

THE ROCKEFELLER FOUNDATION

TO:

FROM: GM

DATE: 9/28/66

---

Copies of this summary were sent to the following:

SW  
JJM  
RWR  
LMR  
JAP  
DP  
ECS  
JGH  
KWT  
KW  
JEB  
HH  
JPP  
RKD  
Don Fletcher  
NEB  
GBB  
RFC  
RWC  
JWG  
UJG  
WMM  
JSN  
RDO  
JAR  
OS  
EJW  
EWS

MER

REPORT AND SUMMARY  
OF THE  
AGRICULTURAL SCIENCES FIELD DIRECTORS' MEETING  
JULY 25-28, 1966

CONFIDENTIAL

AGRICULTURAL SCIENCES FIELD DIRECTORS' MEETING

JULY 25-28, 1966

The annual meeting of the field directors of the Agricultural Sciences division of The Rockefeller Foundation was held in the New York office July 25-28, 1966. The following were present:

From abroad:

Dr. Guy B. Baird, India  
Dr. Norman E. Borlaug, Mexico  
Dr. Robert F. Chandler, Jr., Philippines  
Dr. Ralph W. Cummings, India  
Dr. John W. Gibler, Ecuador  
Dr. Ulysses J. Grant, Colombia  
Dr. Will M. Myers, Nigeria  
Dr. John S. Niederhauser, Mexico  
Dr. Robert D. Osler, Mexico  
Dr. Joseph A. Rupert, Chile  
Dr. Ordway Starnes, Kenya  
Dr. Edwin J. Wellhausen, Mexico

From New York:

Dr. Sterling Wortman  
Dr. John J. McKelvey, Jr.  
Dr. Dorothy Parker  
Dr. John A. Pino  
Dr. Ralph W. Richardson, Jr.  
Dr. Lewis M. Roberts

Consultants:

Mr. Donald G. Fletcher (arrived Wednesday, July 27,  
delayed because of airlines strike)

Dr. E. C. Stakman

Others:

Dr. J. G. Harrar and Mr. Kenneth Wernimont joined  
the meetings when their schedules permitted.

Other speakers in the sessions included: Mr. Richard  
Keigley of Haskins and Sells, Dr. Joseph E. Black of  
HSS, Dr. R. K. Davidson of HSS, and Mr. Herbert Heaton,  
Comptroller.

MONDAY, JULY 25

In his opening remarks, SW introduced those present who did  
not attend last year's meetings and noted the transfers and promotions  
that had occurred during the year, as follows:

\*RWC: Transferring to the New York office later this fall.

\*GBB: Assuming directorship of IAP.

JWG: Now an assistant director.

EWS: Now an assistant director; transferring to Thailand to  
be in charge of the national program there.

DGF: Newly appointed consultant.

RDO: Transferring to Mexico; in charge of the International  
Corn Improvement Project.

OS: Director, EAAFRO.

\*It was requested that these changes be kept confidential until the  
official announcement is made.

JSN: Expanded responsibilities: taking charge of the pathology program at CIMMYT while continuing leadership of the Inter-American Potato Improvement Project until a Latin leader is identified.

JGH spoke to the group briefly, urging them to look at production figures in each country where the Foundation is working to see if the programs are effecting increases in food output.

SW explained to the field directors that the urgency of the world food situation has caused the officers in the New York office to consider carefully the relevance of all proposed expenditures to the conquest of hunger program.

SW pointed out that many students graduating from agricultural universities abroad do not have the practical skills necessary to manage crops and animals and said the RF should encourage education programs in developing countries which are more relevant to their needs. He suggested that it might be wise for colleges to require an internship for agricultural degrees. In-service training can be highly significant in making graduates more effective workers in their countries' agricultural programs.

#### RFC: IRRI AND DEVELOPING NATIONAL RICE PROGRAMS

RFC gave an enthusiastic account of the excellent new rice variety developed at IRRI, IR 8-288-3. It is being tested in India, Thailand, Malaysia, the Philippines, and Pakistan; and it is proving to be the top one of 300 varieties in each trial. RFC displayed pictures of the plant and charts showing its nitrogen response in comparison with other varieties. The fame of IR 8-288-3 is spreading rapidly.

RFC is optimistic about rice growing in the Philippines. Esso has established a fertilizer plant and is setting up numerous stores (over 300 in operation now) to make fertilizer and insecticides readily available to farmers throughout the Philippines. At high yield levels, these inputs are profitable.

The IRRI staff has proved that virus diseases are very important in rice, and they have been able to identify some of them in various parts of Asia.

Training at the Institute: Thirty rice production specialists are being trained at IRRI now, most of them being financed by other organizations (over 80% by AID). Everyone trained at the Institute gets out into the field and learns how to grow a crop of rice. Through the seminars, the trainees learn to think of the rice plant as a single organism. The Institute is limited to 60 trainees at any one time because of dormitory space and their quota of five trainees per staff member.

RFC said he was discouraged by the difficulties encountered in trying to get governments to pay for the training of rice specialists from their countries. The main difficulty is foreign exchange. JGH suggested accepting foreign currency and exchanging it some other way - for example, accepting rupees, giving them to RWC, and making the adjustment in the New York accounts.

