Notes

ON

Agricultural Co-operation

IN THE

Netherlands

BY

JAMES C. ADAMS and JAMES FANT

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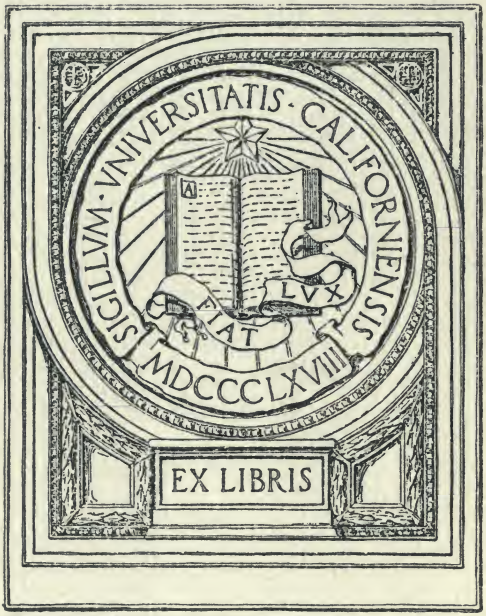
PRICE ~~THREEPENCE~~

Published by the Irish Agricultural Organisation Society
The Plunkett House, Dublin.

PRINTED AT THE SACKVILLE PRESS
FINDLATER PLACE, DUBLIN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PREFATORY NOTE.

Co-operating dairy farmers in Ireland will do well to study these very interesting "Notes on Agricultural Co-operation in the Netherlands," by Messrs. Adams and Fant. The writers set forth in simple language the steps taken by the Dutch farmers to increase the productiveness of their dairy herds and to establish the reputation of their butter in our markets. By two agencies mainly they have been enabled to accomplish this, viz. :—Cow Testing Associations or Milk Control Societies, and by their system of Butter Control. To us in Ireland, who are beginning to move in these directions, it will be of great interest to note that both these agencies were of spontaneous growth, and that they were encouraged from the start by the State Department of Agriculture, and now enjoy its protection and patronage. The I.A.O.S. has modelled its Butter Control Scheme on lines very similar to that adopted in Holland, and the Cow Testing Associations which it is advocating will follow closely on those of our Dutch competitors. But the great lesson which these Notes teach is the supreme importance of self-help. It is chiefly on self-help that the Dutch farmers have relied for their success rather than upon State aid, and it is upon co-operation, the practical expression of self-help, that Irish farmers also must rely.

R. A. Anderson,
Secretary, I.A.O.S.

INTRODUCTION.

In submitting these notes on a very brief visit, we desire at the outset to acknowledge our indebtedness to the several gentlemen who provided us with the necessary introductions, and particularly to—

Mr. O. Reitsma, Secretary of the General Netherlands Dairy Association.

Mr. G. J. Bieleman, Government Dairy Inspector, Utrecht.

Mr. U. Koostra, Secretary, Association of Co-operative Creameries in Friesland.

Mr. R. M. Veeman, Manager of Marssum Co-operative Creamery, and Chairman of Friesland Provincial Association.

who, in addition to many other services, kindly undertook the correction of our proofs.

We must also acknowledge our indebtedness to the following gentlemen for all the information and help which they so readily gave :—

Mr. J. J. C. Ament, Technical Instructor in Dairying for the Province of Limburg, and Secretary, Association of Co-operative Creameries in Limburg.

Mr. J. Mesdag, Director of the Control Station for the Province of Friesland.

Mr. A. Bos, Secretary of the Control Station for South Holland.

Mr. S. Hepkema, Technical Instructor in Dairying for the Friesland Association.

F. A. R. Baron Van Ittersum, Director of the Co-operative Central Bank, Utrecht.

Mr. F. B. Löhmis, Government Inspector of Agriculture.

Mr. J. L. Van Ryn, the Netherlands Commissioner in Great Britain.

JAMES C. ADAMS and JAMES FANT.

December, 1910.

NOTES ON AGRICULTURAL CO-OPERATION IN THE NETHERLANDS.

By JAMES C. ADAMS and JAMES FANT.

To those interested in agricultural co-operation, Denmark has hitherto been held up as the great object lesson, almost to the exclusion of the other countries. It will be readily acknowledged that Denmark can claim the premier place as a pioneer in this movement, but a short study of the system of organisation in the Netherlands has impressed us with the solid progress which has been made in that country; and has led us to believe that so far as Co-operative Dairying is concerned the Dutch farmers have little to learn either from Denmark or any other country.

Like Ireland, the country depends to a large extent on agriculture for its existence and a very large proportion of the land is also under pasture. The Government returns show a 36.9% as under grass and 28.8% under tillage. The remaining 34.3% being scheduled as bog land, forests, roads, fences, waste, etc.

The following figures regarding area, population, and exports will also be of interest :—

	Netherlands.	Ireland.
Area	12,600 sq. miles.	32,524 sq. miles.
Population (about)	5,000,000	4,456,546
Exports :—		
Butter	£3,100,000	£3,625,111
Cheese	2,300,000	11,443
Eggs	812,516	2,863,221
Bacon	82,000	3,562,850
Total,	£6,294,716	£10,062,625

Unfortunately, we have no figures to show the proportion of the urban population in the Netherlands to the rural, but it will readily be admitted that the urban population in the Netherlands is greater than in Ireland, and that consequently the consumption of food products in the former will be larger.

The figures representing the value of butter and cheese exported by the two countries are very striking. Allowing for the increased value of the cheese exported by the Netherlands, which, of course, reduces the value of butter manufactured from the same milk, we believe the higher figures in the Netherlands are to a great extent explained by the much larger winter production of milk in that country.

We draw attention in our report to the fact that the Creameries throughout the entire country work at least six days every week and in most cases seven, and

it was very instructive to find that even in the grass districts the winter production in the smallest month is estimated to be at least one-fourth that of the highest month in the year. In Ireland the same proportion is estimated to be from 1-25th to 1-40th.

It will also be seen that the average yield of the cows in the Netherlands is almost double that in Ireland, and this increase may to a very great extent be attributed to the work of the milk testing societies, which could be quite easily worked and are so much needed in this country. The increased yield during recent years means, of course, a considerably greater return from an equal number of cows, as the figures in our report will show, and it is to be hoped that we shall soon see in Ireland a combined effort towards the same end.

Perhaps the feature of the movement which impressed us above all others was the strong spirit of self-reliance and self-help which was so evident in every branch of the work. The organised farmers of Holland control their own industry, and whilst State aid and technical instruction are welcomed, care is always taken that assistance of this kind does not involve Government control, or that the sturdy spirit of independence which is characteristic of the Dutchman is not interfered with. We have no desire to labour this point unduly, but in all our enquiries and in all our interviews this feature was invariably emphasised as one of the fundamental principles of the movement.

Next to this the feature which struck us most forcibly

was the strong co-operative spirit and the sense of individual responsibility which prevails throughout the movement. The individual members of a society, as well as the officials, would appear to realise that the progress of the movement and the reputation of the produce depends upon his or her individual effort and the consequence is that a keen and healthy interest is taken not only in the work of the local society, but also in the provincial and central associations. Further, our inquiries did not disclose that the difficulty of trade opposition which is so much talked of in Ireland prevails to any extent in the Netherlands. It was readily admitted that in the beginning and before the aims and objects of the movement were properly understood a certain amount of resistance was offered. Since then, however, the movement has made its mark on the economic condition of the country, and it is now acknowledged on all hands that the comparative prosperity and progress of the agricultural industry is almost entirely the result of the farmers' organisation. The movement is now recognised as a great national asset and the consequence is that merchants and shopkeepers, as well as politicians, are ready and anxious to help rather than hinder the work.

State Aid.

In Holland, as in Denmark, a clear distinction is made between what the State can do effectively to help in developing agriculture, and what must be left to private initiative and to State-encouraged, but volun-

tary, co-operation. Mr. O. Reitsma, the Secretary of the General Netherlands Dairy Association, gave us, in an interesting interview, an account of the stages whereby the Netherlands became a country in which Government aid for agriculture is considered, side by side with freedom for development of a self-help movement, as the first duty of the State. A condensed account of the facts narrated by Mr. Reitsma may not be without interest to us in Ireland.

Until 1875 the State took no interest in agriculture. The farmer considered his practical knowledge sufficiently scientific for his purpose, and State intervention was regarded as unnecessary, if not undesirable. The year 1875 was, however, a year of agricultural crisis and, the Government having no point of contact with the farmer, it was found that even with the best intentions the State was impotent to aid.

The first step towards establishing satisfactory relations was the appointment of a Commission to inquire into the conditions of agriculture and point out means of improving it. The Commission addressed itself in the first instance towards the development of instruction in farming. To this it added the encouragement of co-operation as we understand that term in Ireland, and along parallel lines to the policy which the I.A.O.S. has always sought to pursue in the relations of co-operation to State aid. The recommendations of the Commission were acted upon, and as a result the necessary support was given to the co-operative societies, but these were left entirely free

from State control. The next stage in the growth of State aid was the establishment of a Department of Agriculture. Subsequent to its establishment this Department was placed under the care of a Director of Agriculture, who was given a very independent position.

The policy of the State as exemplified and embodied in the work of this Department at present involves close co-operation and consultation with the elected representatives of the farmers' movement. Great progress on these lines has been made since the appointment to the head of the Department of a Director with close personal knowledge of the farmers' requirements, and in complete sympathy with the aims and objects of the farmers' organisation. The Director referred to had a clear conception of the reforms and developments which are only to be effected by a thorough system of co-operative organisation under democratic control, and to his administration may be attributed in great measure the undoubted progress which has been made by the agricultural industry in that country. The greatest care continues to be taken to prevent State aid from interfering with self-help, and to encourage the work of the co-operative movement.

Co-operative Dairying.—History.

The co-operative dairying movement started in Holland in the year 1886, when the first co-operative creamery was established. Between the years 1870 and 1880 the butter trade in Holland passed through a period of depression similar to that experienced in

Ireland during the same time. Before the starting of the Dutch creameries the export trade in butter was altogether in the hands of merchants who purchased the finished product from the farmers and exported to England and elsewhere. Then came Denmark with her improved and more modern methods introduced by the enlightened farmers of that country, who through their co-operative societies were producing a butter of superior quality, which quickly displaced the Dutch, as well as the Irish, produce, relegating both to an inferior position. The Dutch farmer being, as his class everywhere is, very conservative in his methods, believed that the fault lay either with the shortcomings of his wife, who was then the butter maker, or with the merchant, who seems to have enjoyed no greater esteem in the Netherlands than his confrere in Ireland, and who came to be looked upon as a parasite who was "fattening on the life-blood of the struggling and helpless farmer." At this time there was in the Province of Friesland an association called the Friesland Agricultural Association, the membership of which consisted mainly of landlords, farmers and others interested in agriculture. The association was founded to develop the agricultural industry generally by promoting shows, giving prizes for stock and produce, teaching agriculture and dairying, and disseminating information which might be of service for these purposes.

The Association, learning of the great development of the dairying industry in Denmark, decided to send

a deputation to visit the country to investigate and study the conditions and report thereon. The deputation naturally reported that the progress in Denmark was due largely, if not altogether, to the introduction of the co-operative system, and recommended that a similar movement be started in the Netherlands. The report and recommendations did not at first receive the unqualified support of the members of the Association, but this was perhaps due to some extent to the fact that the membership included a considerable number of merchants.

However, some years later, in 1879, the first creamery was started, but on proprietary lines. The farmers at first did not look upon the new system with much favour. "The separated milk would not rear calves," "their wives and daughters would be unemployed "—and all the predictions with which we are so familiar in Ireland seem to have been served up in the same prolific manner. Eventually a start was made, and in 1886, after much effort, the first co-operative creamery was established at Warga, but it is interesting to note that for the first society the actual cash was provided by the landed proprietors, the farmers who became members giving a binding guarantee to supply all the milk produced on their farms for a period of thirty years, except, of course, that required for household purposes. All subsequent societies have been organised on the basis of this guarantee. After the usual period of experiment, the system came to be recognised as sound, and the Joint Stock Banks

and other corporations then freely granted advances at rates of interest varying in different cases from 4 per cent. to 5 per cent.

Organisation.

