BROWNLEE—

Putting Dairying On A War Footing

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'ARM *and* FOOD POLICY

Pamphlet No. **5** *in the Series* _____

PUTTING DAIRYING ON A WAR FOOTING

by

O. H. BROWNLEE

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WARTIME FARM AND FOOD POLICY SERIES

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To mobilize our nation's giant strength for war necessarily means a drastic readjustment in our ways of producing, distributing, and consuming everything we make. A few laggards, and people working at cross purposes, can slow down the whole nation if government authority is not used to bring them into line. But authority is not a substitute for public understanding and acceptance. As a matter of democratic principle and of efficiency, the citizens must know what has to be done in economic mobilization—and why and how. This series of pamphlets, prepared by members of the Department of Economics and Sociology at Iowa State College, deals with the what, why, and how of agricultural policy and food management.

Previous pamphlets have outlined the broad relations of food to the war effort and sketched techniques of dividing food supplies and getting maximum production. The use of farm prices to obtain the kinds and amounts of food production needed, the mobilization of necessary farm labor and a food rationing program to maintain a high level of morale have been examined in detail.

This pamphlet, "Putting Dairying on a War Footing," deals with an important sector of food production and distribution. Its dominant theme is efficiency in the use of resources, shifts that will save manpower, changes that will make it possible to contribute most to the nutritional health of those who share in the food supply of the United States.

Ames, Iowa, March 19, 1943

PUTTING DAIRYING ON A WAR FOOTING

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PART I. THE FINDINGS*

The Problem

1. The quantity of dairy products needed for our armed forces and for lend-lease, plus those which domestic consumers would be willing to purchase at ceiling prices will be far greater than the amounts that will be produced during 1943. Total requirements for milk in 1943 are expected to be nearly 140 billion pounds. We will probably produce less than 120 billion pounds.
2. There will probably be shortages of all dairy products. Those such as fluid milk, and evaporated and dried milk are very economical, are important to good diets, and have few very satisfactory substitutes. A great effort should be made to maintain their production at a high level. Even though some of the milk solids are lost in the whey, cheese is a concentrated and economical food. Butter is in a somewhat different class. It is a high cost fat; and only a small part of the skimmed milk, a by-product of its production, goes to human food. Vegetable as well as some other animal fats can be produced at less cost of manpower

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and other resources. These can be used in margarine to make up the butter shortage.

3. The desirability of maintaining or expanding the supply of milk depends on the products that are made from it. In spite of this fact workers are deferred on the basis of the number of cows milked, no difference being made between those on farms selling cream to go into butter and those on farms selling whole milk that goes to various products that use all or most of the milk solids. The total food supply could be increased by shifting some of the resources now engaged in producing milk for butter into providing milk to be sold as fluid milk or as evaporated or dried milk or to be made into cheese. A saving in manpower, feed, and materials would also be made if some of the resources now going to butter were shifted to the production of hogs or the production of vegetable oils.
4. Unnecessary sanitary standards make expensive the shifting to other uses milk now going into the production of butter. And the lack of uniformity in sanitary standards makes difficult the interchange of milk between milksheds.
5. Margarine production has not been increased sufficiently to make up for the shortage of butter. In addition, taxes and other restrictions on the sale of margarine are discouraging its use.
6. Much manpower and materials are being wasted in fluid milk distribution. The measures which have been taken thus far to cut delivery costs have not gotten at the heart of the problem—the duplication of milk delivery routes.

The Solution

1. Even if we had the necessary manpower and feed we cannot produce enough milk to meet all expected demands for 1943. Consequently, we need to make the best possible use of dairy resources by shifting them from less essential to more essential uses. This can be accomplished by:

(a) Establishing prices of milk and milk products so that as much of milk as feasible is diverted into products utilizing the essential milk solids, and so that the shift from milk to other livestock is deterred in those areas where all the milk solids can be used for human consumption.
(b) Making deferments of dairy workers conditional upon production of milk for whole milk products or cheese rather than production of milk as such. This sort of policy may encourage some sellers of cream to shift to selling whole milk or to producing other livestock.
(c) Granting subsidies to producers to enable them to secure necessary equipment and make the other changes necessary to sell whole milk rather than cream. A subsidy to butter producers should not be granted.
(d) Revising sanitary standards so that they protect consumers' health but do not impose unnecessary costs or aid in the monopolization of the local market. Unification of sanitary standards based upon analysis of the milk itself rather than the barns, cows, and other production facilities will do much toward shifting milk out of butter and facilitating the interchange of milk between markets.
(e) Relocating drying facilities so that they may be more fully employed. This will enable the recovery of a somewhat larger proportion of the skim milk now being fed to livestock.

2. Re-examine the allotment of fats and the allocation of materials for manufacturing facilities for margarine so that consumers will have a substitute for butter. Restrictions on the sale of margarine—state excise taxes, license fees, etc.—should be removed so that its consumption may be encouraged.
3. Ration butter, cheese, and evaporated and dried milk to

consumers. But fluid milk rationing should be resorted to only after the possibilities for supplementing shortage areas with fluid milk and evaporated and dried milk from surplus areas have been exhausted.

4. Reorganize milk distribution to eliminate duplication of routes and the consequent waste of manpower and materials. This may mean:
   (a) elimination of home delivery, or
   (b) pooling of deliveries, or
   (c) zoning of delivery territory so that one distributor is the sole deliverer in a given section of the market.

PART II. THE ANALYSIS

THE DAIRY SITUATION IN GENERAL

Why Attention Is Focused on Dairy Products

Milk is of great nutritional importance in American diets. Insofar as possible, the output of fluid milk and of dairy products that contain all or most of the nutrients provided by milk should be maintained or even increased. If this is to be accomplished important changes are needed in our price and subsidy policies and in the sanitary standards established for farms producing milk for these products. Butter is less important in our diets than are some of the other products. Its output should be contracted if the feed and labor used in producing it can be shifted to more important uses. At the same time, the production of satisfactory low cost substitutes should be expanded. Consumer rationing should be introduced for those products and in those areas where shortages arise.

Manpower is particularly scarce. Consequently, it should be directed insofar as possible into production that yields the highest possible returns per unit of labor. Additional manpower for turning out war materials and for the armed forces can be provided and we can still produce essential civilian goods if labor is used more efficiently. In many communities the distribution of fluid milk is very wasteful. There is almost universal need for more efficient methods of milk distribution in order to stretch our supply of manpower and at the same time maintain the production of needed milk products without increasing the costs to consumers.

