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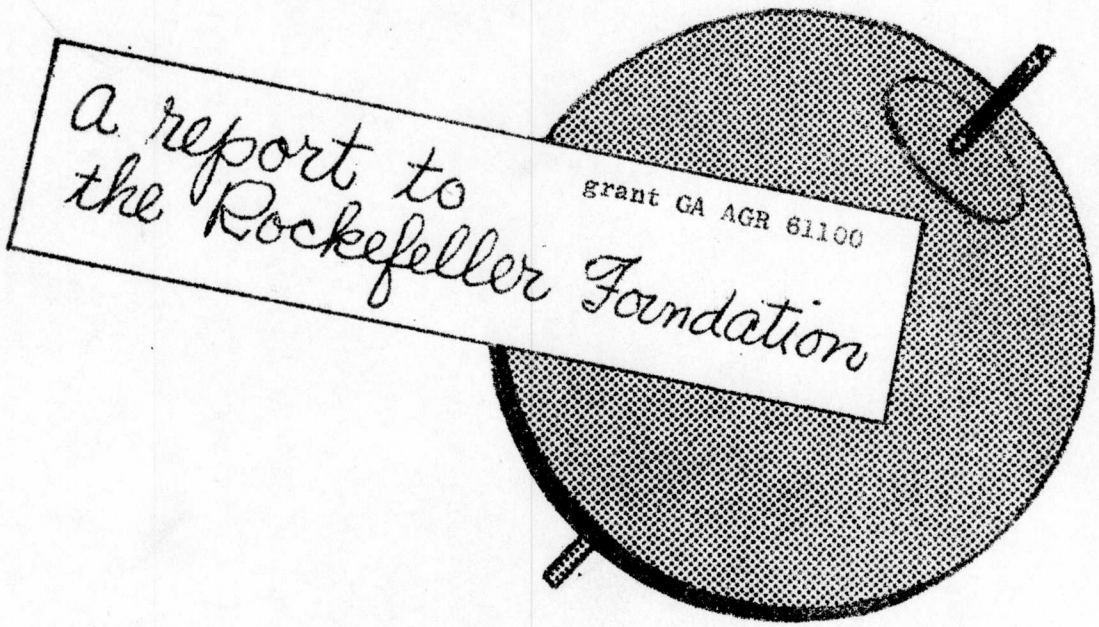
# THE CHALLENGE OF CIRCUMPOLAR BIOLOGICAL RESEARCH

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# PREFACE

PROJECT TITLE: Streptomyces scabies as a device for studying interrelations of soil microorganisms and plant disease in circumpolar areas.

OBJECTIVE #1: To foster closer working relationships between Alaska and countries of northern Europe through exchange of personnel to work on problems of mutual concern.

This report deals only with this first objective of the project and is based on observations and conclusions of Dr. Charles E. Logsdon, Alaska Agricultural Experiment Station Research Plant Pathologist, during his tour of duty at Vollebekk, Norway, from September, 1961, to August, 1962. The other project objectives will be covered in subsequent reports.

The author of this report is very grateful to the Rockefeller Foundation for financial assistance on this project, to Professor G. Lindeberg for office and laboratory space in his Microbiologisk Institutt and for his many kindnesses and thoughtfulness and for his assistance with this project, to members of Professor Lindeberg's staff for all their help and afternoon tea, and to all the others in Fellesbygget who helped make the year pleasant and profitable.

Attached are examples of talks made to various groups since my return to Alaska. The resolution presented in my comments on Dr. Aamodt's paper at the Alaska Science Conference was subsequently adopted by the Alaska Division of AAAS with the words "northern biology" deleted to broaden the application of the resolution. This resolution is a call for action on cooperation even though this has always been a matter of stated policy of the Alaska Division of AAAS.

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# THE CHALLENGE OF CIRCUMPOLAR BIOLOGICAL RESEARCH

The development of an international cooperative research program is in a sense a unique proposition, a very fascinating study in human relations within a unique group of people--scientists. Within a scientist's own field he exists in pretty much the same milieu regardless of the country in which he finds himself. But even here there are certain differences--some very obvious, such as language differences, and some rather subtle, such as his particular status within his group of coworkers. Outside of working hours and away from the laboratory, the milieu is quite different, and adjustment is considerable.

The most obvious difference is the matter of language. Not so obvious but equally important are customs of the country, the social and economic conditions and attitudes of the people which are a reflection of the mores of that country.

These things are known, at least vaguely, by most people and are a source of concern by those considering work in a foreign country. For a single person, these differences need hold no concern if he is at all adaptable. Most scientists must be to some extent adaptable, curious and interested or they would not be scientists. On the other hand, if a man is married, he must also consider his wife's reaction to a new environment and the effect of such transplantation on his children. The effectiveness of his work will depend to a large extent on the manner in which his family will accept its new surroundings.

During the course of our stay in Norway, we encountered Americans who were completely adjusted, even to using the Norwegian language for nearly all communication with their neighbors and cohorts. We also met others who were never able to adapt and were completely miserable.

There is considerable enthusiasm both in Alaska and in Norway for the theory of cooperative research. I detect a certain amount of reluctance, however, within our research group when the possibility of personal involvement is broached. I can only believe that this reluctance stems from the uncertainty of the position in which they might find themselves if they were involved in an exchange program. The basis of cooperation must be understanding as well as mutuality of interests, objectives, and benefits. For this reason, I have spoken on several occasions to this group and to other groups in the community of our experiences and have tried to create a better understanding of the Norwegian people and country as we found them.

## WHY COOPERATE WITH SCANDINAVIA?

This presentation is based on the assumption that cooperation between Scandinavia and Alaska is desirable. The basis of this assumption is the existance of a tremendous expanse of the world's land surface between 50° and 70° north latitude. Although much of this surface land is entirely unsuited for agriculture as we presently define it, and although much of it

may never be suited for anything except wildlife, it is very desirable to know what developmental potential of the northland is or can be. This is not of immediate concern from a practical standpoint because we are still dealing with surpluses in the United States. The need to investigate the potential to its fullest is of immediate concern, however, just on the off chance that continuing research in more southerly latitudes fails to provide an adequate diet for the people in a few generations. The need is immediate because the long term nature of such research dictates that we should begin more intensive studies in this generation.

President Kennedy expressed this same thought in his speech to the Anniversary Convocation of the National Academy of Sciences in Washington October 22, 1963. He said:

> "It reminds us of what the great French Marshal Lyautey once said to his gardener: 'Plant a tree tomorrow.' And the gardener said, 'It won't bear fruit for a hundred years.' 'In that case,' said Lyautey to the gardener, 'Plant it this afternoon.'"

It is conceivable that one entity such as the University of Alaska Institute of Northern Biology, or for that matter, our own experiment station might, with sufficient push and sufficient financing, make such discoveries that would open the whole area to settlement and food production right on around the world. On the other hand, the more people who are involved in such an undertaking, the better are the chances that science will push back the "ice curtain" that presently inhibits full development of the north. Other countries are in no better position individually than we are. In fact, if sufficient interest were developed in this idea, we might find that Alaska is in a better position to do something than most of the other countries that are encompassed in this circumpolar area. The other countries are either relatively poor, or their level of research resources is such that they cannot undertake any such large scale program, or the northern portion of a country such as Canada is of less consequence at present than the rest of the nation and therefore receives proportionately less in the way of investigation. Pooling of resources in this enterprise appears therefore very desirable. By pooling of resources, I mean not necessarily throwing all the money into one kitty, but rather a pooling of present knowledge, a pooling of interests and use of these in a cooperative effort.

We are all familiar with the arguments that agriculture in Alaska is different from agriculture in the other states, and that it does not succeed rapidly because we have taken the varieties and cultural methods developed at lower latitudes and superimposed that system on an entirely foreign environment. This argument may have some validity as evidenced in the lack of adaptability of certain crop plants developed at lower latitudes and the adaptability of crop varieties developed at latitudes comparable to Alaska, namely those derived from Scandinavian sources. We do not know in detail actually how this environment differs from other latitudes in terms of plant response. We have perhaps touched on it slightly, but actually we have hardly scratched the surface. We do not really know why varieties of Scandinavian origin are better adapted. Nor have we really tried to investigate what naturally adapted native plant species might be useful in this or any other system of agriculture.

The whole problem is much too vast for any agency to make more than a slight impression without very considerable backing. And backing is not always enough. We need also a range of viewpoints. Very often a problem can be too large for one person or even a number of people of similar background experience to visualize all of the ramifications. Approach to the solution of such a problem requires a background of knowledge and experience accumulated by a number of people with very diverse interests. If those people of diverse interests, background, experience and knowledge also have certain problems in common, there is a very good chance that even very difficult problems can be attacked vigorously with a good chance of solution, and the scope of problems such a group may attack can be very broad. I also believe that such cooperative effort would serve scientists in Alaska well by helping them keep up to date with what is going on in science. There is probably no other research institution or location which is so far removed geographically from other research institutions and research workers in this northern area as our own station. Certainly the Scandinavians are not so isolated.

## THE SOCIAL CLIMATE FOR COOPERATION WITH SPECIAL REFERENCE TO NORWAY

The differences between Alaskans and Scandinavians is considerable. Those differences are historical, cultural, linguistic, social, etc., differences that might appear at first to be too great to be able to establish a common meeting of the minds. A quick examination of these factors, however, will reveal that these differences are not as great as they might at first appear.

