pining, Vinquish, or Daising in Sheep. (*Scott. Journ. Agric.*, V, 1922.)

McGowan, J. P.

Scrapie in Sheep. (*Scott. Journ. Agric.*, V, 1922.)

Taylor, W.

Note on the Non-Protein Nitrogen in Goat's Milk. (*Biochem. Journ.*, XVI, 5, Oct., 1922.)

McGowan, J. P.

On a Variety of Hæmorrhagic Septicæmia in Sheep. (*Vet. Journ.*, 79, 4, 1922.)

Orr, J. B., and Crichton, A.

The Mineral Requirements of the Pig. (*Pig Breeders' Ann.*, 1922.)

Orr, J. B., and Crichton, J. A.

The Food Value of Dried Whey Solids. (*Scott. Journ. Agric.*, VI, 1, 1923.)

Orr, J. B.

The Importance of Mineral Matter in Nutrition. (*Trans. Highland Agric. Soc. Scotland*, XXXV, 1923.)

McGowan, J. P., and Crichton, A.

On the Effect of Deficiency of Iron in the Diet of Pigs. (Preliminary Communication.) (*Biochem. Journ.*, XVII, 2, 1923.)

McGowan, J. P.

Some Points relating to the Morphology and Development of *Sarcocystis Tenella*. (*Parasitology*, XV, 2, June, 1923.)

Orr, J. B., and Crichton, A.

Fish Meal and Tainted Bacon. (*Scott. Journ. Agric.*, VI, 3, July, 1923.)

Orr, J. B.

The Influence of Oils in Poultry Feeding. (*Scott. Journ. Agric.*, VI, 3, July, 1923.)



- Godden, W.  
The Mineral Constituents of Milk. (*Journ. State Medicine*, XXXI, Sept., 1923.)  
Notes on the Drainage from Tower Silos. (*Journ. Agric. Sci.*, XIII, Oct., 1923.)
- Husband, A. D., Godden, W., and Richards, M. B.  
The Influence of Cod-liver Oil, Linseed Oil, and Olive Oil on the Assimilation of Calcium and Phosphorus in the Growing Pig. (*Biochem. Journ.*, XVII, 6, 1923.)
- Orr, J. B., and Magee, H. E.  
The Application of the Indirect Method of Calorimetry to Ruminants. (*Journ. Agric. Sci.*, XIII, 4, Oct., 1923.)
- McGowan, J. P.  
Bradsot or Braxy. (*Centralblatt fur Bakteriologie-originales*, 91 Band, 1923, Hefst. 1.)
- Orr, J. B.  
The Role of Vitamins and of Minerals in Poultry Feeding. (*N.U.P.S. Year Book*, 1924.)
- Crichton, A.  
Some Practical Aspects of the Mineral Requirements of Farm Animals. (*Scott. Journ. Agric.*, VII, 1924.)
- Orr, J. B., and Crichton, A.  
The Requirements of the Pig for "Vitamin A" and "Vitamin C." (*Journ. Agric. Sci.*, XIV, 1, Jan., 1924.)
- McGowan, J. P., and Crichton, A.  
Iron Deficiency in Pigs. (*Biochem. Journ.*, XVIII, 1, 1924.)  
Cotton Seed Meal Poisoning. (*Biochem. Journ.*, XVIII, 1, 1924.)
- Orr, J. B., Henderson, J. M., and Magee, H. E.  
The Effect of Irradiation with the Carbon Arc on Pigs on a Diet high in Phosphorus and low in Calcium. (*Proc. Physio. Soc. : J. Physiol.*, LIX, July, 1924.)
- Orr, J. B., and others.  
The Nutritive Requirements of Poultry: The Effect of adding Vitamin-rich Substances to Normal Rations for Poultry. I. The Fat Soluble Vitamin or Vitamin A. (*Scott. Journ. Agric.*, VII, 3, 1924.)
- Orr, J. B.  
The Importance of Mineral Elements in the Maintenance of Health. (*Brit. Medical Journ.*, Sept., 1924.)  
The Importance of Mineral Elements in the Nutrition of Children. (*Journ. State Medicine*, XXXII, 9, 1924.)  
The Chemical and Physiological Properties of Milk. (*Trans. Highland Agric. Soc.*, 1924.)
- Richards, M. B., Godden, W., and Husband, A. D.  
The Influence of Variations in the Sodium-Potassium Ratio on the Nitrogen and Mineral Metabolism of the Growing Pig. (*Biochem. Journ.*, XVIII, 3 and 4, 1924.)
- Telfer, S. V., and Crichton, J. A.  
The Influence of Mineral Deficiency in Goat's Milk on the Skeletal Growth of Kids. (*Brit. Journ. Exp. Path.*, V, 1924.)
- McGowan, J. P.  
On the Pathology of Iron Deficiency and Cotton Seed Poisoning in Pigs. (*Journ. Path. Bact.*, 27, 1924.)
- Magee, H. E.  
The Influence of Variations in the External Temperature on the Energy Exchange of the Goat. (*Journ. Agric. Sci.*, 14, 4, 1924.)  
The Influence of Pregnancy on the Energy Exchange of the Goat. (*Journ. Agric. Sci.*, 14, 4, 1924.)

- The Influence of Work on the Energy Exchange of the Goat. (*Journ. Agric. Sci.*, 14, 4, 1924.)
- The Influence of Food on the Energy Exchange of the Goat. (*Journ. Agric. Sci.*, 14, 4, 1924.)
- Orr, J. B., and Magee, H. E.  
The Course of Metabolism after Food in the Goat. (*Journ. Agric. Sci.*, 14, 4, 1924.)
- McGowan, J. P.  
Iron Deficiency and its possible Relationship to Human Disease. (*Lancet*, 2, 1924.)
- Richards, M. B., and Godden, W.  
The Pemberton-Neumann Method for the Estimation of Phosphorus. (*Analyst*, XLIX, 1924.)
- Kelly, F. C., and Husband, A. D.  
Method of Estimating Minute Quantities of Iodine in Biological Material. (*Biochem. Journ.*, 18, 5, 1924.)
- McGowan, J. P.  
The Modification of the Bone-Lesions in Rickets, due to Mobility of the Part. (*Journ. Path. and Bact.*, 27, 1924.)
- Orr, J. B.  
The Influence of Nutrition on the Incidence of Disease. (*Vet. Record*, 1924.)
- Orr, J. B., and others.  
The Nutritive Requirements of Poultry: The Effect of adding Vitamin-rich Substances to Normal Rations. II. Vitamin B or the Water soluble Vitamin of Yeast. (*Scott. Journ. Agric.*, VIII, 1, 1925.)
- The Nutritive Requirements of Poultry: The Mineral Requirements. Preliminary Communication. (*Scott. Journ. Agric.*, VIII, 1, 1925.)
- Henderson, J. M.  
The Effect of Irradiation and Diet on Calcium and Phosphorus Metabolism. (*Biochem. Journ.*, XIX, 1, 1925.)
- Orr, J. B.  
Vitamins in Stock Feeding. (*Agric. Progress*, 1925.)  
Mineral Metabolism and Disease. (*Practitioner*, Jan., 1925.)  
The Effect of Iodine on the Metabolism of Nitrogen and Phosphorus in the Growing Pig. (*Proc. Phys. Soc.*, Feb. 21st, 1925, *Journ. Physiol.*, LIX.)
- McGowan, J. P.  
A Further Contribution to the Subject of Scrapie. (*Scott. Journ. Agric.*, Apr., 1925.)
- Orr, J. B., Moir, M., Kinross, A., and Robertson, G. S.  
The Nutritive Requirements of Poultry. (*Scott. Journ. Agric.*, July, 1925.)
- Orr, J. B., Crichton, A., Crichton, J. A., and Middleton, W.  
Mineral Nutrients in the Rations of Dairy Cows. (*Scott. Journ. Agric.*, July, 1925.)
- Godden, W., and Husband, A. D.  
Some Aspects of the Mineral Metabolism of Farm Animals. (*Journ. Soc. Chem. Industry*, XLIV, 27, July, 1925.)
- Orr, J. B.  
The Mineral Requirements of Dairy Cows. (*Milk Industry*, Aug., 1925.)
- Orr, J. B., Magee, H. E., and Henderson, J. Mc.  
The Effect of Ultra-Violet Light on the Mineral Metabolism of the Lactating Animal. (*Biochem. Journ.*, XIX, 4, 1925.)

Orr, J. B.

The Mineral Elements in Animal Nutrition. (*Brit. Assoc. (Southampton, 1925).*)

Kelly, F. C.

The Influence of Small Quantities of Potassium Iodide on the Assimilation of Nitrogen, Phosphorus and Calcium in the Growing Pig. (*Biochem. Journ., XIX, 4, 1925.*)

**Ministry of Agriculture for Northern Ireland (Chemical and Animal Nutrition Division).**

Robertson, G. S.

Basic Slags and Rock Phosphates. (*Cambs. Univ. Press Monograph, 1922.*)

Robertson, G. S., and Dickinson, F.

The Valuation of Insoluble Phosphates by means of a Modified Citric Acid Test. (*Journ. Soc. Chem. Ind., 52, 1923, pp. 597-667.*)  
Report on Baby Beef Experiments. (*N.I. Min. Agric., Tech. Bull. 1, 1924.*)

Baskett, R. G.

Effect of Minerals in Overcoming Breeding Difficulties in Sows. (*Agric. Prog., III, pp. 34-36.*)

Robertson, G. S.

Field Experiments with Rock Phosphates on Soils poor in Phosphatic Acid. (*Brit. Assoc. Sci. (Toronto, 1924).*)

Robertson, G. S., and Baskett, R. G.

The Influence of Minerals on the Growth of Chicks and the Egg Yield of Laying Pullets. (*Brit. Assocn. (Southampton, 1925).*)

**Animal Breeding Research Department, University of Edinburgh.**

Crew, F. A. E.

The Effect of Castration in the Fowl. (*Vet. Journ., Jan., 1922.*)  
A Suggestion as to the Cause of the Aspermatid Condition of the Imperfectly Descended Testis. (*Journ. Anat., 1922.*)

Ovarian Disease and the Secondary Sexual Characters in the Domestic Hen. (*Vet. Journ., Feb., 1922.*)

Crew, F. A. E., and Panikkar, M. R. V.

A Description of the Abnormal Reproductive System of a Pig. (*Ibid., March, 1922.*)

Crew, F. A. E.

A Histological Study of the Undescended Testicle of the Horse. (*Journ. Comp. Path., 1922.*)

A Possible Correlation between the Components of the Egg and Hatching Results. (*Nat. Poult. Journ., April, 1922.*)

The Sterility of Twins and the Free-Martin in Cattle. (*Scot. Journ. Agric., 1922.*)

Crew, F. A. E., and Panikkar, M. R. V.

A Description of a Cryptorchid Goat with Abnormal Genitalia. (*Vet. Journ., April, 1922.*)

Crew, F. A. E.

A Case of Developmental Abnormality in *Bos domesticus*. (*Ibid.*)

A Case of Cystic Ovary in a Goat. (*Ibid., May, July, 1922.*)

Studies in Intersexuality. I. Mammals. (*Proc. Roy. Soc., B., 1923.*)

A Black Leghorn which turned White. (*Journ. Hered., 1923.*)

On the Relation of the Science of Genetics to Practical Stock-Breeding. (*Scot. Journ. Agric., April, 1923.*)

- Crew, F. A. E., and Dighton, A.  
Developmental Intersexuality in the Domesticated Goat. (*Vet. Journ.*, 1923.)
- Crew, F. A. E., and Blyth, J. S. S.  
A Micrological Study of the Fleeces of the Blackface Lamb. (*Journ. Text. Instit.*, 1922.)
- Crew, F. A. E., and Glass, E. J. G.  
The Thyroid Gland of the Bulldog Calf of the Dexter. (*Journ. Comp. Path.*, 1922.)
- Crew, F. A. E., and Fell, H. B.  
The Nature of certain Ovum-like Bodies found in the Semiferous Tubules. (*Q.J.M.S.*, 1922.)
- Hogben, L. T.  
A Method of Hypophysectomy in the Frog. (*Q.J. Exp. Physiol.*, 1922.)  
The Experimental Analysis of Sex-review. (*Eugen. Rev.*, 1923.)
- Hogben, L. T., and Winton, F. R.  
The Pigmentary Effector System. III. (*Proc. Roy. Soc.*, 1923.)
- Fell, H. B.  
Case of Unilateral Cryptorchism in a Ram. (*J. Roy. Micr. Soc.*, 1923.)  
A Histological Study of the Testis in Cases of Pseudo-Intersexuality and Cryptorchism. (*Q.J. Exp. Physiol.*, 1923.)
- Dighton, A.  
Coat Colour in Greyhounds. (*Proc. Zool. Soc., Lond.*, 1923.)
- Fraser Roberts, J. A.  
A Method for Preparing Sections of Mammalian Hair. (*Journ. Text. Instit.*, 1923.)
- Crew, F. A. E.  
Developmental Intersexuality in the Pig. (*Vet. Journ.*, 1923.)
- Crew, F. A. E., and Huxley, J. S.  
Effect of Thyroid Feeding in Domestic Fowl. (*Ibid.*)
- Crew, F. A. E.  
Studies in Intersexuality. II. Fowl. (*Proc. Roy. Soc.*, 1923.)  
The Significance of an Achondroplasia-like Condition met with in Cattle. (*Ibid.*)  
A Mutant of the Old English Black Rat. (*Journ. Hered.*, 1923.)  
The Bulldog Calf of the Dexter Breed of Cattle. (*Journ. Hered.*, 1923.)  
Complete Sex-Transformation in the Fowl. (*Journ. Hered.*, 1923.)  
Dominance and the Mendelian Theory. (*Nat. Poult. Journ.*, 1923.)  
The Cocky-feathered Hen. (*Ibid.*, 1924.)  
Genetics and the Pig Breeder. (*Pig. Breed. Ann.*, 1924.)  
Genetics and the Goat Breeder. (*Brit. Goat Soc. Year Book*, 1924.)
- Hogben, L. T., and Winton, F. R.  
Studies on Pituitary. II. (*Q.J. Exp. Physiol.*, 1923.)
- Hogben, L. T., and Crew, F. A. E.  
Endocrine Activity in Fœtal Life. (*Brit. J. Exp. Biol.*, 1923.)
- Hogben, L. T.  
The Pigmentary Effector System. IV. (*Ibid.*)  
Internal Secretion and Reproduction and Growth in the Fowl. (*Vet. Journ.*, 1924.)
- Finlay, G. F.  
Effect of Different Species Lens Antisera on Rats and Mice. (*Brit. Journ. Exp. Biol.*, 1924.)  
Sterility in Swine. (*Nat. Counc. Pig Breed.*, 1924.)

- Blyth, J. S. S.  
Micrological Analysis of the Fleece from Blackface Sheep. (*Ann. Appl. Biol.*, 1923.)
- Blyth, J. S. S., and Crew, F. A. E.  
Fibres of Intermediate Character in the Fleece of *O. vignei*. (*Ibid.*)
- Fell, H. B.  
The Histological Basis of Sex Reversal. (*Brit. Journ. Exp. Biol.*, 1923.)  
Histogenesis of the "Luteal" Cells of the Ovary. (*Ibid.*)
- Crew, F. A. E.  
The Bulldog Calf. (*Proc. Roy. Soc. Med.*, 1924.)  
Hermaphroditism in the Pig. (*Journ. Obstet. and Gynec.*, 1924.)  
The Sex-Ratio and the Question of its Control. (*Intern. Rev. Agric.*, 1924.)  
Blue and White Colour in Swine. (*Journ. Hered.*, 1924.)  
Science and the Breeder. (*Poult. Year Book*, 1924.)  
Sex-linked Inheritance. (*Nat. Util. Poult. Soc. Year Book*, 1924.)  
Genetic Aspects of Fertility and the Sex Ratio. (*Brit. Goat Soc. Year Book*, 1925.)
- Finlay, G. F.  
Recent Developments in Cattle Breeding. (*Oliver and Boyd*, 1924.)
- Greenwood, A. W.  
Growth Rate in Hypophysectomised Salamander Larvæ. (*Brit. Journ. Exp. Biol.*, 1924.)  
Gonad Grafts in Embryonic Chicks. (*Ibid.*)
- Fraser Roberts, J. A.  
Colour Inheritance in Sheep. (*Journ. Genet.*, 1924.)  
The Science of Genetics and the Stockbreeder. (*Welsh J. Agric.*, 1924.)
- Nichols, J. E.  
Fertility in Sheep. (*Journ. Min. Agric.*, 1924.)
- Smith, A. D. B.  
Shorthorn Colours. (*Journ. Hered.*, 1925.)
- Walton, A.  
The Flocculation of Sperm Suspension in Relation to Surface Charge. (*Brit. Journ. Exp. Biol.*, 1925.)

**Department of Genetics, University of Cambridge.**

- Pease, M. S.  
Note on Professor Morgan's Theory of Hen Feathering in Cocks. (*Proc. Camb. Phil. Soc.*, XXI, 1922.)
- Punnett, R. C.  
Heredity in Poultry. (*London, MacMillan and Co.*, 1923.)  
Future Mendelian Research in Poultry. (*Sec. World's Congress Poult., Barcelona*, 1924.)  
On the Japanese Rabbit. (*Journ. Gen.*, XIV, 1924.)
- Punnett, R. C., and Pease, M. S.  
On the Pattern of the Dutch Rabbit. (*Journ. Gen.*, XV, 1925.)

**National Institute for Research in Dairying, Shinfield,  
Reading.**

- Williams, R. Stenhouse.  
The National Institute for Research in Dairying. (*Journ. B.D.F.A.*, XXXIV, 1922.)
- Mackintosh, J.  
Milk Recording. (*Ibid.*)  
Milking Trials, Dairy Show, 1921. (*Ibid.*)

- Williams, R. Stenhouse.  
Concerning Steam Sterilisation. (*Essex F. U. Year Book*, 1922.)
- Freear, K., Mattick, A. T. R., and Williams, R. S.  
The Keeping Qualities of Grade A (Certified) Milk. (*J. Hyg.*, XX, 4, Jan., 1922.)
- Golding, J.  
The Whey Problem. (*Milk Ind.*, Feb., 1922.)
- Mackintosh, J.  
Milk Recording Societies and their Effect upon the Dairy Farming Industry. (*J. Farm. Club*, Part 1, Feb., 1922.)
- Golding, J.  
Pig Feeding that Stops Growth. (*Mod. Farm.*, Feb., 1922.)
- Mackintosh, J.  
How to Produce Clean Milk. (*J. Min. Agric.*, April, 1922.)
- Williams, R. Stenhouse, and Mattick, A. T. R.  
Report concerning the Present Position and Possible Developments of Graded Milk. (*Dairyman*, May, 1922.)
- Mackintosh, J.  
Feeding for Milk Production. (*Dairy World*, May 16th, 1922.)
- Golding, J.  
A new type of Portable Pig Sty. (*Pig Breed. Ann.*, 1922.)
- Mackintosh, J.  
What is a Profitable Milk Yield? (*Dairy World*, July, 1922.)
- Hoy, W. A., Sargent, M., and Williams, R. S.  
Producing Milk that Keeps Sweet. (*Mod. Farm.*, July, 1922.)
- Drummond, J. C., Golding, J., Zilva, S. S., and Coward, K. H.  
Relation of the fat soluble factor to rickets and growth in Pigs. XII. (*Biochem. Journ.*, XVI, 3, 1922.)
- Mattick, A. T. R., and Williams, R. S.  
Evidence of the necessity for a bacteriological standard for Grade A Milk. (*J. Hygiene*, XXI, 1, 1922.)
- Maule, H. P. G., and Aston, A. E.  
The Planning and Construction of Cow Sheds. I. (*J. Min. Agric.*, July, 1922.)
- Maule, H. P. G.  
The Planning and Construction of Cow Sheds. (*J. Min. Agric.*, Aug., 1922.)
- Golding, J.  
The Fallacy of the Single-milk-fat Test. (*Lancet*, Aug. 5th, 1922.)
- Maule, H. P. G.  
A Clean Milk Centre and where to find it. (*J. Min. Agric.*, Sept., 1922.)
- Golding, J.  
An Estimation of the practical importance of Vitamins gathered from Experiments in feeding Vitamin A to Pigs. (*Brit. Assoc.*, Hull, 1922.)
- Vitamins. (*Lancet*, Sept. 23rd, 1922.)
- Mackintosh, J.  
Dairy Breeds of Cattle in relation to Quantity, Chemical Composition and Cost of Production of Milk. (*Proc. Nat. Milk Conf.*, Oct., 1922.)
- Dry Meals for Calf Feeding. (*Milk Ind.*, Nov., 1922.)
- Mattick, A. T. R., and Williams, R. S.  
The Bacteriological Condition and Keeping Qualities of Grade A (Certified) Milk during the year 1921. (*J. Hygiene*, XXI, 2, Nov., 1922.)
- Williams, R. Stenhouse, and Mattick, A. T. R.  
Pasteurised Milk. (*Mod. Farm.*, Dec., 1922.)