Wartime Demands for and Supplies of Dairy Products

Milk and milk products, like many of our foods, will not be produced in sufficient quantities in 1943 and during subse-

quent war years to meet the combined demands of our armed forces and lend-lease and at the same time enable civilians to obtain all that they will wish to purchase at ceiling prices.

The Department of Agriculture expects total milk production in the United States in 1943 to be about 118 billion pounds—a figure slightly below the amount produced in 1942. One can only guess at the amounts of milk that will be produced in 1944 and in later years. It seems reasonable to expect that production will not be increased. Production in 1942 was about 5 per cent greater than in 1941 and nearly 20 per cent greater than in 1930. Production for the years 1930 to 1942 and expected production for 1943 is shown in Table 1.

TABLE 1

MILK PRODUCTION ON FARMS IN THE UNITED STATES, 1930–43[1]

Year	Billions of Pounds
1943 (expected)	118
1942	119
1941	115
1940	111
1939	109
1938	107
1937	103
1936	103
1935	101
1934	102
1933	105
1932	104
1931	103
1930	100

[1] Data are compiled from U.S.D.A. sources.

What about wartime demands for milk? Many forces are making demand at existing ceiling prices very high. Civilians' incomes have increased, more dairy products are needed for export to our allies, and a larger quantity will be consumed per capita by our military forces than by civilians. This means a large net increase in the demand for dairy products. If consumers are allowed to buy all of the dairy products

they will probably wish to purchase, and if military and lend-lease requirements are fully met, about 140 billion pounds of milk will be required for 1943, and at least as much will be required in 1944 and 1945.

Production of various dairy products in 1941 together with the estimated demand in 1943 are shown in Table 2.

TABLE 2

1941 Production and 1943 Estimated Demands for Milk for All Purposes

Product	Billions of Pounds of Milk Equivalent	
	Production, 1941	Estimated Demands, * 1943
Fluid milk and cream †	46.9	49.8
Butter †	44.8	54.4
Cheese	9.3	16.4
Condensed and evaporated milk	7.9	9.1
Ice cream	5.3	7.0
Other	1.0	1.9
Total	115.2	138.6

* These estimates of total demands for milk are based upon past consumption patterns of civilians and military personnel plus estimated demands for relief and lend-lease. Civilian incomes were estimated to be 15 per cent greater in 1943 than in 1942.

† Dried skim milk is included with the butter and cream. It is processed from the skim milk from these products.

Potential Supply of Milk

Even if we were not faced with critical labor shortages and had all the feed that could be fed to dairy cows, it is doubtful whether the expected shortages for 1943 could be eliminated. There is a definite physical limit to the increase in milk production which might be obtained. Milk output cannot be increased as rapidly as can the production of hogs or eggs. The total number of dairy cows cannot be increased overnight—at least two years is required for a heifer calf to become a producing cow. There are, of course, some cows that farmers are not planning to milk in 1943 that might be milked. But

the number of these that could feasibly be brought into production will add little to total production. This means that the maximum number of cows which can be milked in 1943 is now virtually determined and that most of the increase in milk production which might be obtained must come from better feeding of existing cows. A total production somewhere between 5 and 10 per cent greater than that of 1942 is probably the outside limit of milk output that could be obtained in 1943. Much of this increased output would probably go into butter rather than into the more essential uses, so that even though we might increase production, our supplies of the most nutritive products would still be less than what will be required. Furthermore, increasing milk production may not be in line with the best use of our resources.

Shortages of Dairy Products

Thus, we may expect a difference of approximately 20 billion pounds between our production and our total demands for milk in 1943. Greater deficits may be expected for 1944 and 1945.

With existing policies, civilians may expect about the situation with respect to various dairy products in 1943 as is shown in Table 3.

What Can Be Done?

With shortages of dairy products looming, administrators directing our food policy have two principal alternatives:

(1) *Produce more.* How much more can and should we try to produce? We must answer this question in terms of the total war situation. If there are more important uses for our manpower, feed, and equipment than producing more milk, we must accept shortages rather than try to expand milk production. We should strive to produce more of some dairy products, but not try to increase production of all milk products.

TABLE 3

Product	Supplies Available in 1943 in Contrast With 1942	Special Conditions Affecting Supply
Fluid milk	About the same total amount available in 1943 as in 1942. Local demands may not be completely satisfied in the South, in the Pacific Coast area, and perhaps in New England	
Butter	About ⅔ as much will be available for civilians as in 1942	Production expected to be below last year. Thirty per cent of the butter produced is to be set aside for armed forces and for lend-lease. Storage stocks are very low
Cheese	About ⅝ as much for civilians as in 1942	One-half of American cheese production set aside for armed forces and lend-lease. Total cheese production, however, is expected to be the highest on record
Ice cream	Probably less than ⅔ as much as in 1942	WPB has ordered restriction of ice cream production to make more butterfat available for butter
Whipping cream	Cannot be sold	WPB order eliminated distribution of cream with a butterfat content of more than 19 per cent. This was to increase butterfat available for butter
Condensed and evaporated milk	About as much will be available as in 1942	Evaporated milk production limited by shortage of steel for cans
Dried skim milk	Slightly more than 1942, and about the same amounts as in 1941	Ninety per cent of spray-process dried skim milk is set aside for army and lend-lease

(2) *Divide existing supplies more equitably.* If the product in which there is a shortage has a national market and supplies can easily be shifted from area to area, a nation-wide rationing program is needed. If the supply shortage is local, as is likely to be the case with fluid milk, local programs are needed.

Waste in the Distribution of Fluid Milk

High costs of milk distribution have long been a sore spot in the relations between distributors and both milk producers and consumers. Duplication of delivery routes, the soliciting of customers, provision of special services, extremely high wage rates for milk-truck drivers—all of these have kept costs high. Distribution and bottling charges on a quart of milk delivered to a city consumer's door are about the same as the returns to milk producers.

These high distribution costs are coming in for much criticism at the present time for two important reasons.

(1) In many areas the costs of producing milk have increased, so that higher prices are necessary in order to pay increased wages and to meet other increases in costs. If distribution costs could be cut, then it would be possible to increase the farm prices without increasing prices paid by consumers.

(2) Reorganization of milk distribution could release many workers for other types of work and for the armed forces.

Topics To Be Discussed

As a basis for formulating suitable policies to direct the production of milk, the allocation of supplies among various dairy products, and the distribution of fluid milk, the following topics will be considered in some detail:

A. The relative nutritional importance of various dairy products.
B. Farm price policy for dairy products.
C. Paying subsidies to milk producers.

