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RECOMMENDATIONS FOR DEVELOPING
AN
AGRICULTURAL RESEARCH SERVICE
AND
AGRICULTURAL EXTENSION PROGRAM
FOR

THE REPUBLIC OF KOREA

PREPARED BY
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U.S. INTERNATIONAL COOPERATION ADMINISTRATION

OFFICE OF THE ECONOMIC COORDINATOR

UNITED NATIONS COMMAND

SEOUL, KOREA

May 1956

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OFFICE OF THE ECONOMIC COORDINATOR FOR KOREA
OFFICE OF FOOD AND AGRICULTURE
APO 301

28 May 1956

TO : The Economic Coordinator for Korea
FROM : Dean Harold Macy, Consultant
SUBJECT: Agricultural Research in Korea

1. I have the pleasure to transmit herewith, (a) report of survey of agricultural research institutions in the Republic of Korea. (b) a summary of conferences held with national, provincial, gun, myon, city and village officials. UN and US officials, Korean agricultural research administrators, educators, private individuals, including farmers, and young farm boys and girls, and (c) a series of recommendations regarding a pattern for the organization and administration of agricultural research and extension in the Republic of Korea, together with comments pertinent to such an organization and administration.

2. This report and recommendations are based upon observations made in Korea from 13 March 1956 to 28 May 1956, while serving as a consultant to OEC/ICA authorized under PIO No. 89-11-000-2-50108 to (a) "visit various agricultural research installations in South Korea to discover the type and quality of agricultural research being conducted". (b) to "contact various officials of the Ministry of Agriculture and Forestry, and American agriculturists in Korea to obtain their ideas concerning present research organizations" and (c) to make recommendations "to provide Korea with a modern integrated agricultural research service".

3. I am recommending the establishment of an Institute of Agriculture at a high level in the Ministry of Agriculture and Forestry. The Institute would have two major subdivisions an Agricultural Research Service and an Agricultural Extension Service, fully coordinated and responsible for all agricultural research and extension supported by national funds. I hope that the recommendations which I have made regarding the integrated research program will be helpful to O.E.C. and, naturally, to the Korean government. They represent the best advice which I can give at this time.

4. Likewise, I wish to endorse the recommendations made independently by my colleagues, Extension Director Skuli Rutherford and Miss Dorothy Simmons of the Institute of Agriculture, University of Minnesota. We have worked as a team, in fact, throughout our stay in Korea. It has been a privilege to have their advice and counsel, and to assist in the formulation of their suggestions for the organization and operation of a coordinated extension program that will function in rural areas and among farm people to their advantage and the over-all economy of Korea.

5. If the research and extension programs can be integrated substantially as we have suggested and the basic administrative unit placed at a high level in the Ministry of Agriculture and Forestry, without political interference from national or provincial governments. I'm sure that agriculture and forestry in Korea will move ahead through a series of satisfactory advances toward a more productive future.

6. I wish to emphasize my conviction about the vital need for constant and active coordination of the programs for instruction, research and extension to serve agriculture in the broad sense. The three are

mutually dependent and must be inseparably associated intellectually and practically, even if it may not be administratively feasible to join them at the moment. Cooperation between, and within, every public or private agency must be maintained, of course, if an integrated, coordinated program is to be successful. I have the impression that the climate is now right in Korea to build the interest in, and support of, an integrated program such as we have suggested. It may take time but patience will be a virtue in this project as it has been in many others that have been right.

7. I am sure that expenditures made for agricultural research and extension in Korea under a well-planned and coordinated program, such as we have suggested will yield rich returns for the farmers and businessmen of this country, beyond the dividends received from any other investment made by the government and its people, assuming of course that the program is administered wisely, honestly and without political interference.

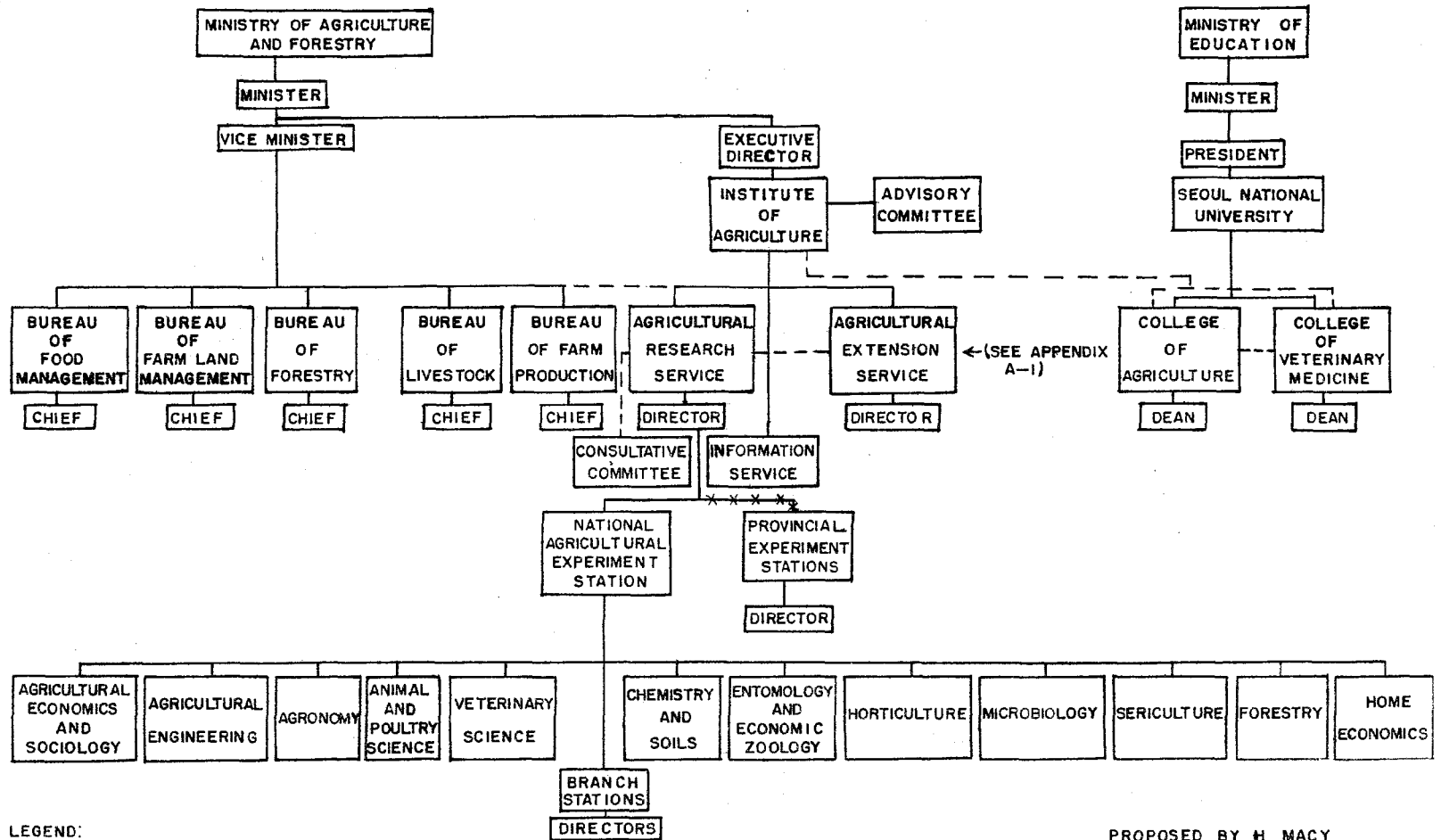
8. The Office of the Economic Coordinator can contribute materially to the success of the integrated program of research and extension. There is an opportunity to give advice and guidance to the Korean officials since I have found that the representatives of the Office of Food and Agriculture have the confidence and good will of the agricultural officials and others at all levels of the Korean Government. For the program we have proposed. I believe you will find that the soil is fertile, so the seed should germinate successfully, if OEC personnel will help to nurture the growing plant, give it care and attention which it will require if Korea is to harvest the fruit in good season.

9. Our tour of duty in Korea has been stimulating and pleasant, although somewhat arduous. We have tried to learn something about the country, as

evidenced by our visits to all the provinces except Cheju-Do. We have conferred with many people in our effort to understand and build a sound foundation for our recommendations. So, as we leave, we hope that we have contributed something worth-while to Korea and in furthering the best interests of our own people.

10. I wish to express my gratitude to you and all members of your staff, U.S. and Korean, for the unfailing courtesy, prompt assistance and cheerful cooperation which we have been accorded from the time of our arrival in Korea. I am especially indebted to the staff of the Office of Food and Agriculture. I would like to name everyone who has been helpful to us in completing our mission but I hesitate to do so because I am fearful that some one of the many might be forgotten. Everyone has been wonderful and you may be proud of your associates whom I shall thank, personally.

RECOMMENDATION FOR ORGANIZATION OF RESEARCH AND EXTENSION IN KOREA



LEGEND:

- ADMINISTRATIVE CHANNELS
- - - - - ADVISORY AND COOPERATIVE RELATIONSHIPS
- X X X X COORDINATING AND PROFESSIONAL RELATIONS WITH SEMI-AUTONOMY EXCEPT FOR CONTROL OF NATIONAL GRANTS - IN-AID

PROPOSED BY H. MACY
MAY 1956

Foreword

The recommendations regarding a modification of, and it is hoped an improvement in, the agricultural research service for the Republic of Korea are based upon observations made in Korea, after visits to experiment stations and farms in all but one of the provinces, conferences with officials of the Ministry of Agriculture and Forestry, interviews with provincial governors, gun, myon and village officials, outstanding farmers and a host of individuals, both Korean and United Nations personnel during March, April and May 1956.

The consultant, Harold Macy, Dean of the Institute of Agriculture of the University of Minnesota, appointed by OEC and the International Cooperation Administration, in preparing this report also drew upon nearly forty years of experience as a professor, researcher, agricultural experiment station director, and dean of a land-grant university carrying the responsibility for super-vising and coordinating an over-all program of instruction, research and extension in the fields of agriculture, forestry, home economics and veterinary medicine in an agricultural state.

The recommendations include a proposal for the organization of an integrated agricultural research service, closely tied with an agricultural extension service and providing for close cooperation with colleges and universities responsible for instruction in agriculture and related sciences. Suggestions are made concerning the functions of various units of such a research service, the problems of personnel to staff these units, the facilities needed and programs of research under the conditions now existing in Korea. The unification or integration of the research activities at the national and provincial levels is emphasized.

It is recognized that time will be required to accomplish these purposes and to provide trained personnel and facilities for their implementation. Changes and improvements may be expected as the program unfolds, and as conditions in the country necessitate, or make possible, modifications or expansion of the proposed programs.

Legislative or executive action may be required to establish the type of research and extension services proposed and to assure adequate authority for integration, coordination, cooperation, and financial support.

It does not seem necessary in this report to emphasize the importance of agriculture in the economy of Korea. Such facts have been set forth in many documents, both Korean and otherwise. We may start with the promise that agriculture is the basic industry of the nation.

The report prepared for the United National Korean Rehabilitation Agency by a mission selected by the Food and Agriculture Organization of the United Nations, and published in 1954 under the title "Rehabilitation and Development of Agriculture, Forestry, and Fisheries in South Korea" contains voluminous details and data, and has been most useful to the consultant in his studies. In general, the conclusions drawn in that report are not too different from the recommendations made by the consultant at this time.

Further enlightenment has come from the examination of numerous Korean government reports as well as material supplied by the International Cooperation Administrations, the Office of the Economic Coordinator for Korea, UNKRA, KCAC, American Korean Foundation, and others too numerous to mention.

the opportunity to observe agricultural and forestry conditions in practically every area in Korea, the privilege of conferring with government officials at all levels, visiting with farmers, farm women and 4-H Club members in their home environment, and inspecting a variety of experiment stations, have been priceless.

Wherever the consultant has visited in the Republic of Korea he has been greeted with courtesy, friendliness, hospitality, candor and a fine spirit of cooperation. Information has been supplied to him whenever requested. The ideas and ideals of the Korean people augur well for the support of a strong, integrated program of teaching, research and extension for the country. Everyone recognizes the importance of agriculture to the welfare of Korea and there is a clear understanding of most of the problems to be faced now and in the future. Throughout, the welfare of the country has been emphasized as much more important than the interests of individuals, whether this be in matters such as an integrated research service or otherwise.

The future development of agriculture in Korea depends upon a program where research uncovers new facts, where young people are trained to apply and disseminate the new knowledge they have acquired and where an extension service carries to the people constantly and directly the latest information about farming and related fields.

It should be said, parenthetically, that wherever the words "agriculture" or "agricultural" are used in this report they are intended to include and not exclude such fields as forestry, home economics, veterinary medicine and

other related sciences or disciplines.

A Proposal for the Establishment of an Integrated Research Service for Korea.

It is proposed that a new and very important unit be established in the Ministry of Agriculture and Forestry of the Republic of Korea to be known as the Institute of Agriculture (See accompanying organizational chart Page, 2a). This Institute, with an Executive Director, as its principal administrative officer, would have the responsibility, under the Minister, for the administration and advancement of all agricultural research and extension programs and institutions supported by funds from the national government; and for the coordination of research conducted by provincial experiment stations in case national funds are allocated to the province for that purpose.

There would be established, under the Institute and at Bureau level, the Agricultural Research Service and the Agricultural Extension Service, each with its own director responsible to the Executive Director of the Institute. The Director of the Agricultural Research Service would be responsible for the administration of the National Agricultural Experiment Station, and for establishing coordination and cooperation with the Provincial Experiment Stations on behalf of the Executive Director of the Institute.

