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**THE LITERATURE OF AGRICULTURAL PLANNING
NOTES ON ITS USEFULNESS**

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A REQUEST TO READERS OF THIS MANUSCRIPT

This survey is being sent to a small group of professional workers concerned with agricultural planning prior to revision and wider circulation. Inevitably, readers will find that works they feel useful have been omitted and that judgments they consider unfair have been included. I would greatly appreciate your bringing omissions and inadequate assessments to my attention.

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I. Introduction

Thirteen years ago--which is when these notes really begin--Viner began a famous lecture by commenting, "the output of literature on 'economic' development has in recent years reached massive proportions" [316, p.].* Two years ago, one of the leading authors in the field began the preface to his new collection of readings from the development literature by admitting candidly, "the subject matter of economic development is now so wide-ranging...that it defies the compression and definitiveness of a textbook" [185, p. v]. Yet it is this body of literature which, we hope, can make a decisive contribution to economic development.

Given the geometrical progression of the economic development literature in the decade since Viner spoke, the working planner has virtually no hope of mastering more than its peaks. This is particularly true of the agricultural planner, who must somehow combine at least minimum familiarity with development economics and a more-than-nodding acquaintance with agricultural science, a technical field of applied biology, and with the complex institutional structure within which the farmer lives and works.

* The numbers in brackets refer to the list of works cited beginning on page 114.

Colm and Geiger have commented on the "major need for a comprehensive and detailed appraisal of existing experience with, and literature on, planning methods and techniques" and for a "thorough analytical study of the present 'state of the art'" [43, p. 68]. This paper stems from a similar concern, although it must lay claim to much more modest accomplishments than those implied by the objective laid out. The research for its preparation has been suggested by the U. S. Agency for International Development. The materials examined are generally those published within the past decade, with emphasis on the more recent ones. A classified bibliography on agricultural planning--an outgrowth of the research for this paper--is in preparation [93]. It is expected to be of interest primarily to government administrators and scholars having a professional concern with agricultural planning.

The Focus of Concern

The central concern of this evaluation is the usefulness of the professional literature for administrators in low-income countries actually engaged in agricultural planning. Hence, the criteria for appraisal are immediate, pragmatic, restricted--and very important.

In this perspective, what might we ask of the literature? It seems reasonable to expect it to provide a pattern for effective agricultural planning and an exposition of currently applied techniques in a manner sufficiently relevant and stimulating to suggest approaches suitable to one's own country. The literature should do this both

through general discussions of agricultural planning and its particular characteristics, and through case studies and critiques of agricultural planning efforts. The planner should be able to turn to the literature for discussions and examples of demand and supply projection, analytical techniques for choosing among and scaling projects, and practical procedures to use when data limitations are too severe or the most suitable techniques are beyond reach in terms of time or skills.

Two groups make up the potential audience--first, the economist (or agricultural economist) turned agricultural planner and, second, the professional agriculturalist who assumes planning responsibilities. These groups, with their quite different educational backgrounds, professional experience, and immediate needs, rather extend the scope of the literature that might be considered as dealing with agricultural planning and the criteria by which it may properly be assessed; but people of both sorts work together in important planning positions in every underdeveloped country, and the literature, if it is to be useful, must serve both needs. Agricultural planners are "go-betweens." They are integrators of the plans and desires of all the various groups concerned with agricultural administration. They are critics of overambitious (or unduly pessimistic) proposals. They must see agricultural development policy as it fits into the overall development of their nation. They are target-setters. Often they are responsible for projecting supply. They must be a source of perceptive insights into agricultural development strategy and technical consultants about a whole range of agricultural production and institutional improvement

programs. Despite this rather ambitious range of tasks, agricultural planning groups are surprisingly small--for example, in Ceylon, three nationals and four foreign experts prepared the agriculture portion of the ten-year plan [64] and in Iran three nationals and one--sometimes two--foreign experts were responsible for Third Plan frame for agriculture [94]. If he is conscientious, the person responsible for agricultural planning has very little time, indeed, to read the "literature"--assuming he would find it useful.

Do such men need literature at all? One can argue that the general direction of agricultural development is pretty obvious, the major approaches are known to most educated people who have paid any attention to the question, and that projections need to give only rather simply estimated orders of magnitude, since it is unlikely that any development plan can at first do more than start off in the right direction.

This is not the viewpoint taken here. While it is true that the more recherché parts of the planning literature hold little of use for agricultural planners, it is also true that no man can honestly pretend to be a leader in such a fast-moving and idea-hungry field as agricultural planning without access to the richness of other people's experience. Indeed, a general observation is that the very preoccupation of agricultural planners with "doing" that prevents them from devoting much time to reading is one cause of the frequent poverty of approach to agricultural development in underdeveloped countries.

Some Initial Comments

Before considering individual items in the literature on agricultural planning, a few introductory comments are in order.

Low-income, mixed economies. The nations which these notes have in mind stretch through South and Southeast Asia, the Middle East, and Latin America. They are committed, in varying degrees, to democratic, open societies. Incomes, especially rural incomes, are low. These countries have embarked on a course of economic development characterized by a variable mixture of private and public ownership. Despite the enormous differences among them, these nations have enough qualities in common that much of the literature may be usefully discussed from a general viewpoint.

Agricultural development literature. The confines of this evaluation have been narrowed to rule out direct discussion of agricultural development literature as opposed to agricultural planning literature. Admittedly, the distinction is quite arbitrary, and no real attempt has been made to achieve a rigid exclusion of one versus the other. However, readers will note the absence of a number of prominent works on two-sector models, abstract discussions of underemployment, applicability of economic theory to low-income nations, and the like. This is in no sense to say such works are not competently done, making a contribution to our knowledge of the agricultural development process, or to say that they are unimportant to agricultural

planning. It means only that they are less immediately relevant for agricultural plan formulation than other, sometimes less well known, materials. Certainly my impression is that the "economics of agricultural development" is progressing surprisingly well considering the anguished discussions one can hear on the topic. A good picture of some current aspects is found in Ruttan's critique of the contribution of growth-stage theories to the formulation of agricultural development policy [241] and in Wharton's short bibliography prepared for the Conference on Subsistence and Peasant Economics [332]. In model elaboration, such contributions as those of Leibenstein [164], Fei and Ranis [62], Jorgensen [151], and Johnston and Mellor [148] are stimulating. Wharton has prepared a perceptive and relevant critique of the agricultural development literature dealing with individual agricultural infrastructure programs. It is a paper which sits neatly astride the rather artificial boundary between general agricultural development literature and the more narrowly circumscribed agricultural planning material [330]. There are increasing numbers of disciplined studies of low-income agriculture in particular areas or villages with emphasis on innovation and growth. In the light of such contributions, Flores seems unduly critical when he suggests that the state of work on agricultural development gives an "over-all impression... of contradiction and confusion" and finds that an "appalling lack of consensus... pervades the discussion of agriculture and development" [69, p. 946]. Of course, much remains to be done in this direction, but what I see gives me the impression that a challenge is being tackled--and with verve.

Contrast with agricultural planning literature. In view of the extensive and vigorous interest in general agricultural development, it is disappointing how little literature is devoted to agricultural planning per se. My rather time-consuming (but hardly exhaustive) search has turned up only some hundred different items that treat agricultural planning as their primary topic, and hardly many more that include it as part of a broader treatment of economic planning or development. Furthermore, what is available, on the whole, fails to reflect adequately the broad experience with development planning for agriculture, frequently fails to be analytical and critical, and most generally is written at a point in the planning process when it is not possible to draw relevant lessons from successes and failures. To date, we have no single outstanding work on agricultural planning to which students, younger staff members, or busy top administrators could turn for a thorough fill-in the way I turn to my Samuelson for economics [242], or to Meier and Baldwin [186], Higgins [119], or Kindleberger [157] for general development economics. But then, such a single text may not even be appropriate: agricultural planning, as documented in the literature, is still very much an art with hopes of becoming a science.

I am disappointed by how few good, analytical case studies of agricultural planning there are, either by participants or by well-trained, perceptive outsiders. Most of those I have found tend to gloss over the difficult problems and ignore the difficult decisions that had to be made. The literature still gives us few clues about the hard kernels of detailed decision-making, adequate means to overcome glaring

data weaknesses, or much that is really useful in the way of criteria for choosing among projects and programs (with the important exception of water-resources planning). My own experience in program formulation has been that much time is spent trying to justify the scale of programs and trying to estimate the returns that might be expected from one kind of activity as compared with another. The literature on institutional programs in agriculture--and even more on crop and livestock production--is simply enormous, yet, disappointingly, almost bereft of useful discussions on program formulation in the light of limited resources or in competition with alternative production possibilities. (Wharton's study on strengthening the agricultural infrastructure makes a corroborating evaluation [73]).

Finally, the literature is diffuse, scattered, and difficult to master. There is, of course, no real remedy to this problem, but it is nonetheless acute if we are going to bring the accumulated research and experience to bear on practical, day-to-day administration of agricultural planning. Sometimes I think we give too little attention to this key link in the chain of knowledge.

Stylistic quality. It is hardly surprising that the quality of the literature on economic planning and, more particularly, on agricultural planning and development varies enormously, but it is disappointing to note how much of it is almost devoid of really critical content, evasive, and so summary or generalized as to be of little usefulness. The style of most can only be described as unleavened. Given such generally uninteresting material, it is a pleasure to read the occasional exception

where perceptiveness is combined with good writing. Although good writing on this topic is not limited to the few examples pointed out here, let me note the pleasure with which I recall the works of such a varied group as Farnsworth [61], John Lewis (especially his Quiet Crisis in India [168], Arthur Lewis [169], Cairncross [37]), or that champion of economic style, Galbraith (in particular the volume based on his lectures delivered in India [90]). Unhappily, an even lower proportion of the literature on agricultural planning than on economic development in general can be nominated for inclusion in this list.

Contributors to the literature. One is impressed by the important and continuing contribution of the international agencies, especially FAO and the regional economic commissions. Much of this is of high professional competence, timely, and relevant. It is also too generally underestimated. It is encouraging to note the implicit recognition of this contribution found in the rather high proportion of United Nations materials that Meier chose to include in his collection of significant readings [185]. Repeated citations to United Nations publications will also be found throughout this evaluation. By their very nature, United Nations agencies often cannot be as critical or analytical as they would like to be, although, considering the touchiness of many governments even to implied criticism, the quality of the evaluative material in United Nations publications is quite commendable. Broader participation of the academic community in critical analysis of agricultural planning would help compensate for this built-in limitation of United Nations material.

We owe a debt to the Indian and Pakistani scholars for their contribution to the literature on economic planning, as the citations later witness. Not only have they made several pre-eminent individual contributions to the general literature, but they have jointly created by far the best corpus of literature analyzing the planning efforts of particular low-income countries. Their efforts certainly have been in no little measure responsible for the continuing commitment of India and Pakistan to planning. Since much of this literature is published in India and Pakistan by firms with limited foreign connections, some of the useful material is difficult to obtain or went rather quickly out of print, but many of the more important works are available through normal book-distribution channels.

It is unfortunate that the established professional journals are not devoting more attention to agricultural planning problems--particularly to critical evaluation--and all the more so when one considers that a high proportion of the truly effective writings are found in just a handful of journal articles. This criticism, incidentally, is more valid for agricultural than general economic planning.

I remain disappointed by the rather slight extent to which my colleagues in American agricultural colleges have turned their formidable research resources to this practical problem of the modern world.

"Do good" attitude. A disturbing undercurrent in the literature might be called its positivism--or, less elegantly, its "do good" attitude. Too much of the literature on agricultural development planning reflects an administrative attitude that sets out to "help" the peasant farmer without enough consideration of what the man's own viewpoint might be. The intent is obviously generous--to assist in the improvement of human welfare. In practice, however, this approach may be one cause for the failure of agricultural plans. It leads to a tendency to want to prepare "comprehensive" programs which, in turn, may far overreach the limited administrative capabilities available. Another problem is that programs that give farmers what they "ought" to have may, in fact, conflict with existing peasant value structures and, hence, run into unanticipated and sometimes even unrecognized forms of resistance. Finally, the do-good attitude can lead to the assumption that people do not know what is "good" for them, and this, in turn, to a distrust of individual motives or the rationality of individual choice. When this occurs, there is a tendency to formulate programs that fail to take full advantage of the effects of individual incentive within a suitable economic environment, or that underrate the market as an administrative mechanism. This same attitude may lead to a desire to spread the benefits of economic growth evenly through the agricultural community and thereby to a failure to design programs that can take advantage of the rather large differences in the responsiveness and willingness to innovate of individual peasants. More overall agricultural progress may come from programs intended to help some farmers make

rapid advance, or from regional programs which favor already relatively advanced areas blessed with better resource endowments and more progressive farmers, even at the expense of some inequity. Any agricultural economist can cite instances of substantial responsiveness on the part of a select group of peasant farmers to price and other incentives even in agricultural communities generally thought of as "tradition bound." One may note the examples of vegetables grown in the vicinity of Medan in Sumatra for export to Singapore, eggs shipped by rail all the way from Madras to Delhi, or the appearance of winter vegetables from the Persian Gulf on the markets of Teheran. The existing literature pays little attention to this range of questions.