D. Revision of sanitary standards.
E. Deferment of dairy workers.
F. Meeting local fluid milk shortages with supplementary dehydrated products.
G. Margarine as a substitute for butter.
H. Rationing dairy products.
I. Reorganizing fluid milk distribution.

A. The Relative Efficiencies and Nutritional Importance of Various Dairy Products

Should an equal effort be made to maintain the supplies of all dairy products? The answer to this question obviously depends upon the importance of the various products in our diets, the returns secured from the feed and labor used to produce them, and the extent to which suitable low-cost substitutes can be obtained.

Milk provides us with many different food items. In terms of food value fluid milk ranks highest and butter lowest, as we shall show. Other products lie between these two extremes. No single food makes quite the same contribution to the diet as does whole milk, thus making it difficult to find suitable substitutes. Butter, however, has a very close nutritional substitute that can be produced at considerably less cost. These nutritional and cost differences provide the key to what should be done in milk.

We have neither unlimited feed nor unlimited labor with which to secure additional milk; the feed and labor necessary to produce it can also be employed in turning out other commodities. Hence we must compare the relative importance of separate dairy products with the other commodities which could be produced with this feed and labor before we decide whether or not we should increase or even maintain milk output. If the amount of dairy products we can expect to turn out with a given amount of feed and labor will be worth more to us in winning the war than the other products into

which these resources might be converted, we should produce the dairy products. If the milk products will be worth less to us than the other commodities, we should not use the feed and labor to produce milk.

The importance of milk depends upon the use to which it is put. Milk going into butter, when the skim milk is not utilized for human consumption, is far less important in the human diet than is whole milk or milk products using all the milk solids. The proportion of the milk solids in any dairy product is an indication of its nutritional rating. In terms of the proportion of the total milk solids contained in them, the various dairy products rate about as shown in Table 4.

TABLE 4

Fluid milk	100
Dried skim or whole milk	100*
Evaporated milk	100
Cheese	62†
Butter	30‡
Fluid cream (40% B.F.)	36‡

* Dried skim milk (or fluid skim milk) does not contain the butterfat contained in whole milk but does possess all of the other milk solids and is equivalent to fluid milk as a source of calcium and riboflavin, and the fat from the milk has already gone into butter.

† When the whey is not utilized for human consumption.

‡ When the skim milk is not utilized for human consumption.

Cheese contains virtually all the protein and fat in the milk, but lacks the milk sugar. A substantial proportion of the riboflavin and some of the other vitamins, as well as part of the calcium, is lost in the whey. Both butter and fluid cream contain substantially only the butterfat. However, neither butter production nor utilization of fluid cream need result in the loss of the rest of the milk solids if the skim milk is used for human consumption. About one-sixth of the skim milk by-product of butter is expected to be salvaged in the form of dried skim milk in 1943. Similarly, if the whey can be

salvaged, cheese production need not result in the loss of riboflavin and other nutritive elements remaining in the whey.

To evaluate the importance of maintaining or increasing the milk supply, it is also necessary to examine the efficiency of various milk products in terms of the feed and labor used in producing them. Some of the feed and labor going to dairy cows might, for example, be used to produce beef cattle or hogs. Hence, it is also important to weigh the contribution of these commodities as well as various milk products in determining whether to produce meat or milk. Some important facts bearing on this decision are shown in Tables 5 and 6.

TABLE 5

RELATIVE EFFICIENCIES OF VARIOUS ANIMALS IN CONVERTING FEED INTO FOOD

Animal	Average Calories in the Food as % of Calories in the Feed*	Average Pounds of Protein in the Animal Product per 100 lbs. Dry Matter in the Feed†
Dairy cows (whole milk)	17–25	4.6
Dairy cows (butter)	9–13	‡
Hogs	20–35	2.0
Beef cattle (beef steer)	15–20	1.3
Beef cattle (cow and calf)	7–13	1.0

* Compiled from Armsby and Moulton, *The Animal as a Converter of Matter and Energy*, Chemical Catalog Co., New York, 1925.

† Compiled from W. H. Jordan, *The Feeding of Animals*, The Macmillan Co.; and from Henry C. Sherman, *Chemistry of Food and Nutrition*, The Macmillan Co.

‡ If the skim milk is not fed to hogs, this figure will be approximately zero, but if utilized by hogs, about 0.2 lbs. of proteins will be returned per 100 lbs. of dry matter in the feed. If the skim milk is utilized for human consumption the figure is 4.6—the same as whole milk.

If all the solids in the milk are utilized for human consumption the dairy cow compares favorably with other animals as a converter of feed into energy (calories). As converters of feed and labor into protein, dairy cows rate very high, if the whole milk is utilized. But the labor cost of providing food energy (calories) from milk is considerably greater than

TABLE 6*

RELATIVE EFFICIENCIES OF VARIOUS CLASSES OF LIVESTOCK IN CONVERTING LABOR INTO FOOD

Animal	Index of Energy Produced in the Food per Man Hour Expended	Index of Protein Provided in the Food per Man Hour Expended
Milk cow (whole milk)	100	100
Milk cow (butter)	53	0
Hogs	219	98
Beef cattle (steer)	305	113

* This table is based upon average yearly labor requirements in the North Central States. These requirements were as follows:

1 cow: 130 hrs. for care, plus 30 hrs. for feed growing = 160 hrs.

1 steer: 8 hrs. for care, plus 24 hrs. for feed growing = 32 hrs.

1 sow and litter: 35 hrs. for care, plus 40 hrs. for feed growing = 75 hrs.

The cow was assumed to produce 5,000 lbs. of whole milk per year; the gain of the steer was 400 lbs.; and the gain of the litter of pigs was 1,125 lbs. (5 pigs, weighing 225 lbs. each).

It was assumed that the dairy cow maintained her weight during the year. However, the weight of the calf was not included, and the gain of the sow farrowing the pigs was not considered. Omission of these factors, however, does not alter the character of the results.

providing food energy from some meats. And if only the butterfat is made available for human food, the dairy cow rates very low as a source of either energy or proteins.

The importance of milk does not rest on its provision of energy (calories), but on the provision of (1) high quality protein, (2) calcium—a nutrient likely to be deficient in many American diets, and (3) the vitamin riboflavin—also a nutrient available in insufficient amounts in many diets. A quart of milk (either whole or skim milk) contains more than twenty times as much calcium as a pound of beef or pork; and milk also rates much above meat as a source of riboflavin. Although both calcium and riboflavin can be obtained from plant sources, with existing food customs increased intake of calcium and riboflavin can be achieved most readily by an increase in the consumption of fluid milk.