Extension work of IRRI: There are now four rice specialists (two FF and two RF) working out of IRRI in various parts of the world. The program in India is going well. The one in Malaysia got off to a slow start, but IR 8-288-3 is in great demand there now. RFC said Rufus Walker deserves high credit for his skill in working with the Malaysians. The program in Indonesia has been slowed down by the

political troubles, but RFC is confident that things there will soon be moving ahead again.

Rice in Latin America: The need for rice work in Latin America was discussed. SW said that it had been thought for a long time that there should be an inter-American rice improvement project. RFC said IRRI could work through a rice project in the proposed Latin American institute, but LMR believes that identification of a rice man for Latin America should not be put off until the establishment of the new institute.

RFC said the soils of the Amazon basin are very difficult to manage for rice production; but otherwise, conditions in the Latin American tropics are similar to those in the Philippines, and he is confident that IR 8-288-3 and similar types will produce good yields in Latin America.

Structure of the rice plant: SW asked RFC to comment on the architecture of the rice plant because some of the things learned at IRRI in this regard might be applicable to corn and sorghum. IR 8-288-3 is short and has upright, sharp, narrow leaves that allow maximum light penetration to the lower leaves so they remain alive until harvest. This results in efficient use of solar energy. Freedom from lodging, however, is a most important characteristic. IR 8-288-3 has a grain-to-straw ratio of a little more than one.

#### EJW: ORGANIZATION, FACILITIES, AND PROGRAM OF CIMMYT

EJW, who has spent the year working on the establishment of the International Maize and Wheat Improvement Center (Centro Internacional Para el Mejoramiento del Maiz y Trigo - CIMMYT), described the agreement

that has been signed with the Government of Mexico, the board that has been selected for the Center, and the staffing that is planned. There will be two types of training: (1) Research assistants - will be at the Center for 3-5 years, will be given responsibility for a certain research project, and will be trained for agricultural leadership in their own countries. The plans are to have 14-15 research assistants each working in maize and wheat with lesser numbers in other fields. (2) In-service training - intensive work for one year or less.

EJW believes any problems that may arise in regard to freedom of flow for foreigners or seed in and out of Mexico can be worked out satisfactorily with the Mexican Government.

OS pointed out that training needs in East Africa are acute, that the cost of training people so far away is very high, and that there has been discussion of a regional corn and wheat center in East Africa. EJW said CIMMYT would like to encourage development of regional centers and would be glad to develop cooperative programs with them.

#### RDO: INTERNATIONAL CORN IMPROVEMENT PROGRAM

RDO outlined the status of country and regional corn programs throughout the world. He said the Center needs to expand its work in corn in Central America; some of the country programs there look promising.

In Egypt, the Foundation employs Arthur E. Peterson to work on a Ford Foundation-financed corn improvement project in cooperation with the U.A.R. FAO is now providing the salary for Dr. Carballo who will work with Dr. Peterson.



RFC and RDO agreed that there is a need to find the plant type best for maize. RFC thinks the best plant characteristics for maize will be quite different from those for rice.

NEB: INTERNATIONAL WHEAT IMPROVEMENT PROGRAM

India: The wheat program in India was formally organized in 1964, and it shows promise of being quite successful. The new varieties are producing yields that the Indians had never thought possible. The extension service now has something concrete to offer the farmers. NEB thinks India can double her wheat production in eight years, possibly even in five. The crucial factors are the availability of fertilizer and the increase of the number of acres under irrigation. More wells are needed and they are not being drilled rapidly enough.

Pakistan: Trainees took Mexican wheats back to Pakistan in 1961, but by 1963 they were still in small experimental plots. Now there is a concerted effort under way to get the new varieties out onto the farms. Two hundred fifty tons of seed were imported last year, and they have begun multiplying the seed themselves. NEB thinks Pakistan can double her wheat production in three years if they can get enough fertilizer. The number of acres under irrigation is increasing much more rapidly than in India because many more wells are being drilled in Pakistan by private enterprise.

Fertilizer: NEB said there is a complete lack of understanding among people in government of the kinds and quantities of fertilizer needed. Expanding fertilizer capacity requires a great deal of capital which raises the problems of foreign investment versus nationalism and

nationalization. RWC came to the defense of the people in the Indian Government who have made plans to increase the supply of nitrogen rapidly (from 600,000 tons to 2,000,000 tons over a five-year period). He thinks they are doing their best to solve their production problems.

Argentina: NEB thinks this country has a lot to offer in the world food situation. Three years ago none of their wheat was fertilized; this year 50,000 acres are.

Hybrids: NEB is interested in hybrids, principally because of rust resistance; but they are so difficult to produce that only a very good seed company can handle them.

Triticales: This is the man-made cross between wheat and rye on which the University of Manitoba has been working. Some of the varieties look promising now, and there is fragmentary evidence that it is going to be a high-protein grain. Feeding experiments are also encouraging. None of it is available for commercial use yet.

