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REPORT OF THE JOINT U. S. A. /GHANA
COMMITTEE ON AGRICULTURAL EXTENSION
AND RESEARCH

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NATIONAL ACADEMY OF SCIENCES OF THE U. S. A.
COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
UNIVERSITIES OF GHANA

ACCRA: OCTOBER 1971

REPORT OF THE JOINT U. S. A. /GHANA
COMMITTEE ON AGRICULTURAL EXTENSION
AND RESEARCH

"Formal report prepared by the
Ghanaian Council for Scientific
and Industrial Research."

P R E F A C E

Ghana is a nation undergoing severe pressures for rapid adjustments to achieve increased production for internal requirements in internal and world trade. The traditional cultures, concepts of land tenure, languages, and basic reliance on subsistence farming are being challenged by a world which emphasizes commercial farming, mechanization, fuller utilization of resources, and rapid change.

The nation's understanding of its economic problems has been evident in all sectors of the economy. In agriculture, institutions for research, teaching and extension have been built. Constant advances in technology at the farm level are being made. However, the assignment given to this Joint Committee recognized that the mechanisms which have been built in government for the translation of results of agricultural research to the benefit of the Ghanaian farmer are inadequate.

The Committee has necessarily dwelt in its study on a critique of the system. Numerous reports from diverse sources (Ministries of Agriculture and Economic Planning, USAID, FAO, private consultants and graduate theses) have been reviewed. No doubt many more exist that would have been useful. (See Appendix 1).

Basically the Committee has endeavoured to recommend a programme of agricultural services. If followed on a long-term basis, this will evolve a system of extension which will increase agricultural productivity and enhance the well-being of the farmers.

In the process of making the recommendations the Committee has endeavoured to utilize to the extent possible the existing structure of the Ministry of Agriculture. Careful study of the programme will also show that a large portion of Ministry personnel will stay within their present work units.

In studies of this nature it is inevitable that attention will be focused on problem areas such as weaknesses, deficiencies, and working relationships. We recognize that we have not been able to give much attention to the more successful aspects of the Ministry's present programmes. It is hoped that the recommendations contained in this report will, if effectively implemented, lead to a stable and more productive

programme of agricultural services. The over-riding consideration must be to keep the basic organization proposed as a stable unit, with regular review to make the flexible adjustments of programme as circumstances require.

This Committee feels that the potential opportunities in agriculture in Ghana are so great that a failure to seize on these opportunities now with constructive action will be a great disservice to the country.

DONALD W. BARTON

C. E. TAGOE

8th October, 1971.

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PART I - KEYNOTE ADDRESSES AT INAUGURAL MEETING
HELD IN THE CONFERENCE ROOM, C. S. I. R.
SECRETARIAT, ACCRA, MONDAY, 27TH SEPTEMBER, 1971

WELCOME ADDRESS BY MR. M. DOWUONA,
CHAIRMAN OF THE C. S. I. R.

It is both a privilege and a pleasant duty to welcome here the Hon. C. Safo-Adu, Minister of Agriculture, who has kindly agreed to inaugurate his Committee, His Excellency Mr. Fred I. Hadsel, the U. S. Ambassador in Ghana, and the members of the Committee assembled here to study in some depth Agricultural Research and Extension in Ghana, as well as those other persons who have responded to our invitation to attend this meeting. I wish to extend a special welcome to the members representing the National Academy of Sciences of the United States of America. This Academy, as you are aware, in partnership with the Council for Scientific and Industrial Research and the Universities of Ghana, organised a Workshop last January on some problems of research in Ghana. As a result of this Workshop, it was decided to set up two Committees to study more fully two problems, of which Agricultural Research and Extension is one, the other being the formulation of science policy. The specific terms of reference of the Extension Committee, which have since been formulated are as follows:-

1. To study in depth the organisation and methods for agricultural research in Ghana, including the structure of relevant agencies, research-extension relationships, agricultural education of extension personnel and the processes of communication.
2. To analyse agricultural extension in Ghana into its main elements and goals.
3. To consider how far the objectives are being achieved and in the light of the examination, recommend ways in which the missions and goals of agricultural extension can be most effectively accomplished, and, in this connection, recommend the role of agricultural stations in extension work.
4. To consider and recommend machinery for a continuing process of evaluation of the effectiveness of agricultural extension.

We hope this Committee will be as successful as its parent Workshop itself, and that definite practical results will come out of its work.

Since the Workshop was held in January this year, the C. S. I. R., in co-operation particularly with the Ministry of Agriculture, has organised symposia or group discussions on the problems of the use of research results in furthering the development of this country. More specifically, a Reference Handbook on agricultural practices relating to a number of crops, which has been in preparation for some months, has been completed. This Handbook was launched by the Hon. the Minister of Agriculture, Dr. K. Safo-Adu, at the end of the Symposium on Crop Research and Extension held in July this year in Kumasi. We hope that the Reference Handbook will become the standard reference book on the subject for those who are interested in growing the crops dealt with in it, and that it will be brought up-to-date from time to time as dictated by further research results.

Curiosity, ability to acquire or assimilate knowledge and a capacity for action are three essential elements in human progress. In the particular field with which we who are gathered together here are concerned, namely, extension work particularly in agriculture, these three elements are as important as in any other sphere of human endeavour.

Each of these three elements forms part of the make-up of normal human beings. It is they who would feel curious, it is they who can acquire meaningful and purposeful knowledge, it is they who can initiate action aimed at achieving a definite objective; so no matter what organisation we set up, unless we have people who are desirous to acquire knowledge and are prepared to turn this to constructive purposes, we shall get nowhere. It is the quality, determination and stamina of our people which will help them to bring about those changes that will revolutionise our agriculture or any other aspect of our economic activity. The word extension has been used to denote the process whereby knowledge is turned into action and practical activity and we must bear this point in mind in all our discussions.

The materials bearing on the subject of study of the Committee were collected and sent, some weeks ago, to our overseas visitors who are here; and these materials have also been assembled together for our Ghanaian participants. We hope that these will prove useful to them in getting as good an idea as possible of what has been happening here in the field of agriculture, and perhaps also of what remains to be done.

The problem of communication between research workers and those who are actually working in the field in agriculture, or industry for that matter, is of universal concern, and it is doubtful whether in the most developed and advanced countries the problem has been completely solved. That is all the more reason why we in the developing countries, bearing in mind the experience of the developed countries, should be very much alive to the problem. We should therefore leave no stone unturned, which will help in the building up of a satisfactory and efficient machinery for putting valid research results to practical use for the development of our countries.

This objective cannot, however, be achieved by the mere setting up of any formal machinery or organisation or by a series of conferences and meetings only. Granted that our people are eager to learn and willing to put their new knowledge into practice, what is needed above all is knowledgeable people, imbued with a sense of mission, and who have also the capacity for getting people in the respective fields of their work, to make use of new knowledge and methods which will improve their performance. Such people should also be able to demonstrate beyond all doubt the effectiveness of the new methods and approaches which they advocate. Therefore the proper training of the right type of extension personnel is an extremely important element in any move to develop extension work; indeed it is a sine qua non.

A second element, still on the human plane, is the active co-operation of various groups in this endeavour - administrators, scientists, extension workers, farmers and industrialists, both large and small.

There is no doubt in my mind that in this world of ours, it is people and ideas which bring about change. At the same time I am also convinced that these changes can be brought about more quickly, if people work in concert and, in my view, this is one of the elements which is lacking in the moves to bring about changes in our country. Much useful work was done about ten or even twenty years ago in the field of agriculture to help improve agricultural practices; but even then there was concentration almost entirely on those products which are meant for export. Hardly any attention was paid to the better growing of the foodstuffs with which to feed the population; and so we need to turn our attention more to this sector in the revived Extension Division of the Ministry of Agriculture. I personally would urge the Committee not to spend much time in going over the historical ground and showing why there has been

no extension work of any significance in recent years, but to start from the present position where the Extension Division of the Ministry of Agriculture is being revived and show how, in the light of the relevant experience elsewhere, the Division can be made as effective as possible.

The rapport which has been established between the C. S. I. R. and the Ministry of Agriculture should enable us to make very much more progress than before. The terms of reference of the Committee are, I think, clear and precise and we hope that the report of the Committee will constitute a landmark in the agricultural development of this country.

I would end by extending once more a warm welcome to all of you who have come from far and near, and by calling on the Hon. Minister of Agriculture, Dr. Safo-Adu, who is no stranger to us and therefore needs no formal introduction, to inaugurate this Working Committee on Extension, with particular reference to agriculture.