These facts make it obvious that milk is an efficient food in American diets only if the essential elements of the whole

milk are all made available for human consumption. Consequently, we should not attach an equal degree of importance to each pound or gallon of milk produced in the United States.

The desirability of supplying our dietary needs for fat by producing milk for butter calls for further discussion. Fat can also be provided from hogs and from such plant sources as soybeans, flaxseed, cottonseed, and peanuts. Milk is not only an inefficient source of fat when compared with the other animal sources (see Tables 5 and 6), but it is even more inefficient when compared with the more important plant sources. As is indicated in Table 7, the pounds of fat yielded per acre and per man hour from butter are considerably less than those provided from hogs, peanuts, flaxseed, or soybeans.

TABLE 7

FAT YIELDS OF VARIOUS CROPS AND CLASSES OF LIVESTOCK IN TERMS OF LAND AND LABOR REQUIREMENTS

Product	Average lbs. of Fat Produced per Acre*	Average lbs. of Fat Produced per Man Hour Required for Care of Crops and Livestock
Cottonseed	69	0.5–1.0‡
Soybeans	160	13.3
Flax	172	14.3
Peanuts	214	2.7
Hogs (0–225 lbs.)†	190	13.0
Hogs (225–325 lbs.)†	265	18.5
Dairy cows (butterfat)	80	1.5

* Adapted from D. Gale Johnson and T. W. Schultz, *Price Policy and the Fats and Oils Problem*, Memo. No. 4, Elements of a Price Policy for Agriculture, Iowa State College, Ames, Iowa, Mimeographed.

† Fat returns on hogs of 0–225 lbs. weight assume that the hog is sold at a weight of 225 lbs. Returns on hogs of 225 to 325 lbs. are returns on the weight added after 225 lbs.

‡ Cotton (lint) is also a joint product.

A pound-for-pound comparison of fat yields may lead to erroneous conclusions if there are important differences in the qualities of the fats. Butter provides vitamin A. The

importance of this vitamin in the diet was dramatically illustrated in World War I by the widespread occurrence in Denmark, of Xeropthalmia, a disease of the eyes, brought about by insufficient vitamin A. However, scientists have been able to produce vitamin A synthetically, and it is now being added to fats other than butter so that they are equal or superior to butter in vitamin A content. Butter, along with other animal fats, also contains certain fatty acids which are held by some to be essential to growth. There is, however, no evidence to indicate that any health hazard exists if butter is replaced by margarine made from vegetable or animal fats enriched with vitamin A.

A further factor must be taken into consideration when comparing the relative efficiency of securing fat from butter and other sources. The skim milk fed to hogs is not entirely wasted; but its indirect contribution to human food is considerably less than if it were directly consumed by humans. Other sources of fat also provide valuable feeds. Soybeans, peanuts and cottonseed provide, in addition to the fats, meals which are rich in proteins. And cotton is jointly produced with cottonseed.

An indication of the output of protein from various fat sources is given in Table 8.

To what kind of policy do these facts point? We cannot increase milk production enough to meet all demands. Consequently, it is important to concentrate attention on the maintenance or increase of the supply of those products that make all of the essential milk nutrients available for human consumption. If the skim milk is not being used for human food we should try to salvage it or shift the milk into uses other than butter. If this cannot be done we may want to shift the resources that have other uses out of butter production and into the production of more important commodities. Although butter may be a cheap source of fat where the labor and roughage cannot be used in turning out other products,

TABLE 8

YIELDS OF PROTEIN FROM VARIOUS PLANT AND ANIMAL FAT SOURCES*

Source	Pounds of Protein Yielded	
	per Acre	per Man Hour
Cottonseed	80	0.6-1.1
Soybeans	346	25
Flax	129	11
Peanuts	128	2
Hogs, 225 lbs. wt.	65	3.7
Hogs, 325 lbs. wt.†	34	2.0
Dairy cows (skim milk)	80	1.5

* These comparisons are based on average yields and labor requirements. Obviously, the comparisons do not assume that the same land can be used to produce any of the products.

† Protein and fat added as the weight of the hog is increased from 225 lbs. to 325 lbs.

we must recognize that in many areas there are other sources of fat, both plant and animal, that bring much higher returns for the labor and other resources used than is returned from butter.

B. WHAT PRICE POLICY FOR MILK?

If we are to achieve an increase in the production of milk going into dairy products utilizing all of the essential milk solids, we must make more attractive the incentives which prompt farmers to produce milk for fluid use or for evaporated milk, dried skim milk, and cheese. This might mean taking steps to increase the prices farmers receive for milk or the payment of subsidies to milk producers. It may also mean deferring men from military service if they are necessary to produce milk for essential products.

We need our milk prices established not so that we will get increased production of milk as such, but so that we will encourage the output of milk for fluid use and for use in products which separately or jointly make use of the essential milk solids. Our prices should not encourage producing milk

for butter alone. And prices should be such as to induce some farmers now producing milk for butter and feeding the skim milk to shift to selling whole milk, wherever it can be used as fluid milk or processed into products containing all the essential nutrients in the milk.

Obviously, such a price policy does not call for a general increase in all milk prices. In areas where high hog prices are contributing to decreased production of whole milk products, steps should be taken to increase the prices which farmers receive for milk if such increased prices will avert a further shift. Such areas are scattered. Some of this shift has been due to the labor shortage. Higher milk prices may not be a significant factor in bringing the labor back to the farms. They may, however, check a further shrinkage.

Since it is neither desirable nor possible for us to try to produce enough milk to meet all requirements, the realm in which price policy is likely to be most important is in connection with the allocation of given milk supplies among the various milk products. By adjusting the prices farmers receive for milk going into various uses so that the most profitable outlets are for milk going into the most desirable products, we would tend to allocate out supplies so that our demands for fluid milk are filled first; those for butter and fluid cream last. The spread between prices paid to farmers for milk going into fluid use or into whole milk products and milk going into butter alone has averaged about 50 cents per cwt. In some areas this spread might well be increased at least $1.50 per cwt.

A pattern of milk utilization (see Table 2), in which about 40 per cent of the total milk produced goes into butter and only about one-sixth of the skim milk is recovered for human consumption, cannot be blamed upon either the farmers producing cream for butter or the creameries which make butter. The price pattern in some areas is still one which does not sufficiently discourage skimming the milk on the farm,

selling the cream, and feeding the skim to livestock. If we want to recover this skim milk for human consumption, we must pay for it. When farmers shift from selling cream to selling whole milk, they no longer have the skim milk to feed. With the present shortages of protein feeds this skim milk may be worth as much as $1.00 per cwt. as feed. In addition farmers must be compensated for taking the additional care necessary to handle the selling of whole milk. Many of the producers in areas where the milk might be shifted into whole milk products will need to make rather important changes in their equipment and production methods if they are to sell whole milk. From 30 cents to 50 cents per cwt. may be necessary to compensate farmers for this additional care. This means that in some areas farmers may have to be paid $1.50 per cwt. more for whole milk than the returns which they would receive from selling cream.