#### JSN: INTER-AMERICAN POTATO IMPROVEMENT PROJECT

JSN believes potato improvement has been one of the most successful programs of INIA. In the last fourteen years, potato production in Mexico has more than tripled, and per capita consumption has doubled. The number of acres planted to potatoes in Mexico has not increased during the past eight years, but production per acre has. Thirty-six people, mostly Latin Americans, have been trained in this program.

The Colombian project has suffered from lack of leadership. The program in Peru has been discouraging, mainly because of a lack of cooperation between the two principal groups involved in potato research

there. North Carolina State University is going into potato improvement in Peru and will have a group of four U.S. scientists there financed by AID. This project looks promising.

RWR pointed out that Peru makes an interesting national case study. They have supported programs on corn, wheat, and potatoes. There has been progress in maize on the coast, but almost none in wheat. There have been only small gains in potato production in spite of the fact that a few very good men have been trained. Improvements are not getting into the regions where hunger is severe.

JSN said that recent collaboration between European potato breeders and the Mexican program has improved work on blight resistance.

The next three to four years will be a transition period for JSN between the work on potatoes and the CIMMYT program in plant pathology. A Latin will be selected to give full-time leadership to the Inter-American Potato Improvement Project (which will be centered at CIMMYT) with decreasing counsel from JSN. SW pointed out that the wisdom of the decision remains to be seen. When asked if there were a young Latin on the horizon that could take over this job, JSN said there are some with potential, but none with enough experience yet.

There followed a general discussion of the problems of transferring leadership to nationals. Some said that Latins are distrustful of other Latins and, because of this and strong feelings of nationalism, it will be difficult for a young Latin to gain the confidence of men from other countries. UJG mentioned that the Chileans he has seen working in Colombia would be much more effective in their own country. NEB said that he thinks things are changing in this regard. Dr. Narvaez would be perfectly acceptable as a leader in Argentina today, for

example, but five years ago this certainly would not have been true. Part of this is because of his other foreign experience. SW pointed out that the RF could not provide leadership everywhere and that it must not be said that Latins cannot lead Latins until it has been tried.

JSN urged that the potato improvement project be continued and expanded. He was given assurance by SW that it will remain one of the active projects of the AS program.

WMM: INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE

WMM gave a progress report on the establishment of IITA. After two years of work on the legal aspect, only one or two points remain to be settled, and WMM said a military decree legally establishing the Institute was expected in a couple of months. The land is being acquired, crop enumerations are still in progress, and land for the first experimental plots is being cleared between the farmers' fields. It is hoped that construction can begin by December or January with completion scheduled for the end of 1968. WMM is now actively looking for scientific staff to be at IITA by next February or March, '67.

WMM said there are few, if any, improved varieties available for distribution to farmers in Nigeria and that there are a multitude of insects and diseases. The most important cereal crops there are rice and maize. A major effort on maize is planned, but WMM said he would discuss with RFC how much IITA should do with rice. Work on grain legumes is planned, probably cowpeas, which are used widely there, and soybeans. WMM feels that work on vegetable crops could do a great deal to improve the diets of the people in the region. Sorghums and millets

are not now important crops in the rain forest area, but they could perhaps be grown during the second half of the rainy season.

WMM said it has been decided not to give emphasis to an animal sciences program at this stage, principally because of the cost involved.

RWC suggested that the Institute should include work on tropical soils.

RFC and WMM agreed that work at IITA on viruses, insects, and nematodes will prove to be very important.

WMM thinks the training aspects of the Institute may be even more important than its research activities. It is planned to have an average of six trainees for each principal scientist on 3-5 year appointments working on research projects, with the understanding that at the end of that time they will either go on for more study elsewhere or return to their own countries. The Institute expects to establish a cooperative agreement with the University of Ibadan to enable trainees to take course work there.

TUESDAY, JULY 26

UJG: NEW DEVELOPMENTS IN COLOMBIA

ICA is now through the planning stage, and commitments have been made by eight international organizations including AID; the Kellogg, Ford, and Rockefeller Foundations; FAO; UNESCO; the International Bank; and the Inter-American Bank.

UJG said Colombia is a prime example of a country in which factors other than technical skill are keeping production from rising. The knowledge and varieties that are available would enable Colombia

to tremendously increase her production of every important crop, but many factors are preventing it. There are tremendous fluctuations in prices, particularly of corn, and previous attempts to stabilize prices have failed. Farmers have to pay exorbitant interest on borrowed money - up to 48% even though the legal maximum is 12%. All the mills are on the coast, and the millers can get American and Canadian wheat cheaper than that from the interior.

SW pointed out that the RF has concentrated on the technical side of production and has always been weaker in the area of economics. David Hopper was mentioned as the type of production-oriented agricultural economist who can see the implications of new technology, communicate with national leaders and planners, and be effective in breaking bottlenecks limiting the success of programs. Economists with such perspective and skill are extremely rare. Dr. Hopper has been asked to look for young men that he thinks have potential. UJG is hoping there will be some good young economists among those that The Ford Foundation will be sending to Colombia.

It was suggested that the Foundation make a study of food production in Colombia with the aim of accelerating output and of encouraging the Colombian Government to effect necessary changes in policies. To discuss this further, an additional meeting was scheduled for Wednesday evening, July 27. For the results of that meeting, see SW's "Feasibility of Acceleration of Food Production in Colombia."