**ADDRESS BY THE HONOURABLE DR. K. SAFO-ADU,
MINISTER OF AGRICULTURE**

Almost exactly eight months ago, I had the honour to be present at the opening of the Workshop on Research Priorities held in this very hall, and to address a distinguished gathering of scientists, scientific administrators, Deans of Faculties and heads of university institutions from both the United States and Ghana. The Chairman of the Council for Scientific and Industrial Research, Mr. Dowuona, has been kind enough to send me copies of both the Summary and the Full Report of the Proceedings of this important Workshop.

The Workshop idea, as exemplified in the published Proceedings, and in this follow-up on agricultural extension, is, to my mind, a novel and imaginative approach to the problem of fostering meaningful collaboration in the field of science between an advanced, highly-industrialised country like the United States and our relatively small young nation where an articulate scientific community is only just beginning to emerge.

When in July this year, I had occasion to address a meeting of research and extension workers at Kumasi, I confessed to some scepticism as to the usefulness of the omniscient expert who is every now and again inflicted on us by some international agency or other, or perhaps more accurately, whose services we ourselves request. This type of expert, supposedly gorged with encyclopaedic knowledge, has so often in the past claimed - sometimes in a matter of days - to have diagnosed all our economic and social ailments, and has thereupon confidently proceeded to prescribe the medicaments and the therapeutic measures required to deal with them for good and all. The fact that many of the ailments in question are still very much with us provides enough basis for passing a judgement. But perhaps the fault may lie with us: perhaps we did not follow their prescriptions to the letter and to the last drop.

In my talk at Kumasi, I contrasted this type of expert, the teaching-expert, as I call him, with the doing-expert, the expert who comes to work with us "with clay on his boots". I would classify our American friends who are with us here to-day in the latter category. Of course, the teaching-expert and the doing-expert are not necessarily sharply distinguished, and the picture I have painted of them is to some extent a caricature. But like the caricatures of the cartoonist my portrayal is intended to emphasize some simple home-truths. Also, I must not be misunderstood as failing to appreciate the fact that there are men who have developed special competences and expertise -

specialists from whom we in Ghana have much to learn. I need not belabour the point that in certain highly technical areas the necessary expertise is wholly lacking in Ghana or is not yet adequately developed.

I don't know whether these impressions of mine would have been different, if my Ministerial responsibility in the present Government was something other than agriculture. As some of you may know, I am by training and profession a medical practitioner and a physiologist, and only a politician by accident. Nevertheless, after two years in office, I have been able to form some fairly definite impressions about our agricultural problems.

Our agricultural problems are not simply technical problems which can be solved in vacuo, so to speak, or out of context. Indeed, when you are dealing with traditional agricultural practices, whether with a view to improving them or replacing them with methods considered superior, you are tampering with an entire social system. This is something which our omniscient expert does not often realise or take into sufficient account. I am not even sure whether many of our foreign-trained Ghanaian agriculturists fully appreciate this. Thus, very often, what is identified as a single problem often turns out to be closely interwoven with a congeries of other problems immediately hidden from view and which administrators and those in Government ignore at their peril. The agricultural sector in Ghana, as perhaps in many other parts of the world, is a tricky marsh frothing forth unforeseen problems just when you think you have mastered an important problem.

Some schemes which were undertaken in the past, and which came to naught, have proved in the afterlight to be incredibly simplistic in conception, just because they were divorced from an entire gamut of problems which claimed equal attention. Scheme upon scheme which filled their originators with optimism and inspired people to heroic efforts had foundered in the past because due account was not taken of traditional customs and practices, or of political imperatives, or of the need for certain managerial and technical skills, or even of petty jealousies and antagonisms between local rival institutions.

Often it was assumed that, just because a particular agricultural pattern had achieved spectacular success in the U. S. S. R. or the U. S. A. or the

United Kingdom, it could be adopted wholesale in Ghana. The losses incurred as a result of the abortive mechanisation programme, the State Farms and similar ventures in the First Republic must be reckoned in tens of millions of cedis. It is to be hoped that we have learnt the necessary lessons from them.

The idea of a joint Workshop in which non-Ghanaian experts collaborate with Ghanaian experts to tackle local problems seems to me a far more sensible and realistic approach. And it would seem to me also that a great deal of preparatory work has been done to make it reasonable to hope that the work of the present Joint Committee on Extension will yield fruitful results.

First of all, the Workshop last January covered a good deal of ground. We had with us a dozen or so scientists from the U. S. A. - all of them, experts in their particular fields of interest. They came here avowedly not to tell us what to do, not to prescribe ready remedies, but to listen, comment, ask questions, offer suggestions, describe experiences in the U. S. A. , in Argentina, in Brazil, in Colombia, in Mexico, in India, in Pakistan, and so on. And because there was high-level local representation from the Universities and the C. S. I. R. , it was possible to have discussions in depth. The published Proceedings of the Workshop is, in consequence, a most valuable document which deserves careful study by all concerned with policy and decision-making in the fields of scientific research, university education, and agricultural and industrial development in Ghana. Those of our American friends here who did not take part in the Workshop will no doubt have briefed themselves from these Proceedings.

Attesting to the highly relevant nature of the discussions is the fact that the Workshop was able to identify, for the next phase of the U. S. A. /Ghana collaborative venture in scientific research and development, two of the most important problem areas which demand vigorous action if scientific research is to make any impact on the economic and social progress of Ghana. The first of these, as you know, is the problem of how to set about formulating research priorities so that they answer to the requirements of national economic plans and objectives, as well as give the necessary technical leads which would guide future Governmental development policies. The realistic and effective delineation of research priorities in the context of nation economic and social objectives is an imperative prerequisite if research is not to degenerate into the whims and fancies of individuals, or the fads and fashions prevailing at frontier-line research in the advanced countries. Whatever

grain of wisdom there may be in the dictum "knowledge for its own sake", I am convinced that research which is avowedly prosecuted in the interest of national and economic objectives, but which, nevertheless, is not responsive to national aspirations must be adjudged worse than useless in relation to its stated objectives. We must get our priorities mapped out as clearly and as realistically as the available information allows.

Now, when the priorities have been defined it does not follow that the results which eventually flow from the laboratories will be automatically applied. Indeed there is always the real possibility that the very information which is required to impart dynamism, life and motion to our development, may find its last resting place in dusty files and shelves. The communication of research results to producers, i. e. extension, understood in the broadest sense, is clearly of the most crucial importance. And I am happy that the Workshop identified agricultural extension for intensive study.

As further evidence of the preparatory work which has been done for the present joint programme on extension, I recall the visit to Ghana not long after the Workshop, by the Chairman of the U. S. team and an official of the U. S. Academy of Sciences, during which they conferred with many of the key persons in the field of agricultural research and extension in Ghana. I am also informed that members of the Working Party have been supplied with the relevant background documentary material, and also that the programme which has been drawn up includes field trips. There is little doubt that you are tackling this assignment very earnestly.

I am pleased to note that the ideas contained in the preamble to the recommendations of the Workshop Committee on Extension do not differ in all essentials from the conclusions I have formed during the past two years. In particular the idea of a total or co-ordinated approach to extension which this Working Party has been charged with evolving is entirely in accord to my own line of thinking. Indeed I find your terms of reference unexceptionable; and the sense of urgency implied in the timetable laid down for the present Workshop is highly appreciated.

My Ministry has set in motion several schemes in the field of food production, marketing and extension, some of which, I am happy to say, have been done in collaboration with the research institutes and the universities. I am sure you will acquaint yourself fully with my Ministry's current schemes and future plans and take due account of them in making your recommendations.

I do not intend to go over the details of our present and future programmes. My officers will be pleased to provide any information you require in this connection. There are, however, a few observations I should like to make since they tend to be glossed over whenever extension is being discussed.

It can be misleading to ask the simple question "What is your Ministry's programme for extension?" This question does not lend itself to a ready and simple answer. If you are told that currently we have 500 extension officers attempting to reach 5,000 farmers, that is only part of the story. There are several large schemes under my Ministry with extension aspects to them but which are not often referred to as such. Cocoa is the most conspicuous example. Some of our programmes for rice, maize, oil palm, rubber, poultry, livestock, fisheries - all include important extension-type activities which hardly receive attention in discussions on extension. For even though I said a little while ago that I favoured a total and co-ordinated approach, I must not be construed as necessarily implying a monolithic, highly-centralized extension organisation which aims at catering within one framework for every single farm crop and animal. On the contrary, several semi-autonomous commodity boards have been set up by legislative instrument within the last few years (Tobacco, Grains, Cotton, Bast Fibre, Fishing, Poultry) and more are contemplated (Sugar, Cattle etc.) and this policy is a deliberate attempt to encourage some specialisation and extension in depth within the Extension Division of the Ministry. This monocrop type of extension specialisation is proving very effective for us. There are of course obvious dangers here but whatever these are they do not encourage over-centralised monolithic type of organisation. And yet it is of the utmost importance that all the various extension activities be identified and be seen as parts of a meaningful, well-defined overall pattern.