C. Subsidizing Milk Production

Subsidies, like prices, are a means of inducing farmers to produce the kinds and amounts of commodities needed to win the war. In wartime, subsidy programs may also help to maintain retail price ceilings. Grants of this kind are one of the alternatives to higher prices. If a farmer or business man is unable to make ends meet with current ceiling prices and cost conditions, price ceilings must be altered or some other aid must be offered or the farmer or business man may be forced to suspend operations. The puncturing of a few price ceilings may endanger the entire price control program. Through a subsidy, the farmer producing milk or the distributor handling milk may be able to sell at established ceiling prices and still pay the prices necessary to obtain labor and materials.

In several cities subsidies were paid to milk distributors for a short period during the winter of 1942–43 in order to enable them to pay higher prices to farmers without advancing the

prices charged to consumers and at the same time to maintain distribution margins. These subsidies aroused much criticism and were discontinued early in 1943. Much of the criticism levied against paying such subsidies to processors and distributors seems justified. If subsidies are used to maintain customary distributors' margins, there is less incentive for distributors to look for economies in operation than there would be if pressure on their margins were brought on by rising costs. There are many areas in fluid milk distribution where costs can and should be reduced. Such economies are more likely to be attained only if distributors are forced to make them.

A subsidy of 3¾ cents per pound is being paid to cheese processors. This subsidy is to enable cheese makers to pay a higher price for milk than they would otherwise be able to pay and at the same time avoids increasing retail cheese prices.

Incentive Payments

The Department of Agriculture has announced that it intends to apply to Congress for 250 million dollars to offer subsidies directly to milk producers in the form of "incentive payments." Although the details of this program have not yet been announced, it is assumed that these payments will be administered in about the same manner as the Department had planned to administer its "incentive payments" on certain war crops. A farmer may receive a payment of, say, $1.50 or $2.00 per cwt. for that part of his milk production which is between 90 per cent and 110 per cent of his production goal. This payment will be in addition to the returns he receives from selling his milk on the market.

Such "incentive payments" appear, upon first examination, to have many good features as a means for getting increased milk output. By this method the amount that might have to

be spent in order to obtain a given increase in milk production may be less than if the same increase were encouraged by means of higher prices for milk. A price increase has to be paid on all production. The "incentive payment" is to be paid only on the additional production that would not take place at expected prices.

However, there are some very imposing administrative problems that need to be considered in connection with "incentive payments." One of these is the establishment of the production goals for the individual farms. Unless these goals are correctly established, much of the payment may be dissipated in paying for output that would have been produced without the subsidy. If the Department pays only for production between 90 per cent and 110 per cent of the farmer's production goal, it may be making a serious error. For example, if a farmer's goal should be established at less than 90 per cent of what he planned to produce without the subsidy, the "incentive payment" paid only on output between 90 per cent and 110 per cent of his goal will not be effective in inducing him to expand his production. He will not be receiving any incentive for producing more than he had already planned to produce. Much care should be taken in seeing that the goals are high enough. And in order to assure that the "incentive payments" are effective even though the goals may be underestimated, the payments should be made on *all* production in excess of 90 per cent of the goal.

The same general principles should be applied in administering "incentive payments" on milk as in establishing relative prices for milk going into various uses. If "incentive payments" are made to milk producers, they should be made only on milk going into fluid milk, products using all of the milk solids, or cheese. There is little justification for granting any subsidy to encourage the production of milk for butter when the skim milk is not used for human consumption.

Other Subsidies

To increase fluid milk supplies or to get an expansion in milk supplies suitable for essential dairy products may require considerable change in milk production methods in some areas. Cooling the milk, sterilizing the equipment, and keeping the milk free from foreign matter are some of the things which farmers will have to do if they switch from producing milk for butter production to milk for fluid use or for use in cheese or in manufactured products employing all of the milk solids. Subsidies might well be used most effectively in encouraging farmers to make the necessary shifts in the handling of their milk.

For example, subsidies might be paid to farmers to clean up their barns and equipment. This would be of particular importance in the Corn Belt, but would be of less importance in some of the metropolitan milksheds where a large proportion of the milk produced already meets necessary standard standards. Such subsidies might be offered only to those farmers making changes in their production methods so that their milk is acceptable for use as whole milk. They need not be offered to farmers already producing acceptable whole milk. And the payments might be non-recurring. They might be offered for only one year, for once the necessary changes have been made, the price spread between whole milk and cream for butter will probably be sufficient to maintain the gains resulting from the subsidy.

D. Revision of Sanitary Standards

Whether milk can be channelled from butter into whole milk products, and particularly into fluid milk, depends a great deal upon the local sanitary standards established for whole milk. Meeting these standards may necessitate major alterations in the barns and other equipment now used by farmers selling cream for butter. Some sanitary standards cause the farmer considerable expense and are more rigorous

than would be necessary to protect consumers' health. Farmers selling whole milk must, as a consequence, spend considerably more time in milking and caring for the milk, the dairy herd, and the equipment than is necessary merely to produce good quality milk. Revision of sanitary standards in many areas would help to increase the supplies of fluid milk, since it would reduce the costs of shifting to selling whole milk rather than cream for butter.

More uniform standards throughout the country would also make for better use of the nation's milk supplies. Unification of standards would make it easier to shift supplies from one milkshed to another and thus relieve some local shortages. But unification of standards should not mean the incorporation of the highest standards in all areas. It should mean establishing standards which meet necessary sanitary requirements and recognize the need for minimizing excessive use of labor and materials in producing the milk. Often special sanitary standards have been built up by local producers interested primarily in excluding competitors from the market, even though the competitive milk was safe for human consumption. Some requirements that increase costs are maintained in spite of the fact that careful investigations have shown that they do not make for safer milk. By setting sanitary standards solely from the point of view of health protection and not in the interest of milk producers who wish to exploit local consumers, much can be done to expand our supplies of fluid milk.