#### JWG: THE INIAP PROGRAM

The Rockefeller Foundation began working in Ecuador in 1956. There are now 79 on the staff, including some young men who are still working on their degrees. JWG is the only RF staff member there.



The Ecuadorian program has received assistance from the Colombian and Mexican programs in training and materials. The INIAP board has many influential people on it; primarily because of this, INIAP was the only institution in the entire country to get its full budget last year.

Ecuador leads the world in exportation of bananas, and its economy is tied to the banana market. One of the successes of AID was the development of controls for banana diseases in Ecuador. Now 20,000 small farmers are growing them. The country now needs to diversify its agriculture.

Many people think beef would do well in the coastal area. JWG said he will soon be asking for an animal scientist.

The traditional farmers' organizations in Ecuador are being reorganized. Farmers are unhappy because of fixed low prices, threats of agrarian reform, etc.; they also object to U.S. surplus grains and milk being brought in.

JWG raised a question about the goals and direction of the Ecuadorian program. He said he would like to try to develop farm organizations that would produce seed themselves because the country is too small for any seed company to be interested in investing there. He also said he would like to get a man to train Ecuadorians in extension work.

ECS and SW praised the Ecuadorian program for developing its own leadership and for illustrating how much could be done by only one resident RF staff member.

RWC: THE INDIAN AGRICULTURAL PROGRAM

RWC said that agricultural research in India is being reorganized. There will be greater centralization and there are new, able people in high positions. He mentioned three institutes under the ICAR (Indian Council of Agricultural Research): (1) the Indian Agricultural Research Institute, with which the RF has been working; (2) the Indian Veterinary Research Institute, which the RF declined to support in the past; and (3) the Indian Dairy Research Institute - the RF may be invited to participate in a study of its training program.

There is interest in upgrading the libraries of all these institutes, and the RF will be asked to participate in a study of them. ICAR is receiving greater autonomy and freedom of action which RWC considers strategic. He thinks the Council is deserving of support.

Agricultural education: There are agricultural universities in eight of the 15 states; five or six of these are in a position to make rapid progress. GOI appointed a commission two years ago to study education as a whole. The commission's report has recently come out, and it strongly recommends the establishment of at least one agricultural university in each of the states. ICAR has a committee studying legal aspects of agricultural universities. AID is supporting seven of the agricultural universities through contracts with universities and plans to support more. UNESCO and FAO are also working with these institutions, but not very effectively. ICAR plans to develop its programs in connection with and through the state experiment stations and agricultural universities. Some universities have responsibility for all the research experiment stations in their states; others are moving toward this pattern.



RWC sees commendable progress in India and predicts substantial increases in production within the next two years. There has been a heartening change in the thinking and attitudes of Indian leaders; they are becoming much more production oriented. National field demonstrations of new varieties (in which state departments of agriculture, the RF staff, agricultural universities and colleges were all involved) were very successful in spite of a poor cropping year. RWC thinks they might have been one of the significant reasons for the great demand for seed which is causing India to buy huge quantities of seed from Mexico.

Sorghum and millet center: RWC thinks the time is ripe for the development in India of a sorghum and millet center of international importance. There already is a wide range of germ plasm in India, though there is a need to collect more systematically in East Africa. There are some very good Indian scientists in this field with considerable potential leadership ability among them. RWC thinks the Indians would be proud to have such a center in their country and that there would be no insurmountable problems regarding government policy. RWC questions whether IARI is the best place for such a center because they have rather cold winter temperatures.

Postgraduate education: When asked to evaluate the postgraduate training center at IARI, RWC said that it still needs strengthening, but some areas are very good. In Southeast Asia, India is generally regarded as a good place to study. UPCA is also considered to be good - the best in the Southeast Asia area, though it needs strengthening in the basic sciences and in field research programs.

## THE PROGRAM PROPOSED FOR THAILAND

In EWS's absence because of the airlines strike, SW outlined the progress of the program that is being set up in Thailand. EWS is transferring to Thailand to be in charge of the program, though he will continue to lead the Inter-Asian Corn Improvement Program. EWS is looking for a corn breeder and a sorghum breeder to work with him. Dr. Dwight Finfrock, an agronomist, is already in Thailand. Dr. Ben Jackson is spending about six months at IRRI and then will go on to Thailand to work on rice. Visits will be arranged so the Thailand program can have the help of technical people in other programs; for example, EWS hopes to get some early assistance from Dr. David Hopper, Dr. Laird, and others.

The AS field staff in Thailand will be handled through Dr. James Dinning's office in Bangkok. RFC and SW agreed that Ben Jackson should be administratively responsible to EWS rather than IRRI.

The Thailand program will provide in-service training for large numbers of people who are already in government service there. The internal costs will be divided between Kasetsart University and the Ministry of Agriculture.

## UPCA

The College of Agriculture of the University of the Philippines was discussed. Although UPCA has nearly 60 Ph.D.'s, there are no really active crop-oriented programs there.