It is the ultimate aim of my Ministry to ensure that all individuals and agencies engaged in farming who need information, guidance and advice get them. Our extension programme must ultimately cater for the big plantation owner, the small farmer who cultivates just one crop as well as for the traditional peasant farmer who grows several basic staple crops on a small holding, and keeps in his backyard a stock of poultry, sheep, pigs and other farm animals. And we shall need the total support and co-operation of our research institutions and the Universities in this enterprise. The recent publication of a Handbook on Crop Production marks a significant stage in our joint effort.

One impression I have formed - and I have said this on several occasions - is that our agriculturists' knowledge of the practices and methods of Ghanaian peasant farmers is on the whole superficial, and their attitude, generally supercilious. The farmers, on their part, do have their own views about our agriculturists, which are not always very flattering - sometimes, not without justification.

We should never lose sight of the fact that it is the Ghanaian peasant farmer on whom we have depended all along for our cocoa production and for all our basic staple foods. Research can never make its proper impact if research workers do not have a thorough understanding of the needs of the peasant farmer, what his constraints are, what limits his productivity. Research projects which are conceived without reference whatsoever to the actual needs of the farmer in mind may yield interesting results but may prove of little interest to me as the Minister of Agriculture. No doubt many of the techniques of the peasant farmers are primitive, but we cannot hope to improve them unless we know thoroughly what his techniques are and why he uses them. On the basis of my experience so far, I do not subscribe to the view that the peasant farmer cannot be persuaded to adopt more sophisticated techniques. The important thing is that these techniques must be shown to work, and the farmer must be convinced that he stands to gain in hard cash by adopting them. That is why I attach so much importance to trials and demonstrations on farmers' farms.

The fact that I emphasize the needs of the peasant farmer, however, does not mean that I do not believe in big sophisticated agricultural schemes. As a matter of fact, we have several large schemes with considerable financial backing in progress and more are planned for the future. But I believe that if we are to make the necessary break-through in agriculture, large-scale schemes must be undertaken hand-in-hand with measures designed to improve the productivity of Ghana's millions of peasant farmers and to widen their economic horizons.

In concluding, may I express the hope that the businesslike and objective approach which has so far been displayed will be maintained in this new joint U. S. /Ghana Workshop. I should like to express my appreciation for the serious and imaginative manner in which our American friends are collaborating with us. I am particularly cheered by their confidence in our ability - which is one of the things which impressed me as I read the Proceedings of the Workshop. I am not referring to explicit statements by any of the participants but rather to the general attitude which

emerges and the implications of some of the statements made by the participants. For instance, when Dr. Roger Revelle of the U. S. Academy expresses the positive conviction that in 15 to 20 years' time Ghana's energy requirements would be about 5 times her present total hydro-electric potential, and Dr. Harrison Brown concurs, or at least speaks in a similar vein, I find their statements not only interesting and important, but I am overwhelmed by the implied expression of confidence in our ability as a people and as a nation to develop at such a phenomenal pace. This is in refreshing contrast to those who would like to see Africans remain permanently as noble savages only fit for the hewing of wood and drawing of water.

I look forward to receiving a copy of the recommendations of the Working Party in the near future. And I hope that as a result of this joint project, the co-operation between our research institutions, the Universities and my Ministry will grow from strength to strength; and also that we can look forward to more joint programmes with U. S. scientists.

ADDRESS BY DR. DONALD W. BARTON, DIRECTOR,
NEW YORK STATE AGRICULTURAL RESEARCH
EXPERIMENTAL STATION (CORNELL UNIVERSITY),
GENEVA, AND LEADER OF THE U. S. PANELISTS

I regret that we did not know the content of Dr. Safo-Adu's address before we came. We would have worn our shoes from yesterday with good sod from Dawhenya, Kpong and New Aiena on our feet.

I speak for all of the representatives from the United States when I say that we consider it both a pleasure and an honour to join you in this two-week review of research and extension in Ghana. Dr. Harrison Brown, Victor Rabinowitch and Norman Brown, members of the Academy staff who were here for the January Workshop, send you their regards and best wishes that fruitful conclusions may be reached by this joint study.

It is a great personal satisfaction for me to enjoy your hospitality for the third time this year. Each time I have seen new opportunities for significant agricultural development in Ghana. The reception, preparations, and proceedings of the Workshop prepared me for great expectations.

Our presence here is a reflection of a partnership interest that the U. S. National Academy of Sciences and USAID have in fostering the role of science in national development. This interest resides not only in Ghana, but also in a number of other developing countries. Some have very similar problems, but each country has a uniqueness that defies a stereotyped plan.

National support of science in any country, developed or developing, is not abstract. It is given with a pragmatic interest, because science is important for both educational and technological development. While governments may foster to varying degrees both basic and applied approaches to the sciences, their needs are best served if both basic and applied research have practical value. If this is correct, the advancement of science will be more adequately supported by governments if technological progress is both demonstrable, and shown to be a consequence of research.

Thus, hand in hand with scientific thought must come technological development. There must be an integration of the findings of research and the experiences of the past in synthesizing new pathways for the future. This integration is made easier and faster through the functioning of an

effective organization devoted to the extension of knowledge to those people who can put the learning into use. The use may be economic, social, educational, or cultural. It is particularly true in the agricultural sector that science and technology must be linked together through a mechanism of extension education.

The triumvirate tie, research-teaching-extension, should be a two-directional function in each of its relationships. Research should serve and draw on both teaching and extension; teaching should serve and draw on resources from research and extension, and extension should effectively communicate to and receive information from the teaching and research functions.

There is nothing new or novel in these concepts. They should apply whether one is in Ghana, the United States, Australia, or Timbuctu. (There is a usage in our country, dating back many years, of Timbuctu being about as far out as one can get. I suspect that this is no longer true!)

The triumvirate interaction of research, teaching and extension has been stressed. It is important that there be an absolute responsibility for establishing, strengthening and reviewing this relationship. It needs constant attention, is never stable, and it must respond to the changing requirements of society. With proper guidance, these interactions can have a profound effect on agricultural education, the impetus and direction of research, and the content, effectiveness, and methodology of extension. These can bring team resources to bear on key needs for the fruition of the national economic plan.

With this philosophical introduction, we can turn to the reason for our joint study. At the Workshop on Research Priorities and Problems in the Execution of Research in Ghana, held in Accra in January 1971, the Ghanaians presenting papers, as well as those participating in the discussion and committees, expressed concern about the relationships of extension with teaching and research, and about the ultimate goal - effectiveness of its communication at the field level. Since your current economic plan places great emphasis on agricultural development, the primary concerns have been related to the extension process in agriculture.

You all know the content of the recommendation. The goals of our present study are :-

1. To study in depth the organization and methods for

agricultural research in Ghana, including the structure of relevant agencies, research-extension relationships, agricultural education of extension personnel, and the processes of communication.

2. To analyse agricultural extension in Ghana into its main elements and goals.
3. To consider how far the objectives are being achieved, and in the light of the examination, recommend ways in which the missions and goals of agricultural extension can be most effectively accomplished, and in this connection recommend the role of the agricultural stations in extension work.
4. To consider and recommend machinery for a continuing process of evaluation of the effectiveness of agricultural extension.

Obviously, the goals are ambitious ones. They do not allow time for extraneous matters. Thus, it is clear that we need not be concerned with subject matter content of either research, education, or extension. We are concerned with mechanisms, working relationships, responsibilities, definitions and communications.

I am sure that I speak for the U. S. component of this study when I say that we come with no preconceived ideas about what the recommendations will be that are jointly conceived with you. We have endeavoured, with our small group, to broadly represent extension, international agricultural development, communications, research, agricultural education, and six agricultural disciplines. We feel humility in the fact that our background on Ghana is limited. At the same time we consider it a privilege to associate with men of your distinction, who have such a wealth of education, experience and service in Ghana.