One of the most important steps which could be taken to unify sanitary standards and still adequately protect health would be to establish the requirements for the milk itself and reduce the requirements for barns, care of the cows, etc. Standards might be established which set up maximum bacteria counts, acidity, and foreign matter and odors in the milk. Milk not meeting such requirements could not be accepted. Herds might be tested only for tuberculosis and

Bang's disease. This would force farmers to exercise reasonable care and cleanliness in handling the milk, but would not necessitate as many alterations in barns, milk houses, and other equipment as would be necessary if inspections of the cows and equipment were carried out as they are at present.

Pasteurization of the milk is already widespread except in areas where many small producer-distributors dominate the market. Pasteurized milk is not a substitute for clean milk. But adequate pasteurization destroys bacteria responsible for diseases and reduces the necessity for inspections of both cows and equipment. Where pasteurization is not feasible because of the lack of materials for pasteurizing equipment or because of the small volume of milk handled, herds and facilities might be inspected more rigorously. And if raw milk sales are maintained in the larger markets where pasteurization also prevails, only the milk which is not pasteurized need meet the requirements for raw milk.

Unification of sanitary standards is a necessary step toward coordination and integration of milk markets in order to facilitate the interchange of fluid milk supplies. Local shortages of fluid milk have in many instances been averted by arrangements to supplement supplies from other nearby sources. This means breaking down the limits of many milks sheds. The number of producers supplying any market can be determined primarily through sanitary inspection. Unification of standards imposing homogeneous requirements on the milk itself will enlarge the market as well as enable interchange of supplies between markets.

E. Deferring Dairy Workers From Military Service

There is little question but that a shortage of farm workers looms as a very important factor in limiting milk production. More than one-half of the milk cows on farms in the United States in 1939 were in herds of nine cows or less and could probably be handled by the farm operator and his family.

Many of these herds were, however, located in the butter-producing areas where the milk that is produced goes into the less important uses from a dietary standpoint. Many of the herds serving the fluid milk markets require labor in addition to that of the farm operator and his family.

TABLE 9

PERCENTAGE OF TOTAL NUMBERS OF COWS IN VARIOUS SIZES OF HERD GROUPS, 1939*

Size of Herd	Percentage of Total No. of Cows	Percentage of Total No. of Cows in Herds of This Size or Smaller
1 to 4	27.2	27.2
5 to 9	27.7	54.9
10 to 14	17.6	72.5
15 to 19	9.9	82.4
20 to 29	8.8	91.2
30 to 49	4.9	96.1
50 to 74	1.7	97.8
75 to 99	0.7	98.5
100 to 199	0.9	99.4
200 and over	0.6	100.0
All	100.0	

* Data are compiled from U.S.D.A. sources.

Although the reports of dairy herd liquidation for slaughter appear to present an inaccurate picture of the actual situation, there seems to be little doubt that the exodus of farm workers into industry and into the armed forces has made it extremely difficult to expand milk production on farms requiring hired labor. A very large part of the fluid milk comes from these farms.

Increasing farm wage rates will, for the most part, be ineffective in bringing the labor back to the farms or in keeping it from moving into industry or the armed forces. Most of the movement of labor will be the result of non-wage factors. In its suggestions to local draft boards relative to the deferment of farm workers from military service, the War Manpower

Commission has given the handling of dairy cows a high rating. This may check the drain, and in some instances might actually increase labor on dairy farms.

The advisability of deferring farm workers for producing milk depends primarily upon the manner in which the milk is to be used. Labor employed in producing milk for butter when the skim milk can not be used for human consumption could, in many instances, be employed much more effectively in the armed forces, in war industry, or in raising hogs or such oil crops as soybeans and flax. Just as the prices for milk should vary with the use to which the milk is put, so should the rating of dairying as a basis for farm labor deferment vary with the use to which the milk is put. Workers employed in producing milk for fluid use or for use in whole milk products or cheese should be given much more consideration than workers employed in producing milk for butter, if the skim milk is not used for human consumption.

It should be recognized that much of the milk going into butter is produced on small farms employing family labor, while the milk going into fluid milk or cheese and whole milk products is primarily from larger herds. This means that the policy suggested above will not force a great shift of resources out of butter production; but it will recognize the desirability of differentiating between milk used for butter and for whole milk products in the formulation of our production policies.

E. Meeting Local Shortages With Supplementary Evaporated and Dried Milk

Diversion of milk into fluid use in quantities sufficient to meet all requirements might not be impossible. But a more economical means of meeting consumers' requirements for milk solids would be to supplement local sources of supply with dried and evaporated milk. Transportation of fluid

milk for great distances involves considerable specialized equipment and much care in handling. If dried and evaporated milk could be used to supplement whatever local supplies are available, much of the transport and handling problem could be eliminated.

Of course one cannot supplement fluid milk supplies with these dehydrated products if sufficient supplies of them are not available. Because of the ease in storing and shipping dried skim milk, much of it is being reserved for our allies and our armed forces overseas.

Although civilians will have slightly more dried skim milk in 1943 than they had last year, it will still be a relatively small item. Very little of the dried skim milk produced in 1943 will be available for household use; most of that available to civilians will go to bakeries, confectioners, and ice cream makers. The use of dried skim milk in bread might well be increased. There is a marked deficiency of calcium and riboflavin in the diets of many low-income consumers, and supplementing their diets by providing the calcium and riboflavin through bread may be an efficient means of improving the health of many consumers. It might be well to direct a large part of our supplies of dried milk into use in bread, thus making available less for ice cream makers and confectioners. Bread is consumed by nearly everyone in relatively large quantities. Ice cream and candy consumption is highest in the upper income brackets where the calcium and riboflavin deficiency is less important than it is in the lower income brackets.

Evaporated milk output in 1943 will not be increased because some of the steel needed for cans is being directed to other uses. In order to assure that whatever supplies of evaporated and dried milk we have are used most advantageously, we may also need to allocate them to areas where fluid milk supplies are short. This might mean that in areas

where fluid milk is plentiful, less evaporated and dried milk would be made available, the bulk of supplies being reserved for areas where there are fluid milk shortages.

By relocating facilities for drying milk and by increasing the steel allocation for canning evaporated milk, however, we may be able to provide considerably more dried milk and evaporated milk than is now scheduled to be produced in 1943. Evaporated milk output could be increased nearly 45 per cent with existing facilities, provided the cans were available. This would leave available for civilian consumption nearly twice as much evaporated milk as will be provided under the present 1943 schedule.

