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THE M.A.D.C. MAGAZINE

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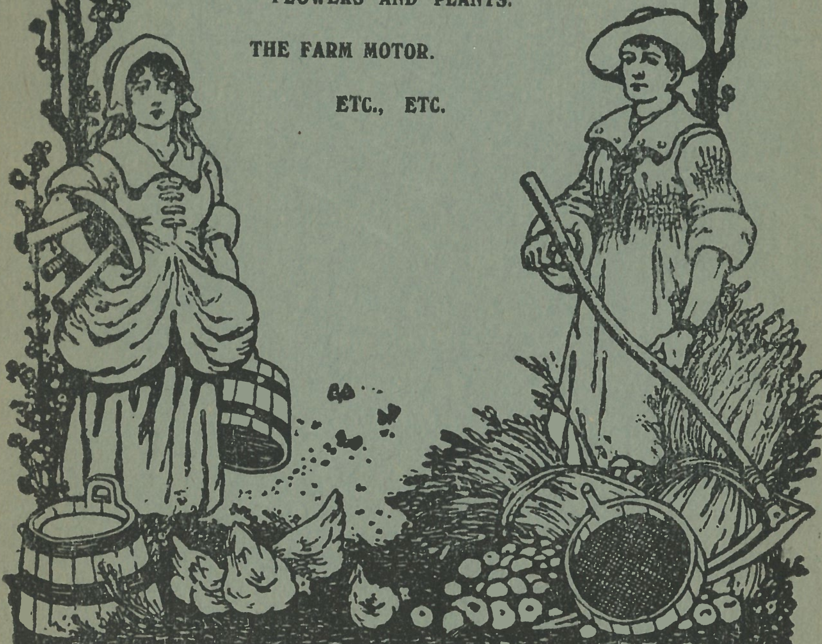

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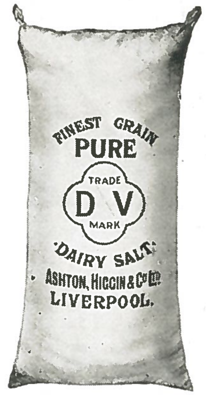

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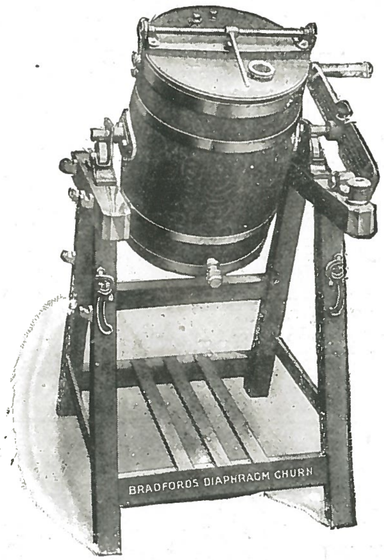

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Contents.

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EDITORIAL.

In spite of the many difficulties which have arisen, we are still able to publish our Magazine. With this number we commence the third volume, and we trust our many readers will find it as interesting as in former years. A change in "Editorship" is always somewhat of an event in the journalistic world, and our readers will no doubt learn with regret that Mr. Cranfield finds he is unable to occupy the Editorial chair this year.

The world war continues, with its new difficulties and dangers arising each day, its effects, so far-reaching, are only too well known to us. The College "Roll of Honour" still grows, and though we publish it with a feeling of considerable pride, it is with the most profound regret that we announce the names of those who have paid the supreme sacrifice. Several former students have distinguished themselves in the field of battle, and have received awards.

We have, as usual, made an addition to our "gallery," and we are sure our frontispiece will meet with the approval of all readers. Mr. Russell, the popular head of the Poultry Department, is so well known that no further comments are necessary.

The past year has seen several changes in the Staff of the College. Her many friends will hear with regret of the resignation of Miss Hawkins, which took place in December last. She relinquishes the position of Matron of the College after the long service of 16 years; a truly notable record. We wish her every success in her new sphere in life.

SERVING WITH THE FORCES.

Staff.

McCreath, H. M., Sec.-Lieut., 8th Royal Scots Fusiliers.
Stafford, J. G. W., Lieut., M.G.C.
Wallace, J. C., Sec.-Lieut., Royal Engineers.
Beale, J. H., Sergt., 2nd 7th Notts. and Derbyshire Regt.
Knowles, F., Pte., 2nd 7th Notts. and Derbyshire Regt.
Fox, G. O., Pte.

Late Members of Staff.

Golding, J., Capt., R.A.M.C. (Sanitary Corps).
Murray, A., Lieut., Scottish Horse.

Students.

COMMISSIONED OFFICERS.

Abbott, W. I., Lieut., 9th Lincolnshire Regt.
Abraham, C. C., Lieut., 2nd Northamptonshire Regt.
Arter, J. H., Lieut., 6th Australian Infantry Brigade.
Ashworth, L., Sec.-Lieut., 16th West Yorks.
Bond, K. H., Sec.-Lieut., 1st 6th Sherwood Foresters.
Burkitt, J. R., Sec.-Lieut., 8th Reserve Cavalry.
Cheatle, C. C., Sec.-Lieut., 8th York and Lancaster Regt.
Davie, A. W., Sub-Lieut., R.N.V.R., attached to Royal Naval Air Service.
Ellwood, A. A., Major, 4th Lincolnshire Regt., Lincoln and Leicester Brigade.
Fera, Dr. B., Italian Army.
Golding, Sec.-Lieut.
Hague, E. A., Lieut., 9th Bedfordshire Regt.
Hill, A. E. F., Lieut., M.G.C.
Harker, W. L., Sec.-Lieut., 3rd East Lancashire Regt.
Harrison, J., Sec.-Lieut., 11th Lincolnshire Regt.
Kingsbury, E. J., Sec.-Lieut., 6th York and Lancaster Regt.
Le Sueur, A. D. C., Capt., Royal Artillery.
Leighton, N. C., Sec.-Lieut., Motor Transport, A.S.C.
McKay, H., Sec.-Lieut., 10th North Staffordshire Regt.
Palethorpe, H. N., Sec.-Lieut., 2nd 1st Hertfordshire Yeomanry.
Parker, W., Sec.-Lieut., 13th Hussars.

Parkes, G. K., Capt., 1st 7th Royal Welsh Fusiliers.
Potter, W. A., Major, A.S.C. (M.T.).
Powell, P. J., Sec.-Lieut., 4th West Yorkshire Regt.
Rice, P. H., Sec.-Lieut., 51st Sikhs Frontier Force (Indian Army).
Silvester, C. T., Sec.-Lieut., 1st 6th North Staffordshire Regt.
Simpkin, T., Sec.-Lieut., 1st 1st Leicestershire Yeomanry.
Stafford, C. A. S., Sec.-Lieut., Manchester Regt.
Start, W. B., Sec.-Lieut., 2nd Border Regt.
Stiven, K. C., Sec.-Lieut., 7th Leicester Regt.
Stimson, J. C., Lieut., 1st Sherwood Foresters.
Thomas, J. S., Sec.-Lieut., West Riding Regt.
Wallis, C., Lieut. (Transport Officer), East Lancashire Regt.
Weld, T. J., Lieut., King's African Rifles.
Young, M. T., Lieut., 15th Middlesex Regt.

N.C.O.'s AND PRIVATES.

Allis, L. C., Trooper, Lincolnshire Yeomanry.
Annis, H. J., Trooper, Leicestershire Yeomanry.
Bailes, F., Pte. (Shoeing Smith), 18th Hussars.
Ball, D., Sergt., South Notts. Hussars.
Barber, H. J., Sergt. (Instructor of Musketry), 11th Lincolnshire Regt.
Barker, H. G., Trooper, Leicestershire Yeomanry.
Basford, S., Pte., Derbyshire Imperial Yeomanry.
Bath, F. H., Pte. (Signaller), 2nd 4th Leicestershire Regt.
Blunt, J. V., Coy.Sergt-Major, 5th Leicestershire Regt.
Brooke, H., Sergt., 1st 1st Lincolnshire Yeomanry.
Bunting, A. M., Lance-Corpl., 7th Oxford and Berks. Light Infantry.
Bosworth, T. A., Cyclist, Canadian Reserve Cyclists.
Campbell, G. N., Pte., Royal Naval Division (Hawke Batt.).
Caulkwell, C. A. B., Corpl., 11th Signalling Company, R.E.
Clayton, G. H., Pte., 3rd 7th Manchester Regt.
Cullen, C. N., Air Mechanic, Royal Naval Air Service.
Derbyshire, A. C., Corpl., A.V.C.
Dodd, J. F., Trooper, 9th Imperial Corps.
Evens, J., Cadet, O.T.C., Cavalry Officers' Cadet Sqd., Lincolnshire Yeomanry.

Fishwick, V. C., Sec.-Lieut., 3rd Bedfordshire Regt.
Freeman, T. S., Trooper, Leicestershire Yeomanry.
Gibbs, B. C., Lance-Corpl., Leicestershire Yeomanry.
Gillespie, A. S., Pte., R.A.M.C. (2nd 1st West Lancashire Field Ambulance).
Godsmark, R., Corpl., 18th Hussars.
Gould, A. B., Trooper, 1st 23rd London Regt.
Greig, L. C., Trooper, 1st 1st South Notts. Hussars.
Haigh, G. R., Pte., Artists' Rifles.
Hall, J. F., Sergt., South Notts. Hussars.
Hands, E. P., 11th Cyclist Yeomanry Regt., Berks. Yeomanry.
Hay, G. E., Trooper, Hants. Yeomanry.
Heaton, G., Cadet, Nottn. University College O.T.C.
Heawood, H. W., Trooper, Royal Canadian Dragoons.
Hubbard, E., Pte., A.S.C.
Hunt, W., Pte., R.F.A. (1st 4th North Midland Howitzer Brigade).
Hyland, C., Corpl., 2nd Life Guards.
Knight, J. R., Trooper, Royal Horse Guards.
Knight, S., Lance-Corpl., Leicestershire Yeomanry.
Kirk, F. L., Pte., K.O.R. Lancasters.
Lester, J., Pte., Australian Light Infantry.
Lindley, W., Sergt., A.S.C.
Little, J., Lance-Corpl., 2nd 4th Leicestershire Regt.
Locker, A. H., Lance-Corpl., Motor Transport, A.S.C.
Marshall, S. B., Gunner, R.G.A.
Milner, G., Corpl., A.S.C.
Neave, J. W., Rifleman, K.R.R.
Nicholson, A., Trooper, 1st Lincolnshire Yeomanry.
Oldershaw, J. W., Pte., 1st North Midland Cyclists' Corps.
Oldham, F. H., Pte., 8th Royal Fusiliers.
Ottewell, J. H., Pte., A.S.C. (M.T.).
Overin, F. A., A.B., R.N.V.R.
Phillips, T., Sergt., Lincolnshire Yeomanry.
Rayns, F., Corpl., H.A.C.
Riley, C. F., Trooper, 1st 1st South Notts. Hussars.
Roberts, T. H., Sqdn.-Sergt.-Major, Leicestershire Yeomanry.
Rowland, F., Pte., R.A.M.C.
Scholey, T. W., Sergt. (Transport), 2nd 7th London Regt.