II. Contemporary Agricultural Planning

Two decades of widespread experimentation with planning in low-income countries amply show that "the actual accomplishments of development planning have, with a rare exception, failed to fulfill original expectations." As Meier comments, "the difficulties of planning have only too often been underestimated, and the anticipated results...overestimated. Development planning in practice has clearly revealed a need to improve upon its formulation and implementation." [185, p. 561]. Such a comment probably applies even more forcefully to agricultural planning than to the overall context Meier was considering. In India, certainly one of the countries where planning has been done most consistently and systematically, Lewis notes the difficulties of effective planning for agriculture. "The enormously complicated problem of rural organization," he writes, "defies capsule treatment" and "when viewed comprehensively...is the very aspect of the Indian effort that has been least successful thus far and stands most in need of reform" [167, p. 87]. It is both instructive and disappointing to note that Ezekiel and Saco's discussion of agricultural planning prepared for the International Conference of Agricultural Economists in 1952 could have been read virtually without change at the 1964 Conference [59]. Although they might be a little less positive about the virtues of mechanization and rather more concerned with commercial inputs and incentive structures today, the basic thrust of the article and the sections devoted to institutional and administrative problems need hardly even be brushed up.

Changing View of the Contribution of Agriculture

The past few years have seen an increasing emphasis on the positive contribution of agriculture to the overall pattern of economic growth and with it, a considerable change in attitude from planning for agriculture as a kind of welfare sector to a new emphasis on seeing agriculture as an essential, fully economic sector of a growing economy. Rostow sounds this new note as he suggests that "economic development in Asia can no longer be based on the immediate postwar rationale for industrialization. . . It is a question of modernizing rural life in Asia as a basis for continued rapid industrialization" [237, p. 849]. Witt has chronicled this change: "During the 1950's most development economists looked askance at agriculture." A "more recent view is that agriculture is an intimately interrelated sector in the development process." Hence, much of the recent work focuses on the interrelations between agriculture and other sectors, with interesting implications for agricultural planning [338, p.120ff]. Barter comments on the importance of agriculture's contribution to the rest of the country as it affects agricultural planning [16].

Some of this new concern for agriculture has grown from an increasing awareness that "the less-developed world is losing the capacity to feed itself," as Brown concludes [32 , p. 7]. At the same time, professional attention has come to be better focused on the sluggishness of yields in low-income agriculture. "More

than half of the 1948-50 to 1960-62 increases in crop yields in India, Pakistan, Thailand, Colombia (to cite a few countries) have been due to factors other than fertilizers, pesticides and other purchased inputs" is Long's conclusion [173, p. 10]. Nonetheless, yields in low-income agriculture can increase if the environment is right. A recent USDA study analyzing agricultural growth in 26 countries from 1948 to 1963 shows that twelve achieved a rate of growth in agriculture more than 4 per cent per year over the period. Two important inferences can be drawn by agricultural planners: the high-growth countries show the whole range of "can'ts" in agriculture, and are unified only in that all are characterized by "aggressive group action, generally national in scope, directed specifically to improving agricultural production conditions" [304, p. v].

Current Patterns of Agricultural Planning

Fortunately, the literature contains several good summary statements-- almost idealized "models"--on agricultural planning which reflect the current concern with the place of agriculture in economic growth, the concern with food supplies, and the conviction that vigorous economic program action is necessary if agriculture is to grow at an acceptable pace. Perhaps the best short description is Smallfield's background paper prepared for the World Food Congress [255]. A runner-up is that of Zusman, notable for its sympathy with more formal techniques of planning but its recognition that in practice they may be impossible to apply, given the present state

of theoretical knowledge, data availability, and administrative capacity. Zusman also has a good, brief discussion of the usefulness in agricultural planning of budgeting, linear programming, and input-output approaches to plan formulation [75]. For a fuller treatment, and for probably the best starting point for anyone seriously concerned, the best source is the fine paper prepared by Ojala [210]. (Ojala treats some of the same subject matter--but not so well--in the paper he presented to the 1963 agricultural planning training course [209].) Barter has an excellent discussion of the kinds of problems that distinguish agricultural planning from more general planning which should be high on the list of anyone concerned with agricultural planning [17].

An extremely informative discussion of current trends in agricultural planning practice is found in the FAO State of Food and Agriculture 1965, which includes intercountry comparisons of the main features of postwar development plans in agriculture, trends in public investment in agriculture, share of private investment in total planned investment in agriculture, and share of planned public investment devoted to agriculture [83]. (Montgomery and Marglin have some interesting intercountry comparisons of the ratio of government expenditures to agricultural output as one index of a nation's "will to develop" [191].) The UN World Economic Survey for 1964 discusses the place of agriculture in national plans, with comparative tabulations of planned growth in agriculture as contrasted with industry and a comparative analysis of agricultural growth targets [288].

Four highly relevant FAO publications focusing on techniques of agricultural planning together amount to the beginnings of a workbook or text on agricultural planning [71] [72] [80] [85]. Of these, perhaps the most general and useful is the report of the FAO/ECAFE expert working group; even so, as a practical introduction to the techniques of agricultural planning, it could be expanded to advantage with more discussion of alternative approaches and the strengths and weaknesses of various devices. Such an expansion should include much more discussion of the experiences of various countries, a topic virtually untouched in the present version. It would be desirable, too, if the range of interest could be broadened to include Africa and Latin America, although the working group assembled under the aegis of ECAFE understandably did not concern itself with these continents. Of course, this is a big order; it is nonetheless needed.

Two other regional economic commission series also amount to text material on planning. The more general is the series of articles ECAFE has prepared almost annually dealing with overall planning and then with the particular problems of individual sectors, including agriculture [296]. Indeed, it might well be time to consider gathering these into a single ECAFE reprint that would be more readily and widely available. The other series is the ECLA analyses and projections of economic development in which a general introductory publication has been followed by a group of impressive country studies. These are discussed more fully later in connection with planning models. Two are available in English and five in Spanish only [301].

The manual on development projects, also prepared by ECLA, is an extremely useful publication devoted to preparing economic analyses of individual development projects and enhanced in its usefulness for agricultural planning by the inclusion of several agricultural examples [302].

As yet, there is no single work or textbook on agricultural planning which treats techniques and experiences on a generalized basis. In such a rapidly expanding field as development planning, however, it is possible to take Meier's cue and establish a rather convincing case that such a general work is not yet desirable. A more useful alternative at present might be to prepare a judiciously edited collection of excerpts from relevant works with extensive bibliographical references. Such a work does not exist, and it is in this sense that the literature may be justly characterized as lacking a general work on agricultural planning.

Discussions of the current status of agricultural plans and planning in various Asian countries are found in Ojala [208] and the ECAFE discussion of agricultural planning [298], and in Abed for the Middle East [3]. Such reports date quickly, so it is to be hoped that the regional commissions will find space in their journals for more frequent articles on this order. In a more general direction, Wilcox has an instructive discussion of development planning in Southeast Asia where he treats agriculture within the context of overall planning [335]. Unfortunately, Wilcox did not choose to take advantage of his considerable familiarity with planning approaches to draw lessons from intercountry comparisons--

a kind of analysis in which not just the literature of agricultural planning but the whole literature of economic planning is sadly lacking.

These general discussions of agricultural planning can be set in the broader context of national economic planning by reading Hagen's summary chapters [105] [107]. Wilcox opens his paper on planning in Southeast Asia with an idealized statement of what modern economic planning "ought" to include [335]. Waterston discusses some of the modern thinking about a "definition" of planning, or what planning in practice might be thought to include [323].

Both the rather idealized discussions of agricultural planning and the more general discussions of economic planning noted take a comprehensive view. Some authors suggest that this is too ambitious for most low-income countries in the early stage of development. This is a recurring theme in Waterston's analysis of planning experience. "Comprehensive planning does not work in most less developed countries where it has been tried," he asserts early in his book. The reasons are many: data limitations, inadequate numbers of well-prepared projects, problems of personnel to undertake the planning task, difficulties of improving administrative efficiency, inadequate time devoted to preparing plans, and a number of others. In view of these difficulties, Waterston suggests a partial or "staged" sequence proceeding consciously from a project-by-project approach to integrated public investment programs and on to comprehensive planning. Agriculture is particularly suited to this treatment, he feels, because it lends itself to sectoral

treatment and because so much in an agricultural development program is public-sector initiated and can be treated well even in the absence of a macro-economic analysis and overall comprehensive plan [323, p. 5ff.]. Wharton takes a similar view derived from his concern about the urgent need to accelerate food production and his conviction that the limited available resources must not be spread too thinly to be effective. "The goal will be not balanced growth nor unbalanced growth," he concludes, "but selective growth" [330, p. 36].

III. Shortage of Case Studies

By far the most serious lack in the agricultural planning literature is detailed, analytical case studies prepared by perceptive, trained workers. Although this accusation may be directed at the whole of the literature on planning, more or less, it is particularly acute in agriculture. Furthermore, where general case studies of planning have been undertaken, agriculture is often treated with hardly more than a passing reference. While much of what able case studies might cover is touched upon elsewhere in this manuscript, the importance of case studies is great enough to justify separate attention and emphasis here.

Case studies could bring to the practicing administrator and research scholar alike a feeling for the richness of experience in agricultural planning from which valid generalizations and syntheses could be made. To be useful, however, they must be much more thorough and much more searchingly analytical than most written so far. An increasing number of intercountry comparative studies should begin to emerge. From the standpoint of their usefulness as planning literature, these case studies will need a different subject matter from the recent general works devoted to agricultural development in one particular country or region and from the village studies that have characterized one school of anthropological research during the past two decades. These more general studies are needed, too, of course, but more is needed; and, in addition, a body of case studies focused on agricultural planning is one of the most

acute lacks in the current literature.

On the whole, the available literature on agricultural planning fails to reflect the variety of experience in policy-making and planning for agriculture. An element of unreality tends to creep into some of the literature from too great abstraction and too much consideration of agricultural planning as a generalized whole. Several of the contributions to the FAO lectures on agricultural planning illustrate this tendency. Sen resorts to treating all agriculture as a single unit, clearly something that can lead us too far, as he would be quick to acknowledge [249]. Abercrombie's talk of planning is somehow too remote from the realities of administration and technical agriculture. He gives too little recognition to the range of experience within a society that must go into making a viable agricultural plan. He writes that a planning organization is charged with "determination" of broad objectives, does the "technical" formulation of programs, and "implementation" of programs. Clearly, it doesn't; otherwise, it would be the whole government--or perhaps the whole society [4, p. 143].

One reason that the literature fails to reflect the variety of experience in agricultural planning may be the dominance of the Indian model--and, to only a slightly lesser extent, that of Pakistan--in the minds of most writers concerned with the problem of planning in low-income, mixed economies. This is true, even though no one can doubt for a moment the importance of the Indian and Pakistani contribution or the impressive quality of Indian and Pakistani planning efforts. Myint effectively

treats this point in his discussion of economic theory and underdeveloped countries [200, pp. 489-490]. He suggests India needs to be treated as a "special case" and notes three "obvious limitations" of the Indian example: (a) that most of Latin America, Africa, and much of Southeast Asia are sparsely settled, making the concern with disguised unemployment quite different; (b) that even among overpopulated countries, "the over-all size of the population and area of India has no peer except for China"; and (c) that "underdeveloped countries are at widely varying stages of general social, political, and economic development," so there are still many countries "hard put to maintain even the minimum of law and order, political stability, and public services, and that clearly do not yet possess the necessary institutional framework to carry out elaborate economic development planning."

Galbraith, certainly a sympathetic observer, comments: "...the world has come, in far greater degree than has been realized, to identify development as a whole with the experience of...India and Pakistan.... Since competent planning is possible in India and Pakistan, it is assumed to be possible everywhere.... We cannot have one diagnosis of the causes of underdevelopment. Rather we must have the particular diagnosis which fits the particular country.... It is wrong to imagine that the kind of planning that is done by India or Pakistan is essential for nations in all stages of development. In earlier stages, it is neither necessary nor possible" [90, pp. 44ff].

This dominance of the Indian and Pakistani experience--reinforced by the ability of its expositors--may be deflecting others from analysis of less perfect but more

urgent examples of agricultural planning, particularly those relevant in smaller countries. Why have Indonesia, Burma, Thailand, the Philippines, and Malaya-- neighboring countries with roughly similar resource endowments--all had "planning" in agriculture but largely failed to make their agricultural planning effective either in terms of the realism and adequacy of the planning process or in terms of implementing plan programs? In two instances agricultural growth has been creditably rapid; in the others agricultural output has remained almost unchanged. Would agricultural growth have been faster if the planning process were more effective?

Clearly, there is a need for a broader-based analysis of the planning process in agriculture, even though it may nowhere else be so competent as in India and Pakistan. Two of the best discussions of agricultural planning organization-- especially relevant for smaller countries, which really need a general literature on agricultural planning the most--are found in the IBRD studies on Uganda [138] and Tanganyika [137]. The Uganda work envisions one person to coordinate outside aid and two planning units within the Ministry of Planning, one to deal with review and plan formulation and the other with statistics. The sectoral plans would then be elaborated in the various ministries concerned. In Tanganyika, a three-year "rolling plan" is recommended. In this case, the planning staff would be attached to the Treasury and program initiation would rest with the concerned ministries. The literature appears to include no record of experience with a rolling plan in

agriculture in a low-income country. Waterston expresses doubt a rolling plan would be effective. Few planning agencies are "up to the task of revising and extending their plans each year," he suggests, and, in any event, a rolling plan is "a technician's device" which lacks the "psychological appeal" of a brand new plan for securing public interest and participation and does not give politicians the same opportunity to use plan objectives in their election platforms [323, p. 140].

Although there are several good studies of "indicative planning" in France (see, for example, Hackett and Hackett [104]), there appears to be no analytical record of attempts at such an approach for agriculture in a low-income country. A number of countries are known to have tried "pilot projects" or "nuclear" approaches to development, but the literature does not analyze these well. The FAO Mediterranean development project is an interesting example of an attempt at intercountry agricultural planning [81]. Fisk, in a rather different direction, elaborates a model of transition from subsistence to monetary agriculture for New Guinea and discusses some of the implications this has for development planning in a primitive territory [66, 67]. An analysis of the Joint Commission on Rural Reconstruction as a political device to foster agricultural growth on Taiwan is found in Montgomery, Hughes, and Davis [192].