- Williams, R. Stenhouse.  
A Vindication of Raw Milk. (*Dairy World*, Dec. 16th, 1922.)
- Mackintosh, J.  
Milk Recording and Feeding for Milk and Butter. (*Journ. R.A.S.E.*, 83, 1922.)  
Economy in Feeding Dairy Cows. (*Ann. Rep. Berks. Milk Rec. Soc.*, 1923.)
- Mattick, A. T. R.  
Clean Milk and the Farmer. (*Ibid.*)
- Golding, J.  
Vitamins in Agriculture. (*Univ. Bull.*, XXXII, Jan., 1923.)
- Mattick, E. C. V., and Hallett, H.  
The Influence of Unsterile Utensils on Clean Milk. (*Milk Ind.*, Feb., 1923.)
- Mackintosh, J.  
Dry Foods for Calf Feeding. (*Fert. Feed. Stuffs Journ.*, Feb. 28th, 1923.)
- Hoy, W. A.  
How to Steam Dairy Utensils with an ordinary Farm Copper. (*Dairyman*, Apr., 1923.)
- Drummond, J. C., Coward, K. H., Golding, J., Mackintosh, J., and Zilva, S. S.  
Cod Liver Oil in the Winter Feeding of Milch Cows. (*J. Agric. Sci.*, XIII, 2, 1923.)
- Drummond, J. C., Zilva, S. S., and Golding, J.  
The Use of Cod Liver Oil in the Feeding of Farm Animals. (*J. Agric. Sci.*, XIII, 2, 1923.)
- Williams, R. S., Drummond, J. C., Zilva, S. S., and Golding, J.  
Conference on the Milk Question. (*Dairyman*, May, 1923, *J. R. Soc. Arts*, May, 1923.)
- Mattick, A. T. R.  
The Production of Clean Milk. (*London: Dairyman, Ltd.*, 1923, 1s.)
- Mackintosh, J.  
Danish Methods of Improving Dairy Cattle. (*Agric. Gaz.*, June 29th, 1923.)  
Milk Production and the Constitution of Milch Cows. (*Est. Mag.*, Sept., 1923.)
- Mattick, A. T. R.  
Research in Dairying. (*Farm. and Stock.*, Oct. 22nd, 1923.)  
Effects of Pasteurisation on the Cream Line. (*Proc. Nat. Milk Conf.*, Nov., 1923.)
- Hiscox, E. R.  
A Study of the causes of "Blowing" in tins of Sweetened Condensed Milk. (*Ann. App. Biol.*, X, 3, Dec., 1923.)
- Williams, R. Stenhouse, and Mattick, A. T. R.  
How a wholesome and clean Milk Supply can be Provided. (*J. Royal San. Inst.*, XLIV, 6, Nov., 1923.)
- Mackintosh, J.  
Milk Recording and advisory work on Feeding of Dairy Cows. (*Agric. Prog.*, 1924.)
- Hickson, P. M.  
The Value of the different types of Covered Pails in the production of Clean Milk. (*Milk Ind.*, Jan., 1924.)
- Williams, R. Stenhouse.  
The Value of the Study of the Methods of Handling Milk. (*Journ. Agric. Dept.*, *Univ. Coll., Aberystwyth*, 1924.)

- Golding, J.  
Report on the World's Dairy Congress. (*Analyst*, XLIX, 579, June, 1924.)
- Bartlett, S.  
Measurements as an Aid to Inter-Breed Comparison. (*Journ. B.D.F.A.*, 1924.)
- Mackintosh, J.  
The Scientific Aspects of Dairy Farming. (*Journ. Yorks. Agric. Soc.*, 1924.)
- Mattick, A. T. R.  
Dairy Farm Buildings, Fittings and Equipment: their relation to Clean Milk Production. (*J. Min. Agric.*, July, 1924.)
- Channon, H. J., Drummond, J. C., and Golding, J.  
The effect of giving certain Oils in the Daily Diet of Cows on the Composition of Butter Fat. (*Analyst*, XLIX, 580, July, 1924.)
- Williams, R. Stenhouse, and others.  
Studies concerning the handling of Milk. (*Min. Agric., Misc. Pub.*, 41, 1924.)
- Williams, R. Stenhouse, Mattick, A. T. R., and Hoy, W. A.  
Refrigeration and the Milk Supply of the larger Towns in England. (*Fourth Intern. Cong. Refrign., Comm. VII*, 1924.)
- Mackintosh, J.  
The Practical Aims of the Dairy Farmer. (*J. Min. Agric.*, Sept., 1924.)
- Williams, R. Stenhouse, and Mattick, A. T. R.  
Equipment for the Dairy Farm. (*Agric. Gaz.*, Sept., 1924.)
- Williams, R. Stenhouse.  
Clean Milk. (*Cripples' Journ.*, Oct., 1924.)  
The Pure Milk Campaign. (*Dairyman*, Oct., 1924.)  
The Production of Clean Milk. (*Brit. Med. Journ.*, Oct., 1924.)
- Mattick, A. T. R., and Williams, R. S.  
Certified Milk in relation to the Bacteriological Standard. (*J. Hygiene*, XXIII, 3, Oct., 1924.)
- Zilva, S. S., Drummond, J. C., and Golding, J.  
The Relation of the Fat Soluble Factor to Rickets and Growth in Figs. III. (*Biochem. Journ.*, XVIII, 5, Oct., 1924.)
- Hiscox, E. R., and Lomax, K.  
Fruitiness in Whey. Part I. Bacteriological Studies. Part II. Chemical Studies. (*Ann. App. Biol.*, XI, 3 and 4, Oct., 1924.)
- Drummond, J. C., Golding, J., and others.  
The Influence of the Administration of certain Oils on the value of the Butter Fat of Cows on Winter Rations. (*J. Agric. Sci.*, XIV, 4, Oct., 1924.)
- Procter, F.  
Notes on Clean Milk Competitions. (*J. Min. Agric.*, Nov., 1924.)
- Golding, J.  
Vitamins in Agriculture. (*Agric. Prog.*, 1925.)  
The Use of Cod Liver Oil for Farm Stock. (*Essex F. U. Year Book*, 1925.)
- Williams, R. Stenhouse.  
Clean Milk. (*Ibid.*)  
The National Institute for Research in Dairying. (*Welsh Journ. Agric.*, March, 1925.)  
Tuberculosis and the Milk Supply. (*Veter. Journ.*, 81, 4, Apr., 1925.)
- Little, W. L., and Wright, N. C.  
The Ætiology of Milk Fever in Cattle. (*Brit. Journ. Exp. Path.*, VI, 3, June, 1925.)



- Mackintosh, J.  
Circumstances influencing the Yield and Quality of Milk. (*Trans. H.A.S.S.*, 1925.)
- Williams, R. Stenhouse.  
Bacteriological Standards and Pure Milk Supply. What should be the Standard of Purity of Milk? (*Brit. Med. Journ.*, Aug. 8th, 1925, and *Dairyman*, Aug., 1925.)  
Research in Dairying. (*Scott. Journ. Agric.*, VIII, 3, 1925.)
- Hallum, E. M., Hickson, P. M., and Batten, P. W.  
A Simple Form of Milk Equaliser. (*Milk Ind.*, Sept., 1925.)
- Mattick, A. T. R.  
Abortion in Cattle caused by *Vibrio Fœtus*. (*J. Comp. Path. Ther.*, 38, 3, Sept., 1925.)
- Hiscox, E. R., and Starling, U.  
Use of the Fermentation-Reductase Test for the Grading of Milk. (*J. Hygiene*, XXIV, 2, Oct., 1925.)
- Mackintosh, J.  
Cheapening Milk Production. How Research has Reduced Costs and Increased Yields. (*Farm. and Stock.*, Oct. 19th, 1925.)
- Williams, R. Stenhouse.  
The Whole Milk Trade: How Research has benefited Producers and Consumers. (*Farm. and Stock.*, No. 1880, Oct., 1925.)
- Mattick, A. T. R., and Wright, N. C.  
Influence of the Administration of certain Salts on the inorganic constituents of Milk. (*Biochem. Journ.*, XIX, 6, 1925.)
- Williams, R. Stenhouse, Golding, J., and Hiscox, E. R.  
The Use of the Microscope in the Dairying Industry, Fat Globules—The Separation and Identification of Micro-organisms causing Faults in Milk Products. (*Journ. Roy. Micros. Soc.*, 1925.)

#### Royal Veterinary College, London.

- Papers published in the *Journal of Comparative Pathology and Therapeutics*, 1922, 1923, 1924, and 1925:—
- McFadyean, Sir John.  
Researches regarding Epizootic Abortion of Cattle.
- Sheather, A. L.  
Abortion Bacillus in the Milk of Infected Cows.
- Bosworth, T. J.  
The Causal Organisms of Bovine Actinomycosis.
- McFadyean, Sir John, and Sheather, A. L.  
Joint-ill in Foals: Treatment with Vaccine.
- Sheather, A. L.  
The Detection of Mange Parasites and Protozoa by a Floatation Technique.
- McFadyean, Sir John.  
Review of the Progress of Veterinary Science in Great Britain during the Past Hundred Years.
- Sheather, A. L.  
The Detection of Worm Eggs in the Faeces of Animals, and some Experiments in the Treatment of Parasitic Gastritis in Cattle.
- Ware, Frank.  
Two Bursate Nematodes from the Indian Elephant.
- Sheather, A. L.  
Coccidiosis in the Guinea-pig.  
Fainting in Foals.

- McFadyean, Sir John.  
Fatty Infiltration of the Liver as a Cause of Death in Pregnant Ewes.
- Sheather, A. L.  
The Diagnosis of Bovine Mastitis by Milk Examination.
- Ware, Frank.  
Intestinal Myiasis in a Dog.
- McFadyean, Sir John.  
Tuberculosis in the Horse.
- Ware, Frank.  
A Case of Habronemiasis in England.
- McFadyean, Sir John.  
Cholesteatoma in the Brain of a Horse.  
Contagious Diseases of Animals, with Special Reference to their Prevention.
- Ware, Frank.  
On a Nematode of the Genus *Ostertagia*.
- Sheather, A. L.  
Enlarged Heart in a Horse.
- Ware, Frank.  
On a Collection of Helminths from Domesticated Animals in Mauritius.  
Nematode of the Genus *Ostertagia*.  
Two Uncommon Nematode Parasites of Cattle.  
Parasitic Infections of Comparative Interest.

**Ministry of Agriculture and Fisheries (Veterinary Research Laboratory).**

- Daubney, R.  
The Lesions in Lungworm Disease ("Husk" or "Hoose") of Cattle. (*Journ. Comp. Path. Thera.*, 1922.)  
The Kidney Worm of Swine: A Short Re-description of *Stephanurus Dentatus*, Dising, 1839. (*Journ. Comp. Path. Thera.*, 1923.)
- Stockman, Sir S.  
Bracken Poisoning in Cattle in Great Britain. (*Journ. Comp. Path. Thera.*, 1922.)  
Further Observations on Louping Ill. (*Journ. Comp. Path. Thera.*, 1925.)
- Doyle, T. M.  
Bacillary White Diarrhoea, its Control and Eradication. (*Journ. Nat. Poult. Inst.*, X, 11, 1925.)  
Bacillary White Diarrhoea of Chicks. (*Journ. Comp. Path. Thera.*, Dec., 1925.)
- Rice, J. P.  
Some Contagious Diseases of Poultry. (*Vet. Record*, March 8th, 1924.)  
The Prevention of Poultry Diseases. (*Vet. Record*, Sept. 13th, 1924.)

**Animal Diseases Research Association, Glasgow.**

- Gaiger, S. H.  
Dysentery in Lambs. (*Journ. Scott. Board of Agric.*, April, 1920.)  
Bacillary Dysentery in Lambs. (*Journ. Comp. Path. Thera.*, XXXIV, 1921.)  
Bacillary Dysentery in Lambs. (*Journ. Comp. Path. Thera.*, XXXVI, 1923.)  
Dysentery in Lambs. (*Pamph. for Farmers*, 1924.)

- Investigations into Braxy. (*Journ. Comp. Path. Thera.*, XXXV, 1922.)
- Bovine Tuberculosis. (*Journ. Scott. Board Agric.*, VIII, 1925.)
- Scrapie. (*Journ. Comp. Path. Thera.*, XXXVII, 1924.)
- Anærobic Infections in Animals. (*Ibid.*)
- Institute of Agricultural Parasitology, London School of Hygiene and Tropical Medicine.**
- Goodey, T.  
 A Simple Method of Experimentation for Skin Infection with Hook-worm Larvæ. (*Proc. Roy. Soc. Med. (Sect. Trop. Dis. and Parasit.)*, XV, 4.)
- On the Susceptibility of Clover and some other Legumes to Stem-disease caused by the Eelworm, *Tylenchus dipsaci*, syn. *devastatrix*, Kühn (*Journ. Agric. Sci.* XII.)
- Observations on the Ensheathed Larvæ of some Parasitic Nematodes. (*Ann. App. Biol.*, IX.)
- Ortlepp, R. J.  
 On a new Trichostrongyle Genus from an Armadillo: *Euphrectus villosus*. (*Ann. and Mag. of Nat. Hist.*, IX.)
- On the Hatching and Migration in a Mammalian Host of Larvæ of Ascarids normally parasitic in Cold-blooded Vertebrates. (*Journ. Trop. Med. and Hyg.*, XXV.)
- A new Davaineid Cestode—*Raillietina (Paroniella) macropa*, sp. n., from a Wallaby. (*Ann. and Mag. of Nat. Hist.*, Ser. 9, IX.)
- A New Species of *Oesophagostomum (Oesophagostomum xeri)*, sp. n. from a Rodent (*Xerus xelosus*). (*Proc. Zool. Soc.*, June, 1922.)
- Goodey, T.  
 The Eelworm in Paper-hanger's Paste: *Anguillula rediviva* (Linneaus, 1767). (*Ann. and Mag. of Nat. Hist.*, Ser. 9, X, 57.)
- Ortlepp, R. J.  
 The Nematode Genus *Physakoptera*, Rud. (*Proc. Zool. Soc.*, Dec., 1922.)
- Goodey, T.  
 Experiments on the Feeding of Embryonated Eggs of *Ascaris megaloccephala* to Domesticated Animals. (*Ann. App. Biol.*, X, 1.)
- Goodey, T., and Cameron, T. W. M.  
 Observations on the Morphology and Life History of *Ascaris columnaris* Leidy, a Nematode Parasite of the Skunk. (*Journ. Helm.*, I, 1.)
- Goodey, T.  
 Quiescence and Reviviscence in Nematodes, with special reference to *Tylenchus tritici* and *Tylenchus dipsaci*. (*Journ. Helm.*, I, 2.)
- Ortlepp, R. J.  
 Two new Nematodes collected in the Zoological Gardens of London. (*Journ. Helm.*, I, 2.)
- Cameron, T. W. M.  
 The Anatomy of *Monodontus trigonocephalus* (Rud.) of Sheep. (*Journ. Helm.*, I, 3.)
- Studies on two new Genera and some little-known species of the Nematode Family, *Trichostrongilidae* Leiper. (*Journ. Helm.*, I, 2.)
- Ortlepp, R. J.  
 The Life History of *Syngamus trachealis* (Montagu) v. Siebold, the Gape-Worm of Chickens. (*Journ. Helm.*, I, 3.)
- Goodey, T.  
 A Review of the Plant Parasitic Members of the genus *Aphelenchus*. (*Journ. Helm.*, I, 4.)

- Cameron, T. W. M.  
On the Morphology of *Ollulanus tricuspsis* Leuckart, 1865, a Nematode Parasite of the Cat. (*Journ. Helm.*, I, 4.)
- Goodey, T.  
*Necator Americanus* and the Domestic Pig. (*Journ. Helm.*, I, 4.)
- Ortlepp, R. J.  
Observations on the Nematode Genera *Kalicephalus*, *Diaphanocephalus* and *Occipitodontus*, g.n., and on the Larval Development of *Kalicephalus philodryadus*, sp. n. (*Journ. Helm.*, I, 4.)
- Goodey, T.  
Eelworm Disease in Potatoes caused by *Tylenchus dipsaci*. (*Journ. Helm.*, I, 5.)
- Cameron, T. W. M.  
On the Biology of the Infective Larvæ of *Monodontus trigonocephalus* (Rud.) of Sheep. (*Journ. Helm.*, I, 5.)
- Goodey, T.  
The Anatomy of *Oesophagostomum dentatum* (Rud.), a Nematode Parasite of the Pig, with observations on the Structure and Biology of the Free-living Larvæ. (*Journ. Helm.*, II, 1.)
- Cameron, T. W. M.  
On *Gaigeria pachyscelis* Railliet and Henry, 1910, a Nematode Parasite of Ruminants. (*Journ. Helm.*, II, 1.)  
Dochmoides: a new genus for the Hookworm *Uncinaria stenoccephala* Railliet. (*Journ. Helm.*, II, 1.)
- Goodey, T.  
The Anatomy and Life-History of the Nematode *Rhabdias fuscovenosa* (Railliet) from the Grass Snake *Tropidonotus natrix*. (*Journ. Helm.*, II, 2.)
- Cameron, T. W. M.  
On the Nematode Genus *Globocephalus* Molin, 1861. (*Journ. Helm.*, II, 2.)
- Morgan, D. O.  
A Survey of Helminthic Parasites of Domestic Animals in the Aberystwyth Area of Wales. (*Journ. Helm.*, II, 2.)
- Cameron, T. W. M.  
The Pig and Human Disease. (*Proc. Roy. Soc. of Med. (Sect. Comp. Med.)*, XVII.)
- Goodey, T.  
*Oesophagostomes* of Goats, Sheep and Cattle. (*Journ. Helm.*, II, 3.)  
Some New Members of the Genus *Oesophagostomum* from the Roan Antelope and the Wart Hog. (*Journ. Helm.*, II, 3.)
- Cameron, T. W. M., and Ross, I. C.  
On the Identity of the Kidney Worm of Pigs in New South Wales. (*Journ. Helm.*, II, 3.)
- Leiper, R. T.  
Present-Day Teachings on Helminthology in Relation to Public Health. (*Brit. Med. Journ.*, July 19th, 1924.)
- Goodey, T.  
Observations on *Hyostromylylus rubidus* (Hassall and Stiles, 1892), Hall, 1921, from the Stomach of the Pig, with a note on *Strongylus attenuatus* (Molin, 1860). (*Journ. Helm.*, II, 4.)  
A Critical Review of Zebrowski's Preliminary Report on Hog Lung-Worms. (*Journ. Helm.*, II, 4.)  
Two new species of the Nematode Genus *Rhabdias*. (*Journ. Helm.*, II, 5.)
- Ortlepp, R. J.  
Observations on the Life History of *Triodontophorus tenuicollis*, a Nematode Parasite of the Horse. (*Journ. Helm.*, III, 1.)

- Cameron, T. W. M.  
The Cestode Genus *Mesocestoides* Vaillant. (*Journ. Helm.*, III, 1.)
- Goodey, T.  
*Oesophagostomum longicaudum* n. sp., from the Pig in New Guinea. (*Journ. Helm.*, III, 1.)  
Observations on Certain Conditions requisite for Skin Penetration by the Infective Larvæ of Strongyloides and Ankylostomes. (*Journ. Helm.*, III, 2.)
- Lewis, E. A.  
Starlings as Distributors of "Gapes." (*Journ. Helm.*, III, 2.)
- Ortlepp, R. J.  
On *Arihirocephalus gambiensis* n.g., n.sp., a new Ankylostome from an African Mongoose. (*Journ. Helm.*, III, 3-4.)
- Goodey, T.  
*Vianella viscacia* n.sp., a Nematode Parasite of the South American Rodent *Viscacia viscacia*. (*Journ. Helm.*, III, 3-4.)
- Cameron, T. W. M.  
The Trichostrongyle Genus *Graphidioides*. (*Journ. Helm.*, III, 3-4.)
- Morgan, D. O.  
Notes on the Helminth Parasites of Domestic Animals in the Aberystwyth Area of Wales. (*Journ. Helm.*, III, 3-4.)
- Goodey, T.  
Skin Penetration by the Infective Larvæ of *Dochmoides stenocephala*. (*Journ. Helm.*, III, 3-4.)
- Cameron, T. W. M.  
Parasitic Diseases of Pigs and their Prevention. (*Journ. Min. Agric.*, Aug., 1925.)  
Some Recent Advances in Veterinary Helminthology. (*Nat. Veter. Med. Assoc., Ann. Rep.*, 1925.)
- Ortlepp, R. J.  
On Two Nematode Parasites from the Gizzard of Pea-fowls. (*Journ. Helm.*, III, 5.)
- Morgan, D. O.  
Investigations on Eelworm in Potatoes in South Lincolnshire. (*Journ. Helm.*, III, 5.)
- Goodey, T.  
*Tylenchus hordei* Schoyen, a Nematode Parasite causing Galls on the Roots of Barley and other Gramineæ. (*Journ. Helm.*, III, 5.)
- Ortlepp, R. J.  
A Review of the Members of the Genus *Streptopharagus* Blanc, 1912. (*Journ. Helm.*, III, 5.)
- Thomson, J. G.  
A *Giardia* parasitic in a Bursate Nematode living in Viscacha. (*Protozoology*, May, 1925.)
- Triffitt, M. J.  
Observations on *Gastrocystis gilruhi*, a Parasite of Sheep in Britain. (*Ibid.*)  
Observations on Two Species of *Coccidia* parasitic in Snakes. (*Ibid.*)
- Ministry of Agriculture for Northern Ireland (Animal Diseases and Agricultural Zoology Divisions).
- Rice, J. P.  
Bacillary White Diarrhœa. (*Veter. Record*, IV, 43, 1924.)
- Rhynhart, J. G.  
On the Life History and Bionomics of the Flax Flea-Beetle—*Longitarsus parvulus* Payk. With Descriptions of the hitherto unknown Larval and Pupal Stages. (*Sci. Proc. Roy. Dub. Soc.*, XVI (N.S.), 39, 1922.)

The Larva and Pupa of *Trichocera Regolationis* L.—*Diptera, Rhyphida*.  
(*Proc. Belg. Nat. Hist. and Phil. Soc.*, 102 Session, 1922-23.)

**Institute of Agricultural Engineering, Oxford.**

- Report on the Work of the Institute of Agricultural Engineering.  
(*Journ. Min. Agric.*, Nov., 1924.)  
Trials of Sub-soiling. (*Journ. Min. Agric.*, Jan., 1925.)  
Labour-saving Machinery on the Farm. (*Country Life*, July 11th, 1925.)  
Machinery Exhibits at the Royal Show. (*Country Life*, July 25th, 1925.)  
Agricultural Engineering at Oxford. (*Field*, Sept. 24th, 1925.)  
In Praise of Sub-soiling. (*Country Life*, Oct. 17th, 1925.)  
A Report on the Use of Windmills for the Generation of Electricity.  
(*Inst. Bull.*, 1.)