Shackleton, J. E., Trooper (Sqdn. Scout), 17th Lancers.
Shaw, W., Pte., R.F.A.
Smith, F., Signaller Sergt., 15th Sherwood Foresters, Bantam Battalion.
Smith, W. Pittock, Lance-Corpl. R.A.M.C.
Spink, B. E., Lance-Corpl., South Notts. Hussars.
Stedeford, L. H., Pte., A.S.C.
Stevens, W. H., Trooper, Derbyshire Imperial Yeomanry.
Swaby, R., Pte., A. Vet. C.
Swaby, A. H., Pte., A.V.C.
Thirlby, S. L., Pte., Artists' Rifles.
Tolkien, H. A. P. R., Bugler, 16th Royal Warwickshire Regt.
Turnill, L. C., Leading Mechanic, Royal Naval Air Service (Wireless Section).
Twigge, R., Corpl., Queen's Own Oxfordshire Hussars.
Upton, G. H., Lance-Corpl. (Motor Dispatch Rider), 5th East Yorks. Regt.
Waddington, T. E., Conductor of Transports and Remounts, British East African Expeditionary Force.
Wagstaffe, H., Sergt., South Notts. Hussars.
Walker, R., Pte., A.S.C. (M.T.).
Warter, A. A., Driver, R.F.A.
Wharam, W. S., Pte., Yorkshire Regt.
Wheeler, W. G., Pte., R.A.M.C.
Willows, S., Corpl., Sherwood Rangers.
Wild, P. R. S., Trooper, 1st Canadian Mounted Rifles.
Wilson, A. E., Trooper, Leicestershire Yeomanry.
Woodhead, H. E., Trooper (Regimental Scout), Lincolnshire Yeomanry.
Webster, E., Pte., 5th Durham Light Infantry.

RURAL EDUCATION.

By B.Sc. (Agri.).

"The age has new convictions. We know that in certain historic periods there have been times of negation. . . . I read the promise of better times."—Emerson.

This country has at last awakened to the importance of the agricultural industry. After being despised and neglected for years the oldest and most honourable industry in the land is, we hope, about to return to its own. This is indeed glad tidings to those of us who have been born and bred on the land, and who have cherished the hope of an agricultural revival in the "Old Country."

One of the chief factors in this rural rejuvenation must be the establishment of an efficient system of rural education both general and technical.

Although our education departments may consider that elementary education has reached a satisfactory standard, this opinion is not generally held by laymen, while technical education in agriculture has scarcely passed the embryonic stage. The systems of each in vogue in England, Scotland, and Ireland vary, because the conditions and requirements differ. These notes will be confined to the needs of England and Wales.

Elementary Education.

It is not the purpose of this article to deal at length with elementary education. A good sound elementary education is of fundamental importance. and undoubtedly it is here that the re-organisation of rural education must begin. The present state

of elementary education in England is far from satisfactory. It is a sad and deplorable fact that in this twentieth century in England boys are leaving school who are practically illiterate in every respect.

We must have a system that will turn out boys and girls who can at least read write and do simple arithmetic reasonably well at the age of 13. This can be done, but if there is any difficulty we believe there are still a few "dominies" in Scotland who can show the way.

Secondary Education.

Having reached the age of 13, or attained a certain standard, the boy or girl should then enter upon a course dictated by his or her intellectual capacity, inclination, social status, etc., and designed to fit the pupil for his or her avocation in life.

All do not possess the abilities of a Shakespeare, a Lister, or a Kelvin, some are only fitted to be "hewers of stone and drawers of water." Nevertheless it must be recognised "that a cultivated labourer is worth many untaught labourers, and that a scientific engineer with instruments and steam is worth many hundred men, many thousands."

There must, therefore, be various courses open to the scholar from the elementary school. One point of great importance is that each should be enabled by a proper system of scholarships to follow up the course for which he is best qualified. The son of the agricultural labourer or village blacksmith has an equal right with the son of the farmer or squire to a college or university education if he is capable of profiting by it.

We must, however, confine ourselves here to those boys who are to follow rural pursuits. They may be divided into three groups according to their future occupations, viz. :—

1.—Labourers, gardeners, and small farmers, etc.

2.—Farmers.

3.—Landlords.

Obviously the educational requirements of each group differ. Group 1 is by far the largest numerically, and hitherto practically nothing has been done in this country to provide secondary education for this class.

On the completion of their elementary education, these boys should be allowed to go to work on farms, gardens, etc., but should, for the next three years at least, *i.e.,* until about 16 years of age, be compelled to attend continuation classes. The teaching in these classes should not simply be a continuation of the elementary education, which would be uninteresting and comparatively useless to them. Its chief aim should be to impart a general knowledge, especially about rural objects and affairs, and to give the boys an increased interest in their surroundings. Particular attention should also be paid to inculcating high principles of morality, and much could be done during this period in the formation of character. The instruction would be best carried out by lectures or "talks," illustrated by lantern slides, charts, models, and specimens, etc., also by the reading of suitable books, newspapers, and periodicals. Suitable subjects that suggest themselves are:—Elementary animal and vegetable physiology, history, geography, etc.

The subsequent education of these rural workers should be mainly practical, with a view to making them skilled in manual processes. This could be accomplished by means of an extension of the classes in manual processes, already started in some districts, such as ploughing, stacking, thatching, sheep-shearing, hedging, etc. This could be supplemented by courses of lectures dealing in an elementary way with such subjects as:—The care and management of stock, farm machinery, cottage gardening, etc. A scheme arranged on these lines would result in a more intelligent and efficient class of workmen, whose labour would be more valuable and would command higher wages.

Furthermore, it would enable them to take a much greater interest in their work and surroundings, and in conjunction with certain improvements in our village life would do much to relieve

the monotony of the country and make these rural classes happier and more contented.

Coming to the second group—the sons of farmers—these will as a rule proceed from the elementary school to a secondary school until they reach the age of 15 or 17, according to circumstances.

Thereafter their technical education in agriculture will be pretty well provided through the scheme of the Board of Agriculture recently inaugurated in certain districts. This aims at providing such a graduated scale of technical education in agriculture as will put this instruction within the reach of all. Briefly the scheme is as follows:—

The country has been divided into provinces. Each province has, or is intended to have (1) a central institution or agricultural college, (2) one or more farm schools or institutes, and (3) county organisers and instructors. Instruction is to be given by means of (*a*) classes in provincial towns and villages for those who cannot leave home, (*b*) short courses at the farm institutes, and (*c*) longer and more advanced courses at the agricultural colleges.

This scheme, if properly developed and carried out, will meet the wants of all classes of farmers' sons.

It is not, however, as presently constituted, free from defects, and requires alteration and modification to ensure success. There must be greater co-ordination within each province, a certain amount of control by the Board of Agriculture, steps must be taken to compel every county to adopt the scheme and provide proper facilities, and a certain modification of the existing boundaries of the provinces is advisable.

Under present conditions the county organisers and instructors in a province, though nominally attached to the central college, are in reality quite independent of it, and there is not the close co-operation desirable to obtain the best results. The intention of the Board of Agriculture and Fisheries is, we believe, that there should be close co-operation, but this can only be secured by making the principal of the college the director of the agricultural instruction in the province. This postulates that this official should possess a good knowledge of the science and practice of agriculture, a qualification which is, unfortunately, not possessed by all who occupy positions of authority and responsibility in the administration of agricultural affairs.

Moreover the adoption of the scheme has been left to the option of the County Councils, with the result that while it is well organised in some counties, others have not even made a start. Again, in a few instances, the grouping of the counties into provinces might be altered with advantage. These and a few minor improvements in the scheme can only be effected by the Board of Agriculture and Fisheries exercising more control.

One of the most difficult problems connected with agricultural education in this country has been to get the farmers' sons to attend classes and colleges. To accomplish this it is necessary to gain the interest and confidence of the fathers in agricultural education. There are two ways of effecting this which have not always received sufficient consideration.

In the first place, it is of the utmost importance that county organisers, heads of agricultural colleges, and professors of agriculture, etc., should be well acquainted with agricultural practice, as they are expected to be. Much harm has been done to the cause of agricultural education in the past by the appointment to such positions of men who lacked the practical knowledge necessary to appreciate the farmer's point of view, and to inspire confidence.

The second way of enlisting the sympathy and support of farmers in agricultural education is by having well-equipped and properly managed farms in connection with each college and institute. A farmer will be impressed and convinced by what he sees in practice much more quickly and thoroughly than by what he reads or hears in a lecture. Such farms are also essential for the efficient education of the college students. Unfortunately agricultural college farms have not been so successful and useful as they ought to be, and have sometimes done more harm than good. To deal fully with them would, however, occupy too much space. Nor is it possible to consider here the courses and classes conducted at the colleges and institutes.

The education of the third group, namely, those who are to be the future landlords, also stands in need of great improvement. The educational requirements of this class differ in some important points from those of farmers, and such courses as have been provided at certain colleges are not sufficiently comprehensive. Moreover, it is unfortunate that this class has not evinced a greater desire for such specialised knowledge and training as would fit them better for their important positions. Present indications point to the fact that the duties and responsibilities of landed proprietors in the future will necessitate their possessing a much better knowledge of agricultural affairs than many of them have to-day.

To fit a man to discharge these duties and responsibilities proficiently, his training should embrace a full course in agriculture and allied sciences, and, in addition, subjects like estate management, economics, agricultural history, forestry, agricultural law, etc. He should also become acquainted with the practical side of estate management and development by visiting places both at home and abroad where up-to-date methods are in operation.

The time is now ripe for the regeneration of agriculture and other rural industries. Power is required to carry this out. Education by training man's natural faculties, mental and physical, increases his power and efficiency. We have recognised this in other industries, *e.g.*, engineering, shipbuilding, etc.; we must recognise it in agriculture and allied industries.

THE ECONOMIC USES OF FLOWERS AND PLANTS.

It is a matter of common knowledge that flowers, the choicest gift of God, are used in an ever-increasing measure in all parts of the world for ornamental and decorative purposes. From time immemorial, these wonderful children of Nature have filled the heart of mankind, civilised and uncivilised, with joy; and admiration for the great Creator. They have constituted amongst all the peoples of the world, one may well say worlds, a favourite article of gift and religious offering. But besides this universal homage to their beauty and grandeur they have through ages been cultivated and used as an article for commercial enterprise and profit. Extensive areas are now devoted to the cultivation of a great variety of them for the production of cut flowers for decoration. Another object for which they are largely grown is the production of seed. But by far the most important economic use of flowers is the extraction of their aroma. And if the floral world, so rich and fragrant, especially in the favoured climes of the East, were not made to yield its sweet treasures, its glory would be very short-lived.

"Then, were not Summer's distillation left,
A liquid prisoner pent in walls of glass,
Beauty's effect with beauty were bereft,
Nor it, nor no remembrance what it was,
But flowers distilled, though they with winter meet,
Leese but their show; their substance still lives sweet."
—*Shakespeare.*

The industries of distillation and extraction of their aroma, of the manufacture of perfumes and scents, and the basic industry of their culture to provide the necessary material, have assumed gigantic dimensions in many countries of Europe and Asia. And indeed they are capable greatly of further development within and without the Empire.