Some of the rollers used in producing roller-process dried milk might be shifted from areas where milk supplies are so short that a roller can be operated for only a few hours each day to areas where they can be operated full-time. Some new spray-process drying plants are being planned. These should also be located in areas where they can be operated full-time. The most imposing problem to be solved in trying to get increased output of dried skim milk is to locate the plants in areas where sufficient milk to keep the plant operating at full-time can be obtained without transporting the milk for great distances. The volume of skim milk fed to livestock in Iowa in 1941 was equal to 500 million lbs. of dried skim milk. It is estimated that out of this quantity only from 20 to 30 million pounds of additional dried skim milk could have feasibly been obtained because of the costs involved in concentrating and transporting the milk from the many small scattered producers.

Milk for dried or evaporated milk must be virtually equivalent in quality to milk for fluid use. This means that so far as quality is concerned producers in the large fluid milk sheds might supply milk for dried and evaporated purposes somewhat easier than it could be supplied in the primary butter-producing areas. Fewer farmers would have to make im-

portant changes in their production methods in the milksheds than in the butter areas. And the problem of concentrating supplies would be somewhat less imposing. Considerable cheese is also manufactured in the city milksheds in the north central states, but enough milk would probably be available to enable some increases in the production of evaporated and dried milk and some increase in cheese, but butter production would have to be decreased.[1]

G. Substituting Margarine for Butter

It is clear that consumers' demands for many customary foods cannot be fully satisfied if we are to mobilize our resources most effectively for war. We will not be able, for example, to produce as much butter as consumers will want to purchase. And it will also be necessary to reduce consumption of fats as a whole considerably below the level of last year. However, civilian morale may be kept at a high level within the framework of resources available for the production of civilian goods if we make available substitutes which alter consumption patterns as little as possible and can be supplied at low costs. We cannot afford to shift men and feed into producing more butter. But we can probably afford to increase the production of some other fats, and to expand the processing of margarine.

On the basis of average returns received from resources employed in producing milk for butter and in producing vegetable oils, one-half of the crop land and one-eighth of the labor necessary to turn out our butter would produce enough vegetable oils which, when converted into margarine,

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[1] Reduction in butter output would not be necessary if only dried skim milk production were increased, for butter and this product are produced jointly, and do not compete with each other for the raw material—whole milk. However, cheese, evaporated milk, fluid milk, and butter (or dried skim milk) compete against each other for the whole milk supply, and increases in production of any one of the products necessitates a reduction in the output of one or all of the others unless the milk supply itself is also increased.

could entirely displace butter. Margarine compares favorably with butter both in nutritive value and palatability.

But in spite of the food value and efficiency of margarine, dairy interests have been rather effective in suppressing its use. There are high Federal taxes on colored margarine. At least half of the states have enacted excise taxes on margarine; one-third of the states have imposed license fees on retailers, wholesalers, and manufacturers of margarine; thirty-one states prohibit the sale of colored margarine. While these restrictions do not prohibit the sale of margarine, some of them do have the effect of increasing its cost to consumers. Others increase the difficulty of breaking down the popular belief that margarine is definitely inferior as a food.

We probably need to re-examine the entire margarine situation. The War Production Board has increased the 1943 allocation of fats to 80 per cent above the amount used in 1941. This is equivalent to an increase of less than 2 pounds per capita over our production of last year. Since butter supplies available for civilians will leave us about 5 pounds less per capita than we had last year, the margarine allotment for 1943 might be at least triple the amount used in 1941. Apart from requiring accurate labeling of the product and the preservation of sanitary methods of manufacture, we also need to abolish the restrictions on the sale and manufacture of margarine. We might even go so far as to allow its being colored to resemble butter; and we certainly should allow its being flavored to maximize its palatability.

But in order to make available more margarine we may have to expand the facilities for its manufacture. It is doubtful whether margarine production in 1943 could be double that of 1942 without additional processing capacity, since 1942 production was the highest on record and little additional facilities for its manufacture were constructed.

Making more margarine available does not force consumers to use more of it. Consumers apparently prefer to maintain

their consumption of fat spreads—butter and margarine—even though this may mean less of other fats. Processing vegetable fats into margarine is somewhat more costly than processing them into cooking compounds. But the differences in costs are small enough to make it relatively inexpensive for us to follow consumers' preferences in providing more margarine and less cooking fats rather than less fat spreads and a greater quantity of cooking fats.

H. Rationing Dairy Products[2]

Adoption of the policies suggested in this study would make more acute the butter shortage, although it would provide more margarine to take its place. In addition it is unlikely that we shall be able to increase the production of cheese and evaporated and dried milk sufficiently to meet expected requirements. Consequently, in order to insure equitable distribution of available supplies among consumers, rationing of some or all dairy products may be necessary.

Many local fluid milk shortages can be handled by supplementing these local supplies with fluid milk from nearby markets where there are surpluses. If the shortages are not confined to a local area but are regional in character, as is apparently true in much of the south, importation of milk from more distant sources or the use of dehydrated products must be resorted to. When shortages become so acute and so widespread as to make supplementation no longer feasible, rationing of fluid milk in the shortage areas to provide equitable distribution of the short supplies should probably be undertaken. Fluid milk rationing for the nation as a whole, however, does not seem necessary so long as our annual milk production totals 110 billion pounds or more, if we see to it that fluid milk has priority on all feasible supplies.

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[2] One of the pamphlets in this series is devoted to a discussion of consumer rationing. Consequently, the present analysis will be framed in very general terms pointing toward only a few of the considerations involved in rationing milk products.

If the necessity for rationing fluid milk should arise in some localized areas, fluid milk can be included in the group of foods in which is also included evaporated milk and dried skim milk (if such is available for household use). In rationing evaporated milk, differences between the consumption patterns of small children and adults should be recognized, so that ample quantities will be available for children.

Rationing of butter can probably be most easily accomplished by including butter in a group of fats and oils, and assigning points so that the fats which cost least in terms of men and materials can be easily substituted for butter. Cheese might well be in a block of protein foods—meats, eggs, poultry, etc.

I. Reorganizing Milk Distribution

The present organization of fluid milk distribution is unquestionably one which wastes a great deal of much-needed manpower and materials. One could hardly say that the men employed in distributing fluid milk are loafing. But one can point to many places where important savings of labor and equipment could be made if the present delivery system were reorganized. Duplication of routes, provision of special services, etc., was often questioned during peacetime; this criticism is even more justified during the war when we are in need of all available manpower for use in the military service and in war industry, and when we need to conserve such materials as rubber and automobiles for the long pull ahead. Some consumers have been glad to pay for all services given. However, in many instances consumers have been offered no other alternatives. They were seldom given the opportunity to buy fewer special services with their milk and pay a lower price. Many state and federal milk markets have established the same minimum prices for milk sold out of stores as for milk delivered to the consumer's doorstep. And

distributors in many small markets establish their prices and discounts so that there is actually a higher price for milk sold in stores than for home-delivered milk.