It is contemplated that the National Agricultural Experiment Station, under the Director of the Agricultural Research Service, would have its headquarters at Suwon and would be the active, operating center for the agricultural research program.

Under the National Agricultural Experiment Station, it is proposed to authorize twelve technical or professional departments or sections, each

with the responsibility for initiating and conducting actual research in the special field or discipline described, under the "project" plan, with the approval of the Director.

It has been suggested that there might be a "lumping" of some of these departments, to reduce the number, but it is the opinion of the consultant that it will be a more smoothly operating team if there is a "splitting" into the twelve departments listed. He is convinced that there is a considerable morale factor involved. The departments need not be responsible for detailed administrative duties and may operate under a designated or elected head for convenience, proper coordination and efficient operation. The important consideration is the opportunity for, and encouragement of, cooperation between departments or individuals so that team work may be prominent in the pursuit of investigations which may be complex or cutting across several scientific fields.

Provision is also made for outlying Branch Experiment Stations serving specific functions as outlined elsewhere. Actually departments of the National Station may find it expedient to extend their research programs to outlying or branch stations and participate in the coordination of the projects there with the administrative responsibility still resting in the Director of the Agricultural Research Service.

It will be noted in the organizational chart that an Advisory Committee for the Executive Director of the Institute is recommended. The suggested membership and functions of such a committee are outlined below:

Advisory Committee

Membership:

- * Minister of Agriculture & Forestry (or his designated representative) -
Chairman
- * Bureau Chiefs, Ministry of Agriculture & Forestry
- * Dean of College of Agriculture, Seoul National University
- * Dean of College of Veterinary Medicine, Seoul National University
- One representative of Provincial Experiment Station Directors
(Selected by vote of Directors)
- One representative of Provincial Extension Service Officials
(Selected by vote of the senior officials)
- One representative of the Korean Home Economics Association
(Selected by vote of members of the Association)
- Two representatives of outstanding farmers of the country (Appointed
by the Minister of Agriculture & Forestry)
- One representative of agricultural or forestry industry - businessmen,
bankers, etc., (Appointed by the Minister of Agriculture and Forestry)
- One representative of 4-H Club Members (Appointed by Minister of
Agriculture & Forestry upon nomination by National 4-H Club Committee)
- * Director of Agricultural Research Service - Secretary

Total of 17

NOTE: * Indicates members by virtue of office held, others to be named
for three-year terms.

Functions:

The function of this important committee should be to advise the Executive Director of the Institute of Agriculture on all matters pertaining to policy, programs, cooperation, coordination, financing etc. The function of the committee should be strictly advisory and not administrative.

This should be a most important and helpful device for a review of agricultural problems facing the country, for advising the Executive Director and staff about needed research and extension as well as for encouraging financial support through representations made to governmental or private agencies. It may be found desirable to enlarge the membership of this advisory committee to include representatives of farmers' organizations or cooperative associations. At other times, adhoc committees might be constituted to consider special problems, or at the discretion of the Minister and/or Executive Director.

Likewise, a Consultative Committee is recommended as an advisory group for the Director of the Agricultural Research Service with membership and functions as outlined below:

Consultative Committee:

Three representatives of Department Heads of the National Agricultural Experiment Station. (Chosen by vote of all such Department Heads)

Two representatives of the Provincial Experiment Station Directors. (Chosen by vote of all such Directors.)

One representative of the College of Agriculture, Seoul National

University (Chosen by vote of all senior faculty members.)

Total of 7.

Note: The members of the committee should serve for one year unless reelected by the usual procedure.

The members of the committee should elect their own officers annually.

The committee should constitute sub-committees or ad hoc committees with membership possibly from outside the consultative committee itself to consider special problems in the planning and coordination of research programs in specific fields, for example; crops, vegetables, fruits, animal husbandry, forestry, etc.; or sub-divisions thereof, such as rice, swine, Newcastle disease, etc.; and to provide, in other cases, sub-committees given an opportunity for consultation of research staff with provincial or local extension representatives to further the coordination of the two programs.

Functions:

The function of this committee should be to advise the Director of the Agricultural Research Service concerning the planning and coordination of the research programs of the national, branch and provincial experiment stations. The function of the committee should be strictly advisory and not administrative.

This body would assure a better integration of research programs of departments, branch stations, provincial stations, etc., and would facili-

tate planning of research in special fields. It also gives to the research workers a sense of participation which in itself builds morale and teamwork.

The functions of the National Agricultural Experiment Station, the Branch Stations and the Provincial Experiment Stations, as envisaged by the consultant, are listed below:

National Agricultural Experiment Station:

1. To conduct fundamental and applied research on problems confronting the country as a whole with special reference to agriculture and related fields, and for which extensive facilities, equipment and highly trained personnel are needed.

2. To plan for, and stimulate cooperation in, and coordination of research programs of the country in agriculture and related fields.

3. To prepare and arrange for publication and dissemination of reports promptly on results of research obtained from the station and its branches so that the information will be in a form most useful for, and understood by, farmers, extension workers and laymen, as well as papers for submission to scientific and professional journals.

4. To maintain close liaison and cooperation with government officials and agencies at all levels in the country.

5. To maintain particularly close liaison and cooperation with the College of Agriculture, and the College of Veterinary Medicine of Seoul National University and all other universities, colleges, schools or

institutions concerned with agriculture or related fields.

6. To encourage participation of staff members in public meetings, training programs and conferences with colleges, universities, high schools, extension workers, 4-H Club leaders, farmers, professional groups and others in the country.

7. To provide "in-service training" for the upgrading of members of the staff of the national, branch or provincial experiment stations.

8. To encourage further training, and professional improvement of staff members at home or abroad.

9. To maintain, improve and make available to the staff, and other eligible persons, a library consisting of the most important scientific books and periodicals on agriculture and related sciences available in the world, and to the greatest extent possible.

10. To maintain fields, grounds, buildings, equipment and livestock in such a way that they will reflect credit on the station, its staff and the government; inspire confidence, and serve as an example to all visitors who may inspect them, especially during demonstrations or public meetings to present the results of research.

11. To conduct research on the basis of properly prepared and adequately documented project outlines, reviewed and approved by the Director and revised or terminated whenever necessary.

12. To present, at least annually, reports of progress of research authorized by approved projects.

Branch Stations:

1. To extend research programs, particularly those applied in nature, or for example those on special crops such as cotton, or for such fields as livestock or veterinary research to regions of the country where soil, climate, types of farming, etc., may differ from conditions at the national station and which will supplement rather than duplicate, unnecessarily, the projects underway at the national station.

2. To pursue research on problems peculiar to a given region of the country.

3. To provide further opportunity for demonstrations to farmers, extension workers and others in a region.

4. To serve as centers for the further projection and introduction of improved seed, livestock, etc., for farmers and others in a region.

5. To conduct research on certain problems for which the provincial stations are not equipped or staffed, or for which presently existing facilities may be best adapted.

6. To maintain a library or collection of reference materials so far as funds will permit.

7. To cooperate with public and private agencies, public officials or private citizens in promoting the best interests of agriculture in the community.

8. To cooperate actively with the agricultural extension service in the neighboring community and to encourage the staff to participate

in public meetings, training sessions and conferences whenever possible.

Provincial Experiment Stations:

1. To conduct research, particularly applied in nature, in the provinces where soil, climate, precipitation, types of farming, etc., may differ from conditions at the national or branch stations and which will supplement rather than duplicate, unnecessarily, the projects underway at the national or branch stations.

2. To pursue research on problems peculiar to a province.

3. To provide further opportunity for demonstrations to farmers, extension workers and others in the province.

4. To serve as a center for further production and introduction of improved seed, livestock, etc., suitable for farmers or others in the province.

5. To serve as communication centers or observation posts for ascertaining special or current problems confronting the farmers or other citizens of the province.

6. To prepare and arrange for publication and dissemination of reports of research completed by the station as promptly as possible and in a form most easily understood by farmers and laymen.

7. To cooperate actively with provincial and other officials and agencies in promoting improvement of agriculture, in the broadest sense, in the province.

8. To encourage the participation of members of the staff in public meetings, training courses and conferences in cooperation with

schools, colleges, universities, extension workers, 4-H Club leaders, farmers, professional or social groups and others in the province.

9. To maintain a library as adequate as funds will permit.

Without going into detail about the fields covered by the department suggested in the National Agricultural Experiment Station, since most of the functions would be conventional, it may be well to comment upon a few items.

Agricultural Economics and Sociology might be expected to include statistics, farm management, marketing, agricultural credit, community development, etc., among the areas to be covered.

Agricultural Engineering might be expected to include irrigation, drainage, engineering aspects of soil conservation, meteorology, physics, farm tools, machinery, food & crop storage, structures etc.

Entomology and Economics Zoology might be expected to include rodent control, wildlife and game management and possibly fresh water biology.

Horticulture would be expected to include the usual studies on fruits and vegetables and perhaps edible nut-bearing trees.

Microbiology would be particularly interested in plant pathology in the broadest sense, but would also be expected to be active in soil microbiology, industrial fermentations, food preservation, etc.

By the citation of a few of these examples of sciences involved in agricultural research, it should be abundantly clear that there is the opportunity, and indeed the necessity, for a team approach to the solu-

tion of agricultural problems. None of the departments can really exist alone: cooperation is the keynote in modern research and for successful endeavor.

At no time, however, should basic or fundamental research be forgotten. At the moment, because of the exigencies of the situation, the agricultural research program of Korea should, and in the opinion of the consultant must, largely be directed toward applied or technological research. The National Agricultural Experiment Station would be expected to initiate, conduct and coordinate any basic research supported by government funds. The immediate problems needing solution are so numerous and so important from the practical viewpoint that the "fires must be extinguished" first. Meanwhile advantage must be taken of the store of information available in the scientific literature of the world, until such time as sufficient funds are available in the country to support, generously, studies on basic or fundamental problems. The grant-in aid proposal made later may be the starting point for some fundamental investigations.

Finally, there is a recommendation that an Information Service be established in the Institute of Agriculture. This is a vital need and a single unit could meet the overall national, provincial or even local requirements of both services - Research and Extension. It would be desirable to appoint an editor who would cooperate in the preparation of manuscripts, and be responsible for the publication and dissemination of informational material as required and so far as funds permitted.

Newspaper releases, magazine articles, folders, leaflets and bulletins of many arts should be prepared for wide circulation especially to farmers. In the modern field of communication, maximum use should be made of radio and every other new channel of communication. The editor should be chosen because of his training in all of these fields and preferably from candidates with an agricultural background and interest. An individual, who has had the opportunity to study abroad recently and to observe the latest methods of communication, would be most useful in this position.

It is recognized that the titles of administrative officials, or the designations of units of the research and extension organizations being suggested may require modification because of local requirements, legal or otherwise, but to the consultant they seem new to be descriptive and administratively sound.

Transfer of Research Activities from other Bureaux or Agencies:

Any research projects, or programs now being contemplated or underway in any Bureau of the Ministry of Agriculture and Forestry, and any facilities now used for research should be transferred to the appropriate unit of the proposed Agricultural Research Service. The same procedure would be logical with respect to extension functions which should be transferred to the proposed Agricultural Extension Service.

Every Bureau has, at the present, more than its share of responsibilities under existing laws. None would suffer from the proposed re-

alignment whereby all research and extension activities of the Ministry would be consolidated into one agency. The opportunity for horizontal intellectual cooperation and actual coordination within the Ministry and between the bureaux would be especially promising under the proposed organization of research and extension activities. It would follow the trend so clearly successful in countries where agriculture is on a high plane of productivity and efficiency.

It would seem desirable to transfer forestry research from the Bureau of Forestry of the Ministry of Agriculture and Forestry to the Agricultural Research Service without a major change in present research functions and without eliminating close intellectual cooperation which could exist between this new department of the National Station organization and the Bureau of Forestry in the Ministry. There is a great deal of research pertaining to forestry which should be conducted by or in cooperation with such departments as agronomy, livestock, chemistry and soils, agricultural engineering, etc. It is to be expected that present national or branch forestry stations would be used as centers for forestry research but be administratively, research-wise, under the Agricultural Research Service and a part of the National Agricultural Experiment Station even though such stations were actually not located at Suwon.

It is recommended that livestock and veterinary research be transferred from the Bureau of Livestock to the Agricultural Research Service. There needs to be closer coordination between livestock or veterinary

research and other departments of the National Experiment Station. It would be a much more logical and efficient arrangement than now exists.

Considerable research, for example, needs to be conducted on forage crops, pasture and silage for livestock. Here, agronomy and soils specialists would at least ~~would~~ be concerned as well as livestock researchers, and an agronomist might be the leader of the research project. In animal nutrition the veterinarian and the livestock specialist might work as a team with the chemist and microbiologist as part of the supporting group. The opportunity for close cooperation would be greatest if these research workers were brought together in the Agricultural Research Service.

It is contemplated that presently existing facilities such as those at Songhwan for livestock, or Pusan for veterinary science, for example, would continue to serve as excellent research units under the administrative direction of the Agricultural Research Service and the National Agricultural Experiment Station.

Livestock breeding stations brought under the administration of the Agricultural Research Service would still be continued at national and provincial levels. They would be maintained largely as sources of good or improved blood-lines for distribution to farmers. It is doubtful if Korea is justified, or able at this time, to spend the large sums of money that would be required to support basic genetic studies, even if well-conceived and well-controlled, on the larger domestic animals.

