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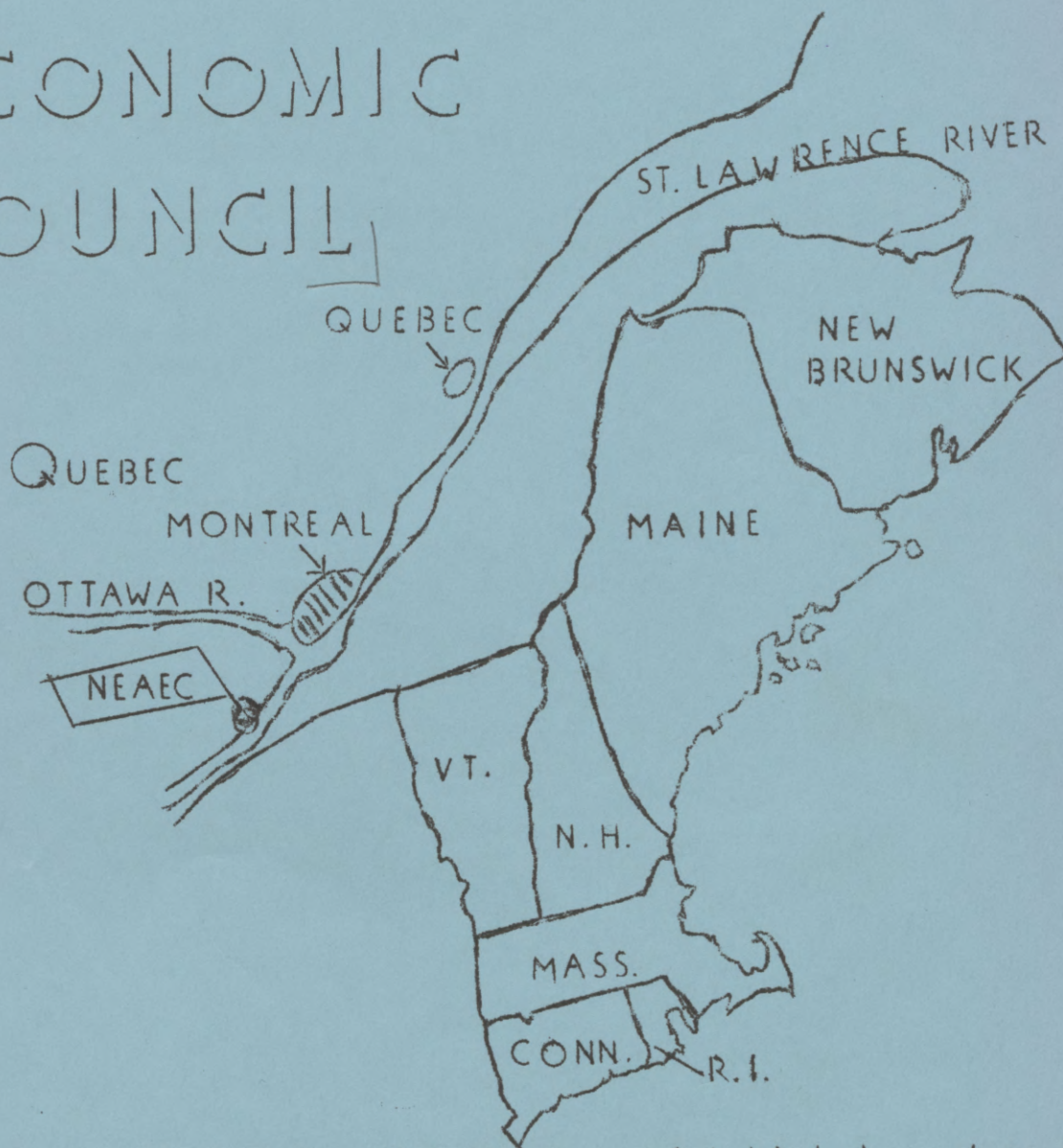
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CHANGES IN DAIRY FARM ORGANIZATION

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Recently I had the opportunity to go on a tour of the U. S. Submarine Nautilus. Although we could see no basic detail, it was interesting to observe the ingenious planning and compactness of the boat. One thing that impressed me was the control center used in guiding the vessel. This center was located approximately in the center of the boat and resembled a very small, windowless office. There were two large comfortable chairs called cockpits in which operators sat facing an opaque wall about four feet away and on which there were many instruments. These operators flew the submarine through the water by using the instruments in front of them. Submariners are beginning to use the words which we commonly associate with airplanes. They speak of the cockpit, pilot, rudders, elevating planes, banking, diving, just as airplane pilots do. For these men are flying an object through an ocean of water just as pilots fly their planes through an ocean of air.