In the Netherlands, as in Denmark, the societies have no shares or limited liability in this respect. The society is formed on the basis of the supply guarantees already referred to, and the capital is usually advanced at varying rates of interest by the Joint Stock Banks on the joint and several guarantee of all the members. These advances are usually paid off by yearly instalments, and the members receive interest at the rate of 4 per cent. on the surplus net profits from year to year. Buildings and machinery are depreciated at the rate of 2 or 3 per cent. per annum, but the cost of additions and renewals is charged to revenue. The policy of the societies, as soon as the liability to the bank is exhausted and the buildings and plant thus provided by profits, is to pay the highest possible price to the members, providing only a small amount yearly towards reserve, which amount is credited to the members (and interest paid them) in proportion to the amount of trade done with the society.

Creameries.

We have already explained the organisation of these societies, and we now give some particulars of their working. In the Province of Friesland milk is delivered twice daily from about the middle of March to the end of November and once every day for the other months

of the year. Each creamery works every day throughout the year and every member is bound to send his milk once or twice daily, according to the regulations of the society, every day of the year. During the period when milk is delivered only once daily the night's and morning's milks must be kept separately and delivered in separate cans. The cans generally used are 10 gallons size and under, although an individual supplier may use 4 to 7 such cans. A large proportion of the milk supplied to the creameries in the Province of Friesland is made into cheese, of which many varieties are produced.

In the several creameries visited it was observed that the milk was delivered in beautifully clean condition, every can being polished. It is forbidden to send milk in rusted cans, and the close watch and frequent tests made for dirty or unstrained milks render it practically impossible for such milks to be accepted. In some of the provinces where cheese is not made, milk is only received once daily, but it must be sent every day throughout the year, and the night's and morning's milks in separate cans. There are, again, some districts where the creameries receive no milk on Sundays, but it is sent in on six days each week all the year round. In such creameries cheese is not made.

Here we think it well to give an outline of the buildings and equipment before dealing with the treatment of the milk and the different processes of manufacture.

Buildings.

The creameries are built largely on plans similar to

those in Denmark, but in many cases, particularly where cheese is made, the buildings are larger than in Denmark. The creameries are built throughout of brick; the walls are lined inside with white glazed tiles to a height of $3\frac{1}{2}$ to $4\frac{1}{2}$ feet and plastered from that to the roof. The platforms and floors are generally laid with extra hard tiles or bricks, close jointed and firmly set in cement. The buildings are well lighted by large windows placed close together on all outer walls and by skylights on the roofs where necessary. Ample ventilation is provided by air vents fitted with shutters on all outer walls near the floors, and also by roof ventilators. Ceilings of roofs are of wood neatly varnished. The buildings are generally divided into the following apartments:—Receiving platform (in some creameries this is sufficiently large to accommodate the tanks and apparatus for delivering back separated milk, etc.); separating room, in which is placed the separating plant, milk and cream pasteurisers, and sometimes the coolers; cream ripening room; churning room; cellar or cold store for butter; testing room—large and well lighted—office of good size; boiler room for one or two Cornish boilers; engine and refrigerating plant room; coal store; and general store where packages are made. In creameries where cheese is made there are large setting rooms in which milk is set in large vats; cheese-making room; preparing and curing rooms and general stores. In every case where a Cornish boiler is used—and these are general—a brick chimney 60 to 70 feet high is also built. The contract for the erection of

every creamery includes the building of a commodious and well appointed manager's residence on the same grounds, with garden attached in most cases. The larger creameries have also housing accommodation provided for one or more of their other employees. The manager's house is always given free of rent.

Equipment.

The machinery includes the following:—

Boilers.—Generally Cornish type, with corrugated flues and "dished" ends. In most of the creameries where cheese is made there are two such boilers erected.

Engines.—Horizontal pattern of capacities from about 30 to 45 b.h.p.

Feedwater Heaters.—Generally of horizontal pattern, having 30 to 35 square feet heating surface.

Hot Water Tank.—Galvanised tanks of different sizes.

Shafting.—Bright steel 2½ in. diameter running in self-oiling bearings.

Belting.—Chiefly "balata" of well-known brands.

New Milk Weighing Machines.—The "Sinus" and "Simplex" patterns in general use.

Milk Tanks.—Generally tinned steel having two compartments and supported by iron framing.

Strainers.—Tinned steel with fine gauze fitted.

Dirt Tester.—A small tray about 18 inches square having hinged wire cover divided into small squares and perforated cover under. Between the two a layer of quilt filter.

Can Drainer.—A rack in which the milk cans are placed mouth downwards to drain.

New Milk Heater.—Vertical pattern in self-contained frame 14 to 18 square feet heating surface.

Separators.—"Alpha Laval" or "Perfect."

Pumps.—Unique or vertical lift and force patterns.

Cream Pasteuriser.—Vertical pattern on gun-metal legs or cast-iron base.

Cream Cooler.—Large circular pattern, and in some cases tubular pattern.

Starter Plants.—Large drums submerged in special tank.

Cream Vats.—Large tanks, inner vessel of tinned steel and outer casing of wood.

Refrigerating Plants.—Generally of detached pattern. some ammonia plants and some CO_2.

Chilling Vat.—Generally one vat with a submerged coil.

Churns.—Combined pattern, principally of the "Astra" make, mostly made in Holland.

Butterworkers.—Butterworkers of "Philipsen" pattern in use where Holstein churns are still worked.

Weighing Machine.—For butter. Beam pattern for large, and counter scales for small lots.

Separated Milk Coolers.—Some large circular pattern and some tubular pattern.

Delivery Weighing Machines.—Generally of automatic pattern, as used in Danish creameries.

Water Pumps.—Large sizes of duplex, steam driven.

Cheese Plant.—Several large setting tanks, cheese-

making vats, curd mills, presses, shapes, and accessories.

Testing Apparatus.—One or more 24 to 32 bottle size Gerber hand-power geared testers with copper stands, copper water baths, automatic acid measures, chemical balance, butter testing apparatus, and all the accessories required for a fully equipped creamery testing outfit.

Electric Lighting.—Practically all creameries are provided with electric lighting installation and accumulators. The different apartments in the creamery as well as the manager's residence are lighted in this way.

So thoroughly is the work carried out in most of the creameries that daily records are kept, giving the following among other particulars:—

(*a*) Acidity and temperature of starter at 4 p.m.

(*b*) Acidity and temperature of starter at 8 a.m.

(*c*) Acidity and temperature of cream at 4 p.m.

(*d*) Acidity and temperature of cream before churning.

(*e*) Acidity and temperature of buttermilk when drawn.

(*f*) Percentage of moisture in each day's make of butter.

All that is useful and practicable in modern dairy science seems to have been adopted by most of the creameries in their efforts to produce butter of the very finest keeping qualities. The creameries being affiliated to the Provincial Associations are provided by that

body with all the necessary instruction and advice they require, both in commercial and technical matters.

The total number of creameries of all kinds in the eleven provinces comprising the Netherlands is 927, and these are divided as follows:—

Co-operative steam power dairies, 358; co-operative hand power dairies, 325—total, 683.

Proprietary steam power dairies, 213; proprietary hand power dairies, 31—total, 244.

The total production of butter from co-operative dairies for two years is as follows:—1906—550,000 cwts. 1908—648,000 cwts.

The increase in production by the co-operative creameries is considerable, being approximately two and a half to three times that of the proprietary creameries. In Holland, as in Ireland, the proprietary creameries are gradually being sold to co-operative societies, and the number of the latter is steadily increasing both by the starting of new creameries and the purchasing of proprietary concerns.

A co-operative hand-power dairy is owned by a small society of five to eight members. The plant is hand-power throughout. In a village or commune in the southern provinces there may be four or five such small dairies. These are gradually being displaced by the societies co-operating together and erecting a steam-power creamery.

The auxiliary system is unknown in most of the provinces, but in others—notably the poorer districts—there are some separating stations owned by the main

creameries. These are equipped similarly to the separating portions of full creameries, a cream pasteuriser being installed in every case similar to the heaters used for cream pasteurising in the central creameries.

Payments for butter fat and separated milk are estimated and made weekly by the manager, and at the end of every four weeks a full statement of the month's accounts is laid before the committee. At this meeting the value of the cheese made during the month is closely estimated, and payments are made for the last week's supplies, together with such balances as are due from the previous weeks. Members who supply milk to creameries where cheese is made are entitled to receive back free of charge whey to the extent of 70 per cent. of the volume of whole milk delivered, as well as 10 per cent. of undiluted buttermilk. Members of creameries where butter only is made receive back 75 per cent. of separated milk and 10 per cent. of undiluted buttermilk free of charge.

The following statistics of the working of a co-operative creamery—by no means the largest—in the Province of Friesland for a period of eighteen years will be of some interest as showing the steady progress of the society. Perhaps the most interesting feature of that return is the average nett income per cow supplying the creamery. We would only add that this society is typical of all the other co-operative creameries in the province, and the statistics, as taken from the yearly balance sheet, show the importance which is attached to detailed records of the business.

Particulars of the Working of a Friesian Co-operative Creamery for Eighteen Years.

Year 12th May to 12th May	Members all bound to supply milk	Number of cows owned by the members	Total Milk supply (Gallons)	Amount paid for same £ s d	Average test. Per cent. of fat	*Price per gallon nett d	Working expenses per gallon d	Gross price per gallon d	Average supply per cow (Gallons)	Average nett amount paid for milk per cow £ s d
1892-93	28	756	625,087	10,360 9 2	-	3.94	.56	4.50	827	13 14 1
1893-94	33	873	784,633	13,143 6 8	-	4.02	.54	4.56	898	15 1 1
1894-95	42	1,062	941,785	13,059 5 0	-	3.32	.52	3.84	887	12 5 10
1895-96	38	956	845,270	12,262 12 4	-	3.47	.49	3.96	884	12 16 6
1896-97	44	1,085	869,769	12,750 18 4	3.02	3.52	.49	4.01	801	11 15 0
1897-98	41	1,034	836,010	12,806 7 6	3.06	3.67	.48	4.15	808	12 7 9
1898-99	44	1,071	927,769	14,378 8 9	3.04	3.72	.51	4.23	866	13 8 6
1899-00	49	1,189	1,021,137	17,399 3 0	3.05	4.09	.46	4.55	858	14 12 8
1900-01	54	1,343	1,093,269	19,693 12 10	3.08	4.32	.50	4.82	814	14 13 3
1901-02	63	1,461	1,161,513	21,197 12 0	3.08	4.38	.55	4.93	795	14 10 2
1902-03	63	1,476	1,318,595	25,070 3 11	3.19	4.56	.48	5.04	893	16 19 8
1903-04	68	1,576	1,303,418	23,311 13 4	3.13	4.29	.50	4.79	827	14 15 10
1904-05	68	1,586	1,238,437	22,725 18 4	3.03	4.42	.52	4.94	781	14 6 7
1905-06	70	1,602	1,255,037	24,561 8 6	3.10	4.70	.54	5.24	783	15 6 8
1906-07	73	1,601	1,377,530	27,896 0 0	3.15	4.86	.49	5.35	860	17 8 5
1907-08	76	1,648	1,413,413	26,436 8 0	3.10	4.49	.48	4.97	857	16 0 10
1908-09	77	1,676	1,424,723	26,830 1 8	3.14	4.52	.59	5.11	850	16 0 2
†1909-10	76	1,655	1,318,982	28,100 18 0	3.14	5.11	.67	5.78	797	16 19 7

* These prices are for whole milk, with 70 per cent. of its weight as whey and 10 per cent. of undiluted buttermilk returned free to the suppliers.

† The year 1909-10 was an exceptionally dry year, consequently the milk yields suffered.

Returns of milk supplies, weekly average tests, and prices paid monthly for year—12th May, 1909, to 12th May, 1910, in the same Creamery.

