Economic Opportunities for South Dakota During the 1970's: Highlights of Papers Presented: Eighth Agri-Business Day

South Dakota Agricultural Experiment Station

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Economic Opportunities for South Dakota During the 1970's

Highlights of Papers Presented

Eighth Agri-Business Day

Economics Department
Agricultural Experiment Station
April 9, 1970

South Dakota State University
Economics Pamphlet 135
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The economic well being of the people of South Dakota in the 1970's and beyond will depend on many conditions, but paramount among these will be their abilities to understand and analyze the changing nature of our economy, their wisdom in planning for a better future, and their courage and willingness to take the actions necessary to create the kind of communities they desire.

One very important factor determining the economic position of those remaining in the state will be the extent to which they can cause more income to flow into South Dakota from the outside. The people of a state can create more goods and services for themselves from their own resources to be sure, but even more important, from a long-run economic standpoint, are the higher levels of living possible through expansion of interstate and foreign trade.

When considering how a state can compete economically, it is well to recognize that the law of comparative advantage plays a very important and pervasive role. This law demonstrates that even though a state may have an absolute advantage in the production of several commodities, it is usually not in a state's own best economic interest to produce all such commodities. Rather it should produce those commodities where it can achieve the greatest comparative advantage, and trade with other states for other items where its comparative advantage is not so great.

This is not to suggest that because the law exists the citizens of this state need not be concerned about programs to cause economic development and growth. Rather it is to suggest that opportunities exist because of the law of comparative advantage. Changes in what people plan, in what they do, and in their institutional structures can greatly influence the results of the operation of the law of comparative advantage.
For many years we have recognized changes taking place in agriculture in South Dakota and the problems resulting from these changes. At the same time we have exerted a great deal of thought, time and effort on how we might achieve more economic development. We have not, however, adequately considered the nature of agricultural changes in South Dakota in terms of the policies needed to cause economic growth and development in our communities and in the State.

For example, what kind of compensating policies should we try to develop to accommodate the labor moving off from farms? What kind of policies should we try to establish to compensate for the declining tax base in rural areas? What kind of policies should we promote to discourage the outflow of needed investment capital? What kind of policies should we encourage to achieve a higher proportion of the distribution of federal funds? And, what kind of policies should we support in order to strengthen our economic position in selling state produced commodities to out-of-state markets?

There are several rather obvious reasons why we should make a connection between agricultural changes in South Dakota and economic development policies. First, agriculture in South Dakota and indeed in the nation is a giant among all industries. Because of this, virtually everyone in the State is affected either directly or indirectly by changes taking place in agriculture. By understanding the causes and effects of these changes, policies to needed changes and adjustments can be worked out more effectively.

The predominance of agriculture in South Dakota's economy is evident by the fact that 30.6 percent of the total employment was engaged in agriculture in 1960, exceeded only by North Dakota, having 32.8 percent. The national average was 6.5 percent. In 1969, agriculture in South Dakota exceeded a billion dollars ($1,033,000,000) in terms of value of cash receipts from farm marketings. On a per farm average basis this resulted in a realized gross cash farm income of almost $24,000 and almost $7,000 in realized net cash income. Our average net farm income figures were higher than many surrounding states and 44 percent above the national average.

Second, the very size of and changes in agriculture can suggest policies for economic development opportunities that can benefit both farm and non-farm people. For example, the availability of a substantial supply of agricultural production can provide the raw materials for agricultural processing industries which in turn can create employment and income opportunities for those moving off farms or others not finding employment opportunities in agricultural production.

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1These figures do not include "Home Consumption of Farm Products" nor "Rent at Value of Farm Dwellings."
Third, not only is the economy of the State affected by what happens in agriculture, the reverse is also true. The strength of agriculture can be greatly influenced by what happens outside of this basic industry. Changes in domestic and foreign markets and in government payments to agriculture are prime examples of this. Policy decisions in an agricultural state should be made taking these external economic aspects into account. Foreign markets are significant to our State's economy. In recent years, around 10 percent of the total value of all South Dakota farm marketings has come from foreign markets.

SELECTED CHANGES IN AGRICULTURE AND ECONOMIC DEVELOPMENT PLANNING

The Production Market

A very brief review of changes in the marketing of agricultural products suggests needed economic development policies. For example, it is well recognized that in the early settlement of this country a very large proportion of total income and employment was directly related to the production and sale of agricultural products. In 1880, agricultural employment in the United States amounted to about 8.5 million people while non-agricultural employment was only slightly above that figure - 8.8 million people. Compare these figures with 1969 employment estimates of 3.6 million in agriculture and approximately 74 million in non-agricultural activities. It is interesting to observe that currently total employment in agriculture - 3.6 million - is less than the unemployment in our total national economy, a figure approximating 3.8 million.

Also to indicate the declining national relevance of agriculture in terms of expenditures, one should consider the policy implications of the fact that out of approximately $90 billion that all United States consumers spent on food in 1968, less than $30 billion of that amount went to the farmer. The other $60 billion was taken up in processing and manufacturing ($23 billion) and marketing costs ($37 billion). Also, in terms of changes in family income and expenditures, it is well to keep in mind that a declining proportion of personal income is going for food purchases. Less than 17 percent of disposable income of society was spent on food in 1969 compared with over 20 percent in 1959 just ten years earlier.

What are the economic development policy implications of these changes for South Dakota? Here are a few:

In order to get more of the income for food expenditures flowing back into the State, it is vitally important that as much value be added to our products as is economically feasible before they are shipped out. For example, the State's economy is likely to gain more in shipping out processed beef, pork or lamb at 50 or 60 cents a pound rather than shipping
out grain at two or three cents per pound to finish livestock elsewhere. Or the state can be expected to gain more by shipping out processed potatoes at 20 or 30 cents a pound rather than unprocessed potatoes at two cents per pound. Also, not to be overlooked are the possibilities of producing more livestock for the purpose of utilizing more of our grain production.

When processing more of our own agricultural production, more labor is required, thereby increasing labor income and the multiplying effects of it. An important income consideration for an agricultural economy anywhere in the nation, is that while it is true that the human stomach only holds so much, it makes a great deal of difference whether stomachs are filled with high-priced products such as steaks or chops, or low-priced products such as potatoes or macaroni. Obviously, the more high-priced products that are purchased from South Dakota, either by those living outside the state or in foreign countries, the more income will flow into the State.

The Input Markets For Agricultural Production

Not only is the income position of the people of the state greatly affected by the links we provide in the food production and distribution chain, it is also affected by the amount of income retained, spent and invested within the State. The changing nature of agricultural production has intensified outflows of funds for such items as farm machinery, fertilizers, seeds, fuel and insecticides. This is not to suggest that farmers or others in the State refrain from buying tractors or other products produced elsewhere. Rather it is to urge that we consider what types of industries might be built in South Dakota to competently furnish the growing supply of inputs required by farmers, ranchers and others.

The input market is becoming a very large one. It has been pointed out that "in 1870 the typical American farm was still in some respects a subsistence unit with the value of intermediate products supplied by the non-farm sector amounting to less than nine percent of the value of gross farm product. By 1900, intermediate inputs still amounted to only about 13 percent of the gross farm product. In recent years, non-farm inputs have exceeded 60 percent of the value of farm output."2

What, if anything can South Dakota do to secure more of the expenditures for the inputs of agriculture? Possibilities include in-state production of fertilizers, seed corn and other seeds, formula feeds, and possibly some types of specialty farm implements. In a different vein, agricultural input costs might be reduced through joint ownership of farm machinery, use of more custom machines, and more machinery rentals. Competent economic analyses are needed when considering these alternatives.