It was suggested that some UPCA men could be trained under Dr. James Sentz and thus involve UPCA in the Inter-Asian Corn Improvement

Program. RFC was asked to ascertain the attitudes of the Cornell group and Dean Umali toward this.

SW said that very little of the \$100,000 that has been allocated to UPCA has been used. It is intended primarily for the development of experiment station work rather than teaching or administration. The RF would like to support certain crop-oriented programs in the institution. WMM suggested that ways should be found to encourage Cornell to provide more continuity to their programs there.

#### JJM & OS: DEVELOPMENTS IN AFRICA

JJM said the RF would have five staff members in Africa as of September 1, '66: WMM, OS, Dr. John Nickel as the Director of the College of Agriculture at Makerere, Dr. Arthur Peterson in the U.A.R., and Dr. Mitchell Vavich at the University of Khartoum. The resignation of Dr. Marvin Lindsey raises the question of what the RF should do about corn improvement work in Nigeria.

The hunger situation is not as acute in Africa as in other parts of the world, so work there is on a long-term basis. Some of the major problems facing the RF African program are:

1) What should be done about sorghum and millets research?

There is a strong program going on in this field in Northern Nigeria. Whether or not the Foundation decides to support and strengthen this program will depend upon what happens in sorghum and millet work in India and East Africa.

2) What should be done about animal sciences? There is no

animal disease establishment in a humid region of Africa. There is an

incipient faculty in Northern Nigeria. Ecologically, Ibadan would be a better place, but it remains to be seen if the Nigerians want to move it to Ibadan.

3) What should be done to further improve the Faculty of Agriculture at the University of Ibadan? This is the strongest faculty in Nigeria today, in spite of the strife that exists in it, because it has good African leadership.

4) A major problem throughout the continent is finding African leadership. Traditionally some institutions do not train Africans, and many expatriates fear they would lose their own positions if many Africans were trained. An RF staff member has a great advantage in a situation of this kind because he is confident the Foundation will place him elsewhere if a national can be trained to do his present job.

5) Much of the research being done in Africa is not relevant to national and regional problems.

OS talked about the particular problems faced in East Africa:

1) There is political instability, principally because of tribalism; there is also a serious imbalance of trade between Uganda, Kenya, and Tanzania.

2) There is a question of whether the University of East Africa should continue as it is or whether each nation should have its own university. It is generally believed to be a viable institution, but each nation is moving toward establishing its own degree program in agriculture.

3) The national programs do a reasonably good job with extension, but EACSO has no extension program. This is a generally recognized need and probably will soon be corrected in some way.

4) Land tenure is a serious problem. Land is being purchased, broken up into small holdings, and made available to Africans. Unfortunately, most of the units are too small to be economical.

5) Statistical reporting is extremely inadequate. (RFC mentioned that he has a man at IRRI who is very good with agricultural statistics in case he could be useful to other programs on short assignments.)

A research group from Glasgow is presently working in Kenya on immunological techniques to combat East Coast fever. If they are successful, their work could have tremendous implications for the control of trypanosomiasis, and perhaps even malaria in man.

#### JAR: FOOD PRODUCTION IN CHILE

As in Colombia and Ecuador, food production in Chile has not increased. Yields have gone up 20-30%, but national production has remained stagnant. JAR attributes this to: (1) Low prices which provide no incentives to produce. Farmers can make more money growing fruits for export. (2) Dumping of U.S. surplus wheat and milk. Many farmers have sold their dairy herds and it will take a long time to build them up again. (3) National leaders are not production-conscious, and JAR sees no change in their attitudes.

JAR suggested that perhaps the RF should refuse to help a country increase its food production unless it were doing something about its population growth, but several present thought such a policy would not be acceptable to many nations.

RWR: ARID LANDS, NONCONVENTIONAL AGRICULTURE, AND ENVIRONMENTAL SCIENCES

The cultivated area of the earth is only about one tenth of the total land area. Arid lands amount to two or three times as much, or at least 7 billion acres. The RF has given considerable support to the Dry Lands Research Institute of the University of California. Progress there is slow, however, because they do not have the leadership they need. The RF is also supporting research at the University of Nebraska to study the physiology of sorghum in relation to stress factors such as drought and high temperatures. It is hoped that the knowledge gained in their research will be valuable in developing new varieties that will be more adaptable to arid zones.

Projects on the conversion of saline water are under way at the University of Arizona and in Northwest Mexico. It is feasible to use saline water for irrigation, and this has actually been done economically in the Negev. Degrees of tolerance to salinity vary, and the reasons are not known.

There are many possible uses for solar energy in some parts of the world, and outstanding work has been done in this field in Israel.

It is thought that with the right international reporting apparatus, capability for accurate weather prediction could be increased from the present 2 days to 30 days.

The work that has been and is being done on synthetic foods is interesting, but RWR said that most of them do not look very promising.

There is increasing interest in the U.S. in the environmental sciences, particularly in relation to pollution.

WEDNESDAY, JULY 27

JAP: DEVELOPMENTS IN ANIMAL SCIENCES

Although animal products are not absolutely essential in human nutrition, interest in animal sciences can be justified on the following bases:

1) Protein. The value of ingested protein is decreased if it is not properly balanced at the time of ingestion. Thirty per cent protein from animal sources and the remainder from plant sources make a good balance.