First and foremost amongst the blossoms of the world stands the rose, "The Queen of Flowers." On account of its extraordinarily large variety of size, form, and hue, and its most delicious and charming odour, it stands absolutely alone. And we bestow upon it the deserved appreciation of its charms. Many a lady's boudoir and drawing-room in London, is converted into a perfect Gúlistán—garden of roses—in the months of June and July. It has been appreciated and admired by the ancients just as much as by the modern races. Cleopatra more than once had her dining-hall floor covered a cubit thick with roses. Nero is said to have expended on the occasion of one feast alone £30,000 on roses. Although the ancient rose lovers neither possessed, nor even saw, blooms half so perfect as may nowadays be seen in a modest, well-kept cottage garden, yet they highly valued this eternal theme of poets of all ages and of all nations for its grand, simple beauty, and, perhaps, more so for its magnificent odour. Well has Shakespeare expressed their sentiments—

"The rose looks fair, but fairer we it deem
For that sweet odour which doth in it live."

This sweet aroma, like that of some of the flowers mentioned hereafter, forms the basis of some of the finest perfumes, and is obtained by the perfumier in every shape. It is extracted in its distilled water—the "rose water"; its essential oil—the "otto"; a perfumed oil; and a pomade. Even its withered leaves are rendered available to form the ground of sachet-powder, for they retain their scent for a considerable time.

The art of distilling "rose water" originated in Persia. There the rose is distinguished by no specific name. It is simply known as Gúl (flower), that is *the* flower par excellence, and its fragrant water Gúláb, the flower water. There and in India at the present day the pink tinge is designated Gúlábi. And the partiality of the Persian poet for the rose is no less than that for the nightingale. Their greatest poet Sàdí named his works—the finest ever written in the Persian language—"Gúlistán" (the Garden of Roses) and "Bóstán" (the Realm of Perfume), and indeed he has immortalised with these verses both himself and the rose. Hafiz, another of their great poets, simply loved and worshipped the rose, like Anacreon. Addressing his mistress, he uses a charming simile, and says:—

"Like the bloom of the rose, when fresh pluck'd and full blown,
Sweetly soft is thy nature and air:
Like the beautiful cypress in Paradise grown,
Thou art ev'ry way charming and fair."

In another place in one of his odes he couples the praise of wine with that of the rose:—

"In the mirth-enliven'd bower,
Wine, convivial songsters, pour;
See the gardens flowery guest
Comes in happiness full dress'd;
Joy round us sweet perfume throws,
Offspring of the blooming rose.

"Hail! sweet flower, thy blossom spread,
Here thy welcome fragrance shed;
Let us with our friends be gay,
Mindful of thy transient stay:
Pass the goblet round; who knows
When we loose the blooming rose?

" Hafiz loves, like Philomel,
With the darling rose to dwell:
Let his heart a grateful lay
To her guardian humbly pay,
Let his life with homage close
To the guardian of the rose."

For a long time "rose water" formed an article of extensive commerce between Persia and other countries of the East, as well as the West. Subsequently the distilling industry was introduced by the Persians into India, and by the Arabs and Turks into the Near East and the Western countries. "Rose water" is used in the East as an article of luxury at banquets and other festive occasions. It is used to sprinkle the guests on their arrival as a sign of welcome and honour. Byron alludes to this custom, and says:—

" She snatched the urn wherein was mix'd
The Persian Atar-guls* perfume,
And sprinkled all its odours o'er
The pictured roof and the marbled floor."

Sweetened with sugar and flavoured with cinnamon it forms a popular beverage. A confection made out of the petals—"Gulkand"—is used as a luxurious laxative.

The discovery of the essential oil ("otto") was made in India in 1612, on the grand occasion of the marriage of the Moghul Emperor, Jeehan-Geer, and his famous queen, Núr-Jehán—"the Light of the Universe"—when a fête was held, and the favourite "rose water" ran in the canals of the royal gardens. It has been manufactured ever since, and the industry gradually found its way into Persia, Arabia, Egypt, Turkey, Bulgaria; into France from the African coast, and into Germany from Bulgaria.

In the popular imagination one rose may be much the same as regards its odour, except perhaps for the vast difference in the intensity in some cases; but they are in reality widely different. In fact, the odour is so capricious that in the same species, and even on the same plant, there would not be found two roses with an identical odour. Probably it is known to very few that there are roses which are totally devoid of odour, while

* "Otto" of rose.

there are others that positively stink. For instance, flowers of most varieties of *R. Rubiginosa,* of the majority of the Noisette roses; and many Tea-roses, such as the Melanie Souppert, Marie Guillot, Marie Caroline de Sertouse, and Triomphe de Milan are odourless; while those of *R. Platyacantha* and *R. Capucine* (*R. Elgantaira, Lin.*) and also those of *R. Beggeriana* (*R. Coriosma, Desen*) develops an odour of bugs and coriander. We also find a great variety of fragrance in the pleasant-odoured species of rose. Some Tea-roses have delicate fruity odours, for instance, *R. Socrates* has the odour of peach; Elizabeth Barbenzien, odour of melons, which is also possessed by Souveraine —a cross between a Tea-rose and *R. Centifolia;* Isabelle Narbonniani, odour of violet, which is also developed in *R. Banksia Alba;* Sofrano, odour of pinks, which is also exhaled by others, such as *R. Caryophyllea, R. Ripartii, Deseglise, and R. Mochata of Miller.* Again, an odour like that of raspberry is found in the yellow Tea-rose Maréchal Niel, the red Gonbault, and the creamy white Madame Bravy. The perfume of the Tea-rose "Gloire de Dijon" is so sweet and subtle that no definition is possible. "Unique Jaune" amongst the Noisette-roses has the faint oodur of hyacinths, and *R. Bracteata* and *R. Macartnea* possess the odour of apricots. The odour of mignonette is noticeable in *R. Cannina, R. Saepium,* and *R. Alpina, Lin.* It may be pointed out here that neither do the Tea-roses possess the flavour of tea, nor does *R. Mochata* that of musk, as their names may lead people to think. The latter odour is only developed in a bright red hybrid Moss-rose—*R. Salet.*

The pure odour of rose, however, is unique, indefinable, and incomparable, and is indeed a *type* which cannot be imitated, although there are some which somewhat resemble it, and are used to adulterate its more valuable aromatic products. This true odour is best represented in the Cabbage Rose or Provence Rose *R. Centifolia, Lin,* the Gul-e-Sad berk of the Persians.

" The floweret of a hundred leaves,
Expanding while the dew-fall flows,
And every leaf its balm receives."

It is equally well represented in *R. Damascena, Miller.* The former grows wild with single flowers in the Eastern Caucasus; and with more or less double flowers in its cultivated form it is largely grown in southern France and Turkey, famous for its "otto" of roses. The latter is extensively cultivated in India, Persia, Bulgaria, and Germany. The roses in the famous plantations of Shiraz and in the Bâg Guldustuum—the Rose garden—of Persopolis, have been identified as *R. Mochata, Miller,* or *R. Pissardi,* which is a veritable Mochata, although some botanists regard it as a distinct species. In Tunis, *R. Cannina* is grown, or rather a very odoriferous variety of it. This extraordinary variety of its odour, coupled with its exquisite sweetness, renders it a most valuable material in the art of perfumery.

In addition to the variety referred to already, the perfume of the rose exhibits some very interesting peculiarities. The red roses, and, as a rule, deep-tinged roses, are more odoriferous than white and light-tinged ones. The full odour is only developed in very hot and sunny climates, where the maximum of heat and light is afforded. The direct rays of the sun, however, have a very deleterious effect on the perfume of full blown flowers, which in the case of *R. Damscena* is totally destroyed in drying. The only exception seems to be *R. Gallica,* flowers of which at first possess a very feeble odour, but develop it gradually in the process of dessication. Further, it has been noticed that previous to a storm or other atmospheric disturbance the odour of the rose seems strangely increased, due most probably to the stronger oxidizing influence of ozone. Wherever the distillation of "rose-water" or the extraction of the "otto" are carried on, the flowers are gathered early in the morning before sunrise, and before the flowers open, so as to prevent loss of strength and sweetness through dessication and exhalation into the air.

The latter phenomenon depends upon the interesting biology of its floral leaves. The essential oil is secreted in the layer of epidermal cells on both surfaces of the petals; those on the upper surface being papillar, while those on the lower are cubic in form. Here the oil exists in a very minute state and not in drops, as in the pedicellate glands of the leaves and other green parts of the plants. These cells are both the seat of manufacture and the containing reservoir of the oil generated by a natural synthetic process. There are no special receptacles for the storage of the oil; and consequently the oil in its minute condition is liable to be dissipated on coming into contact with air.

Besides the aromatic essential oil generated in the petals, there is secreted in the pedicellate glands, which abound on the stalk, the calyx, and other green parts of the plant, an oil or glutinous oleo-resin, with a powerful odour, but of an entirely different character to that developed in the tiny cells of the petals. In some varieties the odour of these glandular secretions is very rank, while in others it is very much like those of other popular flowers. In some varieties of *R. Vilossa* the odour thus developed approaches that of oilbanum and myrrh. The glands on the pedicells and sepals of *R. Brunonii, Lind*—a moss variety of *R. Machata, Miller*—develop a fine odour of pinks; and the glands on all the green parts of "Sweetbriar"—*R. Rubiginosa, Lin.;* also those of *R. Micrantha, Smith; R. Graveolens, Pers;* and *R. Glutinosa, Sibth,* secrete an agreeable odour like that of the apple "Pipin" or "Pomme Rennete." The leaves of *R. Lutea, Dalech* (*R. Eglantaira, Lin.*) also known as *R. Capucine,* produce a much finer odour, and very akin to that of jasmine.

Jasmine, the "Moonlight of the Grove," is possessed of one of the most pleasing and highly valuable odours. Perhaps it is in favour only second to the rose in the East, whence it has been introduced into some countries of Europe. It is largely used by perfumiers, who obtain its fragrant treasures.

> " From timid jasmine buds that keep
> Their odour to themselves all day,
> But when the sunlight dies away,
> Let their delicious secret out."

The oil is usually confined to the epidermal cells on the upper surface of the sepals and petals. In following the evolution of the cell-contents of the flowers, first of all chlorophyll alone is found in the tissues, glucosides appear next, which are in turn followed by tannin and violet pigment materials on the lower surfaces. It appears that intermediary glucosides are here slowly oxidised under the action of light, and oxygen of the air into tannin compounds, while in the upper surface, which is not exposed to these agencies, the same compounds are converted into the essential oil, which oxidises when in contact with air, and produces the sensation of perfume.

The most fragrant variety is *Jasminum odoratissimum,* which is largely cultivated in the South of France for perfumery purposes. In India, *J. grandiflorum* and *J. Hirsutum* are cultivated. There is another flower of the jasmine tribe possessing a sweeter and more intense odour, and is in great favour for its high fragrance. It is in much greater demand, as a rule, than jasmine, and is used in its fresh condition to make garlands, and wristlets, and other objects of ornamentation. Both the jasmine and its sister flowers are utilised in much the same way as the rose, and made to yield their fragrance in every shape.

Violet is one of the most charming and delicate odours that a known blossom ever produced. Its mild and exquisite fragrance made Shakespeare exclaim :—

"Sweet thief, whenst didst thou steal thy sweet that smells
If not from my love's breath?"

Its perfume is in universal favour, as it suits the most nervous as well as the most fastidious connoisseur of perfumes. The largest plantations, we believe, are at Nice—the great centre of the flower trade. Their cultivation has been commenced on a fairly extensive scale in Cornwall.