**Agricultural Economics Research Institute, Oxford.**

- Orwin, C. S.  
Cost of Tractor and Horse Labour. (*Scott. Journ. Agric.*, Jan., 1922.)  
Orwin, C. S., and Uptold, S. J.  
Farming Equipment and Finance: A Seven Years' Study. (*Journ. R.A.S.E.*, 1921.)  
Bridges, A.  
Labour Organisation on an East Midlands Farm. (*Journ. Min. Agric.*, July and Aug., 1922.)  
Howell, J. Pryse.  
The Productivity of Hill Farming. (*Oxf. Univ. Press*, 1s.)  
Speller, C. A.  
The World's Wheat Position. (*Economist*, June 3rd, 1922.)  
Woods, Katharine S.  
The Making of Clogs, Clog Soles and Clog Blocks. (*Journ. Min. Agric.*, Nov., 1922.)  
The Crate Rod and Barrel Hoop Trades. (*Journ. Min. Agric.*, Dec., 1922.)  
Orwin, C. S.  
The Position of British Agriculture. (*Manch. Guard.*, Apr. 26th, 1923.)  
Commodity Prices and Farming Policy. (*Journ. R.A.S.E.*, 83, 1922.)  
Howell, J. Pryse.  
An Economic Survey of a Rural Parish. (*Oxf. Univ. Press*, 1923, 1s.)  
Orwin, C. S.  
The Crisis in Arable Farming. (*Yorks. Post, Trade Rev.*, Jan. 13th, 1923.)  
Ashby, A. W.  
The Agricultural Situation. (*Edin. Rev.*, Apr., 1923.)  
Ashby, A. W., and Byles, P. B.  
Rural Education. (*Oxf. Univ. Press*, 1923, 2s. 6d.)  
Miscellaneous Papers in Agricultural Economics. (*Vol. 1*, 1919-22, 10s.)  
Ashby, A. W.  
Standards of Production on Scottish Farms. (*Scott. Journ. Agric.*, Oct., 1923.)

- Orwin, C. S.  
 The Uses of Costing. (*Journ. Land Ag. Soc.*, Sept., 1923.)  
 Decline of Arable Farming in England. (*Yorks. Post Trade Rev.*, 1923.)  
 Farming Conditions at Home and Abroad. (*Journ. Land Ag. Soc.*, Feb., 1924.)  
 Agricultural Cost Accounts. (*Inc. Cost Account. Journ.*, May, 1924.)
- Thomas, E.  
 Danish Schools for Small-holders. (*Welsh Outlook*, Apr., 1924.)  
 Insolvencies among Farmers. (*Journ. Min. Agric.*, May, 1924.)
- Ashby, A. W.  
 The Study and Teaching of Agricultural Economics. (*Journ. Min. Agric.*, June, 1924.)
- Orwin, C. S.  
 Insurance and the Farmer. (*Journ. Min. Agric.*, Aug., 1924.)  
 Farm Accounts. 2nd edition, revised. (*Cambs. Univ. Press*, 5s.)
- Ashby, A. W.  
 The Marketing of Farm Products. (*Farm. and Stock.*, Sept. 29th, 1924.)
- Bridges, A.  
 Iwerne Minster Home Farm Cost Accounts for three years ended Michaelmas, 1923. (*Oxf. Univ. Press.*)  
 Economics of Farm Management: Farm Labour Organisation and Efficiency. (*Farm. and Stock.*, Sept. 8th, 1924.)
- Holmes, H. R. J.  
 A Short System of Farm Costing. (*Oxf. Univ. Press*, 6s. 6d.)
- Thomas, E.  
 Agricultural Book-keeping in Denmark. (*Scott. Journ. Agric.*, Oct., 1924.)
- Maxton, J. P., and Orwin, C. S.  
 The Maintenance of Arable Cultivation in Scotland. (*Journ. Min. Agric.*, Nov., 1924.)
- Orwin, C. S.  
 Party Proposals for the Development of Agriculture. (*Berks. F.U. Year Book*, 1925.)  
 Farm Accounts. (*Essex F.U. Year Book*, 1925.)
- Ashby, A. W.  
 The Miller's Margin. (*Journ.*, R.A.S.E., 85, 1924.)
- Vaughan, H. J.  
 The Economics of Production on Grass and Arable Farms. (*Journ. R.A.S.E.*, 85, 1924.)
- Orwin, C. S., and Peel, W. R.  
 The Tenure of Agricultural Land. (*Cambs. Univ. Press*, 3s. 6d.)
- Orwin, C. S.  
 The Work of the Agricultural Economics Research Institute. (*Oxf. Univ. Press.*)  
 Research in Farm Management and Agricultural Organisation. (*Farm. and Stock.*, Sept. 14th, 1925.)
- Howell, J. Pryse.  
 An Agricultural Atlas of England and Wales. (*Ord. Surv.*, 10s.)
- Bridges, A., and Dixey, R. N.  
 Sugar Beet: The Results of an Inquiry into the Costs of Production, Yields, and Returns in 1924. (*Res. Mono.* 3, *Min. Agric.*, 3s.)
- Orwin, C. S.  
 A Review of the Liberal Land Scheme. (*Manch. Guard.*, Nov. 4th, 1925.)

- A Simple System of Farm Book-keeping. (*Min. Agric. Misc. Pub.*, 50.)  
 Miscellaneous Papers in Agricultural Economics. (*III*, 1923-1925, 10s.)

#### ADVISORY CENTRES.

##### University College of Wales, Aberystwyth.

- Fagan, T. W., and Jones, H. T.  
 The Nutritive Value of Grasses as shown by their Chemical Composition. (*Welsh P. B. Sta. Pubn., Series H*, No. 3.)  
 Stapledon, R. G., Fagan, T. W., and Williams, R. D.  
 Grassland and the Grazing Animal. (*Welsh P. B. Sta. Pubn. Series H*, No. 3.)  
 Fagan, T. W.  
 The Variation in the Moisture and Nitrogen Content of the Potato during Growth and Storage. (*Welsh Journ. Agric.*, I, 1925.)  
 Fagan, T. W., and Evans, R. E.  
 The Influence of the Application of Superphosphate and Nitrate of Soda on the chemical composition of the stem and leaf of pasture cuts of Cocksfoot. (*Welsh Journ. Agric.*, II, 1926.)  
 The Influence of the date of enclosing fields for Hay upon the Yield and Chemical Composition of the Crop. (*Welsh Journ. Agric.*, II, 1926.)  
 Sampson, K., and Davies, D. W.  
 Dry Treatment for Smut Diseases of Cereals. (*Welsh Journ. Agric.*, I, 1925.)  
 Some Experiments on the Control of Bunt on Wheat by Copper Carbonate and other Chemicals, including data on the Growth and Yield of Treated and Untreated Grain. (*Welsh Journ. Agric.*, II, 1926.)  
 Ashby, A. W.  
 The Human Side of the Farming Business. (*Welsh Journ. Agric.*, I, 1925.)  
 Agricultural Education and Research: Some Economic Considerations. (*Scottish Journ. Agric.*, April, 1925.)  
 Farm Workers Budgets. (*Journ. Min. Agric.*, Dec., 1924; Jan. and Feb., 1925.)  
 Human Motives in Farming. (*Welsh Journ. Agric.*, II, 1926.)  
 The Place of Cereal Growing in Welsh Agriculture. (*Welsh Journ. Agric.*, II, 1926.)  
 Ashby, A. W., and Jones, J. M.  
 Organisation of Labour on Welsh Farms. (*Journ. Min. Agric.*, XXII, 7.)  
 The Social Origin of Welsh Farmers. (*Welsh Journ. Agric.*, II, 1926.)  
 Jones, J. M.  
 The Poultry Industry of Wales: A Survey of Stocks, Methods and Prices. (1925.)  
 Labour Organisation on Four Welsh Farms. (1925.)  
 Capital and Equipment on Welsh Farms. (*Welsh Journ. Agric.*, II, 1926.)

##### Armstrong College, Newcastle-upon-Tyne.

- Collins, S. H.  
 The Determination of Lævulose (Fructose) in Straw. (*Journ. Soc. Chem. Ind.*, Feb. 28th, 1922.)  
 The Production of Sugars and Albuminoids in Straw. (*Journ. Agric. Sci.*, XII, 1922, p. 280.)



Harper Gray, R. A.

Frit Fly on Oats in the Four Northern Counties. (*Journ. Min. Agric., March, 1923.*)

University College of North Wales, Bangor.

Robinson, G. W.

Notes on the Mechanical Analysis of Humus Soils. (*Journ. Agric. Sci. XII.*)

A New Method for the Mechanical Analysis of Soils and other Dispersions. (*Journ. Agric. Sci., XII.*)

Walton, C. L.

Notes on the Liver Rot Epidemic in North Wales, 1920-21. (*Journ. Min. Agric., May, 1922.*)

Liver Rot. (*Adv. Leaflet I., U.C.N.W. Dept. Agric., Sept., 1922.*)

Whitehead, T.

Varieties of Swedes Resistant to Finger and Toe. (*Journ. Min. Agric., July, 1922.*)

Walton, C. L.

Some Observations on the genus *Bombus* in Wales. (*Ent. Mo. Mag., Dec., 1922.*)

Walton, C. L., and Theobald, F. V.

A Preliminary List of the Aphididæ of North Wales (with description of four new species). (*Ann. Rept. Lancs. and Chesh. Ento. Soc., 1921-22.*)

Walton, C. L.

The Frit Fly in North Wales. (*Adv. Leaflet II., U.C.N.W., Dept. Agric.*)

Liver Rot of Sheep. (*Journ. Min. Agric., Aug., 1923.*)

Whitehead, T.

Virus Diseases of Plants. (*Brit. Assoc., Liverpool, 1923.*)

Transmission of Leaf Roll of Potatoes. (*Rep. Intern. Conf. Phytopath., Holland, 1923.*)

Potato Leaf Roll and Degeneration in Yield. (*Ann. Appl. Biol., XI, 1, 1924.*)

The "Seed" Potato Industry in Relation to Degeneration. (*Derb. Agric. Comm. Mon. Bull., March, 1924.*)

Walton, C. L.

Preliminary Report on the Agricultural Zoology of North Wales. (*Feb., 1924.*)

The Control of Aphides attacking Sprouting Potatoes. (*Journ. Min. Agric., Dec., 1923.*)

Zoological and Ecological Surveys in their relation to Agriculture. (*Vasculum, July, 1924.*)

Robinson, G. W.

Soil Types of North Wales. (*In "Memoires sur la Nomenclature et la Classification des Sols," pub. by Intern. Comm. Soil Sci.*)

Robinson, G. W., with Ramann, E., Hissine, D. J., and others.

Soil Survey Work in Great Britain. (*In "Memoires sur la Cartographie des Sols," pub. by Intern. Comm. Soil Sci.*)

Montgomerie, R. F.

Hydrocyanic Acid Generated from Linseed Cake Meal. A Case of Poisoning in Calves. (*Vet. Journ., Vol. 80, No. 8.*)

Robinson, G. W.

Selection of Manures for Farm Crops. (*Adv. Leaflet I, 1925.*)

Walton, C. L.

Liver Rot of Sheep and its Prevention. (*Adv. Leaflet II, 1925.*)

- Montgomerie, R. F.  
Liver Rot of Sheep : its Diagnosis and Treatment. (*Adv. Leaflet III*, 1925.)
- Robinson, G. W.  
Pedology as a Branch of Geology. (*Geol. Mag.*, LXI, 1924.)  
Soils of Anglesey. (*Trans. Angles. Antiq. Soc.*, 1924.)  
The Form of Mechanical Composition Curves of Soils, Clays and other Granular Substances. (*Journ. Agric. Sci.*, XIV, 1924.)  
Modern Tendencies in Soil Research. (*Welsh Journ. Agric.*, I, 1924.)
- Robinson, G. W., and McLean, W.  
A New Method for the Determination of Ammoniacal Nitrogen in Soils. (*Journ. Agric. Sci.*, XIV, 1924.)
- Robinson, G. W., and Jones, H. Trefor.  
Soil Studies on the Waste Lands of Lleyn. (*Welsh Journ. Agric.*, I, 1924.)
- Robinson, G. W., and Williams, Rice.  
Base Exchange in relation to the Problem of Soil Acidity. (*Trans. Far. Soc.*, XX, 1925.)
- Robinson, G. W., and Jones, J. O.  
A Method of Determination of the Degree of Humification of Soil Organic Matter. (*Journ. Agric. Sci.*, XV, 1925.)
- Williams, Rice.  
The Problem of Soil Acidity in North Wales. (*Welsh Journ. Agric.*, I, 1924.)
- Walton, C. L.  
Notes on Warble Flies in North Wales. (*Welsh Journ. Agric.*, I, 1924.)  
The Agricultural Entomology of North Wales. (*Proc. Land. and Colwyn Bay and Dist. Field Club.*, 1925.)
- Montgomerie, R. F.  
Male Fern—its Toxicology and its Use in Liver Rot. (*Journ. Comp. Path. and Thera.*, XXXVIII, March, 1925.)
- Whitehead, T.  
Experiments with Finger and Toe Disease of Swedes, with a Note on Loss caused by Rabbits. (*Welsh Journ. Agric.*, I, 1924.)  
Some Experiments on Potato Leaf Roll Transmission. (*Welsh Journ. Agric.*, I, 1924.)

#### University of Bristol.

- Hanley, J. A.  
Improvement of Grassland. (*Farmer & Stockbreeder*, 1924.)  
Lime and Liming. (*Farmer & Stockbreeder*, 1924.)  
Liming for Increased Crop Production. (*Daily Telegraph*, July, 1925.)  
Grass Land. (*Essex County F.U.Y.B.*, 1925.)
- Weller, E. P.  
Agricultural Costing. (*Trans. Surveyors' Inst.*, LVII, Part 1.)  
The Value of Costing in Estimating and Controlling Expenditure. (*Journ. Land Agents' Socy.*, XXIII, 2.)  
Farm Income Tax Assessments. (*Journ. Land Agents' Socy.*, XXIV, 5.)  
The Economic Aspect of Wintering Cattle for the Production of Farmyard Manure. (*Agric. Prog.*, 2, 1925.)  
The Cost of Wintering Cattle for the Production of Farmyard Manure. (*Journ. Min. Agric.*, XXXI, 12.)  
Farm Problems. (*Western Morning News and Mercury Agric. Supp.*, 1925.)

**School of Agriculture, Cambridge.**

- Mansfield, W. S., and Boyes, D.  
A Record of 12 Years Development on a 15,000 acre Farm. (*Journ. Min. Agric.*, April, 1922.)
- Venn, J. A.  
Foundations of Agricultural Economics. (*Cambs. Univ. Press*, 1923.)  
A Short Description of the State Systems of Agricultural Costing recently established in England. (*Ugeskrift for Landmand*, May, 1923.)  
The Report of the Agricultural Tribunal of Investigation. (*Econ. Journ.*, Sept., 1924.)  
An Economic and Financial Analysis of 14 East Anglian Farms. (*April*, 1925.)  
The Study of Agricultural Economics. (*Nature*, Feb., 1925.)
- Venn, J. A., and Carslaw, R. G.  
An Economic and Financial Analysis of Six Eastern Counties Farms. in 1924-25. (*Report No. 2*, Nov., 1925.)
- Petherbridge, F. R.  
The Common Cause of Failure of Spring Oats—Frit Fly. (*Journ. Min. Agric.*, Jan., 1924.)  
Apples Attacked by the Larvæ of the Dock Saw Fly. (*Ann. App. Biol.*, XI, 1, April, 1924.)

**Botany School, Cambridge.**

- Brooks, F. T.  
Disease Resistance in Plants. (*Brit. Med. Journ.*)
- Brooks, F. T., and Storey, H. H.  
Silver-leaf Disease. IV. (*Journ. Pom. Hortic. Sci.*)
- Brooks, F. T.  
Some Present-day Aspects of Mycology. (*Trans. Brit. Myc. Soc.*)  
Epidemic Plant Diseases. (*Trans. Brit. Myc. Soc.*)  
The Relation of Plant Pathology to Genetics. (*Report, Imp. Bot. Conf.*)  
Polyporus adustus as a Wound Parasite of Apple Trees. (*Trans. Brit. Myc. Soc.*)
- Brooks, F. T., and Moore, W. C.  
On the Invasion of Woody Tissues by Wound Parasites. (*Proc. Camb. Phil. Soc.*)

**University College, Cardiff.**

- Rees, J.  
A New Disease of Cultivated Campanulas due to Sclerotinia Sclerotiorum. (*Welsh Journ. Agric.*, Vol. 1.)
- Thompson, H. W.  
A Test of the Tobacco Powder and Lime Mixture for the Destruction of Warble Maggots. (*Welsh Journ. Agric.*, Vol. 1.)  
Leatherjackets and their Control. (*Welsh Journ. Agric.*, Vol. 2.)
- Bisset, N.  
Verminous Broncho-pneumonia in the Pig due to *Metastrongylus apri*; with Observations on the Chloroform Method of Treatment. (*Vet. Journ.*)  
Some Notes on Mountain Sickness—"Clefyd y Mynydd." (*Welsh Journ. of Agric.*)  
Diseases of Poultry. (*Adv. Leaflet.*)

**Harper-Adams Agricultural College, Newport, Salop.**

Davies, W. M.

A Preliminary Investigation into the Draught of the Plough. (*Journ. Agric. Sci.*, XIV, 1924.)

Crowther, C., and Chalmers, W. S.

The Merits of Home-Produced Foods for Pig Feeding. (*Journ. Roy. Agric. Soc.*, Vol. 84, 1923.)**University of Leeds.**

Comber, N. M.

The Limitations of Laboratory Methods of Lime-Requirement Determinations. (*Paper read to Brit. Assocn. Hull, 1922.*)The Flocculation of Soils. III. (*Journ. Agric. Sci.*, Vol. 12.)Availability of Mineral Plant Food : A Modification of the Present Hypothesis. (*Journ. Agric. Science*, Vol. 12.)A Modified Test for Sour Soils. (*Journ. Agric. Science*, Vol. 12.)The Sourness of Arable Soils. (*Brit. Assoc., Liverpool, 1923.*)The Use of Lime in the North of England. (*Brit. Assoc., Hull, 1922.*)

Hanley, J. A.

Phosphate Manures and their Application. (*Journ. Yorks. Agric. Soc.*, 1923.)What is Ground Lime? (*Journ. Min. Agric.*, 1923.)

Comber, N. M., and Saint, S. J.

Notes on the Absorption of Bases by Soils. (*Soil Sci.*, V, 18.)

Comber, N. M.

The Role of Electro-negative Ions in the Reactions between Soils and Electrolytes. (*Trans. Far. Soc.*, Vol. 20, Pt. 3.)Some Neglected Aspects of Agricultural Education. (*Journ. of the Yks. Agric. Soc.*, 1925.)The Laboratory Examination of Soils. (*Soc. of Chem. Ind.*, Nov., 1924.)

Saint, S. J.

The Relation between the PH. Value, the Lime requirement and the Thiocyanate Colour of Soils. (*Trans. Far. Soc.*, Vol. 20, Pt. 3.)The Reaction between the Mineral Soils and Alkaline Earth Hydroxides. (*Chem. Cttee. of A.E.A.*, July, 1925.)

Millard, W. A.

Common Scab of Potatoes. (*Ann. Appl. Biol.*, IX, 2.)Common Scab of Potatoes. (*Ann. Appl. Biol.*, X, 2.)

Millard, W. A., and Burr, S.

The Causative Organism of Skin Spot of Potatoes. (*Bull. Misc. Infm.*, Kew, No. 8.)

Millard, W. A.

Crown Rot of Rhubarb. (*Rept. No. 134 of Univ. Leeds and Yorks. Counc. Agric. Educn.*)

Burr, S.

Clean Milk and its Production. (*Rept. No. 131, Univ. Leeds and Yorks. Counc. Agric. Educn.*)

Bennett, F. T.

Outlines of Fungi and Plant Diseases. (*Textbook.*)

Edwards, R. E.

Pasture Analyses as an expression of the Changes in the Distribution of certain Species. (*Agric. Progr.*, Vol. I.)

Ruston, A. G.

Farm Accounts for Income Tax Purposes. (*Journ. Yorks. Agric. Soc.*)Cost of Horse Labour. (*Journ. Min. Agric.*, Dec., 1921.)

- Ruston, A. G., and Seton, R. S.  
The Cost of Manual Labour in Milk Production. (*Journ. Min. Agric., Aug., 1922.*)
- Ruston, A. G., and Simpson, J. S.  
Labour on the Farm. (*Journ. Min. Agric., Nov. and Dec., 1922.*)  
When Should a Farmer Sell Home-grown Foods? (*Journ. Min. Agric., Dec., 1922.*)
- Farm Capital and Profits. (*Journ. Min. Agric., Feb., 1923.*)
- Ruston, A. G.  
Poultry Keeping on the Farm. (*Scott. Journ. Agric., April, 1923.*)  
Farm Profits and Farm Losses. (*Scott. Journ. Agric., July, 1923.*)
- Ruston, A. G., and Robinson, J. E.  
Influence of the War on the Cost of Milk Production. (*Milk Ind., Jan., 1923.*)  
Influence of Herd Management on the Cost of Milk Production. (*Milk Ind., Jan., 1923.*)
- Ruston, A. G., and Dallas, J. W.  
The Economic Value of Milk to the Producer. (*Milk Ind., April, 1923.*)
- Ruston, A. G.  
Farm Economics. (*Essex Farm. Journ., March, 1923.*)  
The Economic Condition of Agriculture at Home and Abroad. (*Journ. Farm. Club, April, 1923.*)  
The Economics of Poultry Keeping. (*Second Inter. Poultry Conf., Madeira, 1924.*)
- Ruston, A. G., and Cheveley, S. W.  
The Cost of Grazing. (*Journ. Min. Agric., May, 1924.*)
- Ruston, A. G.  
Farm Productivity and Farm Profits. (*A.E.A., Aberdeen, July, 1924.*)  
Farm Book-keeping. (*Agric. Progr., 1924.*)  
Agricultural Tribunal of Investigation. (*Journ. Inst. of Brewing, Feb., 1925.*)  
Lime Burning on a Yorkshire Farm. (*Journ. Min. Agric., Nov., 1924.*)
- Ruston, A. G., and Wood, R. C.  
The Cost of Milk Production on Yorkshire Farms. (*Milk Rec. Year Book, 1925.*)
- Ruston, A. G.  
Agricultural Costings. (*Journ. Land Agents Soc., Jan., 1925.*)  
What is Wrong with British Agriculture? (*Essex Farmers' Union Year Book, 1925.*)  
Farm Productivity and Farm Profits. (*Agric. Progr., Vol. II, 1925.*)  
The Value of Accounts to the Pig-Breeder. (*Pig Breed. Ann., 1925.*)  
The Value of Records to the Milk Producer. (*Yorks. Milk Rec. Soc., 1924.*)

## Manchester University.

- Smith, K. M., and Gardner, J. C. M.  
Insect Pests of the Horticulturist. (*Vol. 1, Benn Bros., 1922.*)
- Smith, K. M.  
A Note on the Control of certain Root-Feeding Maggots. (*Journ. Min. Agric., Vol. 29, No. 3, 1922.*)  
A Study of the Life-History of the Onion Fly. (*Ann. Appl. Biol., Vol. 9, No. 3, 1922.*)  
On a Curious Effect of Mosaic Disease upon the Cells of the Potato Leaf. (*Ann. Bot., Vol. 38, April, 1924.*)  
Further Experiments in the Control of Certain Maggots attacking the Roots of Vegetables. (*Ann. Appl. Biol., Vol. XII, No. 1, 1925.*)

A Note on the Egg-Laying of *Calocorisbipunctatus*: An Insect injurious to the Potato. (*Entom. Mon. Mag.*, Vol. LXI.)