As countries, our history has differed; but immigration of quite a large number of Scandinavians into the United States has brought about a commingling of histories. It is said, facetiously, that there are more Norwegians in Brooklyn than there are in Norway. I chided the Norwegians somewhat by telling them that one way they have controlled the population of Norway is by sending so many of their numbers to the United States. In Alaska there is probably a higher proportion of people of Scandinavian descent than in most of the other states, with the exception of the upper mid-west. Alaska is the only state, for instance, in which a community celebrates the 17th of May, Norwegian Independence Day. The Matanuska Colony which recruited mainly in the North Central States contributed substantially to the numbers of people in Alaska with Scandinavian backgrounds.

Culturally there is not a great deal of difference. Culture is composed in this case of those elements of history, language, religion, art, music, and all the other facets of civilization that normally compose the total experience of an individual and of a nation. So much culture has been borrowed between nations that culture in the broad sense transcends national boundaries and very little of the total is reserved by a single nation unto itself.

Language - Language is always a difference between nations, of course, but Swedish, Norwegian, and Danish are all derived from low German just as English is. It is obvious from studying Norwegian that it is a parallel development to English. The grammar for the most part is much more similar to English than either is to the German parental language, although much of the vocabulary of Norwegian is more closely related to German than is English. There are relatively slight differences between Norwegian, Swedish and Danish. It is slightly more than a dialect difference, but people in each of these three countries understand each other. Actually Norwegian is not a single language, but two or three. There is the language of literature, the language of the man on the street, and the official language which is an attempt to compromise between these two. The differences between Riksmål and Landsmål are a result of history and isolation. The isolation has been overcome and left with it the problem of reconciling these differences. Language differences between Scandinavian countries and Alaska, however, need be no problem. I would say that all of the educated people of Scandinavia speak English. I have to modify that statement to this extent. I do not know about Finland. The Finnish language is not Germanic in origin. I am rather sure, however, that language need not be a particularly serious barrier here either since many of the Finns also speak English. If they do not, they usually speak Swedish. I would recommend that in a cooperative venture with the Scandinavians, we not depend entirely on their knowledge of English, but instead, we should make attempts to learn something of their languages also.

Government - I also mentioned social differences, and by this I refer to their governmental systems and to their economy. I can speak only with limited knowledge in this area, and I should like to confine my remarks to Norway since I am most familiar with that country.

Norway has a king, but since the king's power is strictly limited, they are not a monarchy in the old sense. The king bears much the same relation to Norway that the Queen of England bears to the English people. I have often wondered at the value of having a king since I could not understand the function of a king in society. Probably many other people in the United States have felt the same way as I. My year in Norway did give me an appreciation of the reasons for and the value of a king. He represents stability in government, a focal point for national loyalties, a rallying point in times of stress. Our president can not perform this function in the same way because his term of office is subject to the whims of the voters, and he may be in office with only a bare popular majority or even without a popular majority at all. The king, on the other hand, is there because he inherited the job. Everyone knows he is going to be there until he dies and after him it is most likely that his natural heirs will succeed him. His position is almost as certain as the existence of the country itself. There is a very decided psychological advantage in this which is not always recognized by us or even by some of the more liberal people in Norway. The presence of the king tends to concentrate the patriotic feelings of the people, and for this reason the king is often in a very strong position. In history, the enemy has always tried to control the king of

an invaded country because the people will react favorably to the king's wishes. The resistance of King Haakon VII to capture by the Germans in World War II set the pattern for resistance by the Norwegian people. Another example can be found in the king of Denmark during the same war. When the Germans decreed that all the Jews would wear yellow arm bands, the Danish king decreed that all loyal Danes would wear yellow arm bands. The Germans dared not eliminate the king for this kind of resistance or they might develop more resistance in Denmark than they could hope to control.

Besides having a king, Norway has a democratic or representative form of government with the powers of government concentrated in the parliament and a cabinet of ministers. Control of government is through political parties of which they have 6 or 7. Not every party runs a candidate in every election. They can only run a candidate (this is my understanding of the system) if they receive a minimum number of votes in the primary elections. When a party receives less than the minimum, they throw their votes in with some other party, probably in return for certain concessions from that party. It was interesting to me that the Norwegians said that we do not really have a democracy in America because we do not allow everyone to speak his own mind. They were referring, of course, to the outlawing of the Communist Party in America as an arm of the Russian dominated Communist International. They have had two communists in Parliament until quite recently when they were replaced by some rather far left leaning members from another party. I gathered that many people in Europe think we were wrong in outlawing the Communist Party in America because it showed a weakness in our ability to deal with communism as a political idea. They think it showed a lack of faith by the leaders of our government in the people of our country and the democratic system. It may be that we are actually the only ones with sufficient strength to be able to say that this is not only a political idea espoused by Marx, but is now a tool for Russian aggression.

Not only is Norway a democracy, it is also a socialistic country. We have been taught in the last generation that socialism and democracy are incompatible, but the political scientist will tell you that there are two kinds of democracy--socialistic democracy and capitalistic democracy. In a way it is unfortunate that we have been told that socialism is the same thing as communism and we have been told that to a point where we find it acceptable as a concept for everyday living. At the same time we have been socialized in this country almost to the same point as the so-called socialist countries and it has created considerable conflict in our minds as to whether we are going in the right direction for a strictly capitalistic democracy. We tend to forget that socialism was an accepted concept in America not many years ago. Norman Thomas ran several times for president on the socialist party ticket just as Earl Browder at that time ran on the communist party ticket. At that time we clearly separated communism and socialism as two separate ideas.

In these days and times when we hear about socialism we immediately think of socialized medicine because it is tagged with the term "socialized". In spite of comments I have heard to the contrary in America and American

magazines, the Scandinavians--at least the Norwegians and I think the Swedes, like their socialized medicine very much. In fact, I believe one of the greatest dreads any of them have about coming to America is the possibility of getting sick and being ruined financially. The difference in the price of medical services is what makes the Scandinavians interested in socialized medicine. I am sure that any cooperative program we might have with these countries in which exchange of personnel was a part, we would have to make some definite arrangement about medical insurance. I tried but found it very difficult to convince the Norwegians that we have a system of socialized medicine that is much the same as theirs except that participation in the program was on a voluntary basis and that private insurance companies acted to provide this service rather than have the government perform the same service out of taxes. I was required by law to have medical insurance, and the Blue Cross policy I had was acceptable to them.

Other aspects of socialism that I noted there were ownership and operation of the railroads by the government the same as we have in Alaska, and the operation of at least a part of the bus lines. That was something I did not understand. I was always under the impression that one feature of socialism was control of transportation, at least public transportation. And yet, I do believe that there are private bus companies operating in Norway in addition to the government owned and operated ones. They, of course, do not operate and compete over the same routes. We do not have government ownership of many railroads in the United States, but we certainly do have government control at almost all levels of government. We have government subsidies of transportation, government rate fixing, and a private company must obtain permission before discontinuing operation of money-losing lines or other facilities.

Power development and distribution, I believe, is a government function in Norway. That is not greatly different from our situation where the government is intimately involved in the development of hydro power and where the REA system is a government regulated and partially tax supported distribution system. The people in Norway also pay for power other than through taxes. What I mean by partial tax support of REA is that the government borrows money at from 3 to 4.5 percent and loans it to REA cooperatives at 2 percent, the difference being made up by taxes or by adding to the national debt, which amounts to the same thing.

Another form of transportation that has been controlled in Norway by the government until recently is automobile transportation. Until about two years ago, an individual had to obtain a permit in order to buy an automobile, and he could only obtain a permit once every three years. This tended very definitely to restrict the number of cars on the roads as well as restrict the outflow of capital, since no cars are manufactured in Norway. The restrictions were lifted and the cars are now flowing into Norway, particularly from Germany, by the shipload. There is heavy competition for this new Norwegian market, and German cars are now cheaper (except for taxes) in Norway than they are in Germany. The demand for new roads and other government services related to automobiles is going to put considerable strain in the next few years on an already burdened taxpayer.

Which brings to mind that any government service is apt to be expensive. This is naturally reflected in a socialistic system where more services and broader benefits are provided the taxpayer. These services are paid for by taxes, and the taxes in Norway are high.

Norway has an income tax based on the same type of sliding scale as we have in the United States and I believe amounts to about the same magnitude as ours in terms of percentage of income paid into the governments as taxes. They have what they call a capital tax which is essentially the same thing as our property tax with certain differences. For instance, when you buy a house you are taxed only on your equity in that house. I cannot believe, however, that the purchase price of that house does not include the amount the seller expects to have to pay in taxes on his diminishing equity. The capital tax also applies to bank accounts over 5000 kroner (about $700). These things are pertinent to any exchange program visualized under a cooperative research project. Probably because I was a foreigner, I was placed in a 50 percent bracket for any money I might earn in Norway. In terms of the capital tax, I found it most expedient to bank in the Matanuska Valley Bank and transfer to my Norwegian bank only that money needed for any current expenses.

Their sales tax must be considered as a matter of living expenses. This tax is a straight ten percent and is included in the price of articles purchased. Because of this inclusion in the price, apparently, you must also pay a ten percent tax on the ten percent tax, which in reality means that their sales tax is actually 11 percent.

In addition, they have the usual excise taxes which are particularly heavy on tobacco and alcoholic beverages. I do not know what these taxes actually amount to since I did not buy any alcoholic beverages. This is a government monopoly. But I do know that cigarets selling 20 to a pack, cost four kroner or about 56 cents. They also sell packages of ten to a pack so people can still afford to smoke if they don't want to smoke very much. Quite often people smoking more than 10 cigarets a day prefer to roll their own. Incidentally, they even sell filters to roll into your cigarets if you are a filter cigaret smoker. It was rather interesting to me to see women as well as men rolling their own, or taking a cigaret butt out of a case and lighting it. They do not waste them. If a cigaret is not completely smoked, they save the remainder rather than throw it away.