The Outflow of Investments in Human Resources

With the use of new machines and other kinds of labor saving devices, the need for labor in agriculture has continually declined. These changes plus limited employment opportunities within the State, have caused labor (which means "people") to migrate elsewhere. This labor supply often represents considerable capital investment in education and/or training.

The economic policy implications of this include not only attempting to provide competitive off-farm employment opportunities within the State, but also to consider what, if anything, can be done to secure additional supporting funds from outside the State to help finance the education and training programs that provide valuable services for other states.

Also, for consideration is the possibility of training more of our young people for the types of agricultural processing and other industries that might feasibly be expanded or encouraged to locate in this State. Industry tends to locate not only where raw materials for production exist, but also where there is an adequate supply of well trained people.

The Outflow of Capital Through Land Inheritance Policies

Another aspect of marketing that has some real implications in terms of economic development policy within the State, deals with the effect of land value appreciation over time and the ultimate distribution of income because of it. It is well recognized that one of the most important returns to farm ownership is the increased land values over time. It is often said that a farmer or rancher can be almost broke at of his life and retire with a very substantial accumulation of wealth because of the increases that have occurred in land values. When one analyzes this pattern of wealth accumulation and distribution, it can be observed that while the farmer himself may have accumulated this wealth, it is ultimately distributed far and wide. At the time of the farmer's death and after the sale of his property, the proceeds are frequently disbursed out of the State's economy to the heirs living elsewhere. This type of drain-off from otherwise potential investment capital for the State obviously has its economic impacts.

Another common practice that has an economic impact on this State's economy is the tendency of farmers, ranchers and others to invest in out-of-state industries covered under various types of investment programs. What, if anything, can be done about influencing and encouraging more state investments from accumulated agricultural wealth in South Dakota?

Capital tends to flow where return on savings and investments are the highest. Thus, State laws should be designed to encourage retention of funds for investments in State ventures. Alternative investment opportunities in the State need to be pointed out and explained to those in agriculture who are in a position to invest in such ventures. Little has been done in
the form of general educational programs for farmers and ranchers in this regard. In most cases, farmers are not well informed about alternative investment opportunities and often are not brought into discussions pertaining to alternative opportunities for their capital accumulations.

The role of the Farm Corporation needs to be considered in terms of its ability to avoid the necessity of refinancing farm property every generation. Perpetual debt, at a level consistent with good farm management, should be seriously considered. With the increasing capital requirements in agriculture it may no longer be reasonable to assume that in the course of a farmers lifetime he should be able to accumulate full ownership of a farming or ranching unit with a value of one-half million dollars or more. To finally retire with an equity in such a unit of perhaps $50,000 to $150,000, may be a more reasonable expectation. By structuring the financial plan to accomplish this objective, rather than to attempt to pay for the entire unit in a lifetime, may also make it possible for the farmer or rancher and his family to enjoy a higher level of living during their productive years. Further, such a financial structure may also increase in-state spending and investments.

**Increasing State Income Through Higher Farm Product Prices and Farm Program Payments**

Two other ways of increasing income flows into the State would be through marketing structures that result in higher farm product prices and through high government farm support payments. There are several types of programs that might accomplish these goals. Collective bargaining, marketing orders, supply management of production, and higher governmental price support programs fall in this group. The type of farm program in existence can have a very great effect on income flows in and out of agriculture.

**THE NEED FOR A STATE COUNCIL OF ECONOMIC ADVISORS**

It can be seen from the above analysis that many opportunities exist for strengthening the State's economy through policies designed to take advantage of changes occurring in agriculture. But basic to this and even more fundamental for creating a state economic structure to meet the future needs of society, will be the extent to which leaders make the right economic decisions. These decisions can be greatly influenced by the type of professional assistance given in economic development.

To provide such economic guidance South Dakota urgently needs a State Council of Economic Advisors. This need exists not only for the 70's but also for the more distant future. Imaginative, creative and informed minds
in economic development are in very scarce supply, but in South Dakota a supply does exist and the State can ill afford to ignore them.

Things will not turn out "just fine" economically without competent and dedicated economic planning and action. Man can influence and shape his economic future if only he has the knowledge and determination to do so.

The White House Council of Economic Advisors has in the last decade earned profound respect for its influence in both national and international affairs. Their current budget is just over $2 million per year with twenty-seven professional staff members. The nation would not and should not attempt to try to get along without them. Neither should South Dakota.

The size of economic advisory budget and staff for the nation is, quite obviously, not suggested for South Dakota. Indeed little or no budget may be needed. Rather it is merely urged that existing competencies be used to better determine the economic potential in the State and to assist in achieving desirable economic goals.

MAJOR AREAS OF ECONOMIC ACTIVITIES IN SOUTH DAKOTA NEEDING STRONG, ECONOMIC COUNSEL AND GUIDANCE

Five major areas of economic activities in South Dakota needing strong economic advice and counsel are presented.

1. Strengthening Agricultural and Agri-Business Functions

While much has already been done in providing guidance and counsel in such agricultural and agri-business functions as farm management and marketing it is expected that even more rigorous economic analysis and assistance will be needed in the future in these fields. For example, more linear programming and heavier use of the computer in management decisions is likely to become a necessity in order for agriculture in South Dakota to compete and to realize its potential in growth and development. In addition to strong leadership from State specialists in these areas, area farm management, marketing and public affairs specialists could be of real value to the State.

The relationships between foreign markets and our agricultural production needs to be better understood. Currently approximately 50 percent of the market for wheat stems from foreign demands. Feasibility studies are continually needed for various types of agricultural processing possibilities within the State.
The need for assistance in determining the economic potential for irrigation and economic impacts from it is becoming increasingly acute. Irrigation is already expanding rapidly in the State. In 1949, for example, there were approximately 78,000 acres of irrigated land in farms and by 1969, the South Dakota Crop and Livestock Reporting Service estimated that 136,020 irrigated acres had been harvested. Approximately 500,000 acres are currently under irrigation permits in the State and about 250,000 of these acres have already been developed for irrigation. Current estimates are that a total of two million acres are potentially irrigable in South Dakota.

Research now being completed indicates that large farming operations in the Missouri terrace area of north central South Dakota can substantially increase returns to management, by adopting irrigation. Assuming a 1600-acre farm with 960 irrigated acres, it was estimated that with irrigation, using a tow line system, returns to management could be increased from $8,450 to $40,280.

Also, farmers and others affected by farm prices and income need economic advice and counsel relative to the impacts of alternative agricultural policy programs on their operations. With agricultural farm program payments for South Dakota approximating 25 percent of the realized net farm income in recent years the State can ill afford to be unconcerned about agricultural policy.

2. Increasing Employment and Income Levels

The future economic strength of South Dakota's economy will depend not only on how many individuals can be employed in the State, but also how fully they can be employed and their earning capacity while they are employed. The average level of income cannot go up unless either the existing labor force can earn more income through more full employment or additional employees achieve higher levels of income than the rest of the labor force. It appears that one of the best opportunities for increasing the per capita level of income in South Dakota is to more fully employ those already in the State. However, this is not to suggest that we refrain from doing all we can to create new employment opportunities that possess high salaries and wage levels.

In a recently released study indicating underemployment by counties in the United States for 1960, the underemployment levels for South Dakota for the male population averaged 37 percent below what might be expected if national median levels were achieved. Ten counties in South Dakota were under 50 percent of the national average while only five counties had a figure under 10 percent. For the female population a very similar pattern existed. Buffalo County, the most sparsely settled county in the State, had an underemployment figure of 51.3 percent for the male population.
compared with Minnehaha County, the most densely populated with 10.2 percent. While many situations exist in South Dakota causing different levels of underemployment, the study appears to be sufficiently complete to indicate that the per capita levels of income can be substantially improved by more fully employing those living in the state.  