Month	Milk received for month (Gallons)	Percentage of total supply for year	Weekly Average Tests—Percentage of Butter Fat				Nett price paidper gallon d
			1st	2nd	3rd	4th	
12th May to 12th June	172,766	13.10	3.18	3.21	3.05	3.05	4.23
13th June to 10th July	149,809	11.35	3.01	3.00	3.01	3.12	4.30
11th July to 7th Aug.	143,444	10.87	3.02	3.07	3.10	3.05	4.22
8th Aug. to 4th Sept.	137,848	10.45	2.97	2.98	3.09	3.13	4.47
5th Sept. to 1st Oct.	114,464	8.68	3.12	3.19	3.18	3.22	5.24
2nd Oct. to 29th Oct.	85,153	6.46	3.31	3.34	3.50	3.53	5.87
30th Oct. to 27th Nov.	68,406	5.19	3.49	3.44	3.39	3.42	6.11
28th Nov. to 25th Dec.	60,066	4.55	3.42	3.44	3.43	3.45	6.55
26th Dec. to 22nd Jan.	48,425	3.67	3.44	3.40	3.35	3.34	6.56
23rd Jan. to 19th Feb.	44,858	3.41	3.31	3.26	3.25	3.23	6.66
20th Feb. to 19th Mar.	69,605	5 28	3.16	3.17	3.05	3.00	6.10
20th Mar. to 16th Apr.	106,409	8.07	3.02	3.00	2.95	2.98	5.48
17th Apr. to 12th May	117,729	8.92	2.98	3.00	3.09	3.09	4.83
Totals and averages ...	1,318,982	100.00			3.14 p.c		5.11

This society is a member of the Butter Control, a member of the Provincial Co-operative Association, a member of the General Netherlands (Co-operative) Dairy Association, and also a member of the Provincial Trade Federation.

In this society's creamery several varieties of cheese as well as butter are made all through the year.

MARSSUM CO-OPERATIVE CREAMERY.

The following particulars of the Marssum Co-operative Creamery, which is so ably managed by Mr. R. M. Veeman (elsewhere referred to in our report), show the milk supply, the turnover, the staff employed, and their weekly wages, with other emoluments. The buildings and equipment are typical of the Co-operative Creameries in the Province of Friesland, and nothing seems to be left undone to promote the welfare of the Society and to extend the sphere of its operations in every way that is likely to serve the interests of its members.

The following particulars, taken from the Society's balance-sheet, are for the year 12th May, 1909, to 12th May, 1910:—

Total milk supply for the year, 1,429,282 gallons.

Total amount paid for milk (including bonus for extra rich milk), £30,560 2s. 6d.

Average nett price * paid per gallon (exclusive of the bonus referred to), 5.13d.

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* The price paid is for whole milk, with 70 per cent. whey and 10 per cent. buttermilk returne free of charge

MARSSUM CO-OPERATIVE CREAMERY, WITH MANAGER'S RESIDENCE,

Working expenses per gallon, .606d.
Number of cows supplying milk, 1,769.
Average yield per cow, 808 gallons.
Average nett amount paid per cow for milk, £17 5s. 6d.
Number of members (all milk suppliers), 196.
Average number of cows per member or supplier, 9.

The Staff Employed.

(*a*) Manager ...	...	£150	0	0	per annum.	
Assistant Manager	...	1	3	4	per	week.
Messenger, etc. ...	...	0	13	4	,,	,,
Milk Control Manager	...	1	0	0	,,	,,
Assistant ...	...	0	18	4	,,	,,
Milk samples (2), each	...	0	10	0	,,	,,
Cooper	...	1	0	0	,,	,,
Carpenter ...	...	1	0	0	,,	,,
(*b*) Engine & Boiler Attendant		1	1	8	,,	,,
(*c*) Buttermaker ...	...	1	0	0	,,	,,
Assistant do. ...	...	0	15	10	,,	,,
General Helper	...	0	15	10	,,	,,
(*c*) Separator Attendant	...	0	16	8	,,	,,
Assistant do. ...	...	0	16	3	,,	,,
(*b*) Cheesemaker ...	...	1	1	8	,,	,,
Assistant (2nd) ...	...	1	0	0	,,	,,
,, (3rd) ...	...	0	16	8	,,	,,
Cheese Helper ...	...	0	15	10	,,	,,
,, ,, ...	...	0	11	8	,,	,,
,, ,, ...	...	0	16	8	,,	,,
,, ,, ...	...	0	10	0	,,	,,

Milk Delivery Attendant ...	£0	19	2	per	week.
Helper	0	8	4	,,	,,
Cold Store Attendant ...	0	16	8	,,	,,
Milk Receiver	0	16	8	,,	,,
General Storekeeper ...	0	16	8	,,	,,

(*a*) Manager has also a free house and garden.

(*b*) The engine and boiler attendant and the head cheesemaker have also a free house each on the creamery premises.

(*c*) In addition to a free house on the premises, the head buttermaker and the separator attendant have each their chances of a premium or bonus on extra good results from their work.

Provincial Associations.

The undoubted success of the movement in the Netherlands must to a very large extent be attributed to a thoroughly sound system of organisation under the most democratic control. The organisation is strictly on provincial lines, each Province being responsible for and having the entire control of the work in its own district. Almost every society is a member of the Provincial Association, as well as of one or more trade federations, and all the provincial associations are affiliated to the Central Society at the Hague, which among other things is responsible for the policy of the movement, conducts the propaganda, and is also the medium for all communications with, and all representations to, the Government.

The most progressive of all the provinces, both as

regards trade and organisation, is Friesland in the northern part of the country, and we therefore selected that Province as the field for the greater part of our study and investigation. We have already dealt with the method of organisation as regards the individual societies, and in the Province of Friesland there are 78 dairy societies all affiliated with the provincial association, which is called "The Association of Co-operative Dairies in Friesland," with head office at Leeuwarden. There are also four co-operative creameries (one large one and three very small ones) which are not members of the Association.

The Association was founded in 1898 with a membership of 43 societies and 225 subscribing members, individuals, managers, and others, who contribute on the following scale :—

Managers and members of societies, 1 guilder = 1s. 8d.
Other subscribers ... ... 2½ ,, = 4s. 2d.

At present the membership is made up of 78 societies representing the milk of about 100,000 cows (and it is on the basis of the milk supply that the contributions of the societies to the Provincial Association are fixed) and about 650 subscribing members. Societies making both butter and cheese contribute at the rate of £3 2s. 6d. per 1,000,000 kg. of milk (213,675 gallons).

Sixty-eight of the societies manufacture both butter and cheese, and ten manufacture butter only. The latter societies contribute £2 1s. 8d. per 1,000,000 kg. of milk (213,675 gallons).

Objects.

The objects of the Association, as set out in the Rules, are as follows :—

1. To promote the co-operative system and to teach and learn to improve the dairying industry by obtaining and disseminating information thereon.
2. To work for the good name of Dutch produce at home and abroad.
3. To promote, and carry out weekly, butter and cheese competitions.
4. To purchase jointly the requirements of societies which are members.
5. To (voluntarily) control and advise on the book-keeping arrangements of the societies.
6. To provide technical instruction for employees of societies and to grant diplomas to such after examination.

Committee.

The Committee consist of nine members elected by the affiliated societies. Members of committee must be members of affiliated societies, are elected for a period of five years, and cannot be immediately re-elected. The voting powers of societies are also fixed on the basis of the milk supply. One vote to every one million kilos milk (approximately 213,675 gallons), but with a maximum of five votes. The chairman is elected by the committee, two members of which retire annually.

The affiliation fees are based on the milk supply, the amount being fixed at the end of the year and at a

figure which will cover the working expenses of the Association. In the year 1909 the basis was ¾d. (three farthings) per 1,000 kilos, or, say, a society with a milk supply of approximately 853,000 gallons, or, roughly, a turnover of £16,500, paid £12 10s. 0d.

The total expenditure of the Association for the year was £1,200, but this included the contribution to the Central Body, which is supported by the provincial associations, and also on the basis of the milk supply.

Trade.

The Association also buys dairy requirements, including coal for the affiliated societies. On the coal trade a commission of 2 per cent. is paid by the merchants, part of this is retained to cover working expenses, and part is paid to the societies in proportion to the trade. Affiliated societies are not bound to purchase requirements, but at the beginning of every year societies are invited to furnish an estimate of, and to contract for their requirements for the twelve months. The total amount of these purchases by the Friesland Association in 1909 was about £40,000.

Butter Competitions.

As already mentioned a most excellent system of Provincial Butter Competitions has been arranged, which is carried out with great interest by the affiliated societies, and which has produced the most satisfactory results in raising the standard and improving the reputation of the produce. The competitions are arranged by a Committee of the Association, which consists of

managers, and which is assisted by a Dairy Instructor, and are held weekly on Thursdays in Leeuwarden (the capital of the Province), in a hall provided for the purpose. Two butter merchants are employed as judges, and are remunerated at the rate of 16s. 8d. each per competition. One of the competitions took place during our visit to the town, and we witnessed the operations with very great interest.

The points are awarded on the following basis.—Aroma, 20; flavour, 40; and texture, 40.

Samples of about 4 lbs. each are forwarded every week in the year, on Thursdays, from each of the 78 Creameries.

These samples are in earthenware jars enclosed in wooden or metal cases, both being returnable. On arrival they are placed in a cellar at ordinary temperature. On the following Monday the jars are removed from the cases, but kept in the cellar until the end of a week (the following Thursday), when they are placed on the benches for judging. On the following day, Friday, which is market day, the managers attend to inspect the samples which have been held over for this purpose, but in the meantime have been placed in the order of merit as per results. After being examined by the managers, the butter is replaced and returned to the creameries. Officers of the Provincial Association can take samples for analysis as they desire, and, of course, the creameries are not paid for these samples. Societies pay freight on exhibits both ways. Once every three months the butter-makers are also invited to examine

the exhibits, and on this occasion the results in the case of each creamery for the season commencing 1st January are tabulated for the information of the visitors.

Certificates are granted by the Association to competing creameries, and in order to qualify for a certificate a society must have secured an average of 66 points for the year from 1st January, and must not have been more than four times during the year below the 60 average. About four or five out of the 78 competing creameries usually secure a certificate each year. In addition to the certificate, prizes of £2 are awarded to the butter-makers of the successful creameries.

Besides the weekly provincial competitions, arrangements are made three or four times each year by which the samples from all the members of each provincial association are brought together to one centre, and when all the judges attend.

It cannot be too clearly pointed out that these competitions are conducted by the societies through their provincial organisations, and without any State aid or interference whatsoever.

As regards the staff of the association, the following information will be of interest:—

Office staff consists of secretary, book-keeper, and two clerks.

Chemist in charge of laboratory. At the laboratory are tested all glass ware and chemicals used for testing purposes by the societies, also water (bacteriologically and chemically) and cheese—tested for fat contents—and butter samples taken at the judging competitions.

Instructor, who has charge of weekly butter competitions, visits and inspects societies when required, and conducts winter classes in general dairy work for employees of societies.

Accountancy Inspectors.—The accountant supervises the office accounts, visits societies, audits balances, and attends committee meetings to explain accounts. In the year 1909, thirty societies had quarterly audits, thirty, yearly audits, and eighteen received no advice.

Advisory Committees.

In addition to the General Committee, the following sub-committees are elected annually, and are made up of members who are not on the General Committee:—

Office Committee, consisting of three members, all managers.

Competitions Committee, consisting of three members, all managers.

Cheese Committee, consisting of three members, all managers.

Purchases Committee, consisting of four members, all managers.

Propaganda Committee, or Committee of Agricultural Co-operation, consisting of managers, farmers, a law advisor, and others.

The Secretary of the Association acts as secretary to all committees. The committees are all appointed by general meeting and none of the members are immediately re-elected.

The General Committee, of course, is responsible for

the entire work of the Association, but this system of supplementary committees is found to give very satisfactory results, particularly by spreading interest in the work, giving useful men who might otherwise be passed over an opportunity of service. It has also been found useful in converting critics who might become hostile into enthusiastic workers. It will be noted that the system of only one term of office at one time brings a great number of different men into service.

We have been very deeply impressed with the work of these provincial organisations, and we cannot pass from this part of our investigations without giving expression to the conviction that to this system of purely democratic control, and the thorough organisation on this basis, is due the very solid progress which undoubtedly has been made, and the enlightened and enthusiastic spirit of real co-operation which exists throughout the whole province.

Féderation.

In addition to the Provincial Association just dealt with, a most successful trade Federation for export has also been established in the Province of Friesland. In the year 1898 three delegates from the Association visited the British markets to investigate the conditions, and report. The practice hitherto had been for the individual societies to "consign" to the wholesale merchants in different centres, and the delegates found that although the butter forwarded in this way was graded by the merchants and sometimes held for a rise,

the creameries which were producing an inferior article might get the price, or rather the lowest market price, for the commodity; rarely or never was the market price returned for the superior article.

The delegates, therefore, recommended that an export Federation be formed, that grading be done at home (and for this the competitions have provided the basis), and that Great Britain be divided into the four following districts: London, Manchester, Newcastle-on-Tyne, and Glasgow, and that in each of these districts an agent be appointed.