Genetic improvement of poultry (including ducks), swine, rabbits, and goats might be attempted in a preliminary way at this time, perhaps in that order so far as funds, facilities and trained personnel are available to conduct such research.

Research on improved livestock might be more nearly based on trials of present and imported stock and selection of superior lines. This could be done at lower cost.

Livestock and poultry management, nutrition, etc., especially in cooperation with agronomists, veterinarians and others would seem to promise results which would promote and make more efficient, the animal industry of the country. Certainly, some attention should be paid to the possibilities of artificial insemination of domestic animals in Korea, and research conducted along those lines.

There is no substantial or logical reason for the existence of a separate National Horticultural Research Station. All horticultural research should become the responsibility of a Department of Horticulture of the National Agricultural Station. Special or branch stations thereof could be established away from Suwon or wherever necessary, but administratively under the Director of the Agricultural Research Service as indicated above. There is need for coordination of horticultural research with other departments and units of the proposed Agricultural Research Service and National Agricultural Experiment Station.

The same arguments would be valid with respect to all other presently

separate national experiment stations that may exist for the prosecution of research in agriculture, forestry, or veterinary medicine. The best interests of the country would be served by having a strong, coordinated research program where there is an opportunity to take advantage of all the scientific skills and talents of a staff composed of well-trained individuals in various fields of science which must be drawn upon when modern agricultural research is conducted. "Ivory tower" research in agriculture is a luxury, at the moment, in Korea because of limited funds and the need for prompt and practical answers for the most pressing problems facing the nation. A limited grant-in-aid program, suggested elsewhere in this report, would give assistance to those who would prefer to work in isolation or on problems not being studied by government agencies.

It is realized that the transfer of the research and extension activities from the Bureau of Forestry and the Bureau of Livestock might cause some misapprehension. The advantages of the change would far outweigh the disadvantages. The Bureau concerned would still retain major responsibilities for regulatory, control, action and service functions. The close liaison that will be possible between the existing bureaux and the proposed Institute of Agriculture would insure maximum efficiency in the best interests of the country. Furthermore, the fruits of research will be richer when scientists in related fields work together cooperatively as a team to find solutions to the complex and puzzling problems which face the country.

It is basically sound and imperative to separate education, research, and extension in the field of agriculture and related sciences from regulatory or enforcement duties if the service to the people is to be most effective, acceptable to the constituencies and free to search, find and disseminate the basic facts of agriculture and related sciences which in turn will influence large numbers of people to improve their practices and promote the general welfare of the nation.

The proposed addition of home economics research to the conventional fields covered by the National Agricultural Experiment Station would be new to Korea. The relation of the problems of the home to agricultural development and the public welfare is clear and logical. There is ample justification for including this discipline with the other professional fields incorporated in the Agricultural Research Service.

The home economist likewise has much to contribute to the extension program in rural homes, with young people and homemakers. The role of women in national life is becoming more apparent all over the world.

There is a rich opportunity to coordinate research and extension programs in home economics with the rather widespread development of home economics training in schools and colleges throughout Korea. This indicates the interest and support for this important educational enterprise.

Selection of Executive Director, Directors, and Department Heads:

It is suggested that the Minister of Agriculture and Forestry appo-

int a special and representative committee of citizens to select a well-trained experienced and tactful administrator, thoroughly versed in agricultural education, research and extension to head the new Institute of Agriculture. The committee should consist of outstanding educators, scientists and public-spirited citizens of Korea, perhaps with a foreign advisor. The selection of the new Executive Director should be based strictly on merit and with the understanding that the individual chosen will carry responsibilities as important to the future welfare of the country as any other public servant in the government of Korea. The administrator, of course, should be appointed by the Minister as a career appointee.

The new Executive Director, when appointed, should have the opportunity and responsibility for the selection and nomination of the Director of the Agricultural Research Service and the Director of the Agricultural Extension Service, with the advice of a committee made up of agricultural research workers and educators of the country appointed by him, and with the approval of the Minister of Agriculture and Forestry. These Directors should be career appointees.

The Directors of the two services should select and nominate for appointment, the heads of the branch stations, departments, sections or other subordinate units of their respective services and with the approval of the Executive Director of the Institute of Agriculture for Appointment by the Minister. Reports of programs should be made to the Executive

Director.

It is suggested that all appointments to administrative positions be made for the first two years on a provisional basis. If at the end of the eighteenth month, the services of any appointee have proven to be better than satisfactory, he should be offered indefinite tenure and appointed on a career basis with removal from the position thereafter only for cause. If, at the end of the eighteenth month, the services of any appointee have been proven to be unsatisfactory, he should be informed that his appointment will be terminated at the end of the second year. In general, the same rules could apply to subordinate employees on the technical or professional staff.

Suggested Specifications for Administrative Staff Members in the Institute of Agriculture:

1. Executive Director, Institute of Agriculture:

- a. Graduate of an agricultural college or a reputable college or university with a major in some field of science related to agriculture.
- b. Ph. D. or equivalent degree.
- c. Experience in teaching, research and/or extension, and administration related to agriculture for at least 5 years.

2. Director, Agricultural Research Service:

- a. Graduate of an agricultural college or its equivalent.
- b. Ph. D. or equivalent degree with a major in some field of

agriculture or related sciences.

- c. Experience in agriculture or related research for at least 3 years.

3. Director, Provincial Agricultural Experiment Station:

- a. Graduate of an agricultural college or its equivalent.
- b. Preferably M.S. degree, but at least a B.S. degree or its equivalent, with a major in some field of agriculture or related sciences.
- c. Experience in agricultural research for at least 3 years if M.S. degree, or 4 years if B.S. degree.

4. Heads of Departments - National Agricultural Experiment Stations:

- a. Graduate of an agricultural college or its equivalent.
- b. Preferably Ph. D. degree, but at least a B.S. degree or its equivalent, with a major in some field of agriculture or related sciences.
- c. Experience in agricultural research for at least 2 years if Ph. D. degree, three years if M.S. degree or four years if B.S. degree.

5. Head of Branch Stations:

(Same as for Directors, Provincial Agricultural Experiment Stations)

Personnel Relationships:

If the Republic of Korea is to secure and retain the services of

the most competent and best-trained scientists in the agricultural experiment stations of the country, it must expect to provide salaries equal to, or better than, the compensation of comarable, well-prepared professional people in other branches of government or most private industries.

The salaries must be high enough to provide for a decent standard of living and for the full-time service of the individual. He should not find it necessary to engage in other income-yielding enterprises which would distract him from his research.

Members of the scientific staff of an experiment station, provincial or national, should be full-time, well-compensated employees. They should carry no responsibilities for action programs, or regulatory work. They might well serve as professional advisors to governmental agencies or officials. All their energies must be free for application to a dedicated career of research, free from any entangling political commitments. They must be the best trained men available in the country, selected on the basis of merit, training and experience. They should be encouraged to improve their knowledge and skills continuously, with the assurance that such records of accomplishment developed by them will be recognized by advancements in salary, rank and community standing.

Every effort should be made to provide opportunities for experiment station staff members and key extension workers to study abroad for one year or more, either supported by funds from the national or provincial

government or by special grants or fellowships that may be available. Assistance in the upgrading of the staff might be given through the technical assistance program of I.C.A. or other similar purpose agencies.

Such individuals who may be selected on merit for foreign study should agree to return to their former position for a least two years after the completion of such studies and, further, the Korean government should assure the individual that his former position or a position at a higher level will be available to him for at least two years after his return.

Delegation of Authority:

In every well-administered unit of government or industry, it is imperative that authority be delegated with the assignment of responsibilities. The Executive Director of the Institute of Agriculture and the directors or heads of subordinate units should be given the authority necessary for the accomplishment of their missions, so far as it is possible to do so under existing laws and regulations: delays would be minimized, efficient service promoted, and the morale of each person and unit would be proportionately raised.

Foreign Advisor:

A foreign advisor to the Executive Director of the Institute of Agriculture is suggested for a period of two years at least. This individual should be, preferably, a Dean or former Dean of Agriculture at a land grant college in the USA, or similar institution in another

country, who has had at least five years experience as a successful administrator of combined teaching, research and extension activities.

He could be available as advisor to all units and individuals of the new agency in the Korean government and in the provinces.

Projected Research:

All research conducted by the Agricultural Research Service or the Provincial Experiment Stations should be based upon approved project outlines only.

Whenever a station staff member requests funds to support a new line of research, he should be required to prepare, for the head of his department and/or the director of the station, a project outline setting forth the specific nature and purpose of the proposed investigation, the justification for it, a resume of the literature pertinent to the proposal, an outline of procedures to be followed in the studies, a statement of staff and time required for the research and an estimation of the funds necessary.

The approval of the Director of the station administratively responsible should be required before work could be started on a new project.

Reports of progress should be required at least annually. The project outline should be revised carefully whenever procedures or objectives are modified. The project should be terminated when the investigations are completed or when there is evidence that the research

in no longer productive.

Grants-in-aid:

When the national government, through the Ministry of Agriculture & Forestry makes grants-in-aid to provinces for research in provincial agricultural experiment station, the Institute of Agriculture should reserve the right to review the project proposals before funds are allotted and to determine whether the progress and procedures being followed are in compliance with the project outline approved for support through the grant. Necessary audits may be required annually.

Otherwise, administratively, the provincial stations should be autonomous but with the admonition from the Ministry of Agriculture and Forestry that their programs of research would be coordinated with the Agricultural Research Service and that the utmost in cooperation should be established between teaching, research and extension.

It is recommended that the Ministry of Agriculture & Forestry consider not only the grants-in-aid for research to the provincial experiment stations for agriculture and related sciences, but also grants-in-aid to individuals in colleges, universities or elsewhere in the country upon application for such grants and upon presentation of an adequate and properly documented project outline for the proposed research and justification therefor. Such applications should be reviewed by a committee appointed by the Minister and including in its

membership, the Executive Director of the Institute of Agriculture, the Director of the Agricultural Research Service, and the Minister of Agriculture and Forestry or his representative. Grants should be made for research that could not be conducted more satisfactorily by the Agricultural Research Service or provincial stations. Such a program would stimulate an actual interest in research in agriculture and related sciences and contribute materially to the knowledge essential for the maximum development of agriculture in Korea. It would marshal all of the scientific talents of the country wherever they might be found.

Overall Funds for Research:

The Republic of Korea or any other government will find it both profitable and justifiable to allot adequate funds for agricultural research. As a matter of fact, it cannot afford to do otherwise. The costs, really, are not great in terms of returns to be expected.

As an example, in the state of Minnesota with a population of about 3,000,000 people, the University of Minnesota spends more than \$2,400,000 a year for agricultural research. This represents a per capita expenditure of eighty cents (\$0.80). If the Agricultural Experiment Station after making such expenditures, produces results from research in any given year which would add even one bushel of wheat to the production of a farm, one extra pound of butterfat, or reduces the loss from disease or insects to the same degree, the individual farmer's share of the cost would be fully repaid. As a matter

of fact, it can be demonstrated that the savings on the increased income attributable to the application of new practices resulting from research would repay ten-fold to one-hundred-fold, the cost of the research annually. No other expenditure of government or private funds will possibly yield as rich dividends as those spent on research and applied to productions and living.

There must be sufficient funds from national or local agencies, public or private, to insure the efficient operation of research and extension services. Since agriculture is the basic factor of Korean economy, it should have top priority in the allocation of funds.

The research stations must have more adequate land areas, buildings, equipment and, above all, an increased number of competent scientists if they are to make the maximum contribution. All of the experiment stations, which the consultant has visited, are critically in need of basic facilities and equipment. The capital investments and the operating budgets required for the research and extension services will be the best investment which the government can make for the future.

Cooperative Spirit:

The Executive Director of the Institute of Agriculture, with the support of the Minister of Agriculture & Forestry, could and should establish and promote active cooperation between the provincial experiment stations and provincial extension agencies through the usual administrative channels of the Ministry or national and provincial governments.

This nurturing of the spirit of mutual assistance and coordination could well extend to other governmental or private agencies concerned with agriculture, and the general welfare of Korea.

It is very important that the closest possible relationships be established between the national or provincial research and extension services and the agricultural, forestry, veterinary, and home economics colleges or schools, whether they be public or private. The curricula of the educational institutions should be designed to prepare young people for greatest service in their chosen fields. The schools and colleges, likewise, are the seedbeds from which future teachers, and research or extension personnel will come. Therefore, the research and extension workers of the present could offer very constructive advice about teaching programs. Likewise, the young people in schools and colleges could be made aware of career opportunities in research or extension as well as in private enterprise, on the farm, or in the city.

Cooperation in Research:

Research has always been most productive when investigators have been free to seek the truth without fear or favor. The experiences of most countries, which have made the greatest strides in science in recent years, emphasizes the need for independence from direct political interference or pressure tactics from any groups with selfish interests.

Likewise, the importance of team work in research has been clearly demonstrated. Through cooperation and coordination between individuals,

groups, departments, institutions, provinces, states or even nations, more can be accomplished at lower cost than otherwise because the joining together of scientists from many disciplines, with diverse talents and experiences, almost inevitably will lead to earlier and more productive answers to our many problems.

Thus, it is of utmost importance to Korea to join together the agricultural scientists into a research team as envisaged in these recommendations and to assure the closest ties with an extension service and collegiate instructional program which will be able to disseminate the latest information most directly to those who need it. The best interests of the country demand such a program.