Concentrated development programs along the lines of either the Gezira scheme in Sudan or the Indian package program inspired by the Ford Foundation team recommendations [86] and a similar approach in Pakistan have received much too

little attention. Such a program grows quite naturally out of two aspects of agricultural development which play an increasing role in current thinking. One is the greater recognition of the highly complementary nature of agriculture as a system of managed biology. The other is the increasing feeling that "pilot" programs have little to offer, not just because they cover too small an area but also because they are unrealistic in focusing so much scarce, high-quality technical and administrative talent which, by definition, cannot be extended to a larger area. The attempt to utilize something along the lines of the package program is one of the "growing tendencies" in agricultural planning over the past decade noted by FAO [83]. The experience with the Gezira scheme is warmly chronicled by Gaitskell [89]. Although basically more of an irrigation than a productivity-increase program, the Gezira has many elements of interest for planning other kinds of intensive programs. The Indian package program is not well analyzed. The best publication to date is the article by Malone, but this really focuses on diffusion of innovation within one package-program district rather than an analysis of the overall planning problems of the program or its effectiveness as a development device. An earlier, though not very informative, description is that of Ensminger [58], while another discussion will be found in Johnson [145 ISC Conf].

An extensive and sophisticated literature exists on regional planning, as indicated by Isard [141] and Isard and Cumberland [142]. But it is disappointing

countries. Most of the writing has focused on the problems of more advanced nations, more often than not on their "underdeveloped" areas, whereas in many low-income countries a good case can be made for the opposite approach of concentrating limited resources on the more advanced regions. Although I have not had a chance to evaluate it, on the basis of an earlier article it appears Rivkin may have some very interesting comments on regional economic planning, including agriculture, in Turkey [235][236].

The most immediate need at this point is for a rather general group of analytical studies tracing the agricultural planning process from the earliest preliminary work through plan formulation and on to implementation, both where planning has been successful and where it has not. These studies should pay particular attention to what was done to overcome gaps in data. More specialized case studies could profitably concentrate on selected aspects of the planning process in countries where one or another aspect is of particular interest or where that one aspect may be all of the planning process that has been carried out. Agricultural planners would be substantially enriched by case studies focusing on preliminary research, what Clark calls "preplanning" in his broader examination of plan formulation in Nigeria [39]; by instructive comparative studies of the kind Hunter has done on education (with some useful attention to agricultural education and extension, it may be noted [133]); or by more of the kind of study that Wilcox has prepared on Southeast Asia emphasizing the problems of administrative authority for

planning [335]. A carefully prepared group of case studies might begin to give useful insights into the generally poor record of plan implementation.

Preparation of analytical, detailed case studies is, incidentally, an area where scholars attached to independent research institutions can make a critical contribution. United Nations agencies, by their very structure, are severely limited in the contribution they can make, although some of the individuals best suited by interest and experience to undertake them are staff members of these agencies.

If we turn to examine the case studies of agricultural planning that do exist, we find that there are very few, indeed. Most of the best discussions of agricultural planning are found as part of more general examinations of the planning process. Fortunately several of these are very perceptive; but it is exceptional when they pay detailed attention to agriculture. Waterston, for example, in one of the few case studies of planning available, mentions agriculture only in passing, even though agricultural improvement was one of the three major objectives of the Moroccan 1958-59 Biennial Investment Plan and despite his tantalizing comment that "Operation Plow" "was reported to have increased peasant incomes in the areas affected by 25 percent" [324, p. 21]. The group of United Nations case studies on planning for economic development present a wide range of examples, but they are too short to give more than a general picture of the range of differences as well as the similarities in development planning [290]. Another United Nations

collection on planning for economic and social development is written from a different viewpoint from that here and contains very little pertaining to agricultural planning [289]. Unhappily, many of the available case studies are three- or four-page annotations prepared as "country reports" for international conferences and are too brief and uncritical to be really useful.

Of the case studies that deserve serious consideration, the quality of presentation and analysis runs all the way from Fisk's comments about Malaya, which, if competent to the extent they go, do not add much to our insights about planning [68], to the realistic, sophisticated approach of Lewis who criticizes the Indian Third Plan with a professional competence that sets a high standard [168]. A major disappointment is the generally lackluster group of papers presented at the 1963 Rehovoth Conference on Comprehensive Planning of Agriculture in the Developing Countries [234].

India, the low-income nation with the most sophisticated planning procedure and the firmest commitment to planning in a democratic environment has also been dignified by the most comprehensive, searching, and cogently argued critique-- Lewis's Quiet Crisis in India [168]. The outlines of his argument are restated in his contribution to Hagen [167]. A large part of his book is devoted to a tightly reasoned analysis of why the Indian plan should devote more attention to the problem of mobilizing idle or underemployed agricultural manpower. Lewis also puts welcome stress on the need to harness market forces more fully in agricultural development

and to treat agricultural planning "as an integral component of a larger rural policy frame" [168, p.166] and as part and parcel of the overall development problem. Lewis is most concerned, of course, about the theory or strategy of agricultural development lying behind India's planning effort. Unfortunately, from the present standpoint, he pays little attention to the mechanics of agricultural planning. His familiarity with the planning structure as well as with the agricultural development problem is such that one wishes he could have found time and space to discuss in greater detail the relationship of the planning structure to the weaknesses he perceives in the agricultural strategy. Lewis was taken to task by Malenbaum for accepting the outlook of Indian planners themselves as his starting point instead of adopting a more sweeping basis for his criticism. It is possible, however, that Lewis's very acceptance of the Indian planning experience adds greatly to the interest of his study for those concerned with the realities of agricultural planning. This is not the place to go into Malenbaum's basic premise that "it is poor planning strategy which is responsible" for the limited "prospect for success" of the Third Plan [178, p.876]. But it is relevant to the present concern to note that without a body of cogently argued studies about agricultural planning as it exists and within its existing framework and real situation, our ability to improve the planning process is hampered.

There is, of course, an overwhelming literature on economic and agricultural development in India and, more particularly, on Indian economic planning. But, rather surprisingly, there are few case studies of agricultural planning even there. Of course, there are such general discussions as those of Bhatt [24], Ghosh [91], Krishnamachari [162], Little [172], Mahalanobis [176], Malenbaum [177], Pant [220], Reddaway [233], and Vakil and Brahmananda [313, 314], to name only a sampling of the publications dealing with planning techniques. But these tend to treat agriculture in passing, without devoting much particular attention to the kinds of problems faced by agricultural planners. There is also, needless to say, a broad and technically impressive range of materials dealing more generally with economic development in India. But this leaves us rather where we began: there are surprisingly few discussions of the agricultural planning process, the way it has been worked out, and the problems faced by the planners. Among the few that can be mentioned are Gadgil [88] (which I have not had a chance to evaluate) and Poduval's rather bland once-over at the Near East training center [226]. A little more general in their viewpoint are the Ministry of Food and Agriculture's papers on the approach to agriculture in the Third Plan [135], Sen's discursive and rather disappointing essay on strategy [251], Rao's review [232], and Shrinivasan's study, which I also have not seen [254]. These still leave us without a detailed exposition--and this is one of the countries where the most advanced techniques have

been used for planning in low-income agriculture, one with the longest experience in democratic approach, and one where there has been a continuing debate throughout the society and the professional community on the performance of agriculture during three plans and the problems associated with increasing agricultural production and productivity.

The next-best-documented planning experience in a low-income country is doubtless that of Pakistan--and here the literature on agricultural planning is relatively more plentiful, although scarce enough considering that here, again, is an important country using sophisticated planning techniques. There is still no general case study of agricultural planning. Haq has a rather detailed discussion [111]. A useful, fairly brief general discussion is found in Wilcox, who certainly does pay attention to agricultural problems but whose focus is elsewhere and who did not have the space to deal in adequate detail with agricultural planning [335]. Another, still rather general, treatment is that of Bell, who discusses allocation criteria in respect to Pakistan [19]. Fei and Ranis discuss planning methodology with their usual cogency [63]. Snyder raises some problems of agricultural planning based on his Pakistan experience and comes the closest to a true case study. Unfortunately, the rather narrow confines of his format and the broad range of his coverage force him to be so summary as to be reduced almost to cliches. One would have hoped

for a fuller development of his points, drawing more in detail on the Pakistan experience and the efforts made to face up to some of the difficulties he notes [260]. Shorter's fine study of food-grain policy, noted in connection with food problems, deserves to be read as a study in agricultural planning, too [252]. Shorter also discusses planning procedures more generally [253].

Although the documentation is not extensive, there is an interesting group of studies on Burma. Hagen's earlier study [106], followed by Walinsky's later book [320] and his shorter case study [319], provide a very interesting picture of planning problems in a country where great administrative obstacles had to be faced. To these studies should be added two by Thet Tun, one dealing with economic planning in a more general sense [277] and one with organization of the planning machinery [278]. Although these do not deal extensively with agriculture (agriculture was excluded from the terms of reference in the 1953-59 Eight Year Plan and provided for in a separate plan), there are some interesting sections devoted to agriculture, especially in Walinsky's book [320]. The latter has a very interesting and detailed chapter on the implementation of the agriculture and irrigation program. Perceptive discussions of the relationship of agriculture to other economic planning activity are liberally sprinkled throughout.

Beyond these studies of three contiguous South Asian countries, case studies of agricultural planning in low-income agriculture are sparse, indeed. Of the general and rather brief surveys available, mention can be made of the quite

interesting ECAFE survey of agricultural plans in its region which is more analytical and critical than might be thought possible for an international agency [298]. This reviews agricultural development plans, generally commenting on the delayed implementation and the need for more attention to incentives and institutional reform. There is an interesting comparative table of objectives and plan features. It also makes one of the few attempts at something which has been discussed often enough: a look at the rice demand-and-supply situation for the region as a whole if the plans in separate countries were to be carried out. (It concludes there will be a surplus in 1966 if India and Pakistan meet their targets but a shortage if there is any considerable shortfall. The survey was prepared prior to the Chinese purchases abroad and considers mainland China as a net exporter.) Ojala compares countries very briefly in a paper devoted mostly to a discussion of agricultural planning techniques in Southeast Asia [208]. Paauw comments on the failure of agricultural plans to be implemented in relation to overall planning in Southeast Asia [217]. The ECLA studies on analyses and projections of economic development, while not treating agriculture in every instance, provide an interesting group of studies on the more macro-economic aspects of agricultural planning in various Latin American countries, but cannot really be counted as case studies [301].

From other countries, mention may be made of Fernando's very informative but far-too-short piece on agricultural planning in Ceylon, particularly

admirable for its frank analysis of planning shortcomings and some of their causes [64]. Although a substantial body of literature discusses various programs for agricultural development on Taiwan, until very recently there has been little analyzing the planning process itself. Ho's study on planning and programming in agriculture [125] and his paper presented to the Conference on Economic Planning in Southeast Asia [124] have helped fill this gap, as has the analysis prepared by Hsieh [131]. Tsiang includes program formulation in his discussion of the Joint Commission on Rural Reconstruction [285]. Nevertheless, we still await the detailed, critical analysis of agricultural planning that the Taiwan experience deserves and which would be of such interest to a number of other countries.

Stead treats agricultural problems in Puerto Rico rather slightly [263]. The Waterston country studies turn out to be rather too descriptive instead of analytical and, in any event--as noted earlier--devote too little attention to agricultural planning problems [324][325][326]. Two African studies which have appeared in a new series of books on planning tend to focus on political rather than economic aspects, and pay little attention to agricultural planning as such. Ashford's comparative study of Morocco and Tunisia emphasizes the political obstacles to using planning effectively to bring about major social changes [8]. Burke's study of preplanning in Tanganyika is mostly devoted to historical recounting. Its analysis of agriculture is skimpy and unsatisfactory, raising a number of provocative suggestions about the proper direction for agricultural planning but failing to explore them adequately [36].

The IBRD studies on economic development in various countries, too numerous to cite and too well known to need to, can hardly be called case studies in the sense considered here, but they do discuss agricultural planning and, as noted, sometimes propose stimulating alternatives of approach. The collected lectures from the FAO Near East regional training center [80] and the 1963 agricultural planning course [71] mention some other agricultural planning experiences but, except for those cited, they lack enough analytical content to justify recommendation. Apparently, the only separately published case study is that of Gittinger on Iran [94]. This is made all the more interesting by the different view of the same planning effort expressed in the chapter on agricultural planning in Baldwin [11].

Among these case studies of agricultural planning--which, of course, fail to add up to nearly as many as the importance of the problem justifies--there are several glaring omissions. The absence of studies in Pakistan and India and the lack of a study of experience in low-income agriculture with a rolling plan have been noted. There are almost no comparative studies. We lack a well-focused study on the Yugoslav experience, which might be of great interest in many countries where the expectation is that the public sector will have to be very important in industry but where privately owned agricultural holdings are likely to continue as the future preference. The article by Jelic and Orthaber, while touching on agriculture, is too uncritical to be able to meet this need [143].

We have too little careful study of failure. Watson and Dirlam make this point by noting that, of the obstacles to effective planning, three of the most serious are a lack of suitable information on which to base planning, a lack of suitable projects, and a lack of qualified and motivated personnel. They suggest that much more effort in planning needs to be directed to removing these restraints, and that to make planners more aware of the need for such changes, "much more pooling of experience is needed, particularly of unsuccessful experience" [327, p. 194]. Indonesia would be a good possibility for a start. A number of planning attempts--including some in agriculture--have been undertaken but they have come to nothing. Wilcox puts it bluntly: "Indonesia has never created an effective organization for the formulation and execution of development plans. It has never prepared a fully adequate plan. It has never carried any of its plans into effect" [335, p. 4]. Several analyses of economic development on Indonesia have been prepared. Perhaps the most interesting from a planning standpoint are those of Higgins [120] and Higgins and Higgins [121]. A more descriptive contribution is that of Van der Kroef [315]. None of these deal extensively with agriculture.