We want particularly to stress the following points. You know the strengths and the weaknesses in your current working relationships. You know solutions, or alternative solutions to many of these problems. You know a lot about what is practical and feasible. It is our hope that we can interact effectively in this joint study. The key to a successful conclusion will be the frank and constructive interchange of views on alternative solutions to the matters under review. Let us draw on strengths where

they exist, let us recommend relationships where they are needed, and above all let us keep the interests of Ghana at the heart of our deliberations. We must not allow ourselves to think that the subject of this review is the key to solving all of the agricultural problems in Ghana. We should agree, however, that it is a vital part of the total picture.

PART II - REPORT OF THE COMMITTEE ON AGRICULTURAL
RESEARCH AND EXTENSION

INTRODUCTION

In January 1971, a Workshop on "Research Priorities and Problems in the Execution of Research in Ghana" was held in Accra. This Workshop was organized jointly by the Council for Scientific and Industrial Research, the Universities of Ghana, and the National Academy of Sciences of the U. S. A. The Proceedings have been published as Part I: Summary, and Part II: Full Report.

The present study on agricultural extension had its origins in the recommendations made by the earlier Workshop. Its definition may be found in Part II, page 256, which is the Report of the Sub-Committee on Extension:

"The committee deliberated on agricultural extension and the various questions relating to it that were posed in the Workshop session of January 18th. One problem identified was the fact that extension-type activities exist in the Ministry of Agriculture, the Research Institutes, the Universities and other Government agencies, but no central co-ordinating mechanism exists at this time. A second problem is that the objectives of an agricultural extension programme for Ghana should be broader than the narrow parameters confining the attention of the Ministry of Agriculture to the farm sector while the Ministry of Trade attends to the agricultural inputs, industries and the food processing and food marketing industries. A systems approach in extension will become more essential as agriculture develops, and the recommendation limiting the objectives of extension might not serve long-term goals of agricultural enterprise. The committee's conclusion was that the resolution of a set of recommendations on agricultural extension in Ghana must (1) encompass the total need, and (2) have carefully thought-out conclusions as to how the recommendations can be implemented.

The committee recommends that:

1. A joint U. S. /Ghanaian working group be established to study in depth the present and future needs for extension in Ghana and the

relationship of these needs to the existing organisational structures performing some of the extension functions.

2. The working group should be asked to make recommendations on the most effective and feasible co-ordinated extension system for Ghana that will accomplish the defined objectives, including training and recruitment of personnel, research and extension feed-back, the national network of extension personnel and essential communication and working relationships with the total agricultural enterprise.

3. It is recommended that the working group be composed of five members from each of the national sources representing the interests of teaching, research and extension. The Ghanaian team should be composed of representatives from the Universities, the Research Institutes, the Ministry of Agriculture, the Ministry of Finance and Economic Planning, and the Ministry of Education.

4. The working group should be encouraged to study other extension organisations as well as that of the United States, and, if necessary, meetings should be scheduled in both countries to ensure a comprehensive review of alternative systems.

5. The urgency of need for a co-ordinated extension effort is such that a time schedule should be established calling for a report from the working group within one year.

6. The report should be directed to the C. S. I. R. , the Ghanaian Universities and to the National Academy of Sciences, U. S. A. with the request that it be brought to the attention of appropriate authorities."

In July 1971, a symposium on crop research and extension was organized in Kumasi. This was sponsored jointly by the Ministry of Agriculture, the C. S. I. R. and the Universities at Legon and Kumasi. This symposium offered constructive suggestions for the improvement of liaison and was a strong initial step toward strengthening C. S. I. R. , University, and Ministry relationships.

The C. S. I. R. , the Universities and the U. S. National Academy of Sciences organized the current study, drawing on broad disciplinary

representation in the background of the Committee members, as well as significant experience in international problems involving research, teaching and extension relationships in agriculture.

The study has proceeded within the terms of reference defined earlier by the C. S. I. R. and the N. A. S. , and stated by Dr. Dowuona in his opening address. * To orient and educate the joint committee, field visits were made to settlement areas at Dawhenya and New Ajena, to the Cocoa Research Institute at Tafo, to the University of Ghana Experiment Station at Kpong, to the Cocoa Rehabilitation Project at Suhum, and to the Ministry of Agriculture Training Centre at Bunsu.

The committee conferred with individuals representing the entire range of agricultural activity - including farmers, Ministers and donor organizations. Although these individuals and organisations are not listed the committee wishes to express its appreciation to those who participated.

EXTENSION PRINCIPLES AND PHILOSOPHY

In all parts of the world, extension programmes are operating to help farmers, their families, and national development. These programmes are based on certain principles and a prescribed philosophy. The following paragraphs give a brief summary of these principles and philosophy which make extension teaching successful around the world.

Extension is teaching rural people useful facts and new research findings. It helps them make their own decisions, design their own plans, and carry out these plans. It is a programme to help the farmer help himself. This makes it possible for the farmer to adopt modern farm methods by himself after the extension agent has gone.

Rural people learn best by doing; so learning by doing is a basic teaching method of extension. They learn best when the same lesson is repeated several times using both the ears and eyes to capture the message. Teaching methods must be varied and repeated in different ways and at different times. The extension worker must have the best teaching aids available to instruct rural people quickly and effectively.

* See Page 3.

Every problem that is big enough to affect a group of farm people is big enough to have a leader. This person, called a volunteer leader, serving without pay, aids the extension worker in teaching the group. Ideas passed on through the people's own leaders and organizations are more easily accepted. Thus elders, chiefs, and other leaders must be used extensively in agricultural extension work.

Extension work must take into account the conditions as they exist and be presented at a level understandable to the farmer. The culture of rural people must be studied by the extension officer so that he can work with that culture and not be in conflict with it.

By getting most people in a locality both concerned and involved in the local programme, extension gets all to take part in the action and share the responsibility for it. Rural people should be involved only in actions which promote their own welfare. It is not wise to attempt anything that is impossible to accomplish within the resources of a given rural community. Therefore the pace and goals of extension work should be decided with the help of the rural audience which extension serves.

Rural people should always learn improved agricultural methods through a plan and a programme. That same plan and programme must always be built by the rural people themselves. Their will, their needs, and their wishes must make up this programme. This local extension programme must have balance and emphasis. It can be rigid in its main goals but flexible enough to adjust to changing conditions and still not lose sight of the main goals.

Trained extension specialists should be employed to find solutions to local problems and provide information on skills to overcome them.

Success of extension work depends on the confidence, dedication and extra endeavour of the extension staff. The satisfaction of doing effective extension teaching lies in the amount of knowledge or skills that the extension officer can pass on to the rural people he serves.

An extension programme is voluntary. Thus, rural people have to be persuaded and taught in ways that are different from regular school methods. Appeal must be made to all the five senses - sight, sound, feeling, taste and smell. The extension officer needs the strongest support possible

from information specialists so that he can use the best oral, printed and visual teaching materials available. The extension officer must be continually instructed on how, when, and where to use these teaching materials.

Offices of extension information should be established at the several levels of operation and staffed with well-trained people to write and print bulletins, make visual aids, and issue timely releases for use by press, magazines, radio and television.

ESSENTIALS FOR AN EXTENSION PROGRAMME IN GHANA

In considering what a Ghanaian Extension Programme should be the following basic elements and goals are important:

- (i) There must be clear lines of authority from the top of the organization to the field staff and proper delegation of authority at every level. Without clear definitions of responsibility and role no organization can function at maximum efficiency.
- (ii) Clear lines of communication both up and down the organization must be established and kept open.
- (iii) There must be budget support and commitment from the administrators.
- (iv) There must be proper training and permanency of staff. Such training should include technical agriculture as well as extension methods, philosophy of extension etc. The dedicated worker of long tenure is the most productive. More in-service training is needed.
- (v) There are many agencies attempting to do extension work in Ghana. The main objective is to help farmers and their families improve conditions and productivity. In order not to confuse the farmers but to render efficient services to them, proper co-ordination must be effected. Extension should bring together those agencies that can help in the process of education and change.

- (vi) Extension must interpret scientific information into farmers' language. In like manner, extension must interpret farmers' needs to researchers.
- (vii) Highly trained extension specialists working with research institutions and local agents can bring into use much research information that would otherwise not be available to farmers.
- (viii) Production programmes and practices being recommended to farmers should be subjected to economic analysis to determine if their adoption will return a profit to the farmer.
- (ix) Good teaching tools must be made available to extension workers.
- (x) Adequate travel and transportation budgets and facilities are essential elements for the successful operation of the field staff.
- (xi) Farmer involvement in identification of problems and in programme development at the local level is an essential ingredient.
- (xii) The ability of extension workers to live among the rural people and to speak their language will speed the learning process.
- (xiii) Extension workers must be free from service responsibilities if they are to conduct an aggressive educational programme. But at the same time services must be closely co-ordinated with the programme at the local level.
- (xiv) There should be a reasonable ratio of extension workers to the farmers they serve.