A Comparative Study of the Feeding Methods of certain Hemiptera and of the Resulting Effect upon the Plant Tissue, with special reference to the Potato Plant. (*Ann. Appl. Biol.*, Vol. XIII, No. 1.)

**Midland Agricultural and Dairying College, Sutton  
Bonington.**

King, J. S.

Comparative Costs in Relation to Farm Management. (*Agric. Progr.*, Vol. 1, 1924.)

Seasonal Distribution of Employment in Agriculture. (*Journ. Min. Agric.*, Jan., 1925.)

A Note on the Determination of the Cost of Horse-Labour. (*Inc. Acc. Journ.*, June, 1925.)

An Experiment Relating to the Feeding of Dairy Cows. (*Agric. Progr.*, Vol. III, 1926.)

The Interpretation of Farm Accounts. (*Coll. Bull.* No. 6, 1926.)

Roebuck, A.

Experiments on Cultural Methods of Controlling Onion Fly. (*Bull. Chamb. Hortic.*, July, 1922.)

The Use of Poultry in the Eradication of Insect Pests. (*Util. Poul. Journ.*, Oct., 1923.)

Elimination of Wireworms on Ploughed-up Grassland. (*Journ. Min. Agric.*, Feb., 1924.)

Cabbage and Turnip Gall Weevil. (*Derb. Mo. Bulln.*, March, 1924.)

Notes on the Hemiptera in the East Midlands. (*Entom. Mo. Mag.*, March, 1924.)

Poultry in Orchards: Their Relation to Insect Pests. (*Poultryman*, 2, Nov., 1924.)

The Use of Poultry against Farm Pests. (*Eggs*, March 25th, April 1st, June 24th, July 1st, July 15th, 1925.)

Roebuck, A., and Brown, F. S.

Correlation between Loss of Leaf and Damage to Crop in Late Attacks on Wheat. (*Ann. Appl. Biol.*, Vol. X, Dec., 1923.)

**School of Rural Economy, Oxford.**

Cunliffe, N.

Additional Host Plants of *Oscinella* Frit among Grasses. (*Ann. App. Biol.*, Vol. IX, No. 2, 1922.)

On the Relative Importance of certain Common Grasses as Host Plants of *Oscinella* Frit. (*Ann. Appl. Biol.*, Vol. X, p. 210.)

Further Observations on the Prevalence and Habits of *Oscinella* Frit. (*Ann. Appl. Biol.*, XI, p. 54.)

Cunliffe, N., and Fryer, J. C. F.

*Oscinella* Frit: An Investigation to determine how far the varietal differences may influence Infestation of the Oat Plant. (*Ann. Appl. Biol.*, XI, p. 465.)

Clarke, G. R.

Soil Acidity and its Relation to the Production of Nitrate and Ammonia in Woodland Soil. (*Oxf. For. Mem.*, No. 2.)

Cunliffe, N.

The Frit Fly and its Relation to the Yield of Oats. (*Journ. Min. Agric.*, Sept., 1924.)

Morison, C. G. T.

The Effect of Light on the Settling of Suspensions. (*Proc. Royal Society, A*, Vol. 108, 1925.)

Soil Stabliisation: A Grassland Problem. (*Scott. Journ. Agric.*, 4, Oct., 1925.)

- Clarke, G. R., and Morison, C. G. T.  
Losses of Ammonia from Soil by Volatilisation. (*Nature*, March 21st, 1925.)
- Cunliffe, N.  
Studies on *Oscinella frit*, Linn. : A Preliminary Investigation of the Extent of the Recovery Power of Oats when subject to Injury. (*Ann. App. Biol.*, XII, 2, 1925.)
- Cunliffe, N., Fryer, J. C. F., and Gibson, G. W.  
Studies on *Oscinella frit*, Linn. The Correlation between Stage of Growth of Stem and Susceptibility to Infection. (*Ibid.*, XII, 4.)
- Cunliffe, N., and Fryer, J. C. F.  
Studies on *Oscinella frit*, Linn. Supplementary data on the Relation between Varietal Differences of Oat Plants and Susceptibility to Infestation. (*Ibid.*, XII, 4.)
- Cunliffe, N.  
*Oscinella frit*, Linn. A Note on the Seasonal Regularity of the Maximum Prevalence Periods of the Fly in the Field. (*Ibid.*, XII, 4.)
- University of Reading.
- Buddin, W.  
Black Leg of *Pelargonium* Cuttings. (*Gardeners' Chronicle*, Jan., 1924.)  
Notes on some *Antirrhinum* Diseases. (*Gardeners' Chronicle*, Aug., 1924.)
- Buddin, W., and Wakefield, E. M.  
Observations on the Growth of *Rhizoctonia crocorum* (Pers.), D.C., in Pure Culture. (*Ann. Appl. Biol.*, Vol. XI, 3 and 4.)
- Simpson, J. S.  
Factors in the Cost of Milk Production. (*Berks. Farm. Year Book*, 1925.)  
Cost of Maintenance of Dairy Cows. (*Herts. Milh Rec. Soc. Hndbk.*, 1924.)
- Seale-Hayne Agricultural College.
- Hodson, W. E. H.  
Preliminary Experiment in the Control of Slugs. (*Journ. Roy. Hortic. Soc.*, 49, 2, 1924.)  
Further Notes on the Control of Slugs. (*Journ. R.H.S.*, 50, 2, 1925.)
- Vanstone, E.  
Basic Slags and Mineral Phosphates. (*Journ. Agric. Sci.*, 15, 1.)  
Available Phosphates in Soils. (*Journ. Agric. Sci.*, 15, 4.)  
A New Method of Evaluating Basic Slags and Mineral Phosphates. (*Journ. Agric. Sci.*, 15, 4.)  
Basic Slags and Rock Phosphates. (*Journ. Soc. Chem. Ind.*, 44, 14.)  
The Role of Phosphorus in Agriculture. (*Journ. Soc. Chem. Ind.*, March, 1926.)
- South-Eastern Agricultural College, Wye.
- Theobald, F. V.  
Thrips Attacking Corn. (*Journ. Kent F. U.*, Aug. 1922.)  
Summer Washes for Fruit Trees. (*Leaflet S.E.A.C.*)  
The Woolly Aphid of the Apple and Elm. Pt. I. (*Journ. Pom.* II, No. 2.)  
The Woolly Aphid of the Apple and Elm. Pt. II. Treatment. (*Journ. Pom.*, II, No. 3.)  
The Apple and Plum Case Bearer (*Coleophora nigricella*). (*Journ. Pom. Hortic. Sci.*, I, No. 1.)  
An Aphid Genus and Species new to Britain. (*Ent. Mo. Mag.*, 3rd S., Vol. VIII.)  
Aphides Attacking the Potato. (*Bull. S.E.A.C.*)

- Salmon, E. S.  
 Fifth Report on the Trial of New Varieties of Hops. (*S.E.A.C.*, July, 1922)  
 Brewers' Visit to Kent Hop Gardens. (*Kent. Gaz.*, Sept. 16th, 1922.)
- Salmon, E. S., and Wormald, H.  
 Hop "Canker" or "Growing-off." (*Journ. Min. Agric.*, XXIX, 354, 1922.)  
 Investigations on the Hop (M. and Mme. Moreau). (*Journ. Inst. Brewing*, XXVIII, 548, 1922.)
- Salmon, E. S., and Horton, E.  
 Lime-Sulphur and Calicum Caseinate as a Fungicide. (*Journ. Min. Agric.*, XXVIII, 995, 1922.)  
 The Fungicidal Properties of Certain Spray-fluids. III. (*Journ. Agric. Sci.*, XII, 269, 1922.)
- Salmon, E. S., and Amos, A.  
 Commercial Varieties of Hops. (*Journ. Min. Agric.*, XXIX, 30, 1922.)
- Wormald, H.  
 A Shoot-Wilt and Canker of Plum Trees caused by *Sclerotinia cinerea*. (*Ann. Bot.*, XXXVI, 306-320, 1922.)  
 Observations on a Discomycete found on Medlar Fruits. (*Trans. Brit. Myc. Soc.*, VII, 287-293, 1922.)
- Wormald, H., and Grubb, N. H.  
 Notes on the Control of Nursery Stock against Crown-gall. (*Gard. Chron.*, Apr. 22nd, 1922.)
- Theobald, F. V.  
 Aphides on Fruit. (*Misc. Pub. No. 39, Min. of Agric.*)  
 A Serious Attack of Winter Moth in East Kent. (*Journ. Kent F. U.*, and *Kent. Expr.*, 1923.)  
 A Preliminary List of the Aphididæ of North Wales, with Description of Four New Species. (*Rep. Lancs. and Chesh. Ent. Soc.*, 1921 and 1922.) (*Theobald and Walton.*)  
 The Aphides Attacking Cereals. (*Bull.* 2, *S.E.A.C.*, 1923.)  
 New Species of British Aphides. (*Entom. Mo. Mag.*, Sc. 3, Vol. 9, pp. 23-28, 1923.)  
 Aphides on the Yellow Horned Poppy (*Glaucium luteum*). (*Entom. Mo. Mag.*, Sc. 3, Vol. 9, pp. 152-156, 1923.)  
 A new Genus and two new species of Aphides from Ross-shire. (*Scott. Nat.*, pp. 19-20, 1923.)  
 An Aphid Genus and Species new to Britain (*Trilobaphis caricis*). (*Entom. Mo. Mag.*, Sc. 3, Vol. 8, pp. 137-138, 1922.)  
 The Winter Washing of Fruit Trees. (*Leaflet, S.E.A.C.*)  
 New Aphididæ found in Egypt. (*Bull. Soc. Royale Ent.*, 1922, pp. 39-80, 1923.)
- Salmon, E. S.  
 The "Mosaic" Disease of the Hop. (*Journ. Min. Agric.*, Jan., 1923.)  
 Sixth Report on the Trial of New Varieties of Hops. (*E. Malling Res. Sta.*, July, 1923.)
- Salmon, E. S., and Wormald, H.  
 A Safe Method of Preventing "Bunt" in Wheat. (*l.c.*, XXIX, Nov., 1922.)  
 The "Ring-spot" and "Rust" Disease of Lettuce. (*l.c.*, XXX, May, 1923.)  
 Three New Diseases of the Hop. (*l.c.*, XXX, Aug., 1923.)  
 A New *Cercospora* on *Humulus*. (*Journ. Bot.*, May, 1923.)



- Wormald, H.  
Blossom-wilt of Plum-trees. (*Journ. Min. Agric., July, 1923*)
- Ware, W. M.  
Violet Felt-rot (*Rhizoctonia*) of Clover. (*l.c., April, 1923.*)
- Theobald, F. V.  
Insects Feeding on Hops. (*Min. Agric. Misc. Pub. 32.*)  
New and Little Known British Aphides. (*Entom. Mo. Mag., LX, pp. 126-130, 1926.*)  
Two Aphides of Economic Importance New to Britain. (*Bull. 3, S.E.A.C., Nov., 1923.*)
- Salmon, E. S., and Wormald, H.  
The Prevention of "Bunt" in Wheat. (*Journ. Min. Agric., Jan., 1924.*)
- Salmon, E. S., and Ware, W. M.  
Occurrence in England of the Winter-stage (*Venturia inaequalis*) of the Apple-scab Fungus. (*Gard.'s Chron., Apr. 5th, 1924.*)  
The "Pear-scab Fungus." (*Ibid., May 10th, 1924.*)  
Apple and Pear Scab. (*Journ. Min. Agric., Sept., 1924.*)
- Salmon, E. S.  
Seventh Report on the Trial of New Varieties of Hops. (*E. Malling Res. Sta., June, 1924.*)
- Ware, W. M.  
"Scorch" or *Gloeosporium* Disease of Red Clover. (*Journ. Min. Agric., Dec., 1923.*)
- Wyllie, J.  
How to Adapt Systems of Farming to the Changed Conditions of Agriculture. (*Journ. Farm. Club, April, 1924.*)  
The Economics of Milk Production. (*Essex F.U. Year Book, 1924.*)  
Cost Accounting in Relation to Milk Recording. (*Ann. Rep. Heris. Milk Rec. Soc., 1922-23.*)  
Farm Economics—How the Farmer can Reduce Costs. (*Farm. and Stock., Sept., 1924.*)
- Theobald, F. V.  
Aphides attacking Vegetables and Market Garden Crops. (*Journ. Roy. Hort. Soc., L, 1, 1925.*)  
Aphides attacking Vegetables and Market Garden Crops. (*Journ. Min. Agric., XXXII, No. 2, 1925.*)  
New and Little-known British Aphides. (*Entom. Mo. Mag., LXI, pp. 71-81, 1925.*)
- Theobald, F. V., and Ramsbottom, J.  
The Enemies of the Rose. (*Nat. Rose Soc. Hdbk., 1925.*)
- Amos, A., Salmon, E. S., and Theobald, F. V.  
Cultivation, Diseases and Insect Pests of the Hop Crop. (*Min. Agric. Misc. Pub. 42, 1925.*)  
Preliminary List of the Crane Flies of Carnarvonshire, North Wales. (*Entom. Mo. Mag., IX, Oct., 1924.*)
- Barnes, H. F.  
The Ecological Distribution of Crane Flies in Carnarvonshire. (*Journ. Ecol., XIII, Jan., 1923.*)
- Salmon, E. S.  
Diseases of the Hop Crop. (*Min. Agric., Misc. Pub. 42, 1925.*)  
Eighth Report on the Trial of New Varieties of Hops, 1924. (*Ashford, Aug., 1925.*)
- Salmon, E. S., and Ware, W. M.  
An Endemic *Peronospora* on the Hop in England. (*Gard. Chron., Oct. 18th, 1924.*)  
The Downy Mildew of the Hop. (*Journ. Min. Agric., March and April, 1925.*)

- The Downy Mildew of the Hop and its Epidemic Occurrence in 1924. (*Ann. Appl. Biol.*, May, 1925.)
- On the Presence of a Perennial Mycelium in *Pseudoperonospora Humuli*. (*Nature*, 116, p. 134, 1925.)
- Virus Diseases and the Grafting of the Hop. (*Gard. Chron.*, May, 1925.)
- New Facts concerning the Downy Mildew, or "Spike-disease," of the Hop. (*Journ. Kent F.U.*, July, 1925.)
- Biological Observations on Apple "Scab" or "Black Spot." (*Journ Pom.*, IX, 230, 1925.)
- Notes on a Visit to the Hop Growing Districts of Bohemia, Czechoslovakia.
- Salmon, E. S., Bagenal, N. B., and Goodwin, W.  
Spraying Experiments against Apple Scab. (*Journ. Min. Agric.*, May, 1925.)
- Ware, W. M.  
Experiments and Observations on Forms and Strains of *Trifolium repens* L. (*Journ. Agric. Sci.*, XV, Jan., 1925.)
- A Disease of Wild White Clover caused by the Eelworm, *Tylenchus dipsaci* (Kühn) Bastian. (*Ann. Appl. Biol.*, Feb., 1925.)
- White Clover. (*Min. Agric. Misc. Pub.* 46, London, 1925.)
- Wyllie, J.  
Scientific Farm Management. (*Trans. H.A.S.S.*, 1925.)
- The Cost of Production of Grain Crops. (*Farm Crops*, I, pp. 303-317.)
- The Cost of Production of Root Crops. (*Farm Crops*, II, pp. 212-224.)
- North of Scotland College of Agriculture, Aberdeen.
- Hendrick, J.  
The Measurement of Soil Drainage with an account of the Craibstone Drain Gauges. (*Trans. H.A.S.S.*, XXXIII, 1921.)
- Fertilisers Before and After the War. (*Trans. H.A.S.S.*, XXXIV, 1922.)
- Hendrick, J., and Newlands, G.  
The Value of Mineralogical Examination in Determining Soil Types, with a Method of Examination and a Comparison of certain English and Scottish Soils. (*Journ. Agric. Sci.*, XIII, 1.)
- Hendrick, J.  
An Experiment on the Control of Finger-and-Toe by Liming. (*Trans. H.A.S.S.*, XXXV.)
- Proffit, W. J., and Findlay, W. M.  
Some Factors affecting the Value of Potatoes for Seed Purposes. (*Scott. Journ. Agric.*, Jan., 1923.)
- Hendrick, J.  
Drainage Investigations at Aberdeen. (*Scott. Journ. Agric.*, Jan., 1924.)
- Artificial Drying of Crops in the Stack. (*Trans. H.A.S.S.*, XXXVI.)
- Some Characters of Scottish Soils. (*Trans. H.A.S.S.*, XXXVII.)
- Hendrick, J., and Newlands, G.  
The Mineralogical Composition of Some Scottish Soils. (*Journ. Agric. Sci.*, XV, 3, July, 1925.)
- Paterson, W. G. R.  
Grassland in Scotland. (*Farm Crops*, III, p. 137.)
- Rennie, J.  
Polyhedral Disease in *Tipula paludosa*. (*Proc. Roy. Phys. Soc., Edin.*, MCMXXXIII.)
- Mermithid Parasite in *Tipula paludosa*. (*Proc. Roy. Phys. Soc., Edin.*, MCMXXXV.)

- Morrison, T., and Morrison, L.  
Species Determination in Two Common Crane Flies (*T. Paludosa* and *T. Oleracea*). (*Proc. Roy. Phys. Soc., Edin., MCMXXV.*)
- Morrison, G.  
Notes on Thysanoptera from the Aberdeen Area. (*Scott. Nat., 1925.*)
- Robertson, D.  
Notes on Soil Nematoda (Eelworm). (*Proc. Roy. Phys. Soc., Edin., MCMXXV.*)
- Rennie, J., and Harvey, E.  
Mites on Hives and on Hive Bees. (*Proc. Roy. Soc., Edin., 1922.*)
- Rennie, J.  
Acarine Disease Explained. (*Apis Club Mem., 1, 1923.*)  
The Crucial Problem of British Bee-keeping. (*Bee World, Apis Club Pub., 1922.*)  
The Control of Acarine Disease. (*Pres. Address, Apis Club, Bee World, 1923.*)  
(*Leaflets issued from Advisory Entom. Dept.*)
- Rennie, J.  
Management of Isle of Wight Diseased Stocks.  
Control of Isle of Wight Disease in Autumn.  
Instructions for the Control of Acarine Disease.  
Acarine Disease in Summer.  
Treatment of Bee Stocks showing a Moderate Infestation with Acarine Parasites.
- Nancy Robinson.  
Foul Brood and its Treatment.
- Edinburgh and East of Scotland College of Agriculture.
- Cunningham, A.  
The Covered Milking Pail as a Factor in Clean Milk Production. (*Scott. Journ. Agric., V, No. 1, 1922.*)
- Cunningham, A., and Williamson, W. T. H.  
The Preservation of Milk. (*Scott. Journ. Agric., V, 1922, p. 420.*)
- Lauder, A., and Cunningham, A.  
Dried Milk. (*Scott. Journ. Agric., VII, No. 3, 1924.*)
- Smith, William G.  
Basic Slag and Mineral Phosphates on Hill Pastures. (*Scott. Journ. Agric., VI, No. 3, 1923.*)
- Kermack, W. O., and Williamson, W. T. H.  
The Stability of Suspensions. I. The Rate of Sedimentation of Kaolin Suspensions by Salts at Varying Hydrogen ion Concentrations. (*Proc. Roy. Soc., Edin., XLV, 1925, p. 60.*)
- Smith, A. M.  
The Exchangeable Bases in Some Scottish Soils. (*Journ. Agric. Sci., XV, 1925, p. 466.*)
- Ogg, W. G.  
Soil Investigations and their Bearing on Field Experimental Work. (*Scott. Journ. Agric., IX, 1926, p. 20.*)
- Williamson, W. T. H.  
Soil Sourness. (*Scott. Journ. Agric., IX, 1926, p. 29.*)
- Ogg, W. G.  
The Michigan Land Economic Survey. (*Scott. Journ. Agric., VII, 1924, p. 179.*)
- Glasgow and West of Scotland Agricultural College.
- Berry, R. A.  
The Production, Composition and Utilisation of Whey. (*Journ. Agric. Sci., April, 1923.*)  
The Manurial Properties of Lead Nitrate. (*Journ. Agric. Sci., Jan., 1924.*)