The relatively high levels of underemployment shown for South Dakota may account for the fact that per capita personal income for South Dakota has been approximating 80 percent of the national average for several years. In 1968, for example, the per capita personal income for South Dakota was $2,876 compared with the national average of $3,421. Thus to improve the employment and income situation in South Dakota, it is important that farm and non-farm labor be more fully utilized through either the creation of more jobs or increasing labor use in existing jobs. Competent economic counsel and advice are needed to assist in creating or expanding employment opportunities.

3. Establishing and Maintaining a Desirable Environment

Certainly one of the most rapidly growing public concerns in the nation and perhaps in South Dakota is the problems associated with developing and maintaining a desirable environment in which to live. Pollution is a major problem in some parts of the nation and indeed in some parts of this State.

It is well to recognize that almost all pollution problems are a direct result of man’s selfish economic motives. If it were not for the intense desires of individuals to get more profits and continually strive for higher levels of living, many of the undesirable environmental problems would not exist. This is not to suggest that selfish motives of man or groups of men are all bad. Indeed such motives play a vital role in causing our economic system to function. However, an economic system with no public restraints can create a very undesirable social and economic environment.

While economic motives have caused and are causing most of our environmental problems, economic motives can also be used to help correct these

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conditions. When it becomes profitable or not costly for individuals or firms to do those things that reduce pollution, corrective action can be expected to be taken. If, however, incentives and/or subsidies or marketing arrangements are not established to make these incentives operative, then the only other way of controlling pollution is to establish strong legislation and compel compliance with specified rules of business and individual conduct.

Thus, economics plays a vital role not only in causing pollution and other environmental problems, it also provides the opportunity for reducing and/or controlling these problems.

In the next decade and beyond, many social and economic studies need to be made and actions taken on the basis of these studies if our environment is not to be destroyed or greatly deteriorated. It is important to be able to suggest alternative courses of action, that are economically feasible for pollutors and would-be pollutors.

In South Dakota we are still at a stage of development whereby through careful economic planning, including economic incentives and strong and realistic laws, we can maintain a relatively unpolluted State from becoming one that would not be a desirable one in which to live.

4. Structuring Viable Communities and Areas in Which to Live

The decisions of people to remain in South Dakota or move out of the State will depend on more than the strengths of agriculture, agri-business, income levels, and even the levels of pollution. It will depend on all of these factors, plus other supporting social and economic features that constitute desirable areas in which to live. Whether such supporting features will become a reality will depend to a great extent on whether the economic feasibility of them can be achieved and accurately pointed out to the general public. For example, there are both efficient and inefficient ways of financing public and higher educational systems in the State. The same can be said for churches, for health programs, and for recreational and cultural opportunities. Alternative types of tax policies to most equitably finance such services need to be seriously considered.

To achieve an optimum in the structure of an economic area, the role of the small town within the area needs to be analyzed. Many small businesses continue to be under extreme pressures to even survive. They are under cost-price volume pressures similar to those of the small farmer. These pressures force mergers and other types of economic concentrations. Various actions taken in this regard can be good or bad in terms of the future economic well being of the people of the State.
5. Improving Economic Conditions for Indians

The last suggested area of major economic concentration for South Dakota, but certainly not the least in terms of importance, pertains to economic opportunities for the Indian population of the State. In terms of particular human economic problems, the living conditions of the Indians must be among the most severe.

As agricultural economists we know that the amount of land available for the number of Indians living on reservations to make a good economic living from the traditional types of farming or ranching is inadequate. Thus, other types of employment opportunities are needed for Indian people. Substantial economic changes are going to have to take place if the Indian population is going to enjoy a level of economic well-being comparable with the rest of society. No solutions are suggested here. Rather the urgency to concentrate more heavily on alternative economic approaches to help solve this very serious human problem should be of major concern to the entire citizenry of the State.

To improve living conditions for Indians will no doubt involve more than economic consideration. Many disciplines working together should be able to suggest some valuable alternative courses of action. Anytime a segment of the population of a State is experiencing adverse economic conditions the entire economy is hurt. Thus, even from a selfish standpoint, we should give more attention to ways of improving the economic lot of the Indian people.

SUMMARY AND CONCLUSIONS

The economic future for the people of the State can be bright or it can be dismal. Whether it is to be bright or dismal will depend on the economic knowledge of the citizens of the State and the wisdom and courage of the leadership to bring about desirable economic changes. There are several ways of increasing our income by influencing the income flows associated with agricultural changes. Also, employment opportunities can be intensified and expanded through agricultural production, processing, and marketing.

We have gone a long way in solving our immediate problem of increasing agricultural productivity, but the long-range human problems are still before us. The economic aspects of structuring and maintaining a desirable environment in which to live in the State includes many more than what have been traditionally thought of it in the past.

The establishment of a State Council of Economic Advisors could be a very important step in helping achieve desirable economic growth for the future. A State Council on Economic Education has already been created which can act as a supporting force for such a council.
Urgency exists in providing economic counsel and guidance in maintaining and strengthening our environment with special attention given to pollution. To be considered are the economic aspects of encouraging and providing specific types of pollution control systems and regulation of industrial development. Also, the economic aspects associated with providing quality education as well as religious, cultural, recreational, and health programs are vitally important. The financing of such programs through an equitable and an adequate tax system also requires rigorous economic analysis. The role of the small town in area development has real economic implications.

Finally, it is vitally important that one of the most serious economic problems in the State -- the economic well-being of the Indian population -- be even more seriously analyzed in the future than in the past.

As leaders and educators in the State, a real obligation is on us to help develop the kind of areas and communities in which people will want to live in the future. There is no greater economic challenge facing us at this time. We can be optimistic about our possibilities to develop a good state in which to live, however, because at no time have we known more about economics and been more able to influence our economic future than is the case today. No greater hope exists for a better economic future than through your support and participation in our research and educational efforts on these very important problems facing the people of the State.
When an economist gives a report on the future outlook picture, it is an educated guess. When I give out any information on outlook, it is merely a guess and should be interpreted as such. Like unprofessional advice, it is worth just what it costs.

As Mr. John Harms, editor of the Kiplinger Agricultural Letter, told his audience, "There is a great demolition job now going on in agriculture" and from this will emerge a whole new set of rules.

For those who are looking forward to the "good old days" they had just as well forget it as they are not coming back. Parity for farm prices is as dead as the steam threshing rig.

In trying to forecast the future the best source of information is probably a look at change trends in the past few years. Although there are many factors such as farm programs, foreign policy, public opinion, weather, and war that tend to create temporary trends and adjustments, there are some rather pronounced and persistent trends that are worthy of study.

1. The total number of all farms has been decreasing at the rate of about 70,000 per year and, although this rate is slowing down somewhat, it is expected to continue for some time.

2. Although we are losing agricultural land due to airport, highway, industrial and residential expansion, total farmed acreage has held about constant due to irrigation, draining of swamps, etc; so with the declining number of farm units it means that farms are getting larger and our production capacity is being maintained.

3. There has been a marked increase in the number of farms with $40,000 or more of gross income and, if the trend continues, will soon surpass the number of farms with $2500 to $5000 gross.

4. Production expenses have been rising about 4% per year over the past 5 years and with fewer farmers the average will be spending about 40% more than his counterpart 5 years ago.

Wilmer L. Davis is Manager, Sokota Hybrid Producers, Brookings, South Dakota.
(5) In the early 1950's the total investment in machinery and equipment about equaled the investment in livestock. In 1967 the investment in machinery was nearly double that of the livestock investment which indicates a strong trend toward mechanization and the elimination of labor.