The species best suited for perfume and one that is largely cultivated is the double Parma violet—*Viola overate.*

Next we come to the orange, the aroma of which is utilised, in addition to those of other citrus plants, to a far greater extent than may seem at first. The aroma of orange blossoms is of the first importance in the art of perfumery. By distilling them with water the otto "Néroli" is produced; the one obtained from the flowers of the edible Portugal orange—*Citrus Aurantium*—being known as "Néroli Petale," or "Néroli Douce," and that obtained from the bitter or Seville orange—*Citrus Bigarradia*—blossoms goes under the name of "Néroli Bigarrade." The Nérolies form the basis of "Hungary Water" and Eau-de-Cologne. The flowers are also made to yield an extract by maceration in a fatty matter, the resultant pomade being digested in "rectified" spirits. The essential oil thus extracted has the perfect odour of the orange blossom, and is highly prized by the perfumier. From this "Sweet Pea," Magnolia, and several other bouquet scents are made up.

An aromatic essential oil—"Petit Grain"—is obtained through the distillation of the leaves. This is chiefly used for scenting soaps. Yet another essence is extracted from the rind of the fruit, known as "Oil of Bigarrade" if made from the peel of the bitter orange, and as "Oil of Portugal" when obtained from that of the sweet orange. The peel is also used in the manufacture of famous orange bitters.

Orange-flower water is used as a lotion for the hands, the skin, and the eyes. It is also extensively used in confectionery, and for mixing with nauseous medicines. The pulp of the orange mixed with bran forms an excellent food for cattle, and may be utilised in that manner when the peel is employed for other purposes.

An excellent oil is expressed from Lemon (*Citrus Medica*) rind possessing an intense odour of lemons. It is known as "Citron Zest" in commerce. By its distillation is produced the "Essence of Lemon," which is not of so fine a quality, but keeps better. These oils, with those of the orange peel, form the chief ingredients of "Lisbon Water" and "Eau-de-Portugal." The acid pulp of lemon is expressed for citric acid.

The popular uses of citrus are many, and are universally known. Lemon and orange jellies and marmalade are some of the most palatable of preserves for the table. The fair readers would no doubt be fully familiar with the modes of and adept in making these up. They would also be fully appreciative of the great and welcome assistance the lemon renders them in their 'very own' realm behind the scenes. Candied and preserved in syrup, citrus peel is of invaluable use in confectionery, and for flavouring. Various kinds of exceedingly delicious pickles may also be made from this most unpretentious of fruits. Fresh lime-juice and lemon-squash in sweetened water form most exhilarating drinks both inside and outside the house in summer months, more especially in hot and tropical climates. In fact, they constitute the only really effective drinks which would quench a parching thirst after a vigorous game of tennis or hockey, or a scorching tramp or ride in the intense heat of July and August. It would be found equally effective by those engaged on strenuous work on the land, or when you get rather warm over a vat, as their effect lasts a considerable time, unlike many other cool drinks.

Cassie (*Acacia farnesiana*) is a sweetly pretty shrub, from 5—6ft. high, and bears in the months of October and November globular flowers of a bright golden hue, which, peering through its foliage of glorious emerald green, produce a very picturesque effect. In Europe it only grows in the southern latitudes, and its flowers, intermixed with other blossoms, are used for making exquisite bouquets and garlands.

A powerful aromatic oil and pomade are obtained from the flowers by maceration in India and Africa, chiefly in Tunis; where they possess a high floral fragrance. It is somewhat like that of violet, and being much stronger is often used to strengthen or fortify that scent which is naturally weak. It is also employed in other bouquet scents.

Tuberose (*Polyanthus tuberosa*) is another fragrant blossom of a bulbous plant grown in warm climates for its perfume.

"Eternal spring, with smiling verdure here,
Warms the mild air, and crowns the youthful year,
The tuberose ever breathes and violets blow."

It produces a stalk about 3ft. high, which throws out two full blown flowers every day between 11 a.m. and 3 p.m. These should be gathered at once, as their perfume does not last long, and would be lost if left long exposed to the air. It is a native of the East Indies, and grows wild in southern India, Ceylon, and Java. At one time it was cultivated in hothouses laregly by the Dutch in Europe, but it has now found its way to the warmer countries—France, Italy, and Spain.

Narcissus (*Narcissus odorata*) and Jonquil (*Narcissus Jonquila*) are two other bulbous plants cultivated for the beauty and perfume of their flowers. The former is much appreciated and cultivated in Algeria, Persia, and India, while the latter is cultivated in the South of France. These are but little used in perfumery, as the extracts named after them are usually produced by blending other odours.

We will now mention some plants, the leaves and other parts of which yield similar oils to those of the blossoms mentioned before, and which are put to similar commercial uses.

Indian-Geranium oil is distilled from the leaves of Rohish or Raúns or Agyaghás (*Andropogon-Schœnanthus, Linnæus*) in

India. It is of two sorts; one extracted from the tender grass when the inflorescence is young and of a bluish-white colour, and the other when it is full grown and red in colour. The first one has a more delicate odour. In commerce the oil goes under a large number of names. In England it is chiefly known as "Ginger grass," Turkish Oil of Geranium," "Rúsa-grass Oil," and "Oil of Nimar or Nemaur." In the Balkans it is known as "Essence of Geranium," and oil of "Palma Rosa." It grows in a wild state in all parts of India, particularly the North-West. Wherever the rose "otto" industry is in existence it is used to adulterate the more valuable otto. Citronella (*Andropogon citratum*) oil forms the basis of the perfume of honey soap.

The rose-geranium (*Pelargonium odoratissimum*) is cultivated in the South of France, Algeria, and Spain, on account of the powerful aroma of its essence, which is a rosy fragrance. It is highly prized by perfumiers, who use it to impart this rose-like fragrance to common articles in place of the much more expensive "otto."

Patchonli (*Pogostemon Patchouli*) is an Indian herb, which has a rather peculiar odour. It is offensive to some and very agreeable to others. It is imported for use in blending perfumes in this country.

Winter-green (*Gaultheria procumbens*) is a North American plant, and yields a very powerful essence. It is used in scenting soaps, but needs to be well blended with others, and to be used in very small quantities. The aroma thus produced has a pleasant floral odour.

Lavender (*Lavandula vera*) yields a nice, clean scent, and is an old and great favourite in this country. And it is indeed one of the very few plants that can be profitably cultivated here for their perfume. The climatic conditions which make the odour of other aromatic plants too faint for profitable extraction, tone down the strong and rank odour of lavender and make it so agreeable that the English lavender is the best and most desired. The essence of lavender manufactured in France from this plant, which grows wild in the Alpine districts, is much inferior. Spike lavender (*Lavandula spica*) a coarser species, yields a poorer essence, which is either used to adulterate the better products or for scenting soaps. Another species (*Lavandula Stœchas*) is capable of yielding a very fragrant essence. It is found in large quantities in Spain and Portugal, but is scarce in France. In the two first-mentioned countries it is chiefly used to strew the floors of churches and houses on festive occasions, or to make bonfires on St. John's day, a practice which was common at one time in this country.

Peppermint (*Menthapiperita*) produces an essence which is used in confectionery very largely. It is also used in tooth powders and washes. For the same reasons as apply to lavender the English essence is the best, next to which is the American product.

Rosemary (*Rosmarinus officinalis*) yields a powerful essence which has a remarkable resemblance to that of camphor. It is chiefly used for scenting soaps.

Amongst other plants distilled in this country may be mentioned Thyme of two sorts—*Thymus Vulgaris* and *Thymus Serphyllum*—and Marjoram (*Origana Majoram*).

Some of the spice plants are used from ancient times for the production of aromatic oils.

Cassia is distilled from the leaves of (*Laurus Cassia*) a tree of the laurel tribe, which is very abundant in India, Indian Archipelago, and China. Cinnamon (*Laurus Cinnamomum*) is another plant of the same tribe, from the bark and leaves of which an essence is extracted; the one from the bark being finer than the other. Again Cloves, which are buds of (*Caryophyllus aromaticus*) yield an essence which, like that of cinnamon, is used for scenting soaps. Its fragrance closely resembles that of carnations and clove-pinks, and may with advantage be employed in blending handkerchief scents.

In the ligneous series, Sandal-wood and Sassafras are the most important.

Sandal-wood, which comes from India and other Eastern countries, ranks first, and its essence forms the ground of all toilet preparations. There are several species, but *Santalum citrinum* yields the best perfumed essential oil.

Sassafras is distilled from *Laurus Sassafras,* a North American tree. It grows there abundantly. Its essence has a fresh and powerful aroma, which is very useful for scenting soaps.

We may also mention two plants which constitute the radical series of plants yielding aromatic essences.

Vetivert, or Kus-Kus, or Kusá is the rhizome of *Anatherum muricatum,* which grows wild in India. Its essential oil is very much admired in India and elsewhere; and, indeed, has a fine, cool, and refreshing perfume. It forms the basis of the perfume called "Mousseline." The rhizome is also made into mats and blinds, which, when watered, give out a most pleasant odour. These keep the rooms cool and fragrant in the most scorching heat.

Oris or Iris is the rhizome of *Iris Florentina,* which is extensively cultivated in Italy, chiefly in Tuscany. It exhales in a dry state a delightful violet fragrance which renders it very useful for scenting toilet, sachet, and tooth powders.

Lastly, three plants, the fruits of which yield valuable essential oils, deserve mentioning.

An essential oil is obtained from bitter almonds by distilling the dry cake of the fruit after the fat oil has been pressed out. It contains prussic acid to the extent of 8—10 per cent., which can be obtained by re-distilling it over potash.

Tonquin Beans, fruit of *Dipterix odorata,* also yield an essence. This plant grows in the West Indies and South America.

Vanilla is the fruit of a beautiful creeper (*Vanilla planifolia*) a native of Mexico. It yields a very valuable perfume. The flavour of which most of us are familiar with.

In conclusion, we may draw the attention of readers to the vast possibilities of tapping the existing resources of many favoured parts of the Empire, and of also cultivating some of the plants mentioned more extensively in our Colonies and Dependencies. Many of these have hardly been touched on anything like commercial lines. India, Australia, and the African Colonies which have been so largely added to, offer great possibilities too numerous and diverse to refer to in the space of an article. At home the culture of flowers must, on the whole, be confined to the production of cut flowers, and that of seeds. Already, in the neighbourhood of London, in Kent, and Essex, thousands of acres are devoted to their culture. In Cornwall, and the Channel and Scilly Islands extensive areas are under cultivation. Their success is the best inducement one can offer. But let us say one word of warning. Those who wish to cultivate them must know their flowers and interest themselves in them seriously. And then their culture is much the same as that of a field of potatoes or any other similar crop except, of course, in the ordinary garden practice.

D. M. LAL.

LIFE AT THE KINGSFIELD PHYSICAL TRAINING COLLEGE.

The house which is now the Kingsfield Physical Training College was bought some years ago by Madame Osterberg, who added two large wings to the building. The first consists of a lecture hall, connected with the library, with a very fine, well fitted laboratory built over it, and the second of a large dining hall, with three storeys of students' studys and bedrooms. All are heated by radiators, and there are fifteen study-bedrooms on each landing. Each floor opens on an outside iron staircase, on which vines are artistically trained.

The dining hall is the most striking feature of the building. It would be difficult to imagine a more beautiful room, with its oak panelled walls and polished floor, it is more like the banqueting hall of a baronial castle than the dining room of a modern College. Leading from this room is a long corridor, built of oak, which connects it with the Gymnasium, Weighing Room, and Games Room. The Gymnasium, fitted by Swedish workmen, contains a great deal of apparatus, which is made to disappear rather mysteriously through trap-doors in the floor. There is also a Medical Gymnasium, fitted up for remedial gymnastics.