2) Animals can make use of certain sources of nutrients that would otherwise be wasted.

3) There are some areas of the world where agriculture is still in the pastoral stage and some where animals can do much better than crops.

JAP thinks the Foundation needs to develop guidelines for its work in animal sciences and some of his recommendations are as follows:

1) Research emphasis should be placed upon ruminants (dairy and beef animals, goats, and sheep) rather than on swine and poultry. The knowledge necessary for good swine and poultry production exists, and it is highly transferrable to different climates and conditions. Much research is needed, however, on growing ruminants in tropical areas where their fertility and reproduction rates are often very low.

2) In Africa, work in animal diseases is being emphasized and work in other areas - animal husbandry, nutrition, problems of reproduction, etc. - are being neglected.



3) The Colombian animal program has great training potential for all of Latin America. UJG said this would take five years and a considerable amount of money.

SW raised the question whether animal science programs should be organized by disciplines or species. Opinions differed. LMR said this question had been discussed by the Board of Consultants two years ago and no decision was reached.

RWC said there is a desire to build the Indian programs in veterinary and animal sciences up to an international standard of excellence. Funds will probably be available internally, but he believes the Foundation might be asked for technical assistance and guidance. RWC wanted to know what type of response he should make if he received such a request. JAP believes the opportunity ought to be explored because good research and training programs in India could have an impact in other countries with similar problems. SW said that the RF would certainly want to provide initial technical assistance and guidance but probably would not want to invest major funds on a continuing basis.

#### LMR & RWR: CURRENT INTERESTS IN LATIN AMERICA

LMR and RWR passed out copies of a financial summary of the AS program for 1941-64 and a list of the current AS appropriations in Latin America which they had prepared. (See attachment with the original of these notes.)

RF aid to agricultural education in Latin America is now focused on a few schools with the goals of setting standards and developing regional training centers. There are about six schools in Latin America



that offer postgraduate courses now, but there has not yet been an agricultural sciences Ph.D. granted in a Latin American institution, and there were only 35 master's degrees awarded last year.

There was general agreement that periodic lists of current grants would be helpful for directors in the field.

LMR: THE PROPOSED TROPICAL INSTITUTE FOR LATIN AMERICA

LMR and Dr. Lowell Hardin of The Ford Foundation are working on the second draft of the proposal for the new institute. It is planned that this institute will do research related to the problems found in the hot tropics of Latin America with an altitude of up to 1,000 feet; this includes 85% of the land area in this hemisphere. Cali, Colombia, is favored as the site, and the Colombian Government is highly interested.

The annual budget will be two million dollars in the beginning (one million for operating expenses, one million for staff), and might increase to three million later. The initial capital cost will be six or seven million dollars. It is hoped that a concrete proposal will be ready for presentation to the Trustees toward the end of this year.

Proposed areas of activities include the following: corn (a regional outpost of CIMMYT), rice (a regional outpost of IRRI), grain legumes, root crops, soils, tropical fruits and vegetables, plant protection, forage, and agricultural economics. It is planned to develop crop and animal programs simultaneously, with the emphasis in the animal program on ruminants and with division along discipline lines rather than species. It is also hoped that work can be done on human nutrition, food technology, and agricultural engineering.

JEB: ECONOMICS PROGRAM OF HSS

Dr. Joseph E. Black, Director for HSS, stated briefly the major things the HSS program is doing in economics, particularly in areas where there are also AS programs. He mentioned that the RF has economists in the University of East Africa, in Colombia, and in Bangkok, and will have one at the University of Ibadan next year. Water studies are being made in Arizona (which might prove useful in other arid zones) and in the great water basin of Africa.

JEB mentioned that he is concerned about the type of economics that is being taught in New Delhi. He fears that it is too much dictated by social ideology for a country with such a need for rapid progress.

There was a long discussion on the effectiveness of qualified economists in advising governments of developing nations. JEB said that because each country has a different power structure, it is necessary to have a different pattern in each country to get qualified people into a position to influence governmental decisions. Highly competent individuals are required for this type of role. They must have experience in the locality, they must have access to the most up-to-date information available, and they must have the personality and character necessary to gain the confidence of national leaders.

It was brought out that present-day agricultural economists are not trained for the type of work that needs to be done. NEB blames this on the specialization and lack of communication in today's universities.

SCHOLARSHIP PROGRAM: REVIEW OF POLICIES

Mr. Jesse P. Perry, Jr., Fellowship Officer, joined the group for this session.

Priorities and qualifications for the selection of scholarship candidates were discussed. It was generally agreed that intelligence and a social consciousness and willingness to contribute are extremely important. However, the question of the relative importance of an individual's qualifications and the relevance of his field of specialty to the Foundation's emphases remained unresolved. It was agreed that there is a higher payoff from those scholars who continue to have contact with RF staff and RF supported institutions.