(6) Capital items — buildings, tractors, trucks, and farm equipment — have increased in the past ten years at a rate twice as fast as total farm income and shows no signs of slowing down.

(7) The income from livestock has been increasing at a much faster rate than cash crop income and is expected to increase to where it is more than twice the amount of all other farm income combined.

If we can predict the future on the basis of past trends, what does all this mean to South Dakota agriculture and Agri-Business?

(1) South Dakota is in an excellent position to take advantage of both larger units and a drastic increase in livestock production.

(2) Farming in the future is going to be both more rewarding and more challenging.

(3) The farmer of the future is going to be a shrewd businessman. He will need and demand more in service than he has in the past. He will demand and get a quality product at a competitive price.

(4) Agri-Business is going to be forced to be staffed with highly trained technical people that not only give the physical services needed, but the technical and management service as well. He is not going to be interested in sales talk as such -- but with ideas and facts that work.

(5) Capital is going to be much more important and there will be a real challenge for lending agencies to come up with the type of credit that is needed, or other credit systems will be devised that will meet this need.

(6) The marketing of farm products will play a more important role in the future and sophisticated marketing systems and services will need to be devised to meet the needs of agriculture.
The "Law of Supply and Demand" won't be repealed. But better methods of agricultural statistics must be devised to keep good management constantly advised of this balance. It is disturbing to me that we can send a missile to the moon and predetermine not only the exact time that it will arrive, but the exact spot where it will land, and yet we cannot give the number of cattle on feed with any degree of accuracy until two months after they have been slaughtered.

Private research has increased at a tremendous rate in the past few years and public research has been increasingly difficult to fund.

I would have you recall that farm prices have not changed much in the past 20 years. New seeds, feeds, fertilizer, chemicals, and machinery have increased farmers producing ability 3 1/2 times in the past 15 years, all as the result of research.

Our future depends on continued and expanded publicly-supported research if we are to feed our growing population, and this type of program must be constantly sold to the public.

Agriculture must put out a concerted effort -- an advertising program if you will -- to create and maintain a better public image to our urban neighbors and friends.

As an example of what advertising can do, the housewife will complain about paying 30¢ for a quart of milk, with all of the food nutrients and amino acids to completely maintain life, and yet be willing to pay 15¢ per bottle or 50¢ a quart for a bottle of Coke -- simply because it refreshes.

In Summary

Agriculture will not be without its problems but they will be met. Food and clothing, even though fads and fancies may change, will still be needed.

As agricultural management becomes more efficient and technically trained, Agri-Business opportunities multiply as more services will be needed.

Young men will be able to start farming and will be recognized -- not as poor country cousins --- but as highly trained, capable businessmen.

Farm life will still be the envy of the world as a place to raise a family. The smell of a newly turned furrow or of new mown hay will smell just as sweet. The thrill of new life, the closeness of nature will be as rewarding as ever, and South Dakota is in an enviable position to take advantage of these opportunities.
RURAL DEVELOPMENT: DREAM OR CHALLENGE?

E. F. Behrens

Rural development. It is a phrase full of promise and hope yet it is so broad in concept it defies definition. Rural Development—elusive and as hard to nail down as the Sioux River after a heavy spring rain.

Rural America itself has been defined by the President: it is all those areas outside of Standard Metropolitan Statistical Areas. Sioux Falls—Minnehaha County—is outside Rural America. All the rest of South Dakota is inside Rural America. By definition.

But what is Rural Development? Is it, as some have suggested, the urbanization of Rural America? Is it the transition of Brookings County into a Standard Metropolitan Statistical Area?

Or is it the transition of Grant County—population 9,913—into an area with three times the population but still far less than an SMSA?

Is it getting 25 jobs for Grant County? Or 2,500 jobs?

Is it providing decent human habitation?

Is it taking advantage of existing hills and cold weather to provide skiing opportunities for people who live in the cities but want to ski in the country?

Or is it combining the assets and energies of several neighboring towns to provide a community college for all their children?

Rural Development is all of these things and more.

It is the people of Rural America making life better for themselves and their children—improving all of America in the process.

If we are, indeed, to be joined by another 100 million Americans in the next 30 years, then America must get ready.

A Rural America of equal job opportunities and a high quality of life, combined with space and a pleasant environment can offer meaningful alternatives to that 50 percent increase in our population -- most of whom will be born in cities.

E. F. Behrens is Executive Assistant to the Secretary of Agriculture, U.S.D.A.
President Nixon, recognizing the opportunities inherent in Rural America, appointed a blue-ribbon citizens Task Force on Rural Development and a Rural Affairs Council of Cabinet members to help him develop and carry out a national growth policy. He has made Rural Development -- in all of its ramifications -- a challenge to members of his cabinet and their subordinate agencies.

Many Congressmen and Senators are concerned about Rural Development, introducing legislation to help it along.

Private and semi-private organizations and associations have taken up the challenge and offered a wide variety of paths to success. On Monday evening of this week Secretary Hardin met with the Chairman and Trustees of the Committee for Economic Development. This is a group of hard-headed businessmen who look at the problems of economic development through eyes of years of successful business experience and problem solving.

A few days ago, the Commission on Agricultural Credit, admittedly interested primarily in agriculture said:

"The (Farm Credit) System, in total, has been extremely successful in bringing new capital into agriculture -- currently at the rate of more than $1 billion additional capital each year. Should this credit institution be used to meet future capital needs of Rural America as well as American agriculture?"

And it continued:

"Communities have, and will continue to have, difficulties in financing such crucial projects as water systems, facilities for waste disposal, recreational facilities, and similar projects necessary for improved rural living. There is special need for credit for non-farm rural housing."

At almost the same time, the President's Task Force on Rural Development was reporting to the Rural Affairs Council:

"The Task Force recommends a new credit institution to provide rural areas with greater access to private capital. This institution--to be named the Rural Development Credit Bank--should be structured in law as a wholly new title in an amendment to the Farm Credit Act."

Within the Department of Agriculture, an extensive study had already begun along those lines. We are still studying it. There are a lot of questions yet to be answered.

I use this merely as an example of the thought that is being given to Rural Development in Washington.
There are a great many other projects underway that would affect Rural America, not only within the Department of Agriculture, but in Housing and Urban Development, the Department of Transportation, the Department of Labor, the Department of Commerce, the Office of Economic Opportunity, and the Department of Health, Education and Welfare... practically all those departments represented on the Rural Affairs Council.

USDA and the Department of Housing and Urban Development are working together in implementing the law providing funds for nonmetropolitan planning and development districts. We're working with Commerce—the Economic Development Administration—on this one, too.

HUD and USDA are working also to improve the housing of Rural America. Almost two-thirds of the nation's substandard housing is located in rural areas and in towns of up to 25,000 population. Teamwork, with HUD extending its services and the Farmers Home Administration helping to inform Rural America about HUD programs, can help win the war on substandard housing.

We're working to develop a program of incentives to encourage private forestry.

We're looking very seriously into the effect of freight rates on the development of Rural America — a subject not overlooked by the President's Task Force, which said:

"The rate structure of public carriers hold a life-or-death decision over the future of an area, and over the competitive potential of individual businesses. Public carrier rates influence the location of new industries."

The Task Force recommended that the President request the Interstate Commerce Commission to scrutinize all aspects of the rate structure of public carriers to serve the new national policies in rural growth and development.

Within the Rural Affairs Council, we are concentrating at this time on three fields: Jobs and Opportunities, Rural Facilities, and Family Assistance, and created three ad hoc committees to report on these.