Students come to the College for a course of two years, generally straight from school, and the age limit is from 17 to 30. They are admitted only after careful consideration of their mental and physical attainments, and at the end of the first term a certain

amount of weeding out takes place, and again at the end of the first year.

This keeps the standard very high, and is a great incentive to serious work, as each student knows she may be dismissed at any time if her work, both theoretical and practical, does not reach that standard. The ideal is as far as possible the attainment of physical and mental perfection. The student who arrives at the College with the idea that she is going to spend a delightful two years, occupied principally with games and gymnastics, is speedily undeceived. Anatomy, Biology, and Physiology are all very thoroughly taught, and occupy no small portion of the student's time. Theory of Movement, the Art of Teaching, and Voice Production are also part of the curriculum, nor does this complete the list of occupations. Every afternoon a certain number of senior students sally forth on their bicycles to give lessons in drill, gymnastics, and games at the elementary schools in the neighbourhood, whilst those who remain behind give Swedish massage treatment—under the direction of a lady doctor —to a children's clinique.

There is another side to the training, and that is the games and dancing. Games are made a science, and are taught by two Games Mistresses. Cricket—principally—is taught and to a lesser extent tennis in summer, and hockey, lacrosse, and net ball in winter, with intervals for all sorts of indoor games and country dances, etc.

Last term the greatest interest was aroused by the latest fashion in dancing—that is the Classical—supposed to be based on the highest form of Greek Art, and taught by its latest exponent. The poses are all copied from ancient Greek vases, and bas-reliefs, and a class in full swing almost suggests the obliteration of the last fifteen hundred years, and transports one from prosaic England to the land of Ulyses and Homer.

When the student has completed her two years' course satisfactorily, the College give her a certificate and endeavours to provide her with a suitable post. These are generally very plentiful, and in excess of the supply. The idea at the root of all the training is to produce teachers who will be capable of undertaking the complete physical culture of children, consequently most of the posts are in schools. The salaries are invariably good, and £60 to £70 per annum, with residence, is usually the minimum.

WINONAH CHAMBERS.

THE EFFECT OF THE WAR ON AGRICULTURE.

The three all-important things, at the present time, to the countries at war, are men, munitions, and food, and it is difficult to say which takes first place, as each is dependent upon the others. It was, however, truly said by Napoleon that "an army moves on its stomach," and if we consider the gigantic size of the "stomach" of the armies of to-day, exclusive of the civil population, it gives one some idea of the "catering" to be done.

For many years previous to the outbreak of the present war, the population of these islands gave very little serious thought to food production. Most articles of food were to be obtained in abundance, at a moderate or cheap cost. To-day, however, these conditions are somewhat altered, and the time has arrived when we must perforce produce as much food in the country as possible.

During the 10 years previous to the outbreak of the present hostilities, the arable area in Great Britain decreased by more than 1,000,000 acres. The causes of this are well known to many, but at the present time we are more concerned in re-cultivating this vast area, than investigating causes for non-cultivation. Besides this great decrease in arable land, there are many acres which although still cultivated are not producing more than 50 per cent of what they are really capable of.

It is true that "Comparisons are odious," but it gives us seriously to think when we compare the achievements of the enemy with those of ourselves. On every 100 acres of cultivated land in Germany there is produced annually more than twice the amount of corn, five times the amount of potatoes, and twice as much milk, as on a similar area in the British Isles. In addition, the Germans produce about 2½ tons of sugar per 100 acres of cultivated land.

Only one-third of the cultivated area of Great Britain is arable land, and this accounts largely for the colossal amounts of foodstuffs that we are compelled to import annually. In a single year (1915) we spent £276,803,000 on imported foodstuffs, a sum more than four times as large as that spent by France in normal times.

Our task is now to produce the maximum amount of food, and the difficulties are many. Since the commencement of the war we have witnessed many changes in the agricultural world, and the most notable is the replacing of male labour by women. Thousands of women are already at work on the land, and many more are needed. In pre-war days the woman farm worker was quite a rarity in many parts of Great Britain, though in France and other European Countries much of the farm work has been done for many years by women, with excellent results.

There is still much prejudice with regard to women farm workers, and in most of the cases where satisfaction is not given, it is found that the women are either not strong enough or that they dislike the work. However enthusiastic a woman may be, if she does not like the life and is not physically fit, the results will not be very satisfactory.

At the present time, the farmer is a much-abused man. He is often looked upon as being the chief cause of high priced food, and somewhat of a profiteer. The public is rather inclined to think that the proper vocation for the "fool of the family" is farming, and it is high time the facts should be known. It is just as essential that the farm worker should be skilled, as the worker for any other occupation, and the farmer himself must have an intimate knowledge of many things that do not occur to the man in the street.

Agriculture is ever at the mercy of the weather, and there are many farming operations which, if suitable climatic conditions do not prevail at the proper time, may possibly have to be left until late in the season, and in all cases result in loss. For this reason it is necessary to perform these operations quickly, and we shall this year see a much larger use of agricultural machinery, both for cultivation and harvesting operations.

Even after the war it will be necessary for us to produce more food, particularly wheat, than we have done during the last generation, for not only will there be a shortage of ships, but much productive agricultural land has been devastated in countries on which we are partially dependent for food, and also the consumption of wheat is on the increase among races where rice, etc., has formerly been the staple food.

British agriculture has not made the strides it should have done during the last 20 years, but it can be readily understood when we think of wheat at 25/- per quarter, and oats at considerably less than 20/-. Apart from these low prices, less has been spent on development of agriculture by the State, than most other countries in the world. The war has had the effect of emphasising the importance of agriculture, and much progress is likely to be made during the next few years in the agricultural world.

P. W. BAILEY.

"SOMEWHERE IN FRANCE."

When one is faced with a title like the above one, a terrible mental struggle commences. If you say anything to the point, the Censor will cut it out; if you wander, the Editor will do likewise. Hence you feel in the happy position of many a "Hat Night" speaker. Let this explanatory apology suffice.

Now, out in France, they have many ways of making you smart. For example, in the huts, the smoke from the wood fires makes your eyes smart, and the rush for rations is a quickening exercise for the feet. Many scientific facts are also driven home here, you realise that water may change its physical state when you try to wash on a frosty morning by alternately rubbing your face with a cake of soap and a block of ice. When the thaw comes, the flocculation of clay is an important problem if you do not desire a muddy face after the morning ablution.

Strange to say, you occasionally come across some amusement out here. I have heard of cases where men have complained to the Orderly Officer that the gravy was tough! But the most delightful story I have heard here is connected with "flogging."

Now, perhaps, you will say that the practice is obsolete in the British Army, so I must hasten to explain. A Tommy is said to "flog" a thing when he sells it, or exchanges it for anything he values. Well, one man, who must be nameless, was lucky enough to be in billets with the French. His rations one day included a greasy preparation for the feet, known as "Anti-Frostbite." The soldier had little faith in the preparation, so he "flogged" it to his French hostess for some bread. The good lady thought it was butter, and, spreading it on bread, gave it to her family. It is rumoured that the family never suffered from colds during the rest of their lives, but whether those lives were very prolonged or not, I cannot say.

Well, you will be relieved to hear that conditions "Somewhere in France" will not allow me to write more, so I will close by wishing all my old Kingston acquaintances the best of good luck in 1917.

PTE. F. L. KIRK.

THE FARM MOTOR.

Three years ago very few farmers could have even named more than two makes of agricultural motor, and their belief probably was that the position of the horse was secure for at least another half century. The demand for this kind of machine was so small in Britain that there was no inducement for the engineer to study the home requirements, while the farmer, on the other hand, had few types from which to select one that was likely to suit him best. But now we see articles in all sorts of journals headed with titles such as "The Era of Tractor Farming," written to convince the general reader that the control lever will rapidly replace the rein, and giving the impression that the horse will soon be as rare in these islands as the ox, in the draught capacity. Moreover, when we learn that in one county alone, Kent, at least 46 farmers own tractors, and that the Board of Agriculture propose distributing numerous sets of mechanical ploughing tackle about the country, we begin to feel that we really have entered upon another era in the methods of soil cultivation.

The cause of this, as of many other innovations to which we have adapted ourselves during these eventful years, is, of course, the new set of conditions created by the world war. In the first instance, it was the shortage of manual labour that brought the farmer seriously to consider the advantages of the tractor; for it offered him the means whereby a reduced staff could control greater forces per man, and in the primary operations perform the same work as the normal staff of men in charge of horses. But the farmer is now beginning to court the tractor, not merely as a means of liberating him from labour troubles, but as a factor enabling him to till both more extensively and more intensively: he is beginning to realise its financial virtues both in reducing costs and in increasing returns. This is the consideration that guarantees its future on the farm.

The farmer has not the reputation for change and adventure; indeed, this spirit does not flourish in country places. There are not, therefore, likely to be big sales of discarded farm horses, though the blacksmith's son may well begin to study motor mechanics. The farmer's chief claim for the horse is its adaptability. It can be used for practically each and every farm operation that demands more than human force. The tractor, on the other hand must be specialised if it is to be efficient, and this would necessitate the possession of more than one type for the *substitution* in a large measure of motor power for that of horses. A tractor cannot excel both on the land and on the turnpike; and if it is to be suitable for ploughing strong sun-baked land it is likely to be unsuitable for the lighter operations, such as harrowing, drilling, and work among growing crops. With horses the power can be adapted to suit the work; and the weight of six horses is not passed over the land in the performance of a one-horse operation.

The vital difference between horse and motor power lies in the fact that the former possesses a reserve which it can exert for a short period when necessary, as in starting a load on a steep gradient. Emergency gears are not the exact equivalent. On the other hand, the horse is liable to fatigue, and cannot maintain its normal power beyond definite lengths of time. These differences largely determine the unsuitability of the tractor for

the hill farmer on the one hand, and its suitability for the clay land farmer on the other.

In ordinary farm practice horses have perforce to work under conditions impossible for the motor. During several months of the year the land, occupation roads, and gateways, are usually in an unfit condition to carry tractors; and the farmer naturally wonders what the state of affairs would be in spring—must ploughing and carting operations be wholly suspended till the return of conditions suitable for the use of motors. The answer lies in the power of the motor to make the best use of favourable periods and thereby to obviate the necessity of poaching the soil or churning up the roads.

The high skill supposed necessary for the management of a tractor has been found to be no serious obstacle, and when this type of power has become a familiar feature of farm life, the skilled mechanic will be in about the same position as the veterinary surgeon—to be consulted only when the trouble is serious. In this connection it must be recognised, however, that the illness of a horse has not the same paralysing effect as a mechanical breakdown.

In hilly districts tractor cultivation presents a set of problems that will probably not be solved quite so soon as those found on the lowland farm. It is here that the inability of the wheel to grip on slippery surfaces may be most disadvantageous, especially during winter periods, such as that recently experienced. The obvious difficulty of mounting steep gradients may be partially overcome by the adoption of light types of tractor, taking their grip from the fore wheels, and by the provision of additional gears; but there still remains that of controlling the machine when running across the incline. Small fields are another objection commonly raised in districts otherwise suitable for motor cultivation. The tractor makes too large a headland and rolls it too much. Improved devices for turning in a small space, different ways of attaching the plough, and perhaps of ploughing, and lastly the adaptation of the farm to the new conditions are expedients the future holds in store. The cropping also may have to be modified.