- Berry, R. A., and O'Brien, D. G.  
Field Experiments. (*Journ. Agric. Sci., Vol. XIV, Pt. 3, 1924.*)
- Berry, R. A.  
The Effect of Frequent Changes of Diet upon the Secretion and Composition of Cow's Milk.
- Scott, A., and McArthur, D. N.  
The Constitution of Basic Slags. (*Journ. West Scot. Iron and Steel Inst., 1922, 29, 79.*)
- McArthur, D. N.  
The Constitution and Manurial Value of Low Grade Basic Slag (*Journ. Soc. Chem. Ind., 1923, 42, 213.*)
- Leitch, R. H.  
The Use of Selected Lactic Ferments in the Manufacture of Hard-pressed Cheese. (*Proc. World's Dairy Cong., Washington, 1923.*)  
Pasteurisation of Milk for Cheese-making. (*Milk Ind., Sept., 1924.*)  
Experiments in the Manufacture of Rennet Extract. (*Proc. World's Dairy Cong., Washington, 1923.*)  
Standardisation of Rennet Extracts. (*Scott. Journ. Agric., July, 1922*)  
De quelques progres recents dans la fabrication du beurre. (*Le Lait, 4 annee no. 39.*)  
The Production of Pure Milk. (*Scott. Journ. Agric., Jan., 1925.*)  
The Keeping Properties of Sterilised Milk. (*Milk Ind., Sept., 1924.*)
- McCandlish, A. C.  
Building a Dairy Herd. (*Scott. Farmer, 32, Jan. 5th, 1924*)  
The Self Feeder for Calves. (*Scott. Journ. Agric., Oct., 1924.*)
- McCandlish, A. C., and Berry, R. A.  
Home-Grown and Chinese Beans for Milk Production. (*College Bull., Dec., 1924.*)  
Steamed Bone Flour as a Mineral Supplement for Milk Cows. (*Scott. Journ. Agric., Jan., 1925.*)
- McCandlish, A. C.  
Water for Dairy Cows. (*Scott. Journ. Agric., Jan., 1925.*)  
Salt for Cows. (*Scott. Journ. Agric., Jan., 1925.*)  
Dairy Type. (*Scott. Farmer, Jan. 24th, 1925.*)  
Infectious Weed in Cows. (*Scott. Farmer, March 28th, 1925*)
- McCandlish, A. C., and McVicar, A.  
Are Milk Record Association Results Accurate? (*Scott. Journ., April, 1925.*)
- McCandlish, A. C.  
Building Up a Dairy Herd from Scrubs. (*Proc. Scott. Cattle Breed. Conf., May, 1925.*)  
Mind the Minerals for Milk. (*Scott. Farmer, June 6th, 13th, 20th, 1925.*)  
Spray for Cows for Flies. (*Scott. Farmer, Aug. 22nd, 1925.*)  
Conserving Swedes for Milk Production. (*Scott. Journ. Agric., Oct., 1925.*)  
The Rationing of Dairy Cows. (*Scott. Farmer, Dec. 12th, 19th, 1925.*)
- Paterson, Wm. G. R.  
Rotation Cropping on a Demonstration Area in Wigtownshire. (*Trans. H.A.S.S., 1922, and Coll. Bull. 101, 1922.*)  
Pig Feeding and Cattle Feeding Experiments. (*Trans. H.A.S.S., 1924, and Coll. Bull. 102, 1924.*)  
The Grub Pest and Paris Green as a Remedy. (*Coll. Bull. No. 103.*)  
Report on Pig Feeding Experiments. (*Coll. Bull. 104.*)  
Pig Feeding, Indoor v. Outdoor Fattening. (*Trans. H.A.S.S., 1925, and Coll. Bull. 105, 1925.*)

## INDEX.

	PAGE		PAGE
Aberdeen, North of Scotland		Apples—	
College of Agriculture	6, 16,	Breeding	81
38, 189, 193, 198, 252		Diseases ( <i>see</i> Fruit diseases).	
Aberystwyth—		Keeping quality	140
University College	193, 220,	Manuring	115
315, 319, 322		Pests, control by spraying	154, 160
Welsh Plant Breeding Station	58, 61, 71, 91, 93	Pruning	118
Abortion, epizootic	280	Root-stock classification	102
Acarine disease of bees	252	Storage and preservation	138
Adco ( <i>see</i> Synthetic Farm-yard Manure).		Apple-blossom weevil	165
Agricultural Accounting Society	313	Apple mildew	168
Algae in soil	47	Arable farming	320
American gooseberry mildew	176	Armstrong College, Newcastle-on-Tyne	29, 191, 195, 201, 294
Animal diseases—		Arsenic sprays	152
Advisory scheme	292	Atlas, agricultural	319
Braxy	295	Azotobacter	46
Dysentery (lambs)	297		
Epizootic abortion	280	Baby beef	206
Erysipelas (swine)	289	Bacillary white diarrhoea	248
Fluke or liver rot	293	<i>Bacillus radicola</i> , life cycle	44
Foot-and-mouth disease	285	Bacteria—	
John's disease	278	Decomposing cellulose	39
Joint-ill in foals	277	Nitrogen-fixing	41, 43, 46, 99
Mastitis or garget	282	Soil inoculation for lucerne	43
Milk fever in cattle	299	Bangor, University College	18, 31, 33, 184, 196, 199, 236, 293
Parasitic gastritis and enteritis	283	Barley—	
Poisoning from foodstuffs	285	"Blindness"	59
Scrapie	283	Breeding	59
"Stomach staggers" in ewes	295	Climate effect on growth	94
Strongylosis	295	Fertilisers effect on growth	95
" Swayback " in lambs	294	Food value	223
Ticks in sheep	294	Gout fly	190
Trembling or louping ill	297	Malting trials	52, 96
Warble flies	294	Basic slag research	22, 27
Worm parasites	289	Beans, breeding	66
Animal Diseases Research Association, Scotland ( <i>see</i> Edinburgh).		Bees—	
Animal nutrition—		Acarine disease	252
Baby beef experiments	206	Combs, position of	250
Mineral constituents in foodstuffs	208	Feeding for winter stores	251
Nutrition of young animals	205	Mating experiments	252
Principles of	203	Metal combs	250
Rate of growth in sheep	207	Belfast, Queen's University ( <i>see</i> Northern Ireland, Ministry of Agriculture).	
Ultra-violet rays	216		
Vitamins	258		

	PAGE		PAGE
"Big Bud" and "Rever-		Carbon dioxide, effect on	
sion" (black currants) -	173	plant growth -	92, 123
Black currants—		Cardiff, University College	195, 294
Breeding - - -	81	Carnations, red spider -	124
Classification - - -	105	Carrot fly - - -	201
Diseases ( <i>see</i> Fruit di-		Cattle—	
seases).		Control of "heat" period	228
Manuring - - -	115	Dairy - cow rationing	
Black currant leaf spot -	176	schemes - - -	257
Black scurf of potatoes -	189	Diseases ( <i>see</i> Animal Di-	
"Black Spot" in cheese -	269	seases).	
Blight of potatoes - - -	189	Lactation period	228, 230, 256
"Blindness" in barley -	59	Mineral requirements of	
Board of Agriculture for		dairy cows - - -	214
Scotland (Plant Registra-		Nutrition ( <i>see</i> Animal nu-	
tion and Testing Station)	85	trition).	
Boron - - -	99	"Cauliflower" disease	
<i>Botrytis cinerea</i> - - -	147	(strawberries) - - -	129
Bracken poisoning - - -	285	Celery diseases—	
Braxy in sheep - - -	295	Celery blight or leaf spot	
Bristol University ( <i>see also</i>		- - -	199, 200
Long Ashton) - - -	313	Root-rot or canker - - -	200
Brown rot - - -	166	Seedling diseases - - -	199
Bulb-growing and pests -	130	Cheese—	
Bunt in wheat - - -	193	"Black spot" - - -	269
Butter—		Blue-vein cheese making -	268
Creamery demonstration		Discoloration problems -	266
in Ulster - - -	270	Flavouring - - -	268
Effect of feeding on		Pasteurisation of milk -	268
quality - - -	270	"Red spot" or "rusty	
Flavouring - - -	268, 270	spot" - - -	267
Pasteurisation of cream -	269	"Starters" - - -	268
		Whey disposal - - -	271
Cabbage gall weevil - - -	201	Cherries—	
root fly - - -	201	Breeding - - -	81
Calorimeter experiments	205, 206	Diseases ( <i>see</i> Fruit di-	
Cambridge Browick wheat -	57	seases).	
Cambridge University—		Root-stock classification -	105
Animal Nutrition Insti-		Cheshunt, Nursery and Mar-	
tute	52, 203, 207, 219, 222,	ket Garden Crops Re-	
223, 225, 227, 245, 256		search Station - - -	121-127
Animal Pathology Insti-		Chipping Campden, Fruit	
tute - - -	288	and Vegetable Preserving	
Horticultural Research		Station - - -	141-144
Station - - -	106, 152	Chlorosis - - -	117
Plant Breeding Insti-		Cider-making investigations	135
tute	50, 54, 57, 58, 59, 62,	Citric solubility test -	24, 26
64, 65, 66		Clovers, breeding - - -	72
School of Agriculture	154, 155,	Cockle Park Experiment	
156, 157, 158, 161, 191,		Station - - -	23
193, 196, 311		Cocksfoot, breeding - - -	69
School of Botany - - -	170	Cold storage - - -	137
Small Animal Breeding		Colloids of soil - - -	3
Institute - - -	233, 243	<i>Collombola</i> (springtails) -	197
Canning fruit - - -	141	Condensed milk, "blowing" -	267
Capsids ( <i>see</i> Apple pests).		Co-operation - - -	320

	PAGE		PAGE
Corn-cockle poisoning	285	Eelworm in bulbs	131
Cornwall, Duchy of ( <i>see</i> Duchy of Cornwall).		Eelworm in potatoes	187 291
<i>Corticium</i>	188 & 189	Electricity—	
Cost accounting	310	From windmills	307
Cost of production, inquiries	314	Influence on plant growth	100
Crane flies	193	Use in ploughing	9
"Crinkle" disease of potato	182	Epizootic abortion	280
Crop drying	302	Experimental plot work	96
Crown gall on nursery stocks	168	Farm labour organisation	318
Cucumbers—		Farming in smoke areas	317
Manuring	122	Farmyard manure, synthetic	39
Mosaic diseases	124	Feeding stuffs, cooking	222
Red spider	124	Fescue, breeding	71
Root flies	126	"Finger-and-toe" disease	198
Temperature effect on growth	94	Flax—	
Woodlice	125	Breeding	76
Currants, black ( <i>see</i> Black currants).		Bulking of "J.W.S." seed	78
Cutworms	197	Fluke in sheep	293
Cyclamen wilt disease	127	Food Investigation Board (Low Temperature Re- search Station)	137
Daddy Longlegs	193	Foot-and-mouth disease	285
Dairy cows ( <i>see</i> Cattle).		Fowl pox	249
Dairy-farm management	255, 257	Frit fly in oats	191
Dehydration (including crop drying)	302	Fruit—	
"Die Back" disease (apples, etc.)	163	Canning	141
<i>Diaporthe perniciosa</i>	164	Juices and syrups	143
Diphtheretic roup	249	Keeping quality	140
Downy mildew of hop	179	Preservation and storage	137
Drain-gauge experiments	6, 38	Variety trials	143
Drainage trials	301	Fruit soil survey	106
Dry rot of swedes	196	Fruit-tree diseases—	
Duchy of Cornwall	131	American gooseberry mil- dew	176
Dynamometer experiments	10	Apple blossom weevil	165
		Apple mildew	168
		"Big Bud" and "Rever- sion" (black currants)	173
East Malling, Horticultural Research Station	80, 82, 103, 107, 110, 111, 115, 116, 117, 152, 162, 165, 166, 168, 175, 178, 180	Black currant leaf spot	176
Edinburgh—		Brown rot	166
Animal Breeding Research Institute	236, 242	Cherry blossom wilt	167
Animal Diseases Research Association	295-298	Crown gall on nursery stocks	168
East of Scotland Agri- cultural College	14, 23, 31, 41, 46	"Die Back" (Apples, etc.)	163
Plant Breeding Research Society	53, 59, 64, 65, 69	Gall mites	175
Royal (Dick) Veterinary College	298	Pear-blossom wilt	167
		Raspberry blue stripe wilt	178
		"    cane spot	178
		"    mosaic	179
		Silver leaf	170
		Testing stocks and varie- ties for disease resist- ance	169
		Tortrix moths	167

	PAGE		PAGE
Fruit trees—		Immunity studies with fungi	148
Breeding - - - -	80	Imperial College of Science	
Fruit-bud formation - -	109	(see Plant Physiology Re-	
Manuring - - - -	115	search Institute).	
Nutritional disorders -	116	Insecticides - - - -	150
Pruning - - - -	117	Insects in soil - - - -	47
Root influence and treat-		Insemination, artificial -	230
ment - - - -	107	Iodine, effect on plant growth	100
Root-stock classification -	102	Irradiation (see Ultra-violet	
Fungi—		rays).	
Genetics - - - -	147	Isles of Scilly (see Scilly	
In soil - - - -	48	Islands).	
Physiology of immunity -	148	Jam-making - - - -	142
Fungicides - - - -	158	John Innes Horticultural	
<i>Fusarium</i> - - - -	149	Institution - - - -	82
Gall mites - - - -	175	Johne's disease - - - -	278
"Gapes" in poultry - - -	291	Joint-ill in foals - - - -	277
Garget in cows - - - -	282		
Glasgow—		Kilmarnock Dairy Institute	
Kilmarnock Dairy Insti-		(see Glasgow).	
tute 254, 257, 263, 264,		Labour organisation on	
265, 268		farms - - - -	318
West of Scotland Agri-		Lactose production - - - -	273
cultural College 15, 27, 98,		Lamb dysentery - - - -	297
130, 188, 189, 194, 196,		Latin Square - - - -	97
252, 272		Lead nitrate manurial pro-	
Gooseberries—		perties of - - - -	98
Breeding - - - -	81	Leaf roll of potato - - - -	182
Diseases (see Fruit di-		Leaf scorch - - - -	116
seases).		Leather-jackets - - - -	193, 197
Manuring - - - -	115	Leeds University 30, 191, 201,	
Gout fly of barley - - - -	190	312, 315, 323	
Grasses, breeding - - - -	69	Lime-requirement of soils	
Green manuring - - - -	39	(see Soil sourness).	
Harper-Adams Agricultural		Liming experiments (see Soil	
College 153, 191, 199, 241, 247		sourness).	
Hartley Botanical Labora-		<i>Limnaeus truncatula</i> -	198, 293
tories, Liverpool - - - -	139	Linen Industry Research	
<i>Helminthosporium</i> - - - -	59, 196	Association - - - -	78
Hen Gymro wheat - - - -	58	Lister Institute of Preven-	
Herbage plants, breeding -	68	tive Medicine - - - -	286
<i>Heterodera Schachtii</i> - - -	188	Liver fluke in sheep - - - -	198, 293
Hops—		Liverpool University - - - -	139
Breeding - - - -	82	Long Ashton, Horticultural	
Diseases—		Research Station 80, 102, 106,	
Downy mildew (spike		107, 110, 114, 116, 117, 127,	
disease) - - - -	179	132, 135, 137, 141, 153, 154,	
Hop wilt - - - -	180	155, 156, 158, 163, 167, 174,	
Mosaic - - - -	180	176	
Red spider - - - -	180	London School of Tropical	
Humus (see Soil, organic		Medicine - - - -	188, 289-292
matter).		Louping-ill of sheep - - - -	297



	PAGE		PAGE
Low Temperature Research Station ( <i>see</i> Food Investigation Board).		Mustard beetles - - -	197
Lucerne inoculation - -	43	<i>Mycophilidæ</i> - - -	126
Maize, food value of -	222	National Institute for Research in Dairying, Reading	254, 258, 260, 263, 265, 266, 299
Malting barley ( <i>see</i> Barley).		National Institute of Agricultural Botany, Cambridge - - -	85
Manchester University	162, 183, 200, 201, 317	Nitrogen: cycle - - -	37
Mangolds, black leg disease	197	loss from soil - - -	37
Marketing investigations -	320	fixation in soil - 41, 43, 46, 48, 99	
Markets and Co-operation Branch (Ministry of Agriculture and Fisheries) -	321	influence on plant growth	97, 114
Mastitis in cows - - -	282	Northern Ireland, Ministry of Agriculture (Research Stations at Belfast and Stormont)	22, 31, 60, 78, 85, 154, 155, 162, 176, 177, 189, 206, 212, 270, 299
<i>Meligothis æneus</i> - - -	199	Oats—	
Meteorology - - -	19	Breeding - - -	59
Midland Agricultural and Dairy College	189, 193, 195, 312, 319	Crane flies - - -	193
Milk—		Field trials at Aberystwyth - - -	62
Clean milk production -	260	Frit fly - - -	191
Coagulation of sterilized milk - - -	265	Hardiness - - -	55
Cod-liver oil affecting fat content - - -	259	Leaf spot - - -	196
Cost of production - -	314	Resistance to disease	61
Feeding affecting vitamin content - - -	259	Supply of pure seed (Northern Ireland) -	60
" Graded " milk scheme -	262	Offals, classification -	223
Heating - - -	263	Oil sprays and emulsions -	156
Oiliness - - -	264	Onion fly - - -	201
Physical ropiness - - -	265	Onions, white rot - - -	200
Milk fever in cattle - -	299	Organic matter in soil -	35
Milk records, examination -	255	Ormskirk potato trials	64, 86
Mineral constituents of food-stuffs - - -	208	Oxford University—	
Mineral phosphate experiments - - -	22	Agricultural Engineering Institute	275, 300-308
Ministry of Agriculture and Fisheries—		Economics Research Institute	310, 315, 316, 318, 319, 320, 322
Markets and Co-operation Branch - - -	310, 321	School of Rural Economy	37, 168, 191
Plant Pathological Laboratory - - -	146, 191	Paris green bait	126, 194, 202
Veterinary Research Laboratory - - -	248, 283-288	Parsnip canker - - -	200
Ministry of Agriculture for Northern Ireland ( <i>see</i> Northern Ireland).		Parturition, control - -	227
<i>Momonchus papillatus</i> - -	189	Pasteurised milk - - -	263
Mosaic diseases—			
Cucumbers and tomatoes	124		
Hops - - -	180		
Potato - - -	182		

	PAGE		PAGE
Pasture—		Potatoes—	
Food value - - -	218	Breeding - - -	64
Improvement - - -	14, 69, 74	Wart disease trial sta- tions - - -	64, 86
Patch disease (strawberries)	129	Yield and maturity trials	87
Pears—		Potato diseases—	
Breeding - - -	81	Black scurf - - -	189
Diseases ( <i>see</i> Fruit di- seases).		Blight - - -	189
Pruning - - -	119	Eelworm - - -	187
Root-stock classification	104	Violet root rot - - -	190
Storage and preservation	138	Virus diseases (leaf roll, mosaic, crinkle, streak)	181
Peas, breeding - - -	66	Wart disease - - -	185
Perennial ryegrass, breeding	69	Poultry—	
<i>Phadon cochliaria</i> - - -	197	Breeding experiments	
<i>Phoma apiicola</i> - - -	200	(Reaseheath) - - -	243
<i>Phoma napobrassica</i> - - -	196	Diseases - - -	248, 291, 299
Phosphate, influence on plant growth - - -	98, 114	Feeding and husbandry experiments (Harper Adams) - - -	247
Phosphates—		Feeding experiments (Wye)	246
Citric solubility test	24, 26	Inheritance of fecundity -	233
Mineral and basic slag re- search - - -	22, 27	Mineral requirements -	215
<i>Phyllocteta vulgatissima</i> -	198	National Poultry Insti- tute - - -	243
<i>Phytophthora</i> - - -	189, 199	Nutrition research (Cam- bridge) - - -	245
Pig—		Sex linkage - - -	233
Breeding experiments		Poultry for controlling farm pests - - -	197
(Edinburgh) - - -	242	Protozoa of soil - - -	45
Degeneration of foetuses -	229	Protozoan parasites of animals - - -	292
Feeding trials (Harper Adams) - - -	241	Pruning experiments - - -	117
Mineral requirements -	212	<i>Pseudoperonospora Humuli</i> -	179
Nutrition - - -	205	<i>Pseudopeziza ribis</i> - - -	176
Fig - keeping systems		Purple leaf blotch (straw- berries) - - -	130
(Wye) - - -	242		
Diseases ( <i>see</i> Animal di- seases).		Rabbits, inheritance of pat- tern and weight - - -	235
Plant disease service - - -	145	Raspberries—	
Plant growth—		Breeding - - -	81
Effect of carbon dioxide	92, 123	Classification - - -	106
Effect of electricity - - -	100	Diseases ( <i>see</i> Fruit di- seases).	
Effect of fertilisers - - -	95	Manuring - - -	116
Effect of length of day -	93	Raspberry—	
Plant Physiology Research Institute, South Ken- sington 90, 92, 94, 97, 100, 137, 149, 181		Blue stripe wilt - - -	178
Ploughing—		Cane spot - - -	178
Speed of - - -	12	Mosaic - - -	179
Use of electricity in - - -	9	Rationing advisory schemes	257
Plums—		Reading University - - -	190, 272
Breeding - - -	81	Red currants, breeding - - -	81
Diseases ( <i>see</i> Fruit di- seases).		Reaseheath School of Agri- culture, Cheshire - - -	243, 317
Root-stock classification	105		
Storage and preservation	138		
Potash, influence on plant growth - - -	96, 114		

	PAGE		PAGE
Red Fescue, breeding -	71	Silage - - -	223, 270
Red Plant (strawberries) -	129	Silicon, influence on plant	
Red Spider in glasshouses -	124	growth - - -	100
Red spider on hops -	180	Silver leaf - - -	170
"Red Spot" or "Rusty		Slugs - - -	198, 201
Spot" in cheese -	267	Small leaf (strawberries) -	129
Residual shrinkage of soil -	3	Snails - - -	198
<i>Rhizoctonia</i> - - -	190	Soil—	
Root flies in glasshouses -	126	Acidity ( <i>see</i> Sourness).	
Root influence - - -	107	Algæ - - -	47
Roots, feeding quality	53, 66	Ammonia losses from -	37
Root stocks—		Classification - - -	4, 13
Classification - - -	102	Cohesion and friction ex-	
Crown gall - - -	168	periments - - -	9
Physiological influence -	112	Colloids - - -	3
Relationship to scion -	110	Drain-gauge experiments	6, 38
Testing for disease resist-		Fungi - - -	48
ance - - -	169	Insects - - -	47
Rothamsted Experimental		Mechanical analysis -	18
Station	2, 8, 19, 24, 29, 30,	Organic matter - - -	35
	31, 32, 34, 36, 39, 43, 45, 46,	Protozoa - - -	45
	47, 53, 95, 98, 147, 150, 183,	Residual shrinkage -	3
	190, 250	Resistance as measured	
Rowett Research Institute,		by drawbar pull -	10
Aberdeen	208, 213, 225, 263	Sourness—	
Royal Veterinary College,		Methods of testing -	29
London - - -	277-283	Theory of exchangeable	
Rural Industries, investi-		bases - - -	32
gation - - -	319	Liming experiments -	34
Ryegrass breeding - - -	69	Surveys - - -	14, 106
		Water movements - - -	5
		South-Eastern Agricultural	
Scab ( <i>see</i> Apple pests).		College ( <i>see</i> Wye).	
"Scald" in stored fruit -	139	Soya meal, extracted, poison-	
Silly Islands Agricultural		ing from - - -	285
Committee - - -	131	Spider, red ( <i>see</i> Red spider).	
Scion and stock relationship	110	Spike disease of hop - - -	179
Scorch ( <i>see</i> Leaf scorch).		Sprays and washes -	150-162
Scottish—		Springtails attacking man-	
Plant Breeding Station	65, 69	golds - - -	197
Plant Registration and		Sterilised milk, coagulation	265
Testing Station - - -	85	<i>Stereum purpureum</i> - - -	170
Seale - Hayne Agricultural		Stilton cheese, discoloration	266
College	26, 130, 132, 197, 202	Stock feeding, principles ( <i>see</i>	
Seed germination studies -	91	Animal nutrition) - - -	203
Seeds mixtures - - -	74	Storage of fruit and veget-	
Seed-testing stations - - -	87	ables - - -	137
Sex-linkage in poultry -	233	Straw, decomposition - - -	39
Sheep—		Strawberries—	
Diseases ( <i>see</i> Animal di-		Cultivation - - -	128
seases).		Diseases - - -	129
Growth experiments -	207	Forcing - - -	129
Improvement of Welsh		Manuring - - -	129
fleece - - -	236	Normal life cycle - - -	127
Mineral requirements -	213	"Strain" influence -	128
Southdown/Blackface		"Streak" disease of potato	182
cross - - -	238	Sub-soiling - - -	301