What has all of this to do with by topic--changes in dairy farm organization? I wish to draw a parallel between this submarine control center and one of the most fundamental changes now going on in the dairy production field. The dairy farm operator must learn and is learning to think of himself as a pilot flying his productive unit through a time dimension. Or, in more conventional terms, he is learning to think of himself as a manager of a business making decisions which determine the year to year success of his farming activity. He is facing an opaque wall--the unknown future. But to help guide him in his navigational work is a group of instruments which provide measures of the operational characteristics of his unit, its functional efficiency, and its relationships with other things in the environment through which he is moving. To a limited extent, some of the instruments probe into the future and reflect estimates of possible coming events.

In both examples, the instruments play a limited and unique role of measuring certain important parameters. There is no rightness or wrongness, goodness or badness about their readings. They are facts. In turn, they must be interpreted by some auto-servo mechanism. The information becomes critical or unimportant only as the data are related in some means-ends setting.

Nor is any one instrument the conveyor of all needed facts. There must be simultaneous readings on many facets. Each measurement must be evaluated and combined with other measurements in a multivariate setting--again by some auto-servo mechanism.

Call this mechanism the farm owner, operator, manager, decision maker--these words describe that input resource which plays the central role and is undergoing the most fundamental change in modern dairying. The modern farm operator is becoming a business manager. No longer does he see a field of blossoming alfalfa, but rather therms of net energy. No longer does he understand the self image of each cow. Old Betsy has become Number 341--with a record. In his mind, farming is paper and pencils and measurements--black lines on white paper--holes in punch card. Resources are to be used, to be exploited, to achieve some end.

For those who decry the passing of the artisan--the good life--there is an answer. There will be time for all these things, perhaps more time than ever before. But the owner or manager will enjoy these rewards during his leisure hours just as do other workers in our economy. Perhaps he will walk across the land, stoop and sift a handful of "good earth" through his fingers rather than go to the beach. Perhaps he will stop by the pasture fence to admire some fine young stock rather than watch television. Perhaps he won't. The decision will be his and not presented as a quasi payment for the use of resources.

To function well, this manager must have a continuous flow of information. I wish to discuss several phases of the measurement problem. The cluster of instruments I am suggesting is not new and is not complete. Perhaps the dials or calibrations will be new. I plan to mention some of the more significant instruments. Associated with each of these would be an entire group dealing with various phases of the same general measurement area.

1. Size of Business

The first major instrument required by the manager concerns the size of the unit itself. Present forces encourage the development of large, highly mechanized, highly capitalized dairy enterprises. This trend will continue at an accelerated rate in the future. It must continue as more services formerly performed on the farm are provided from off-farms resources.

I need not mention to this group the advantages and disadvantages of large sized units--the spreading of overhead costs, economies of scale, the possible greater risk, and the possible greater profits. Recent research at Connecticut indicates that the unit cost reduction opportunities in moving from the 100-cow unit to the 500-cow unit are in the neighborhood of 10 percent, while profits increase by tenfold.

Table 1.	<u>Size of herd</u>	<u>Estimated average cost per hundredweight</u>	<u>Profits</u>
	100 milking	\$4.50	\$ 6,000
	200 milking	4.05	21,000
	300 milking	3.95	36,000
	500 milking	3.95	60,000

Internal economies result from the greater specialization possible within the labor force. We are finding that the managing and milking of the herd is being turned over to one worker while crop production and other farm work may have another crew or be on a custom basis.

Specialization is being carried still further by "placing capital closer to the milking machine, as one of our county agents stated recently. The proliferation of equipment and buildings is being reduced by striking off many enterprises formerly found on the smaller dairy unit. In many cases, cow replacements are being purchased, part or all of the forage is bought, and specialized jobs are custom hired. The effect upon the labor force is summarized in the following table.

Table 2.	<u>Size of herd</u>	<u>Estimated units of labor required when all forage and replacements are</u>	
		<u>Bought</u>	<u>Raised</u>
	100 milking	2.12	3.05
	200 milking	4.22	6.17
	300 milking	6.35	9.17
	500 milking	10.63	15.34

All this specialization leads to the more basic specialization of the management factor upon the coordination of the group of activities which leads to the production of milk.

Our experiences also show one unexpected result. I had believed that through the use of various combinations of milking parlor designs, that much of the lumpi-

ness in this factor had disappeared. Instead, it appears that it may be aggravated. While the belief is not substantiated by research, the contention of the farm operators is that one man parlors is the optimum. Thus we would be dealing with 100-150 cow units in our business planning.