THE PRESENT POSITION OF AGRICULTURAL EXTENSION IN GHANA

Ghana owes well over 90 per cent of her agricultural production to the small land-holder. He is likely to continue being a major factor in the country's farming activities for several decades. It is therefore to him that much of the agricultural extension programmes must be directed. A full appreciation of his psychology and attitudes is crucial for the success of extension activity.

To-day many farmers feel they are getting no service from extension workers. Some have never seen an extension worker and those who have come into contact with one often complain that he has no useful service to extend to them. This situation where there is little or no effective contact constitutes the basic cause for the failure of extension activity in Ghana and is responsible for the low repute of these services among farmers and others.

The more important elements retarding progress of the present system of extension are identifiable and are listed as follows:

- (i) Poor organization.
- (ii) Personnel problems.
- (iii) Inadequate training of personnel, especially those working at farm level.
- (iv) Poor educational support.
- (v) Poor logistics.
- (vi) Inadequate co-ordination and integration with other agencies.
- (vi I) Inadequate programme planning and strategy.

Organization

Agricultural services, research and teaching are now located in separate ministries and agencies and lack effective communication and co-ordination. An urgent need is for frequent and two-way communication between research and extension.

The Ministry of Agriculture has overall responsibility for the organization and direction of extension activities. But structural upheavals in the Ministry's organization since 1962 have tended to be too frequent. This has reduced staff stability and the continuity of extension programmes.

Apart from the Cocoa Division which maintained its own extension programmes in close liaison with the Cocoa Research Institute, the Ministry's Division of General Agriculture was responsible, until 1962, for all other agricultural extension and services. This arrangement was reasonably successful until it was replaced by the present system in which no fewer than 12 specialized divisions have been established within the Ministry. While successful in many of their activities, they do engage separately and without effective co-ordination in some form of agricultural services. These divisions are Crop Production, Animal Husbandry, Animal Health, Cocoa Produce Inspection, Fisheries, Economics and Statistics, Settlement, Irrigation, Mechanization and Transport, Training and Manpower and Information and Publications. Commodity Boards, special production agencies, and the joint state and private agricultural companies also arrange extension programmes on their own.

The present organization of extension lacks a strong administrative structure where responsibility is placed and authority delegated to meet the farmers' needs. Because of slow implementation of plans to decentralize, there has been excessive concentration of decision making in Accra.

Ghana does not have a well-organized extension structure capable of:

- (a) Providing useful advice to farmers.
- (b) Co-ordinating education with the timely supply of farm inputs.

- (c) Providing competent personnel to help farmers to solve their problems because of inadequate training of agricultural and field assistants and a lack of regional subject-matter specialists to assist field personnel in problem identification and solution.

There is also inadequate integration of supplies and services with the extension educational programmes. Close integration is needed to eliminate duplicating and confusing contacts with farmers by representatives of the various divisions in the Ministry. No effective mechanism now exists for fostering linkages between divisions of the Ministry relating to provision of supplies and services to the farmer. Nor is there, in a single service, a bringing together of the limited educational functions now separately carried out by the divisions of the Ministry, the Commodity Boards, and special agencies.

Personnel

There are too few people to plan and carry out effective extension education and services to large numbers of farmers. On the basis of national averages, the present ratio of extension workers to farmers is about 1 to 1600. Consolidation of extension and service functions and redeployment of personnel from other operations of the Ministry could permit locating more and better trained personnel at sub-district, district and regional levels.

Frequent interregional and interdivisional transfers of staff make it difficult to keep people assigned to areas where they are linguistically competent and knowledgeable about local farming. This discourages staff from trying to acquire knowledge of the local language.

Lack of even the most basic amenities (water, electricity, schools, etc.) in rural areas makes it hard to recruit and hold competent personnel.

Promotion policies on basis of seniority discourage development of specialized competence, experience, and advancement within specializations.

There is little incentive to excel in performance of duties. In many cases, advancement is essentially automatic with seniority unless an individual has been the subject of a complaint - a situation much more likely to arise from initiative than from inaction. Low salaries and failure to reimburse fully for necessary travel expenses discourage a worker from making needed farm calls.

Training

It is repeatedly reported that inadequate training of personnel imposes a serious constraint on effectiveness of programmes. This also encourages the setting up of new structures to perform duties which could be more efficiently provided by competent extension personnel.

Technical officers and field assistants responsible for directly assisting in the solution of farmers' problems have a lower level of training than required. It is impossible to build an effective extension programme with such a weak link to farmers.

Most personnel in extension and services have little or no farm background nor do they receive adequate training in basic farm skills. They are therefore reluctant to meet farmers and display their ignorance. As a result farmers have little confidence in the advice offered, and technical officers and many field assistants remain at their offices or homes or engage in non-productive activities.

Educational Support

No agricultural service can be effective without useful information to impart to farmers. Despite farmers' general lack of knowledge of modern agricultural practices, it has been frequently said that even ambitious extension personnel have little information to extend.

Communications between extension and research appear to be incomplete and slow. Little attention is given to developing a two-way flow of information which allows for transmitting research to extension and researchable problems to research personnel.

There are inadequate provisions for field testing and adapting research findings under various environmental and farming conditions. Apparently some field agricultural stations are little used.

Extension personnel are not provided with necessary means to put out effective demonstration plots. They lack supplies, equipment and transport for such purposes and are reported to receive tardy and incomplete reimbursement for expenses they incur.

Little attention is being given to simple studies of economic benefits to the farmer when proposed cropping patterns and practices are brought to him. Similarly no attention is given to impacts of practices on labour requirements and on other social considerations.

Very few publications of any kind are available for extension personnel to distribute to farmers. Arrangements should be made to prepare well-illustrated publications with simple text in local languages. Publications which can be used for training extension personnel should also be prepared.

Few educational and mass communication materials have been planned or made available to extension workers at all levels.

Logistics

In most cases transport for extension and service personnel is inadequate. This severely limits farm calls, demonstrations, and timely delivery of supplies and services.

Supplies and services are now not located at a centralized location in each district or sub-district. Were such centralized facilities used by all Supply and Service Divisions, this would ease delivery of supplies and avoid time-wasting travel to separately located facilities.

A poor network of rural roads is a serious limiting factor in logistic support of extension and services personnel.

Even where information and services are made available to farmers, their opportunities to obtain credit and market their produce are limited.

Programme Planning and Strategy

Provision of effective extension assistance to Ghanaian farmers who have limited human, material, and financial resources available requires careful planning. Planning within the area of agricultural services is inadequate.

There is little involvement of farmers in the planning of educational programmes. Management is needed to gain more efficient deployment of personnel now available within units of the Ministry of Agriculture.

RECOMMENDATIONS FOR AN EFFECTIVE EXTENSION PROGRAMME

Introduction

The Committee considered the alternatives of establishing an Extension Programme in the C. S. I. R. , the Universities, or in the Ministry of Agriculture. It concluded that, with proper management, there are compelling reasons for continuing and strengthening the programme in the Ministry. Many of the personnel are already there, and farmers have a traditional orientation toward its service programmes.

The following criteria were judged to be of importance in the development of the Committee recommendations:

- (i) Existing organizational structures in the Ministry should be utilized as far as possible.
- (ii) The organization should have professional management at the top level.
- (iii) For greatest effectiveness and programme balance, there should be decision-making authority at the district and regional level. There should be a clear distinction but close co-ordination between an extension programme and other services.
- (iv) There should be close liaison between agricultural services (including extension) and the Ministry Boards and production agencies.
- (v) Clear and direct lines of communication should be established between research and extension.
- (vi) The programme should promote research relevant to farm needs. It should ensure that helpful information is delivered to farmers.
- (vii) It should provide for an effective programme of in-service training.