Import duties are quite high on certain items. I believe there is about a fifty percent duty on automobiles imported into Norway. Medicines in any form cannot be imported into Norway except through the government health agency which takes a considerable mark-up on it. Grain such as wheat is a government monopoly and imports are therefore strictly controlled. What portion of the price of grain imported is tax, I do not know, but in all likelihood it is not great since wheat and other grains used in baking carry what is termed a consumer subsidy. Bread and milk are consumer subsidized, so these items are plentifully available at very low cost to the consumer. Milk sells for 70 øre per liter, which is a little less than 10

cents per quart. Bread is equally reasonable in price even though little bread wheat is grown in Norway. Of course the bakeries do not have the expense of slicing, wrapping and distributing bread.

Studies on bread wheat quality are in their infancy. In fact, I believe they are just about to undertake studies on that subject. This may be found to be a way of decreasing imports if they can develop better local bread wheat varieties. Alaska could well afford to keep an eye on the progress of these investigations in light of our present inability to produce satisfactory bread wheats here.

Socialism appears to work very well in Scandinavia. It is possible, of course, that recent articles appearing in American publications about how socialism is undesirable because it is bankrupting Sweden may be 100 percent correct. Certainly it can be a costly proposition depending on how government services operate. Socialism appears to me to be working in Norway, and it is quite possible that a purely capitalistic system might not work there. I think in any case we must not condemn socialistic democracy as unthinkable for those countries in which it seems to do the job of providing adequately for people and where capitalistic democracy might or might not work equally well. I am definitely of the opinion that socialistic democracy is right and proper for Norway. I am not an economist, so what I have to say about economics must be viewed in that light. What I say about socialistic democracy for Norway is based on my opinion of their economic situation.

Economy - Norway is a poor country from the standpoint of their reserves of natural resources. Their agricultural land resources are not extensive, are of relatively poor quality, are scattered, and are apt to be rocky or occasionally boggy. Most of this land has been farmed, perhaps for centuries. Their forest resources are rather good, but probably no better than Sweden or Finland, if as good, and their river systems are probably not enough better for handling timber, to put them in an especially favorable position to compete with these other two countries. Norway is practically lacking in mineral resources. There were valuable copper deposits at one time in north central Norway, but these have mostly been worked out and much of this mining discontinued. She has no coal deposits for industrial development and apparently no iron. Norway has considerable power resources in her water. This water power has recently increased with new installations, financed in part by Canadian capital, and some of this power is now being used in the production of aluminum for which the bauxite is imported. Nitrate is an important by-product of their power development. Power, especially replaceable energy such as Norway's water power, is valuable for human continuance on earth, and even the end of aluminum production would not mean the end of that valuable natural resource for Norway.

The sea constitutes Norway's most valuable resource in at least two ways--shipping and fishing. It also constitutes resource as a tourist attraction, especially in the fjord country of the west.

Shipping is probably Norway's major industry. She ships not only to and from Norway, but also between other countries. It has been said that Norway has so many ships under her flag that she could take the entire population of $3\frac{1}{2}$ million on board at the same time. Some Norwegian ships never go to Norway. They ply between the United States and the Orient or in the China Seas or the Indian Ocean or almost anywhere in the world ships can go. One ship's officer told me he had hauled tons of Norwegian sardines from New Orleans to Norway, but he did not know why.

Fishing is a very important resource for the Norwegians, not only as a source of an exportable commodity but as a very important food for the Norwegian people. You realize the importance of fish in the diet when you see as many fish stores in a town as you do meat markets, and you also realize it when you are served sardines for breakfast. Whaling might be lumped also with the fishing industry. Norway has one of the world's largest whaling fleets, taking the animals wherever they are found, including Antarctic waters. Whale meat is good and the cheapest kind of meat available in Norwegian stores. Salmon fishing was an especially important activity on Norway's west coast fifty years ago, but their system of renting out fishing rights on the rivers probably helped deplete the salmon population. Salmon is now rather rare and about the most expensive thing you can buy in the line of food. There has been talk in the last few years that the Russians had brought Pacific salmon to stock some of their northern rivers and that some of these salmon had escaped those rivers to invade some of the rivers of the northwest Norwegian coast. I also heard, but was unable to confirm, that these salmon are dogs and humpies, not the kings or reds. The Norwegians are happy in any case about the prospect of a replenishment of the salmon supplies in their rivers.

This list of resources almost covers the resources Norway has to draw on to create her wealth. There is one other very important one and that is the human resource.

With this relative scarcity of resources, they must be very carefully husbanded, not only to avoid their depletion, but to get as much out of them for immediate use and creation of wealth as possible. Everything must be used as well as possible and there is little room for waste. This is entirely contrary to our concept in the United States where we have been able to base a rapidly rising standard of living not on cautious use of resources, but on waste. Resources are turned over rapidly, the resultant wealth skimmed off and anything left over discarded. By this method we convert only a small portion of the used resource to wealth, but create our total wealth by the volume converted. The total amount we waste then becomes a measure of the wealth we have generated. Under this philosophy we must continually strive to make things less and less durable in order that we can create an artificial demand for new items, since it is only in the creation of these new items that we generate wealth. The old items must then be past use so they can be discarded without competing with the new item. Such thinking has lead inevitably to rapid style changes in automobiles and clothing; no deposit, no return beer bottles; breakable but not cheaply replaceable plastic parts, prepackaging of food items in not

easily used quantities, usually just a little less or a little more than you need; and quantities of one-use-throw-away items. Because we can afford at this stage in history to be wasteful of these resources, we can use wealth created in this fashion to substitute for human resources that might otherwise be needed, and as a consequence, we are also wasteful of human resources. We practically forbid our young people to work before they reach the age of 18 and by that time they have not learned good productive work habits. We hardly need to forbid this by legal methods since there is little work available to them even around the home with all the labor saving devices that have been created and installed. We further prolong infancy in our young people by keeping them longer and longer in school. This is not always bad but it does postpone their productivity. We continually shorten the work week and lower the retirement age without providing constructive outlets for those productive hours and years that remain. The best gimmick so far for preventing productive use of time is TV. A recent survey indicated that the average American family spends six people-hours per day watching television. The increase in per man hour productivity in the United States is not a result of labor efficiency but must be credited to research and automation.

These things are not all bad just as they are not all good, and my purpose is not to comment on that phase. I am merely trying to state what I believe the situation is and to try to compare the situation in the United States with that in Norway so there might be a little more understanding generated as to why they have one system of doing things and we have another.

As I stated, Norway is short on most resources and especially so when compared to the United States. In relation to their other resources, the human resource is much more fully utilized than is the case in the United States. Men and women often do things that might very well be done by machinery here. I think for instance of the grass on the road sides that is cut with a scythe. Older men are often engaged in such activity. Loads are sometimes carried on bicycles that we would require a car to move. Most people still move around by bicycle or on foot instead of by car, and many of them including women carry packsacks on their backs. Forests are harvested, not so much by crews of specialists with specially designed machinery to help them, but by individual farmers with a tractor or a horse.

If possible, nothing is wasted. Ordinary cardboard cartons are hard to obtain because they are used over and over again. Toilet paper comes in a roll two feet in diameter so only one spool is needed to wind a whole year's supply. Fish are consumed almost in their entirety. Cod fish tongues for instance are a delicacy; people in the United States would probably not touch them. Any number of examples are encountered every day to illustrate this avoidance of waste.

I was impressed at times with what I thought was waste of human resources. Nearly every store has more clerks than are needed to handle the number of customers in that store. Even in some of the large stores

in Oslo where they have arranged things into a system which is intended to give better service, they still have not cut down on personnel. In one department store, for instance, when you decide to purchase an item, the clerk takes your purchase and the bill to the wrapping desk and cashier. She may have to walk half a block delivering a ten cent item. At the wrapping desk, another clerk wraps your package and places it on a shelf. When you are ready to leave the store you go to the cashier and pay your bill, after which a clerk will start looking through all of the packages on the shelves because there appears to be no order in which they are placed there after being wrapped. During the Christmas rush this can be quite an operation. This impressed me at the time as a terrible waste of labor, but I thought that only because I was familiar with the United States way where the important thing is to reduce labor and save peoples' time. After thinking about it, however, I have concluded that "labor saving" is a misnomer unless that labor is converted from a less creative to a more creative occupation. When you switch labor from production, even inefficient production, to idleness, then you have waste of human resource. It would appear therefore that although they may be wasting human resources through inefficiency, they are preventing complete waste of that resource through idleness.

One thing about human resources is that up to a point, the more they are used, the better they operate. I was greatly impressed, and I think most visitors from the United States are impressed with the magnificent physical condition of most Norwegians. They seem to be hitting the peak of condition when they are about fifty. We in the United States think life begins at forty when actually most of us have been on the way down hill since we were thirty. Much of this, I am sure, is due to the "inefficient" use of their labor which keeps their people active through most of their lives.

I mentioned TV as the great idler. Norway has TV also. It is state controlled and operated, and announcers are fired if they do not use the official language. Most of the programs are educational or sports broadcasts and TV is broadcast every evening from 8:00 PM to 10:00 PM. Perry Mason is on every Friday night, of course, with Norwegian subtitles.