Although he does not deal with agriculture, except incidentally, Friedmann has written a perceptive analysis of what he calls the "latent" effects of planning in Venezuela which is particularly apt for those concerned with agricultural planning. These effects are "called latent... because they normally pass unmentioned in any discussion of the purposes of planning" although "the question may legitimately be

raised whether the latent functions of planning were not, on balance, more important to the development of Venezuela as a modern democratic nation." The latent effects that Friedmann singles out are strengthening the presidency by permitting him more adequately to "assert a national interest in policy questions, with the backing of factual and reasonably objective information;" improving the political process by exerting a "disciplinary effect on political debate" primarily through forcing "protagonists to fall back on reasoned arguments and think of incremental improvements in the plan itself rather than of grandiose schemes that would fail to meet the critical tests of consistency;" creating a "development society" by fostering a development mentality and acting as a "countervailing force to a fatalism born of recurrent failure, poverty, and despair;" reducing social conflict by coming "to serve as an instrument for reconciling competing interests in an image of the national interest;" and by mobilizing external assistance [87, pp. 47ff].

A most instructive kind of "case study" to read would be the agricultural plans themselves. There are a great number of these, of course. The United Nations Dag Hammarskjold Library has published a list of plans--many including portions devoted to agriculture--in the form of a listing of its accessions [287]. It is to be hoped that this will become a regular publication. Waterston has an appendix listing all the plans he and his staff could locate [323]. But there is a problem of accessibility here. Most plans are mimeographed or published in limited editions. They go out of print quickly and most often are not available

through normal book distribution channels. (Some have even been held as state secrets.) Further, there is a tendency for them to have become rather dated by the time they are indexed in some international source. Perhaps there is room here for the Hammarskjold Library or some other agency to publish a collection of excerpts or whole plans, perhaps by Xerox or some similar system. Meanwhile, one accessible plan is that of India which was published in large enough quantity to be distributed widely [136]. Short excerpts dealing with investment from the Indian draft outline and the Ceylon ten-year plan may be found in Meier [185].

IV. Particular Planning Problems Associated with Agricultural Development

As more and more low-income nations have turned to planning as a tool to accelerate agricultural growth, discussions of the particular obstacles lying in their way have begun to be published.

Economic incentives

A significant recent trend in the literature has been emphasis on economic incentive. This is a reaction to the rather unsatisfactory results achieved by programs focusing heavily on such institution-building activities as extension, community development, and cooperatives, plus growing realization that peasant farmers are relatively price responsive providing they are given a proper environment. (Sturt notes 93 per cent of the Pakistani peasant farmers in his sample wanted to undertake some technical innovation during 1962 which, in the event, they did not carry out, and that nearly all indicated the reasons for their failure were either lack of credit or unavailability of materials [270].) Attention to improving incentives has tended to be closely linked with emphasis on two related needs: first, commercial inputs--particularly fertilizer and insecticides--as essential to modernizing agriculture and, second, improving marketing channels both for supply of inputs and purchase of products as a means to reach large numbers of farmers with a minimum burden on government administrative capacity. "The need to provide incentives, or

to reduce disincentives," Barter comments, "is a most crucial matter in agricultural planning." He recalls the "great powers of passive resistance" of peasant farmers because of the "subsistence nature of agriculture," and notes that, while strikers in industry can seldom hold out long and entrepreneurs have great difficulty resisting strongly implemented government policies, farmers "can go on year after year growing as little as possible over the bare minimum needed to support their families if they consider it unlikely to be profitable to incur the increased effort or expense to produce more" [17, p. 39].

An agricultural development program based on increasing economic incentive and commercial inputs may have several substantial advantages. It tends to reach the more responsive farmers in the community who are, in any event, the ones who really do things. It is these exceptional farmers, the responsive margin, with whom we are most concerned in the early stages of agricultural growth. Using price incentives and market demands, as a basis for decisions, farmers will tend to increase production in crops for which there is a high income elasticity of demand among consumers. Not only does this have the greatest immediate impact on subjective evaluations of progress among consumers (and on nutrition, since it is generally nutritionally important foods that have high income elasticity), but it also has the greatest influence on absorbing additional purchasing power as investment for growth proceeds and thus the most beneficial influence on containing inflationary forces. It tends to enhance capital formation most effectively, since, when a better

farmer adopts a new, modern practice, there is more likely to be a relatively large change in his income; the increasing monetization necessary for using commercial inputs also encourages capital formation. Furthermore, the more active farmers, who respond best to economic incentives and information about new commercial inputs, are the ones most likely to be willing to save and invest. Commercial inputs have a tendency to be used most readily on market crops--as, for example, livestock feed, vegetables, or tobacco--rather than those consumed in the household and so contribute toward a cumulative increase of monetization and commercialization in agriculture. In passing, it may be noted that an agricultural plan relying on price incentives assumes a sufficiently high price elasticity of marketable surplus to bring substantial additional quantities of wanted produce onto the market. Although a full discussion of the research on this topic is beyond the scope of this review, some of the more interesting discussions may be noted. Krishna has proposed a very interesting theoretical statement [161] which he has followed up with an empirical analysis in the Punjab [160]. Falcon, working in Pakistan, has prepared a very careful study of farmer response to price in subsistence situations. His research leads him to the conclusion that "farmers in West Pakistan, when given the opportunity, do respond to price and income incentives." In West Punjab, he found short-run price elasticities for irrigated wheat acreage of .1 to .2 and a price elasticity of supply for cotton in terms of acres slightly over .4, which, he notes, is higher than some studies indicate for the

United States [60, p. 580]. Hussain found price elasticities of jute acreage in East Pakistan to be about .4. His article contains an interesting summary table of price elasticities in Pakistan which range from nil for inferior substitute grains to one case of .72 for cotton [134]. Mubyarto, in an unpublished doctoral dissertation, has estimated price elasticities of marketable surplus for rice producers in Java with the encouraging conclusion that it may be as high as .5 in some of the more important areas [197]. Other workers are approaching this problem empirically in Thailand, the Philippines, and elsewhere, as Wharton reports [331]. Both the published results and reports from research in progress indicate more responsiveness than most planning officials have previously assumed.

Meier notes a recent trend toward wider use of incentives and market mechanisms and away from excessive "overplanning" in a number of countries. Such excessive concentration on detail has, among other things, he notes, "slighted the strategic importance of agricultural growth," "In contrast with their earlier enthusiasm for comprehensive centralized planning, a number of countries are now attempting to place more reliance on decentralized regulation and are giving more emphasis to the improvement and guidance of the market mechanism." This "lighter-type of planning" puts more emphasis on "maximum utilization of existing resources," and recognizes that "the need to increase the marketable surplus of agriculture is of fundamental importance." [185, p. 564]. Paauw notes this shift in planning approach among Asian planners. At the Second Conference of

Asian Planners in 1964 he found greater "stress placed upon incentive systems appropriate to stimulating agricultural output, a problem which has been largely neglected in the past throughout much of the ECAFE area" [217, p. 18].

Waterston emphasizes the increasing recognition of the importance of economic incentive in economic planning and notes many observers of Pakistani planning feel that "in Pakistan's agriculture... the use of incentive prices played an important part in increasing production" [323, p. 342].

Fernando presses the desirability of using private-sector entrepreneurs and a regulated market as a means to bring the demands of program implementation within the range of administrative feasibility. He notes the staff of planning officials in the Soviet Union numbers some 800,000 people, "many of whom, one suspects, are substitutes for the price mechanism" [65, p. 27].

Berg suggests that in some low-income countries the inadequacies of administration all but force a pattern of agriculture depending on small farms and economic incentives. Against the background of difficulties encountered in Guinea, he discusses the problems of trying to establish a pattern of large scale government-owned farms. Among the factors he cites are the variability of soils and the lack of knowledge about them, the inappropriateness of mechanization in low-income agriculture where labor is plentiful, the possibility of farmers retreating into a subsistence economy rather than working as wage labor, and the general availability in Guinea of additional land for agricultural expansion [22].

Galbraith illustrates the growing interest in market mechanisms when he comments in the introduction to his collection of lectures on economic development, "Were I writing this book afresh, . . . , I would be even more concerned, especially as regards India, with how a larger part of the task of economic management might be shifted to the price system" [90, p. xii]. Colm and Geiger state more generally that "most less developed countries have found that the market mechanism is a much less wasteful way of making many kinds of economic decisions and for getting many kinds of economic tasks accomplished" [43, p. 17].

An excellent example of the more recent emphasis on incentives and commercial inputs as a means to modernize low-income agriculture is found in Hill and Mosher. "It is on the alternative combinations of practices available to the individual operator and the potential rewards associated with these alternatives that attention must be focused if substantial and sustained agricultural development is to be achieved." They point out that in the "early transitional stage" agricultural planning must successfully provide "locally-tested combinations of improved practices," must assure "production supplies and equipment of the kinds and quality farmers must have," and finally must convince individual farmers "that the recommended practices will in fact increase production on their farms and that it is to their advantage to adopt them" [122, pp. 2-3]. In an excellent, more extensive treatment of the strategy for developing low-income agriculture which carries further this contemporary trend toward emphasizing incentive and economic

environment combined with commercial inputs for modernizing agriculture, Mosher lists five "essentials" and four important "accelerators," which combine to provide a framework for developing an agricultural plan. His essentials for agricultural development are transportation, availability of purchasable inputs, markets for farm products, new patterns of husbandry and management, and production incentives for farmers. His accelerators are farmer education, production credit, coordinated local programs, and improving and expanding the land base [194].

Many authors stress the importance of price policy in low-income agriculture if economic incentives are to be effective and commercialization is to proceed in an orderly fashion. The implications of these discussions for agricultural development planning are well summarized by Barter [14] [15]. He suggests a well-formulated price policy can have an important impact on accelerating production in low-income agriculture both through the effect on farmers producing for the market and through bringing more and more subsistence farmers into the commercial sector in response to increasing confidence that erratic, speculative price swings have been contained [15]. The widespread use of conscious price policies in low-income agriculture is chronicled in a number of international agency publications. One of the better ones is that published by FAO [76], but a number of others can be noted (see, for example, [75] [82] [84] [300]). These surveys also point up the not uncommon tendency to try to keep agricultural prices, especially of foodgrains, low for the benefit of urban consumers, thus vitiating economic incentive for producers.

Taxation of Agriculture

The literature on taxation in agriculture is surprisingly limited in scope but rather compact in form. Much of the best can be found in the papers from the conference on agricultural taxation and economic development edited by Wald [318] and Wald's subsequent book [317]. Lindholm argues that taxes must not be imposed without regard for increasing size of holding, a view which seems premature in many crowded, low-income countries [170][171]. A good discussion prepared by ECAFE draws on the taxation experience in Asia [299]. The readings edited by Bird and Oldman contain several excerpts relating to agriculture, including two interesting recommendations of visiting economists, one by Hicks and Hicks on Jamaica [118] and another on graduated land taxation, a much-discussed but rarely attempted device suggested by an IBRD group for Colombia [139]. Discussions of agricultural taxation frequently turn on interpretations of the Japanese experience of taxing away most of the increments of increasing agricultural productivity for use to invest in industrialization. There are many discussions of Japanese economic development which devote considerable attention to this question, but among the most immediately relevant are two by Johnston [146][147], one by Dore [49], and a section of the history of agricultural development in Japan edited by Ogura for the Japan FAO Association [207]. Most discussions about agricultural taxation refer to taxes levied by the central government;

for a discussion of how local taxation might be used one can turn to Paauw [218].

Population Growth

Lying behind much of the writing on agricultural development and planning is the spectre of rapid population growth outrunning food supplies and pre-empting resources that could otherwise be devoted to investment. Relatively few works deal primarily with rural population problems, and perhaps more attention should be devoted to them. Some literature is beginning to appear and is proving very interesting. Two papers presented at the recent Belgrade World Population Conference illustrate this development. Khan discusses the receptivity to family planning education of villagers living in the vicinity of Comilla in East Pakistan, noting an encouraging acceptance when the program is organized properly [156]. Henin reported on research in the Gezira scheme where the investigation disturbingly indicated that increase in income was leading to no decrease in the size of the family and concluded "all this points out to the need for family planning programmes which must be incorporated into any resettlement scheme" [116, p. 9].

Although the literature focusing specifically on rural population problems is still limited, it should be noted that general works on population pay full attention to questions of the agricultural population in the context of the overall demographic picture. Among these more general works, those particularly useful for agricultural planners include Belshaw's general treatment [20] and the extremely

interesting study of population and economic development by Coale and Hoover [42].

Some of the more interesting work on population questions from the standpoint of planning is that of Enke, who has looked rather carefully at the purely economic question of alternative investment for production increases, particularly those for food, in contrast to investments aimed at limiting the rate of population growth. Working from hypothetical figures that he considers reasonable on the basis of experience in low-income countries, he concludes that "the superior effectiveness ratio of birth reduction over output expansion... is 100 times" [57, p. 26]. Berelson makes a similar point, commenting that "as for cost, it begins to appear that family planning can be implemented economically--that is, for far less than the strictly economic value of each prevented birth" [21, p. 128]. Another interesting economic approach is that of Paukert, who computes the proportion of national-income increments that go to population growth, increased per capita consumption, investment, and increased government services. He notes that "in the developing countries by far the most important use of the gains from economic development was catering for growing population [the median value was 55.7 per cent], with consumption well behind, and government and investment (roughly equal) still further behind. In the industrialised countries, on the other hand, the most important use of economic gains were increases in per caput consumption, followed by investment, the population use being only third in importance [with a median value of 19.1 per cent]." [222, p. 376]. Judged on the straightforward

comparison of food supplies meeting the demand arising from population growth plus income growth. Long points out that agriculture, if sometimes performing well, is generally not performing well enough [173].