Commerce Department is strengthening its coordination of several programs, including the extensive Economic Development Districts and the regional councils.

The Labor Department, HEW and the Department of Agriculture are continuing their efforts to extend Concerted Services in Training and Education.
From this, you may conclude that "Rural Development is alive and is in Washington." That would be an erroneous conclusion. Rural Development is alive . . . and the people in Washington are busy with it . . . but Rural Development is living only in Rural America, where it ought to be.

All the pronouncements in the world that are issued from Washington cannot change Rural America . . . only the people of Rural America can change it.

And they are busy at it! Listen:

In Bangor, Maine, when the Defense Department announced it was closing the Dow Air Force Base, with its 5,000 jobs and $20 million annual payroll, Bangor residents refused to let the town die. The base hospital was changed into a new city hospital, 348 military homes were transformed into low-income housing units and 11 industrial buildings on the base property were turned into an industrial park.

But Bangor didn't stop there. By sheer selling ability and hard work, it converted the seemingly useless 11,400-foot long runway into a prime alternative landing land site for planes bound for Kennedy Airport in New York City.

Bangor has become the haven of the "supplemental" carriers -- unscheduled airlines that specialize in economy flights between the West Coast and Europe. U. S. Customs was persuaded to open a facility. Some 300 new motel rooms have been built and another 300 are under construction. More than 2,000 Bangorites have gotten jobs from the new enterprise and the people of Bangor say they have just begun to scratch the surface.

In the Hull-York Lakeland Resource Conservation and Development project in Tennessee, sales tax receipts for 1967 jumped 11 percent over the previous year -- attributed largely to expanding recreation and tourism in the project area.

Ten of the eleven counties in the project area have new industries, including five new aircraft plants employing 1,000 people. A watershed project kept the town of Livingston's economic mainstay -- a shirt factory employing 1,400 people -- from moving. Three vocational training centers have been established. A crafts association has more than 400 chairmaker, weaver, and painter members, and they have a new warehouse and retail stores.

Five new libraries have been built. Three new high schools, four health centers, and a mental health center are now under construction. Five towns have new sanitary landfills. More than 120 acres of eroding roadsides have been seeded.
That's Rural Development!

Down in Laurens County, Georgia, 26 low-income men ranging in age from 22 to 68 and averaging 4.2 years of formal schooling have begun studying basic horticulture so they can go into business on their own, earning as much as $6,000 a year from the sale of flowers from each greenhouse. The project, which included 17 weeks of "learning and doing" followed by 17 weeks of supervised free enterprise, represents the epitome in cooperation between local people, local government, private enterprise and several agencies of the Federal government. Teamwork. Altogether, some 81 of those "people left behind" — both black and white — get another chance at life in Rural America.

Out in California, Robert F. Allen of Menlo Park is building attractive three-bedroom homes for a total price (lot included) of $15,000 to $16,000 under the Farmers Home Administration new conditional commitment authority. Mr. Allen's firm has obtained a conditional commitment from FHA on two small subdivisions providing housing at low-and-moderate cost which farm workers averaging $5,500 to $6,000 in annual wages are buying as fast as they come on the market.

Allen's housing project has other interesting aspects. Beginning just last December, he leased a vacant lumber yard and warehouse in the small town of Oakley, hired two Spanish-American agricultural workers and began converting the facilities into a housing factory. Today 28 Spanish-Americans are busy prefabricating and putting the finishing touches on a 43-house subdivision in Oakley. Construction of 54 houses in nearby Hollister is next.

Rural Development!

A poultry-processing plant employing 750 persons, 65 percent of the total employment in a two-county area in West Central Arkansas, was about to be closed because it was dumping raw sewage into a river. Cooperative Extension Service helped local leaders obtain help from the Economic Development Administration to build a primary treatment plant.

Watershed projects are helping Rural America. For every $1 of project cost in Central Appalachia's Brush Creek watershed, the community has received more than $32 in development benefits. More than 1,200 new jobs and nearly $20 million in wages have been credited to this project, which provides not only food protection and a water supply but recreation and economic opportunities for community growth.

Near Corrigan, Texas, the Farmers Home Administration and U. S. Plywood-Champion Papers, Inc. joined forces to create a whole new "town" for employees of the company. When USP-CP bought the 200,000 acre timber holding of W. T. Carter Brothers in July 1968, it started immediately
to find new housing for company employees who were residing in company-owned cottages in Camden, a few miles from Corrigan.

In coordination with FHA, the lumber firm developed a 117-acre tract into 156 home sites just south of Corrigan, installed water and sewer systems and paved the streets. For the first time in their lives, most of the employees are experiencing the thrill of home ownership—all but a handful of the four-bedroom homes were financed with loans averaging $8,000 to $10,000.

In Idaho, armed with a loan of $413,550 and a grant of $480,570, the City of Caldwell Housing Authority is renovating a labor camp area, creating 112 brand new living units, upgrading 48 individual homes, and improving the roads, the sewers and the irrigation system. That kind of rural development is encouraging a processing plant to enlarge and the possible establishment of a mobile home factory in the Caldwell area.

Rural development comes in all shapes and sizes.

In Lanier County, Georgia, the sight of junk cars spurred the people to action. Lanier County had 5,097 people in it at the last Census and apparently most of them got tired of looking at junked cars on their landscape. So they formed an acronym called LILA (Let's Improve Lanier's Appearance), which immediately agreed to remove any junk cars from anyone's premises without cost. A local automobile dealer hauls them to the junk yard without charge. An out-of-town contractor comes in, salvages usable parts, crushes the rest into compact packages and takes them out of the county.

Ingenious. "Why didn't we think of it before?"

That's Rural Development—people thinking and acting.

Sometimes community-conscious Federal employees can take credit for jogging the local leadership into action. As many times or more, the local leadership doesn't wait for jogging. It demands and gets action.

I've cited a number of examples where Rural Development has been tried . . . and where it has worked. I could cite others where it has been tried . . . and failed. Failed for any number of reasons, lack of proper and sufficient financing, a project not correctly oriented to local resources and people, or, perhaps, a lack of coordinated local leadership. There are also examples of communities which for one reason or another have not taken advantage of their people and environmental resources.

By citing the examples of success I don't want to imply that rural development is on the way. It is not . . . just barely getting started. The thing is: we know it can be done.
The Department of Agriculture has gotten the word to its thousands of employees across the country: Get Involved in Rural Development--help the local leadership, encourage the local leadership, jog the local leadership, if necessary.

But we are very clear in our instructions. Time and again the Secretary has emphasized that Rural Development rests primarily on local people.

We want to help. We are organizing to help more.

But Rural Development is in your hands and the hands of people like you. You can make it happen. It can happen, all over America.
There is evidence of much complacency in the area of transportation perhaps because we do not feel that it concerns us or because we think there is nothing we can do. Both of the attitudes mentioned are in error because we are involved in transportation directly, even though we may not think about it. There is something we can do to reduce the relative costs of this service. Every man, woman, and child is involved in transportation 24 hours of every day. It is the axis on which our entire economy revolves. Transportation takes 25% of our consumer dollars, or 115 billion dollars per year, from the people of our nation. Transportation in return utilizes 14% of our total labor supply and furnishes 10 million jobs.

There are some dramatic changes occurring or about to occur in South Dakota transportation. Some changes will occur even if we do nothing, but if we want to have something to say about the design, quality, and equity of transportation systems in South Dakota we must become active participants in the planning. There are social and economic gains to be derived and the potential rewards are great. There can also be a very high cost of inaction.