It is hoped, also, that in the course of time, there will be an official recognition of the desirability of combining on-campus teaching of agriculture, forestry, home economics and veterinary medicine with off-campus teaching (extension) and research in these same fields. The pattern set by the landgrant college system in the U.S.A. is worthy of emulation. The progress made in agriculture and related sciences in the U.S.A. is ample proof of the effectiveness of this coordinated type of program, especially where there has been an autonomy for the universities and broad public support of the integrated and productive programs.

Cooperation of Farmers in Research:

Every effort should be made by the Agricultural Research and Exten-

sion Services to encourage farmers to cooperate in research and demonstration programs. Trials of new varieties of crops or of fertilizers, for example, could well be established on farmers' fields. They should be well-planned, practical, and under conditions where the farmer is given a reasonable assurance that he will not suffer a financial loss because of the investigations cooperation. Farmers in the U.S.A. and elsewhere are eager and ready to cooperate in such projects once the researcher or extension worker has gained their confidence. The farmers thus gain a better understanding of the practical value of research. At the same time, the research worker has evidence of the applicability of the new facts which he has uncovered.

Responsibilities for Instruction:

The College of Agriculture should be given the specific responsibility for training young men and women in agriculture and related sciences for careers in the government service, for teaching, for research and extension, for private business in agricultural and related industries and for private enterprise in farming wherever the opportunity may present themselves. The research and extension services should not have the task of training people independently but should cooperate with the colleges in planning or conducting training courses other than the in-service type.

The relationships between the colleges and the experiment stations must be very intimate. College students could be used to excellent

advantage by the experiment stations as field or laboratory assistants during vacation periods or otherwise pursuing their studies. The experiment stations would serve as training schools for graduate students pursuing their thesis research for an advanced degree.

At Suwon, for example, some of the professors at the College of Agriculture could and should be appointed as members of the National Experiment Station staff on a joint appointment basis. Some of the National Experiment Station staff likewise should hold a joint appointment as a member of the faculty of the college. Thus each such joint appointee could be teaching future scientists and conducting research. This would be the wisest course to follow especially when teachers and professors are so much needed in Korea, and where the maximum use should be made of the scientific talent and facilities of the country.

Any in-service training for the research or extension services should be considered as supplementary to the regular collegiate training of research and extension workers.

Joint use, at Suwon, of College and National Experiment Station grounds, lands, buildings, laboratories, classrooms etc., would be desirable and sensible and should be authorized. If the extension service headquarters were to be located at Suwon it, likewise, should be incorporated into an over-all agricultural center where teaching, research and extension could be brought together as an effective unit to serve agriculture in Korea. Similar arrangements would be advisable in

the provinces.

Senior and scientific personnel of the research and extension services should be college graduates with the equivalent of Bachelor of Science degree at least, representing at least four years of collegiate instruction if the programs are to succeed. Junior members of the staff may be selected from graduates of agricultural high schools or those who have not completed work for a degree at a college. The qualifications for appointment to positions in the research or extension service should be raised as the supply of trained people in Korea more nearly meets the demand. The best people are required for the very important posts in both of these services.

Research in Korea at Present:

At present, progress in many lines of research at the agricultural experiment stations in Korea is limited by staff and facilities available. There is a shortage of land, buildings, equipment, libraries and, most of all, trained people and money. Destruction and pilfering during the 1950's have left most of the stations destitute. It is surprising that as much research is being done as was evident to the consultant. Admittedly, with a few exceptions, the programs consist largely of the maintenance of stock, plant or animal, a reasonable increase for sale and further support of the station, while here and there could be observed variety trials, and some fertilizer tests. Some basic plant breeding was underway at a few stations, notably at Suwon, Iri, and

Tongnae. Substantial progress was being made at the livestock station at Songhwan, the veterinary station at Pusan, and the forestry station at Chong Yong Ni. Much of the work was on a "status quo" basis. As a matter of fact, it is not going to be possible to make the most satisfactory progress in agricultural research until staff and facilities are improved and supplemented or until sufficient funds are made available for support of a strong research program. The integration of the research service as suggested in this report should be helpful in reducing costs by eliminating, to some degree, unnecessary duplication and overlapping of research effort.

Suggestions about Research and Service Needed:

Intensified or new research is imperative with respect to the breeding, testing and selection of new and improved varieties of all sorts of agricultural and forest crops, making full use of the possibility of the introduction of new varieties from abroad for testing and use in breeding programs; improvement of all breeds of livestock and poultry largely through selection and introduction of superior germ plasm from other countries.

There is a crying need for more information on the composition, properties and management of the soils of the country, with special reference to the selection and use of proper kinds and amounts of fertilizers for various soils and crops, and the best time and method of application. Green manure cropping, use of lime and trace elements, all need to be studied.

A coordinated program of research on soil conservation must get underway promptly if facts are to be available upon which to base control of erosion and other factors important in conserving and building the soil which is the priceless heritage of any agricultural country.

Of immediate concern is the establishment of cover on the hillsides so prominent in Korea. Research on grasses, legumes and other vegetation suitable for the purpose must have top priority. If the forests are to have a chance to develop, there must be more than tree planting. There must be seeding or planting of other vegetation to retain soil and water before the rich soil yet remaining washes down to fill the beds of streams and to jeopardize rich cropland.

If a livestock industry is to develop, there must be active research on forage crops, pastures etc., and the reclamation of lands not now suitable for paddy land or conventional culture. This program fits perfectly into the program for forestry research.

Variety testing of native and imported species of forest trees and all that goes with a program of forest improvement should be intensified and coordinated with agronomic, soils and other research.

Research on the cause and control of all sorts of plant and animal diseases must never cease. The depredations of insects, weeds and parasites of every variety from the tiny virus to the largest insect, must be pursued unceasingly and methods of control determined.

Much needs to be learned about food processing, storage and dis-

tribution, utilization of farm products, and market outlets.

Little has been done about fiber crops that might find an important use in local or national industries.

Methods for producing improved seed, must be determined under Korean conditions as well as procedures to be followed in the increase of quantities of registered or certified seed, its inspection, certification, treatment, storage and distribution.

Studies should be undertaken on methods for village cooperation in processing, storing and marketing fruit, vegetables, grain, fiber or forest crops, and animal products.

Research by the home economist in home conveniences, clothing, food preparation, sanitation, family relations etc., has endless possibilities.

Encouragement should be given to research on alternate sources of fuel and power in order to relieve the pressure on Korean forests and lands. The Department of Agricultural Engineering of the National Agricultural Experiment Station and other departments could cooperate, and even include coordination with the College of Engineering of Seoul National University and others who are studying this problem. Solar energy, atomic energy, the transformation of low grade coal and peat to more useful forms, explorations for petroleum, searches for and trials with new, fast-growing plants for fuel could well bring results.

Soil Treating:

There should be an immediate intensification of effort on soil

surveys and soil testing in Korea, especially the latter, in terms of pressing need.

While it may appear that soil testing is only a routine analytical procedure constituting a service enterprise, in fact it becomes a basic part of research.

We must know all things, specifically, about our soils if we are to make recommendations about cropping practices, soil management, use of fertilizers, liming, irrigation, drainage, etc. The soil testing laboratory furnishes basic information for the research programs in soils. Likewise it provides the data to be used by the extension service in the improvement of farm practices and the productivity of the soils of the country. A soil testing laboratory or laboratories, adequately staffed and equipped, should be established at the earliest possible date through the Agricultural Research Service or its present counterpart. The cooperation and active field support of an Agricultural Extension Service are integral parts of a soil testing program. The plans for sampling, collection and shipment of samples, and the dissemination of results of analyses and recommendations for practices should quite logically be functions of the Extension Service and prove to be of great service to farmers of Korea.

Other Research and Service:

There is need for further research on bacterial, fungus and virus diseases of livestock and poultry. Concentration should be on the

common and important diseases causing heavy losses and not on exotic or rare diseases.

The production of vaccines and sera such as those for hog cholera, Newcastle disease, and a few others might be the responsibility of the Bureau of Livestock or some institution, perhaps privately owned. Rather than to attempt to produce all vaccines, sera, antibiotics, etc., for the country, it might be better to purchase such materials from other countries until sufficient funds and trained people are available in Korea. Perhaps an Oriental central source of vaccines might be established by some United Nations agency.

Until other arrangements can be made, it might be desirable to call upon the microbiologists of the National Agricultural Experiment Station for the preparation of cultures of bacteria for seed and soil inoculations such as those commonly used for leguminous plants. These inocules would have a considerable effect upon the productiveness of crops now grown in Korea with limited success.

This is not a complete cataloging of research and service that might be performed or needed. It is simply a listing of suggested fields for inquiry and action. The fertile minds of the laboratory scientists and directors will be aware of many additional problems that require early exploration. A research program is never fully completed, and possibilities are infinite.

Each new fact disclosed is just a clue to the multitude of factors

involved in the natural processes in this changing world.

Miscellaneous Comments:

It is realized that changes in organization or programs made at this time may require modification later as conditions in the country change, and when additional funds and sufficient trained personnel become available. But, a start must be made sometime. There is no successful argument that can be advanced against research or extension and no logical reason why the research and extension programs should not be integrated, coordinated and cooperative in nature. Furthermore there are countless reasons why research, teaching and extension should be tied more closely together and in an independent organization not subject to sudden changes because of political upheavals or capricious decisions of the uninformed. The people of Korea believe in education and, by the same token, in research. Since extension is just another method of teaching, "off-campus" instruction in fact, the people most assuredly do support the principle of the combined activities.

Now seems to be the time to instigate a modern integrated program of research and extension in Korea.

Again, emphasis must be placed on the idea that an integrated agricultural research program would facilitate cooperative relationships at all levels of government, both vertically and horizontally. There are many opportunities for cooperation with other ministries as well as public and private agencies of all sorts. Certainly the UN and USA

would be much more interested in cooperation and support if the program was similar to the plan suggested.

Summary:

1. An outline of an integrated agricultural research and extension organization and program for Korea is presented.

2. It is proposed that a high level, new Institute of Agriculture be established in the Ministry of Agriculture and Forestry.

3. An Agricultural Research Service and an Agricultural Extension Service, both at the level of existing bureaux of the Ministry of Agriculture and Forestry, are proposed.

4. All agricultural research and extension programs of Korea would be coordinated through the new agencies.

5. Suggestions are made regarding:

a. Advisory and consultative committees to advise the respective agencies concerning programs, coordination, requirements and financial support of the activities.

b. National, Branch and Provincial Experiment Stations, their functions, administration and integration.

c. An Information Service for the dissemination of research and extension information to the citizens of Korea.

d. The transfer of research activities and facilities from existing bureaux and presently independent research stations to the new research and extension services.

e. The addition of a new Home Economics research department to the research service.

f. The selection and qualifications of top administrative officials of the research units of the Institute.

g. Personnel relationships within the Institute.

h. Delegation of authority with assignment of responsibilities.

i. Foreign advisor for Institute.

j. Project research.

k. Cooperation between agencies at all government levels, and between public and private institutions, agencies and individuals to further instruction, research and extension activities.

l. Funds for research.

m. Responsibilities for instruction.

n. Research in Korea at present.

o. Research and service needed.

p. Miscellaneous comments.

6. Korea depends upon agriculture as the major source of the country's income and for the employment of the majority of its people. If agriculture is not progressing the country cannot move ahead in its program of rehabilitation. The education of Korean young people for future service to the nation, the constant search for new facts through scientific research agencies and the dissemination of the latest knowledge about the art and science of agriculture and all its related

fields are absolute requirements for the present and the future. A well-integrated, efficiently administered, imaginative and productive program of research and extension will do much to promote the best interests of agriculture and, inevitably, the welfare of the Republic of Korea.

7. The Office of the Economic Coordinator for Korea and the International Cooperation Administration can continue to be most helpful in the implementation of the proposed integrated program through their staff members, particularly the Office of Food and Agriculture with its specialists who are competent in their fields and well-versed in Korean agriculture. They could continue their excellent relationships with the Ministry of Agriculture and Forestry and aid materially the proposed Institute of Agriculture and its constituent units and officials in developing the programs contemplated. It is hoped that O.E.C. would provide further technical assistance, participant programs abroad, assist in the rehabilitation and construction of buildings and facilities and in the acquisition of badly needed scientific equipment, supplies, books, periodicals etc., so that the system could be made truly operational and productive. Consultants employed by OEC might be needed to meet certain contingencies when the desired specialists or advisors are not available on the O.E.C. resident staff.

RECOMMENDATIONS REGARDING AN
AGRICULTURAL EXTENSION PROGRAM
FOR
THE REPUBLIC OF KOREA

PREPARED BY
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International Cooperation Administration

Office of Economic Coordinator

United Nations Command

May 1956

UNITED NATIONS COMMAND
OFFICE OF THE ECONOMIC COORDINATOR FOR KOREA
OFFICE OF FOOD AND AGRICULTURE
APO 301

23 May 1956

TO: The Economic Coordinator for Korea.
FROM: Mr. Skuli Rutford, Consultant.
SUBJECT: Agricultural Extension in Korea.