From the standpoint of agricultural planning itself, Myrdal emphasizes the importance for those concerned to recognize the urgency of population problems in their plan formulation [201]. A key planning consideration, of course, is the rate of transfer out of agriculture into the urban sector of the economy. Rural-urban migration is an important consideration in most two-sector models as, for example, the recent one published by Fei and Ranis [62]. A sobering, indispensable article on this topic is that of Doving [50], whose deliberate analysis and easily read graphs could put an end to many an uninformed discussion of mechanization, land reform, and the rural labor force. Phillips studies rural-urban migration in Iraq [224], and Bhattacharjee notes studies in India [25]. There are other studies, to be sure, but the implications of urbanization from an agricultural policy standpoint are not extensively treated.

There is one disturbing current in rural population discussions. Clawson, [41], to cite just one example, expresses concern that rural-urban migration is draining off talented youths. A related concern is the often undefined feeling that increasing urbanization destroys good qualities in a bucolic society (see, for example, Halperin [109]), which is closely akin to the agrarian fundamentalism so familiar in American social thought. The selective effects of rural-urban migration

on rural leadership potential has been inadequately studied; but given the rates of migration in fact experienced, it hardly seems that, for several generations, at least, one need fear that so many young people will leave agriculture as to hobble seriously the leadership potential for agricultural growth. As for the undesirable effects of urbanization, it would appear that growth in rural populations precludes maintaining agriculture without change and almost inevitably will entail substantial out-migration. Anyhow, most evidence indicates rural people, the supposed beneficiaries of such an agrarian society, prefer urbanization.

Manpower Planning

If one turns to the modern trend to focus on "manpower planning" instead of "education," one finds that as yet the literature deals rather scantily with agriculture. The country studies in Harbison and Myers, for instance, mostly refer to agriculture only in passing [112]. Perhaps the most critical lack in this whole area is the failure of those concerned with manpower and education to pay more attention to the potential of rural primary schools as agencies of agricultural change. "The biggest problem in education," Lewis feels, "is the relation of schooling to agricultural improvement" [169, p. 7]. Lewis suggests that it is possible to overbalance the education program with too much emphasis on primary schools in relation to adult education, although it would appear that his concern might be more properly directed more at the content of primary education. The literature does not appear to report a single curriculum series in a low-income country

designed for the primary level in rural areas, although several specialized subject-matter sequences have been prepared or are about to be published.

The International Bureau of Education-UNESCO survey of facilities for rural education highlights how few separate administrative organizations exist for rural education as opposed to urban and concludes that the tendency is for urban needs and viewpoints to eclipse those of agriculture [303]. Yet a well-designed rural curriculum could be a powerful tool for agricultural development. Among other advantages, it could give rural children a view of agriculture as an important integral part of the economic life of the nation. It could implant from the very beginning an implicit recognition, first, that effective, new techniques do exist in agriculture which they and their families can use to their benefit and, second, that the printed page is an accessible, trustworthy source of information about modern farming techniques and improved family welfare. Wharton puts it another way in calling on rural schools to concentrate on teaching pupils "how to economize in production and marketing" and how to "individualize" to their own needs and farms the general information available to them [329, p. 225]. (In passing, it is interesting to note how important rural educational facilities can be to overall economic development. Christensen and Yee, working with Mexico for the period 1950-1960, estimate that, allowing for rearing, elementary education, and training, "the total investment in people moving out of agriculture annually was about \$450 million. This may be compared with total capital formation in material forms which averaged about \$1.500 million annually" [38, p. 1059].)

Organization of Agricultural Planning

One of the areas where the literature could be most interesting for those actually engaged in agricultural planning would be that of organization for planning-- where the agricultural planning units should be located, experience with the advantages of one organizational approach over another, suitable organizational structures for smaller countries, decentralization, participation by various groups, and the like. Unfortunately, the literature on economic planning as a whole pays too little attention to these questions of organization and scant attention, indeed, to organization for agricultural planning. Abraham contends the absence of critical studies devoted to organization is one more indication of the "lack of concern with how as opposed to what" which he detects among planning advisers and development economists [5, p. 7].

Fortunately, much of what is available is of high quality and provides yet another instance where publication devoted to such practical concerns is to a large extent the work of the international agencies. By far the most extensive and best work dealing with general organizational problems of development planning is Waterston's, which draws on the planning experience of virtually every country in the world [323]. For those primarily concerned with agricultural planning, much of the best and most relevant material is in the papers prepared for the workshop on organization and administration of agricultural services in the Arab states [293].

Within this collection, the article by Harper and Farouky contains an excellent discussion on the administration of agricultural planning groups which is turned primarily toward Arab states but which would be useful in any planning organization [12]. On balance, the authors feel the main locus of planning responsibility should be within the ministry of agriculture rather than a separate central planning organization. A similar conclusion is reached by Bruce in another fine paper in this collection. He draws on the experience of several countries in noting that when the detailed preparation of agricultural plans rests in a central organization insufficient account is taken of problems of implementation, while the staff of the ministry of agriculture tends to consider the projects as belonging to the planners and so fails to take a strong interest in their execution [33]. Yet a third article in this same collection, that by Bruce and Gregory, competently discusses planning administration with emphasis on implementation problems, although this is not of the same standard as the other two [34].

Another excellent article, this time focused on Asian states but again of far wider applicability, is ECAFE's discussion of administrative machinery for planning. This article, with thorough competence, discusses the pros and cons of such planning administration problems as centralization and decentralization; plan formulation, including perspective planning, medium-term, and annual plans (and concluding that the best arrangement is for the central agency to do the long-term plans but only to coordinate short-term plans put up by various technical agencies

within the plan framework); problems of implementation; review and adjustments (arguing against rigidity or a plan law); where the planning organization should be placed in the governmental structure; planning work within substantive agencies; and organization for securing public cooperation with emphasis on the very general need for more and better publicity [294].

Waterston, after reviewing the experience in a number of countries, recommends a central planning agency with rather aggregative responsibilities and establishment of "programming units" in the operating agencies. The central group would formulate and revise the more aggregative aspects of long-term, medium-term, and annual development plans; prepare regional plans where regional groups cannot; prepare annual operational plans (but not budgets); recommend policies to mobilize financial, material, and human resources; do periodic reporting and evaluation of the progress of the plan; and coordinate foreign technical assistance [323, p. 435f]. The programming units would bear most responsibility for preparing plans relating to the operating agency to which they are attached and be responsible for seeing that projects are prepared. Such a pattern, Waterston feels, tends to emerge in most countries but generally only after long delay. In his view this kind of structure is so important that "...the absence or ineffectiveness of programming units is the most important flaw in the planning apparatus of even the more experienced less developed countries" [323, p. 376]. Two earlier articles prepared by ECAFE also discuss the location of sector planning units but not with the same competence as the items already noted [295][296].

Stone's discussion of national administration for economic development treats the broader problem of administration well [269], and Walinsky discusses the overall administration question in a chapter on planning-unit organization and another on improving public administration, but his treatment is so summary as to lose much of its value except as an introduction [321]. For a useful country study written by an active participant in the planning process, see *That Tun* [277]. An interesting contrast to much included in these articles is provided in the report on the seminar on administrative organizations attended by officials from former British-administered areas which strongly reflects their British-oriented approach [239]. The IBRD suggestions on organization for agricultural planning in smaller countries contained in the country reports on Tanganyika and Uganda have been mentioned in another context, but they are relevant here, too [137][138].

Development administration must be suited to the unique environment of each individual country, of course, and here again Galbraith states it well when he cautions against "casual" borrowing of organization where the "dangers are greatest of all." Recalling the rather narrow institutional focus in the United States as it expanded into the trans-Mississippi plains a hundred years ago, he comments caustically, "it was our unquestioned good fortune that community education experts, grain marketing analysts, home economists, vocational counselors, communications specialists, or public safety advisers had not been invented" [90, pp. 57, 58]. Whatever form of administrative device eventually is chosen, there

is generally a "widespread lack of understanding that it takes a long time to staff and build a viable central planning agency" and the related agricultural planning groups in operating agencies, as Waterston comments. Citing the Pakistan experience, he notes that "few countries have received high caliber foreign planning assistance on as large a scale. But after more than a decade, the central planning agency was still without an adequate staff and faced serious organization problems which prevented it from effectively performing all the functions assigned to it" [323, p. 374].

Although quite a range of administrative devices for implementing agricultural development have been proposed or attempted in practice, this rich range of experience has been too slightly analyzed. I have found only very brief descriptions of the oft-mentioned Malayan Red Book and the rural development operations control room. The best is that of Wilcox in his survey of planning in Southeast Asia [335, p. 26f]. Thong discussed the technique in a paper presented at the Conference on Economic Planning in Southeast Asia [280], Waterston also describes the operations room approach in some detail [323], and Crosson notes it in connection with his study of Malaya [45]. It has been noted that the Indian and Pakistani "package plan" has not been adequately analyzed. Other similarly imaginative organizational approaches to rural development and agricultural planning need to be described and assessed.

Problems of Implementation

"The espousal of planning, from country to country, is more eloquent than its execution," Mason has commented with a measure of understatement [183 p.].

"Effective implementation of plans and programs... is even more difficult to achieve than satisfactory plans and programs and is susceptible in only minor degree to control by planners" is Walinsky's view [319, pp. 50-51].

Disappointment with the effectiveness of development planning in low-income countries has led to an increasing concern in the literature with ways to adjust the planning process to facilitate implementation and to an increasing feeling that planners themselves must take more responsibility for implementation. Colm and Geiger simply define implementation as part of planning. "The final element of a well-conceived development plan is the provision for its implementation"--including budget, fiscal and monetary measures, progress reports and evaluation, and selection and training of personnel [43,p. 51]. FAO notes that, in contrast to a decade ago, "it is now much more generally realized that the policies and measures needed for implementation are an integral part of planning and must be worked out in detail if the plan is to have any chance of success" [83,p.125]. Waterston takes a similar view and goes on to assert, "the lack of success in implementing plans is in large part attributable to poor planning." He suggests that part of the planners' responsibility is to prepare plans in such a manner as to facilitate implementation.

The major causes for delay, in his view, are dispersal of physical and financial resources, lack of discipline in plan implementation, inadequate preparatory work on projects, lack of engineering supervision, and administrative and procedural delays [323,p.314ff]. Although there is little doubt that when a planning group is fully aware of these common failings it can organize its planning approach so as to minimize causes for delay, to overcome such an impressive list of obstacles will clearly take a much broader effort and much more political leadership than any planning group can be expected to supply alone.

Implementation problems are perhaps more serious in agriculture than in any other field. Waterston notes "the greatest shortfalls are usually in agriculture" [323,p.365] and cites the experience of a number of countries as examples of how poor performance in agriculture can skew the whole investment program of a plan [323]. FAO notes that "while there have been many improvements in techniques and organization for the formulation of agricultural plans, their implementation still leaves much to be desired in most countries" [83, p. 125]. Barter has some useful comments on implementation problems in agricultural planning [15].

To go further into the question of implementation takes one far astray into questions of public administration, administrative reform, and the political theory of developing countries and cannot be examined here. But the theme is never far from discussions of agricultural planning and perhaps deserves more explicit attention in terms of devices that can help smooth the path for those to whom responsibility for implementing plans is given.

Annual Plans and Budgeting

Two closely related devices are commonly among the adjustments in the planning process recommended to help improve implementation. The first is that the planning agency prepare annual plans which derive from the medium-term plan. The annual plan would spell out in some detail the measures needed in any given year to implement the economic development program. At the same time, it is usually suggested that these annual plans be carefully integrated with the regular government budget, which will, of course, include many on-going government expenditures not closely related to development.*

A substantial literature exists on problems of making budgets more suitable for development purposes and on integrating the budget, generally controlled by the treasury, with the development plan. Waterston devotes a whole chapter to budgetary reform, and his discussion is a good place for one primarily concerned with agricultural planning to turn for a quick view of the main trends [323]. Authors often note the difficulties of working with the treasury because it lacks a "development mentality," but Abraham suggests that a "real difficulty... is that so often plans are not really translatable into budgetary action" because planners pay insufficient attention to problems of implementation. He suggests the best way to relate planning

* For a more extended discussion of the literature on this subject see William I. Abraham, Annual Budgeting and Development Planning [3].

to the budget process is through preparation of annual plans and concludes that the preparation of an annual plan is "one reason why Indian planning has shown results" [5, p. 30]. Even in India, Hagen reports, despite the fact that the "relationships among the various units of government in the planning process provide a model any other underdeveloped country might well imitate," the country "has not developed annual planning very fully, so that occasionally the coordination over time of various projects is faulty" [108, p. 24]. In most other countries the situation is considerably worse, moving sometimes to the extreme of simply ignoring the development plan altogether in allocating annual expenditures, which has been the Indonesian experience. Small wonder, then, that FAO concluded "very few developing countries... have been able to establish a practical system of translating medium-term plans into annual operational programs that can be integrated with annual financial budgets" [83, p. 124].