**Truck Transportation**

South Dakota has an excellent interstate highway system, but we also have many areas not accessible by a four lane, all weather road. In the past two years certain trucking companies have declined to serve certain areas of South Dakota, and as a result contributed to the closing of some processing plants. It wasn't because of the inconvenience that these companies chose not to serve certain areas; it was because they knew they could save about 1.7¢ per traveled mile by reduced travel time, lower vehicle operating costs, lower accident rates, and increased load and volume capacity by serving other locations adjacent to four lane, all weather highways.

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Rail Transportation

In 1967, South Dakota had approximately 3818 miles of rail lines. Past and pending abandonment will probably reduce this mileage by 240 miles. Most reasons for abandonment are economic. The Chicago-Northwestern and Milwaukee Railroads, which together serve about 85% of the towns with rail service in South Dakota, last year lost substantial sums of money from operations serving some lines at a loss, increasing the costs of serving profitable locations.

Besides determining where service should be continued or discontinued, there is a need for planning for heavier rails over most of South Dakota to accommodate the new larger cars. Large car service is important because:

a. All new grain car construction is for large hopper cars;
b. Presently only hopper cars are eligible for discounts of freight rates;
c. Soon box cars will be discontinued because of the greater difficulty to unload them.

We cannot pay more for our freight service and remain competitive with other areas handling similar goods.

Barge Transportation

The average barge rates are 3/10th of a cent per ton mile compared to 1.3¢ for rail and 3¢ for air. Barge rates on the Missouri are higher than on the Mississippi but increased use could reduce that difference. Inbound freight rates are as important as outbound. Perhaps we should be looking up-stream on the Missouri to see about shipping to and from Fort Peck, Montana.

Air Transportation

The new air transport planes offer several exciting possibilities of new markets for containerized grain, meats, new crops from our irrigation area, and the products from our industries.

The application of known efficiencies of other areas, to South Dakota grain production and farm supply purchases could result in possible savings of about $19,600,000 in 1970. Application of the same possible savings to projected grain production and farm supply purchases for 1980 indicates possible savings of $28,200,000 for our producers and consumers.

We are involved in transportation with our pocket book if in no other way and the stakes are high enough to warrant our immediate attention and our concentrated efforts.
"INFLATION --- THE DANCE OF THE DOLLAR AND ITS EFFECTS ON SOUTH DAKOTANS"
A SUMMARY AND CONCLUSIONS

Allyn O. Lockner

This paper seeks to answer two questions: What are some effects of inflation on South Dakotans? How might the anti-inflationary policies of the federal government be made more equitable for South Dakotans?

Some Effects of Inflation

Some South Dakotans are gainers from an inflation while others are losers. Neither the gainers or losers usually anticipate inflation correctly. Among the effects of inflation are the following:

1. It lowers the capacity of some South Dakotans to produce goods and services and raises this capacity for other South Dakotans.

2. It renders market prices for outputs and inputs less responsive to shifts in the demand and supply of individual goods, services and inputs, thereby complicating decision-making and planning by South Dakota businessmen, farmers, and government officials.

3. It creates inequities by transferring in a random way the purchasing power of wealth and income from one group of South Dakotans to another.

4. It makes it more difficult for South Dakota producers to sell their products to persons and firms in those countries having stable prices.

5. It causes some South Dakota consumers to "buy down", to postpone planned expenditures, to require a second "bread winner", and to undertake "do-it-yourself" repairs and other services. The opposite is true for other South Dakota consumers.

6. It often lessens attention to product quality and service, thereby contributing to shoddy gadgets and incomplete services.

Dr. Lockner is Associate Professor, Economics Department, South Dakota State University. The paper contains the author's personal views.
7. It becomes especially burdensome when South Dakotans do not change their ways --- for example, when State monies invested for the support of primary and secondary schools earn an annual rate of return far below the annual rate of inflation.

In these ways, inflation has diverse effects upon South Dakotans. Some are gainers, while others are losers. For those South Dakotans with low incomes and few assets, poverty is caused or intensified by inflation. This is particularly true for our senior citizens, unskilled persons and the very young who do not have access to incomes which increase, and assets which appreciate in value during inflation so as to raise or at least maintain their levels of living.

A Redesign of National Anti-Inflationary Programs May be Desirable

South Dakota has been characterized by sluggish long-term economic growth and development while the nation as a whole has compiled a far more satisfactory record of economic performance. The structure, developmental stage, conditions and performance of South Dakota's economy vary substantially from those of other states and regions. Dissimilar basic economic characteristics also exist for other states and regions. To design a uniform national anti-inflationary policy and to implement that policy on dissimilar economic structures, conditions, etc., is to invite dissimilar economic impacts and effects, thereby contributing to inequities throughout the nation. An economic policy designed to cope with inflation as revealed by national economic characteristics might not only curb inflation but it might also increase unemployment, provoke an undesired redistribution of "real" income and wealth and slow balanced economic development in some regions and states. Such effects may not be in the national or state interest. For example, South Dakota's economy is characterized by many small owner-managed businesses and a large number of small owner-managed farms and ranches. These entities are heavily dependent upon external financing for their working and venture capital and, consequently, they are particularly vulnerable to rising interest rates and limited credit availability. Conversely, large corporations located in other states and regions with the huge internal flows of cash and lines of credit at large banks are more insulated from rising interest rates and credit shortages. Moreover, when these corporations do borrow, they are often eligible for loans at low prime interest rates. This is at least a partial explanation of why the national boom of business investment in plant and equipment continues to fuel inflation, while other parts of the economy, such as small businesses and farms, can be hard hit by credit shortages and rising interest rates. The results of such policies might be increased unemployment, undesirable redistribution of "real" income and wealth and stifled economic development in South Dakota which has been characterized by a sluggish economic performance.
Perhaps the time has come for the Congress of the United States to explore the possibility of "tailoring" the design and implementation of economic programs, both general monetary and fiscal policies, to fit the unique and dissimilar economic structures and conditions in South Dakota and other states and regions throughout the nation. Dissimilar state and regional economic characteristics require dissimilar federal policies if equity and other economic goals are to be achieved by our people. For example, federal government expenditures and tax rates might be varied among South Dakota and other states and regions having dissimilar economic characteristics. The cost, availability and terms of credit might also be varied in a similar manner. Such "tailored" regional fiscal and monetary policies would achieve more equitable results in the form of achieving short-run economic prosperity, attaining a more desirable distribution of "real" income and wealth and stimulating balanced long-run economic growth and development, not only for South Dakotans but also for all Americans.
SUBSTITUTES FOR DAIRY PRODUCTS

J. Orville Young

Many substitute dairy products have appeared on the grocer's shelf within the past few years. Others are replacing dairy products for use by meat processors, bakers, and other food processors. In general, these products fall into three broad categories.

Filled milk and filled dairy products. The filled products are those where milkfat has been replaced by vegetable or other fats. Many of the so-called "imitation" milks sold in Arizona and other states, mellorine (filled frozen dessert) and imitation sour cream are examples of filled products. The non-fat portion is skim milk or non-fat dry milk.

Non-dairy products. The coffee "whiteners" and whipped toppings are the best examples of these products. Most of them contain sodium caseinate derived from milk but the courts have ruled that sodium caseinate is a chemical and not a dairy product. Some frozen dessert products and other items are currently being sold on a limited basis but are still primarily in the development stage. Vegetable fats, sugars, stabilizers, and emulsifiers are used in conjunction with sodium caseinate in most of these products.

Substitute dairy products. This is an arbitrary classification for those products being used in place of dairy products but do not necessarily imitate them. They include the isolated soy proteins and the textured vegetable proteins being used in sausage, bakery products and other food items.