The Federation started with six societies, and after the usual period of experiment and struggle a measure of success was attained, which was gradually increased until to-day the membership consists of 28 societies with a trade turnover of £458,000. For the first two years it was thought advisable to bind societies to sell only one-fourth of their output through the Federation, but afterwards this was changed, and now the entire trade must go through the one centre.

In the beginning, also, all creameries received the same price, but since then a standard of quality has been established on the basis of the weekly competitions, and the weekly returns above or below this standard are made on the result of the judging for the same week. A rule of the Federation provides that all members (societies) must be members of and affiliated to the Provincial Association and take part in the weekly competitions.

Returns are made weekly for butter and the prices

are fixed on the basis of the weekly competitions, the following figures being taken for this purpose as a standard. The points are fixed in proportion to the competition marks:—

Aroma.	Flavour.	Texture and Body.	
12	24	24	= 60.

When the weekly result of any of the creameries reaches this standard the basis price is returned. If the marking is between 60 and 45 on the following basis,

Aroma.	Flavour.	Texture.	
9	18	18	= 45,

the price is reduced by 2 cents per kilo ($2\frac{1}{5}$ lbs.). (100 cents = 1s. 8d.). When the marking is under 45 on the same basis the price is reduced by 4 cents, or when the marking is 75 or over, the dairy receives one cent. per kilo extra, and when 85 or over 2 cents. per kilo extra. A deduction of 2 cents is also made when anyone of the above characteristics are marked below the above basis. Further deductions, according to a scale agreed upon, are made when the moisture exceeds 15 per cent. In some of the federated societies arrangements are made by which a standard is established for milk, and deductions made for inferior supply in the same manner.

The societies are bound to the Federation for a period of years, and can only withdraw or be expelled under the following penalties:—Six months' notice of withdrawal must be given before the end of any year and by forfeiting a penalty fixed on the basis of £21 per 213,000 gallons of milk in the last year. If a society dissolves, a similar penalty is also incurred, but this at the discretion

of the Federation Committee. If a society is expelled the penalty is £84 per 213,000 gallons.

Payments are made weekly by the Federation for half the supply of the previous week and the balance of the preceding week.

The Federation has large Government contracts and supplies the Army in the Colonies with tinned butter.

When the result of the judging on samples from any of the Federated Creameries is not up to the standard the society is visited by an inspector employed by the Federation, who investigates the working and instructs the staff.

In conversation with Mr. Veeman, the Chairman of the Provincial Association, and who is the manager of a most successful creamery at Marssum, and a most enthusiastic propagandist, we were told that one of the secrets of the success of the system is, that developments are never pushed from outside, that the promoters of the different organisations are always willing to wait for new ideas to ripen and for new institutions to be tried by experience, and that in this way the Federation has now reached such a position and enjoys such a reputation in the country that the membership is likely to increase more rapidly in future. Mr. Veeman looks forward to the time when all the societies in the province will be joined together in one or more federations for trade purposes, as they are at present in the Provincial Association for propagandist and educational purposes.

The following are the total exports of the Federation for the years from 1899 to 1907, inclusive:—

Year.	Cwts.
1899	7,154
1900	18,775
1901	30,165
1902	47,711
1903	57,222
1904	58,531
1905	58,376
1906	62,742
1907	68,900

With the exception of the Butter Control Scheme, which we deal with separately, we have now dealt with all the organisations in the Province in connection with the dairying industry, and proceed to explain the objects and working of the Central Body at the Hague, which is the chief corner stone of the whole structure.

Central or General Association.

This Association, which is called The General Dairy Association of the Netherlands, with head offices at The Hague, is constituted by the provincial associations and subscribing members.

The objects and working of the Central body are similar to those of the provincial association (but with a wider interpretation), and, of course, it is responsible for propagandist work in foreign countries as well as for all communications with and representations to the Government. The Central Association is also used as a pur-

chasing medium for requirements which are common to all the provincial associations. The Association has a system of status enquiry from which reports on 780 firms were issued to affiliated societies during 1909, and which seems to be of the greatest service to the subscribing members. The Society is responsible for a co-operative market held twice weekly at Arnheim, and in addition to other duties the Secretary acts as editor to the journal which is issued weekly.

The Central Association also controls a national trade mark which stands for quality. Returns from the different weekly competitions are forwarded to the central office by the provincial associations. No society is permitted to use this trade mark before a certain standard has been reached and consistently maintained for a given period. Leave to use this trade mark is also withdrawn, by the Central Association, if at any time the marking at the weekly competitions falls below 60.

One of the schemes of the Central Association, which has met with general approval, is a superannuation fund for officers fixed on a contributory basis. An arrangement has been come to with an insurance company on the basis of which a yearly payment of £36, of which the officers pay 25 per cent., insures a retiring allowance at the age of 60 of £200, and in the event of death before that age a payment to his wife of £62 10s. A similar scheme has also been taken up by some of the creameries and is gradually becoming general.

The Committee consists of eight members. Every provincial society sends one member, and three are

elected by the general meeting on the basis of one vote for each 10 million kilos of milk and one for each additional million, but no member has the right to more than one-third of the entire votes. The members of this committee, unlike those in the provinces, are eligible for re-election.

The total annual expenses amount to about £1,250. For the year 1909-1910, about £600 of this was derived from schemes administered by the Central Association and the balance contributed by the provincial associations on the basis of the milk supply—the contribution of the Friesland Association being about £300.

Two or three general meetings are held yearly, one of which takes place in summer in one of the provinces, and from which excursions are arranged of a social nature. The summer meeting in 1909 was held at Masstricht, in the Province of Limburg, and was attended by about 350 representatives, 180 of whom were farmers and managers from the Province of Friesland.

Butter Control.—Origin and History.

There are eight different stations in the Netherlands, all of which are entirely controlled by the members, but each receiving Government patronage and some financial assistance, varying in amount in different provinces, but in all cases diminishing as the organisation becomes stronger and controls an increased output. The analysts and inspectors employed by the Control

must possess such qualifications as satisfy the Government. The stations are located as follows :—

Name	Province.	Production, 1909.
Assen	Drenthe	75,700 cwts.
Deventer	Gelderland & Overijssel	189,652 ,,
Eindhoven	North Brabant	88,235 ,,
The Hague	South Holland	68,627 ,,
Groningen	Groningen	37,870 ,,
Leeuwarden	Friesland	301,182 ,,
Maastricht	Limburg	68,627 ,,
Middelburg	Zeeland	3,333 ,,
	Total,	833,226 cwts.

The origin and history, as well as the constitution, of the different stations varies in each case, but the proposal originated at Leeuwarden, which is still responsible for a much larger turnover than any of the other stations, as the above table will show.

The first move in the matter was made in the year 1900. At that time the Netherlands butter was suffering severely in reputation owing to fraudulent practices of various kinds being carried on by certain manufacturers as well as by traders. The co-operative societies did not suffer to the same extent because of the fact that the produce of the affiliated societies was protected by a registered trade mark, which then was, and still is, their celebrated "Nedraw" Brand. This brand had been registered in the year 1897 by the Association of Co-operative Creameries in Friesland for the exclu-

sive use of the affiliated co-operative creameries in that province. The matter was brought before the Friesland Agricultural Association, a provincial society of old standing much on the lines of the Royal Dublin Society. After some inquiries, steps were taken to establish a Provincial Control, and during the first year between twenty and thirty creameries joined the scheme. It must be borne in mind that the Control then established and still carried out is for purity and normal moisture only, and that the question of quality in the co-operative societies is regulated by the weekly competitions and other means explained elsewhere in our report. For this reason the regulations then laid down were formulated to secure the manufacture of a pure butter only, free from excessive moisture. The scheme, of course, was entirely voluntary, and the principal regulations were that the subscribing creameries should permit their dairies and all manufacturing operations to be inspected at all reasonable times by the representatives of the Control, who were employed for that purpose; to allow samples of cream and butter to be taken for analysis at the Control laboratory; and to keep such records as were required by the Control Committee. Further, that all substances which might be used for adulterating purposes should be entirely excluded from the premises; and that all butter produced should not contain more than 16 per cent. moisture. The arrangements were nominally under the control of the Agricultural Society, but a special Committee consisting of the representatives of the subscrib-

ing creameries was formed to carry out the scheme. The guarantee then given was in the form of a certificate which accompanied the invoice. Similar Control stations were soon afterwards started in other provinces and were organised on somewhat similar, though not on identical, lines with that formed in Friesland. Each Control station was conducted by an elected Committee who employed a staff to carry out the work, in accordance with the special regulations devised by the respective provincial Committees. These Committees carried on the work for a period of three years, and the value of the Control then becoming universally recognised in the different provinces, the Netherlands Government in 1904 expressed its willingness to grant a Government Brand provided certain fundamental conditions were complied with. The conditions laid down by the Government, and most of which had already been included in the schemes of the different provinces, were as follows:—

1. The exclusion from the premises of all creameries in the Control and the prohibition to deal in and to manufacture margarine and all edible fats and oils which might be used for adulteration.
2. That creameries or merchants in the Control should not buy any butter except such as came from another creamery or merchant which is a member of any of the Control stations under Government supervision.
3. Members of a Control station under Government

supervision are required to keep records of all butters made, purchased, and sold in such form as is prescribed by the Committee and approved by the Government. They have to register the addresses of persons to whom they send 5 kilos butter or more, and the names and addresses from whom butter has been purchased.

4. To at all times give free access to premises to all officers of the Control station and of the Government, and to furnish all information these officers may require. To allow them to inspect the books, including the records kept as provided in paragraph 3. To permit the officers also to take samples of cream and butter free of charge.
5. That creameries in the Control are bound to take care that the amount of moisture in Control butter whether salted or unsalted does not exceed 16 per cent.
6. Creameries are bound, first, to affix upon the package the identification mark provided, and, second, to affix on the butter itself the official mark of guarantee.
7. Creameries that act in contravention of the Control regulations are bound by contract to pay such penalties as are described by the Committee.

The creameries at once realised that a hall mark of this kind would considerably enhance the value of the guarantee, but the suggestion was only ultimately adopted when it was explicitly stipulated in the regu-

lations governing the Control (*a*) that the scheme should be entirely voluntary; (*b*) that the administration of the scheme should be entirely in the hands of the members; and (*c*) that the Government control should be strictly limited to the inspection which was, of course, necessary if the Government was to be responsible for the official guarantee. These conditions having been agreed to, the scheme was now launched under the new auspices, and practically all the creameries in the different provinces were admitted to membership in their respective control stations as quickly as the committees were satisfied that the necessary regulations had been complied with in each case.

In addition to the inspection referred to above, the Government also provides an annual subsidy to this and all other districts which have adopted the scheme, and is also responsible for advertising and for protecting and defending the brand in foreign countries.

Administration.

The present Committee of the Leeuwarden Control station for the province of Friesland consists of seven members, made up as follows:—

The Secretary of the Association of Co-operative Creameries in Friesland.

A member of the Committee of the Friesland Agricultural Society.

Two managers of Control creameries.

A farmer who is a member of a Control Society.

Two representing general dairy interests (one of whom is a landowner).

The number of members in the Friesland Control station during the year May, 1909, to May, 1910, was 123, representing for the year an output of 281,050 cwts. of butter. Estimating this at an average price of 102s., the nett value (for the province) of the Control butter would be £1,433,355 and the cost of administering the station for the same year was £906.

Staff.

For administering the scheme three inspectors are employed by the Committee, whose duty it is to visit each creamery not less than twice each month, take samples of butter and cream, examine, and if found correct sign the Control records, and satisfy themselves that the Control regulations generally are being properly observed.

This station, as well as all others, has a fully equipped laboratory where a properly qualified analyst with assistants is employed. At this laboratory the samples sent in by the inspectors are analysed, and if not found satisfactory the creamery is immediately notified and an inspector advised to visit and investigate.

In addition to the above, there is, of course, also a secretary with the necessary clerical assistance.

Labels.

The Control labels are provided by the Government and delivered to the Control stations, who distribute

and invoice them to the affiliated members in the ordinary way, but only against a written acknowledgment of receipt.