The experience already gained in the use of the internal combustion engine has permanently established this source of power, as a partial substitute for the horse, on the British farm. Attached to a couple of reapers, and working long days, the tractor enables the farmer to complete his harvest more quickly. Then while the land is hard and in the best condition to benefit from ploughing he can rapidly turn it over, meanwhile the horses are fully engaged in clearing out the crew-yards and leading the manure out before rain commences to hinder. Not only does the land receive the benefit of what approximates a pin-fallow, but a larger breadth of autumn-sown corn can be put in, and the spring work proportionately eased. The tractor is, in reality, a reserve of horse power, such as every arable farmer would like to possess at certain periods of the year, but which it would be an expensive luxury to maintain through the periods of enforced idleness. The tractor is not eating when it is standing, and does not develop "weeds" from lack of exercise.

If conditions after the war should not favour the extension of arable cultivation to the former wheat lands, the farmer who possesses a tractor will be able to cultivate his present area with a smaller staff of horses and at less expense than his neighbour without one. Should corn growing continue to be profitable, the tractor will be the additional strength enabling him to cultivate a larger area of arable land.

There is a tendency to blame the tractor for the defects of the plough it hauls: the motor and the plough require separate consideration, and probably the latter has received less attention from both engineer and farmer than its importance demands.

The great variation in type of outfit now being placed before the farmer naturally raises the suggestion that tractor cultivation is still in the experimental stage; and the farmer of 1927 will have the benefit of the workings of the process of the survival of the fittest type. One fact is well established, namely, that the 10—12 h.p. size is not sufficiently powerful for general service on the farm: an agricultural tractor should generally be 20 or more h.p., and should have three forward and one reverse speeds.

Mechanical cultivation has been before the farmer for many years in the form of the double engine system. This still has

its advocates, but owing to its high initial cost, the number of attendants required, and the inconvenience of having to haul coal and water, it has never really appealed to the tenant farmer. The liquid fuel tractor scores on all the above points, and it would seem that the future of power tillage is wholly bound up with this system and source of energy.

J. R. Bond.

"REAL" WORK ON THE LAND.

There was great unrest everywhere, rumours were afloat that made men's faces grow grave and brought the shadow of coming evil into many bright homes—and then it came—war was declared, and England called upon her manhood and chivalry to go forth and help a country in its need. Fine it was to see how men put all personal interests aside and threw themselves heart and soul into the great forecoming struggle; fine, too, were the women who said good-bye to their sons, who after a few months hard training went out and fought so bravely for their Motherland! And those who were left at home? Well, patriotism proved infectious, and the girls buckled to also—some going in for nursing, others on to the land, and many other new occupations; but it is for the girls who intend to go on to the land that I am writing this, because I think it may be of interest to them to hear how the work was carried on, on a large mixed farm in Shropshire, where they were practically devoid of man labour. One hears and reads so much about the charm of an open-air life on a country farm—but you know its not at all like the life depicted in so many of our illustrated papers, where one sees dainty maidens in pretty, but exceedingly unpractical, garments, standing in the middle of the farm-yard surrounded by cocks and hens! Charm, there certainly is; a wonderful charm for the light-hearted, Nature-loving girl, but she must find it amongst the practical, hard work.

Work for us started at 6 a.m., when we had to be in the milking sheds, and until breakfast, which came at eight, we were hard at it; the milking done, the milk was taken to the dairy, after which the sheds were swilled down, the horses brushed, fed, and watered; that usually took till eight. At 9 o'clock we began again, so many going into the fields and the remainder of us staying at the buildings, where we were kept busy feeding the pigs, of which there was a great number, cleaning outbuildings, and preparing food for use in the afternoon. Those in the fields, "it was harvest time," making hay, and later helping with the grain. It was most interesting to watch the "self-binders" at work and listen to the quaint conversation carried on by the Irish teamsman to his horses. We had great fun over the sheep dipping while I was there; the sheep had to be driven several miles to the dipping bath, where, after arriving, we spent a most exciting hour or two, I having the pleasure of towing each expostulating sheep along, who, when it was once more on *terra firma,* proceeded to soak me in horrid disinfectant! Cattle sorting was another of our many odd jobs, the farmer who we were working for rented the park land belonging to a large hall, into which he had turned several hundred head of cattle, and every so often he went down and chose so many to be brought over to the home buildings to be fattened.

Generally he took two of us with him in a quaint old "Ford," and we drove the 13 miles to the park. All the animals were then rounded up and driven into an enclosure with large gates at each end.

Two would go in and the other stand ready at the gate to open it when the word was given; it was alright for the first two or three, but when the animals began to get restless it became very exciting, and anything but pleasant to hear "He's coming, ready!" and to see several wildly careering bullocks heading for the gate, while you were still wondering which one it was that you were to let through, and being uncomfortably conscious of the highly interested beast you had already let pass edging nearer and nearer at your back.

When the sorting was accomplished those which had been chosen were driven into an enclosure to wait till the following morning to be driven home, while the others were once more turned loose to roam at will over the park.

RUTH HUMPHREYS.

THE WOMAN OF TO-MORROW.

What is to become of the woman of to-day after the war?

Will she be willing to return to the drudgery of housework, the schoolroom, and the drapery store, or will she fight to hold the position in the commercial world she has attained during the past two and a half years?

This is a question that is being discussed in every home to-day, and one that must be answered quickly; the victory we are fighting for looms largely on the horizon, and ere that glorious day dawns, the relative position of man and woman, not only in the commercial world, but also in the home must be settled, once and for all.

During the time I have been in this country, I have watched this army of women war workers steadily growing, until to-day I see around me a multitude of young, middle-aged, and matured women, nobly carrying on the business of England, as if to the manner born.

In Canada, Australasia, and America, the women have always taken a leading part in the development of their respective countries, but I must confess to having had a feeling of doubt concerning the women of the Motherland, who for centuries past have been sheltered in their homes and protected by their men folk.

Would they take to business as a new and novel entertainment, to be dropped as soon as the novelty had worn off? Or would they stand to their guns in the face of every hardship, determined to back their men up and win out at all costs?

That was the question I ask myself, and to-day, from every corner of the Empire, comes their answer.

The hammer in the munition works is singing it, the plough on the land is calling it, the pen in the office echoes it; and, in fact, in every department of business life the answer is shouted from thousands of throats—

"We'll support our lads to the last!"

I raise my hat to the women of England, to that army of fighters who are doing every bit as much towards attaining our glorious victory as the lads over yonder in the trenches. And now let me express my opinion on that vexed question of our women's position after the war.

In the face of all opposition, I say emphatically and without hesitation, that our women will never return to the old life.

Never again will they be contented to have everything done for them, to be pampered, petted, and spoiled by their men folk.

They have found their level, have awakened from the sleep of centuries, and have proved to the world their undoubted ability to hold their own in any walk of life.

But don't, please, misunderstand me. I don't for one moment believe that they will lose the charm of their femininity, or scorn to accept the advice and help of mere man, but I do say that they will refuse to let us exclude them from all interest in that little world of commerce, that has been for years past, so exclusively our own.

Before the war, how many wives and sisters have been told by their men-folk, when asked to be enlightened on some question of the day, "Oh! it wouldn't interest you, dear," or "Don't worry me, you wouldn't understand it if I tried to explain it to you."

Those days are over, and when the men who have gone to protect their homes, return to their fireside, they will find a new and enlightened woman to greet them.

The same dear, lovable, little woman, but altered in the sense that she, too, has gone through the horrors of war, and has emerged from it a bigger and nobler woman.

When our men return again to their business life they will find that woman is still mistress of the household, but with this vital difference—

The married woman, secure in the knowledge that if necessity arises she is capable of becoming the bread-winner, will expect her husband to enter more into her life, to take a bigger interest in his home, and to respect her opinion on topics other than the kitchen, and the single woman will feel secure in the

knowledge that she is no longer dependent on man, and whilst retaining all the charm and lovableness of her sex, can fend for herself if the necessity arises.

In a nutshell, the woman of to-morrow will be again the dear creatures we men delight to honour, made even more attractive by that touch of independence.

H. S. D.

THE FOOD PROBLEM CONDENSED.

It is hard to imagine, try as you will,
A pound of beef steak in the form of a pill.
A nice piece of haddock fresh from the box,
Served for your breakfast in neat little blocks.
A plate of fresh bread and some jam for your tea,
Condensed, let us say, to the size of a pea.
What with courses restricted and prices so high,
I've decided it's harder to live than to die.

H. S. D.

THE KINGSTON ALPHABET.

A—stands for Agri. boys; its a terrible bore,
If girls chance to look at them, they're soon shown the door.

B—stands for Bill, big of heart as of frame,
And since he has left it, Coll.'s not been the same.

C—stands for Crannie, who lectures on gasses,
And because we can't grasp it, he thinks we are asses.

D—is Dairy where we toil and we learn
How to make cheeses and butter to churn.

E—is for Edwin of poultry world fame,
He'll give you advice if you're wanting the same.

F—for the Food which to thrive we must take,
But, please, no remarks, for Miss Nicholson's sake.

G—stands for Goodwin, "the Principal," he,
If you're having a lark, is quite sure to see.

H—stands for Hawkins, called Matron or "Ma,"
She is badly in need of a strong-minded "Pa."

I—for Instructresses; some are sporty, some not,
But all things considered they're not a bad lot.

J—stands for for John, a "some" canny Scot,
Of him and his lectures we all think a lot.

K—is for Kingston, may she flourish for aye,
Our next merry meeting—"Here's to the day."

L—stands for lectures, they're a bit of a mix,
Some are of interest, and some dry as sticks.

M—stands for Margarine, known as "Nut-butter,"
Of course when we eat it, we know its not butter.

N—is the "National," we swot till we're pale,
As no student likes to go in and fail.

O—stands for Orton, old Ann at the Shop,
She serves starving students with biscuits and pop.

P—stands for Percy, and the patience he shows,
How he does it at Book-keeping, Dear, only knows.

Q—is for Quad, where talking's "taboo,"
And over the lawn, walking is too.

R—stands for Reynard, the Fox in the lab.
He's a good-hearted chap, but a bit of a blab.

S—for the "Squeakers," whose course is six weeks,
Some are quite brilliant, others are freaks.

T—stands for "Test," girls, be accurate, please,
It's very important, in making all cheese.

U—is for uniform, collar and tie.
The donning of which causes many a sigh.

V—for our Vet., who is ne'er at a loss
For words, when discussing the bones of a hoss.

W—for War, and Kingstonians brave
Are doing their bit, the Country to save.

X—for "X-Rays" which should be used, when
Finding the contents of fried "Super Men."

Y—for "Young Woman," when a girl's thus address'd,
For her to effect an escape it is best.

Z—is the Zeppelin, which came in the night,
And succeeded in giving all Kingston a fright.

"MIESHIEL."

THE TRAINING OF WOMEN FOR THE LAND.

Since the last number of our Magazine, everyone has heard the cry "Women on the Land," and I should like to tell you how Devon is answering that call. Early in 1916, the County Council saw the need of trained women for land work; farmers were too busy, and many of them had too short a store of patience to undertake the teaching of women, so the Governors of the Seale-Hayne Agricultural College were approached, with the result that at the end of May the "Servants' Quarters" were opened and utilised for students. Fourteen students a month were taken. Miss Bray and myself were lent by the County Council to give instruction in dairy work—milking, calf-rearing, pig-feeding, and yard cleaning. The Governors provided a Matron, who brought with her a friend, and it is not too much to say that the success of the venture has largely been due to the splendid work of these two—they have cooked, and looked after us cheerfully and well, all during that hot summer, working Sundays as well as week days with never a maid to help! Until Christmas we had 72 students, and of these quite 60 have done well, and are working on farms.