The word "imitation" is used in a very confusing manner. In general, FDA regulations require the word "imitation" on packages of items that are sold in semblance of an existing well known item. In some states, however, the word imitation cannot be used on cartons for filled milk or filled dairy products. In other states it is required that the term be used for filled dairy products.

Current legal status. The 1923 Federal Filled Milk Act prevents the interstate shipment of filled milk and filled dairy products. The law is being strictly enforced in the case of filled fluid milk, filled evaporated milk, and most other products. However, filled sour cream and dips seemingly are an exception. Some 36 states have filled milk acts which prevent the sale of filled dairy products within their state. Several of these laws,

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however, are being attacked through the courts and in all likelihood will be gradually repealed. Some 13 states permit the sale of filled products, including mellorine, filled milks, filled evaporated milks, sour creams, and similar products.

There are no federal laws preventing the interstate shipment or sale of the so-called non-dairy products. Most states permit their sale. There have been a number of court cases, most of which have ruled that the products could be sold if properly labelled.

Most of the replacement of dairy foods by ersatz products has come since World War II; beginning with the repeal of the federal colored margarine acts. The decline in per capita consumption in total milk equivalents since 1950 can be noted in Table I. It should also be noted that the decline in per capita consumption of milk fat is much more distinct than the decline in the solids-not-fat portion. This is a result of the shift from butter to margarine, whipping cream to whipped toppings, coffee cream to coffee whiteners and by a shift in consumption from whole milk to skim milk products. It should be noted that the production in milk equivalents has been relatively stable during this period. The increase in population has, in general, offset the decline in per capita consumption.

It seems necessary to note the characteristic of today's consumer and our current retailing practices to better understand the reasons for the influx of dairy substitutes.

Table I
Milk Production and Per Capita Consumption

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<th>Production</th>
<th>Per Capita Consumption</th>
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<tr>
<td></td>
<td>Milk</td>
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<td></td>
<td>Milkfat</td>
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<tr>
<td></td>
<td>Equivalents</td>
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<tr>
<td></td>
<td>Million lbs.</td>
</tr>
<tr>
<td>1950</td>
<td>4,646</td>
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<tr>
<td></td>
<td>117,302</td>
</tr>
<tr>
<td>1960</td>
<td>4,628</td>
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<tr>
<td></td>
<td>123,109</td>
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<tr>
<td>1968</td>
<td>4,311</td>
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<td></td>
<td>117,281</td>
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<tr>
<td>1975 (Projected)</td>
<td></td>
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<tr>
<td></td>
<td>140,000</td>
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<td></td>
<td>29.3</td>
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<td></td>
<td>653</td>
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<td>576</td>
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Some 8,000 different food items are now carried on the crammed shelves of the typical large American supermarket. Two-thirds of them did not exist ten years ago. Over 4,000 new food items are offered grocers each year; 20 percent make the shelf. Two-thirds of them will disappear each decade but will be replaced and added to by additional products. Some
12,000 items will likely be displayed in large markets by 1975. In the true sense of the words "new products", few of these will likely be truly new. Most of them will reflect changes in processing methods, substitution or alterations in ingredients or perhaps merely changes in form or in packaging. For practical purposes, however, such items are generally considered new products.

Now let us consider today's customers. Today's homemaker reflects fully our affluent society. Time is at a premium. She is always in a hurry. Fifteen years ago she spent 45 minutes in a grocery store where today she spends 27 minutes. This means that she now passes by 310 food products on the grocery shelf each minute. She also expects convenience. She no longer obtains the same self-satisfaction from creativity in the kitchen nor recognition at the dining room table. She prefers to receive her satisfaction on her job, at the local Red Cross Office, at Girl Scout recognition dinners, as family traffic coordinator or at the bridge table. I do not mean to imply that the American housewife is lazy but she does put an ever-increasing premium on convenience. The average homemaker comes from a home with slightly under $6,000 income and percentage-wise is spending less and less of an increasing total income on food. But regardless of the fact that her husband is working fewer hours per week to earn money for food, she does not consider food a bargain. Most do not recognize that 20 percent of their "food bill" is for non-food items such as hair spray, Hi-fi records, floor wax, aspirin and numerous other similar items.

Mrs. Homemaker's husband deserves some comments also. He shares many of her attitudes. The same man who is content with his breakfast of margarine on toast and non-dairy coffee whitener in his instant coffee is the first to complain the loudest if he is served these products in a restaurant—particularly if he is on an expense account. When Mr. and Mrs. consumer go out for dinner they want only what they consider to be the best and seldom complain about the price. They are nonchalant about the 26.3 percent increase in cost of restaurant meals in the past decade but picket supermarkets because of the 12.6 percent increase in prices of food at home. Children are not plagued with choices of what they remember as being high-quality. What they have never known they will never miss. How many of today's children have known the pleasure of homemade buttermilk pancakes heaped with cultured butter and swimming in pure maple syrup? Indeed, how long has it been since any of us have enjoyed such a treat. And would it really be as good as we remember, or have our tastes changed along with our values?

Today's consumers are also further removed from the farm. Few have had the opportunity of visiting Dad or Grandpa to watch them milk the cows, harvest the wheat, or feed out a pen of steers; and most of them could care less. They have fewer brand loyalties and have developed few personal relationships with their grocer and others who serve them; and about the time that they do, they move to some other part of the country into an even less personal environment. They have little reason to be concerned about
the word "imitation" and indeed it is becoming to be synonomous with low price. It is little wonder that under these conditions substitute products of all kinds are replacing the more traditional products. It is not my intent to criticize. This is the U.S. that is. The U.S. of tomorrow will be still different. We would not want it otherwise.

Now let us ponder the year 1975 and consider the customers of this era. For one thing there will be about 50 million more of them. They will also be much younger. One-half of the total U.S. population in 1975 will be 25 years of age or under. If the present trend of age of marriage continues, we will have a startling number of teenage homemakers. If current trends continue, the average family in 1975 will have an income of $9,300 compared to current income of about $6,000. With this additional income the present situation of one-third of all food being sold through restaurants and institutions will likely increase. It would appear then, that our products in 1975 must appeal to consumers who are younger, have a changing sense of quality, have more money to spend, eat out more often, have less "brand" loyalty, associate "imitation" with low price, have known nothing but prosperity, demand more convenience, but are convinced that food is not a bargain. This would appear to be a difficult task and indeed it is a challenging one.

Outlook. In spite of the change in consumer buying habits, an influx of substitute products and a declining per capita consumption of dairy foods, we see a good future for dairying. The Dairy Industry is large, diverse and blessed (or cursed) with stability. Substitute products have never blitzed a market and retained a significant share. They come and go and those that stay make slow, insidious inroads, giving producers and processors time to adjust.

There are several encouraging events that could stem the tide of declining per capita consumption.

1. There is a growing awareness and concern about the inadequate level of human nutrition in the U.S. Most substitutes have a long way to go to match the nutritive quality of dairy foods.

2. Milk producers are becoming more aware that advertising can increase per capita sales and if they do not do it, no one will do it for them. They have doubled their contributions to advertising and promotion within the last year.

3. Milk producers are also becoming aware of the need for more product development research. They have initiated a new program in this area within the past year.