As regards the labels used on purchased butter, it must be noted that Control creameries can only buy butter produced in a creamery which is also a member of a Control station. In this case the selling creamery must furnish with the invoice the number and mark of the label contained in each package. The purchasing creamery may then adopt one of two courses:—(*a*) remove the labels altogether and affix its own; or (*b*) it may forward or deliver the butter with the label already on the butter without affixing its own.

Subsidy.

Towards this administration the Government contributes a subsidy to each district station. In this case the total expenses were £906 and the amount of the subsidy was approximately £42; the contributions from the creameries being £900. It will therefore be seen that the income was equal to the expenditure without the Government grant.

Other Stations.

Some other Control stations were visited, but the system in all cases is practically the same, although the regulations as laid down by the Control Committees may differ in some details in the different provinces.

Advantage was also taken of a visit to Utrecht to interview the Chief Inspector employed by the Govern-

ment in connection with the Control, and from this officer we learned the following facts:—

1. That creameries intending to enter the Butter Control are not necessarily obliged to become members of local or provincial agricultural societies. The only qualifications required are that such creameries enjoy a good reputation as makers of pure butter, and that they are prepared to comply with the regulations laid down by the Control Committee.
2. That, as regards the charges which creameries have to pay to become members of Control stations, they must (*a*) contribute such portion of the cost of establishing the Control station as the Control Committee determines and afterwards an annual levy varying from 1¼d. to 6d. per 2 cwt. approximately of butter. (*b*) In addition each creamery must pay the actual cost of the Control labels used by it. The cost has not so far in any case exceeded 6d. per 2 cwt. of butter.
3. That creameries in the Control are not allowed to make, buy, or sell any butter except that which conforms to the Control regulations and on which Control labels are used. This regulation is never objected to by the creameries, because it would not be to the interest of any creamery to buy butter outside the Control and also because Control butter invariably fetches a higher price.
4. As to the inspection of creameries by the Govern-

ment as well as by the Control: in both cases the officers merely take samples of butter and cream, examine the Control records, and satisfy themselves that the Control regulations are being complied with. The inspectors for the Control may also take such particulars from the records as they may deem necessary.

5. When a complaint shall be received regarding Control butter, the complaint should at once be transmitted to the station to which the creamery is attached, and a Control station inspector is immediately sent to the creamery in which the butter was produced. The inspector examines the butter and cream, makes all necessary inquiries, takes samples, and reports. If the analysis of the butter is found to be unsatisfactory, the Control labels are taken up by the inspector and returned to the Control station. The labels are only returned to the creamery when the analysis of butter samples taken at the creamery by the Control inspectors conforms to the regulations regarding purity and moisture contents.

6. That creameries may use any size or description of package, but in all the creameries it is recognised that after taking all steps possible to produce pure butter of the best quality it would be very unwise to use anything but strong, clean, attractive packages of best seasoned wood.

7. In case a creamery has been suspended or

removed from the Control and wishes to be readmitted, this can only be done when the director of the Control station is satisfied that the butter produced is pure and contains less than the 16 per cent. limit of moisture.

8. There is no charge by the Government to creameries using the Control, the only payments being those which the creameries have to pay to the Control station.
9. When a creamery wishes to withdraw from the Control—and this rarely happens—notice must be given to the director of the Control, signed by the chairman and secretary of the committee, and all payments due to the Control must be made.
10. That Government inspectors have no power regarding the working of creameries, the only powers they possess being to enter creameries in order to see that the provisions of the Netherlands Butter Acts are complied with and that no fraudulent practices are indulged in. In the case of Control creameries the Government inspectors, of course, have power to see that the conditions of the official recognition are being complied with.
11. That Government officials have no power to exclude any creamery. This power rests entirely with the Control Committee. Of course, Government officials may submit reasons which, in their opinion, would justify the Committee in

excluding any creamery. In that case the report would be carefully considered by the Control Committee, and might or might not be deemed by that body as sufficient grounds upon which to refuse the creamery admission to the Control. So far, however, we were informed that no conflict of opinion in that respect had arisen.

12. That the Government does not interfere with the income or expenditure of Control stations. No supreme direction in this respect is sought by the Government, although the inspector in visiting the stations may make recommendations to the committee regarding the working of the station.

13. That a creamery seeking admission to the Control has to apply to the Control Committee, who can admit or refuse the creamery, as far as the admission is not contrary to the conditions to which the Control stations must submit.

14. That the number and mark of a creamery are allotted by the Control Committee. The numbers and marks are also changed from time to time by the control director, and notice of such change is at once sent to the Government.

15. That the Control inspectors as well as the Government inspectors have power to intercept consignments of butter in transit and to take samples. The procedure in such cases is to open one or more packages, draw the sample, examine the Control label to see that the brand is sufficiently

indented to render its removal impossible, and to note the identification mark as well as the number of the label. Such samples are forwarded to the Control station of which the creamery is a member or to the Government Dairy station at Leyden for analysis and the results compared with those of the samples taken by the Control inspector at the creamery.

16. That the penalties to be imposed for violation of the regulations vary from 8s. 4d. to £1,000, according to the nature of the offence. The fine is imposed by the Control Committee.

17. As to the benefits derived from the Control: the principal is an increased price for butter, as the official guarantee of purity and freedom from excessive moisture is recognised by the trade in Great Britain, Germany, Belgium, and other countries to which Dutch Control butter is sent.

18. That most of the Dutch creameries participate in the Control, the proportion at present being about 93 per cent., and this is gradually increasing as the creameries realise the advantages of the scheme.

19. That pasteurisation is not a condition of the scheme (quality not being guaranteed by the Control). It was, however, stated that most of the Dutch creameries now pasteurise, as the results of the weekly competitions prove that pasteurised cream butter keeps much better and is looked for by the best buyers.

How the Control Scheme is Operated.

As soon as the regulations of a Control station are approved of by the Government, the right to issue the labels bearing the official mark of guarantee is granted and the director of the station issues the labels to the creameries admitted to membership. The admission to membership, as already mentioned, is subject to a creamery undertaking to comply with the following among other conditions:—

(*a*) Paying its proportion of the cost of establishing the Control station.
(*b*) Paying its levy based on the annual butter produced, for administering the work of the station.
(*c*) Paying the actual cost of the labels it uses.
(*d*) Conforming with the manufacturing regulations and other conditions, most of which are set forth above.

The labels, bearing the arms of the Netherlands surrounded by the words "Netherlands Butter Control," are printed in five sizes, stamped A, B, C, D, and E, each size being intended for packets of different quantities as follows:—

Size A for quantities of $2\frac{1}{5}$ lbs. and under. (1 kilo).
Size B for quantities above $2\frac{1}{5}$ lbs. and not over $6\frac{1}{2}$ lbs.
Size C for quantities above $6\frac{1}{2}$ lbs. and not over 43 lbs.
Size D for quantities above 43 lbs. and not over 83 lbs.
Size E for quantities above 83 lbs. and not over.

Besides these marks the labels for each station have

marks or letters indicating the station, and the labels have consecutive numbers. The labels are issued in book form with counterfoils bearing the consecutive numbers and marks of the labels. The labels are cut through in different directions so as to render their removal intact from the surface of the butter an absolute impossibility.

The labels are placed on the surface of the butter and the centre of each label bearing the official mark of guarantee is pressed into the butter by the indented wooden stamp, which breaks the official mark in such a manner as to prevent its being used a second time. Great care is taken at each creamery to see that the labels or marks are properly applied and that the precautions against the misuse of the marks are all that the Control station requires.

A record book supplied by the Control station is kept at each creamery in which the manager or his assistant is obliged to enter daily the following particulars:—

(*a*) The quantity of butter forward—stock on hands.
(*b*) The quantity of butter made, with the numbers and marks of labels placed on each package.
(*c*) The quantity of butter purchased, with numbers of labels.
(*d*) The quantities of butter sold, with names of parties to whom it is sold.
(*e*) The quantity of butter on hands—stock forward.

This book constitutes a Control record of production and sale, with numbers of labels used, and also a record

corresponding with the stock book used for the purpose in many Irish creameries.

In order to prove that the butter made in all Control creameries is pure and within the 16 per cent. limit for moisture, samples are taken at least twice monthly by the inspectors of the Control stations and sent to the Control laboratories, where they are carefully analysed and the results recorded for reference.

The records of the labels at the Control stations and at the affiliated creameries, together with the frequent analysis of butter of each creamery, render it possible to trace every package of each creamery's butter and at the same time to give a guarantee of purity and composition as representative of the daily make of each creamery's butter as it is practicable to furnish.

A creamery in the Control may be either suspended or removed if the composition of its butter is found impure, or if the butter contains excessive moisture, or if the daily records of labels used and quantities made and despatched are incorrect or insufficient for the purposes of the Control.

Ninety-three per cent. of Dutch creameries at present participate in the Control and the number is steadily increasing. The adoption of the Control has led to better prices, to steady demand, and to enhanced reputation. The Dutch Butter Control is an achievement which ranks high among the best reforms which have been effected in any dairying country in Europe.

Guarantee of Quality.

As is already explained, the Butter Control stations guarantee the purity of the butter only and the limit of moisture it contains, leaving the quality to be guaranteed otherwise. It is acknowledged by the Dutch Control authorities that any Control scheme which could guarantee purity, percentage of moisture, and quality, all under one label, would be still more valuable than theirs, but it was pointed out that the difficulties of ensuring the genuineness of the combined guarantee are so great that their Control stations have not yet undertaken the task.

The necessity for guaranteeing the quality of Control butter is, of course, fully realised, and arrangements to provide such a guarantee have long since been made by the co-operative creameries working unitedly under a well-devised scheme throughout the different provinces.

In each province there is an association of co-operative creameries similar to that of Friesland, and among the many functions of these associations is the holding of butter competitions every week throughout the year.

Samples of butter, free from preservative, but containing from 1 to 1½ per cent. of salt, are sent weekly by each creamery to its respective centre, where it is stored for a week, then judged on a scale of points, and the results sent to each participating creamery.

The results of these competitions are closely followed by the creameries and butter export associations. The co-operative societies, recognising that they could turn

the results of these competitions to good account, decided that the right to the use of a certificate of quality from the F.N.Z. (the General Netherlands Association of Co-operative Creameries) should be given to the members, the butter of whose creameries obtained regularly at the weekly competitions a satisfactory percentage of marks. The most important rules governing the use of this brand are:—

(*a*) The creamery must be affiliated to one of the provincial associations of co-operative creameries that is joined to the Central Association which controls the brand.

(*b*) The creamery must be a member of one of the Butter Control stations.

(*c*) The equipment and standard of cleanliness maintained in the creamery and in the milk supply must be such as will satisfy the Board of Directors that the creamery consistently makes butter of good quality.

(*d*) The creamery must obtain at the weekly provincial competitions such percentage of marks as is, in the opinion of the Board of Directors, satisfactory.

(*e*) The creamery must take such precautions as the Board of Directors prescribe from time to time to prevent the delivery of stale and defective milk.

(*f*) The creamery granted the right to use the brand and certificate must only apply it to butter

which, in the opinion of the manager, is of finest quality.

(*g*) The brand and certificate must not be applied by a creamery to butter purchased from any creamery not having the right to use them.

(*h*) The creamery or co-operative butter export association authorised to use the brand and certificate must undertake to give an indemnity against improper use of the brand and certificate, the indemnity to be paid by the Central Association, the amount being fixed by the Board of Directors.

The brand is, as stated, " F.N.Z." which stands for the Netherlands Bond of Co-operative Creameries, and the certificate is as follows:—

CERTIFICATE OF QUALITY.

Series..... No.....

The General Netherlands Dairy Association declares that the Co-operative Creamery at.....in consequence of the results of the weekly butter tests in which it participates is qualified to use the certificate of quality of the F.N.Z. to indicate that it answers the requirements mentioned hereafter.

For the Gen. Netherlands Dairy Association.

.....Secretary.

Declaration signed on behalf of the Co-operative Creamery and appended to the above certificate:—

The undersigned, Manager of the Co-operative

Creamery at.....declares that this certificate of quality is used with the undermentioned consignment of butter:—

Number or letter.	Quantity.	Packing.	Control marks.

Forwarded to-day to————————

Date.....

For the Co-operative Creamery at————————

..... Manager.

The scheme is entirely the property of the co-operative creameries, and is controlled solely by them and their associations. The results of the weekly butter competitions afford a good check on the quality of butter that each creamery turns out, and the monthly reports of the Control stations furnish further evidence of the composition of each creamery's butter.