Since the New Year the Board of Agriculture have provided at the College free board, lodging, and tuition for one month to students, who will work on the land (receiving ordinary pay) for three months after their training. The East Block of the College has been opened; two maids and two house-girls have been established in-doors, and on the farm two girls to act as fore-women: 27 students a month can be taken, and we have 200 waiting to enter the College.

The course is firstly practical, lectures being given on some evenings and when the weather is absolutely impossible for out-door work. The girls work from 6.30 a.m. to 5 p.m., and are busy all day long. They all learn to milk, and take turns at the other work; the general farm work varies with the time of year. The Agricultural Lecturer for the County comes two or three days a week, so that the girls get an opportunity of expert knowledge. The College is also on the point of being made a breeding centre for poultry, with Mr. Flott as the instructor.

The butter-making is cut down to as little as possible, but all available milk is made into cheese.

The girls who have left us are doing wonderfully well, and many weary hours are forgotten, when we hear good accounts of their work. One girl is managing a team of horses in North Devon, one milking 14 cows twice a day, and several driving milk carts.

The girls enjoy their month, and look splendidly well, the Matron is shaking in her shoes as they eat almost twice the allowance of bread!

That the training is too short cannot be denied, but it takes the "rough edge" off for the farmer, and more students can be dealt with in the given time.

Most of the girls work excellently, a few are obviously unfit for the heavy work, and some are amusingly ignorant. One girl put her stool beside the cow—her bucket underneath, then stepped back into the gangway and smiled at the animal! But, alas! we keep no "self-milkers," and that particular cow was distinctly hard to milk.

That girls are answering this call for patriotic reasons is obvious when the rate of pay is considered. But there are many girls who cannot stand the heavy munition making, have no call to nurse, and find clerical work too much indoors for them—so we welcome them at the Seale-Hayne College—urge them to buy strong boots and don breeches and long coats, and come and join the numbers, of which 60,000 more are needed.

MADELINE MASON.

"DAVID" AT THE FRONT.

A certain officer at one of the Advanced Bases in France has a "Ford" car at his disposal. It has seen "better days" twelve months ago, and now possesses a wooden wind screen, and has the knack of overturning with the unfortunate occupants underneath.

Reports of the condition, etc., of the cars used by the Military are sent to the Headquarters of the M.H.S. Accountants every month, and the following is the report of this masterpiece of wreckage already mentioned.

23RD PSALM REVISED.

The "Ford" is my Car;
I shall not want another.
It maketh me to lie down in wet places;
It leadeth me into deep waters.
It soileth my soul.
It prepareth for me a breakdown in the presence of mine enemies;
I fear much evil while it is with me.
Its rods and its engines discomfort me.
It anointeth my head with oil;
Its tank runneth over.
Surely to goodness the damned thing won't follow me all the days of my life, or I shall dwell in the house of the insane for ever.

C. LE. M.

WOMEN OF ENGLAND, 1917.

England has called, but not in vain, to its women, and everywhere one goes one sees Englishwomen bravely doing their duty, with no thought of self, which was the predominating feature of the country previous to the war. War, awful as it is, has brought out the most beautiful features in the women of the British Isles.

There are some women who did not realise the beautiful and sad things of life until their men-folk were taken from them, and then there came the true realisation of the all-powerful "Love," not love for things away, but in the family, which is the root of all true love.

So our women folk have responded to the country's appeal, to do work which they have never been born to. And, surely, with the spirit of patriotism filling the life of the women to-day, the next generation will be a nation of strength, courage, and, above all, Godliness.

"England expects that every *woman* this day will do her duty."

Who can resist such an appeal?

CLEVE GERRY.

TO THE CLOUD.

O Cloud, deep-tinted by the sunset gold,
When watching thy swift flight I long to be
As thou, and with thy airy lightness flee
Far from the world, and 'scape this earthy mould;
And pass the portals of the starry night,
Those mighty gates which none but angels know—
To the Silent Land,—the Heaven of those below,—
Where all is harmony and joy and light.
Alas! O Cloud, no mortal man may see
Those frowning gates. Take me, and let me lie
Wrapp'd in thy fleecy folds; from earth's chains free
To travel with thee o'er the sunset sky.
The Cloud replied, "Earth-child, thy life is best,
I travel starwards: I may never rest."

M. E. DOUGLASS.

SPORTS.

The account of Sports must, this year, necessarily occupy a small space. Owing to a shortage of male students, neither Cricket or Football has been played during the past seasons. Only a few games of Tennis were played. The Rifle Range has not been used very much, but several good shots have been "discovered" amongst the lady members.

The Hockey Club has, this season, played with a mixed team. The season was quite a successful one.

HOCKEY MATCHES.

Oct. 28.—Burleigh Ladies	... ...	Home	2—4
Nov. 11.—Boots' Ladies	... ...	Home	4—0
,, 25.—Gregory Ladies	... ...	Away	1—4
Dec. 9.—Gregory Ladies	... ...	Home	2—4
Jan. 20.—Normanton H.C.	... ...	Away	2—1
,, 27.—Burleigh Ladies	... ...	Away	0—6
,, 31.—Loughborough Ladies	... ...	Home	14—0
Feb. 3.—Boots' Ladies	... ...	Away	4—5
,, 17.—Normanton H.C.	... ...	Home	2—2
Mar. 3.—Normanton H.C.	... ...	Home	1—3

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1916-17.

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Gerry, C., Miss	473, Mansfield Road, Nottingham.
Gibbs, B. C.	Highbury, Sileby, nr. Loughborough.
Gibson, W. J. E.	Pashley House, Epworth, Doncaster.
Gillespie, A. S.	57, Parkfield Road, Sefton Park, Liverpool.
Golding, J.	Agricultural Department, University College, Reading.
Goodacre, E., Miss	Bishop's Meadow Farm, Loughboro'.
Goodwin, Wm., Dr.	M.A.D.C., Kingston, Derby.
Gould, A. B.	Knighton Farm, Leicester.
Gwyther-Jones, C., Miss	Brook Cottage, Thame, Oxford.
Hacking, T.	33, Bowling Green Street, Leicester.
Hague, E. A.	Fair View, 2, Waterloo Rd., Bedford.
Hall, D. M., Miss	Clipston, Plumtree, Notts.
Hands, E. P.	Manor Park, Ruddington, Notts.
Haigh, G. R.	Lewisham, Bruntcliffe, Leeds.
Harker, W. L.	Wilford, Notts.
Harrison, N.	Cottage Homes, Countesthorpe, Leicester.
Haslam, A. H.	M.A.D.C., Kingston, Derby.
Haywood, L., Miss	Nailstone Grange, near Nuneaton.
Hawkins, Miss	Whitegate, Co. Cork, Ireland.
Hayes, G.	Mona Street, Beeston, Notts.
Heaton, G. T.	19, Lenton Road, The Park, Nottingham.
Hemphrey, F. A., Miss	Gotham, Notts.
Hextall, F. M., Miss	M.A.D.C., Kingston, Derby.
Hill, A. E. F.	Camm's House, Eckington.
Hill, F. E. C., Miss	Fern House, Market Rasen.
Holdsworth, I. M., Miss	Sweet Hills Farm, Kirton Lindsey, Lincs.
Hollingsworth, L.	9, Hamilton Road, Burton-on-Trent.
Houghton, A. W.	The Towers, Brereton Avenue, New Cleethorpes.
Howard, E., Miss	Dunham-on-Trent, Newark.
Howard, M., Miss	M.A.D.C., Kingston, Derby.
Hubbard, E. P.	Eastleigh, St. John's Rd., Leicester.
Humphreys, R., Miss	24, Victoria Crescent, Cheadle Hulme, Cheshire.

Hunt, Wm. ... ... Restholme, Sheep Turnpike, Matlock.
Hutchinson, H. P. ... ... M.A.D.C., Kingston, Derby.

Ingram, J. T. ... ... Thackerbarn Farm, West Hallam, Derby.

James, M., Mrs. (neé Bailey) ... Penllwyn, Narbeth, South Wales.
Jaffares, J., Dr. ... ... Kegworth, Derby.
Johnston, M. R. ... ... c/o Messrs. Cleeve Bros., Lansdowne, Limerick, Ireland.
Jolliffe, R. ... ... 93, New Park Street, Devizes.

Kidd, E. L., Miss ... ... West Bridge, Enniskillin, Ireland.
Kind, W. ... ... Whetstone Gorse, near Leicester.
King, K., Miss ... ... Bodens Farm, Enford, Pewsey, Wilts.
Kingsbury, E. J. ... ... Stapleford, Notts.
Kirk, F. L. ... ... Kegworth, Derby.
Kirkham, J. W. ... ... The Laurels, Dean's Walk, Glos.
Kitchingman, C. ... ... The Grange, Broxholme, near Lincoln.
Knight, S. ... ... Buckminster, Grantham.
Knight, J. R. ... ... Sunnymead Hds., Bosworth.
Knowles, F. ... ...

Lee, J., Mrs. (neé Mather) ... Blackwell House, Blackwell, Alfreton.
Levie, A. ... ... M.A.D.C., Kingston, Derby.
Lewis, P. H., Miss ... ... St. Peter's Vicarage, Mountsorrel.
Lindley, W. B. ... ... Holly Dene, Coalville.
Little, M., Miss ... ... Horninghold, Uppingham.
Littler, M., Miss... ... ... 8, Appleton Gate, Newark.
Look, I. M., Miss ... ... Church Farm, Meare, Glastonbury, Somerset.

Maclaren, P. ... ... M.A.D.C., Kingston, Derby.
McNair, I., Miss ... ... Harley House, Bottesford, Notts.
Manners, B., Miss ... ... Wiveton Hall, Cley, Norfolk.
Manning, P., Miss ... ... Melksham, Wilts.
Marriott, J. H., Miss ... ... The Cottage, Hanstead House, Bricket Wood.
Mason, M., Miss ... ... Education Offices, The Castle, Exeter.
Matthews, J. ... ... Carrick-a-Rede, Central Avenue, West Bridgford, Notts.
May, J. S. ... ... Park House School, Pilsey, Chesterfield.
McCreath, H. M. ... ... Challoch, Newton Stewart, N.B.
McKay, H. ... ... Allotment, Newcastle-on-Tyne.
McNish, I. ... ... 27, Station Terrace, Hucknall Torkard.
Mercier, Miss ... ... Royal Victoria Hospital, Belfast.

Milburn, T., Dr. ... ... County Offices, Preston.
Miles, W. T. B. ... ... Micklemeadow, Littleover, Derby.
Miller, E., Miss ... ... West Shield Hill, Morpeth.
Millward, B. ... ... Cold Springs Farm, Buxton.
Mitchell, W. ... ... Brent Knoll, Duffield Road, Derby.
Monks, M. H., Miss ... ... County Offices, Ipswich.
More, W., Miss ... ... Balmoral House, Shaw Lane, Leeds.
Moulds, G. H. ... ... Low Holland, Sturton le Steeple, near Retford.
Murray, A. ... ... Keirmount, Dunblane, Perthshire.