	PAGE		PAGE
Sugar beet—		Vegetables—	
Cost of production - -	315	Pickling and curing - -	143
De Vecchi's process - -	305	Variety trials - - -	143
Sulphur dioxide—		Wines - - -	143
Cider preserving - - -	137	Vetches, breeding - - -	66
Fruit preserving - - -	142	<i>Vibrio septicus</i> - - -	295
Sulphur, fungicidal action	158, 159	Virus diseases of potatoes -	181
Supernumerary teats - - -	229	Vitamin research - - -	258
Surface caterpillars - - -	197	Warble flies - - -	294
Surveys, agricultural ( <i>see</i>		Wart disease of potatoes -	185
<i>also</i> Soil Surveys) - - -	315	Wart disease stations - - -	64
Swedes—		Welsh Plant Breeding Sta-	
Breeding - - -	65	tion ( <i>see</i> Aberystwyth).	
Dry rot - - -	196	Wheat—	
Feeding quality - - -	53, 66	Analysis of "yield" - - -	54
Swede seed beetle - - -	199	Breeding - - -	57
Synthetic farmyard manure	39	Bulking and marketing	
		"Yeoman II." - - -	86
		Bunt disease - - -	193
		Chromosome research - - -	57
		Offals ( <i>see</i> Offals).	
		Resistance to disease - - -	58
		Strength - - -	51
		Whey disposal - - -	271
		White fly in glasshouses -	126
		Willow—	
Tar distillate washes - -	154, 156	Aphis - - -	134
Ticks in sheep - - -	294	Beetle - - -	133, 198
Tillering in cereals, influ-		Investigations - - -	132
ence on yield - - -	54	Peeling machine - - -	134
Timothy, breeding - - -	69	Wiltshire County Council	258, 314
Tomatoes—		Windmills for electricity -	307
Cultivation - - -	122	Wireworm - - -	195, 197
Mosaic diseases - - -	124	Woodlice in glasshouses -	125
Red spider - - -	124	Worm parasites of animals	
Woodlice - - -	125	- - -	283, 289
Tortrix moths - - -	167	Wye, South-Eastern Agri-	
" Trembling " of sheep -	297	cultural College - - -	82, 159, 160,
<i>Triodontophorus tenuicollis</i> -	291	167, 179, 180, 199, 242, 246,	
Turkeys, "blackhead" di-		312, 315, 319	
sease - - -	294	Yeoman II. wheat, introduc-	
Turnip gall weevil - - -	201	tion - - -	57
Turnip seed beetle - - -	199	Yield of cereals, analysis -	54
Turnips—			
Breeding - - -	65		
Feeding quality - - -	53, 66		
Ultra-violet rays - - -	216		

**Devised**  
**for the professional**  
*but still best for all.*

---

**The value of Chemical**  
**Soundness**

These products were devised for professional use. That is to say, they are unadorned scientific preparations, dependent on chemical factors—the factors that cannot fail. We most confidently recommend them to all serious horticulturists, as the finest obtainable.

**XL ALL**  
**NICOTINE SPECIALITIES**

**XL ALL Nicotine Liquid Insecticide**  
**XL ALL Fumigating Compound**  
**XL ALL Leaf Miner Insecticide**

ALSO

**XL ALL White-Fly Vapour**

**T**HERE are XL ALL Insecticides, Fungicides, and Fertilisers for every purpose. All are obtainable only from nurserymen, seedsmen and florists, or chemists. Please ask for our small price list and name of nearest agent.

Manufacturers of Kamforite "F" for the Farm, the best Pest Exterminator, Soil Cleanser and Enricher.

**G. H. RICHARDS LTD.,**  
**234 Borough High St., London, S.E.1**

# ROTOPLUNGE PUMPS

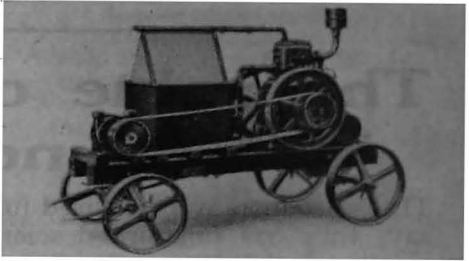
*Rotary Reciprocating Plunger Pumps without Valves.*

**ALL BRITISH-MADE THROUGHOUT**  
and as supplied to Admiralty, War Office, Air Ministry, etc.

No priming, and highest suction lift.

Small weight and space.

Pumps for Farms, Dairies, Bungalows, for use on milk, water, oil or sewage, with or without engine or motor. Sizes from 1 gall. per hour to 400 tons.

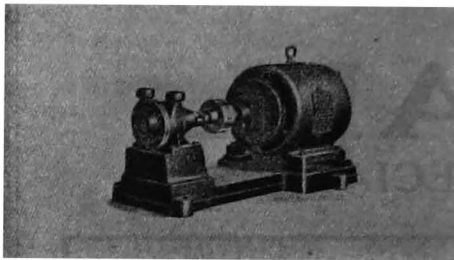


## Portable Petrol-engined Pump.

Can be dragged about by hand or by horse, and by changing over the belt the engine can be used for any purpose.

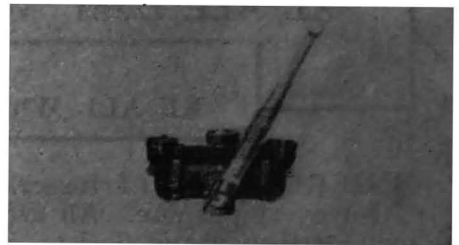
Hopper-cooled engines supplied if preferred.

Always ready for the odd job or for fire purposes.



## Electrically Driven Pump.

Where the electric supply is available the electric motor is usually the best method of driving, particularly where cleanliness and quietness are required.



## Hand Pump.

*Write us for Catalogue, and let us have your inquiries for all kinds of pumping work.*

**ROTOPLUNGE PUMP CO., LTD.,**

**24, Broadway, WESTMINSTER, S.W. 1.**

*(1 minute St James's Park Station.)*

Telephone : Vic. 4395.

Telegrams : "Rotoplung. London."

## ADVERTISEMENTS.

### INDEX TO ADVERTISERS.

	<i>Page</i>
Adco, Ltd. - - - - -	viii
Allen & Hanburys, Ltd. - - - - -	x
Alsace-Lorraine and General Products Company, Ltd. - - - - -	ix
Beatty Bros., Ltd. - - - - -	iv
Brantom & Co., J. H. - - - - -	i
Briton Ferry Chemical & Manure Co., Ltd., The - - - - -	xvii
Chilean Nitrate Committee, The - - - - -	iii
Corry & Co., Ltd. - - - - -	xviii
Curley & Sons, W. J. - - - - -	v
Diabolo Separators, Ltd. - - - - -	vi
Fertilizer Sales, Ltd. - - - - -	xii
Garton, Sons & Co. - - - - -	page iii of cover
Harper Adams Agricultural College - - - - -	xviii
Lands Improvement Company, The - - - - -	page ii of cover
Livestock Feeding Co., The - - - - -	ii
London Assurance, The - - - - -	xi
Massey-Harris, Ltd. - - - - -	xix
Nitram, Ltd. - - - - -	ix
Ransomes, Sims & Jefferies, Ltd. - - - - -	xvi
Richards, Ltd., G. H. - - - - -	xiii
Rotoplunge Pump Co., Ltd., The - - - - -	xiv
Thorley, Ltd., Joseph - - - - -	vii

# ROTOPLUNGE PUMPS

*Rotary Reciprocating Plunger Pumps without Valves.*

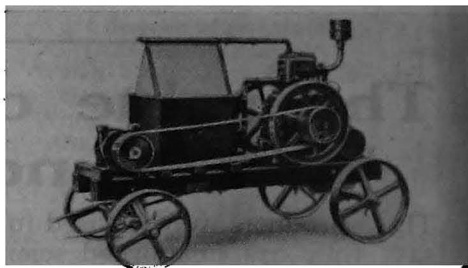
**ALL BRITISH-MADE THROUGHOUT**

and as supplied to Admiralty, War Office, Air Ministry, etc.

No priming, and highest suction lift.

Small weight and space.

Pumps for Farms, Dairies, Bungalows, for use on milk, water, oil or sewage, with or without engine or motor. Sizes from 1 gall. per hour to 400 tons.

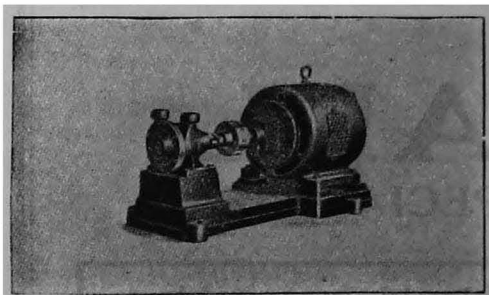


## Portable Petrol-engine Pump.

Can be dragged about by hand or by horse, and by changing over the belt the engine can be used for any purpose.

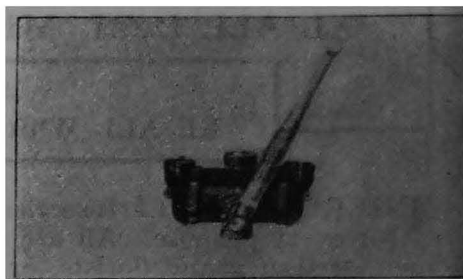
Hopper-cooled engines supplied if preferred.

Always ready for the odd job or for fire purposes.



## Electrically Driven Pump.

Where the electric supply is available the electric motor is usually the best method of driving, particularly where cleanliness and quietness are required.



## Hand Pump.

*Write us for Catalogue, and let us have your inquiries for all kinds of pumping work.*

**ROTOPLUNGE PUMP CO., LTD.**

**24, Broadway, WESTMINSTER, S.W. 1.**

*(1 minute St James's Park Station.)*

Telephone : Vic. 4395.

Telegrams : "Rotoplunge, London"

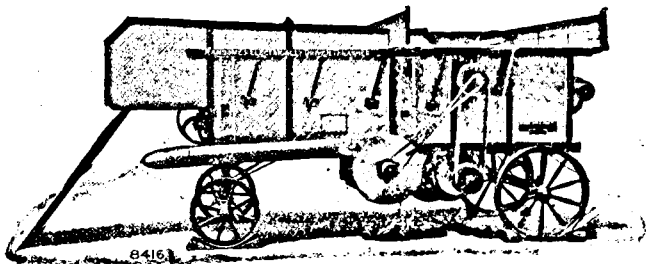


## INDEX TO ADVERTISERS.

	<i>Pag</i>
Adco, Ltd. - - - - -	vii
Allen & Hanburys, Ltd. - - - - -	i
Alsace-Lorraine and General Products Company, Ltd. - - - - -	ii
Beatty Bros., Ltd. - - - - -	iv
Brantom & Co., J. H. - - - - -	v
Briton Ferry Chemical & Manure Co., Ltd., The - - - - -	xvi
Chilean Nitrate Committee, The - - - - -	ii
Corry & Co., Ltd. - - - - -	xvii
Curley & Sons, W. J. - - - - -	v
Diabolo Separators, Ltd. - - - - -	v
Fertilizer Sales, Ltd. - - - - -	xi
Garton, Sons & Co. - - - - -	page iii of cover
Harper Adams Agricultural College - - - - -	xvii
Lands Improvement Company, The - - - - -	page ii of cover
Livestock Feeding Co., The - - - - -	i
London Assurance, The - - - - -	x
Massey-Harris, Ltd. - - - - -	xix
Nitram, Ltd. - - - - -	ix
Ransomes, Sims & Jefferies, Ltd. - - - - -	xvi
Richards, Ltd., G. H. - - - - -	xiii
Rotoplunge Pump Co., Ltd., The - - - - -	xiv
Thorley, Ltd., Joseph - - - - -	vii

# Ransomes'

**ELECTRICALLY DRIVEN THRASHER**



As manufacturers of Electric Motors, Ransomes are now employing this power for the driving of their Threshing Machinery. The illustration is of a Ransomes' 42-in. electrically driven, self-contained Threshing Machine of the "Homestead" type.

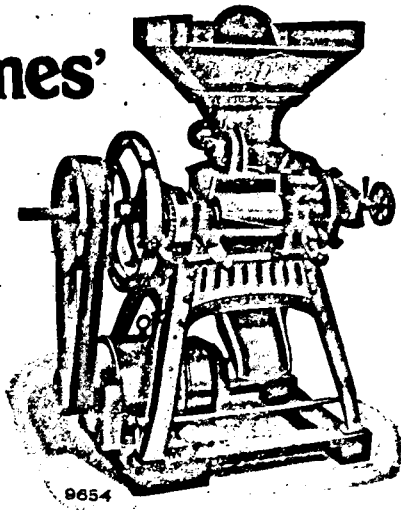
A successful demonstration of Electrical Threshing was recently carried out for the Chester Corporation.

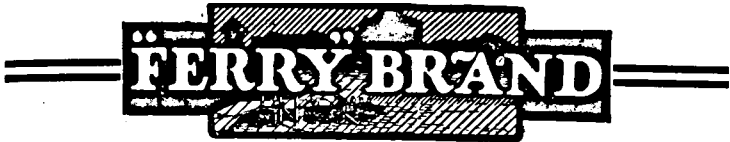
# Ransomes'

## **ELECTRIC MOTORS FOR BARN MACHINERY**

Ransomes' Electric Motors are also being used in conjunction with Barn Machinery, such as a Grinding Mill (illustrated), Chaff Cutter, Root Cleaner and Cutter, while they can be supplied for use with many other types of Agricultural Machines.

**RANSOMES,  
SIMS & JEFFERIES, LTD.  
IPSWICH.**  
Agricultural, Mechanical and  
Electrical Engineers.





Registered

Trade Mark

**SPECIALITIES**  
for  
**HORTICULTURAL AND AGRICULTURAL  
PURPOSES**

"Ferry" Specialities are compounded in accordance with the results of the latest Research Work. They are guaranteed to be compounded from ingredients of the finest quality

**COMPOUND FERTILISERS**

for all Crops

**SOIL PEST DESTROYER**

**CHARLOCK DESTROYER**

**WEED & PEST DESTROYERS**

**INSECTICIDES**

**NICOTINE WASH QUASSIA WASH**

**WINTER WASHES**

**WHITEFLY COMPOUND**

**BORDEAUX MIXTURE**

**SHEEP DIP & CATTLE WASHES**

**DISINFECTANTS, Etc.**

"Ferry" Specialities can be obtained from all good Horticulturists, Florists, Chemists, Agricultural Merchants, Stores, etc.

Full particulars and prices on application to the manufacturers.

**THE BRITON FERRY CHEMICAL & MANURE Co., Ltd.**  
**(Dept R.L.), BRITON FERRY, SOUTH WALES**

*(Established 1886.)*

ADVERTISEMENTS.

# Corry's TAR OIL WINTER WASH

*The Actual Pure Article as used by all Fruit Growers.*

For the Control of Leaf Curling, Apple and Plum Aphid, Psylla and all Aphides, and for the General Destruction of the Eggs of Pests in all Fruit Trees during the Winter Months. It has been proved a cure for Big Bud in Black Currants.

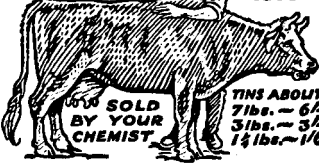
It is safe to handle, mixes readily with water, and will not clog the machines. Sold by the horticultural trade in all sizes, from 1 pint to 40 gallons.

*At the lowest possible prices. Ask for Leaflet and Terms.*

## CORRY'S TOBACCO POWDER

THE ORIGINAL AND BEST

INTRODUCED 1866



NOW SOLD BY YOUR CHEMIST

TINS ABOUT  
7 lbs. - 6/-  
3 lbs. - 3/-  
1 1/2 lbs. - 1/6



JUST AS EFFECTIVE AS ARSENIC.



Tins, 1/- 2/- 3/6 6/6 12/- 27/6  
for 4 12 25 50 100 250 gals.  
SPECIAL FOR FARMYARDS, PARKS, ROADS, ETC.

# HARPER ADAMS AGRICULTURAL COLLEGE, NEWPORT, SHROPSHIRE.

*Principal - Charles Crowther, M.A. (Oxon), Ph. D.*

Residential College. Modern Buildings and Sanitation. Moderate Fees. Farm of 330 acres. Two dairy herds. Specially equipped for work with Dairy Cattle, Pigs and Poultry. Residential hostels with separate room for each student. Courses prepare for College and other examinations in Agriculture, Surveying, Estate Management and Poultry Husbandry. Experimental centre for Dairy Husbandry, Swine Husbandry and Poultry Husbandry. Advisory Centre for three counties. Large staff of specialists. Famous Poultry Egg-laying Trials.

*Practical Work a strong feature of all courses.*

## THE NATIONAL INSTITUTE OF POULTRY HUSBANDRY,

established jointly by the Ministry of Agriculture and the National Poultry Council, is located at the College and undertakes the training of students in this subject.

*Finest educational and experimental plant in Europe.*

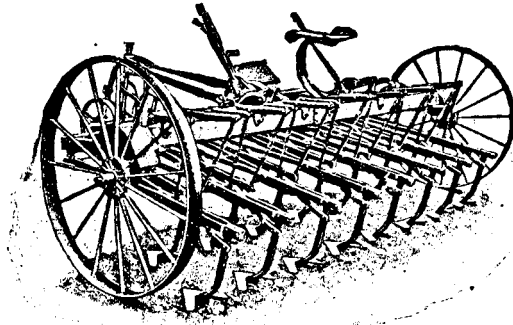
Courses include Poultry, Ducks, Geese, Turkeys, Pigeons, Rabbits and Goats. Full preparation for College Certificates and the National Diploma in Poultry Husbandry.

Illustrated Prospectus gratis on application to—

The Principal, Harper Adams Agricultural College, Newport, Salop.



**MASSEY-HARRIS**  
NEW LINE OF  
**STIFF-TOOTH CULTIVATORS**



**BETTER THAN ANY OTHER.**

*Stronger — More Rigid — Greater Clearance  
Greater Penetrative Power.*

FOR HORSE OR TRACTOR. MADE IN THREE SIZES.  
9, 11 AND 15 TOOTH. CULTIVATING 6, 8 AND 11 FEET.  
FITTED WITH 2½, 5, 7 OR 11 INCH POINTS.

---

*For Lists, write to :*

**MASSEY-HARRIS, LTD.**

CULTIVATING, SEEDING, HAYMAKING, AND  
HARVESTING MACHINERY.

**53, 54, & 55, BUNHILL ROW, LONDON, E.C.1.**



## THE AGRICULTURAL MARKET REPORT.

This weekly publication is the farmers' barometer of prices and market conditions. It is indispensable to all who buy or sell agricultural produce because it tells them what prices are being fetched and supplies information which may afford some guidance as to the trend of future prices.

It is able to do this because the Ministry of Agriculture has special market Reporters in every important centre throughout the country, who furnish regular reports on the nation's markets. From these and other sources the Ministry prepares this exceedingly useful paper.

Three months' trial subscription for 2/6

*Published on Fridays so as to reach Farmers  
by the first country post on Saturdays.*

10s. a year for 52 Numbers. Post Free.

---

**HIS MAJESTY'S STATIONERY OFFICE.**

LONDON: Adastral House, Kingsway, W.C.2.  
EDINBURGH: 120, George St. MANCHESTER:  
York St. CARDIFF: 1, St. Andrew's Crescent.  
BELFAST: 15, Donegall Sq. W.

ADVERTISEMENTS.

**GARTON'S MAIZE  
GLUTEN FEED**  
(LION BRAND)

**GARTON'S MAIZE  
GERM CAKE MEAL**  
(LION BRAND)

UNSURPASSED AS A FOOD FOR  
CATTLE AND HORSES, AND ESPE-  
CIALY FOR DAIRY HERDS,  
BEING EXCEEDINGLY RICH  
IN NUTRITIVE PROPERTIES.

USED BY ALL THE LARGEST  
STOCKHOLDERS IN THE COUNTRY.

*Samples and Prices on application to—*

**PINNOCK BROS.**

*(Sole Agents)*

**30 MARK LANE,  
LONDON, E.C.**

ADVERTISEMENTS.



THE  
JOURNAL OF THE MINISTRY  
OF AGRICULTURE

A regular means of communication between the Ministry of Agriculture and farmers throughout Great Britain is essential if full advantage is to be taken of the large sums annually spent by the State to secure the maximum scientific improvements and discoveries in agriculture. The Ministry, therefore, publishes a Monthly JOURNAL which always contains some 96 pages packed full of practical information on all kinds of vital subjects — *e.g.*, sub-soiling, soil-improvement, crops and their diseases, &c., livestock, manures, feeding stuffs, &c., &c. These articles and the editorial notes, &c., are the work of some of the foremost experts.