Although the application of the brand to any butter rests for the time being entirely with the manager, one of the subjects referred to with pride by the chief officers of the associations was the absence of abuse of the brand and certificate at any of the creameries, and the continued application of the brand for many years by an increasing number of creameries.

Taken in conjunction, the very effective manner in which the Control scheme guarantees purity and

moisture contents, and the excellent uniform system in which the co-operative creameries make their butter as determined by the weekly butter tests for quality, the two schemes furnish evidence of the purity and quality of Dutch co-operative creamery butter that cannot fail to establish confidence and build up a valuable reputation for it in the countries to which Dutch produce is now exported.

MILK CONTROL SOCIETIES.

One of the most valuable forms of co-operation in the country, as in Denmark, is the milk testing associations, which have been the means of very considerably increasing the yield of milk and also of butter-fat from cows where the system is properly carried out.

In Friesland a milk testing society usually consists of ten or twelve members, owning from 20 to 40 cows each. The manager of the association, who is paid about £50 per year, and who may have one or two assistants if the society has more than twelve members, is provided with a testing office at the creamery. The farms must be visited at least once in 14 days, when the milk, both morning and evening, is weighed and samples taken for analysis as to butter-fat.

The following returns are taken from the records of one of the Milk Control Societies working in connection with a co-operative creamery in this province. The records give an accurate return of the yield of 60 cows forming part of the total register of this society

and classified under the following heads and giving the averages in each case:—

(*A*) Yield of the 10 best cows calved before 1906.
(*B*) Yield of the 10 best cows in second period of lactation.
(*C*) Yield of 10 best cows in first period of lactation.
(*Aa*) Yield of 10 worst cows calved before 1906.
(*Ba*) Yield of the 10 worst cows in second period of lactation.
(*Ca*) Yield of the 10 worst cows in first period of lactation.

MILK CONTROL RECORDS.

Yield of the 10 Best Cows Calved before 1906.

Class A. No.	Milk yield for season (gallons).	Average percentage of Butter-fat.	No. of milking days.
1.	1,688	3.26	342
2.	1,078	3.86	273
3.	1,561	2.93	296
4.	1,339	3.51	312
5.	1,571	3.11	324
6.	1,307	3.61	324
7.	1,407	3.14	304
8.	1,204	3.60	305
9.	1,550	3.24	352
10.	1,130	3.74	299
Averages	1,383½	3.36	313

Yield of the 10 Best Cows in Second Period of Lactation

Class B. No.	Milk yield for season (gallons).	Average percentage of Butter-fat.	No. of milking days.
1.	937	4.10	331
2.	1,114	4.08	405
3.	877	3.77	297
4.	1,092	3.67	361
5.	932	3.41	294
6.	1,017	3.33	322
7.	973	3.42	319
8.	845	3.71	307
9.	1,212	2.54	298
10.	1,169	2.97	344
Averages	1,016¾	3.47	327

Yield of 10 Best Cows in First Period of Lactation.

Class C. No.	Milk yield for season (gallons).	Average percentage of Butter-fat.	No. of milking days.
1.	920	3.93	321
2.	944	3.45	322
3.	909	3.36	303
4.	896	3.24	291
5.	878	3.50	314
6.	910	3.46	328
7.	847	3.74	333
8.	964	3.45	350
9.	920	3.68	364
10.	868	3.52	331
Averages	905½	3.53	325

Yield of 10 Worst Cows Calved before 1906.

Class Aa. No.	Milk yield for season (gallons).	Average percentage of Butter-fat.	No. of milking days.
1.	578	2.53	259
2.	724	2.82	301
3.	612	3.31	295
4.	644	2.91	269
5.	690	3.00	295
6.	648	2.90	267
7.	675	2.82	268
8.	654	3.51	326
9.	814	2.36	262
10.	806	2.99	329
Averages	684½	2.90	287

Yield of the 10 Worst Cows in Second Period of Lactation.

Class Ba. No.	Milk yield for season (gallons).	Average percentage of Butter-fat.	No. of milking days.
1.	508	3.53	374
2.	585	3.07	298
3.	698	2.94	322
4.	562	3.19	276
5.	697	2.81	298
6.	532	3.50	287
7.	674	2.99	330
8.	795	2.40	274
9.	787	2.43	274
10.	610	3.45	309
Averages	645	2.97	301

Yield of the 10 Worst Cows in First Period of Lactation.

Class Ca. No.	Milk yield for season (gallons).	Average percentage of Butter-fat.	No. of milking days.
1.	343	2.95	220
2.	490	3.08	332
3.	520	3.23	359
4.	488	2.63	268
5.	461	3.17	294
6.	408	3.06	236
7.	403	2.98	221
8.	540	3.09	294
9.	549	2.95	283
10.	446	2.98	232
Averages	465	3.01	274

It will be noted that Class A contains the ten best cows in the Testing Society which had been in milk before the year 1906. Class B represents the ten best cows in the Society which were in the second period of lactation in the year 1909-1910. Class C the ten best cows in the Society which were in the first period of lactation during the year 1909-1910. The three remaining classes represent the same number, the records of which showed the poorest yields for the corresponding periods of lactation.

Friesian Milk Control Society's Rules.

The following is a translation of the rules and regulations usually adopted by Milk Control Societies in the Province of Friesland:—

1. The object of the Control Society is to obtain reliable information regarding the milk and butter produced by and from the members' milch cows.

2. The Society is formed for three years, and every member must remain in the Society for that time, except he is obliged to give up his farm owing to the lease expiring.

The heirs of a deceased member must remain members of the Society as long as they live on the farm of the deceased (such for the present three years).

3. The maximum number of members is twelve.

4. The members are obliged at least every fortnight to weigh and test the milk produced by each of their cows in the evening and on the following morning for control purposes.

5. The working expenses of the control are paid by the members in proportion to the number of cows for which they have engaged themselves to the Society, or of so many more as are examined regularly, reserving the consideration of particular circumstances to the judgment of a meeting of the members.

6. The business interests of the Society are entrusted to the care of a Board of two persons, elected by and out of the members, one of whom acts as president and the other as treasurer.

7. At least once a year a meeting of the members is held to discuss the Society's interests. At a meeting held within four weeks from the expiration of every financial year, the report of the previous year is examined and a report of the results of the control scheme in the previous year is given.

At this meeting a new member of the Board is elected instead of one member of the Board, who retires in rotation. (The first retirement is decided by drawing lots). The retiring member of the Board is immediately eligible for re-election.

8. The Board appoints in accordance with the members a "Controller," and has the right to dismiss him if he does not adhere to his instructions, or should it be desirable to dismiss him for other reasons decided upon by a meeting of the members.

9. The members are obliged to conform to the time-tables fixed by the Board, and they are also obliged to assist, if necessary, the controller employed at their own houses when at work on the control scheme at their farm.

10. A member who at the expiration of the contracted number of years wishes to retire from the Society, is obliged to send a written declaration to the Board at least three months before the expiration of such period. Should the number of the withdrawing members be more than the half of all the members, the Society is dissolved. In that case the property of the Society is sold, and the proceeds are divided among

the members in proportion to the number of cows for which they have engaged themselves.

Should the number of the withdrawing members be less than half of all the members, the withdrawing members are not entitled to a payment of a share in the property of the Society, and the Society continues existing in the same manner as previously.

Considered at the meeting of the members, held at————————on————————, we, the undersigned, after having duly considered the above Rules, engage ourselves to become members of the Society.

Instructions to the Controller of the Control Society to————————————

1. The Controller is charged with all the activities on behalf of the Control, recommended to his care by the Board.

2. His dwelling place and office are fixed by the Board.

3. He must be present at the milking of the same cows at the same hour each evening and morning; he must accurately weigh the milk of every cow, and take a good average sample of it afterwards. After the morning milking he determines exactly the percentage of butterfat in every sample, and enters the results in a register. He also keeps duly the copies in which the results of the Control are noted for the members. Copies are sent to the members concerned as soon as possible after the test-milking takes place.

SOME FRIESIAN MILCH COWS.

4. The period of lactation of a cow being finished, he calculates the milk yield, the average percentage of fat, and the quantity of butter produced during the whole period of lactation. At the same time he must note all the circumstances which may influence the produce, such as changes in feeding, sudden changes of weather, illness, heat, etc., etc.

5. At the annual meeting of the members he reports the results of the Control during the last year.

6. He engages himself for a year at least, and should he intend to leave his situation he must acquaint the president with it two months beforehand. If he breaks his agreement he forfeits his right to payment of the back monthly salary.

7. Every month the president pays him the twelfth of his yearly allowance, on the condition that the first payment takes place two months after his entering upon his duty.

8. These instructions may always be altered and added to by the meeting of the members.

Drawn up and approved in the members' meeting held at——————————, on——————————

I, the undersigned, appointed Controller of the above-mentioned Control Society, after having taken due note of the instruction above-mentioned, do hereby agree to carry it out.

——————————

FRIESIAN MILCH CATTLE.

We take the following particulars from the publication of the " Friesland Cattle Herd Book " :—

The Friesian milch cattle are bred in the province of Friesland, situated in the north-western part of the kingdom, the Netherlands. Within the boundaries of this province, the most important parts with regard to cattle breeding are the heavy clay soils, which form in the North and the West the rather wide seaboard, and also the lower moorlands which are found in the centre and near the southern frontiers of the province.

The sandy soil in the South and the East is of little importance for the real cattle breeders.

The clay soils consist for the greater part, and the lower moorlands wholly, of permanent pasture.

Mainly on these pasture lands, which form about two-thirds of the total area, the Friesian cattle are bred.

Climate.

A country in which pasture land occupies such a prominent position must have a damp, not too warm climate. The rainfall varies between 24 and 32 inches, but the average is very near to the latter figure. The lowest temperature is found in January, but even then the average is as much as 35½° Fahrenheit. During the hottest months, July and August, the average is not higher than about 62° Fahrenheit.

Unfavourable circumstances which frequently interfere with the growth of the grass are : 1. The night-frosts in the late spring, which do so much harm to the young grass. 2. The drought in July, which prevents the growth of the young grass after the harvesting of the first hay crop, and 3. the wet season in the late autumn when the cattle tramples down the land.

Farming.

With a few exceptions the average Friesian dairy-farm has an acreage of about 90 acres; on the clay soils often a little more and on the moorlands a little less. The land is divided by ditches into fields of $2\frac{1}{2}$ to 10 acres. The superfluous water from the ditches is pumped away by a mill situated on the farm or by a steam-pump built for the use of several farms. Combinations of farms for this purpose are called "polder" or "waterschap."

Buildings.

The most common farmhouses are those in which dwellinghouse, cow-house and hay-barn are under one roof, although several farms are found with a detached dwellinghouse.

The farmhouses built under one roof have the dwelling part in the front and the cowsheds along one of the sides, the latter often occuping also part of the back-building. The rest of the building is used for storing the hay.

The entrance for carriages and carts is always at the back. In former days the cows were placed two by two in one stall, usually with the head towards the wall. The stall was a little over 2 Meter (about 7 foot) wide and separated from the next by a partition 1 Meter (3 foot 4 inches) high. The modern farmhouses have separate stalls for each cow.

Behind the stalls, which used to be situated high above the feeding passage, is a deep manure channel, sloping to a dungpit outside the building. Behind the manure channel is the feeding passage used for feeding, watering and other purposes. Separate stalls for young cattle are found at the back and calves are usually kept in the hay barn.

Tenants.

The farms are occupied for the smaller part by owners, for the greater part by tenants. Large farms, occupied by owners are unknown, the number of smaller holdings of a few hectares, however, is lately increasing more and more, especially in the lower moorlands.

Use of the Land.

As a rule the cattle are turned out in the first days of May, the young cattle sometimes earlier, when the hay is scarce. Usually one-third of the total grassland is used for grazing and two-thirds for making hay. Whether a second hay crop can be harvested depends upon the weather, but generally this does not happen

very often on the clay soil. The hay harvest which usually begins in the first days of June ends within five weeks, after which, as a rule, several parts of the grassland are dunged. In the autumn, ditches and trenches are cleaned and if possible, part of the second crop-grass is saved. According to the condition of the season the cattle are stabled at the end of October or the beginning of November.

The Cattle Breeder.