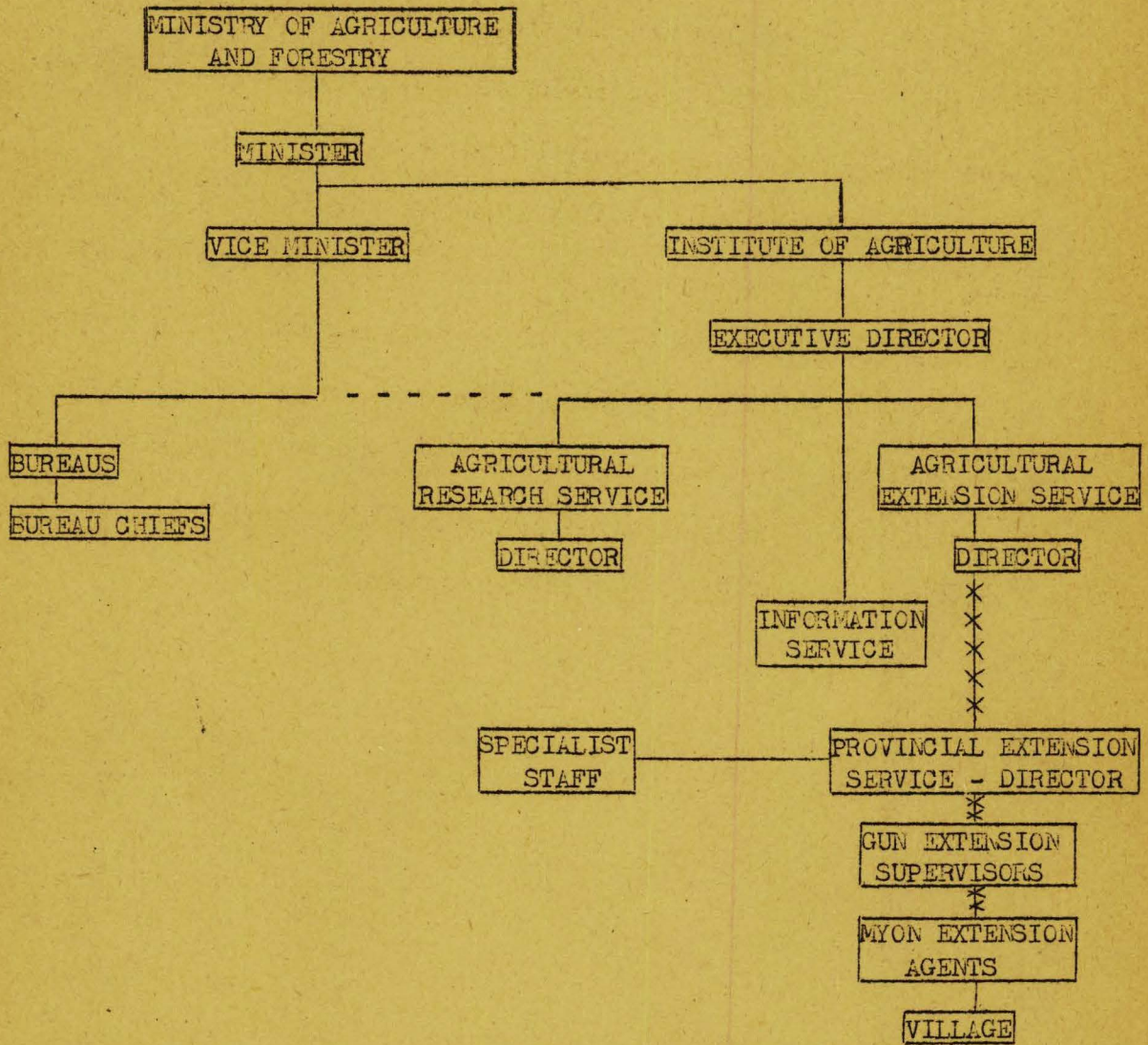
Attached is a copy of the report on Agricultural Extension, one section of the report by the consultant group made up of Dr. Harold Macy, Dean of the Institute of Agriculture, Mr. Skuli Rutford, Director of the Agricultural Extension Service, and Miss Dorothy Simmons. State Leader of Home Work, - all of the University of Minnesota. In his overall statement, Dean Macy has indicated the specific assignments of the consultants. This report includes a statement of need for and opportunities for service of an agricultural extension program, indicates areas which might receive first emphasis, outlines, briefly, a proposed organization plan for the program at each level of administration, and comments on the opportunities for cooperation between the International Cooperation Administration and the Korean Government in establishing the program and participating in the training of the workers employed.

While the report has been prepared for the International Cooperation Administration it has been assumed that it will be read and be

available to the Ministry of Agriculture and Forestry, which will be the governmental unit responsible for administration of extension work.

The aim has been to be specific enough so the report can be of some value in setting up an operating program yet general enough to allow for the adjustments necessary to fit it into the Korean governmental, administrative, and social framework.

It should be added that this consultant appreciates the spirit of helpfulness and cooperation which has been extended to the consultant group by workers in the Office of Food and Agriculture and by Office of the Economic Coordinator personnel in general. The same can be said of the Ministry of Agriculture and Forestry, and of the representatives of the various provincial and local governmental units and of the personnel of the experimental stations.



Prepared by

Skuli Rutford - 1956

Foreword:

The following is a report covering observations on the present status of agricultural extension work in Korea, and with some suggestions as to the further development and possibilities of such a program. The report grows out of the study made by the University of Minnesota Team of Consultants, including Dr. Harold Macy, Dean of the Institute of Agriculture, University of Minnesota, Mr. Skuli Rutford, Director of Agricultural Extension, and Miss Dorothy Simmons, State Leader, Extension Home Economics Program. Dean Macy's report deals especially with research and research problems, Miss Simmons' with the possibilities of home economics extension work, and this report with agricultural extension. In this report no attempt will be made to spell out all details of what the program for Korea should include. Agricultural extension is an out-of-school educational program directed toward the needs of rural people and built around problems of production and marketing, but including the home, youth, and most of the problems of rural life. In order to be effective the program must be adapted to the conditions prevailing and to the people who are to be served. One of the outstanding characteristics of extension work, the world over, is its flexibility; the way it has been adapted to varying cultures and levels of living. The general objectives of all extension programs are much the same, but the approaches and methods vary with existing conditions in different

countries and as between different areas and communities within countries.

With this in mind, the writer of this report will give his reactions to the conditions he has observed, will make suggestions which he feels will be of value, but always with the conviction that if a successful program is to be developed in Korea it will have to be worked out with the Korean Government and with the Korean people making adaptations to their values and local institutions.

Introduction:

In preparation for looking at and studying the agriculture and rural life of Korea and of appraising the present status and need for Agricultural Extension, the writer reviewed considerable material on historical backgrounds of the work in Korea, including Japanese and U.S. Military Government organization. Conferences were held with OEC personnel to assist in appraising the above material and to become informed on cooperation and experiences of OEC and other programs with the Korean Ministry of Agriculture and Forestry, and with the provincial governments. Meetings were arranged with the Ministry of Agriculture and Forestry and with officials in the various bureaus of that department. At these meetings representatives of the departments described their work, setting forth problems and programs under way. At each such meeting opportunities were given to raise questions and to discuss problems.

Following these meetings, visits were made to most of the national and branch experiment stations and to all of the provinces except Cheju-Do. In the provinces, consultants usually met with the Provincial Governor, the Industry Bureau Chief, the Agricultural Section Chief and the persons designated as the extension workers. The usual procedure was to discuss agricultural affairs, research programs and to try to determine the status of extension work. The group then took to the field, visiting provincial (or national branch stations if located in the province) experiment stations, usually a gun and myon office and then a village or two. The villages were usually those with a good 4-H Club or one classed as a "model village". On the visits to experiment stations and to the provinces the consultants were always accompanied by a representative of the Office of Food and Agriculture, (OEC) and by a representative of the Extension Section in the Ministry of Agriculture and Forestry. The group visiting the provincial stations and villages usually included a representative from the Agricultural Section of the Industry Bureau, plus a gun representative and usually a myon agent. We assume that the contacts with villages were with upper level rather than average villages. The above described contacts gave considerable opportunity to visit with various workers and officials in agriculture, research, extension, and general administration, and provided some contact with 4-H Club and village leaders and with actual farmers. Most of the contacts and discussion had to be

carried on through an interpreter, so that discussion was not as productive as would have been possible had we been able to converse directly. The above contacts, however, did give a fairly good picture of the research and extension activities and of Korean agriculture and rural life. The above is cited to give a brief picture of the manner in which the consultants tried to prepare themselves for such suggestions and recommendations as might be made.

Need and Opportunities for Agricultural Extension Work in Korea:

Basic to the whole question of agricultural extension work in Korea is the question of the need for such a program and the opportunities for its development and service. One aspect of the above questions deals with the importance of agriculture to the national well being of Korea, and especially to the need of maintaining or increasing productivity. This might be considered the "general welfare" aspect of the problem. Another aspect is the improvement and well-being of farmers and their families. Such questions have been in the mind of the writer of this report throughout the period of looking at and studying agricultural research and extension in relation to Korea.

The Problems are Real:

It is variously estimated that upwards of 70% of the people of Korea get their living directly from farming and an additional percentage are engaged in the handling, merchandising and distribution of farm products. This attests to its importance to the country.

Further, the rate of growth of the population is sharply upward, with estimates of the annual increase running to over 300,000. Assuming that this rate continues the problem of total food supply will continue to be acute, and will certainly justify maximum national interest in improvements in agricultural production.

When looked at from the viewpoint of the welfare of the farming population, the need for improvement appears equally important. With the average farm area given as under one chungbo (2.43 acres), it can be seen that total production per farm can only be small at best. The UNKRA report and statements of farm people in the villages indicate that there are actual food shortages on many farms and generally in rural areas in the spring, preceding the barley harvest, and again in the fall before rice harvest. Even superficial observation reveals that standards of living, as reflected by housing, health and sanitary conditions and similar measures, are very low. So that, from the viewpoint of the interest of farm families, it must be accepted that there is much need for improvement.

Basic Research Information is Available:

Then, there is the question of whether or not there is a body of information, in research stations or elsewhere, that could be used as the basis for an agricultural extension service which might work with farmers in dealing with the problems involved. During the visits to the various research stations, the question of whether or not there was a body of research information available and not yet applied by

farmers was raised fairly generally. The answers usually indicated that there was. Though it is out of his field, the writer's reaction to the research work observed is that there is need for improvement in research, in equipment and facilities for research, and in coordination and cooperation of research as between the various stations and with such extension work as exists. Yet, he accepts the statement of research workers that there is the research basis for beginnings in agricultural extension, and also that research can go forward at a rate to continue to be of service to a growing extension program.

Production is the Key:

Agricultural production is, of necessity, the basis of income for the farmer, whether it be for subsistence or for farm improvements. So, questions were asked of research workers, and Korean and O.E.C. personnel, as to the areas where opportunity for improvements existed and where returns could be most rapidly made. It was indicated that an outstanding opportunity is in the field of soils and the most profitable and productive use of commercial fertilizers. The annual bill for commercial fertilizer is very high. Yet the fertilizer is being applied with inadequate research as to needs, and with few specific soil tests. Fertilizers and fertilizer combinations which are not on the basis of real soil need are undoubtedly being used, and little or no fertilizer is being used in other cases where it would be highly profitable. A very small percentage of the annual fertilizer cost, if spent to set up, probably, two soil testing laboratories, and then

the initiation of a program of soil testing and fertilizer demonstrations could give very substantial and direct benefits to farmers and to the whole economy. Similar opportunities are said to exist in the field of entomology and plant diseases, where treatment is still little understood and usually applied after damage is done. Other specific farm production opportunities exist and will be listed specifically later in this report.

Production Practices are not all of Extension:

Production problems and the application of research findings to those problems are everywhere an important part of successful extension programs. As it has developed in other countries, however, extension becomes involved in most of the problems that effect rural life. Planning of programs at the community level (village) must involve the people of the village, and needs to be directed toward recognizing and defining problems and desires. When such planning is carried out many opportunities for service are revealed. In Korea it would appear that this would also be true.

One of the areas that suggests itself is health; such problems as improved wells and water supply, and better handling of and fermentation of "night soil". Others might be reforestation and particularly management of reforestation areas, projects dealing with erosion and flood control, cooperative development of small irrigation projects and other activities affecting the community, and even literacy and making reading materials accessible to the villagers. Some of the

most popular and widely used 4-H Club group activities fall in this class. And, as the work goes forward, other activities will suggest themselves, involving farmers, their wives and the young people, which will help improve living conditions in the villages, and gradually bring to rural people the benefits of improving technology in agriculture and industry.

Specific suggestions or development of a program for women are being made in a separate section of this report. A statement on 4-H Club work follows.

4-H Club Work in the Extension Program:

In the course of making contacts with experiment stations and extension activities in the provinces, about twenty-five villages were visited by the consultant group, with village contacts being made in all but one province. The villages were selected by local officials. A number were so-called "Model Village" and all were probably above average. In upwards of three-fourths of the villages, discussions were conducted with 4-H Club groups or their leaders. 4-H Club work has a very short history in Korea and seems to have been promoted very aggressively. So, it would not be surprising to find many in members and leaders who had relatively little understanding of the real objectives of the program. Members of the consultant group, however, have been very favorably impressed with most of what we have seen. Both leaders and club members of clubs visited have shown understanding of the program and enthusiasm for it. Many of the villages have provided

meeting places for clubs, several by purchase, some by making the village center available, and others by rental or donation of space. The meeting places are decorated with various 4-H Club emblems, and by handcraft and other productions of 4-H members. Booklets on club work were available and had obviously been well used. Lists of members and minutes of meetings were available. Individual and group projects and activities were visited. Group projects included tree planting, village clean-up activities, group production programs for fund raising, (tomatoes on rented land), and demonstration plots showing improved practices including fertilizer trials and variety tests. Individual projects included crop production, handcraft, and some livestock. Poultry was the most common livestock project. In one village two boys had built an incubator which was being used to hatch chickens that would be distributed to other club members. In another village 4-H Club members were working on a rotation basis for a poultryman (a war veteran who had lost an arm), pay to be in chickens for club work. Goats from the "Texas Friendship" project and their progeny were seen and, in general, seemed well cared for. A few dairy animals were seen and were in reasonably good condition. (It has little to do with the work of the consultants, but the suggestion is made that the placing of dairy animals on the small farms of Korea at the present stage of development should probably be examined very carefully and carried forward cautiously).