National Agricultural Services (NAS)

- (i) It is recommended that an administration be established in the Ministry of Agriculture called National Agricultural Services (NAS). (See attached chart).
- (ii) The Director of this Service should be a highly qualified person of the top professional level authorized in the Ministry.
- (iii) The NAS should have line authority over the Divisions, which will retain their present functions of agricultural service.
- (iv) There should be an Agricultural Extension Programme for the NAS.
- (v) The responsibility for management of the Extension Programme and the Divisional Services, under the Director, should go directly to the regions and districts for the Extension Programme, and through the Deputy Director and Divisional Chiefs to the regions and districts for Divisional Services.
- (vi) Regional responsibility should reside in Regional Agricultural Service Offices.
- (vii) A position of Deputy Director for Research Liaison should be created. NAS should locate in the Institutes and Universities extension specialists who are highly qualified in their specialities and competent to communicate effectively with research personnel.
- (viii) A position of Deputy Director for Liaison with Boards and Agencies and a position of Deputy Director for National Supplies and Services should be created.

NAS Administration

The NAS will be the basic organization for conducting the educational programme (extension) and for supplying services and supplies to the farm level. It will be responsible for coordination of these programmes right down to the sub-district level, as well as for coordination with other units within the Ministry. Through its Deputy Directors, direct liaison will be established with research, teaching, and with Ministry Boards and Agencies.

For programme coordination the appropriate contact with other Ministries will be made to ensure that such programmes as youth and rural development are appropriately included.

Director

The NAS Director will be a professional administrator reporting directly to the Minister of Agriculture. The Director will have line authority over the Deputy Directors and the Regional Agricultural Service Officers. He must be a well-trained and experienced agriculturist with an appreciation of the intimate relationships that must exist between research and extension.

Deputy Director for Research Liaison

The Deputy Director will be responsible for the coordination of research with the Extension Programme and with Agricultural Services. He will formulate policies dealing with research-extension conferences, lines of communication, and research-extension demonstration farms. His responsibility is to the Director, with a staff function relation to the Extension Programme and Services Programme of the Ministry. Extension needs for research information not currently available will be brought to the attention of research through this officer. He will have line authority over extension specialists located by the Ministry at the Universities and the Institutes.

Deputy Director for Liaison with Commodity Boards and Agencies

The Deputy Director will be responsible for liaison between the NAS and the Boards and Agencies in the Ministry developing and promoting commodity programmes. He will act as a coordinator between these programmes and the extension and the service functions of NAS. He will encourage the use of existing Ministry services in furthering Board programmes and foster the concept of building new staff positions in extension to meet commodity extension needs. This may come in the form of direct, term-limited, grants-in-aid from Boards, foundations, granting agencies to obtain appropriate programme development.

Deputy Director for National Supplies and Services

This Deputy Director will be responsible for effective coordination and integration of the supplies and services available from the twelve existing Divisions in the Ministry. The Chiefs of Divisions, within policy and administrative guidelines established by the Deputy Director, will continue to be responsible for the activities of their Divisions and for the location of qualified divisional personnel as needed on the staff of the Deputy Regional Officers for Services.

The Regions

At the regional level the NAS is to be represented by a Regional Agricultural Services Officer, with the rank of a Chief Agricultural Officer. His responsibility is to the Director of Agricultural Services in the Ministry Headquarters in Accra.

The regional head should have the overall management of the agricultural programme in his region in accordance with prevailing national agricultural policies. He is to be assisted by two deputies, one of whom will be responsible for all extension work in the regions, and the other responsible for all supplies and services.

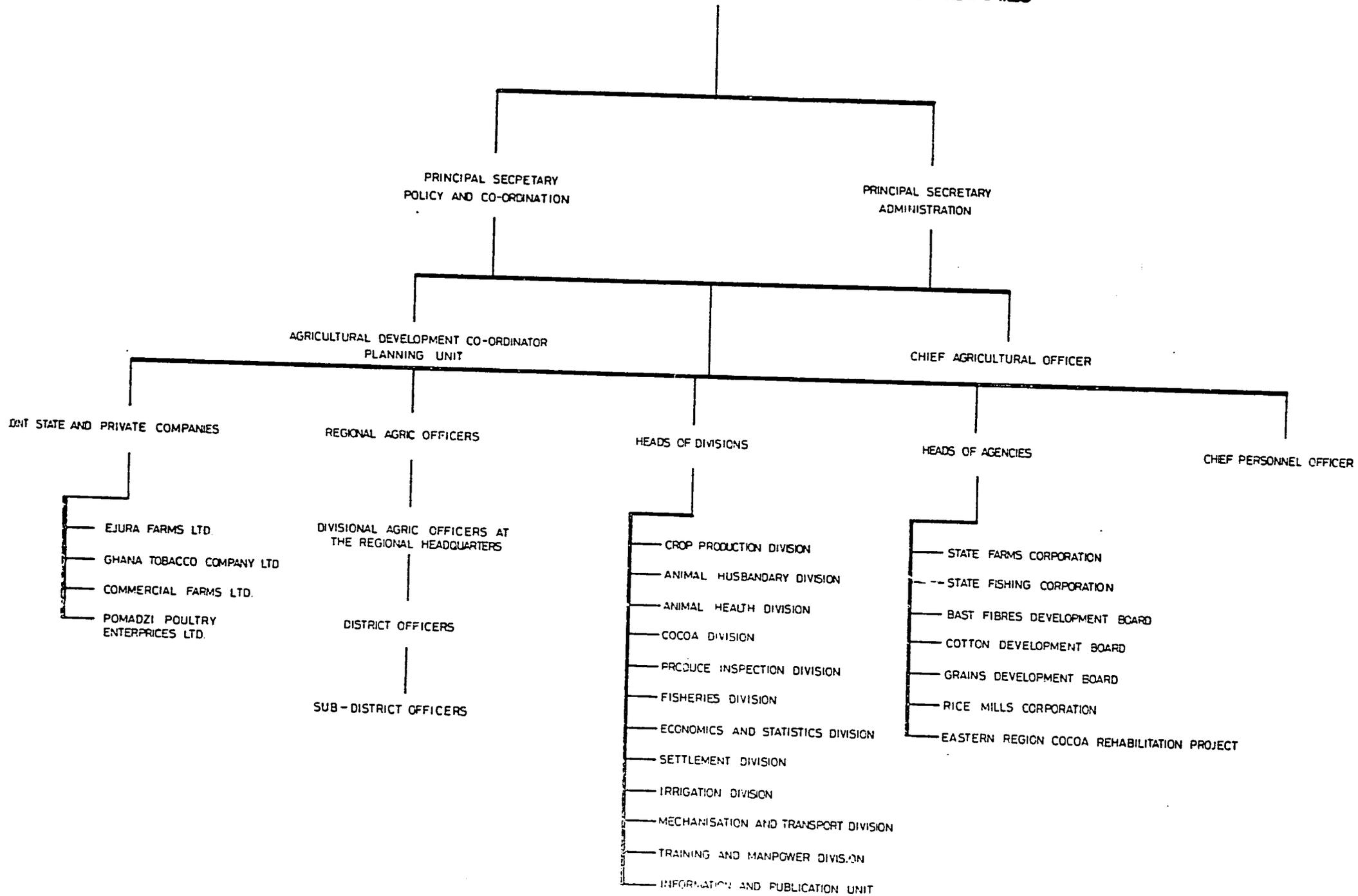
The Deputy responsible for Extension is to have in his offices extension specialists in disciplines which are relevant to the region. A clear distinction is to be made between extension work (which is educational and advisory) and the supply of services by Divisions. The extension specialists at the regional level, should include staff for information and publications.

The Deputy Chief responsible for Direct Services should be responsible for the regional branches of all the Divisions that provide direct services, and he should have in his offices, the regional representatives of these Divisions. He should effectively coordinate activities of these Divisions, and should work closely with the Deputy Chief for Extension, and guarantee that all essential inputs recommended by extension are made available.

The Districts

There will be two officers at the District level: a District Extension Officer, and a District Supplies and Services Officer. The District

MINISTER OF AGRICULTURE — MINISTERIAL SECRETARIES



Extension Officer should be responsible for all extension work at the District level. He would have under him at the sub-district level, Technical Officers whose sole duties will be educational, including advisory work and information dissemination. They can use inputs as needed for demonstrations and trials by farmers, but will not be responsible for the sale of inputs and for contracting services.

The District Supplies and Services Officer should be responsible for rendering these services in relation to agricultural work in the District. He is to guarantee that farmers get the services they need for production from the different Divisions that provide these in the Ministry. He is to work closely with the District Extension Officer. Their offices should be at the same place, and should not be isolated from one another.

N. A. S. Development

The Committee recognizes that while the proposed organizational plan represents a fully developed and effectively organized extension and services programme for Ghana, the Ministry may have to make a step-by-step progression toward the final goal. The whole programme does not have to be activated at once. Most of the positions in the Divisions are already filled. A few of the Extension positions may be created and assigned responsibility for some of the extension-type activities now occurring in the Divisions. Such extension type activities are currently understaffed.