RFC brought up the subject of granting scholarships to women. SW's opinion is that since there are more applicants than can be accepted, and since the probability of a women finding her way into a position of leadership in agriculture is less than that for a man, scholarships normally should not be awarded to women. RFC said that the situation varies from one country to another but that in the Philippines women continue their careers while raising their families, and he cited examples of competent Filipino women in high positions.

The procedures for the selection of scholarship candidates were outlined and discussed. When the interview reports come in, certain candidates are selected, the field director is informed, and those candidates are then given application forms. RWC was told that at this point he could notify GOI that the RF was prepared to consider awarding a scholarship, but of course it still must be approved by Central Administration in the New York office.

The New York officers were asked if they would be willing to interview candidates if the field directors wanted them to. SW said it was hoped that this would not be necessary.

It was brought out that it is becoming more and more difficult to get good student-professor relationships for RF scholars. U.S. universities are becoming more crowded and are not as eager to have foreign students as they once were. JWG suggested that it is good to encourage scholars to go to schools where the RF has good contacts and that it is also good to arrange for professors in those schools to visit RF programs.

UJG said that other foundations were offering many scholarships in Colombia, but he would still like the RF to grant some there to ensure that they get the kind of training they should have. NEB said he has been outlining study programs for Pakistani students who are studying on Ford Foundation scholarships. JJM said that RF and FF programs are being closely coordinated in Nigeria.

When asked if the RF were moving toward requiring prospective scholars to pass the TOEFL test, JPP replied that this was only because most universities will not now accept foreign students without their having attained a certain score on the TOEFL.

The follow-up procedure on scholars includes: (a) personal visits with the student and his major advisor, hopefully once a year, (b) grade reports which are routed to New York officers and sent to the field director concerned, (c) recommendations by advisors before the scholar can have his scholarship renewed, and (d) evaluations of the student's performance by his advisor at the end of his study program. JPP reminded all present that it is their responsibility to find out, when visiting any campus, if there are RF scholars there and to arrange to visit with them.

Field directors were urged to begin interviewing candidates for 1967 now so that the interview report forms can be sent in early. The New York officers asked them to be sure to include enough information on the forms to enable New York staff to argue a case if need be. JPP also warned field directors to be careful about recommending a student whose ability they doubted because an RF recommendation means a great deal.

Some dissatisfaction was expressed because the scholarship program has not produced administrators and leaders. This was discussed, and one suggestion put forth was that major advisors might be asked, when the student completes his studies, where they think he will fit in best and if they think he is a potential leader or administrator.

SW said the AS program probably would request an increase in scholarship funds next year.

#### HH: THE NEW RETIREMENT PLAN, REPORTS, AND BUDGETS

Mr. Herbert Heaton, Comptroller, described the Foundation's new retirement plan.

HH offered to assemble reports in his office for the smaller field offices if it would be helpful.

Field directors were requested to see that monthly activities reports for their staff are sent in more promptly.

Budgets for field programs are usually discussed in October at the time of the directors' meetings. This year they will have to be handled by correspondence. Since they must be in good order by the end of October, field budgets should be received in the New York office in early September.

It was decided to have next year's meetings in October, and the time was tentatively set for the first working week in October, 1967.

THURSDAY, JULY 28

JWG showed the group a slide and tape presentation about INIAP.

The rest of the day was devoted to matters that had not been fully discussed in the previous sessions.

Colombia: SW said he had met with Dr. Lowell Hardin of The Ford Foundation early that morning. Dr. Hardin had recommended that Dr. Gerald Trant, an economist recently hired by the RF to go to Colombia, be asked to help in the study that is planned for Colombia. Dr. Hardin also agreed to look over the Colombian proposal himself when it is near completion.

Extension: There is a great need for improved extension work. JWG suggested that the RF could find ways of stimulating other organizations to do it.

SW cited three things necessary for successful extension work: (1) The extension man must have a workable package of practices to offer to the farmer; (2) he must be technically competent to show the farmer how to use those practices; and (3) the required inputs must be available at a reasonable price when the farmer needs them.

RFC outlined what had been done at IRRI to get their discoveries to the farmers. A small group of young men were trained for a year and each of them went out and trained more men. They were brought back for two weeks' more training after they had been out in the field for about a year. In addition, IRRI frequently has one-day briefings for extension workers. Recently the Institute offered to give two kilograms of



IR 8-288-3 to every farmer who came, and this brought in over 1,000 farmers in a very short time. IRRI regularly has around 600 visitors a week.

It was generally agreed that too often the weaker agronomists and animal specialists are in extension and that those in the field need to be retrained. It was suggested that the RF might support the training of some extension workers in such places as INIAP and ICA for one to two years. It was also suggested that good, continuous in-service training ought to be organized.

The matter of the organization of extension services was discussed. It was pointed out that effective extension work has sometimes been done by researchers themselves (in Mexico, for example) and that perhaps it would be better to have extension and research services in the same organization. It was agreed, however, that changes in administrative organization would not help if additional training was not provided.

Other crops: SW asked if the group thought the RF should begin working on some other crops. Several grain legumes were mentioned, including:

1) Soybeans. NEB suggested that one man should be put in the tropics to work on soybeans. He thinks the right genes exist in Indonesian varieties. Soybeans are not included in the grain legumes program in India. RFC said experiments at IRRI in cropping patterns with rice indicate that this plant shows promise. It is also potentially important because of its high protein content.