The question I had to ask myself was whether Norway would be better off under a capitalistic democracy than she is under a socialistic democracy, and I have to conclude that with her limited resources she probably would not be better off. She has done a most remarkable job of raising standards of living for the majority of the people with very little to start with. If we have anything of a general nature to learn from Norway it is that they are living from the fruits of their own efforts while we are living primarily from the fruits of the land. We should be just a little cautious about congratulating ourselves on the magnificent job we have done in raising our standards of living without giving most of the credit to the fabulous wealth of resources provided by nature in America.

Norway is interested in research cooperation with Alaska, but the solution to many of the practical problems in developing this cooperation will be found only in an understanding and appreciation of each others'

attitudes and the factors that influence these attitudes. I think undoubtedly we can develop a cooperative research program between Alaska and Scandinavia which will pool interests and will take a long step in the direction of solving some of the problems which face northern biology, but which may or may not be defined as yet. The pooling of resources and the reduction of duplication should be of great benefit to the cooperating countries and to other countries of the circumpolar area.

HOW CAN WE COOPERATE WITH SCANDINAVIA?

Exchange of Literature - The first and most obvious way to cooperate is through exchange of literature. This is already being accomplished to a certain extent, but exchange of literature per se is only half the job. In order for this exchanged literature to be of any value, someone has to read it. If it is printed in an unfamiliar language, no one is apt to read it. It takes time to translate, and it takes a knowledge of the language to translate, or it takes money to have someone else translate it since translations by professionals are expensive. In addition, if the subject is agriculture, it may take an understanding of the agriculture of the country to understand even a translation.

Yes, we get a certain number of publications here, especially as a result of Professor Nissen's visit in 1958, but the chances are that not many of those papers are read thoroughly or with particular interest. This is not because they are not necessarily applicable, but because in general we are not familiar with the people or the work they do. Perhaps the institution of a cooperative program would in itself encourage an increase in interest in what is going on in the Scandinavian countries.

Exchange of Scientists - Another way in which we can cooperate is through the exchange of people; scientists from here going to Scandinavia and Scandinavian scientists coming here. I believe that exchange of personnel will be an extremely important aspect of any cooperative program. We must first awaken interest and understanding between ourselves and those in similar fields in other countries in this circumpolar region, and through these contacts, awaken throughout this region the recognition of mutuality of interests within the region as a whole.

The Scandinavians recognize quite well the concept of area-wide problems and area-wide approach to the solution of those problems. They have a number of intra-Scandinavian committees or societies for studying problems common to more than one country. In some cases they have even gone so far as to segregate out different phases of a single problem and assign different phases to different countries. In the case of potato diseases, Sweden may work on late blight and Denmark on scab. There is very free interchange of information and in some cases there is inter-country publication. A good example of this kind of cooperative effort is found in the publication Acta Agriculturae Scandinavica, which is published in Stockholm by the Scandinavian Agricultural Research Workers Association and the Royal Swedish Academy of Agriculture and Forestry. Members of the research workers

association are to be found in Finland, Iceland, Denmark, Norway and Sweden. I think it may be of interest to know that papers published in this journal are written in English, French or German. The purpose of this is to obtain as wide a reading audience as possible, not just within Scandinavia but elsewhere as well. They are all cognizant that the Scandinavian languages are not often studied outside of Scandinavia. I thoroughly believe that if we were to undertake a cooperative program which would almost necessarily mean exchange of publications and the exchange of personnel, we should make provisions for people involved in the program to be able to study the language. This is a practical matter, not only from the standpoint of communications as such, but as a courtesy as well. It is also another step in the better understanding between peoples.

Exchange of people should be for a minimum of six months and I would suggest that in some cases, a year might not be long enough. Much of it depends on the reasons why the exchange takes place, the purpose for which one goes to another country. Exchange connotes a two way proposition. Not only should we send people from here over there, but also we should have people from there coming here.

Exchange of Materials - Another possibility for exchange is the exchange of materials. We have already borrowed rather heavily on the Scandinavian countries in the matter of field crops. We could perhaps test more extensively varieties of other kinds of crop plants. A number of Scandinavian vegetable varieties and selections have been tested, and at least in one year the Matanuska Valley Cooperating Association imported seed of a tomato for distribution in Alaska. I have not heard how that plan went over. When Nip oats became popular in Alaska, in order to reduce the expense and work involved in producing foundation seed stocks at the Experiment Station, foundation seed was imported directly from Sweden and incorporated into the seed program here in Alaska. There may be more room for this sort of thing in the future since many of the varieties we might want to grow here will otherwise be inaccessible due to the fact that these varieties would not be attractive in our normal areas of seed supply. Varieties adapted here might not find sufficient use in any other area of the United States for a seed company to bother with seed production.

This exchange of materials probably eventually would extend beyond seeds. Certainly we should be concerned with the exchange of research materials such as insects and disease producing entities. Only those organisms would be exchanged, of course, that are problems both here and abroad. They would be exchanged for comparative purposes in developing better understanding of these pests. Exchange in a sense has already been accomplished with plant materials, since more than one Scandinavian botanist has collected materials here. We may find it expedient for Alaskan botanists to go to Scandinavia in order to study extensive Alaskan collections. What form the exchange of this material might take in the future is dependent on the kinds of investigations it is determined necessary in a cooperative program.

Segregation of Mutual Problems - It is also possible, after a thorough review, that there could be a segregation of mutual problems so that some of them could be attacked by European scientists and others by Alaskans in much the same way that the Scandinavians now divide up some of their work. At present, and in the past ten years, much of our research effort has been taken up in testing materials and principles developed in the other states to see if they are applicable to Alaska. Quite often they are, but there is never any assurance that such will be the case. Norway finds this is a similar problem with them. Most of the biological research is done at more southern latitudes and results of that research must be tested also in Norway for its applicability there. That is one reason why they would be interested in cooperation with Alaska and why they are presently very much interested in the work being done in Canada. They are interested in studying in other countries in order to expand their horizons and viewpoints, and several individuals stated flatly that they would prefer going to Canada rather than the United States simply because the results of their research would be more directly applicable to the Norwegian situation. This is in spite of the fact that in some fields of science the United States is far outstripping almost everyone else. Some have the feeling that by coming to Alaska, they might have both the benefits of work being done in the United States and work done at their own latitude at the same time.

Let us not forget also that there have been some Norwegian scientists in Alaska. Professor Nissen was here in 1958 and his opinion of the University at that time was that it was rather primitive. In the five years since his visit, there have been tremendous strides made so that at least on the surface the University no longer has that primitive look. I am not presently able to evaluate what the condition is beneath that exterior, but I suppose quality of teaching and research is developing as rapidly as the University's physical facilities. The passage of a bond issue in November 1962 which will allow for the establishment of the Biological Sciences Institute, is an excellent indication of the growth of the University in the direction of improved research. We need therefore to have some way in which we can convince the Norwegians that this sort of growth has taken place and is continuing. Only if they are convinced that we are capable of undertaking a research program comparable to what they can perform would they be willing to accept the results of our research as though it had been done in Norway. That is the only way in which there could be any real division of responsibility for different phases of the same problems.

Exchange of Students - As a part of the program of exchange of personnel, we should not overlook the exchange of students. This, of course, would mean that we would first of all have to develop further our own graduate program, in order to have those students to exchange.

Any program of large scope, in order to have any sort of continuity, should have a training phase which will prepare others to merge harmoniously with the program as it advances. We need also to continue developing interest in succeeding generations in continuing investigations and development of northern areas. The most logical way to do this is to establish a graduate program in northern biological sciences concommittent with the establishment of a research institute program. Those students

who grow with the program are apt to stay with the program and carry it forward. A good research program is a good basis for a good graduate program and this in turn would give a good foundation for the establishment at the University of a good undergraduate program. From these three things are university reputations built.

Graduate student programs, no matter where they are located in the world, are dependent on three things in order to turn out competent students: Library facilities, laboratories, and competent instructors. It is not easy to compare teaching programs in various countries, and it is equally difficult to compare the quality of degrees issued by different institutions whether within one country or between countries. I have been told by the Norwegians that a degree obtained from the University at Vollebekk is roughly equivalent to a masters degree in America. At the same time, I was told by an American professor at Vollebekk that he would put American students up against the Norwegian students any time. Those two viewpoints demonstrate the difficulty of making a direct comparison between degrees. The Licenciat degree is one often conferred between the first degree and the PhD. Presumably this degree would be comparable to the American masters degree, but again, it is difficult to make any direct comparison. The PhD is offered by many countries, but the method of attaining this degree varies somewhat. I was very much pleased to see that the Norwegians take the PhD very seriously. The degree is based both on amount and quality of original research and the ability to lecture, and when an opponent is assigned for a thesis examination, he is an opponent. This system may or may not turn out fewer PhD degrees, but I cannot help but think the degree is well deserved when it is received. I believe a similar system is used in the German universities, and I was told by an American in Germany who had a German PhD working for him that he was not impressed with the fellow and his degree. So it is obviously difficult to compare the quality of degrees between countries, and in any case, judgment must be made on the individual rather than the degree, even though every measure possible should be taken to protect the integrity of professional degrees wherever and whenever they are given. The difference in the approach to granting a degree must be taken into consideration where exchange of graduate students is contemplated.

## SUPPORT OF COOPERATION WITH SCANDINAVIA

A program encompassing a study of biology in the arctic and subarctic will require tremendous expenditures of money, and since the quantities of money needed for a complete program are not likely to be forthcoming in the near future, it will be necessary to be especially cautious in the expenditure of available funds. As pointed out earlier, the countries that would be involved in this program are not blessed with great financial resources to carry out this program and it will be necessary to enlist the assistance of outside agencies.