The above specific observations are made, not as typical of what

may be the situation in all of Korea, but rather to show that substantial work is under way and real possibilities are being demonstrated. 4-H Club work is an educational program specifically developed for farm boys and girls but, in many places, now including other youth. Both individual and group project work is built around regular farm and home jobs and activities. Ideally it contains elements of competition to stimulate members to seek and apply available knowledge to their work and to strive to improve. Young people learn to work together and learn to cooperate for personal and group improvement. Meetings provide an opportunity to learn democratic procedures and tend to develop leadership abilities. The experiences gained should be of value to the Republic of Korea in the years ahead.

The consultant team has been impressed with what they have seen, commend the individuals and groups who have given of themselves in the program to date, and urge that 4-H Club work be given a prominent place in the extension program as it is developed. Further work will be needed to develop individual and group projects and to adapt the program to Korean conditions. The 4-H Club members of today will learn practices and principles that will be of value to themselves and their country when they become the farmers and homemakers of a not distant future.

General Statements Regarding Agricultural Extension Work and its Application to Korea;

The following will be, in considerable part, a repetition and

brief summary of statements in the UNKRA report, with some additional ideas, observations and suggestions growing out of the present study.

Extension is Education Applied:

Agricultural extension work is more than 100 years old and has been developed in many different countries with much borrowing of ideas and methods between countries and between different areas within the various countries. It has developed in the wake of scientific investigation in the problems of agriculture and farm people. It is aimed to bring a scientific approach to the problems out on the farms and to bring the findings of research to bear on those problems. It is an educational program, and as such, involves and is aimed at people. It has to do with living and working on the farm. It deals with the farmer and his farm, his family, and his home, and it deals directly with the farmer in relation to his community. It deals with farm groups and farm organizations, and cooperatives that have significance either in the local community or in broader areas. The extension program reaches from the individual farm, through the community and the province to the nation.

Extension Helps People Help Themselves:

Extension work is a program aimed at helping people to help themselves. It is not a "pouring on" process nor is it a program of "doing for" farmers. It is rather a program of living and working with farmers, of gaining their respect and confidence, and of helping them to study their situations and recognize their problems, of

letting them know what information is available and of helping them get the information and service they need. Extension work is a two-way process of getting information and suggestions from farmers and of making the best information and services available to them. To be effective, it must be a permanently established program based on personal contacts and mutual respect. The most important area of extension work is out in the local community where the face to face contacts are made and where the personal relationships between farmers and extension workers grow up. Here the work should be based on a comprehensive plan developed in cooperation with the people involved and growing out of experiences of local people in determining their problems and of extension service in helping them find, solutions. Work at administrative levels, above the local level, needs to be related to the programs and plans developed at the local level. Such plans can be developed only on the basis of an established program and as experience is gained by farm people and government workers. These general principles will undoubtedly apply to Korea as they have to other areas where extension work has been developed.

Extension Pitfalls:

To win the respect and confidence of the farm people with whom they work, extension workers and the extension program must be kept free of partisan politics. Job tenure needs to be based on satisfactory service and not be subject to change on the basis of political changes. Extension workers must not be assigned regulatory or police type

duties; neither should they estimate or determine farm productions which are to become the basis for assessments or tax liability.

Extension work varies greatly as between the various countries where it has been developed, but the universal experience is that really successful work cannot be developed when it is combined with such duties as the above or when it becomes involved in political activities.

The 1954 UNKRA Report on Agriculture, Forestry and Fisheries.

Agricultural Section:

Reference has been made to the report prepared for the United Nations Korean Reconstruction Agency by a mission selected by the Food and Agriculture Organization of the United Nations. The writer of this report has studied the UNKRA report rather carefully, both before and since making our field contacts. The position being taken is that the UNKRA report is a quite adequate statement of the spirit and philosophy of extension, and of the need for and possibilities of a good extension service. It is also felt that the description of the basic extension organization and administrative set up is sufficiently described to become the pattern of a program for Korea. It should not be taken as an exact blueprint of a program. Here again, it should be emphasized that any program for Korea will have to encompass enough of the fundamentals set forth in the report and found in successful programs in the various countries, but it also must be fitted into the Korean system. It is, therefore, here proposed that the UNKRA report continue to be a rough guide to the Korean government and to OEC, if it

should be that it is to work with the Ministry of Agriculture and Forestry in developing an extension program such as is under discussion. Attention is particularly called to the section in the UNKRA Report listing fields of activity for the provincial office, and the section suggesting appropriate extension projects.

Organization for Research and Extension Services:

On their arrival in Korea the members of the consultant group on agricultural research and extension were informed of the Presidential Decree establishing a basis for setting up a Central Agriculture Technical Institute with a director in charge, and establishing under him a Director of Research and a Director of Extension, each to head up their respective programs at the national level. A proposal for an Institute of Agriculture in the Ministry of Agriculture and Forestry, with an executive director in charge as overall administrator, is made in the research section of the consultants report. The Institute of Agriculture would include an Agricultural Research Service and an Agricultural Extension Service, each with a director in charge. The research report also suggests educational and training qualities that should be sought in the directors and proposes a method of making selection for these offices. This report will deal with the Agricultural Extension service in the Institute of Agriculture at the national level, and with the organization of the extension program at the other levels of administration, - provincial, gun, and myon.

The National Extension Organization:

It is being proposed that the National Extension Service head-

quarters be located in Suwon in close proximity to the research station and the college of agriculture.

The director of extension would be in general charge of the administration of the extension program in the country, and would give leadership to its workers. Extension work, however, is not something which can be superimposed or dictated from above. Rather, it must provide for a close cooperation between national, provincial and local levels with a free flow of ideas in both directions. The national office provides general leadership and support to the program.

The staff at the National Extension Office would include a Leader of Home Economics and a Leader of 4-H Club work. The qualifications and duties of the leader of women's work are set forth in the report on home economics. The 4-H Club Leader should be an agricultural college graduate, fully familiar with agriculture and with the problems of rural youth. In addition, there should be a small staff of well trained specialists with much the same educational background as required for top research and teaching positions. This group of specialists would maintain close contact with research workers and prepare material for field workers out in the provinces.

In the report on research, it is proposed that there be an information service serving both research and extension at the national level and giving leadership to workers in the provinces.

The national office would be expected to set up desirable and minimum standards of education and experience for extension workers in

the provincial, gun and myon levels, and to cooperate with provincial offices in training programs.

A suggested list of personnel that might be needed is included in the UNRA report and could be used for the purpose of this report. Priorities would have to be established by those in charge.

The Provincial Extension Organization:

The provincial extension staff has an important role to play in the program in the province. It needs to give leadership to the whole program in the province and must give support and provide training for the workers at the gun and myon levels. It must also reflect to the national extension service the needs and program trends out in the villages. The provincial staff does not make the program, but it can contribute greatly to its success and value.

The administrative organization at the provincial level should include a Director of Extension, a leader of women's work and a 4-H Club leader, with the director administratively in charge of the entire program. The director should be a graduate of a college of agriculture with a good knowledge of Korean agriculture and with some experience in administration. The leader of women's work should be a home economics graduate with a background and familiarity with rural life. The 4-H Club leader should be a college graduate with some experience in education and with an understanding of rural life and of farm boys and girls.

A specialist staff needs to be assembled at the provincial level,

including at least one specialist on training and communications. This will be the group who will work with myon agents and who will be in contact with farm people. They will need to be well trained in their special fields, fully familiar with available research and have ability to train myon agents in their respective fields and give help in setting up effective demonstrations of practices. To be effective, provision will have to be made, budget and otherwise, for travel in the province. Again, just what specialists will be needed and what priorities should be set up will depend on local situations and budgets available.

As is mentioned elsewhere, a training center for pre-service and in-service training of extension workers is proposed in connection with the national extension headquarters to serve the program throughout the country. The fact of the national center will not make unnecessary a continuing program of training and workshops in the provinces, especially aimed to assist myon workers. The training would deal with extension methods, with technical agricultural subject matter, and with problems of field workers. Instructors would be largely the provincial staff, but with specialist assistance from the national office and from research workers, provincial and national, as special situations might make desirable. Centers for such meetings seem to be available in most of the provinces.

For an extended list of activities and responsibilities of the provincial office reference is again made to the UNRA report.

Gun Organization:

At the start it is proposed that two extension workers be located at the gun level, one men supervisor of myon agents and the other a home economist to assist myon agents in developing programs for women and to help with girls 4-H projects. The man should be college trained, if possible, but with at least technical high school training, with a high degree of familiarity with the agriculture and rural life in his area, and with enough maturity to make it possible for him to assist the myon agents in building comprehensive programs in their areas. He would function as a district supervisor of the myon agents in his gun and as a connecting link with the provincial office. This supervisor should be a full time extension worker without other duties. Again, budget provision should be made adequate for salary and travel within the gun and to the provincial office.

The work of the home economist working at the gun level is dealt with in the report on home economics in the extension program.

Myon:

The Myon worker in Korea will be to the extension program here the same as the county agent is to extension in the United States. It is in the Myon and in the village that face to face contacts take place between extension workers and farm people, and where personal relationships develop. These relationships are a very important ingredient in any extension program. The Myon agent is the key worker in the program.

It is suggested that when the program is fully developed there would

be a Myon agricultural worker in each Myon. While the Myon area is small, the average number of farms per Myon is about 1,200, comparable to the numbers per county agent in the United States. It is recognized that it would ^{be} difficult to finance a program of that size at the start and that it would also probably be difficult to find qualified workers to staff it. If a choice had to be made between poorly qualified and trained workers in all Myons, and reasonably well qualified workers in some of the Myons, the writer would expect better results from the latter choice. If at all feasible politically, consideration should probably be given to starting the program in the more favorably situated Myons and then expanding it as training of workers and solution of budget problems proceeded.

As to educational qualifications it is suggested that the Myon agent should be at least a technical agricultural high school graduate. He should be mature enough and sufficiently familiar with rural life to be able to win the respect and confidence of his farm people. It would seem necessary to provide a budget for salary and travel (probably by bicycle) within the myon to be able to attract workers who could build the kind of program that is contemplated. With Myon workers on a volunteer basis, without compensation as now seems to be the case, it is hard to visualize how an adequate and successful program can be developed. That, however, is again a question which Koreans and the Korean government must determine.

Records and Reports:

- (a) Written programs of work should early receive consideration

and eventually should be developed in each village in the myon.

These program should be developed by cooperation between myon agents, village leaders, and representative farmers of the villages. Such plans could be relatively simple, at least in the beginning, but some records must be kept if progress is to ^{be} assured and measured.

(b) Myon agent and Gun supervisors should submit monthly reports to the provincial office. These would become the basis for annual reports from the provinces to the National Agricultural Extension Service.

(c) An annual report should be submitted by the National Extension Director to the Executive Director, Institute of Agriculture, and to the Minister of Agriculture and Forestry.

Problems and Areas of Cooperation in Establishing and Building an Agricultural Extension Service:

In the preceding statements, an attempt has been made to state what the consultants observed and studied in connection with their assignment, to describe briefly what agricultural extension work is, and its possible application to the problems of Korea, and then to propose an organization plan which would seem workable. It should be emphasized that it is in no sense a complete blueprint. But, the conclusion is that there is need and opportunity for the kind of educational program outlined, both from the viewpoint of farm people and from the viewpoint of the national interest.

A Start Has Been Made:

Initial steps have been taken to establish an extension service

on the basis of the Presidential Decree of March 6, 1956, both at the national level, and to varying degrees at the provincial and myon levels. Some changes and strengthening of the proposed organization are suggested. But, regardless of what is done, it must be understood that no program can be established that will be immediately accepted and completely successful. The nature of the problems being dealt with and of the program itself are such that progress cannot be rapid, particularly in the early stages. The workers in the program need time to get a clear concept of what they are trying to accomplish and to develop skills in working with people. On the other hand, farm people need to get to know the program and people working in it and build up confidence and understanding in them. Then as the work goes forward, results become cumulative and progress speeds up. This has been the history elsewhere and there is every reason to believe it would be also true in Korea.

O.E.C. Offers Cooperation:

These results, however, do not occur automatically. Rather, they grow out of training, experience, some trial and error with correcting adjustments, and improved methods and cooperation between research, extension and farm families. A period of outside assistance in setting up, organizing, and then in training of Korean staff would appear highly desirable and even necessary. A proposal for such a cooperative training program has been made by the Office of Food & Agricultural of O.E.C. In the PPA (Project #89-11), four points are stated as being

recognized by the Republic of Korea as major requirements for a successfully operating extension service, and the statement is made that "these conditions must be met before U.S. Aid Funds will be spent to assist in Extension Service Reorganization and Training". This would seem necessary. The four points follow:

1. The service must be established by law. This is being accomplished under the establishment of the Agricultural Extension Service within the (Institute of Agriculture).

2. It must have recognized clear channels of administration to accomplish Agricultural Extension work.

3. The service must be funded from a budget established by National Assembly action.

4. The service must be trained and manned by technically competent personnel and be devoted to the concept of carrying "know how" to farmers on a non-political, no-charge and unbiased basis". The writer of this report finds himself in general agreement with the idea and expressed intent of this proposal.