It is therefore recommended that an orderly projection in the form of a working plan be developed to initiate the programme. This plan can start with the following steps:

- (i) Establishment of NAS, with the post of Director, and Deputy Directors.**
- (ii) Incorporation of the line functions for Services from the existing Divisions.**
- (iii) Development of a pilot regional plan for the implementation of the regional programme of Extension and Services in two regions. This could entail the use of existing Division personnel, creation of several regional and district supervisory posts, and possible personnel savings by consolidation of services.**

- (iv) Establishment of key extension specialist positions in the research units.
- (v) Development of a plan for efficient use of agricultural stations, combining necessary extension-type demonstrations with research done by research personnel.
- (vi) Development of effective publications and communications services for extension.
- (vii) Initiation of an intensive in-service training programme for extension personnel.

If necessary, some of these proposals could be temporarily deferred, but such an approach would reduce the effectiveness of those proposals selected for early implementation. An integration of these proposals into an effective system is strongly recommended.

Programme Management

The Committee recommends that Civil Service policies be studied with appropriate government personnel to determine how the Ministry can alter its present personnel policies to become more effective in accomplishing its objectives. Major problems identified which affect extension include:

- (i) Movement of personnel and selection of personnel following seniority criteria with little regard for the value of performance, long tenure in an area, or special job qualifications.
- (ii) While a personnel evaluation system exists in the Ministry it is not being effectively used for good personnel management resulting in inadequate personnel evaluation, with associated growth of inefficiency.
- (iii) Lack of an incentive programme to reward productivity.

Extension-Research Relationship

The Committee has noted that a very weak link exists between research in the Institutes and Universities and the extension-type activities of the Ministry. This raises serious questions about the relevance of the research being done as well as having implications for the delivery of those results to the farm level.

The Committee therefore recommends that C. S. I. R. and the Ministry jointly give high priority to improving this relationship and keeping it under continual review.

Agricultural Education of Ministry Employees

The Committee has been concerned by the lack of confidence in technical officers at the level of contact with farmers. It is apparent that they have communication problems, do not generally have information to offer, and must learn from farmers.

The Committee recommends that priority attention be given to reviewing the education of technical officers to be used in extension programmes to ensure that they are familiar with farming methods, as well as with the methods of obtaining research information to pass on to farmers.

Agricultural Farm Management and Ministry Research

The Committee has not been able to study the agricultural stations of the Ministry, and recognizes that these have an important role in adaptive trials and demonstrations, as well as being useful for purposes of Institute and University researchers. The Committee does have a concern about duplication, and about the extent to which the Ministry may draw conclusions from inadequately conducted experimentation instead of from research sources.

The Committee recommends that a joint study be made of the use of agricultural stations by a committee with representation from the C. S. I. R. , the Universities, and the Ministry of Agriculture. The study should recommend management policies, and define the relationships of these stations to research and extension.

Agricultural Extension Concept

The Committee is concerned about the concept of extension which has developed in Ghana. It recommends that extension training encourage the concept that extension information is a service to farmers, rather than a means of using farmers for government programmes. Insofar as possible, such information should include economic analysis of alternatives to increase the opportunity for profit. The economic well-being of both the subsistence level farmer and the commercial farmer can be enhanced by the development of a reliable extension programme in which they can have confidence. This confidence can have a great impact on the effectiveness of the whole programme of the Ministry of Agriculture and be a real asset to national economic development.

Information and Publications

To-day, the Ministry of Agriculture's Information and Publications Unit does not have space, manpower, or equipment equal to the task of producing a variety of teaching aids to support a vigorous extension programme. Neither does this Unit seem to have a growth potential strong enough to warrant future use of it in the development of the extension educational plan.

Ties between the unit with research and extension authors are cloudy at best. The unit's few agricultural publications reflect this.

Much of the unit's manpower and talents are now being used for public relations tasks. This is a necessary and useful role and should be continued to tell both law makers and citizens about the Ministry of Agriculture's programmes, results, and future plans. Therefore we recommend that this Unit continue its public relations work and serve the necessary position as an Information Unit of the Ministry serving all divisions except the Extension Service.

For the support of the Extension Programme, we recommend that a separate Publications and Information Unit be established. This would be done in conjunction with CSIR's present Publications Section and the Universities of Ghana. This offers the advantages of establishing editorial posts that can pay better salaries and thus attract more talented and more experienced communication specialists. It offers greater opportunity to produce a variety of educational aids of high quality, in great numbers, and without delays. It offers superior ties and strong relationships with future

authors and contributors both at the university level and with Ghana's research institutes. It offers a quick and effective way of almost immediately being able to produce teaching materials to support extension work in pilot regions or in a larger area of the nation.

Any extension service that truly helps its rural people is only as strong as the teaching tools made available to its local agents, its specialists, and its administrators. Again the committee stresses that the Information and Publications Unit that serves extension must be staffed with experienced and trained communication specialists ready to write, design, and produce educational materials that can be read and understood by each and every audience served by the extension programme. This means a range from the well-educated, big agricultural operator to the present farmer with small land holdings. All must be reached, and all can be helped with good extension teaching tools.

Publications will not be the only product of this unit. To reach those who do not now read it will need visual aids, radio, and teaching materials useful for meetings, office visits, and farm visits. The Unit must test educational materials to see which ones work best in a given area and for a given audience.

Provision must be made for Regional Information Specialists who can give continuous support to extension workers from a region straight down to the sub-district level. Many times these districts, sub-districts, and regional areas will have special needs for material aimed at certain special crops or given audiences. Plans for producing this material should be so arranged that they can either be produced quickly by the national Information Unit or made locally at a regional or lower base.

Evaluation

Any effective organization must systematically evaluate both its programmes and the performances of its personnel. An extension service is no exception even though it is generally recognized that evaluating the effectiveness of an educational process is not a simple undertaking. Such evaluations can assist extension personnel in determining the degree of success or failure achieved in their programmes. If a continuing evaluation process is properly built into extension programmes it will allow timely corrective measures to be taken.

The suggestions which follow have been divided into two principal groups - Joint Ghana/U. S. evaluations and internal Ghanaian evaluations. They are purposely expressed in general terms and do not present a complete blue-print for effective evaluation. The specific methods and techniques to be used must be adapted to the programme being evaluated and the particular aspects of it which are of major concern to extension. Therefore, the following proposals should be viewed as a general framework for the essential elements of an evaluation system for Ghana.

Joint Ghana/U. S. Evaluation Teams

This body will be composed of a joint team of panelists drawn from Ghana and the U. S. A. The local specialists will be drawn from the C. S. I. R. the Universities, and the Ministry of Agriculture. An appraisal of the extension system by a joint team will lead to a better judgement of the effectiveness of the whole extension set-up in the country.

The evaluation to be undertaken by the joint team should be done in two phases. The first should be performed by a small group of panelists within a year after this report is formally submitted to Government. There are advantages of early review of this nature in six months to assess planning and implementation. This will give the panelists the opportunity to determine some of the immediate shortcomings and problems as efforts are made to implement the proposals contained in this report and to make the necessary recommendations for immediate remedial measures.

If necessary, such measures may include requests for external technical aid to help train local personnel in specific extension units and to help implement other aspects to make it an effective system.

The second evaluation phase must be done every two years. Its purpose is to evaluate periodically the entire extension system. This will facilitate detection of shortcomings which appear after the implementation of the report and permit adjustments for necessary effectiveness.

Internal Ghanaian Evaluations

Annual Evaluation Conferences

For success, the proposals rely on proper communication between researchers, extension personnel, and other users. Also essential is an

evaluation made periodically on the success of the entire programme since researchers, extension personnel and administrators have precise and significant functions.

These objectives can be achieved through yearly meetings, seminars or symposia organised like the July-1971 Symposium on Crop Research and Extension at Kumasi. This was sponsored by the Ministry of Agriculture, the C. S. I. R., the Universities at Legon and Kumasi, with relevant agricultural agencies as participants. These meetings or seminars would be organized around disciplines or closely-related subjects such as livestock and cereal crops. Major decisions and recommendations arising from these meetings would be referred to the appropriate authorities.