2) Beans. EJW said that beans are important in Latin America and he thinks it would be possible to increase yields and protein content

greatly. Work on beans was an important part of the Mexican program in the beginning, ECS said, and yields in Mexico have been increased. The Colombian program has put out 6-8 bean varieties. The breeding program of Mario Gutierrez Gutierrez (Northern Zone, Inter-American Institute of Agricultural Sciences, Guatemala) was discussed. UJG and LMR think that the RF should support him even though his breeding program has not been very successful so far; he is a good breeder and he has been having great difficulties.

Sorghums and millets: Millets are important because they will produce under marginal conditions. They have great potential for arid areas, both for animal feed and for human use. RWC said Dr. Kenneth O. Rachie has found a wide range of protein content in millets in India. KOR has been asked to prepare a position paper on millets during his study leave.

There is work on sorghums under way in India, in Zaria in Nigeria, in East Africa, and in the Sudan. Dr. Vavich is looking into the Sudan sorghum work and will be reporting on it soon. The RF has recently made a grant to Nebraska to study sorghum physiology.

OS said sorghums are very important in East Africa, but that there is need for milling and food preparation work on them; AID is committed to do something in this field.

DP announced that the sorghum and millet bibliography would soon be ready for distribution. This has been prepared by the Biological Sciences Communication Project at George Washington University; the work has been supported by an RF grant.

LMR suggested that millets might not be as important as sorghums because they usually do not produce as well, and that sorghums, with work,



could be extended into marginal areas. He also suggested that sorghum work could be tied in with corn programs. RWC agreed that there is quite a lot of transferability between corn and sorghum, but there is little corn in the sorghum-growing regions of India. And KOR's work has shown great promise for millet yields. RWC said it might make much more sense to combine sorghum and corn research in Thailand than in India.

SW asked if there were a Latin who might spend some time working with Dr. Leland House in India and then be put at CIMMYT. EJW approved of this idea and thinks he might be able to find a man for this.

Annual Report: There are two major problems with this year's Annual Report: (a) the style and organization are being changed, and (b) many reports from the field are very late. Field directors were urged to get them into the New York office as soon as possible.

Travel grants: SW said the Foundation is now giving more careful consideration before awarding travel grants and that they can be a very good way of broadening the vision of leaders in developing countries and building enthusiasm for progressive agriculture in their countries.

UJG said he thought it would be good to award travel grants to outstanding individuals to enable them to present their theses at professional meetings. SW and LMR believe it is best to award travel grants in recognition of work done in their own countries after they have been back three or four years. They also pointed out that grants are not usually given solely to attend meetings, but usually include some other work the individual wants to do or see.

RFC and WRC asked that the tightening up of awards of travel grants not be made retroactive and thus cause embarrassment to field

directors by the failure of a request they had encouraged to be approved in the New York office.

International staff needs and young talent: The University of California has proposed the establishment of an international service faculty. SW said that programs proposed by universities do not provide the continuity of leadership abroad that is necessary for successful programs. Perhaps a better alternative would be an international service division of the USDA.

It was brought out in various sessions during the four days that the Foundation needs to identify young men with potential, watch them, and nurture their development so that leadership will be available when it is needed.

RFC said that several graduate students who worked on their theses in the Philippines have expressed a desire to continue in tropical agriculture. He also thinks it is good to send young men abroad on short-term assignments to enable them to find out if they would like to continue on a career basis. It was agreed that people should be encouraged to do their thesis work abroad.

Dr. James Quick has recently been hired for one year to work on sorghum in India with the understanding that at the end of that time he will join the staff on a career basis if both he and the Foundation want this arrangement. SW said it is hoped that short-term assignments of this kind will be an effective way of finding new talent.

RFC mentioned Dr. Gurdev Khush, a brilliant young Indian geneticist and breeder who is now working on tomatoes at the University of California, Berkeley. RWC and RWR said they had also heard very good

comments about him. RWR has corresponded with Dr. Charles M. Rick (Davis, California) about Dr. Khush, and Dr. Rick recommends him highly.

Dr. Randolph Barker, agricultural economist in the Philippines from Cornell, was mentioned. It is hoped that he can be hired for IRRI effective in September, '67.

RFC mentioned two other competent men in the Philippines from Cornell - two crop physiologists named Palmer and Heikel (spelling?) - who are interested in tropical agriculture.

Miscellaneous items: RFC asked if any of the other directors had troubles with rats. Over 22,000 a year are electrocuted in IRRI's fields. He hopes to get an FAO expert to work on this problem.

UJG said the men in animal sciences at ICA are overworked, particularly Dr. Ned Raun.

DP urged those who are developing new programs to keep detailed records from the very beginning for use in the future if histories of those programs are written.

In his concluding remarks to the group, JGH urged them to consider carefully what is important and what is marginal, and to look for ways of getting other organizations to do things so that the Foundation can accomplish as much good as possible with its limited resources.

9/19/66

gm