I contacted the National Science Foundation to inquire of them if their newly created Office for International Science Activities might be able to give some assistance to the development of such a program. Their

reply was that they would be most interested and would like to have estimates of costs. It is perhaps of interest to note that the United States and Japan have recently entered into a mutual scientific endeavor encompassing an even wider area of activity than would be envisioned under this Alaska-Scandinavian proposition. Whether this United States-Japanese program is to be supported under the National Science Foundation Office for International Scientific Activities, I do not know. It is, however, much the same sort of thing that I originally proposed to the National Science Foundation.

It is my belief that an Alaska-Scandinavian program should be carried out under the auspices of the Biological Science Institute at the University. I have discussed the possibility of establishing such a program with the Norwegian Research Council in Oslo and they are very much interested. They have suggested that they might serve as the contact agency for that program in Norway.

The National Science Foundation, in their new international program, has some restrictions. One of these is that this is not a technical aid program for other countries. Anything smacking of technical aid would be disallowed. Also they are particularly interested in programs involving exchange of personnel, especially graduate students. Some of the support must come from all participating countries and some senior scientists of all countries involved must be participants. It may be difficult to determine just what a senior scientist is and just what the extent of his participation must be. Nor is it entirely clear what part the State Department will play in these arrangements, but I cannot imagine that they would be disinterested. The United States does have an agricultural attache in Denmark, but only agricultural assistants in Norway, Sweden and Finland. It was rather interesting to me that the United States agricultural assistant in Norway is a Norwegian, a very nice and helpful person.

Certainly the Rockefeller Foundation has in the past supported some of our feeble attempts to encourage cooperation with northern Europe. They supported Dr. Kallio's trip over there, my trip to various institutions in 1958, and my trip this time. Professor Nissen's visit here in 1958 was sponsored by the National Science Foundation.

Another American foundation that has been rather active in Norway is the Kellogg Foundation. They have concerned themselves primarily with the more social-science aspects of agriculture, such as a contribution of several million kroner for construction of a new engineering building and the support of a project to assist groups of farmers in organizing for experimental testing of new varieties and improved practices in agriculture under the guidance of the University personnel. I puzzled a bit over the social aspects of the new engineering building, but I finally concluded it had to do with the changing agricultural picture in the switch which is occurring from the horse to the tractor and all that that means. I do not know whether they might be interested or not in a cooperative program, but there certainly is a chance that they might be interested, if only from the standpoint of development of better international relations.

P. L. 480 money is again available for research in Scandinavia. One section of P. L. 480 allows the transfer of funds from the currency of one nation into currency of another and a certain amount of Scandinavian currency has become available under that section. These funds are now used in Scandinavia for market development and also for purposes of section k dealing with research.

There is a well developed Fullbright program in Norway and Finland, and there is no reason why this could not fit into a cooperative Alaska-Scandinavia program. These grants, of course, are made on an individual basis and may be either for the purpose of teaching or research. These grants pay travel and subsistence, and I believe are usually granted for one year. The host country has a great deal to say about the selection of individuals, and in that case, a recognition of this as a source of funds for a cooperative program by Scandinavia would put us in a favorable position to receive Fullbright grants.

Also there are a number of other exchange programs, such as the NSF Senior Scientist Fellowships, the O. E. E. C. Fellowships, administered by NSF, and probably any number of others.

## BARRIERS TO COOPERATION WITH SCANDINAVIA

Established Programs - Establishment of a cooperative program with Scandinavia is not easy. The first important barrier that we must eliminate is in ourselves. Our program at the station has emphasized in the past the importance of our immediate service to Alaskan agriculture. We have given lip service to basic research in the problems of plant culture in these environmental extremes, and we are beginning to be encouraged by the people at all levels to put more emphasis on this type of research. It is perhaps a dream that we are capable by training and experience to accomplish what we think needs to be done. Most of us would much rather decide that what needs to be done is something that someone else should do, than to try to accomplish something of a basic nature ourselves. Much has been said of the differences between basic and applied research and I might as well add to the confusion. The only real difference I can see between the two is an attitude, an approach to the problem. As long, therefore, as we approach all our problems from the standpoint of what returns this will bring to the farmer today, then we cannot hope to do basic research. If we attack a problem that may be of practical benefit but that is too big for us to work on its immediate solution--a problem for which we do not even have sufficient information to adequately define in its entirety--then we can do basic research. And this, I think, is what we must do in trying to assess the value of the subarctic for food production for future generations. We must convince ourselves of what the large problem appears to be, and convince ourselves that solution is possible and desirable. Then we must try to convince others so they will want to join us in finding the solution. They must be able to recognize their own self-interests in the solution of the problem.

We have our own doubts that we are capable of approaching that kind of a problem. We must recognize our limitations and make provisions to reduce the number and extent of those limitations. This might very well mean retraining in certain specific fields, acquisition of necessary equipment and expansion of necessary facilities.

University-Experiment Station Relations - Another possible barrier is the current relation of the Experiment Station to the University. This involves a number of different things. I mentioned that a cooperative program probably should be initiated and carried out under the auspices of the Biological Science Institute of the University. Just what our relationship to the Institute will be is presently a matter of conjecture. If we are to be involved in a cooperative program, then we should have an intimate relationship to the Institute, including joint appointments. The Institute and the University must be convinced that this cooperation is both feasible and desirable. If any state support goes into the program, then it must come through University channels.

Personal Considerations - Another barrier to cooperation is the resistance of individuals. Not everyone will want to be involved in such cooperation, and I think this attitude must be recognized and respected. After all, our whole program would not be devoted to this one proposition. Many problems need investigation that are not necessarily mutual with the Scandinavian countries. Some individual resistance is bound to arise from a disturbance of the status quo. Most of us like to know exactly where we stand, and we are probably happier if there is no upset of that stand. Getting along with people cooperatively is not a simple matter, especially when those people are foreign to us. We have enough difficulty cooperating amongst ourselves, so cooperation with others is bound to be difficult. Part of this difficulty, of course, stems from a lack of understanding, and that is why I have tried to point out in this paper that there must not only be understanding but a sympathy with those other people.

Presently I doubt that we are psychologically ready to cooperate with others in the way it would be necessary in order to accomplish what we could accomplish. We have all spent too much time worrying about what we are not receiving individually to worry about what we might contribute to any kind of joint effort. The word "cooperation" embodies more than one viewpoint, but it also embodies the idea of an attempt to reconcile those viewpoints. When we can learn to reconcile different viewpoints even though we are intimately involved with only one, then we shall be ready to cooperate with others both within and outside of Alaska.

## RECOMMENDATIONS FOR COOPERATION WITH SCANDINAVIA

We must first of all decide among ourselves if a cooperative program is desirable. This will entail a search within ourselves as to whether there is a problem involving the circumpolar area that deserves our attention. Would it be more advantageous for us to approach circumpolar problems alone or do we need the help of others? Would we stand to gain or to lose through a cooperative effort with other countries?

If there is a program of circumpolar research in which we should be involved and which should involve other countries as well, then we should approach these other countries and ask them to look within their own programs and ask themselves the same questions.

If they reach a similar conclusion, then arrangements should be made, either through group meetings of various scientists from these different countries including Alaska, or through a circumpolar congress of biologists to determine what mutual problems exist that might best be attacked through a cooperative approach. Also it should be determined which countries are best equipped with facilities and personnel to work on various specific problems, the kind of support each country can give to the program, and areas where exchange of personnel, including students might enhance the program. Following this a set of basic rules should be established as a guide for all countries involved in the program. Separate contractual arrangements or memoranda of agreement would probably have to be made between the various countries individually on specific projects.

At this point deficiencies in support should be evident and application could be made to various agencies for the additional assistance required.

I believe this kind of a program could best be carried out without establishing any formal body to oversee it, but such a body might be formed if it were necessary, its composition to be decided upon by representatives of the various participating countries.

In Alaska itself there are several steps that should be taken. The Experiment Station program should be realigned in terms of this cooperative program, providing of course, we have by this time developed an intimate relation with the Institute of Northern Biology. The University and the Institute should interest themselves in this proposition, and the University should undertake as soon as possible the further support and encouragement of a graduate program in the sciences related to northern agriculture. In addition, it would be of benefit to establish in the University a course in one of the Scandinavian languages, preferably Swedish, and encourage this as a language for their graduate students to take. It might be equally appropriate to teach this language in a special course for the Experiment Station personnel. If Swedish is not taught, then I recommend Norwegian.

Since all of this is only in the preliminary thinking stage, I suggest our best bet right now is to devote our time to the investigation of those facets of northern biology within the scope of our present projects which might lead to a better understanding of the kinds of obstacles we face in defining biological problems of a circumpolar nature.

# A P P E N D I X

University of Alaska
ALASKA AGRICULTURAL EXPERIMENT STATION

Palmer, Alaska
October 1962

FARMING IN NORWAY

It is a great pleasure and privilege to be here tonight, and I do thank you for the opportunity to speak to you tonight.

As you know, we returned just a month ago from Norway after spending a year there, and I have not previously tried to put into words what we did there, what we saw there, what we learned there. It is actually not possible to condense all this into one evening, and although I have tried to condense it, I have not been successful. Therefore, my presentation is going to be very short and I hope that what I have to say will stimulate your curiosity into asking questions. That way you will hear about what you want to hear about, and I will probably be reminded about a lot of things that I'd like to be reminded about.

I think to start with, I'd like to show you a few slides of the country, about the places we were, and so forth. I have only a few slides with me. Most of them are packed in our luggage which has not yet arrived. These are some that we happened to have brought with us. If there are any questions, don't hesitate to ask them.