Ghanaian Review Panel

The extension programme entails adjustments and decision-making at various levels. Such changes in organization and programme need to be evaluated frequently to ensure success. Therefore we propose that a Ghanaian Review Panel with membership of seven be appointed every two years to do a complete evaluation of the Agricultural Services Organisation. The panelists should be very senior and reliable representatives chosen from the Research Institutes, the Universities and the Ministry of Agriculture. The Review Panel would have a clear mandate to report on individuals and recommend action when such persons are found to be impeding the work of the organization.

Evaluation by Farmers' Advisory Committees

Extension exists to serve farm families and to help them improve their standard of living. Rural people have an essential role to help develop and carry out local extension programmes. Local farmers' advisory committees also should take part in appraising the effectiveness of extension programmes. In this process they will indirectly provide one important indication of the performance of the local extension work. Obtaining such judgments from rural citizens will usually involve informal visits and meetings rather than structured interviews or other more formal approaches.

Field Reports from Extension Workers

Extension workers are normally expected to report on their activities and accomplishments on a regular basis. Such reporting provides a basis

for evaluating extension programmes if they are designed to measure specific achievements toward goals. This system also assumes that some statistically reliable benchmarks exist so that planned changes can be measured. These reports must be analysed by competent personnel at regional and national levels.

POSSIBLE EXTERNAL SUPPORT

Ghana faces the need to increase rapidly agricultural production, and enhance the well-being of its millions of farmers and their families. Agricultural development is an essential requirement for national development.

Ghana's problem is typical of many rapidly developing countries. All these nations are faced with limited human and financial resources to meet the growing needs of education, road construction, better water supplies and the other ingredients of development. Therefore Ghana could offer the world an excellent opportunity for a valuable pilot project showing how to provide to farmers agricultural services essential for accelerated agricultural productivity.

This report outlines a practical approach for providing essential agricultural education and service functions. It proposes a structure for such functions within the Ministry of Agriculture which, to be successful, requires early and full implementation.

This report also exposes some problems facing a rapidly developing country in meeting its immediate needs, while at the same time building a strong long-term approach to agricultural production. There are serious obstacles to implementing this new programme because of limited financial and human resources now available within Ghana.

This Committee urges that the Ghana Government as well as the U. S. National Academy of Sciences open discussions with officials of the World Bank, donor agencies, or a consortium of donors to examine how these sources could help countries like Ghana to meet more rapidly immediate and urgent needs for increased agricultural production, while at the same time creating an effective programme of agricultural services.

More specifically, this Committee suggests the following two approaches, both of which should be implemented:

(i) Loans for expanding the production of given commodities should include the requirement that the necessary supporting research and extension activities be carried out, utilizing and thus strengthening the existing research and extension organization. In this way they would be more effective in meeting later agricultural development requirements.

The Committee recognizes the conditions in Ghana which have led to proposals for establishing Commodity Boards to encourage production of specific crops. This Committee sees opportunities for these Boards, while promoting production of specific crops, to also contribute to building stronger national research and extension services in the country. However, these opportunities are apparently not now being fully utilized.

(ii) Assistance should be given to the Ghana Government to finance early and full implementation of the Programme of Agricultural Services as proposed in this report as the basis for long-term agricultural development.

The Committee suggests that the structure now proposed for Agricultural Services of the Ministry of Agriculture would offer to financing institutions a sufficiently well-defined scope of activity to make possible its acceptance by the World Bank or donor agencies as a pilot programme to study ways to make more effective the role of agricultural services in expediting agricultural and national development.

A FOCUS ON THE PROJECTED EXTENSION CHANGES

Extension education can bring about great changes to the people of Ghana. Such changes are both economic and social. New horizons for many rural people can be brought into sight. To meet such high goals it is agreed

by the Joint Ghana/U. S. team that certain critical modifications in the present extension structure and programme must be made.

The need to separate the extension programme and service functions of the organization seems imperative. Nonetheless these two functions must be closely co-ordinated particularly at the local level. Clear lines of authority and communications must be established throughout the organization. To this end the team recommends specific organizational modifications in the Ministry of Agriculture, and more specifically the establishment of a National Agricultural Services administration.

The technical training and farm skills so important for change agents must be substantially upgraded by in-service training and future recruitment practices. To realize such improvement a system of pay incentives and other rewards must be directly related to field performance.

It has been repeatedly pointed out that liaison between institutions charged with doing Extension and research requires some major remedial actions. These include -

- (i) Appointment of highly qualified Extension Specialists located at research institutes and Universities to adapt research results for use by extension agents and farmers and to help research institutions focus their effort on the most relevant farm problems.
- (ii) Establishment of a strong Publications and Information Unit staffed with experienced and trained communication specialists to write, design and produce appropriate educational materials.

APPENDIX I

BACKGROUND PAPERS SUPPLIED TO PANELISTS

1. Symposium on Crop Research and Extension for a Greater Ghana, July 1-3, 1971, Kumasi, Ghana.
2. Ready Reference Handbook on Crop Production in Ghana, November, 1970.
3. Structural Organization of the Ministry of Agriculture: Ghana. Mr. C. E. Tagoe, September 1971.
4. Suggested Guidelines for the Medium-Term Plan of Ghana. Issued by Co-ordinating Committee for the Medium-Term Plan, August 1971.
5. Extracts from the Budget Statement for 1971-72 on Governments Policy Dealing with Agriculture.
6. Agricultural Development in Ghana: General Report. Robert R. Natham, Assoc., May 1970.
7. One-Year Development Plan of Ghana - 1971.
8. The Parliamentary Debate on Agriculture - 1971
 - (a) Ministry of Agriculture Estimates
 - (b) Third Session Parliamentary Address by the President of Ghana.
9. The C. S. I. R. Handbook - 1970/1971.
10. The Current Economic Position and Prospects of Ghana, Vol. V - Agriculture: International Bank for Reconstruction and Development.
11. Towards a National Science Policy, Hon. J. Kwesi Lamptey, 22 January 1971.

- *12. Some Aspects of Decentralization and the Formulation and Implementation of Agricultural Policy in Ghana, by Gene R. Harris, April 1971.
 - 13. Scientific Research in Ghana: Proceedings of the Workshop on Research Priorities and Problems in the Execution of Research in Ghana (CSIR-NAS), January 1971. Edited by A. Adu.
 - *14. "Intensified Agriculture Through Research", Sterling Wortman, Development Digest, July 1971.
 - *15. "Agricultural Research in Developing Nations", Albert H. Moseman, Development Digest, July 1971.
 - *16. The Need for Training in Technological Management in Developing Countries - Ghana - A Case in Point, Edward S. Ayensu, June 1971.
 - 17. U. S. Economic Assistance to Ghana, U. S. Agency for International Development, June 1971.
 - 18. Budget Statement of the Ministry of Agriculture of Ghana, 1971.
 - 19. Annual Estimates for Crop Production for Ghana, 1971.
 - 20. Agricultural Education and Extension in Africa: Bortei-Doku - University of Legon.
 - 21. Focus and Concentrate Programme of the Ministry of Agriculture of Ghana.
 - *22. Technicians in Field Needed to Carry Action in Afghanistan, T. S. Rackham, World Bank, 1970.
 - *23. Agricultural Research and Extension in Ghana, Edward S. Ayensu, September 1971.
 - 24. "Republic of Ghana", Background Notes, U. S. Department of State, 1970.
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*Not supplied to Ghanaian members before the Committee met.

PLACES VISITED BY PANELISTS

SUNDAY, 26TH SEPTEMBER

1. Dawhenya Resettlement Farms - A rice irrigation scheme jointly executed by the Ministry of Agriculture, Ghana, and a team of experts from Taiwan. This scheme is for the benefit of the traditional farmers in the area.
2. Kpong, University Experimental - An experimental farm managed by the University of Ghana, Legon. It concentrates on the problems of irrigated rice and conducts experiments in the use of various legumes in farming. Adjacent to it is an F. A. O. land development project for irrigated crops.
3. New Ajena - A new township that has been provided for the people displaced by the formation of the Volta Dam lake. An essential part of the resettlement programme was to ensure that the farmers were adequately provided for in terms of land and services.

WEDNESDAY, 29TH SEPTEMBER

1. Suhum Cocoa Rehabilitation Project - A joint project with an initial phase for a five-year period to resuscitate cocoa farming in the Eastern Region. The Eastern Region, once the highest producing area, was decimated by the ravages of the capsid.
2. Bunso Agricultural Station - A Ministry of Agriculture servicing and extension station. Improved cocoa seed production is one of the major programme programme.
3. Cocoa Research Institute, Tafo - A research institute, under the Council for Scientific and Industrial Research, undertakes research into all aspects of cocoa production.

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