Agricultural Center at Suwon Proposed:

In the PPA, above referred to, it is proposed that an agricultural extension center, including a national headquarters office building shall be located in Suwon in close proximity to the central agricultural experiment station and the college of agriculture. Close cooperation between these institutions is needed for the success of the whole program under discussion, and grouping them as proposed, should go a

long way toward inviting and insuring this relationship.

Training Program Proposals:

It is also proposed to build a short course type extension training center "complete with assembly room, class rooms, meeting rooms and dormitories." Such facilities will be needed and apparently are not available either at the experiment station or the college. There has been mention of provision of somewhat similar facilities at the college in connection with "fundamental education". There may be possibilities for cooperation here. It would seem, however, that the proposed training facilities will be extremely important to the success of the extension program, especially in the earlier years, and will serve the "Agricultural Center" as meeting place for extension workers, research workers, village leaders, and farmers in general, in the years ahead.

It is indicated that the International Cooperation Administration through the Office of the Economic Coordinator shall cooperate in the training program and supply personnel to assist in training extension workers and Korean training specialists. Such cooperation can do much to insure that the whole program gets started on a sound basis and insure its ultimate success.

Cooperative Arrangement with Secul Agricultural College Suggested:

It is assumed that, in the beginning, workers at the myon level will largely have to be graduates of the technical high schools; but that, as the work goes forward more and more they will come from agricultural college graduates. With this in mind, it is suggested

that a proposal be made to the Agricultural College at Suwon to offer two courses on agricultural extension, each of one semester to be open to 3rd and 4th year students. The first course might be on "Extension Philosophy, Organization and Programs". It would be designed to acquaint students with the organization of extension work and provide them with training on planning and developing of extension programs. The second course proposed might be on "Extension and Extension Information Methods and Techniques". This course would be designed to give students practice in writing articles for newspapers; preparation and use of circular letters, preparation and use of visual aids, and methods and techniques in carrying out demonstrations and exhibitions. It is suggested that the course be taught by a highly trained individual, employed one-half time by the college and one-half time by the Agricultural Extension service for in-service training of extension workers. This arrangement would have the added advantage of bringing the college closer to extension and should make the college training more realistic and valuable for potential extension workers. In the beginning, it might be necessary that OEC provide an individual. With a broad background in extension and teaching to develop such a program, as one of the training group above mentioned.

Information Service Center:

An information center is proposed to prepare agricultural information media such as bulletin and other printed matter, photographs, filmstrips, sound recordings and exhibits. Such facilities will be a necessity, as indicated in the section of the report dealing with the

national extension office, and will be greatly aided if the assistance proposed in the PPA can be provided.

Mobile Demonstration Unit:

In order to more quickly reach farm people and enlist their interest and support of extension work, it is proposed to set up a mobile demonstration unit to operate at the village level. The unit would put on "quality Agricultural Extension shows for farmers on a practical, simple farm working level." The shows would be built around problems of general interest such as fertilizer use. The writer has had no personal experience with a unit such as is proposed but has read, and heard of such being used in similar situations with good results. The International Cooperation Administration has undoubtedly had experience with such units which can be studied fully in planning and carrying thru this activity. To the writer the project seems to give promise of reaching greater numbers of people and helping build a favorable climate for growth of the whole program.

Demonstration Provincial Pilot Programs:

It is planned that there shall be three "pilot" programs at the provincial level. The proposal is that OEC shall supply an extension worker who will be attached to the Director's office. He would operate in an advisory capacity to the Director, would be available to participate in personnel training meetings in the province, and would function as a resource person with gun and myon workers. For him to be able to be of maximum assistance, adequate provision for travel in the

province will need to be provided. It is assumed that from time to time, as needed, specialist help would be available to him, on call from OEC headquarters. The writer would expect these units, if well manned, to be one of the most useful in building an effective program out in the rural areas. It would also seem desirable that services of these workers be available on a limited basis to neighboring provinces, both for the stimulation that might be given the programs, and to take advantage of the experiences of these men in situations which might arise.

Provision is made in the PPA for housing at Suwon and other support for such ICA personnel as may be used in supporting the expanding extension program. It would seem absolutely necessary that this be provided if qualified workers are to be attracted and held long enough to become really effective in their fields.

All of the above, and this report, are based on the assumption that O.E.C. is committed to a program of assisting in getting the Korean economy on a sounder and more productive basis.

RECOMMENDATIONS REGARDING
A HOME ECONOMICS PROGRAM IN
THE AGRICULTURAL EXTENSION SERVICE
FOR
THE REPUBLIC OF KOREA

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International Cooperation Administration

Office of Economic Coordinator

United Nations Command

May, 1956

A HOME ECONOMICS PROGRAM
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FOR
THE REPUBLIC OF KOREA

Introduction:

The consultant spent eleven weeks in Korea with two other members of a consultant team, Dr. Harold Macy, Dean, Institute of Agriculture, University of Minnesota, consultant on agricultural research, and Mr. Skuli Rutford, Director of the Agricultural Extension Service, University of Minnesota, consultant in agricultural extension.

In these weeks, the consultant explored the possibilities for the establishment of a home economics extension program as a part of the Agricultural Extension Service of Korea. This included attempts to (1) appraise living conditions, especially at the village level; (2) discover what programs are already underway that focus directly on improvements in farm living conditions; (3) observe the development of home economics in Korea and its readiness to make a contribution in the area of village life; (4) give the home economics leaders a vision of the potentials in their field of learning for improvement of life at the village level; and (5) study the existing and proposed organization of Agricultural Extension Service as the framework in which a home economics program could be carried out.

Some of the consultant's time was spent with the other two members of the consultant team in visiting officials at all levels of government; in visiting experiment stations, 4-H activities and homes in the villages.

The consultant made additional visits to other villages, totalling fifteen in four provinces. On these occasions she talked with groups of women and older girls in order to gain impressions of their attitudes and interests, as well as further information on the standards of living at the village level. A visit to a rural five-day market provided some added insights.

The consultant visited three universities and one college having large departments of home economics; talked to the president or college dean in each case; held round table discussions with home economics faculties; talked to student bodies; and inspected laboratories and class rooms. She met also with the Korean Home Economics Association, and held an afternoon seminar with 23 Korean home economists, representing the faculties of all four institutions visited and leadership group in the Korean Home Economics Association.

To gain more understanding of other efforts being made in Korea for the direct improvement of home and family life, the consultant discussed living conditions and present or proposed programs with representatives of many of the voluntary agencies, including missionaries; with OEC personnel both within and outside of the Office of Food and Agriculture; and Korean leaders, both within and without the government. She had the opportunity of taking part in the training phase of one such activity, and in the planning phase of several. She also visited two rural middle schools and one high school in order to see what home economics training is being given there.

What an Extension Program in Home Economics Could Accomplish:

Activities in the Agricultural Extension Service that point

directly to improvements in living and the involvement of women and older girls in activities of this nature could make a significant contribution in the Korean village, and thus to the general welfare, in the years ahead. It is true that farm living conditions are underdeveloped, and material resources for rapid improvement are limited. Some of the solutions to problems, or the obvious first steps in making progress, are met with selfish purpose blocks when one looks into the situation a bit further. It would be important to work closely with the existing leadership; to study the local village situation carefully; and be willing to work patiently in order to approach solutions to problems with realism.

Some of the ways in which home economics programs might be expected to make an impact on the Korean village are presented below.

1. Increasing Family Income: This is basic to most of the improvements that can be visualized for the village family. This would be evident to any observer, and the Korean people at all levels are aware of it. Extension programs for women and girls could make a valuable contribution to the income problem. Their most obvious contribution would be the improvement in real income by more efficient production and processing of a better food supply for family use. Further development of small home industries is also a possibility. Processing of some foods for the market so they can bring a higher price, and improvement in the present home production of certain textiles have been mentioned as possibilities. Women do so much of the farm work

that their participation in extension programs may materially hasten the adoption of better farming methods of all kinds. The incentive value of home economics is important too; if additional comforts and satisfaction in living are made to seem possible, they often encourage trying new methods in the income producing part of the family's activity.

2. Health Improvement: One of the main approaches here, would come through improving sanitary practices of all kinds; better handling of the water and food supply; more adequate composting and fermenting of the night soil; keeping latrines covered; control of flies, mosquitoes, rats, etc.; protecting wells from contamination; sanitary personal practices and general cleanliness.

A second approach to health improvement could come through improving the diet. Food is a major concern in every village. Many actually are short of food in the spring months before the new crop is harvested. A study by the National Chemistry Laboratory indicates that rice makes up two thirds, by weight, of the diet of middle-class working men in Korea; soy bean products, 5 percent; animal protein foods, 1.5 percent; fruits and vegetables, including kimchee, 27 percent. The National Chemistry Laboratory studies show that Kimchee is quite important in providing Vitamin C in the diet. Improvements in the diet necessitate greater production of foods rich in high-quality protein, fats, calcium and riboflavin, and better preservation methods in order to have a better year-around food supply.

A third approach to health improvement could come through better use of and cooperation with dispensaries and other public services contributing to the health and welfare. Programs for women could give a better appreciation of the developments of science in the protection of health, and to establish confidence in services provided to make them available to the village. Services for prenatal and post-natal care of mothers and babies; immunization programs; and tuberculosis control programs are examples.

3. Reducing Drudgery: Women spend a great deal of time in field^{wor} during the crop season. The large number of young men in the armed forces leaves to the women even more than the usual burden of farm work, most of which must be done by time-consuming hand labor.

Work in the village home and care of the family is also done by outmoded methods. Laundry is sometimes done near the well, but much more commonly at the nearest stream. A crude washboard is sometimes used, but more often, the clothing is pounded on a rock. Much of the clothing is white and much of it is constructed so that it must be taken apart every time it is washed. Cotton clothes are starched and "ironed" by pounding on a flat table-like rock. Usually there is no door to connect the kitchen with other rooms of the house, so food is carried to living quarters by an outside route.

The kitchen itself is primitive, having often only a dirt floor; for cooking, several fireboxes set in a common ledge; and a shelf or two, or cupboard, for storage of utensils and dishes. Branches

and pine needles are carried from the mountain sides to provide the village family's fuel supply.

These examples of drudgery will serve to illustrate needs in this area. Better tools are involved in some of the improvements that may be suggested. Cooperative purchase and use of some labor saving equipment may be a possibility. Some change in existing practice may be involved in other labor-saving proposals - as for example, simplification of clothing in order to simplify laundry. Improvements in the house itself could probably begin with the kitchen, taking into consideration fuel saving and pleasanter working conditions as well as labor-saving arrangements.

4. Providing a Medium for Social Change: It is evident that this is a period of rapid social change in Korea. A few women in the cities are beginning to take part in many kinds of public life. Boys and girls are working together in 4-H Clubs. Many other examples could be cited. Further changes are inevitable.

Many women are disadvantaged by education that is inferior to that of men. Women make up two thirds of the illiterates in Korea, and girls are less likely to go to school than boys. The disparity in school attendance grows in the latter school years. Enrollment figures for 1955 show three times as many boys as girls in the middle schools, and five times as many in the high schools. Boys and girls are still segregated in most schools above the elementary level.

Most women do not share in social occasions with men, even entertaining in their own homes. The traditional residence with and

domination by the mother-in-law is potentially troublesome, even if not actually so in every case.

Many of these traditions have deep roots in the Korean culture. Even where changes are desirable, there are dangers in upsetting existing customs too rapidly. Extension activities could provide the medium through which social progress can come. Further 4-H Club work and extension work for adults could provide the setting in which Korean men and women can evolve for themselves those new values which grow out of new experience, but are still consistent with basic conditions of Korean life.

A very important influence might come through the stimulation and development of women through extension activities. Through programs of this kind, women in other countries have shown remarkable development not only in matters of the home and family, but also in other relationships. There is no reason to suppose that such growth cannot be expected in Korea.

Since women have so much responsibility for rearing the children, programs for the education and development of women have effects that reach far into the future.

Methods to Use in Home Economics Extension Program:

1. Girls projects in the 4-H Clubs certainly constitute one of the most effective ways to begin an extension home economics program. The clubs are well started and highly regarded. Young people respond to new ideas and, through them, it is often possible to change practices within the family. The 4-H girl leader was prominent in the discussions in

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seven of the 15 villages visited. In each case she was enthusiastic and alert, and appeared to be a person through whom a great deal could be accomplished. Several mentioned their interest in attending further training sessions so the girls in their village could have more 4-H projects and better understanding.

4-H projects provide an excellent opportunity to focus attention on activities the girls would be carrying on in the village anyway; to find ways to do them better; and to lend dignity to the everyday homemaking tasks. Projects might be developed immediately, to include the following; (a) making kinchee; (b) making soy-bean products; (c) other types of food preservation and storage; (d) laundry work for the family; (e) care of the baby; (f) making her own clothes, or work clothing for her mother; (g) care of the house; (h) preparing family meals; (i) home yard beautification, etc.

Information about and training for these projects could be given as soon as any one of them has been carefully thought through from the standpoint of (a) the objective of the project or what the girl should learn from it; (b) the activity expected to complete the project; (c) what information should be provided to the myon agents and local girl leaders to make the project successful, and how it can be given; (d) What type of record should be kept; and (e) What might be exhibited at a 4-H Exhibit.

If a simple bottle canner could be available in a village or 4-H Club, canning tomato juice in bottles would be an excellent project.

This would serve as a beginning for further food preservation work when materials and equipment are available. There is the possibility that some of the tomato juice might even be sold, becoming a small home industry.

Other home industries, if there is a market, would be excellent 4-H projects for girls because they would provide a little money and more interest in the village and thus tend to prevent so many from going to the city to seek employment.