The market picture was not taken in Norway but in Bonn, Germany. It might very well have been taken in Norway or any other European country since it represents a very important outlet for European farm products. Every town has such a market either daily or at intervals throughout the week. Even the large cities have these markets, and in Oslo they have two of them--one for flowers and one for vegetables.

Agriculture and marketing of agricultural products in Europe are entirely different from the United States. Agriculture in the first place is not as advanced technologically as it is in the United States, but the strides they are making in that direction are remarkable. It was very striking to me that the ox cart as a farm vehicle in southern Germany had almost disappeared between 1958 when we were there and 1962 when we visited there again. Although we never saw ox carts in Norway, it was obvious this time that many of the horses were giving way to the tractor. I suspect, however, that the horses will long remain a primary source of power in the mountain valleys and in the fjord country in the west. There is still considerable subsistence farming, especially in many isolated areas. Many isolated farms are being abandoned as farming elsewhere becomes more productive and industry offers a more attractive living than subsistence farming. I suspect this has been pretty much the trend throughout western Europe. Norway has a much higher percentage of farm population than America. As a result, the farm voice is politically rather strong. In fact, the farmers have their own political party. I think there are six or seven political parties right now. Imagine the speeches they must listen to under that system.

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Presented by Charles E. Logsdon to the Northland Pioneer Grange, reporting on his experiences in Norway made possible by a Rockefeller Foundation Grant.

There is relatively little good soil in Norway. Most of the good soil—and even much of this is rocky or swampy--is in the portion of the country southeast of Oslo, and in an area about 50 miles north of Oslo around the city of Hamar. Most if not all of the country was glaciated and rocky terminal moraines and exposed bedrock are found almost everywhere. They do play it smart, though. They build the house on the rock outcropping so they can save the soil for growing things.

Forestry plays a big part in agriculture, and farmers harvest trees in the winter. It is very selective cutting for the most part, although occasionally they will clear a whole area to increase their farm acreage or plant trees to retire another area from cultivation. Much of the nation's forests are state owned.

As in Alaska, dairying is an important industry in Norway. It is very heavily subsidized by the government in order that the consumer can purchase milk at a very low price. The standard price in the store is 70 øre per liter which is roughly 8 cents a quart. This price of course, does not include the price of the bottle. As a matter of fact, much of the milk is not bottled at all. It is just ladelled into your bucket. Norway does not sell any milk in cartons. That would be much too wasteful since you have to throw cartons away. Sweden does sell milk in cartons, but Sweden has much more in the way of natural resources and so can afford, like America, to be wasteful in order to stimulate the economy and raise the standard of living.

Grain is a major crop. Like Alaska, Norway produces primarily barley and oats with some wheat. Very little of their wheat is used as bread wheat. Most of their bread wheat is imported. What will become of the oats when the horses disappear I don't know. Oats in the United States is rapidly becoming a crop of the past. Since grain is a government monopoly in Norway, the state controls imports and exports of grain. You cannot offer seed for sale unless you are licensed by the government. To be licensed you must hire a graduate from the agricultural college at Vollebekk to supervise your seed business. That more or less restricts the seed business.

There is no beef industry in Norway as such. There is dairy beef and that is all. They apparently market quite a number of reindeer, and whale meat is quite common and very cheap. It is about the cheapest meat you can buy. They have quite a pork industry, and they have the best pork I ever ate, bar none. The hogs are fattened mostly on barley and steamed potatoes. Every community has a potato cooker where the farmers can bring their potatoes for steaming.

They have a couple of very interesting problems with their grain crop. When I was there in 1958 lodging was severe. Milk production per cow was going up so rapidly that the number of dairy animals was being sharply reduced. They no longer needed the straw for the cows. Grain varieties with shorter and stiffer straw seemed a good way to resolve the difficulty. This way they wouldn't have a lot of excess straw to contend with and the shorter strawed grain wouldn't lodge so badly. Certainly they were not going to cut down

on acreages of grain as long as the government offered a ready market. But another factor entered the picture. The Norwegians manufacture very cheap nitrate as a by-product of their hydro electric developments. Farmers found that the shorter and stiffer the straw the more nitrate they could put on, and more than pay for it with the increase in grain yields. The only difficulty was that they increased lodging. So it developed into a cycle. The breeders would release a shorter variety to withstand lodging. The farmers would boost up their nitrogen, the grain would lodge and the breeders would have to release a new shorter stiffer strawed variety. When I talked to them this time, the breeders had given up. They could not produce varieties as fast as the farmers could increase their nitrogen applications. And with the wet summer this year, the lodging was terrible.

They grow another important crop in Norway that we do not grow, and that is rape. Rape is grown as an oil seed crop, and I understand they use this in the production of their margarine. Their margarine is very cheap and is excellent. It compares very favorably with our best quality butter. Even the Swedes go to Norway to buy margarine.

Potatoes, carrots and rutabagas are the most important of their food crops and these three are the vegetable staples in the diet. I believe carrots are the only one of the three that are consistently washed before marketing, and they are even packing them in poly bags. Because the climate is a bit milder than here, many of the potatoes and I think all of the rutabagas are stored in clamps in the field. Generally this consists of just piling them in the field and covering them with dirt and straw. It's just as well that they do not wash their potatoes before selling them. As long as they store them in the field this way, you can hardly wash them in the sink after you get them home. The dirt is just plain there to stay.

I was very much interested in their system of potato harvest and marketing. They start digging the crop about the time the first potatoes get about as big as a quarter. They only dig each day the amount that they can sell. These go direct to the market or direct to the consumer the day they come out of the ground. They are strictly new potatoes, strictly fresh and strictly expensive; but people buy them because it is like having a different kind of vegetable in the diet. This digging and marketing continues right on through the growing season. Of course, each day the farmer has to dig fewer and fewer rows to satisfy that daily market, so by the time the potatoes are mature, he has quite a bit of his field left to dig and put into storage. I said they don't wash potatoes. Actually they do wash a few, and they are just beginning to package a few in roughly 10-pound bags. There are now appearing on the grocers shelves dehydrated processed potatoes from the United States and from Sweden. The Swedish sugar company is now processing over a thousand acres a year under some kind of an arrangement with, I believe, General Foods.

I have not said very much, but I did say it was going to be brief. I would like to say in closing that we had a most wonderful time in Norway. The Norwegians are now some of my very favorite people. They are vigorous. They are conservative. They are very hospitable. I certainly expect to go back to Norway again if I can ever save up enough money for the trip. If you have any questions, I'd be most happy to try to answer them or give you my opinion.

University of Alaska
ALASKA AGRICULTURAL EXPERIMENT STATION

Palmer, Alaska
December 1962

SOJOURN IN NORWAY

I always appreciate the opportunity to talk, as most of you who know me will agree, and I am especially pleased to talk to this group tonight because it is not always that I get to sit down with the ladies as well as the men to do my talking. And further, I appreciate the opportunity of speaking about Norway which I now consider my second home. The Norwegians don't know this, but it is true.

I am from Missouri originally, and I was brought up in Kansas City. A few years ago I was back there, or at least I was in a place called Kansas City, Missouri, but it was not the town I lived in as a boy. I scarcely knew the people that were once my very best and closest friends. If you have never had this experience of going back and finding everything different from what you had very fond memories of, then perhaps you will not understand what I mean. You can tell yourself that everything is changed and that nothing will be the same, but you can never convince youself until you try it. The emotional shock leaves you with an empty feeling. You finally convince youself that the past is gone. The past is dead.

Then suppose you unexpectedly find yourself in the midst of your past, seeing and experiencing the things you cherished in memory from your childhood and youth. If you can imagine this, then you will understand what we found in Norway.

You probably think I am suffering from cabin fever to speak of finding my youth in a foreign land. But let's look at it this way. Just what is a person's youth? Just how do you measure it? Do you measure it by what you did? I don't think so. Youth is a time of receiving, of experiencing and learning. Not a time of doing. It is a time of receiving impressions and forming concepts and above all a time for using your senses instead of your sense. Age dulls the senses as you well know, but not all of this dulling of the senses is physiological. We don't see as much as we did because we have seen too much. We see only something new. Nothing tastes quite as good as the food we ate when we were young because now we have eaten too many tons of it, and we have experienced such a range of flavors that it seems there can be nothing new and worthwhile. And we are no longer susceptible to little sounds because our ear is tired of hearing noise.

These changes have probably been true in all ages, but I think they are more true now than at any time in history. We have become so ultrasophisticated, exposed to so many exciting experiences that we have become unreceptive to many important little things in everyday life. Perhaps all these things I have been saying are summed up in the expression, "The pressures and tension of modern life". This is such a hackneyed phrase that we no longer truly believe it. We have lived with the pressures and tensions of modern life so long that we cannot even believe they actually exist.

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Presented by Charles E. Logsdon to the Kiwanis Club, reporting on his trip to Norway made possible by a Rockefeller Foundation Grant.

When we went to Norway, we didn't realize it, but we were transported into a slower, easier going existence. I didn't recognize it as such because an American must look at things with an American eye, and I did. It was several months before I began to accept their way of life, and I never learned to accept it completely. It was only when I did slow my anxieties down to their pace that I realized I had come home again to my youth.

It was only then that a gentleman removing his hat to a lady when they would meet on the street during a Sunday stroll became a very charming thing and not an anachronism. It was only then that I could understand that what I thought was the Norwegian compulsion to exercise was really a matter of sheer joy in using their muscles.