Even if consumers do generally prefer the present milk distribution pattern to one which provides fewer services but at a lower price, this does not provide a valid basis for continuation of the present pattern during the war. Already those in charge of directing war production have eliminated many products from the list available for civilian consumption. And milk delivered to the consumer's doorstep by one of several distributors might well be another war casualty.

Some steps have already been taken to conserve manpower and materials in milk distribution. Pints and half-pints of milk are no longer delivered to consumers. The Office of Defense Transportation has suggested that the frequency of deliveries by any distributor to any consumer be reduced to one every other day. In some cities alternate day delivery has enabled distributors to reduce the number of trucks and delivery men employed in distributing the milk, but in other areas there has been little saving, for few route trucks have been eliminated and the size of the labor force has not been markedly reduced. Distributors have estimated that the savings from alternate day delivery have amounted to from ¼ to ¾ cents per quart.

Such savings should not be considered insignificant. But alternate day delivery does not eliminate duplication of milk routes, the most important source of waste in milk distribution. The luxury of four or five milk wagons going down the same city street, each serving every fourth or fifth family, can no longer be afforded during the war. Such duplication could be eliminated by any one of several means.

(1) Retail deliveries could be abandoned and consumers could be served only through stores.

(2) Deliveries might be pooled; i.e., one truck might carry

the milk of several distributors, each consumer continuing to exercise some choice as to the distributor whose milk will be purchased.

(3) Delivery territory within any city might be zoned or allocated. Each distributor would then confine his delivery operations to one district in which he would be the sole operator. Consumers within the district would be forced to either take the milk of the sole distributor in the district or buy milk from the stores.

Whether adoption of the first alternative, abandonment of retail deliveries, would be feasible depends upon a number of factors. Refrigeration facilities in stores in cities where a large proportion of the milk is home-delivered might be insufficient to take care of the additional volume of milk which would be sold out of stores. Then, too, consumers might waste considerable time and materials in getting the milk from the store to the kitchen. The use of paper cartons rather than bottles has generally increased the popularity of store milk (except in cases where a higher price has been charged for milk sold in cartons than for milk sold in bottles), and using paper cartons might make the elimination of home deliveries more palatable to consumers.

The second alternative, pooling of deliveries, would undoubtedly effect a considerable saving in materials. Distributors might concentrate their milk at a single loading station, and each truck would be loaded with the various brands of milk. Consumers could continue to choose the brand of milk they wished to consume. But labor costs might not be decreased a great deal by this method of distribution. The labor involved in sorting out one brand from another within the truck would increase labor requirements on the truck somewhat above their present level. And additional labor would also be involved in loading operations. Travel and tires, however, would be saved.

Zoning of delivery territory appears to offer the greatest opportunity for effecting savings in distribution. Consumers would have no choice as to which brand of milk was delivered to them, but they might patronize the stores. Some difficulty in allocating territory might also arise. The allocation would probably be most acceptable to distributors if it gave to each an opportunity to maintain his proportionate share of the market. Where the bulk of the distributors are small operators or are producer-distributors, this plan would effect savings primarily in materials.

A part of any savings that are effected by rationalization of milk distribution should be passed on to consumers, since they are receiving less service with their milk. Distributors' profits should probably not be reduced below the level which would have prevailed in the absence of such reorganization or distributors will undoubtedly provide violent opposition.

Whether allocation of delivery territories would be desirable after the war depends upon the success of the plan during the war. If consumers prefer the reduced selection of milk at a reduced price, the program might well be maintained. Much of the competition between distributors, if there is such, would be eliminated, however, and rather rigorous public control of prices and quality would be necessary.

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IOWA STATE COLLEGE
OF AGRICULTURE AND MECHANIC ARTS
AMES, IOWA

OFFICE OF THE PRESIDENT

July 28, 1943

To the recipients of Pamphlet No. 5, WARTIME FARM AND FOOD POLICY SERIES:

On June 1, 1943, a Joint Committee of 12, representing the Iowa State College and the dairy industry of Iowa, was appointed to review Pamphlet No. 5 of the WARTIME FARM AND FOOD POLICY SERIES, entitled "Putting Dairying on a War Footing."

The following report of the Joint Committee was submitted on July 12, 1943:

"To the President of the Iowa State College:

"The Joint Committee of 12 representing the dairy industry of Iowa and the members of the staff of Iowa State College, have reviewed carefully Pamphlet No. 5 of the WARTIME FARM AND FOOD POLICY SERIES, entitled 'Putting Dairying on a War Footing.'

"It is unanimously agreed that many of the statements contained in Pamphlet No. 5 are either incorrect or are susceptible to misinterpretation or are inadequately documented as to facts. In view of these findings it is recommended that Pamphlet No. 5 be retracted immediately, officially and in publication.

"It is further recommended that the best form of retraction is the preparation of a complete revision which will take into consideration all of the criticisms and suggestions which have been made with reference to Pamphlet No. 5 and shall be worked out with a committee representing the dairy and farm interests of the state.

(Signed) H. H. Kildee
Chairman of the Joint Committee."

The above report of the Joint Committee was approved on July 19, 1943, with the proviso that the recommended revision be in the form of a new study of the dairy situation, undertaken cooperatively, and including both wartime problems and those likely to be of interest and concern in the post-war period.

Charles E. Friley

Charles E. Friley
President of the Iowa State College

✡ ✡ ✡ SUBSEQUENT PAMPHLETS will follow this one at intervals of a few weeks. There will be fifteen or more in the series, each dealing with a crucial problem of our WARTIME FARM AND FOOD POLICY, including:

Food Strategy (Published)
Farm Prices for Food Production (Published)
Manpower in Agriculture (Published)
Food Rationing and Morale (Published)
Putting Dairying on a War Footing (This pamphlet)
Food Management and Inflation
Commodity Loans and Price Floors
Using Our Soils for War Production
Remodelling the AAA
Controlling Land Prices and Sales
Dividing Food Among Civilians
Methods of Educating Consumers
Improving Nutrition in Wartime
. . . and Others

✡ ✡ ✡ THE SOLE PURPOSE of each pamphlet will be (1) to bring together all the information pertaining to its subject, (2) to present an unbiased analysis of the information, (3) to suggest a wartime program for the subject under discussion calculated to contribute to early victory for the United Nations, and (4) to place information and suggestions in the hands of leaders in positions to initiate the necessary action.

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