Decentralization of the Planning Process

A major weakness in agricultural planning to date has been the failure to decentralize the planning process further. The weight of opinion in the literature seems to be that more decentralization is necessary if agricultural planning is to enlist the support of cultivators, local agricultural leaders, and government administrators. "The planners' task," Waterston puts it, "becomes a matter of trying to reconcile, or at least to strike a workable balance between, a whole series

of divergent interests.... This can best be done by making the preparation of a plan a combined operation in which every one and every group likely to be affected by it-- government authorities and administrators, legislative and other representative bodies, regional and local authorities, technical and advisory bodies, the private sector and the public--is involved in the process in some appropriate way"

[323, pp.447-448]. The basic dilemma of centralization versus decentralization in

planning, nowhere more acute than in agriculture, is succinctly noted by Lewis:

"if planning cohesiveness requires centralization, planning vitality requires

decentralization" [167, p.107]. Many authors would argue that greater

decentralization must simply be considered so critical to effective agricultural

planning that whatever proves needed to achieve it must be done, even if it involves

some loss of cohesiveness. In most countries, particular attention needs to be given

to starting preparation of the agricultural plan far enough in advance that the rather

time-consuming process of local consultation can be carried out. The importance of

decentralization to effective planning is discussed in a somewhat broader context

by Hoselitz [128], and several of the discussions of administrative problems in

agricultural planning also devote considerable attention to this question. Roxas,

reflecting on the Philippine experience, strikes a common note when he comments

that the planning task is not to prepare an "analytically elegant document," but rather

to "spread a planning habit, establish rational economic calculation as the common

norm for decision-making and have this accepted by those responsible for making

decisions" [238, p. 48].

Widespread Participation

More widespread participation in the planning process is an important aspect of decentralization. A number of analysts feel broad support for plan programs and participation in the development effort can come only if there is much more public involvement in the debate about planning policy and subsequent program formulation. It is precisely because planning involves only a small elite while implementation involves many people, as Bogra notes, that public participation becomes so critical [28]. Aware of this need, Wilcox includes a public relations section in the planning agency as part of his idealized model of the planning process [335]. Lerner and Schramm note that, among participants in the seminar on communications and economic development, it was generally accepted that "as a principle of development strategy, communications should be budgeted in development plans along with other necessary social overhead. . . . Ten years ago, . . . even such a proposal would have been highly unlikely" [165, pp. 134-135].

The impressive, continuing public debate over plan formulation that goes on in India may well be one clue to why India has had a highly competent planning organization and a more consistent planning effort than any other democratic country. India consciously encourages public awareness and debate through such devices as the National Advisory Committee on Public Cooperation, printing the plan document in all thirteen important local languages to be sold at low prices, radio, documentary

films, lectures and seminars, college planning forums, and concessionary fares for peasant groups travelling to visit important projects and organizations [323]. The impact of India's broad public debate could be the subject of a very interesting and significant study. Even in India, there is indication that more public debate could and should be encouraged. Nair comments that the Indian Study Team of Five Year Plan Publicity felt the metropolitan press had not provided as much coverage of the plan "as could have been expected from national newspapers of their standing." The proportion of "development news" was reported to have ranged from only 2 to 14 per cent [202, p. 292], although from rather casual observation it would seem development news must have been rather narrowly defined.

Special commissions are one approach both to problems of decentralization and to encouraging greater public awareness of planning. Waterston relates that more than 1,500 Moroccans from all walks of life were involved in plan preparation [324]. The slow work pace of the commissions and the inconclusive debates raised serious doubts in the minds of many Moroccan leaders about whether the commission system was an appropriate means for preparing a long-term plan in a low-income country. If the alternative is a planning unit substantially isolated from public contact, the commissions should probably not be wholly discarded. The use of township councils as local organs of planning, apparently primarily to set local goals within the national framework, is described by Hsieh in his otherwise disappointing and uncritical discussion of agricultural planning on Taiwan [131]. For agricultural

planning in India, Waterston reports, a Working Group on Agriculture was established with 20 subgroups. These groups prepared programs on the basis of provisional five-year targets and provided the material for a draft memorandum on the Third Plan which the Planning Commission prepared. The studies needed by the subgroups were undertaken to a considerable extent by Ministry working personnel [323].

In agriculture, many special problems of public participation are raised by the dispersed nature of production; by the generally low level of literacy among farmers; by the skepticism and suspicion that greets any government activity; by the opposition of such entrenched, privileged agricultural groups as landlords and moneylenders to effective agricultural development and thus to public discussion of agricultural planning; and by the general lack of effective, representative farmers' organizations. Faced with such obstacles, agricultural planners must exercise even greater ingenuity than their colleagues in other planning units to find channels of public participation, but the need to do so is even more acute than elsewhere. Such channels should be explored as including more material on agricultural plan formulation and issues in farm radio programs (and very often establishing the programs themselves), encouraging extension agents to raise planning questions, and a broad program of public meetings in rural areas to explain and discuss proposals at the plan frame or some similar relatively advanced stage of planning. Just plain field trips into rural areas for all agricultural planning staff members are one device

too frequently overlooked. Earlier planning efforts, rather preoccupied with the more theoretical and academic aspects of this new applied science, have failed to pay enough attention to the importance of public participation. As Clawson notes, "above and beyond the material rewards, however, farmers respond to other kinds of incentives. Perhaps the most important of all is a sense of participation. Planning should be with farmers, not for them. Plans handed down from on high, no matter how technically sound, will never command the critical local support that farmers will give to programs in which they have had a part."

Descriptive Literature on Rural Life

Often overlooked among the literature useful for agricultural planners are works that give the "feel" of peasant agriculture and an insight into peasant viewpoints. While such material is critical for foreigners who may be trying to work on problems of low-income agriculture, it is also of real relevance for many national planning officials who are concerned with agriculture but who are from urban areas or from very different social backgrounds. For this purpose, some of the fiction that deals with peasant farmers is to be highly recommended. There are several Indian examples and a scattering from other areas. Even though some may be of limited literary value, if well chosen they can reflect peasant attitudes, and the best do it with the emotional impact that can come only from good fiction. Buck's Good Earth [35] is the classic example of this sort of novel, but one can mention also Markandaya's Nectar in a Sieve [179] or Chinua Achebe's Things Fall Apart [6].

Village studies, where good ones exist, can give agricultural planners a very fine background-in-depth on the life, culture, and descriptive economics of a single village. Such studies as those of Hickey [117] and Hendry [115] on Viet Nam, De Young on Thailand [48], or Wiser and Wiser [336] and Marriott [182] on India provide insights into rural life and possible acceptance of innovations and government-encouraged programs. To be worthwhile, these studies must have a high empirical content and make systematic use of modern social science tools. More general, sentimental, or travelogue-type books are hardly worth the time and may even be misleading in the context of agricultural development efforts. In the more general agricultural development literature beyond the scope of this review will be found a number of excellent works on particular countries or regions that, though not specifically directed to planning problems, are of great importance for agricultural planners.

Research to Undergird Planning

Since planners are so acutely aware of the dearth of reliable agricultural data of all sorts, they are among the most active "consumers" of research. Even so, the literature pays slight attention to the planning problem of mobilizing research resources for agricultural development. FAO notes "in very few countries are the results of agricultural research used as fully as they might be in the planning of agricultural development. Similarly, agricultural research is rarely directed

specifically enough to the provision of the basic data needed for agricultural planning purposes." Indeed, FAO commented, very few countries have even "established programs for statistical improvement based on their needs for planning " [83, pp. 138, 122]. Although there are a few discussions of research management in low-income countries, including several in the UNSCAT articles, not much focuses on agricultural development or agricultural planning needs. Perhaps the best discussions of general research needs for development in low-income agriculture are found in two articles by Mosher [195][196]. In the more recent of these, Mosher identifies six major areas where research needs are most pressing: the nature of farms; risks of innovation; nature of the impact of developing urban markets; the relationships between agricultural production and rural welfare; the content of education needed for rapid development; the organization and administration of governmental agencies serving agriculture; and town-centered development schemes [195]. Wharton gives a good picture of the kinds of research on agricultural development being undertaken in Southeast Asia [331]. Interesting insights into emerging trends of research in the biological aspects of agriculture in low-income countries are found in the collection edited by Moseman [193]. Johnston and Tolley, in an article that is particularly provocative for agricultural planners, state that the "mainsprings of growth [in agriculture] are the production function shifts resulting from 'producing' new production techniques." They suggest too little attention is paid by those responsible for agricultural planning to "the process of 'producing' and

distributing new production techniques" [149, p. 366]. Critical though research is to rapid agricultural growth, Wharton laments, he was unable to uncover any research "dealing with the economics of agricultural research in the developing world!" [330, p. 28]. Tang discusses the historical returns to research and education in Japan [275]. Griliches, in a famous article, demonstrated the profitability of research on hybrid corn in the United States [100] and more recently reported research using a different approach which "implies the fantastically high gross rate of return of about 1300 per cent for social investment in agricultural research and extension." While this must be scaled down to allow for the effect of research supported by the agricultural-supply industry, he still feels a rate of return of around 600 per cent is implied if the output is valued at market prices, as it would be in low-income countries. (In the United States context, Griliches assumes that "due to our inability to solve the agricultural problem, the social value of additional agricultural output is only about half of its market value" and so reaches a gross social rate of return for the United States that is "still about 300 per cent.") [101, p. 968]. Tweeten and Tyner estimate an investment yield of 100 per cent in United States agriculture from all research and education expenditures taken as a whole [286]. Heady estimates a rate of return of from 74 per cent to 110 per cent on United States investment to raise "farm productivity" [114, p. 600ff]. Since much research in low-income countries is either adaptive or can be undertaken with relatively inexpensive techniques, returns to research may reasonably be expected to be at least on the order of those reported

here. By way of a slight digression, the question may be raised as to why, in Barter's words, "in view of the particular importance of agriculture in less developed economies, . . . the economists who have been responsible for developing the theory and methodology of planning have generally shown relatively little interest in this sector" [17, p. 34]. As an indication of this, the index in Tinbergen's very interesting work on central planning doesn't even list agriculture [281]; the Hagen collection of case studies of planning includes surprisingly little material on agriculture [108]; and among the research projects on planning proposed by the participants in the Syracuse University Minnowbrook seminar, agriculture hardly figured at all [273]. Surely agriculture deserves better treatment than this and--more to the point--the very ineffectiveness of agricultural planning to date would seem to argue for this greater attention.

A parallel comment may be made about the lack of participation of American agricultural economists in the research effort on agricultural planning in low-income countries even though the profession in the United States is the largest and best financed in the world. Much of what has been undertaken relates to rather abstract model formulation, prompting Wharton to comment on the rarity with which originators and critics of development models "ever test the crucial factual aspects of the models with hard empirical research." He relates this absence of empirical testing to a reluctance to undertake problems where sophisticated tools of analysis may not be applicable, to a preoccupation with economic techniques and

"computerable" problems, to the uncomfortable feeling American agricultural economists have on discovering they have little "intuitive insight" overseas, and to the "absolute aversion to involvement in the political economy of growth" [328, pp. 380-382]. Wharton also comments on the "highly uneven attention which has been given in the past to the major categories of agricultural infrastructure" [330 , p.34]. On the question of agricultural planning itself, one reason for the absence of more American participation may be rooted in the history of agricultural economics in the United States, with its early and continuing emphasis on the problems of individual farms or small groups of farmers. Another reason may be, as Ruttan comments, that American "agricultural economists are, in general, skeptical of planning. They have been brought up as problem solvers. Their orientation is what can be done 'now' about whatever is holding up progress, given problems in marketing, et al. By and large, they don't believe they know how to plan nor do they believe that overall agricultural plans will be carried out."*

Whatever the reasons, it is to be hoped things will soon change. The increasing numbers of American agricultural economists--including some of the most able--who are undertaking research on development in low-income agriculture is a favorable omen, as is the formation of a continuing working seminar on agricultural planning sponsored by the Agricultural Development Council. Should American agricultural

* Vernon W. Ruttan, personal communication, April, 1965.

economists turn more to planning problems, there is every reason to hope they will make important contributions. As examples of what could be the importance of this effort, mention may be made of the American contribution to demand theory and projection, input-output analysis, and the economics of river-basin planning.

V. Data Gathering and More Formal Planning Models

Data gathering and the comparison and balancing between alternatives is, of course, at the heart of development planning and none the less so in agriculture for all that it is difficult to do. Agricultural planning over the last two decades, like more general economic planning, has become less and less merely "a collection of projects" or an investment program for the public sector and more and more an integrated national program of resource allocation to achieve clearly defined goals. A constant complaint of agricultural planning groups--indeed, of all planning groups--is that "there isn't enough data." It could be made into a sampler and hung in the outer office of any planning director. Kochav states it well by commenting that "quantitative estimation is required not because of the accuracy of the figure obtained, but owing to the importance of systematically examining the quantitative relations between the objectives and the means" [159, p. 2].

Use of Formal Models in Planning

In strict logic, the starting point of data collection is model formulation. In an informal sense, some "pattern" of agricultural development and planning approach characterizes any agricultural planning effort. From a more formal standpoint, the literature verifies the impression that little agricultural planning in practice makes immediate use of formal aggregative growth models, planning models, or

econometric techniques for resource allocation. Furthermore, the more formal techniques that are beginning to have a marked influence on overall planning efforts are, as yet, only sparingly applied to agriculture. Waterston notes formal programming models have been "rarely used in national planning in less developed countries" [323,p. 114]. Meier's judgment that the attempt to use more formal models and allocation criteria have been generally disappointing and perhaps even "premature" appears to be borne out in the experience of agricultural planning [185,p. 563].

Although formal models have had a limited proximate impact on agricultural planning, they have had an enormous background influence. The Harrod-Domar model has almost passed into the folklore of planners, and it is doubtful if many agricultural planners could pinpoint the origin of the capital-output ratio. Other, less formal models lie in the back of the minds of many agricultural planners--the historical model of Japan being perhaps the most common.