Neal, I. M., Miss... ... ... Kirby Road, Glenfield, nr. Leicester.
Newbigin, H. F., Miss ... ... 13, George Square, Edinburgh.
Newland, C. E., Miss ... ... The Gables, Rotherfield, Sussex.
Nicholson, Miss ... ... M.A.D.C., Kingston, Derby.
Nix, S. ... ... Barton the Green, Winchmore Hill.
Noble, E., Miss ... ... County Education Office, Stafford.
Nuttall, D. K. ... ... New Combe, Broadway, Worcs.

Oldham, T. H. ... ... Norbury, near Ashbourne.
Overin, F. A. ... ... High Street, Chellaston, Derby.

Parker, G. H. ... ... 127, Russell Road, Nottingham.
Parkes, G. R. ... ... County School, Towyn.
Parsonage, John ... ... White Gate Farm, Malpas, Cheshire.
Peacock, J. B., Miss ... ... Brook Farm, Buxton.
Pearson, H. J., Miss ... ... Gilston Park Estate Office, Harlow, Essex.
Perkins, R. ... ... Barkby, Leicester.
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Pittock-Smith, A. R., Mrs. ... M.A.D.C., Kingston, Derby.
Porter, B. ... ... Tattershall Bridge, Lincoln.
Potter, G. ... ... 1, Trafalgar Road, Birkdale, Southport.
Powell, P. J. ... ... Ivanhoe Terrace, Normanton, Derby.
Pritchard, L. E., Miss ... ... Roden House, Wem, Salop.
Prince, H. P. ... ... Marston Park, Marston Montgomery, Derby.
Proctor, O. ... ... Elmdene, Duffield Road, Derby.
Pybus, D., Miss ... ... The Avenue, Driffield, Yorks.

Rayns, F. ... ... The Grammar School, Brewood, Staffs.
Rhodes, G. P., Miss ... ... Donnybrook, Brookside, Chesterfield.
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Riggott, J. B. ... ... Dunston Farm, Newbold, Chesterfield.
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Robinson, F., Miss ... ... Coppice Farm, Poynton, Stockport.
Rolling, E. A., Miss ... ... Rufford, Ollerton, Notts.
Rothera, E., Miss ... ... Kegworth, Derby.

Rowland, F.	New York, Lincoln.
Russell, E.	M.A.D.C., Kingston, Derby.
Sadler, W.	The Macdonald College, Quebec, Canada.
Saker, D., Miss	Agricultural Education Offices, 5, Graham Rd., Weston-super-Mare.
Shackleton, J. E.	Hill Crest, Mill Hill Road, Derby.
Shepherd, A. E.	Park Lane, Sutton Bonington.
Shepherd, H.	Caunton Lodge Farm, Caunton, Newark.
Sims, E., Miss	Bradley Nook, Hulland Ward, Derby.
Skelton, E.	Lodge Hill, Ambergate, Derby.
Slinger, S. T., Miss	Manor Farm, Frampton-on-Severn, Stonehouse, Glos.
Smith, F.	Angel Inn, Kneesall.
Smith, J.	24, Arboretum Street, Nottingham.
Smithson, Miss	Mattersey, Bawtry, Yorks.
Smithson, E., Miss	Mattersey, Bawtry, Notts.
Speakman, C. E., Miss	The Horticultural College, Swanley, Kent.
Spink, B. E.	Walcot, Doncaster.
Start, W. B.	Derby Road, Long Eaton.
Stewart, W. A.	S.E. Agric. College, Wye, Kent.
Stafford, C. A. S....	Hognaston, Ashbourne.
Stafford, J. G. W.	Hognaston, Ashbourne.
Stedeford, L. H.	21, Margaret Street, Hull.
Stephen, J. D.	The Crosslooms, Mollington, Chester.
Stephenson, Miss	The Rectory, Kegworth, Derby.
Stokes, E. E.	418, Woodborough Rd., Nottingham.
Stretton, A., Miss	Highfields, Kegworth, Derby.
Stubbs, J., Miss	C.C. Dairy School, Hutton, Preston, Lancs.
Swaby, A. H.	106, High Street, Scunthorpe.
Swaby, R.	Oswald Farm, Old Frodingham.
Swain, A. S.	Inkersall Green, Brimington, Chesterfield.
Taylor, M. G. D., Miss	M.A.D.C., Kingston.
Taylor, A. M., Miss	Packington Hill, Kegworth.
Taylor, C. H., Miss	Fern Bank, Chapel-en-le-Frith.
Taylor, M. C., Miss	Education Offices, Weston-s.-Mare.
Taylor, M. F., Miss	Cairn Garth, Heads Nook, Carlisle.
Thornley, A., Rev.	Hughenden, Coppice Road, Nottingham.
Torr, G., Miss	The Holmes Farm, Epworth, via Doncaster.
Trevor, S.	Moat House Farm, Blean, Canterbury.
Trussell, H. J.	Prestop Park, Ashby-de-la-Zouch.
Tulloch, I. W., Mrs. (neé Strachan)	25, Bellevue Crescent, Edinburgh.

Turnill, L. C.	Wittering, Wansford, Northants.
Twigge, R.	Steeple Grange, Wirksworth.
Vallance, M., Miss	Osleton Hill, Worksop.
Vallance, W. D.	Medway Dairy, Gillingham, Kent.
Vernon, M. A., Miss	Ladysmith Farm, Hoar Cross, Burton-on-Trent, Staffs.
Wagstaff, H.	Colston Bassett, Bingham, Notts.
Wagstaffe, E., Miss	Farleigh Court, Whyteleafe, Surrey.
Wakerley, F.	Agric. Organiser, Education Office, Grantham.
Walker, A. R.	G.N. Station House, Linby, Notts.
Wallace, J. C.	
Wallace, J. O.	11a, Park Avenue, Whitley Bay.
Wallis, C.	Acacia Cottage, Eastwood, Notts.
Warter, A.	Minsterley, Shrewsbury, Salop.
Weatherall, G. M., Miss	Scarthingmoor Farm, Weston, Newark.
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Wild, M., Miss	Tollerton, Notts.
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Willett, L., Miss	Snibstone House, Ashby-de-la-Zouch.
Williams, W. L.	
Willows, S.	Knaith Park, Gainsborough.
Wilson, A. E.	6, Quorn Avenue, Melton Mowbray.
Winters, S. E., Miss	Falcon Lodge, Sutton Coldfield.
Wood, R. K., Mrs. (neé Coventry)	15, Brook Road, Walton, Liverpool.
Wood, T., Miss	The Poplars, Epperston, Notts.
Woodall, W.	"The Hawthornes," Westhouses, Alfreton.
Woodhead, H. E.	Marsh Grove, Friskney, Lincs.
Woolley, J. H.	Glazebury House, 155, Duncan Road, Aylestone, Leicester.
Wright, M., Miss	Willingham, Market Rasen.
Young, M. T.	52, Highbury Park, London, N.

"Co-operation is the Secret of Success."—Rt. Hon. R. W. Hanbury, M.P.

THE MIDLAND FARMERS' CO-OPERATIVE ASSOCIATION, Ltd.,

CORN EXCHANGE CHAMBERS, THURLAND STREET, NOTTINGHAM.

REGISTER NO. 4448 NOTTS. R. Nov. 7th, 1906.

OBJECT. "To carry on the industry or occupation of Wholesale and "Retail Dealers in Agricultural Requirements and Produce, in Dairy Pro-"duce, Eggs and Poultry, etc. The Society may obtain and disseminate "among its members useful information in order to foster, develop, and "promote the Agricultural Organization movement in Great Britain."

CAPITAL. The Capital of the Association is raised by shares of the nominal value of five shillings, and one share has to be taken for every ten acres in the occupation of a person desirous of becoming a member. Payment for shares is as follows, viz., one-fourth (1/3 per share) upon application, and the balance as the Committee may decide. A Member occupying 100 *acres* would, therefore, have to pay 12s. 6d. upon application; he is responsible for a further sum of £1 17s. 6d. in such amounts as may be called up from time to time, upon payment of which all liability on his part ceases, the liability of the Association being limited. The first charge on the nett profits is payment of Interest at the rate of 5 per cent. per annum upon the amount of the paid-up capital.

[*N.B.—No application for shares can be entertained unless at least* FOUR *shares be applied for.*]

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from which
the Trading and Finance Committees are Selected:

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,, F. P. ASTILL, Cossington.
,, FRANK BEEBY, Clifton.
,, W. H. BRADWELL, Nottingham.
,, G. A. BELLWOOD, Bishop Norton.
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,, T. TURNER, Kingston.
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,, J. J. SHEPPARD, Barton.

AUDITORS:

THOMAS C. LEMAN, St. Peter's Church Walk, Nottingham.

HON. TREASURER:

MR. W. H. BRADWELL.

MANAGER AND SECRETARY:

CHARLES G. BRYANT.

BANKERS:

UNION OF LONDON AND SMITHS BANK, LTD.

REGISTERED OFFICES:

CORN EXCHANGE CHAMBERS, THURLAND STREET, NOTTINGHAM.

AN OPEN LETTER TO FARMERS.

59, MARK LANE,
LONDON, E.C.

DEAR SIR,

This Spring we beg to bring specially to your notice the fact that if you use CORVUSINE D.G., you will be *certain to save money and labour*, as it will protect your crops of whatever kind from the attacks of **rooks, pheasants, wood pigeons, and vermin, etc.**

You will also find it exceptionally good as a **preventive of premature ground rot,** should the season be very wet.

It is also a **Smut Dressing.**

It causes a great saving of labour, as when once the seed is properly dressed and sown, no further trouble or expense is necessary in the way of scare-crows, bird-minders, ammunition, etc.

By using CORVUSINE you get a high percentage of germination, with extra strong and vigorous plants. It is **non-poisonous,** and therefore safe to use on Game Estates.

The Government has indicated that means will be taken to prevent the use of human food stuffs for Pheasants, etc., and this will mean that these birds will almost certainly be more troublesome this season in newly-sown fields.

CORVUSINE is *very cheap to use*, and will save you pounds for every shilling you spend. It can be bought of almost any **Corn-Seedsman, Chemist,** or **Ironmonger,** but if there is any difficulty in obtaining, please write direct to the Manufacturers:—Hawker and Botwood, Ltd., 59, Mark Lane, E.C., where all information can be had.

If you are not already a user of CORVUSINE, we know that a trial this year will make you a confirmed user.

We are, yours faithfully,
HAWKER & BOTWOOD, LTD.

TWO OF MANY HUNDREDS OF UNSOLICITED TESTIMONIALS:—

[Copy.]

Apley Home Farm,
Bridgnorth,
Nov. 29th, 1909.

Dear Sirs,

I beg to say that I am very pleased with your seed dressing "Corvusine" that I had from you.

I dressed 35 acres of wheat with "Corvusine" and 4 acres with another seed dressing. The rooks have attacked the wheat in the 4 acres, but have not touched the 35 acres that was dressed with "Corvusine," and I can strongly recommend it to all farmers.

Yours faithfully,
(Signed) THOMAS OAKLEY.

Nancemelling Farm,
Camborne, Cornwall,
Nov. 6th, 1916.

Dear Sirs,

I sowed an 8 acre field in wheat last year, half "Corvusine" and the other half another dressing, and it was amusing to see pheasants, pigeons and smaller birds flying over the "Corvusine" plot. I never had any dressing to equal it.

You are at liberty to use my name as you please. I shall defend "Corvusine" and answer any questioner.

Yours faithfully,
(Signed) JOHN NEWTON.

CORVUSINE D.G.