2. The mobile units as proposed for agricultural work, offer another excellent means of helping the people to see and understand improvements they can make. This method is especially useful in the early stages of any program for its attention-getting value. It would be desirable to include home economics exhibits and demonstrations as part of the mobile unit activities from the very beginning. Since only a few ideas can be presented at a time, the mobile units should concentrate on those practices which are more difficult to understand by other methods and which lend themselves to a rather dramatic exhibit. Some of the improved sanitary practices, some housing improvements and perhaps some better tools to use cooperatively, suggest themselves as improvements that can be promoted by the mobile units.

3. Intensive work with a few families would seem to be a necessity in an activity so new as home economics work would be in the rural villages of Korea. This would be valuable to help the workers find the practices and adaptations needed in meeting the real needs of the people.

Furthermore, it is hoped the results of such concentrated work would serve as a demonstration to other families, not only of the specific practices involved but of the whole idea that improvements are possible and not too difficult. This would help establish confidence in the Extension Service as a means of helping people to help themselves.

4. Group work for the women appears to be a distinct possibility. In some villages having a 4-H Club, the women were asked if they would like a similar group for the adult women and in each case they seemed enthusiastic. Some believed this could be done only in winter when women were not working in the fields. But one woman volunteered the idea that this work could be done in the evenings at almost any time of year. Experience reported in some areas verifies this.

There is some experience even with leadership training. In one village visited, one member of the group had attended a week-long training meeting in the provincial capital and had held a meeting in her village upon her return. The women attending were enthusiastic about the meeting and hoped they could have more, although they were vague about what they had learned that was useful. Both the women's extension clerk in the provincial extension office and one of the other extension workers stated that it was practically impossible for the village women to make improvements as suggested in the training meeting because of their meager resources. However, both were certain the meetings were valuable in giving stimulation and encouragement and that their value in these respects was very significant.

This would support the idea of attempting group work, and some leadership training, though it is hoped that at least some of the subject matter could be such that it would be immediately useful to the women.

It is through group work that the greatest possibilities exist in the development of the women themselves and in improving their status and conditions in the homes.

5. Radio, news paper and other mass media: The mass media; as newspapers, magazines, radio, etc., are quite effective in disseminating home economics information and stimulating interest in home improvement. The importance of this method for the villages would grow as more families are able to have radio; when more women can read, and when reading materials are more widely available. Even now, radio and newspaper work in this field would be very desirable. It is and will be increasingly important to get understanding and support for extension activities, and much can be done along these lines through the mass media since the radio and newspaper have the potential of reaching so many segments of the population, village and city, young and old, men and women, rich and poor.

Sources of Information for Home Economics Extension Programs:

Home Economics is well established at the college and university level. Home Economics is prominent at the two big women's universities, Ewha and Sook Myung. In both, home economics is a department in the College of Liberal Arts. However, the presidents of both said that Home Economics would soon become a College. At Ewha, where there has

been a department of Home Economics since 1929, there are 400 home economics students in the total student body of nearly 5,000; at Sook Myung Women's University, 300 of the 1,500 are in the Home Economics Department. Soodo Women's College which is only nine years old has 200 home economics students in its daytime enrollment of 500, and 80 in its night school enrollment of 200. At the National university of Seoul, which has been co-educational for only seven years, the home economics department is in the College of Education, with 150 major students.

Home Economics faculties in the three universities and one college visited seemed to be aware of the value that extension work in home economics would have in Korea. Some indicated that their graduates did not have the best preparation for rural work; that the present home economics curriculum was better suited to the need of city families, and even to the more favorable social and economic conditions that are hoped for in the future.

The presidents of both Ewha and Sook Myung Universities expressed interest in expanding the offering of their respective institutions to include courses to better fit their students for rural work, where women do so much of the farm work. At Ewha, work is already underway to build a farm house which will have in connection a vegetable garden, other crops, small animals, as rabbits and chickens, and eventually the larger animals also. At Sook Myung, the President spoke of adding course in which the girls might have some training in agriculture along with home economics. Two newly published textbooks for the middle school

and one for the high school come to the attention of the consultant. However, text books for university work are almost non-existent. Faculty lectures are the sole source of students' information. The preparation and publication of written materials in home economics and development of libraries would seem to be an urgent need in addition to the improvement of laboratory equipment and facilities.

Home Economics Research:

There is need for more home economics research in order to have more authentic material adapted to Korean conditions and customs.

The Nutrition Section of the National Chemistry Laboratory in the Ministry of Health and Welfare has made valuable studies on the Korean diet and chemical analyses of most of the Korean foods. Further valuable research in the area of nutrition may be expected from this group.

The Scientific Research Laboratory in the Ministry of Defense is working on problems in food technology and nutrition problems in relation to the Korean armed forces. But in the long run this work will doubtless have an impact on the civilian's food as well.

In the period between the liberation (1945) and the Communist Invasion (1950), some beginnings in scientific investigations in Home Economics were made at Ewha University. Since 1954, when the colleges and universities located in Seoul moved back into their own buildings after the evacuation, the shock of the destruction and the pressure to rebuild on every front has prevented the growth of research at Ewha, or beginnings in the other institutions. However, graduate

atudents, of which there are five this year at Ewha University, are required to carry out a research problem. Through direction of these studies, and by small investigations and experimentations of their own, as they are challenged to make their teaching function better, faculty members of the colleges and universities will make a contribution to research. While these efforts are valuable, there is need for more intensive and programmed work. There is now available enough knowledge to justify laying ground work for a home economics program in an agricultural extension service. However, there are many problems that should be studied in setting up such an important program.

Because of the special needs in finding solutions to some of the problems of the farm home, public support for research work in home economics is being recommended in the report of the consultant on Agricultural Research. Home Economics is one of the areas recommended for research under the proposed agricultural research service in the Ministry of Agriculture and Forestry. The proposal provides not only for research within the section itself or by its own staff members, but grants-in-aid for work wherever it can best be done.

While no attempt is made to present a comprehensive list of research work needed, the few suggestions below will serve to illustrate the needs in this field:

1. Food preparation methods to make acceptable some of the foods that may be substituted for rice; also other foods which may become available in larger quantity in the future, for example; rabbit, fishmeal, etc.

2. Further nutrition studies to set minimum nutrition standards in terms of Korean foods and the Korean pattern of life.
3. Food preservation methods - probably canning and drying - that are applicable to Korean village conditions.
4. Designing clothing that will be more practical from the standpoint of care and cost and that will still be acceptable by Korean values.
5. Ways to improve the kitchens and other house arrangements at modest cost to save labor and increase both the palatability and efficiency.
6. Easier methods for laundry work.
7. Further development of home industries.

Staff for Home Economic Extension:

The proposed staff for carrying on the entire extension program is listed in the report of the consultant on Agricultural Extension Service. It includes the following home economics personnel for the eventual program;

1. A leader at the national level who would give general stimulation and guidance to the entire program. This should be a recognized leader who has the respect and confidence of leaders in home economics, agriculture, and related fields of activity. When the program is well established and fully staffed at the province and local level, one or more assistants might be needed.

2. A supervisor or leader at the provincial level with the possibility of a staff of one or more assistants or specialists when the program is fully staffed at the gun level. These people must be college or university graduates. Their assignment would include duties in connection with selection and placement of home economics personnel as well as training of personnel in methods and subject matter to carry out effective extension work.

3. At least one home economics agent at the gun level. It would be highly desirable to employ college home economics graduates for these positions. This may be unrealistic and it may be necessary to employ high school graduates for these positions, giving them further training on the job. Graduates of the two-year program proposed at the training center for Fundamental Education at Suwon may also be potential gun workers. Gun home economics workers would work with the agricultural extension workers within their gun. They would work with girls in 4-H projects; with women in group work and with the entire family on many kinds of problems. They would work in all of the myons of the gun, unless there should be a home economics agent working intensively in one of the myons. (See below) She would work closely with the agricultural agents in the myons, and probably depend upon them for some of the local organization, arrangements and follow up on her work in order to get the maximum value from the limited time she would be able to spend in each myon. There are eleven myons in the average gun.

4. It seems unrealistic for the immediate future to contemplate a home economics extension staff large enough to provide a paid worker in every myon. However, there may be some myons where it will be feasible to have a worker in order to give more concentrated assistance to families than is possible where one worker serves all of the myons in the gun. This would depend on the readiness of the people for such work, and the possibilities for improvements in living conditions which would result.

Since the average myon includes 1,000 to 1,200 families, living in ten to fifteen villages, work at the myon level could well be a full time assignment for a home economics worker, considering the productive value of the program.

Getting a Home Economics Extension Program Started:

It may be necessary and even desirable to begin home economics extension work in a rather small way, expanding as interest grows and more funds become available. If funds for this work are limited at the beginning, it would seem wise to start by setting up at least three demonstrations where the best qualified persons available can begin work under as favorable conditions as possible in order to explore procedures and program content applicable to the Korean village. If only a few home economics workers could be available at the beginning most of them might well be located at the gun level, where they would be close to the problems; could follow up on their activities and evaluate the effectiveness of various approaches. These workers would work as a team with agricultural workers.

If only a few could be employed at first, one home economics person at the national level would probably be able to give the home economics leadership, working closely with provincial directors. When more personnel could be added, home economics leadership at the provincial level will be necessary. Persons to fill these provincial positions could well be chosen from the gun workers who have demonstrated their ability and leadership. In fact, personnel for the original gun positions might well be selected as prospective provincial leaders. For this reason, and in order to get well trained workers with a good chance of success at the local level, it would be wiser to use available funds for a few of the best available home economists, rather than employing twice as many who have a smaller chance of success.

Home Economics Staff Training:

In-service, or on-the-job training of the staff would be especially important, if the work is to be really effective. The informal teaching methods emphasizing demonstration and participation which have proved successful in extension work would doubtless be new to many, even for those who have good professional preparation. Subject matter itself will need a good deal of emphasis, especially where persons without a college home economics education are employed. Adapting subject matter to village conditions would require constant exploration and emphasis for some time.

It would be difficult to indicate now exactly what, how, and where

this training should be given. It is, however, important to recognize that there must be a great deal of it, and to expect a large part of the staff time in the early years to be devoted to receiving and giving staff training. Training at the national level might be used while the staff is still small, and a yearly national conference for extension workers might always be justifiable for its stimulation and morale value. Actual training for gun workers would likely be more effective on the provincial level. When there are enough myon workers, their most effective training would likely be with other workers at the gun level.

National conferences or workshops for provincial and national home economics extension leaders with leading college and university home economics faculty members should be a regular part of the training plan. This would help to insure the constant flow of new home economics information into the extension service, and provide continuous stimulation to make home economics teaching more realistic and better suited to Korean conditions.

Coordinating Home Economics with Other Efforts:

Home Economics is the field of learning that attempts to bring together the sciences and arts that have a bearing on the home and family living. Therefore there is often some overlapping with other fields of learning. Home economics programs are most successful where there is close integration with other programs dealing in a specialized way with some of the problems of the people, as for example health,

welfare, and education. The close relationship of the farm enterprise and the farm home is the reason home economics programs have been successful in the agricultural extension services in many countries of the world.

Home economics extension programs usually are greatly enriched through close integration with these other programs, and also make a contribution to them. It is therefore highly desirable that they be organized and administered in a way to permit active liaison and on occasion, joint action with both publicly supported and privately sponsored programs having objectives similar to their own.

In Korea there are many such activities. The public programs outside of the agricultural framework include the Women's Bureau work on, the status of women, women's organizations, home improvement, simplification of clothing, etc.; public health work in connection with local dispensaries, food handling short courses, and other sanitary matters; and other community development programs. Privately sponsored programs include the work of many voluntary agencies. For example, missionaries have included a great deal of work toward improving home and family life; the YWCA is getting several activities underway for farm women; many agencies are assisting the war widows and orphans; and the "Enlightenment" program of the universities has given students and faculty members vacation-time experience with rural families.

The parent teachers associations, organized around every school may be a group through which some extension work can be done.

While the integration of programs at the local level is the most important, this is more likely to be accomplished if there is good liaison at the provincial and national level also. Some provision should be made to make sure this occurs.

Summary:

It seems clear that a home economics extension program could do a great deal in helping the people of Korea to work out better levels of living. If the Korean government sets up an Agricultural Extension Service, it would be desirable to provide for a home economics staff from the very beginning, even though available funds would permit only a few workers at the start. Programs emphasizing better practices, a better food supply, better use of community health services, labor saving, and home improvement could all be very productive. In addition, extension programs could provide the medium through which social changes can be evolved. This is illustrated by 4-H Club work, which is already well started.

While many methods are suited for carrying out home economics extension programs, the women's group activity is the means by which the greatest development of women is likely to come.

Home economics is well established in the schools, colleges and universities of Korea. While research is needed to further adapt this field of learning to Korean conditions, there is a body of knowledge and trained, interested leadership in home economics so that ground work could be laid for programs for rural women and girls.

The informality of extension methods, emphasizing demonstration and participation, is not yet well developed in Korea. For this reason, and to give further emphasis to adapting subject matter to village conditions, training of home economics extension staff will be an important phase of any program of this kind that may be set up.

The field of home economics attempts to bring together all the sciences and arts that have a bearing on family life. For this reason it is likely to overlap some other programs. It is especially important that means be provided to insure good integration of women's extension activities with other programs for the betterment of homes and communities. Because of the close relation of the farm enterprise and the farm home, home economics programs for agricultural populations have usually been very successful as a part of an Agricultural Extension Service.