Dairying in South Dakota should have a bright future. The projected need for milk promises stable and slowly increasing prices. The milk-fed
grain ratio is favorable and will likely become more favorable. Farmers in the heart of the corn belt are shifting to cash grain, milk production is shifting to more marginal farming areas. Farm automation is leaving some farmers under employed. The price-cost squeeze is forcing those who want to stay on the farm to intensify income per acre. Dairying, along with swine and poultry enterprises are possible solutions. Dairymen who accept new technology and use good management practices should do well in the 70's.
I was asked to discuss the subject of "meat substitutes", not because I am particularly knowledgeable about the subject, but because I was a readily available, cheap substitute. However, I am deeply concerned about meat substitutes and the potential competition they offer my favorite food—meat. This is also the commodity that is responsible for a major share of the income for South Dakota. Approximately 78% ($700 million dollars) of S.D. farm income is derived from livestock. We rank among the top 10 states in the production of beef cattle, sheep, and hogs. In the U.S., 56% of the total farm income is derived from livestock and about 65% of the land area is devoted to production of animal feeds.

We are a meat eating nation (185 lb. of red meat plus 45 lb. poultry/capita), meals are built around meat and predictions are for a continued increase in per capita consumption (especially of beef and chicken). There is a highly positive correlation between level of meat consumption and longevity and productivity of people.

Imitations, substitutes, and fakes are all around us. If you stop and think about it, you can make a list "a mile long". Fortunately, man has the ability to reason and to develop better products and easier ways to do things. In this age of technology it is difficult to say what is impossible for the dream of yesterday is the reality of today. The new generation is not going to be loyal to traditions or traditional products whether they are food items, other products, or teaching methods if replacements can be found that are better or do the job just as well and more economically. This is an important fact that we must accept.

To start this discussion let's briefly look at some historical background relative to competitive products of traditional agricultural products. One of the most dramatic examples of substitution is in the area of agricultural power. Oxen provided the first major substitute for human power. The horse was faster and more efficient and replaced the ox. Technology made it possible to harness the energy in petroleum to mechanize agriculture and replace the horse. These changes affected segments of the economy and tremendously increased food production. It put the draft horse and mule producers and associated industries out of business and freed considerable feed for other uses.

Dr. Menzies is Professor and Head, Department of Animal Science, South Dakota State University, Brookings, South Dakota.
Several years ago a biochemist told me not to seek my life's vocation in the wool industry. Synthetics have not yet duplicated the wonder fiber wool, but today we have man-made textile fibers which have wide acceptance and most of the market. Some agricultural products (wood, cotton linters) are used to manufacture these but mainly non-agricultural sources are used. In 1955 cotton had 64% of the market and wool accounted for 8%. This had changed by 1967 to 50% for cotton and 5% for wool. Both products have been subsidized for several years.

Dr. Young has already discussed the effect of substitutes on the dairy industry. Many of us "old timers" still say "please pass the butter" but we don't really expect to get it. The new generation may talk about the substitute bread spread, butter.

Man-made substitutes are being used more to replace leather. They account for about 75% of all shoe soles, a high proportion of shoe heels and have recently started replacing leather in shoe liners and uppers. If this trend continues it is estimated that number of hides used will drop by 20% by 1980 and only about 50% of the total shoe production will have leather uppers in 1975. Domestic cattle hide production is expected to increase (34 million pieces in 1965 to an expected 46 million in 1980). What will we do with these hides? Who is conducting research on new ways of processing leather or new uses for leather? I saw a Japanese report the other day reporting on a process to convert leather into edible casings for processed meat products. This may be a promising use. There are undoubtedly many other potential uses and processes that await development if research effort is exerted.

Now what about meat substitutes or meat analogs? In many countries man obtains most all his protein from plant sources because it is the only source available. The recent development of high lysine cereal crops will provide the world a larger amount of "high quality" plant protein containing a better balance of essential amino acids than formerly supplied from plant sources. We also know that efficiency of conversion of plant proteins and energy into animal products is not 100% even though animal nutritionists and breeders have improved this considerably. It also is true that religious and philosophical beliefs and, in limited instances, medical reasons prevent some people from eating animal proteins. Protein is the most critical limiting nutrient in the world's hunger problem. We can supply only a portion from animal sources. I am concerned with the "meatless meats", not plant proteins as such.

Soybeans provide the source of raw material for most of the meat substitutes. Other plant sources can be used but soybeans have a good balance of amino acids and are economically produced and the oil has high demand. Currently three general forms of soybean proteins are used in foods:
1. soy flour and grits (50 - 55% protein)

2. soy concentrates (over 70% protein)

3. soy isolates, spun or powdered (over 90% protein).

As long as soy flour, grits or soy concentrates are used in making doughnuts, bread and used in small amounts in prepared meats, those of us in animal agriculture need not get unduly concerned. But when soy isolates are formed into products resembling ham, bacon, chicken, ground beef, stew beef, and corned beef, or used to form new non-meat flavored products, it is a different matter.

In manufacturing, proteins are extracted and extruded through spinnerettes into a coagulating bath where fiber formation occurs. Diameter of fibers can be varied to produce "tender or tough" strands. In fabrication they are blended with fat, flavors, coloring, supplemental nutrients and stabilizers and bound together with heat coagulable protein (egg albumin). Products can be sliced, ground, or diced and consumed as is, frozen, canned or dehydrated. As you can see, composition, texture, taste, etc., can be closely controlled. Products can be manufactured to contain no cholesterol or any type fat desired and with no gristle or bone.

These products represent the ultimate in convenience and are making rapid strides in formulated foods and many believe they will be accepted most rapidly in institutions for use in soups, stews, casseroles, etc.

References give conflicting reports as to competitive cost of producing meat substitutes. The initial cost of equipment is high. An article in 1967 Food Technology by Thulin and Kuramoto, reports that estimated cost of "Bontrac" meat analogs can be produced at 1/3 to 2/3 the cost of corresponding cooked meats. Cost of products in stores now are not this competitive but remember that synthetic fabrics were high priced at first.

It is estimated that soybean protein accounts for only a fraction of 1% of meat sales today. Mr. J. C. North, the Chairman of American Feed Manufacturers Association, in the 1970 January-February Professional Nutritionist reported that U.S. production of soy flour and grits was 360 million pounds in 1969. In addition 15 million pounds of soy protein concentrate and 5 million pounds of isolated soy protein were produced. One report estimated that by 1980 such products would equal 5 to 6% of the meat market for that year.

There are several major manufacturers of soy products aimed at the meat market among which are: Central Soya, Swift and Company, General Mills, Archer-Daniel-Midland Co., Ralston-Purina Co., Worthington Foods, National Biscuit, Loma Linda Foods and others.
If soybean producers get complacent in the fact that they can produce 450 lb. of pure soybean protein per acre, it should be pointed out that alfalfa will produce 600 lb. of protein per acre. Protein can be extracted from plants and is being investigated as a source of protein for humans. Also facilities are in production in France to produce yeast protein (estimated 16,000 tons per year) from crude petroleum. Waxes are utilized by yeast and bacteria and the oil is improved in the process. A total of 5,000 pounds of 50% protein yeast material can be produced in 24 hours from 1,000 pounds of yeast. How much protein will a 1,000 pound steer produce in this time? It is expected that this yeast protein will be initially used in animal feeds but the potential is there for direct conversion to human food.

I hope I have not sounded too pessimistic about the future of animal agriculture. I am on the contrary very optimistic but I would make the following suggestions:

1. We must recognize the potential competition from "meat substitutes" and realize that technology will improve them and that we cannot prevent competition through legislation.

2. We will need to look to sources other than soybean proteins for protein supplements for animals.

3. We must capitalize on the unique abilities of ruminants to convert the energy in cellulose and non-protein nitrogen into meat.

4. In summary we must concentrate on research to make meat products more acceptable and more economical in price to the consumer and at the same time more profitable to the producer. I am of the opinion that we are spending too little on livestock agriculture research in the U.S. to accomplish these goals. We especially need expanded research in the meat processing area and extended support for nutrition, breeding, management and marketing programs. If we don't do this??