6s. A YEAR SECURES 12 NUMBERS.  
POST FREE.

*Specimen number will be sent free of charge.*

**HIS MAJESTY'S STATIONERY OFFICE**

LONDON: Adastral House, Kingsway, W.C. 2

EDINBURGH: 121, George Street.

MANCHESTER: York Street.

CARDIFF: 1, St. Andrew's Crescent.

BELFAST: 15, Donegall Sq. W.



- Berry, R. A., and O'Brien, D. G.  
Field Experiments. (*Journ. Agric. Sci., Vol. XIV, Pt. 3, 1924.*)
- Berry, R. A.  
The Effect of Frequent Changes of Diet upon the Secretion and Composition of Cow's Milk.
- Scott, A., and McArthur, D. N.  
The Constitution of Basic Slags. (*Journ. West Scot. Iron and Steel Inst., 1922, 29, 79.*)
- McArthur, D. N.  
The Constitution and Manurial Value of Low Grade Basic Slag. (*Journ. Soc. Chem. Ind., 1923, 42, 213.*)
- Leitch, R. H.  
The Use of Selected Lactic Ferments in the Manufacture of Hard-pressed Cheese. (*Proc. World's Dairy Cong., Washington, 1923.*)  
Pasteurisation of Milk for Cheese-making. (*Milk Ind., Sept., 1924.*)  
Experiments in the Manufacture of Rennet Extract. (*Proc. World's Dairy Cong., Washington, 1923.*)  
Standardisation of Rennet Extracts. (*Scott. Journ. Agric., July, 1922*)  
De quelques progres recents dans la fabrication du beurre. (*Le Lait, 4 annee no. 39.*)  
The Production of Pure Milk. (*Scott. Journ. Agric., Jan., 1925.*)  
The Keeping Properties of Sterilised Milk. (*Milk Ind., Sept., 1924.*)
- McCandlish, A. C.  
Building a Dairy Herd. (*Scott. Farmer, 32, Jan. 5th, 1924*)  
The Self Feeder for Calves. (*Scott. Journ. Agric., Oct., 1924.*)
- McCandlish, A. C., and Berry, R. A.  
Home-Grown and Chinese Beans for Milk Production. (*College Bull., Dec., 1924.*)  
Steamed Bone Flour as a Mineral Supplement for Milk Cows. (*Scott. Journ. Agric., Jan., 1925.*)
- McCandlish, A. C.  
Water for Dairy Cows. (*Scott. Journ. Agric., Jan., 1925.*)  
Salt for Cows. (*Scott. Journ. Agric., Jan., 1925.*)  
Dairy Type. (*Scott. Farmer, Jan. 24th, 1925.*)  
Infectious Weed in Cows. (*Scott. Farmer, March 28th, 1925*)
- McCandlish, A. C., and McVicar, A.  
Are Milk Record Association Results Accurate? (*Scott. Journ., April, 1925.*)
- McCandlish, A. C.  
Building Up a Dairy Herd from Scrubs. (*Proc. Scott. Cattle Breed. Conf., May, 1925.*)  
Mind the Minerals for Milk. (*Scott. Farmer, June 6th, 13th, 20th, 1925.*)  
Spray for Cows for Flies. (*Scott. Farmer, Aug. 22nd, 1925.*)  
Conserving Swedes for Milk Production. (*Scott. Journ. Agric., Oct., 1925.*)  
The Rationing of Dairy Cows. (*Scott. Farmer, Dec. 12th, 19th, 1925.*)
- Paterson, Wm. G. R.  
Rotation Cropping on a Demonstration Area in Wigtownshire. (*Trans. H.A.S.S., 1922, and Coll. Bull. 101, 1922.*)  
Pig Feeding and Cattle Feeding Experiments. (*Trans. H.A.S.S., 1924, and Coll. Bull. 102, 1924.*)  
The Grub Pest and Paris Green as a Remedy. (*Coll. Bull. No. 103.*)  
Report on Pig Feeding Experiments. (*Coll. Bull. 104.*)  
Pig Feeding, Indoor v. Outdoor Fattening. (*Trans. H.A.S.S., 1925, and Coll. Bull. 105, 1925.*)

## INDEX.

	PAGE		PAGE
Aberdeen, North of Scotland		Apples—	
College of Agriculture	6, 16,	Breeding	81
38, 189, 193, 198, 252		Diseases ( <i>see</i> Fruit di-	
Aberystwyth—		seases).	
University College	193, 220,	Keeping quality	140
315, 319, 322		Manuring	115
Welsh Plant Breeding		Pests, control by spray-	
Station	58, 61, 71, 91, 93	ing	154, 160
Abortion, epizootic	280	Pruning	118
Acarine disease of bees	252	Root-stock classification	102
Adco ( <i>see</i> Synthetic Farm-		Storage and preservation	138
yard Manure).		Apple-blossom weevil	165
Agricultural Accounting So-		Apple mildew	168
ciety	313	Arable farming	320
Algæ in soil	47	Armstrong College, New-	
American gooseberry mildew	176	castle-on-Tyne	29, 191, 195,
Animal diseases—		201, 294	
Advisory scheme	292	Arsenic sprays	252
Braxy	295	Atlas, agricultural	319
Dysentery (lambs)	297	Azotobacter	46
Epizootic abortion	280		
Erysipelas (swine)	289	Baby beef	206
Fluke or liver rot	293	Bacillary white diarrhoea	248
Foot-and-mouth disease	285	<i>Bacillus radicola</i> , life cycle	44
Johne's disease	278	Bacteria—	
Joint-ill in foals	277	Decomposing cellulose	39
Mastitis or garget	282	Nitrogen-fixing	41, 43, 46, 99
Milk fever in cattle	299	Soil inoculation for lucerne	43
Parasitic gastritis and		Bangor, University Col-	
enteritis	283	lege	18, 31, 33, 184, 196, 199,
Poisoning from foodstuffs	285	236, 293	
Scrapie	283	Barley—	
"Stomach staggers" in		"Blindness"	59
ewes	295	Breeding	59
Strongylosis	295	Climate effect on growth	94
" Swayback " in lambs	294	Fertilisers effect on growth	95
Ticks in sheep	294	Food value	223
Trembling or louping ill	297	Gout fly	190
Warble flies	294	Malting trials	52, 96
Worm parasites	289	Basic slag research	22, 27
Animal Diseases Research		Beans, breeding	66
Association, Scotland ( <i>see</i>		Bees—	
Edinburgh).		Acarine disease	252
Animal nutrition—		Combs, position of	250
Baby beef experiments	206	Feeding for winter stores	251
Mineral constituents in		Mating experiments	252
foodstuffs	208	Metal combs	250
Nutrition of young animals	205	Belfast, Queen's University	
Principles of	203	( <i>see</i> Northern Ireland,	
Rate of growth in sheep	207	Ministry of Agriculture).	
Ultra-violet rays	216		
Vitamins	258		

	PAGE		PAGE
" Big Bud " and " Reversion " (black currants) -	173	Carbon dioxide, effect on plant growth - -	92, 123
Black currants—		Cardiff, University College	
Breeding - - -	81		195, 294
Classification - - -	105	Carnations, red spider -	124
Diseases ( <i>see</i> Fruit diseases).		Carrot fly - - -	201
Manuring - - -	115	Cattle—	
Black currant leaf spot -	176	Control of " heat " period	228
Black scurf of potatoes -	189	Dairy - cow rationing schemes - - -	257
" Black Spot " in cheese -	269	Diseases ( <i>see</i> Animal Diseases).	
Blight of potatoes - - -	189	Lactation period	228, 230, 256
" Blindness " in barley -	59	Mineral requirements of dairy cows - - -	214
Board of Agriculture for Scotland (Plant Registration and Testing Station)	85	Nutrition ( <i>see</i> Animal nutrition).	
Boron - - -	99	" Cauliflower " disease (strawberries) - - -	129
<i>Botrytis cinerea</i> - - -	147	Celery diseases—	
Bracken poisoning - - -	285	Celery blight or leaf spot	
Braxy in sheep - - -	295	Root-rot or canker - - -	199, 200
Bristol University ( <i>see also</i> Long Ashton) - - -	313	Seedling diseases - - -	199
Brown rot - - -	166	Cheese—	
Bulb-growing and pests -	130	" Black spot " - - -	269
Bunt in wheat - - -	193	Blue-vein cheese making -	268
Butter—		Discoloration problems -	266
Creamery demonstration in Ulster - - -	270	Flavouring - - -	268
Effect of feeding on quality - - -	270	Pasteurisation of milk -	268
Flavouring - - -	268, 270	" Red spot " or " rusty spot " - - -	267
Pasteurisation of cream -	269	" Starters " - - -	268
Whey disposal - - -	271	Whisky disposal - - -	271
Cabbage gall weevil - - -	201	Cherries—	
root fly - - -	201	Breeding - - -	81
Calorimeter experiments	205, 206	Diseases ( <i>see</i> Fruit diseases).	
Cambridge Browick wheat -	57	Root-stock classification -	105
Cambridge University—		Cheshunt, Nursery and Market Garden Crops Research Station - - -	121-127
Animal Nutrition Institute	52, 203, 207, 219, 222, 223, 225, 227, 245, 256	Chipping Campden, Fruit and Vegetable Preserving Station - - -	141-144
Animal Pathology Institute - - -	288	Chlorosis - - -	117
Horticultural Research Station - - -	106, 152	Cider-making investigations	135
Plant Breeding Institute	50, 54, 57, 58, 59, 62, 64, 65, 66	Citric solubility test - - -	24, 26
School of Agriculture	154, 155, 156, 157, 158, 161, 191, 193, 196, 311	Clovers, breeding - - -	72
School of Botany - - -	170	Cockle Park Experiment Station - - -	23
Small Animal Breeding Institute - - -	233, 243	Cocksfoot, breeding - - -	69
Canning fruit - - -	141	Cold storage - - -	137
Capsids ( <i>see</i> Apple pests).		Colloids of soil - - -	3
		<i>Collombola</i> (springtails) -	197
		Condensed milk, " blowing " -	267
		Co-operation - - -	320

	PAGE		PAGE
Corn-cockle poisoning	285	Eelworm in bulbs	131
Cornwall, Duchy of ( <i>see</i>		Eelworm in potatoes	187 291
Duchy of Cornwall).		Electricity—	
<i>Corticium</i>	188 & 189	From windmills	307
Cost accounting	310	Influence on plant growth	100
Cost of production, inquiries	314	Use in ploughing	9
Crane flies	193	Epizootic abortion	280
"Crinkle" disease of potato	182	Experimental plot work	96
Crop drying	302		
Crown gall on nursery			
stocks	168	Farm labour organisation	318
Cucumbers—		Farming in smoke areas	317
Manuring	122	Farmyard manure, synthetic	39
Mosaic diseases	124	Feeding stuffs, cooking	222
Red spider	124	Fescue, breeding	71
Root flies	126	"Finger-and-toe" disease	198
Temperature effect on		Flax—	
growth	94	Breeding	76
Woodlice	125	Bulking of "J.W.S."	
currants, black ( <i>see</i> Black		seed	78
currants).		Fluke in sheep	293
Cutworms	197	Food Investigation Board	
Cyclamen wilt disease	127	(Low Temperature Re-	
		search Station)	137
Daddy Longlegs	193	Foot-and-mouth disease	285
Dairy cows ( <i>see</i> Cattle).		Fowl pox	249
Dairy-farm management	255, 257	Frit fly in oats	191
Dehydration (including crop		Fruit—	
drying)	302	Canning	141
"Die Back" disease (apples,		Juices and syrups	143
etc.)	163	Keeping quality	140
<i>Diaporthe perniciosa</i>	164	Preservation and storage	137
Diphtheretic roup	249	Variety trials	143
Downy mildew of hop	179	Fruit soil survey	106
Drain-gauge experiments	6, 38	Fruit-tree diseases—	
Drainage trials	301	American gooseberry mil-	
Dry rot of swedes	196	dew	176
Duchy of Cornwall	131	Apple blossom weevil	165
Dynamometer experiments	10	Apple mildew	168
		"Big Bud" and "Rever-	
East Malling, Horticultural		sion" (black currants)	173
Research Station 80, 82, 103,		Black currant leaf spot	176
107, 110, 111, 115, 116, 117,		Brown rot	166
152, 162, 165, 166, 168, 175,		Cherry blossom wilt	167
178, 180		Crown gall on nursery	
Edinburgh—		stocks	168
Animal Breeding Research		"Die Back" (Apples, etc.)	163
Institute	236, 242	Gall mites	175
Animal Diseases Research		Pear-blossom wilt	167
Association	295-298	Raspberry blue stripe wilt	178
East of Scotland Agri-		cane spot	178
tural College 14, 23, 31, 41, 46		"  mosaic	179
Plant Breeding Research		Silver leaf	170
Society	53, 59, 64, 65, 69	Testing stocks and varie-	
Royal (Dick) Veterinary		ties for disease resist-	
College	298	ance	169
		Tortrix moths	167

	PAGE		PAGE
Fruit trees—		Immunity studies with fungi	148
Breeding - - -	80	Imperial College of Science	
Fruit-bud formation - - -	109	( <i>see</i> Plant Physiology Research Institute).	
Manuring - - -	115	Insecticides - - -	150
Nutritional disorders - - -	116	Insects in soil - - -	47
Pruning - - -	117	Insemination, artificial - - -	230
Root influence and treatment - - -	107	Iodine, effect on plant growth	100
Root-stock classification -	102	Irradiation ( <i>see</i> Ultra-violet rays).	
Fungi—		Isles of Scilly ( <i>see</i> Scilly Islands).	
Genetics - - -	147	Jam-making - - -	142
In soil - - -	48	John Innes Horticultural Institution - - -	82
Physiology of immunity -	148	Johne's disease - - -	278
Fungicides - - -	158	Joint-ill in foals - - -	277
<i>Fusarium</i> - - -	149		
Gall mites - - -	175	Kilmarnock Dairy Institute ( <i>see</i> Glasgow).	
"Gapes" in poultry - - -	291		
Garret in cows - - -	282	Labour organisation on farms - - -	318
Glasgow—		Lactose production - - -	273
Kilmarnock Dairy Institute 254, 257, 263, 264, 265, 268		Lamb dysentery - - -	297
West of Scotland Agricultural College 15, 27, 98, 130, 188, 189, 194, 196, 252, 272		Latin Square - - -	97
Gooseberries—		Lead nitrate manurial properties of - - -	98
Breeding - - -	81	Leaf roll of potato - - -	182
Diseases ( <i>see</i> Fruit diseases).		Leaf scorch - - -	116
Manuring - - -	115	Leather-jackets - - -	193, 197
Gout fly of barley - - -	190	Leeds University 30, 191, 201, 312, 315, 323	
Grasses, breeding - - -	69	Lime-requirement of soils ( <i>see</i> Soil sourness).	
Green manuring - - -	39	Liming experiments ( <i>see</i> Soil sourness).	
		<i>Limnarus truncatula</i> - - -	198, 293
Harper-Adams Agricultural College 153, 191, 199, 241, 247		Linen Industry Research Association - - -	78
Hartley Botanical Laboratories, Liverpool - - -	139	Lister Institute of Preventive Medicine - - -	286
<i>Helminthosporium</i> - - -	59, 196	Liver fluke in sheep - - -	198, 293
Hen Gymro wheat - - -	58	Liverpool University - - -	139
Herbage plants, breeding -	68	Long Ashton, Horticultural Research Station 80, 102, 106, 107, 110, 114, 116, 117, 127, 132, 135, 137, 141, 153, 154, 155, 156, 158, 163, 167, 174, 176	
<i>Heterodera Schachtii</i> - - -	188	London School of Tropical Medicine - - -	188, 289-292
Hops—		Louping-ill of sheep - - -	297
Breeding - - -	82		
Diseases—			
Downy mildew (spike disease) - - -	179		
Hop wilt - - -	180		
Mosaic - - -	180		
Red spider - - -	180		
Humus ( <i>see</i> Soil, organic matter).			

	PAGE		PAGE
Low Temperature Research Station ( <i>see</i> Food Investigation Board).		Mustard beetles - - -	197
Lucerne inoculation - - -	43	<i>Mycetophilidæ</i> - - -	126
Maize, food value of - - -	222	National Institute for Research in Dairying, Reading	254, 258, 260, 263, 265, 266, 299
Malting barley ( <i>see</i> Barley).		National Institute of Agricultural Botany, Cambridge - - -	85
Manchester University	162, 183, 200, 201, 317	Nitrogen: cycle - - -	37
Mangolds, black leg disease	197	loss from soil - - -	37
Marketing investigations -	320	fixation in soil - - -	41, 43, 46, 48, 99
Markets and Co-operation Branch (Ministry of Agriculture and Fisheries) -	321	influence on plant growth	97, 114
Mastitis in cows - - -	282	Northern Ireland, Ministry of Agriculture (Research Stations at Belfast and Stormont)	22, 31, 60, 78, 85, 154, 155, 162, 176, 177, 189, 206, 212, 270, 299
<i>Meligethes æneus</i> - - -	199		
Meteorology - - -	19		
Midland Agricultural and Dairy College	189, 193, 195, 197, 199, 200, 201, 259, 312, 319		
Milk—			
Clean milk production -	260		
Coagulation of sterilized milk - - -	265	Oats—	
Cod-liver oil affecting fat content - - -	259	Breeding - - -	59
Cost of production - - -	314	Crane flies - - -	193
Feeding affecting vitamin content - - -	259	Field trials at Aberystwyth - - -	62
"Graded" milk scheme -	262	Frit fly - - -	191
Heating - - -	263	Hardiness - - -	55
Oiliness - - -	264	Leaf spot - - -	196
Physical ropiness - - -	265	Resistance to disease -	61
Milk fever in cattle - - -	299	Supply of pure seed (Northern Ireland) -	60
Milk records, examination -	255	Offals, classification - -	223
Mineral constituents of food-stuffs - - -	208	Oil sprays and emulsions -	156
Mineral phosphate experiments - - -	22	Onion fly - - -	201
Ministry of Agriculture and Fisheries—		Onions, white rot - - -	200
Markets and Co-operation Branch - - -	310, 321	Organic matter in soil -	35
Plant Pathological Laboratory - - -	146, 191	Ormskirk potato trials	64, 86
Veterinary Research Laboratory - - -	248, 283-288	Oxford University—	
Ministry of Agriculture for Northern Ireland ( <i>see</i> Northern Ireland).		Agricultural Engineering Institute	275, 300-308
<i>Mononchus papillatus</i> - - -	189	Economics Research Institute	310, 315, 316, 318, 319, 320, 322
Mosaic diseases—		School of Rural Economy	37, 168, 191
Cucumbers and tomatoes	124		
Hops - - -	180	Paris green bait	126, 194, 202
Potato - - -	182	Parsnip canker - - -	200
		Parturition, control - - -	227
		Pasteurised milk - - -	263

	PAGE		PAGE
Pasture—		Potatoes—	
Food value - - -	218	Breeding - - -	64
Improvement - - -	14, 69, 74	Wart disease trial stations - - -	64, 86
Patch disease (strawberries)	129	Yield and maturity trials	87
Pears—		Potato diseases—	
Breeding - - -	81	Black scurf - - -	189
Diseases ( <i>see</i> Fruit diseases).		Blight - - -	189
Pruning - - -	119	Eelworm - - -	187
Root-stock classification	104	Violet root rot - - -	190
Storage and preservation	138	Virus diseases (leaf roll, mosaic, crinkle, streak)	181
Peas, breeding - - -	66	Wart disease - - -	185
Perennial ryegrass, breeding	69	Poultry—	
<i>Phædon cochlearia</i> - - -	197	Breeding experiments (Reaseheath) - - -	243
<i>Phoma apiicola</i> - - -	200	Diseases - - -	248, 291, 299
<i>Phoma napobrassica</i> - - -	196	Feeding and husbandry experiments (Harper Adams) - - -	247
Phosphate, influence on plant growth - - -	98, 114	Feeding experiments (Wye)	246
Phosphates—		Inheritance of fecundity -	233
Citric solubility test	24, 26	Mineral requirements -	215
Mineral and basic slag research - - -	22, 27	National Poultry Institute - - -	243
<i>Phyllodecta vulgarissima</i>	198	Nutrition research (Cambridge) - - -	245
<i>Phytophthora</i> - - -	189, 199	Sex linkage - - -	233
Pig—		Poultry for controlling farm pests - - -	197
Breeding experiments (Edinburgh) - - -	242	Protozoa of soil - - -	45
Degeneration of foetuses	229	Protozoan parasites of animals - - -	292
Feeding trials (Harper Adams) - - -	241	Pruning experiments - - -	117
Mineral requirements	212	<i>Pseudoperonospora Humuli</i> -	179
Nutrition - - -	205	<i>Pseudopeziza ribis</i> - - -	176
Pig-keeping systems (Wye) - - -	242	Purple leaf blotch (strawberries) - - -	130
Diseases ( <i>see</i> Animal diseases).		Rabbits, inheritance of pattern and weight - - -	235
Plant disease service - - -	145	Raspberries—	
Plant growth—		Breeding - - -	81
Effect of carbon dioxide	92, 123	Classification - - -	106
Effect of electricity - - -	100	Diseases ( <i>see</i> Fruit diseases).	
Effect of fertilisers - - -	95	Manuring - - -	116
Effect of length of day	93	Raspberry—	
Plant Physiology Research Institute, South Kensington 90, 92, 94, 97, 100, 137, 149, 181		Blue stripe wilt - - -	178
Ploughing—		Cane spot - - -	178
Speed of - - -	12	Mosaic - - -	179
Use of electricity in - - -	9	Rationing advisory schemes	257
Plums—		Reading University - - -	190, 272
Breeding - - -	81	Red currants, breeding - - -	81
Diseases ( <i>see</i> Fruit diseases).		Reaseheath School of Agriculture, Cheshire - - -	243, 317
Root-stock classification	105		
Storage and preservation	138		
Potash, influence on plant growth - - -	96, 114		