From what is said above it is evident that the method of farming is very simple and the work on the land does not require much of the time of the farmer, neither with regard to supervision nor to his own labour. The farmer therefore has plenty of time to look after the cattle and with few exceptions this is done in the best possible way. It is one of the most important facts for the province that the breeding of the cattle is done in all details under the eyes of the farmer himself. His herd is as a rule not very numerous, on an average farm not more than 30 cows, besides calves and young cattle. For this reason he is in a position to know every single animal with all its good and bad qualities.

He looks after the feeding himself, so that every animal gets its proper amount of food, which is of great importance, especially for the calves. He is always present when the cows are milked and as a rule he does part of the milking himself. He sees, therefore, that every care is given to the milking and

attends to the udders during the difficult period of drying off.

All these circumstances together explain why in this province more attention is given to the cattle than in many other breeding districts and to a great extent the excellent results which can be shown by many breeders are due to this.

The Cattle.

The Friesian cattle belong to the large group of low-lands races and has a dominating black and white speckled colour of the skin, besides which red and white speckled is found.

As a typical representative of the breed, the Friesian breeder considers a cow answering the following outside requirements :

Description of Friesian Cow.

A soft skin, as soft as that of a mole, a couple of big eyes, head black with small blaze, the crown not too wide, horns not coarse and bent to the front with a small cavity between the orbits, nostrils wide and open. The neck rather thin than fleshy, widening itself with a smooth bend until the chest. The chest must be well developed so that the distance between the front legs is at least 8 inches.

The back forms a straight line from shoulder to tail head.

The fairly broad rump and the shoulder join without making a hollow. The ribs are long and smoothly bent, the loins join horizontal with the tops of the

rump, the flanks are not big and fairly closed. Seen from behind a strong square hindquarter is shown, so to say the basis of a quadrangular pyramid the top of which is situated near the chest. The thighs are fleshy and run in a straight line towards the "Achilles tendon." The heels, slightly bent, are strong and elastic just at the shanks. The tail is long.

The udder, which is extremely well developed, is joined with a smooth bend to the belly, the teats are well developed but not too long. The milk-vein, strongly swollen and very winding, runs well forward along the belly.

The hair-marks must be: blaze on the forehead, dark speckled over the body with sharp lines between black and white without ground colour; four white legs.

All these qualities combined in one animal would make the ideal cow: that is what the clever breeder in Friesland aims at in his endeavour to improve his herd.

Live Weight.

The weight of the calf when born is about 90 pounds, and is:

	for cows	for bulls
at 1 year	660 Lbs.	770 Lbs.
at 2 years	990 ,,	1430 ,,
at 3 years	1320 ,,	1760 ,,
at 4—5 years	1430 ,,	2000 ,,

These figures relate to animals in good breeding condition, therefore not too fat.

A TYPICAL FRIESIAN MILCH COW.

Measures.

The measurements in Friesland are taken after the Dr. Lydthin system.

The measures for average herdbook cattle are for cows :

Length of trunk	155	C/m.	(61″)
Height ,, shoulders	134	,,	(52¾″)
,, ,, rump	137	,,	(54″)
Depth ,, chest	70	,,	(27½″)
Width ,, chest	45	,,	(17¾″)
,, ,, hips	54	,,	(21¼″)
,, ,, pelvis	49	,,	(19¼″)
Length ,, rump	52	,,	(20½″)

Depth of chest (in % of height of shoulders : 100) 53.7 %.
Width of chest (in % of depth of chest : 100) 60.3 %.
Width of pelvis (in % of width of hips : 100) 91.1%.

Object of Breeding.

The Friesian cattle are developed mainly in the direction of milk production, without, however, neglecting the beef qualities. About the beef producing qualities we only wish to say that the cattle can be easily fed and that the beef is of excellent quality.

As, however, the cows are mostly sold as milkers, the fattening is of little importance, and for this reason we will leave this point alone. We shall now say a few words about the excellent milk yield for which quality the Friesian cow has a world wide reputation.

An interesting circumstance, which makes the breed very much desired abroad, is the fact that the excellent

milk yield is maintained when the cattle are brought under new conditions. And even more interesting is the fact that breeders in Sweden have succeeded so far, that they have recorded milk yields from imported Friesian cattle as high as seldom are seen here. The same result was obtained in North America. To give average figures is always dangerous, but we cannot do without some in this publication. In the best herds the average yields are, as a rule, 860 gallons and over, when all animals, also those which have calved for the first time, are included. On the better soils an average of under 645 gallons is not found; on the sandy soils, however, it is lower. Older cows give as much as 1,300 gallons, and occasionally the milk yield goes as high as 2,150 gallons.

When competing in shows with other breeds the Friesian cows nearly always come out first with regard to high milk and butter production (Chicago 1883, Amsterdam 1884, St. Louis 1904).

Amount of Fat in the Milk.

It is a custom to mention as a drawback of the Friesian breed the not very high amount of fat in the milk. It may be true that formerly there was some justification for this; at present, however, we can state that, thanks to the efforts of the milk control associations, a great improvement has taken place. Herds can be shown where in some five years the average amount of fat in the milk has been increased by one half per cent. Moreover, practically all breeding cows

are regularly tested during the whole period for quality and quantity of the milk, and these tests are very stringently controlled by the associations.

When considering the figures of the co-operative creameries we can fix the amount of fat in the milk at about 3% for all those places where the control of the milk has only been introduced recently or where the creameries do not pay according to the amount of fat in the milk. For other herds where the milk testing has been practised for a longer period, the average amount of fat in the milk will be about .1 to .2% higher, because the best animals are used for breeding and the bad ones sold.

Time of Calving.

As a rule the cows calve here in the so-called early spring, which includes the period from the middle of February till the middle of May.

Immediately after the birth the calf is brought into the hay barn in which at the free side of the passage some loose stalls are put together, or an emptied spot where hay has been, is prepared for the reception of the animals.

The most careful breeders provide the calf with a muzzle and disinfect the navel, etc., to prevent the bacillus, which causes the calf disease, to penetrate. The calf gets beastings during the first days regularly three times a day and afterwards until 14 or 21 days full milk. After this period the full milk is gradually replaced by buttermilk or skim milk, until after some

DEVELOPMENT OF THE UDDER.

four or five weeks the calf does not get any more full milk. It is then fed exclusively with buttermilk or skim milk, to which usuelly some linseed meal is added. At this stage the calf is usually turned out (it is then about the middle of May), and gets, in addition to the natural grass, for some time a beverage consisting of whey, to which, according to the products returned from the creamery, some buttermilk, full milk, or skim is added. Sometimes the calves get sheep's milk when this is available. With the beverage as a rule some meal is given. Simultaneously with the cows, or perhaps a little later, the calves are taken in, and must live nearly all the winter exclusively on hay, as not everywhere additional feeding stuffs are given. In the spring they are turned out again, often in the company of a young bull, so that they calve already when two years old. In the period before calving they get additional feeding.

Milking.

Immediately after the birth of the calf the young cow is examined to see if it can be milked. If this is the case, it is milked after half a day, and afterwards it is milked regularly twice a day. Very seldom is the cow milked three times a day.

As a rule, very great care is taken in the milking, which is done by the farmer and his family, with the assistance of a milkman or milkmaid. As this is so arranged that no one has to deal with too many cows, even the last animal can be treated with the greatest care. To further quiet milking, the hind legs of the

animals are tied together a little over the leapjoint, a manipulation to which the cow gets soon accustomed. Special attention is given that the last drops of milk are withdrawn, as the cowkeeper knows very well that these contain the fat.

Feeding of Cows in Milk.

After calving, the cows get, in addition to a plentiful supply of hay, a certain quantity of feeding stuffs varying from 2 to 9 lbs. The amount is regulated by the quality of the hay and the milk yield. Although all sorts of feeding stuffs, often under fancy names and even fantastic compositions are advocated, the Friesian farmer keeps practically to the linseed cake, which is supposed to be exceptionally suitable to be given together with hay.

In the tillage districts, in addition to hay and feeding cakes, mangels and refuse from sugar factories are given, the latter products being lately also appreciated in the pasture districts. During the summer time the animals only get grass, and consequently the milk yield varies considerably according to the condition of the meadows during the summer. For this reason wet summers cause big milk yields on the clay soils, and dry periods can effect a considerable decrease in the production of the milk. The low lands react mostly on night frosts in spring, which often do so much harm to the growth of the grass that it is noticeable all the summer.

Drying Off.

Little can be added to the above about the treatment of the milch cattle. They dry periods lasts usually two months, during which much attention is given to the udder, especially in the beginning, to prevent complications.

Use of the Animals.

In this province the cattle are not kept very long. Friesland is in the first place a cattle breeding province, and the older cows must soon make room for younger ones. Older cows will rarely be seen; as a rule they are exported to the province of Holland or to Belgium, France, or Spain, when 5 to 7 years old.

In some districts—viz., in the agricultural districts—the animals are sold earlier, and seldom kept older than 4 to 5 years. On those farms where the sale of the milk is the main object and breeding is only secondary, sometimes herds are found with much older cows, but in Friesland it is more characteristic to keep herds with young animals only.

Export and Distribution.

Since the middle of last century, and more particularly after 1870, a considerable export from this province has taken place to all parts of the world.

At about 1880 the United States of America and Germany were the principal buyers of cattle in Friesland, and in both countries herdbooks are established to promote the breeding of Friesian cattle. In America

FRIESIAN PRIZE BULL.

this has the name "Holstein-Friesian Herdbook," whereas in East and West Prussia separate herdbooks are established with offices respectively at Königsbergen and Danzig.

The fact that it is possible to keep the breed pure and to develop the qualities in so far distant parts of the world, under such different circumstances, proves the great accommodating power of our breed. It is, however, evident that the best qualities are always maintained in the country of origin.

Lately breeding cattle are exported to a great extent to the South of Sweden and South Africa.

The best evidence, however, that the breed is appreciated is the fact that 17 different countries import more or less of the cattle, and that as a rule those who have bought once become regular customers.

State Help.

The part taken by the authorities in promoting the breeding of cattle consists principally in annual grants given by the Government and the province for judging bulls, and for supporting associations working in the interests of cattle breeding, such as Bull Associations, Breeding Associations, Milk Control Associations, etc.

The examination of bulls takes place in the spring in 19 different places of the province, whereas these examinations are preceded by advance examinations in about 115 places.

Grants for keeping bulls amount to:—

40 guilders (£3 6s. 8d.) for yearling bulls.
75 ,, (£6 5s. od.) for bulls two years old.
100 ,, (£8 6s. 6d.) for bulls three and more years old.

Bull Associations and Breeding Associations can obtain annual grants from 50 to 100 guilders (£4 3s. 4d. to £8 6s. 8d.), according to the conditions they fulfil in the interest of cattle breeding.

Milk Control Associations do not obtain any grants, although these are provided for in the rules fixed by the Government.

Working of the Herdbook.

In conclusion, something may be said about the herdbook. The association called the "Friesian Herdbook" was established in the year 1879. As in this province pure breeding already existed, it was not essential to establish a herd book for this purpose, but the object was, and has always been since, to make the herdbook a register for *selected cattle* answering the most stringent outside requirements.

Even pure-bred descendants of registered animals are not accepted for registration unless their outside requirements are satisfactory. For this reason the herdbook will always only contain a small part of the total number of cattle.

It has always been, and will, as we hope, always

remain a choice book in which only those animals are entered which answer the most stringent requirements.

It is not our object to give a full description of the working of the association, it may only be mentioned that the two colours, black-and-white and red-and-white speckled, are strictly separated in the books, and that mixed colours can not be registered.

No requirements are fixed with relation to the productive power, but those owners who wish that figures about milk and butter yield are recorded in the herdbook are put under stringent control of the council of the herdbook. This is done by nearly all the members, and therefore the figures published by us are absolutely reliable.

The whole arrangement of the herdbook is public, and everyone desiring more particulars with regard to some or other detail, or wanting information in connection with the purchase of animals, will find all he wants when applying to the secretary.

Visit to Farm.

We cannot pass from this subject without referring to a visit to the celebrated breeding farm of Messrs. K. N. Kuperus & Sons, at Marssum, near Leeuwarden, who are so well known as exporters of Friesian Herd Book cattle. As regards the value of milk records, and what can be done by judicious selection in breeding, the following returns from one of the cows on this farm at present will be of interest:—

STIENSER XI. No. 9130 (IN HER 14th YEAR).