Several recent growth models have assigned an important place to agriculture. These deal more with the "theory of agricultural development" than agricultural planning problems, and are thus not of immediate concern in the present context. Perhaps the best known is the two-sector model of Fei and Ranis [62], but growth models having many of the same characteristics have been presented by Johnston and Tolley [149] and others. These models are still too abstract to be of much actual help in agricultural planning.

A good deal of summary literature on programming models and allocation criteria is available which is of interest to agricultural planners but which deals only indirectly with agriculture. Of course, the towering figure in this field is Tinbergen, whose more formal considerations are well presented in Tinbergen and Bos [283]. Tinbergen has certainly not overlooked the need for more practical approaches, but his paper on simple devices for planning [282] is too summary to be of much value for immediate planning use. Little of Tinbergen's writing could be directly useful for agricultural planning.

The United Nations Department of Economic Affairs summary review of development models and their practical usefulness is instructive, but it gives a few examples of the influence of models on agriculture [292]. The ECLA series on analyses and projections of economic development is perhaps the most extensive application of the more formal techniques readily available [301]. It has not, however, been widely applied in actual planning and has a certain quality of perfectionism which Hirschman pungently criticizes: "ECLA's detailed projections where all economic sectors are made to mesh harmoniously are in a sense the 20th century equivalent of Latin America's [idealistic] 19th century constitutions--and are as far removed from the real world" [123, p. 22]. Even so, as Waterston notes, "ECLA's efforts eventually bore fruit," and it was in large part responsible for the inclusion of a commitment to comprehensive planning included in the Declaration of Punta del Este launching the Alliance for Progress [323, p. 67].

Holland and Gillespie give a glimpse of the probable future contribution of computer applications in their book on simulation of development planning, but they are among the first to recognize the acuteness of the present data problem faced in practical planning situations. In deed, they dedicated their book to planners "who, with incomplete and questionable data and with ambiguous theoretical guidance, must nevertheless make decisions, take actions, and be blamed for ensuing difficulties." [126, p. vi].

Several authors note the tendency not to test either growth or programming models adequately. "Much of the...current theorizing appears to consist of a priori 'common sense' assumptions or of fragmentary or obsolete data," Colm and Geiger comment. "Elegance is not a substitute for evidence;... (Models) must always...be submitted to such empirical verification as may be possible" [43 p. 66n] Wharton makes the same point, urging that models be tested with "hard data" and noting that "the need to proceed from concept and theory to hard facts and tests is ever present, though rarely done" [328, p. 381]. Mellor suggests mathematical models fall victim to "highly simplified and often unrealistic assumptions," of which he especially notes closed economies and "highly simplified assumptions concerning income and price elasticities of demand for agricultural commodities" [187, p. 31].

The present prospect is that programming models can offer little immediate help in agricultural planning, although their potential for real usefulness is much

nearer than with growth models.* The linear programming techniques on which much programming model work is based, for example, have serious drawbacks when applied to agricultural planning. There is an important class of problems where this is not true--the case where it is possible to identify a single or very limited group of constraints such as might be the case of a development project in an arid region where farmers are willing to utilize new irrigation supplies as they become available. The most basic problem is that agricultural planning is so directly oriented toward changing technology on farms. Although the technique of input-output planning models can be modified to accommodate some of the difficulties associated with linearity in the technical coefficients, such as assuming a log linear function, the difficulties are not really overcome by such devices. There is the question of just what form technological changes will take and how to incorporate them into planning models. There is the problem of institutional constraints on agricultural development. There is the difficulty that agricultural development involves increasing the productivity of millions of farmers through interaction with public-sector services. Present planning models do not cope well with problems such as these, yet they are precisely the kind that occupy most of the time of agricultural planners. A good discussion of input-output as a tool of agricultural

* This section draws heavily on remarks made by Walter P. Falcon during a roundtable discussion at the Conference on the Theory and Design of Economic Development, Ames, Iowa, November 18-20, 1965.

planning remains that of Bishop. Among other objections, he points out the untenability of the fixed coefficient assumption in agriculture because of the enterprise combination flexibility on farms and the new technology available to farmers for producing the same products, and the problem of capital formation where input-output theory assumes capital formation to occur in some other sector than where it is used. He concludes that "input-output work is unrealistic concerning the conditions of growth in agriculture itself, but it may be helpful in estimating the availability of commodities entering into agricultural production and for commodities produced by agriculture which are generated in other sectors of the economy" [27, p. 10]. Bishop prepared his admirable review in 1956, and one hopes an updating, taking into account the enormous amount published since then, will soon appear. The Taskier bibliography gives an indication of how extensive recent input-output work has been [276].

A logical next step in attempting to improve programming models would be disaggregation to separate out the agri-business sector on the grounds that most of the product flows out of agriculture go to processing industries, while many of the new flows into a modernizing agriculture come from supply firms. This leads to input-output type models; even so, it appears that work along this line will probably have more to offer to improving the realism of macro models for overall economic planning than for planning models for the agriculture sector itself.

An interesting recent attempt to apply a programming model in formulating a development plan is that reported by Seers for Zambia. Although faced with data handicaps (even though "the statistics of Zambia are...much better than those of nearly any other developing country"), Seers is very positive in recommending a modified and simplified input-output matrix. He comments he would "try to use some version of this model for central policy advice if I were working in almost any developing country." He found it useful as a "working sheet for gathering together statistical information," to "help the economist gain insight into the working of the economy, especially its future potentialities," and because "this is the only way in which consistency can be assured between expansion programmes in various sectors." Even this rather sophisticated approach, however, had little to offer agricultural planners. Seers himself comments rather curiously that "in the case of agriculture the future cause of production is basically a sociological question" [247, pp. 9-10]. Discussing his paper, Seers noted a closely related benefit of his technique: it was useful as an organizing device for giving all the foreign and domestic technicians a common point of reference for program discussions with implications for more than one sector.

Turning from more inclusive programming models to the question of allocation criteria and priorities within agriculture itself, Wharton finds that in such traditionally public-sector activities as research, education, and extension, there are few criteria "to assist in allocating public funds...based upon the goal of

promoting development" [330,p. 181]. Among the most useful discussions of allocation criteria is that of Marrama in the collected lectures given at the Near East regional training center. His is a very pragmatic discussion of the value of benefit-cost analysis with particular attention to its usefulness and limitations for project selection outside water resources. He felt that "current literature on economic appraisal has so far not sufficiently explored the possibilities of applying the cost and benefit technique to comprehensive agricultural projects, including such diversified items of investment as irrigation and drainage works, forestry schemes upstream, land reform operations, main and secondary roads, rural industries, storage and marketing facilities, community centers, schools, etc." [181, p. 104]. In this one can fully agree, given the relative simplicity of the benefit-cost technique and the relatively simpler data problem in comparison with more elaborate and general programming or allocation techniques. The most common resource allocation method in contemporary agricultural planning would appear to be simple resources budgeting such as that outlined in the FAO/ECAFE agricultural planning booklet [85] and by Sen in discussing the pattern of investment in agriculture [249]. Such a simplified input-output approach not only has the obvious limitation of far-too-rigid relationship assumptions but gives little hint of the intermediate goods needed to achieve any given agricultural output. Attempts to develop other systems of resources allocation still simple enough to be handled easily, such as that of Bridger [30], have not yet yielded much that is at once sophisticated, realistic, and useful.

There appears to be little conscious use of shadow prices in agricultural planning, and what has been attempted is mostly limited to assigning a zero price to agricultural labor for direct investment purposes. An interesting, informed discussion of the use of accounting prices for agricultural labor is that of Papanek and Qureshi, who also discuss accounting prices more broadly [221]. Although shadow prices are often mentioned in connection with other resource-allocation problems in agriculture, there has been little detailed attention paid them in the literature. (What is almost a form of shadow price--that for capital--enters commonly into planning for agricultural credit programs where government agencies charge farmers rates far below the market. I have yet to see a discussion where this was defended on the basis of shadow prices, although it is common enough to hear program administrators speak rather vaguely of "fair" interest rates. Generally, it is better to treat low rates in agricultural credit agencies as a subsidy.)

The exception to much of what has been said about resource allocation comes in the area of water control, particularly benefit-cost analysis for dams and associated irrigation projects. Here the techniques are well worked out and an extensive literature exists. (According to Wharton, the University of Arizona is preparing a bibliography on arid-lands research covering much of the water-control literature .) In this connection, it is heartening to note that techniques in this field first worked out mostly in the United States seem to have substantial applicability elsewhere and have been applied to projects in countries with as widely varying

conditions and data availability as India [204][18][144][198][262], Taiwan [230], and Iran [11]. Wharton, who has a good, but brief, discussion of water-resources planning, mentions five projects which have received "special attention" in the literature [330]: the Gezira scheme [89][110]; the Aswan high dam in Egypt [54] [56][216]; the Indus plain [311][189][190][206]; the lower Mekong river scheme in Laos, Thailand, Cambodia, and Vietnam [244][333]; and the Bhakra Nangal project in the Indian Punjab [102][231].

United Nations agencies have published an extensive and generally competent literature. The various publications of the United Nations Water Resources Series and the Flood Control Series often give close attention to the economic aspects even though they are primarily physically oriented. ECAFE has published a useful series under the title Multiple-Purpose River Basin Development which includes a general introduction [297]. This is a whole specialized literature of itself, and one where there is no dearth of general books, case studies, journal articles, and critiques. The seriously interested agricultural planner could begin with Eckstein [51], Krutilla and Eckstein [163], and the U. S. Interagency Committee "green book" which remains the standard statement of benefit-cost computation [310], and proceed from there through United Nations publications, books, and journal articles moving as program needs dictate in the direction of economic analysis, physical standards, or small- versus large-scale systems.

Chronic Data Shortage

Although a review of the literature does not indicate any very extensive immediate application of formal models and allocation criteria, it does, of course, indicate an extensive and continuing concern with the data needed for planning and clear-cut recognition of the desirability of integration to the extent that the data allows.

There is a strong undercurrent of caution about mechanistic reliance on data and, hence, the more formal techniques that derive from it. Farnsworth makes some refreshingly iconoclastic comments about food production and consumption data in formulating food policy [61]. Sukhatme has some biting statements about the quality of agricultural census data [271]. Barber notes not only are underdeveloped societies "simply...not geared to yield reliable economic data," but that "conventional" national accounting studies may only present a distorted picture "of those aspects of the system which can be fitted into a Westernized conceptual scheme" [13, p.306]. None of these authors would, it need hardly be said, suggest that no data be used, or that efforts leading to improvement should not be pressed. They are only stressing a widely stated warning that statistics must be used with discretion and careful judgment.

Even without "adequate" data--whatever that might be--planning activity can be meaningful, of course. One discussion of what this involves is found in Stolper [267] which, I hope, foreshadows his forthcoming book [268], Fernando notes the

not uncommon discovery of agricultural planners that "it is... surprising how much information is in fact available, perhaps hidden away in research publications and in departmental files and papers. If a planner asks the right questions persistently enough, the answers are often found" [65, p. 30]. The IBRD mission to Tanganyika noted the use of statistics was "lagging considerably behind availability" [137, p. 345].

Wharton reflects another widely held, though too often unadmitted, viewpoint when he suggests that "all a planner needs is some notion of the orders of magnitude rather than the precise numerical estimates," and goes on to note that the Economic Research Service in the United States Department of Agriculture "is using similar broad estimates in its projections in its agricultural productivity study."* This approach, too, must be used with caution, and preferably by economists with some rather well-grounded notions of quantitative applications, or the assumptions about orders of magnitude can be seriously misleading. Are income elasticities of .9 and 1.1, for example, of the same order of magnitude? Baldwin, in a draft of his forthcoming study of the Iranian planning process, notes another aspect: "when practical planners think they are relying mainly on common sense, judgment, and experience to the neglect of the formal techniques of their profession they may be unduly apologetic" [11, p. 323]. He continues to comment that "experience" amounts to assigning a decisive value to a crucial variable (such as administrative limitations)

* C. R. Wharton, Jr., personal communication, April 1965.

rather than carrying out a formal benefit-cost analysis.

A program commonly carried out in the absence of "adequate" data is land reform. There is no clear indication that any of the economic or social objectives of land reform were better achieved when suitable statistics were prepared beforehand. About all that can be deduced from analysis of experience is that countries such as Japan, where land reform was carried out in a more systematic manner, were better organized both for land reform and general administration. Hence, the weight of professional economic as well as political opinion is that, while data is important and continuing efforts should be made to prepare better data, planning should not be postponed until better data has been prepared. A good summary of this viewpoint is found in Waterston, emphasizing that statistics, too, need to be planned and that too much attention to preparing data "frequently [has] the effect of diverting official attention and effort from all planning activities" and that the "opportunity cost" of too much attention to data can be high [323 p. 184].

By far the most ambitious and impressive effort in respect to data for agricultural planning is the 16-volume country-by-country "inventory of information basic to the planning of agricultural development in Latin America." This series was prepared by the Inter-American Committee for Agricultural Development in which the Organization of American States, Inter-American Development Bank, FAO, ECLA, and the Inter-American Institute of Agricultural Sciences participate. The volumes go into extensive detail about the data available and the gaps which remain.

Topics covered include natural resources and soils, land use, human resources, agricultural institutions, capital and credit in agriculture, farm management, marketing, and policy approaches. Just the outline of the topics treated includes 230 entries. Anyone concerned with agricultural planning would need to read at least the regional report and one or two of the country reports for nations with climatic or economic characteristics similar to those in the area of his major concern [219].