2. Labor Management

A second group of instruments would concern labor management. A key ingredient in production on large units will be skilled workers. Wise selection and use of these workers will be one of the important tasks of the farm manager. He will be bidding in a scarce labor market and he should not seek the workers rejected by other industries. Wages must be competitive with alternative opportunities and must include most of the fringe benefits now incorporated in labor returns in other industries. A prime indicator of the managerial ability of the future farmer will be the stability and the efficiency of his labor force.

Stability comes through improved human relations with the employee. This is a difficult subject, for we are dealing with intangible problems. Studies in the field show that the worker ranks job security, job satisfaction, job promotion, and job recognition along with job salary. There is an art in coping with these first four objectives. It must be learned by the successful operator of large businesses. From my work with some successful managers of labor on large potato and tobacco farms in Connecticut, I have made a list of their techniques:

- a. Stimulate worker interest.
Discuss the entire job and show how each task is part of the whole.
- b. Be precise in giving directions, demonstrate required methods.
What - how - when - where work is to be done.
- c. Show that you expect certain levels of accomplishment.
Quantity and quality of performance must be maintained.
- d. Be cheerful and show appreciation.
Treatment is more important than wages.
- e. Look to the future.
Show the worker he has a place in the future of your business.
- f. Pay a favorable wage level.
Seek to pay high wages for work well done.

Efficiency of labor is obtained by its careful use as a productive resource. This calls for:

- a. An analysis of the job to be done,
- b. the identification of the best ways to accomplish the job,
- c. the development of performance standards for workers, and
- d. the teaching of these techniques to the labor force.

These steps are all important and one cannot achieve high labor efficiency without this analytical approach. Plant layout and equipment will influence the performance of the worker, but once these are fixed, the optimum techniques of doing the job should be adopted.

3. Management of Technology

Superior production know-how is the third essential criterion. This requires that the business manager keep abreast of the technical developments in his field and adopt quickly all cost-reducing production opportunities. No large volume operator can be content to use the policy of following yesterday's successful practices. Neither can he risk huge losses of running an experiment station.

There will be an increasing flow of technological developments both in production and marketing in the future. The manager's time will be invested well in following up all new technologies, first in the experimental phase and then under pilot farm application. Next comes the critical step of deciding whether or not the technology is profitable to his business. This is an individual judgment and must consider all phases of the particular farm situation. For example, through alternative choices in the kinds of crops and fertilization practices, Connecticut dairymen have marginal production and harvesting costs per 100 therms of net energy that range all the way from \$1.05 to \$8.40. A rational upper limit is imposed through the purchase of forage or forage substitutes on the market at prices ranging from \$4.00 to \$6.00 per 100 therms net energy. The economy of alternative plans of action will depend upon the situation facing each dairyman. An appraisal of the expected changes in costs and returns from its introduction will give an indication of the benefit from any action.

4. Management of Capital

Another instrument will concern capital management. Huge sums of capital are required both for long time investment and for plant operation of the large volume firm.

Table 3.	<u>Size of herd</u>	<u>Estimated total investment</u>	
		<u>All forage bought</u>	<u>All forage raised</u>
	100 milking	\$ 78,000	\$130,000
	200 milking	118,000	209,000
	300 milking	168,000	299,000
	500 milking	272,000	484,000

No longer can the farm operator expect to provide most of this capital from his own resources nor to "pay off the mortgage" during his lifetime. New funds must be found that will be used on a permanent basis. But these funds should be incorporated on a risk-sharing, profit-sharing basis. In the past, funds have flowed into agriculture on a profit-sharing, owner-take-the-risk basis.

Steps are developing which permit this risk capital to be used. Much more must be done in this area of financing dairy businesses to explore new programs. Done successfully, both parties can gain from the arrangement.

Once capital has been obtained, it must be put to work. Continual testing is necessary to see that long and short run funds are used effectively. Consider alternative production methods to determine if superior techniques can be adopted. It is not enough that a dollar return a dollar plus nominal profit. The manager wants to find the opportunity that will return the highest profit over time.

5. Adjustments to the Market

Another essential instrument will concern the power position of the firm. Volume production opens the way to closer ties between the operator and the supplier and distributor. The farm operator must learn to recognize buying and selling as

important segments of his decision sphere. He will be producing a specific product in a specific quantity for a given market. No longer will the farm operator produce some good and then look hopefully around for a buyer. Production will be scheduled months in advance. Close ties between the supplier and seller will permit greater standardization of product, closer scheduling of on-farm and off-farm operations, and a minimum of output variation. Purchases, too, can be scheduled and obtained under favorable conditions. As the number of producers declines and the central interests become more uniform, strategy can be employed to secure, in the words of John Davis, "greater stability in the food-fiber sector of the economy. Stability to offset the cost-price squeeze resulting from rigid costs and fluctuating prices."