I have tried to analyze for my own amusement the real difference between the Norwegian way of life and the American way of life and I finally decided that Americans take pleasure in doing, while the Norwegians take pleasure in being. I wonder if this isn't what most Europeans mean when they speak of American materialism.

In a way it is rather strange that we became so attached to the country. Neither one of us, as far as we know, have any Scandinavian background and we knew very little about the country. Much of what we did know was not necessarily in Norway's favor. When we were there in 1958, we had trouble finding a decent meal. Of course, we had just come from Sweden at the time where we had been fattening ourselves up on whipped-cream-covered goodies. I don't think anyone can beat the Swedes for delicious whipped cream treats. Almost every corner in Sweden has a little coffee shop where they serve these little cakes and cookies along with delicious mild coffee. After a couple of weeks of living pretty high and crossing Sweden on a broad high speed highway, we came to Norway. The road immediately narrowed and got rough and the good rich food disappeared. During that week we stayed in Norway we had only two good meals.

There was one very bright spot in our visit to Norway in 1958 and that was the time we drove to the town of Drøbak for dinner. We thought Drøbak was about as nice a place as we had seen. We went down to the beach there, which actually isn't a beach at all but rather rocks, and watched the girls changing into their bathing suits. They are extremely clever at it.

All in all we were not overly impressed with what we saw in Norway in 1958. Why then, you ask, did we go there for a year when we might have gone elsewhere? In the first place, this was a business trip. Pleasure was not a consideration in our choice. Norway is in a similar latitude to Alaska; the Agricultural College at Vollebekk is at almost exactly the same latitude as Palmer. In the second place, I was very much impressed with the attitude of their microbiologist and was impressed by his ecological approach to microbiology, something we need in Alaska. And third, when we were there in 1958 they were just about to finish construction on a new laboratory building which would house the microbiological institute. And fourth, and perhaps most important, Norwegian agriculture faces many of the same kinds of problems that Alaskan agriculture does.

We were on a very tight schedule when we left here. We received word on a Monday that the grant for travel had been approved and we left here the following day. In the meantime we packed. The trip from here to Minneapolis took just six days including time out to replace three blow-outs and discard both mufflers. We arrived in Minneapolis just in time to get our trunks on the train for New York. Fortunately our passports were waiting for us in Minneapolis.

A day was spent in Minneapolis making last minute arrangements, buying boat tickets, etc. and the next day we caught the plane for New York. We arrived in New York thoroughly hot and tired and completely miserable with the temperature and humidity both hitting close to 90. The following morning we got all our gear and kids together and got on the ship, the good ship "Bergensfjord", flagliner of the Norwegian American Lines.

After pushing ourselves for a week and a half to get on the ship, the hour and a half waiting for sailing was interminable. Finally, the visitors left the ship, colored streamers were thrown to friends left behind and the Norwegian national anthem was played as the tugs started pulling us away from the dock. Their anthem is a very sad sort of song, a rather curiously emotional song, but with much of the feeling of Norway about it. There then followed the playing of the Star Spangled Banner, and there was the feeling as the streamers broke that ties were being severed with the homeland. I highly recommend boat travel when you go abroad. There is something very personal about such a leave taking that is entirely missing with air travel.

The trip to Oslo took 10 days. The first three were a complete bore. It took those three days to get slowed down to the pace of the ship. Arly did even better. She went to bed and slept for the first seven days.

Our arrival in Norway was just as cold and miserable as I remembered from before. It was a chilly morning with a misty rain falling. There we were met and taken to the flat we had rented by mail. What a hole in the wall! We spent most of the day there trying it out and by evening we gave up trying. We piled our baggage into a cab and went to a mission hotel where they kept us for a few days until we made other arrangements.

This was not a very cheerful greeting but there was more to come. We were supposed to have a car delivered to us in Oslo, but on the way, the man skidded on wet pavement and hit a rock wall, so they had to go back to Sweden and get us another one. Then we had figured to put our kids in the American school (NATO) in Oslo which turned out to be in exactly the opposite direction from Oslo that the University was. Also they found they had no room for them anyway, and besides it would cost us $900 because the school was only for embassy and NATO personnel.

So after we had been in Norway about a week, we were ready to come home again. It was about this time we found we could move into a little pension in Ås within walking distance of the University and we were glad to say farewell to Oslo. They gave us two rooms over the garage and by

preparing our meals on a hot plate that I borrowed from the Institute we managed to survive without bankrupting ourselves. Unfortunately, there was no way to heat these two rooms so we could not stay there. We had to leave, but there was no place to go. The kids had started to school but they did not find it especially congenial.

So after a month in Norway, I was resigned to living in a hotel for the rest of the year and sending Arly and the kids back to the states.

And then the guardian angel who looks after fools got busy. Professor Lindeberg received a call one day from a lady in Dröbak who said she was willing to rent her villa to the Americans providing they would not let anyone else from Dröbak in the house. I signed a 10 month lease for kr. 750 a month, about 700 kroner more than most Norwegians pay for housing. It was completely furnished including a huge chest of sterling and a floor to ceiling cabinet full of glassware and china. Much of the furniture was custom made for the house and the walls were covered with oil paintings and water colors, all originals.

The house was a complete delight except for a couple of things. There was no way to wash clothes except by boiling them on the stove. We solved this problem by buying a washing machine. The main source of heat was a wood stove. We solved the heat problem by wearing long underwear and wool sweaters and sleeping under feather beds.

So the "Innocents Abroad" finally found a home. To visit and tour a foreign country is one thing. To establish residence is an entirely different matter. I believe Arly will tell you that things are not the same as they are here. The way of life is very different and requires considerable adjustment for any American going there to live.

I had a preconceived notion of what the Norwegians looked like, but there is no Norwegian type. I think everyone that fit my preconceived notion turned out to be a Swede. The Norwegians have always been seafaring people and they have brought back with them from other lands a number of different genes. In addition, the Lapps from the north who are apt to be short and dark with brown eyes have mingled with the lower latitude blue eyed blondes. All this taken together has produced quite a mixture.

An article in a Danish magazine described how to tell Scandinavians apart. The Swedes are very tall. In fact they are so tall that even when they are sitting down they seem to be standing up. This is, of course, a dig at the Swedes by the Danes because they think the Swedes have a very superior attitude. The article went on to describe the Danes as being very round. This is because they are an agricultural country and they eat better than most other countries. Then the article says that the Norwegians are the easiest of all to tell because you hardly start talking to them before they tell you that they are Norwegian. Not only that, but they also wear a little Norwegian flag in their lapel.

There is a quality about the Norwegian people that influences very much their way of life and their approach to things. They are strong people and they are very quiet people. They are not a gay people at all.

They are extremely kind and very polite. They are home loving, exercise loving and extremely nationalistic.

Shopping was also something of a problem in addition to the language barrier. I used to wonder what Arly was going to bring home from the store, and I sometimes think she wondered also. Shopping is a social affair. The ladies all get dressed up to go shopping and it takes about two hours a day and several miles of walking to get food for the day. There is very little refrigeration in the homes so things must be purchased every day. Meat is purchased in the butcher shop. Bread and cakes come only at the bakery. Fruits and vegetables are bought at the green grocers. Milk, butter and cheese are bought at the dairy store. The grocery store fills in most of the rest such as flour and sugar and salt and canned goods, such as it is. These staples come in bulk rather than prebagged. The grocery also sells breakfast foods such as Kelloggs corn flakes which the Norwegians eat for dessert with their main meal. Canned goods are practically non-existent except in specialty stores in Oslo that cater to the American NATO people. They have beans and peas and that is about all. We stopped in Oslo at the store to see about some canned goods, but found a can of Libby's sauerkraut selling for $.70 and a can of peaches for about the same price, so we decided not to buy.

Meat is a rather interesting phenomenon in Norway. Most butchers just chunk it. This is especially true of beef. They remove every ounce of fat and every bone. Fortunately we found a butcher who actually knew how to cut meat and he got himself an English dictionary so he could identify the cuts of meat we wanted. We found that T-bones and sirloin were among the cheaper cuts of meat because of all the waste, I suppose. That was the sort of thing he would offer Arly for soup meat.

Fish is, of course, the mainstay of the Norwegian diet. They also have an interesting trick of cooking fish that Chuckie learned in cooking class at school. You melt your grease, in this case margarine, in the pan and then slice in onions. When the onions are brown you take them out and put in the fish. This adds a very delicate flavor to the fish. This is also good when cooking whale, although I prefer to keep the onions in the pan with the whale. With either fish or whale, they dip it in flour before frying, and then when the fish is about done, they add a little water and let the whole thing stew a bit. That makes good fish gravy. We could always tell it was time for "middag" by the odor of onions frying. I wondered if this wasn't the reason why the Norwegians air their houses so vigorously regardless of the weather.

During the summer they have quite a variety of vegetables in their diet, but during the winter they subsist on those things that can be stored easily. This means that they eat potatoes, carrots, cabbage and rutabagas and not much else. They do ship in fresh carrots from Italy in the spring and they produce a lot of tomatoes in greenhouses.

In our town the milk was sold in bottles, but in other towns and at the University, the milk was ladled into your pail out of a milk can.

Bread was never wrapped until you bought it and then it was wrapped in ordinary wrapping paper and it was never sliced.

Getting away from the subject of food for a bit, I'd like to make a couple of comments about housing. The streets in all Norwegian towns wander just as they do all over Europe. So houses are never built right side by side. They are apt to be built right close together, however. In fact, they may seem to be one right on top of another. And usually they are built right on top of the street. In spite of this, there is an amazing amount of privacy. Although houses are very close together, the windows are such that they never look from one house into another. And often the yards are so arranged that there are secluded areas. The houses are mostly frame construction and the siding is typically placed up and down instead of crossways. Primarily the Norwegians go in for bright red, bright blue or yellow houses, so the towns are apt to be quite colorful.