Age.	Gallons of Milk.	Fat per cent	Days. Milked.
2 years	930	3.64	331
3 ,,	1,029	3.68	297
4 ,,	1,074	3.73	293
5 ,,	1,186	3.72	286
6 ,,	1,347	3.79	307
7 ,,	1,432	3.71	306
8 ,,	1,404	3.76	330
9. ,,	1,411	3.65	343
10 ,,	1,384	3.67	309
11 ,,	1,150	3.65	287
12 ,,	1,317	3.71	322
13 ,,	1,250	3.53	292

Mr. Kuperus, who is a member of the Marssum Co-operative Dairy Society already referred to and also a member of the Herd Book Society, was good enough to submit for our inspection a complete record under the different headings showing the actual return from the cows from which the milk was sent to the creamery during a period of thirteen years, and of which the following is a translation :—

Year.	No. of Cows.	Total milk in glns.	Total receipts for Creamery	Av. quantity per cow glns.	Average return per cow.	Price per gln.	Extra payment for test above the av. of total supply to the Creamery as determined monthly included in total receipts.
			£ s. d.		£ s. d.	d.	£ s. d.
1897	31	25,170	377 3 9	812	12 3 4	3.59	
1898	36	32,752	493 2 8	909	13 13 11	3.61	4 8 4
1899	36	35,710	559 15 0	992	15 10 10	3.76	4 13 6
1900	36	33,668	574 7 4	935	15 19 1	4.09	11 17 8
1901	36	32,920	575 17 4	914	15 19 11	4.19	19 12 4
1902	36	31,207	564 3 6	866	15 13 5	4.33	18 14 6
1903	34	31,355	555 15 8	922	16 6 11	4.25	15 3 4
1904	30	30,586	519 13 4	1,019	17 6 5	4.07	17 6 8
1905	34	30,078	546 12 10	884	16 1 7	4.02	32 5 10
1906	33	33,177	575 10 8	1,019	17 8 9	4.16	34 7 2
1907	32	28,714	592 19 6	897	18 10 7	4.95	21 11 8
1908	30	25,827	491 10 0	861	16 9 8	4.56	24 14 7
1909	35	29,546	562 12 8	844	16 1 6	4.56	21 1 8
1910	30	26,962	574 5 8	898	19 2 10	5.11	23 18 4

ST. ANTONIUS CO-OPERATIVE CREAMERY, WITH MANAGER'S RESIDENCE (PROVINCE OF LIMBURG).

In 1897 the herd average 3.15 per cent. of fat. At that time there were 11 cows in the herd yielding less than 3 per cent., but by selling these and breeding from the better ones the yield was brought up to an average of 3.52 per cent. From this point the percentage has fallen somewhat owing to foreign buyers wanting some of the best animals and the great difficulty of replacing (by purchase from other farmers) with animals giving a high butter fat yield.

As to the average milk production, this, of course, is materially affected by such factors as having a number of young cows in the herd, the length of lactation period, etc.

It will be noted that, having regard to the fact that the separated milk is retained by the creamery for cheese-making, the average prices which are for whole milk are lower than the prices paid by Irish creameries, but the return from each cow to the owner is very much greater than that prevailing in Ireland. This, of course, is explained by the increased yield of milk per cow, which has been brought about by the work of the Cow Testing Associations.

Perhaps the best evidence obtained as to the value of the milk-testing associations is the fact that from the 100,000 cows supplying milk to the co-operative creameries in the province of Friesland, the average yield at present stands at, approximately, 840 gallons. Against this we understand the estimated average yield in Ireland is less than 500 gallons. The milk testing associations in the beginning were not taken very se-

riously by the farmers, but as the result of the records began to show, the value of the system was more quickly realised, and at present a testing association is looked upon as an absolutely indispensable adjunct to a properly equipped co-operative creamery.

Mr. Kuperus also supplied us with some other particulars of his farm, which will be found instructive.

The area of the farm is 110 acres, and the land—heavy clay—is all under grass. The holding is divided by ditches into fields of from two to about ten acres. About one-third of the whole area is used for pasture, the other two-thirds being devoted to the production of hay. When the grass has been cut in the early summer the cattle are allowed to graze on this portion of the farm also, but if the aftermath is very good, portion of it may be cut a second time for hay or ensilage.

On the farm are kept in summer about 34 milch cows, 10 yearling heifers, 2 service bulls, and 24 calves, all herdbook cattle, besides about 20 Friesian pedigree sheep and lambs, and 3 horses. The cattle are turned out to grass in the early part of May and are never housed until about the beginning of November. If the weather should be cold, the cows are blanketed and the calves are put in the shed at night for the first fortnight after they are turned out in May. Cows and yearling heifers are served principally in May or June, in order that they may calve in February or March of the next year, when the heifers are about two years old.

In summer, the cows and heifers get nothing but

grass. The cows are milked twice a day. Until about the middle of June the calves are fed twice a day with a ration which consists of whey and buttermilk, together with about a quart of whole milk mixed with some linseed cakemeal. After the middle of June the older heifer calves get no more whole milk. The younger calves and the bull calves continue to get the above food, to which is added some Friesian sheeps' milk. From about 1st November until 1st May the cattle are continually housed. Cows and heifers get during this period plenty of hay and about 2¼ lbs. of linseed cake per day before calving, which, after calving, is increased to about 4½ lbs. of linseed cake, or sometimes 2¼ lbs. of this food with 2¼ lbs. of earthnuts cake per day, while the heifer calves get besides hay about 1 lb. of linseed cake and 1 lb. of linseed cake meal mixed with whey and water. The bull calves get a little more of these concentrated foods, especially as they grow older and the winter advances.

Calves are taken from their dams immediately after birth and put on dry straw in a barn where the temperature is suitable, and here they are rubbed dry with straw. When about an hour old they are given a little of the dam's milk, and thereafter for the first three days they get the dam's milk three times a day. After the first three days they get full milk twice a day till they are two or three weeks old. For the next four weeks they are fed on full milk and buttermilk, and after that they get whey, some buttermilk, and some whole milk until turned out to pasture.

Mr. Kuperus added :—" It is rather difficult to define exactly the ratios to be given to calves, as one animal can digest much more than another. It is advisable for this reason to let the same man always feed the calves, as, by constant observation, he will be able to guard against both over-feeding and under-feeding."

Egg Societies.

The organisation of egg societies has also been taken up by the Dutch farmers, the system adopted being practically the same as that which prevails in Denmark.

Local societies are formed and affiliated to a Central Provincial Federation, which is responsible for grading, testing, packing, and shipping. The eggs are collected by the local societies and forwarded regularly to the Central Depot. Every member of a local society is furnished with a number, which must be stamped on the eggs before delivery. The eggs are carefully tested, and a member supplying stale eggs is subject to a penalty of 4s. 2d. for every egg rejected.

The Association of Co-operative Creameries in Limburg was the first to take up the co-operative export of eggs. The Province of Friesland followed. There is a Poultry Association which works over the whole of Holland, and has eleven provincial branches, but this association does not trade, having been established to protect the interests and develop the industry of poultry farming generally. The Friesland Export Federation was established in 1903, and the total value of the shipments in 1909 was about £20,000.

It would appear that the opposition in the beginning in Friesland was quite as great as in Ireland, and the methods adopted by the higglers very similar to those with which we are familiar in this country.

In an interview with the manager of this Federation, we learned that a great deal of importance is attached to the stamping of the eggs, and that by this means the reputation and value had been considerably enhanced. The progress in the beginning was comparatively slow, as owing to the methods of the opposition the better prices were not so apparent. Gradually, however, confidence was established, and it is now greatly believed that the societies have been the means of increasing prices by about ten per cent. This confidence is reflected by the more rapid development of organisation, and by the fact that the total shipments for the current year are estimated to be more than double those of 1908.

Raiffeisen Banks.

There are between 600 and 700 credit societies in the Netherlands organised on lines similar to those in Ireland, but in most cases federated with one of three Central Banks, which receive some Government assistance, and the accounts of which are subject to periodical inspection by a qualified accountant employed by the Government.

Central Banks.

The most important of these central banks is that at Utrecht, and a visit there proved of very great interest.

The bank was founded in the year 1898 with a membership of ten or twelve (credit societies), which has since been increased to 312.

The local societies hold shares in the Central Bank, and the amount of credit given in each case is fixed in proportion to the shares held by the society. The shares are of the nominal value of f.500 (approximately £40). Each society must hold at least one share, the maximum being ten, of which only 10 per cent. is paid on the first share and two per cent. on the shares held above one. In addition to these shares, we were informed that each society is liable for the undertakings of the Central to the extent of f.2,000 (or approximately £166) for each share held. Individuals may also hold shares in the Central Bank.

The amount of deposits by local societies in the Central Bank at 31st December, 1909, was approximately £38,280, and the amount outstanding on loans approximately £50,550. This Central Bank has now been working 12½ years, and it is interesting to find that in only two of these years did the demands of the local societies exceed the amount of deposits. The amount in 1904 was £6,670, and in 1906 £45,000, and in both instances the Netherlands Bank discounted the bills of Central drawn on the local societies.

Inspection.

The Central Bank is responsible for the inspection of local societies, and the accounts of the Central are in turn inspected monthly by the Government auditor, who

verifies the accounts and signs the books. In the case of the Central Bank a staff of accountants, consisting of one chief inspector and five assistants, is employed. At least one inspection or audit must be made every year, and more if found necessary. There is no fixed scale of charges, and the amount varies is proportion to the distance from the centre, the annual turnover and the work to be done.

Subsidy.

There is a Government subsidy to the Central Bank amounting to about £280, but the Government control is strictly limited to the monthly inspection of accounts at the Central, and the Department in no way interferes with the work of the local societies.

Reports.

We were favoured with a copy of the Annual Report and Balance Sheet for 1909, as well as the auditor's statement for the month of August, 1910. The latter shows the balance at date of each local society, as well as the general accounts of the Central Bank, setting out the balance debit or credit in each case. The yearly balance sheet provides a most complete record of all transactions, as well as full particulars regarding all the local societies. From the report it appears that:—

The total amount of loans granted during the year was	£231,666
The total amount of loans repaid during the year was	240,630

Total amount of deposits received during the year was	£772,265
Total amount of deposits returned during the year was	875,426
The total capital paid up was	1,424
The total capital uncalled	19,450
The total extra liability of members (or shares)	104,375
The total investments amounted to ...	2,190
The total amount of reserve	2,120
The total assets amounted to	406,590
The total liabilities amounted to	406,075
Amount of profit for year, nett	515

Management.

The management consists of president, a council of seven (which meets monthly and conducts a quarterly inspection), three directors, a manager, and a chief inspector, with the usual office staff.

It will be seen that the volume of business passing through the bank is large, and that the concern is in a very sound condition.

Local Societies.

The organisation and work of the local societies is on the usual Raiffeisen lines. From the report of the Central Bank it would appear that the interest on deposits varies in different districts from 3 per cent. to 4 per cent., and that the interest charged on loans is from 3 per cent. to 5 per cent. The manager of the

local society usually receives some remuneration, varying in amount from £4 up to £50, according to the turnover and financial position of the society.

In an interview with one of the directors, we were told that the Raiffeisen system made very slow progress in the country until the Central Bank was established, and that since then the development has been sound and comparatively rapid. Baron Van Ittersum, who favoured us with an interview, as well as the manager, both expressed the opinion that the Central Bank is indispensable to the movement and that without a clearing house of this kind the local societies must be seriously handicapped and are also likely to become loose in the conduct of their business.

Mr. A. Lohmis, who is the responsible officer of the Department of Agriculture in connection with these societies, in the course of an interview also expressed a similar opinion, and in discussing the work of the local societies informed us that a proposal was now under consideration (and likely to be given effect to), to provide the individual societies with the trading powers which are enjoyed by the credit societies in Prussia.

In this interview, as well as throughout all our investigations, we were very deeply impressed with the absolute harmony and sympathy which exists between the Department and the farmers' movement and also with the very evident anxiety on the part of the responsible Government officials to promote and encourage the principle of combined self-help, without

unduly interfering with, or handicapping, the work of the promoters of the movement.

We regret that time did not permit us to study more closely the different forms of combination dealt with in this report, as well as other schemes of co-operative organisation at work in the country. But we feel that enough has been written to show that Irish co-operators have still a great deal to do, and that in the Netherlands, Irish farmers have a rival which has realised the value of combined effort, and which is leaving nothing undone to place the produce of that country in the forefront of the world markets.