	PAGE		PAGE
Red Fescue, breeding -	71	Silage - - - -	223, 270
Red Plant (strawberries) -	129	Silicon, influence on plant	
Red Spider in glasshouses -	124	growth - - - -	100
Red spider on hops -	180	Silver leaf - - - -	170
"Red Spot" or "Rusty		Slugs - - - -	198, 201
Spot" in cheese -	267	Small leaf (strawberries) -	129
Residual shrinkage of soil -	3	Snails - - - -	198
<i>Rhizoctonia</i> -	190	Soil—	
Root flies in glasshouses -	126	Acidity ( <i>see</i> Sourness).	
Root influence -	107	Algæ - - - -	47
Roots, feeding quality	53, 66	Ammonia losses from -	37
Root stocks—		Classification -	4, 13
Classification - - - -	102	Cohesion and friction ex-	
Crown gall - - - -	168	periments - - - -	9
Physiological influence -	112	Colloids - - - -	3
Relationship to scion -	110	Drain-gauge experiments	6, 38
Testing for disease resist-		Fungi - - - -	48
ance - - - -	169	Insects - - - -	47
Rothamsted Experimental		Mechanical analysis -	18
Station	2, 8, 19, 24, 29, 30,	Organic matter -	35
31, 32, 34, 36, 39, 43, 45, 46,		Protozoa - - - -	45
47, 53, 95, 98, 147, 150, 183,		Residual shrinkage -	3
190, 250		Resistance as measured	
Rowett Research Institute,		by drawbar pull -	10
Aberdeen	208, 213, 225, 263	Sourness—	
Royal Veterinary College,		Methods of testing -	29
London - - - -	277-283	Theory of exchangeable	
Rural Industries, investi-		bases - - - -	32
gation - - - -	319	Liming experiments -	34
Ryegrass breeding - - - -	69	Surveys - - - -	14, 106
		Water movements - -	5
Scab ( <i>see</i> Apple pests).		South-Eastern Agricultural	
"Scald" in stored fruit -	139	College ( <i>see</i> Wye).	
Scilly Islands Agricultural		Soya meal, extracted, poison-	
Committee - - - -	131	ing from - - - -	285
Scion and stock relationship	110	Spider, red ( <i>see</i> Red spider).	
Scorch ( <i>see</i> Leaf scorch).		Spike disease of hop -	179
Scottish—		Sprays and washes -	150-162
Plant Breeding Station	65, 69	Springtails attacking man-	
Plant Registration and		golds - - - -	197
Testing Station - - - -	85	Sterilised milk, coagulation	265
Seale - Hayne Agricultural		<i>Stereum purpureum</i> - -	170
College	26, 130, 132, 197, 202	Stilton cheese, discoloration	266
Seed germination studies -	91	Stock feeding, principles ( <i>see</i>	
Seeds mixtures - - - -	74	Animal nutrition) - -	203
Seed-testing stations -	87	Storage of fruit and veget-	
Sex-linkage in poultry -	233	ables - - - -	137
Sheep—		Straw, decomposition -	39
Diseases ( <i>see</i> Animal di-		Strawberries—	
seases).		Cultivation - - - -	128
Growth experiments -	207	Diseases - - - -	129
Improvement of Welsh		Forcing - - - -	129
fleece - - - -	236	Manuring - - - -	129
Mineral requirements -	213	Normal life cycle -	127
Southdown/Blackface		"Strain" influence -	128
cross - - - -	238	"Streak" disease of potato	182
		Sub-soiling - - - -	301



	PAGE		PAGE
Sugar beet—		Vegetables—	
Cost of production - -	315	Pickling and curing - -	143
De Vecchi's process - -	305	Variety trials - - -	143
Sulphur dioxide—		Wines - - -	143
Cider preserving - -	137	Vetches, breeding - -	66
Fruit preserving - -	142	<i>Vibrio septique</i> - -	295
Sulphur, fungicidal action	158, 159	Virus diseases of potatoes -	181
Supernumerary teats - -	229	Vitamin research - -	258
Surface caterpillars - -	197	Warble flies - - -	294
Surveys, agricultural (see		Wart disease of potatoes -	185
also Soil Surveys) - -	315	Wart disease stations - -	64
Swedes—		Welsh Plant Breeding Station	
Breeding - - -	65	(see Aberystwyth).	
Dry rot - - -	196	Wheat—	
Feeding quality - -	53, 66	Analysis of "yield" - -	54
Swede seed beetle - -	199	Breeding - - -	57
Synthetic farmyard manure	39	Bulking and marketing	
		"Yeoman II." - - -	86
		Bunt disease - - -	193
		Chromosome research - -	57
		Offals (see Offals).	
		Resistance to disease - -	58
		Strength - - -	51
Tar distillate washes - -	154, 156	Whey disposal - - -	271
Ticks in sheep - - -	294	White fly in glasshouses -	126
Tillering in cereals, influence	54	Willow—	
Timothy, breeding - -	69	Aphis - - -	134
Tomatoes—		Beetle - - -	133, 198
Cultivation - - -	122	Investigations - - -	132
Mosaic diseases - - -	124	Peeling machine - - -	134
Red spider - - -	124	Wiltshire County Council	258, 314
Woodlice - - -	125	Windmills for electricity -	307
Tortrix moths - - -	167	Wireworm - - -	195, 197
"Trembling" of sheep - -	297	Woodlice in glasshouses -	125
<i>Triodontophorus tenuicollis</i> -	291	Worm parasites of animals	
Turkeys, "blackhead" disease	294	- - -	283, 289
Turnip gall weevil - -	201	Wye, South-Eastern Agricultural	
Turnip seed beetle - -	199	College 82, 159, 160,	
Turnips—		167, 179, 180, 199, 242, 246,	
Breeding - - -	65	312, 315, 319	
Feeding quality - -	53, 66	Yeoman II. wheat, introduction	57
Ultra-violet rays - -	216	Yield of cereals, analysis -	54

**Devised**  
**for the professional**  
*but still best for all.*

---

**The value of Chemical**  
**Soundness**

These products were devised for professional use. That is to say, they are unadorned scientific preparations, dependent on chemical factors—the factors that cannot fail. We most confidently recommend them to all serious horticulturists, as the finest obtainable.

**XL ALL**  
**NICOTINE SPECIALITIES**

**XL ALL Nicotine Liquid Insecticide**  
**XL ALL Fumigating Compound**  
**XL ALL Leaf Miner Insecticide**

ALSO

**XL ALL White-Fly Vapour**

**T**HERE are XL ALL Insecticides, Fungicides, and Fertilisers for every purpose. All are obtainable only from nurserymen, seedsmen and florists, or chemists. Please ask for our small price list and name of nearest agent.

Manufacturers of Kamforite "F" for the Farm, the best Pest Exterminator, Soil Cleanser and Enricher.

**G. H. RICHARDS LTD.,**  
**234 Borough High St., London, S.E.1**

# ROTOPLUNGE PUMPS

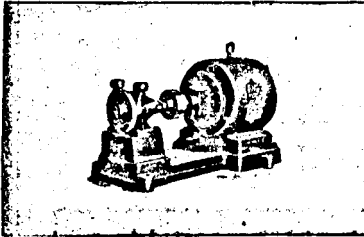
*Rotary Reciprocating Plunger Pumps without Valves.*

ALL BRITISH-MADE THROUGHOUT  
and as supplied to Admiralty, War Office, Air Ministry, etc.

No priming, and highest suction lift.

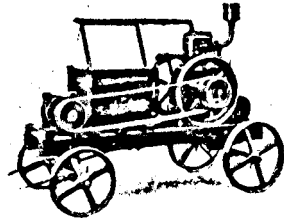
Small weight and space.

Pumps for Farms, Dairies, Bungalows, for use on milk, water, oil or sewage, with or without engine or motor. Sizes from 1 gall. per hour to 400 tons.



**Electrically Driven Pump.**

Where the electric supply is available the electric motor is usually the best method of driving, particularly where cleanliness and quietness are required.

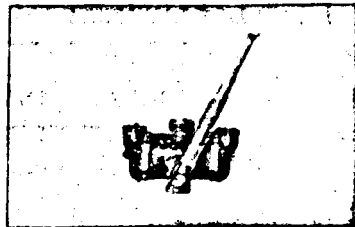


**Portable Petrol-engined Pump.**

Can be dragged about by hand or by horse, and by changing over the belt the engine can be used for any purpose.

Hopper-cooled engines supplied if preferred.

Always ready for the odd job or for fire purposes.



**Hand Pump.**

*Write us for Catalogue, and let us have your inquiries for all kinds of pumping work.*

**ROTOPLUNGE PUMP CO., LTD.**

**24, Broadway, WESTMINSTER, S.W. 1.**

*(1 minute St James's Park Station.)*

Telephone: Vic. 4395.

Telegram: "Rotoplunge, London."

## ADVERTISEMENTS.

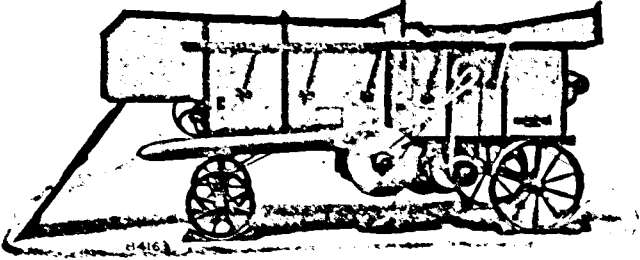
### INDEX TO ADVERTISERS.

	<i>Page</i>
Adco, Ltd. - - - - -	viii
Allen & Hanburys, Ltd. - - - - -	x
Alsace-Lorraine and General Products Company, Ltd. - - -	ix
Beatty Bros., Ltd. - - - - -	iv
Brantom & Co., J. H. - - - - -	i
Briton Ferry Chemical & Manure Co., Ltd., The - - - - -	xvii
Chilean Nitrate Committee, The - - - - -	iii
Corry & Co., Ltd. - - - - -	xviii
Curley & Sons, W. J. - - - - -	v
Diabolo Separators, Ltd. - - - - -	vi
Fertilizer Sales, Ltd. - - - - -	xii
Garton, Sons & Co. - - - - -	page iii of cover
Harper Adams Agricultural College - - - - -	xviii
Lands Improvement Company, The - - - - -	page ii of cover
Livestock Feeding Co., The - - - - -	ii
London Assurance, The - - - - -	xi
Massey-Harris, Ltd. - - - - -	xix
Nitram, Ltd. - - - - -	ix
Ransomes, Sims & Jefferies, Ltd. - - - - -	xvi
Richards, Ltd., G. H. - - - - -	xiii
Rotoplunge Pump Co., Ltd., The - - - - -	xiv
Thorley, Ltd., Joseph - - - - -	vii

ADVERTISEMENTS.

# Ransomes'

ELECTRICALLY DRIVEN THRASHER



As manufacturers of Electric Motors, Ransomes are now employing this power for the driving of their Thrashing Machinery. The illustration is of a Ransomes' 42-in. electrically driven, self-contained Thrashing Machine of the "Homestead" type.

A successful demonstration of Electrical Thrashing was recently carried out for the Chester Corporation.

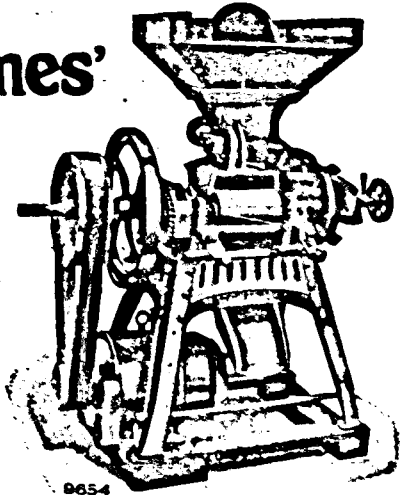
# Ransomes'

ELECTRIC MOTORS  
FOR  
BARN MACHINERY

Ransomes' Electric Motors are also being used in conjunction with Barn Machinery, such as a Grinding Mill (illustrated), Chaff Cutter, Root Cleaner and Cutter, while they can be supplied for use with many other types of Agricultural Machines.

RANSOMES,  
SIMS & JEFFERIES, LTD.  
IPSWICH.

Agricultural, Mechanical and  
Electrical Engineers.



D654

ADVERTISEMENTS.



Registered

Trade Mark

**SPECIALITIES**  
for  
**HORTICULTURAL AND AGRICULTURAL**  
**PURPOSES**

"Ferry" Specialities are compounded in accordance with the results of the latest Research Work. They are guaranteed to be compounded from ingredients of the finest quality.

**COMPOUND FERTILISERS**

for all Crops

**SOIL PEST DESTROYER**

**CHARLOCK DESTROYER**

**WEED & PEST DESTROYERS**

**INSECTICIDES**

**NICOTINE WASH QUASSIA WASH**

**WINTER WASHES**

**WHITEFLY COMPOUND**

**BORDEAUX MIXTURE**

**SHEEP DIP & CATTLE WASHES**

**DISINFECTANTS, Etc.**

"Ferry" Specialities can be obtained from all good Horticulturists, Florists, Chemists, Agricultural Merchants, Stores, etc.

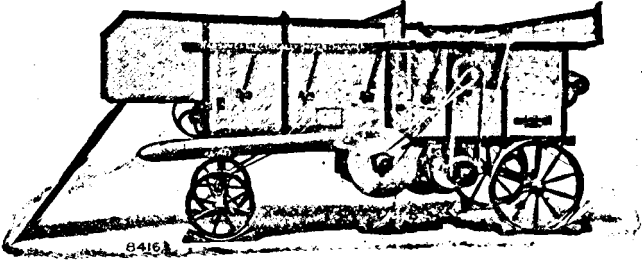
Full particulars and prices on application to the manufacturers.

**THE BRITON FERRY CHEMICAL & MANURE Co., Ltd.**  
**(Dept R.L.), BRITON FERRY, SOUTH WALES**

*(Established 1886)*

# Ransomes'

ELECTRICALLY DRIVEN THRASHER



As manufacturers of Electric Motors, Ransomes are now employing this power for the driving of their Thrashing Machinery. The illustration is of a Ransomes 42-in. electrically driven, self-contained Thrashing Machine of the "Homestead" type.

A successful demonstration of Electrical Thrashing was recently carried out for the Chester Corporation.

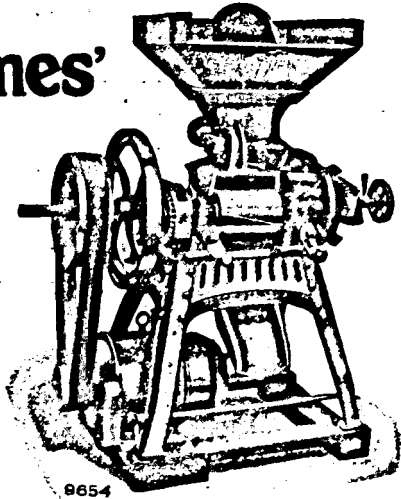
# Ransomes'

ELECTRIC MOTORS  
FOR  
BARN MACHINERY

Ransomes' Electric Motors are also being used in conjunction with Barn Machinery, such as a Grinding Mill (illustrated), Chaff Cutter, Root Cleaner and Cutter, while they can be supplied for use with many other types of Agricultural Machines.

RANSOMES',  
SIMS & JEFFERIES, LTD.  
IPSWICH.

Agricultural, Mechanical and  
Electrical Engineers.



ADVERTISEMENTS.



## SPECIALITIES

for

### HORTICULTURAL AND AGRICULTURAL PURPOSES

"Ferry" Specialities are compounded in accordance with the results of the latest Research Work. They are guaranteed to be compounded from ingredients of the finest quality.

COMPOUND FERTILISERS

for all Crops

SOIL PEST DESTROYER

CHARLOCK DESTROYER

WEED & PEST DESTROYERS

INSECTICIDES

NICOTINE WASH QUASSIA WASH

WINTER WASHES

WHITEFLY COMPOUND

BORDEAUX MIXTURE

SHEEP DIP & CATTLE WASHES

DISINFECTANTS, Etc.

"Ferry" Specialities can be obtained from all good Horticulturists, Florists, Chemists, Agricultural Merchants, Stores, etc.

Full particulars and prices on application to the manufacturers.

**THE BRITON FERRY CHEMICAL & MANURE Co., Ltd.**

(Dept R.L.), BRITON FERRY, SOUTH WALES

(Established 1886)



ADVERTISEMENTS.

# Corry's TAR OIL WINTER WASH

*The Actual Pure Article as used by all Fruit Growers.*

For the Control of Leaf Curling, Apple and Plum Aphid, Psylla and all Aphides, and for the General Destruction of the Eggs of Pests in all Fruit Trees during the Winter Months. It has been proved a cure for Big Bud in Black Currants.

It is safe to handle, mixes readily with water, and will not clog the machines. Sold by the horticultural trade in all sizes, from 1 pint to 40 gallons.

*At the lowest possible prices. Ask for Leaflet and Terms.*

## CORRY'S TOBACCO POWDER

THE ORIGINAL  
AND BEST

INTRODUCED  
1866



JUST AS EFFECTIVE  
AS ARSENIC.



Trade: 1/- 2/- 3/6 6/6 12/- 27/6  
Ret: 4 12 25 50 100 250 gals.  
SPECIAL FOR FARMYARDS,  
PARKS, ROADS, ETC.

# HARPER ADAMS AGRICULTURAL COLLEGE, NEWPORT, SHROPSHIRE.

*Principal - Charles Crother, M.A. (Oxon), Ph. D.*

Residential College. Modern Buildings and Sanitation. Moderate Fees. Farm of 330 acres. Two dairy herds. Specially equipped for work with Dairy Cattle, Pigs and Poultry. Residential hostels with separate rooms for each student. Courses prepare for College and other examinations in Agriculture, Surveying, Estate Management and Poultry Husbandry. Experimental centre for Dairy Husbandry, Swine Husbandry and Poultry Husbandry. Advisory Centre for three counties. Large staff of specialists. Famous Poultry Egg-laying Trials.

*Practical Work a strong feature of all courses.*

## THE NATIONAL INSTITUTE OF POULTRY HUSBANDRY,

established jointly by the Ministry of Agriculture and the National Poultry Council, is located at the College and undertakes the training of students in this subject.

*Finest educational and experimental plant in Europe.*

Courses include Poultry, Ducks, Geese, Turkeys, Pigeons, Rabbits and Goats. Full preparation for College Certificates and the National Diploma in Poultry Husbandry.

Illustrated Prospectus gratis on application to—

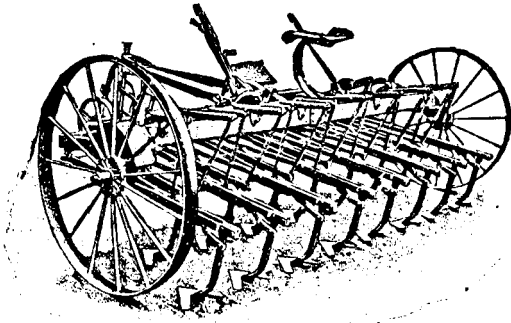
**The Principal, Harper Adams Agricultural College, Newport, Salop.**

ADVERTISEMENTS.



*By Appointment.*

**MASSEY-HARRIS**  
NEW LINE OF  
**STIFF-TOOTH CULTIVATORS**



**BETTER THAN ANY OTHER.**

*Stronger — More Rigid — Greater Clearance  
Greater Penetrative Power.*

FOR HORSE OR TRACTOR. MADE IN THREE SIZES.  
9, 11 AND 15 TOOTH. CULTIVATING 6, 8 AND 11 FEET.  
FITTED WITH 2½, 5, 7 OR 11 INCH POINTS.

---

*For Lists, write to :*

**MASSEY-HARRIS, LTD.**

CULTIVATING, SEEDING, HAYMAKING, AND  
HARVESTING MACHINERY.

**53, 54, & 55, BUNHILL ROW, LONDON, E.C.1.**

ADVERTISEMENTS.



## THE AGRICULTURAL MARKET REPORT.

This weekly publication is the farmers' barometer of prices and market conditions. It is indispensable to all who buy or sell agricultural produce because it tells them what prices are being fetched and supplies information which may afford some guidance as to the trend of future prices.

It is able to do this because the Ministry of Agriculture has special market Reporters in every important centre throughout the country, who furnish regular reports on the nation's markets. From these and other sources the Ministry prepares this exceedingly useful paper.

Three months' trial subscription for 2/6

*Published on Fridays so as to reach Farmers  
by the first country post on Saturdays.*

10s. a year for 52 Numbers. Post Free.

---

**HIS MAJESTY'S STATIONERY OFFICE.**

LONDON: Adastral House, Kingsway, W.C. 2.

EDINBURGH: 120, George St. MANCHESTER:  
York St. CARDIFF: 1, St. Andrew's Crescent.

BELFAST: 15, Donegall Sq. W.

ADVERTISEMENTS.

# GARTON'S MAIZE GLUTEN FEED

(LION BRAND)

# GARTON'S MAIZE GERM CAKE MEAL

(LION BRAND)

UNSURPASSED AS A FOOD FOR  
CATTLE AND HORSES, AND ESPE-  
CIALLY FOR DAIRY HERDS,  
BEING EXCEEDINGLY RICH  
IN NUTRITIVE PROPERTIES.

USED BY ALL THE LARGEST  
STOCKHOLDERS IN THE COUNTRY.

*Samples and Prices on application to—*

## PINNOCK BROS.

*(Sole Agents)*

30 MARK LANE,  
LONDON, E.C.

ADVERTISEMENTS.



THE  
JOURNAL OF THE MINISTRY  
OF AGRICULTURE

A regular means of communication between the Ministry of Agriculture and farmers throughout Great Britain is essential if full advantage is to be taken of the large sums annually spent by the State to secure the maximum scientific improvements and discoveries in agriculture. The Ministry, therefore, publishes a Monthly JOURNAL which always contains some 96 pages packed full of practical information on all kinds of vital subjects — *e.g.*, sub-soiling, soil-improvement, crops and their diseases, &c., livestock, manures, feeding stuffs, &c., &c. These articles and the editorial notes, &c., are the work of some of the foremost experts.

6s. A YEAR SECURES 12 NUMBERS.  
POST FREE.

*Specimen number will be sent free of charge.*

**HIS MAJESTY'S STATIONERY OFFICE**

LONDON: Adastral House, Kingway, W.C. 2.

EDINBURGH: 120, George Street.

MANCHESTER: York Street.

CARDIFF: 1, St. Andrew's Crescent. BELFAST: 15, Donegall Sq. W.