We finally decided there were two things the Norwegians accepted as status symbols--clothes and baby buggies. Their clothes are not cheap. In fact even by our standards they are expensive. The quality though, is excellent. They seem to have a uniform for every activity, and you can tell where a man is going by the uniform he is wearing. Actually they do not have a uniform for skiing. Of course the women wear ski pants but the men wear their regular Sunday knickers. The only thing they add to their costume for skiing is a blue stocking cap with a white band around it.

This baby buggy business is an interesting one. They are expensive and they are built like a fancy automobile with lots of chrome--chrome wheel pants and everything. On top of the baby they put a miniature feather tick or "dyne", and the nicer the covering of the feather tick, the higher the social status. They appear to outdo themselves in covering that feather tick and they come up with some very artful needlework.

Of course, a baby needs a good buggy because he spends a lot of time in it. He goes shopping every day with his mother and he uses it for a bed. The Norwegians believe a child should spend at least four hours a day outside regardless of the age of the child and regardless of the weather. Babies are looked after very carefully, and every effort made to spoil them. At the age of two they are through with babyhood and out they go. They go out for four hours and they stay out. If it's cold they dress them warmly. If it is raining they put on their rain clothes, but out they stay. The children very quickly learn self reliance and they learn quickly to amuse themselves. They have to learn self reliance early because many of them start working when they are twelve to thirteen years old, and may be on their own by the time they are 15 or 16.

School is compulsory until the age of 16, so their work is usually confined to after school jobs. Children are expected, however, to learn to work. For instance, when Dag Hammerskold was killed, they set up a memorial for him and the school was dismissed for one day for the children to go to work and earn at least 10 kroner or about a dollar and a half to contribute. If they did not know of a job they could get for the day,

they were to report to the school to be assigned to a farmer. It was the children, not the parents, who were asked to contribute, and they did contribute by their own efforts, and learned something about working at the same time.

I think one of the biggest social differences between Alaska and Norway is in the way we spend our leisure time. Leisure time for the Norwegians is a time for leisure. For us it is a time to do something else, and preferably something new. I sometimes think we are not really looking for something pleasant to do but rather something to give us kicks. For instance, the Norwegian idea of a boat is a round bottom rig that will ride the waves nicely, with a one cylinder diesel inboard that will push the boat along at a steady 8 knots. The American idea appears to be a flat bottomed boat with a 50 horse kicker that will get the boat out of the water and up in the air where a boat belongs.

The Norwegians enjoy gardening and put in long hours in the spring producing some of the prettiest flower gardens you have ever laid eyes on. They are also great on painting their houses, but in a rugged climate and especially close to the sea, painting is a very practical thing also. And don't forget that flower gardens are food for the soul, and especially important in areas where there are long winters without growing plants.

The Norwegians are great sportsmen and much leisure time activity is taken up by active participation in sports. You know this has another advantage especially for young people besides developing muscles, and that is in healthful and socially accepted dissipation of excess energy. The Norwegians do not go in for a great deal of team sports although soccer is the national sport and followed very closely by the fans. They indulge in individual sports such as bicycle riding, skiing, swimming, and running through the forest with a compass.

I don't want to belabor this thing any longer, but I do want to leave you with this thought, that Alaska will only reach full development when we all concede that it is sufficiently different from the other states that we should establish our own identity, and in doing this we should adopt new customs, new traditions, new ideas in our special society which more nearly fit our special environmental conditions. And I maintain the best place to look for a source of applicable new ideas for this new society is in the Scandinavian countries, particularly Norway.

I'd like to thank you for the opportunity of speaking to you tonight and I hope each of you has a chance to visit Norway.

University of Alaska
ALASKA AGRICULTURAL EXPERIMENT STATION

Palmer, Alaska
August 27, 1963

# INTERNATIONAL SCIENCE COOPERATION PROPOSED

In presenting a program for more food for all people, Dr. Aamodt has given us plenty of food for thought. He has outlined the scope of the problem and has pointed the way to the solution of that problem. If I understand him correctly, he has placed the burden of that solution on the scientist. At least, he has urged the scientist to be prepared with answers as soon as the politician and the economist have paved the way for action. He urges greater cooperation, and he sums up the methods of achieving this cooperation when he says, "International conferences, exchange of personnel, and consultation of specialists on major problems will promote collaboration on mutual problems."

I should like to discuss for a few minutes my concept of what this means in terms of Alaska, and how we might to our advantage engage in international cooperation on agricultural and biological problems of the north. The biological and agricultural problems of the north are principally those of climate and the countries with whom we should cooperate in the solution of the problems are those countries of high latitude--Canada, Greenland, Iceland, Norway, Sweden, Finland, possibly Denmark, perhaps Scotland, and Russia--if that is possible. The Scandinavian countries as a group are far ahead of any other group of countries in research cooperation. They have been at it since before the turn of the century. Realizing that they were small countries, with relatively small populations and consequently a small total number of scientists within that population, they took steps to combine their forces and have thereby developed a sizeable working scientific force. There is just as free interchange of people and ideas between those countries as there is between our states. They have perhaps even gone one step further in that they have actually divided up the work. In plant pathology, for instance, Sweden works on potato late blight and Denmark works on potato scab. The results are equally applicable in both countries, and each country has cut its total work load. There are several inter-Scandinavian committees in various discipline which meet periodically to discuss the research results and to coordinate the research throughout Scandinavia. They have also developed a Scandinavian documentation service in Washington D. C., to bring the results of our research to Scandinavian scientists.

I am not proposing that we must get as closely involved as this, but I am suggesting that they have much to offer in the way of assistance. We must find ways of getting this assistance and at the same time find what we have to offer them in exchange.

During my stay in Norway last year, I discussed this with a number of Norwegian scientists and with the Norwegian research council in Oslo. I can report that they are very much interested in cooperation with Alaskan scientists.

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Address presented to the Fourteenth Alaska Science Conference, August 27, 1963, by Charles E. Logsdon, research plant pathologist.

Of course, interest is only the first thing, and the second thing is financing. As Dr. Aamodt pointed out, three ways to promote collaboration are through international conferences, exchange of personnel, and consultation of specialists, all of which cost money. I believe there is money available for studies on northern biology and money to support conferences and exchange of people. As Dr. Aamodt reported, there are presently a number of projects in the Scandinavian countries (principally Finland) being supported under Public Law 480. One restriction to expenditures of these funds is that the work must be to the benefit of the United States as well as the recipient country. Up to the present time, I do not believe a single one of these projects has been proposed by Alaskans. That's one bet we have overlooked.

There are a number of private foundations willing to support work in those countries and are already doing so. The Rockefeller Foundation for some time supported research in Sweden. The Kellogg Foundation has provided funds for the construction of an agricultural engineering building at the agricultural college in Norway, and is also supporting a program of extending research results to the farmers in the remote northern areas of Norway.

As for international conferences, there are any number of international congresses meeting periodically, and the National Science Foundation has provided funds through AIBS or various societies to support travel of delegates. There have also been numerous symposia of late, supported by foundations, the Department of Defense, NATO, and other granting agencies. This symposium idea has had considerable impetus in the last two or three years, and there appears to be no reason why there should not be an international symposium of northern biologists supported by one of the congresses or by the International Biological Union. Financial support might have to come through some other agency.

Concerning the exchange of people, and this means consultation of experts as well as not so expert, we should not overlook the Fullbright fund. It is my understanding that this money has accumulated through the sale of United States surplus, other than agricultural surplus, and is available to United States scientists either as teaching or research fellowships. The National Science Foundation has available postdoctoral fellowships and senior scientist fellowships for study abroad. The Guggenheim Foundation has a very good fellowship program for overseas study. There are also quite a number of other foundations willing to support this kind of activity. The Rockefeller Foundation supported both of my trips and also Dr. Kallio's trip in 1956.

One of the most intriguing developments of late along this line is the establishment within the National Science Foundation of an Office of International Science activities. This agency is prepared to offer support of cooperative research efforts between the United States and other countries. This is a mutual help program, not one of technical assistance to underdeveloped countries. Each country involved must provide part of the support,

and senior scientists from each country must be involved in the program. They prefer to support exchange of personnel and would be especially happy to support exchange of graduate students under the program.

Although I may be biased, I believe that Alaska's future development is going to depend a great deal on research showing us how to live better and utilize our resources better. The fastest way to develop that research is through cooperative effort with other northern countries. Concommitant with the development of that research should be the development of graduate programs at our institutions leading to the PhD degree and providing a succession of scientists to carry on that research.

The people of Alaska seemed to be of about the same persuasion a year ago when they voted a bond issue to provide a facility at the University of Alaska for an Institute of Northern Biology. I do not believe there has yet been a consensus of the scientists in Alaska on this point, so I have prepared a suggested resolution which I shall submit to the resolutions committee for possible adoption by the Alaska Division of AAAS.

This resolution reads as follows:

A RESOLUTION

Be it resolved by the Alaska Division of the American Association for the Advancement of Science in session at the Fourteenth Alaska Science Conference that the Division does recognize the need and desirability for increased research in northern biology; and that it does endorse the principle of cooperation between Alaska and other northern countries as a feasible and suitable means of enhancing present and future research efforts, and thereby hastening the development of the resources of the North to the benefit of Alaska and the rest of mankind.