Turning to just what statistics are useful for agricultural planning, perhaps the best brief general statement is that of Ojala. Recognizing that "agricultural development cannot wait on the perfection of the data" he proceeds to discuss the needed statistics both in terms of what might initially be available and what direction statistics-gathering should move. He makes two worthwhile, frequently overlooked points: the usefulness of microeconomic research for agricultural planning, particularly farm management studies, and the need to arrange from the beginning of the planning process for a careful, continuing review of implementation [211]. . A good but ambitious checklist is included in the report of the FAO/ECAFE group on agricultural planning [85]. Smit makes another general statement [258], supplemented by his discussion of agricultural censuses [256]. Coordinated with these are brief discussions of the agricultural planning implications of sample surveys by Narain [203], input-output data for farmers by Yang [341] (whose book on farm management investigations is the best available for low-income agriculture [342]), and price elasticities of supply by Gupta [103].

In a more general sense, it may be commented that the literature fails to treat well the cases of agricultural planning in the absence of data--a part of the general lack of case studies previously noted. The case studies that are available commonly mention the progression from unrelated projects to comprehensive planning--Afghanistan [340], Burma [320], Iran [11], and Nigeria [39], to note a few. If this progression is typical, we could rightfully expect the literature on agricultural planning to give us some clues about integration attempts in practice and to discuss just what was done when data were absent. So far, however, there is only a bare beginning; most case studies skirt this painful shortcoming of planning. Almost nothing exists that compares approaches of different countries.

One aspect of the data question that receives too little attention is that of the research studies that lie behind agricultural planning--the "preplanning" phase, as it has been termed. An interesting general discussion of preplanning noted earlier in connection with case studies is found in Clark, but his list is disappointing--and indicative, in that it includes only one study related to agriculture, and that, really, a physical hydrological survey [39]. No similar discussion of agricultural preplanning studies and their problems appears in the literature. An example of a discussion that could profitably be more extensive is Schickele's consideration of the place of farm management in planning [245]. In a continuing planning process, these preplanning studies shade into the kind of continuing background studies for agricultural planning that seem infrequently done except in India and Pakistan. (A mimeographed list of the Indian Planning Commission shows the titles of 296 working

papers prepared between November 1954 and March 1964, including many on food consumption and a number on agriculture.)

Two aspects of the shortcomings of agricultural planning groups point up the need for these kinds of undergirding studies: the general experience that plans must actually be prepared in a very short time and the small size of agricultural planning staffs, which means in practice that these studies must be done by outside groups in cooperation with the planning unit. (Clark also has some interesting comments to make about the jealousies and suspicions that creep into the planning process when he discusses the difficulties of organizing university research in Nigeria on planning problems [39].) Wilcox notes that the six-year plan in Thailand was prepared in four months [335], and Fernando comments that the 1959-68 plan in Ceylon was also prepared in only four months [64] although there had been some excellent preliminary studies. It is naive to suggest that preplanning can be undertaken without a commitment to planning, so that in a sense it cannot make up for the shortcomings of hasty plan preparation. Even so, it is realistic to suggest that more attention to planning-oriented research can mean that more useful studies will be available as the planning process for agriculture proceeds from one plan to another.

Although generally not one of the direct responsibilities of agricultural planning units, the treatment of agriculture in national accounts often depends heavily on the knowledge of agriculturalists. Often agriculture is of great importance in the national accounts, yet critical kinds of data can only be guessed at. Creamer's

comment that only one underdeveloped country had first-class national income data is hardly surprising when it is realized how often little is known about minor subsistence crop production, local processing, marketing margins, and transportation costs, and even milling rates for grain [44]. These and similar kinds of background material often depend on the "hunches" of agriculturalists, very often those in the agricultural planning unit, since their interest in national income accounts is so substantial. The best and almost the only general discussion of agriculture in national accounts is that of O'Loughlin [213], but Farnsworth's observations are extremely interesting [61]. Szczepanik has prepared a short discussion of national accounts in agricultural planning [274]. McLoughlin recasts the national accounts for Sudan into more meaningful economic and geographic terms, and hence much more useful for planning, especially agricultural planning [184]. (His breakdown is also a very interesting example of the kind of monograph that can lie behind much regional and development scheme planning and evaluation. It does not require enormously sophisticated technique or computers, but does come up with breakdowns and details that could be used realistically to suggest expenditure patterns or to deflate myths about agriculture.) The general literature on national income accounting is, of course, extensive and very competent, and much of it treats agriculture with care and perception. Those particularly interested in seeing agriculture in a more general scheme might turn first to the United Nations handbook [291] and to the standard Ruggles and Ruggles [240]. Okigbo and Jackson have prepared a very competent

treatment of the national accounts in Nigeria which grapples realistically with the valuation problem in agriculture [212].

One of the most obvious uses of agricultural statistics of all kinds in agricultural planning is the preparation of a national food policy, a use recounted in the literature as far back as biblical sources. The most important aspect of this is demand estimation, but before turning to a discussion of demand, it is perhaps of interest to examine another aspect of food policy that appears in one undercurrent of the literature on agricultural planning, that of nutritional improvement. Some authors feel that improvement of nutritional standards should be a prime goal of agricultural development policy. They would agree with Marrama who laments that "improvements in nutritional standards do not appear to have been fully considered as a primary objective in any of the current development plans" [180 p. 15]. FAO notes that many agricultural plans "acknowledge the need for nutritional improvement" but very few include any specific measures to achieve this objective [3, p. 116]. To devote any considerable amount of planning effort or scarce administrative resources to formulating a nutrition improvement program seems to be an example of unnecessary complication in an already complex business, and of excessive positivism in economic planning. At least for the next generation or two in most underdeveloped countries, the niceties of nutrition policy will surely be swamped by the problems of increasing agricultural production and rural incomes. The most important cause of poor nutrition in most low-income societies surely is not

preference but income. As incomes rise, at least at first, steady progress toward better nutrition may normally be expected--just as the high income elasticities for protein foods and milk products would indicate. Literary backing for this statement is lacking, however. It would be interesting to study empirically just how much difference there might be between some kind of nutritional standard, on the one hand, and the pattern of consumption that would be predicted on the basis of demand projections derived from income elasticities on the other. A first hypothesis is that both approaches yield much the same dietary composition--at least up to a per capita rural income several times that of the present in most low-income countries. If this should be verified, it is one more instance where efficient planning would allow the market and similar economic forces to bear a good share of the detailed administrative and educational burden of economic development.

Although nutritional objectives seem hardly worth the expense in terms of time and effort, food balance sheets are a widely used tool of food policy. Certainly they are not critical to agricultural planning and, in any event, the existing ones are open to serious theoretical and practical doubt, as so devastatingly noted by Farnsworth [61] and also commented upon by Phipard and Shepherd [225]. The U. S. Department of Agriculture reported in October 1964 that it had published food balances for 52 countries and had completed but not yet published balances for 38 additional ones. The published food balances are largely contained in [305][306][307][308][309]. FAO has also published a number of food balances [78]. In general, agricultural planning

units probably ought not attempt much more than superficial modification of these estimates. If substantial modification or independent estimates seem necessary for a particular reason, planners can turn to the FAO handbook (which, surely, is due for a revision by now) [79]. One interesting effort to incorporate nutritional objectives into planning is the modification of the demand projections included in the food estimates for Colombia prepared by ECLA [301]. An up-to-date brief summary of nutritional standards is given by Hawkins [113] and a fairly extended treatment with a more economic orientation is found in the collection of articles published by Iowa State University [140].

Storage for food reserves has received modest treatment in current literature. Most underdeveloped countries, on balance, find food reserves too expensive in terms of the development alternatives. This has been most extensively discussed in relation to the Indian subcontinent, and both the Indian and Pakistani cases are examined in the FAO pamphlet on national food reserve policies. Shorter treats stocks for food reserves briefly in his discussion of food policy in East Pakistan and points out several of the factors that have prevented food reserves from becoming very important in underdeveloped countries: wide seasonal fluctuation, the problems of exercising restraint in using stocks "so that replacements are kept within the ability of the economy to pay for them," and the enormous cost of establishing an adequate reserve--some two-thirds or more of the government's entire expenditure on economic development in fiscal year 1957-58--which must be balanced against the

possibility of using such amounts of capital for other, perhaps more productive, investment [252]. In recent years, interest in food reserve policies appears to have dwindled.

There is an extensive literature on disposal of surplus commodities of interest to agricultural planners if they are concerned to increase agricultural exports that might face competition from food sold on concessional terms or if there is a prospect that stocks of surplus food might become available during a plan period. The international agencies, FAO in particular, have published a number of studies on the impact of surplus disposal on exports from other countries. FAO has also published a set of international principles for surplus disposal. There are a substantial number of studies devoted to the use of food available on concessional terms for development purposes. FAO has published Development Through Food [74] and Food Aid and Other Forms of Utilization of Agricultural Surpluses [77], for example. Gilbert reports on Pakistan's success in using surplus food for payment in kind to manual laborers [92]. The domestic impact of PL 480 programs has received extensive attention: Witt and Eicher have prepared a general survey [339]; Beringer and Ahmad discuss Pakistan [23]; Dandekar [46] and Sen [250] the "Indian perspective," Goering, Colombia [95]; and Kahn, Israel [152], to name a few. From such sources Witt has prepared a good summary of current thinking about PL 480 and experience in using surplus stocks for economic development [337].

Demand and Supply Projections for Agriculture

Projection of domestic demand for food is clearly one area where there is an immense and competent store of theory and empirical research of immediate relevance to agricultural planning.* An indication of its usefulness in low-income countries can be gathered by a glance through the FAO bibliography [73]. The extent of the interest is evident from the number of surveys cited by Houthakker [129] or Brown [31] and by the number of agencies in different countries working on the problem, as documented in the FAO list [99]. Like much else in academic endeavor, it is surprising when one gets right down to it that there is not more application of this well-known technique, although its use is rapidly expanding. Perhaps the best general discussion to date is Houthakker's. It is interesting to note that even though he attempted to compare the results from "all surveys conducted after World War II for which the results were available in sufficient detail" for food, clothing, housing, and a miscellaneous grouping of other income expenditure, he was only able in 1957 to draw on 26 studies from low-income countries outside Europe [129, pp. 534-537]. A similar study today would surely be able to include more. Houthakker's study is interesting, too, in that, of the surveys available for analysis, "nearly all of them refer to urban households" [129, p. 538].

* For a more extended discussion of the use of aggregative projection techniques in development planning see Pierre R. Crosson, Survey of Development Planning Literature and Aggregative Projection Techniques, Washington: Center for Development Planning, National Planning Association, forthcoming.

From the standpoint of agricultural planning--and economic planning in general--the areas where existing theory falls short of the needs are well known and widely discussed. The most serious, probably, is the limitation inherent in estimating the influence of price changes on projected demand for food and for agricultural exports. Other problems include those of changes in taste and technology, but these are not particularly critical for the medium term which is the focus of most agricultural planning. In a more empirical direction, the general dearth of rural studies makes it difficult to project rural demand for food, which has implications for the whole planning process in projecting national food demand. (It also limits studies of price elasticity and marketable surplus.) Houthakker warns that demand elasticities depend on method of estimation, and different estimation procedures emphasize different adjustment periods. Hence, it is essential in demand analysis to specify the period of adjustment, and it is vain to search for "the" elasticity of demand [130].

Despite the extensive theory and empirical research on domestic demand projection, the scanty information available in case studies and plan documents indicates that to date, with the important exceptions of India and Pakistan (and Iran where there were serious methodological problems), agricultural planning in most low-income countries is still based on a rather simple projection of recent trends or a simple expansion based on population growth. A common agricultural target is to increase production enough to close a current import gap, as was the case in Burma [320].

A significant attempt to use demand projection is made in the ECLA studies for Latin America, but these projections have had little real impact on national plans [301]. Crosson's extensive projections for Malaysia, which deal carefully with domestic demand projection, even though they are primarily oriented to problems of export projections, are a competent and interesting example of projections directly turned toward the planning problem [45]. Stevens has published a careful and thorough study of the elasticity of food consumption associated with changes in income in developing countries focusing on the rate of growth in food demand at the retail level. His results are of particular interest in relation to food marketing problems as urbanization proceeds, since he finds the "most likely" ranges for long-run income elasticity of food at the retail level to be "much higher than those seen in many studies" which "suggests a more rapid rate of growth in demand for retail food during development than is generally indicated" [264, p. vi].

A broad program of demand projection studies is being sponsored by the U. S. Department of Agriculture using PL 480 funds. A progress report circulated in October 1964 listed 18 long-term projection studies for low-income countries either in progress or published. The ones already published include Malaysia [45], the Philippines [155][188], Israel [199], India [205], and Nigeria [312].

"When it comes down to the question of 'how do we get output to grow'," Rutan notes, "we are in a much more difficult position than when we are asking 'how much will we need'."* A good example of what careful research in low-income

*Vernon W. Rutan, personal communication, April 1965.

agriculture can do with supply projection is found in the Indian National Council for Applied Economic Research publication [205], but it is also a good illustration of the limitations for agricultural planning. The study took the development programs of the Planning Commission and then discounted the benefits from proposed investments "to make it conform as closely as possible to actual realization on the basis of past trends." But the researchers balked at trying to take account of possible price influences. The resulting projections are much less useful than the corresponding demand projections. El Tom discusses an informal projection approach suitable for agricultural planning where more elaborate techniques seem inappropriate [55].

Most agricultural planning uses highly subjective methods to project future production, certainly a justifiable procedure since the whole point of an agricultural plan is to break with past trends. If this is so, the weaknesses in the more formal aspects of supply theory which are felt in high-income countries may be of less concern to planners in low-income agriculture. Most planning utilizes some form of what the Indians call "yardsticks"--and others, "response coefficients"--that is, some rather crude set of point input-point output coefficients. In India, as an example, a masonry well is assumed to irrigate 5 hectares, and so forth [85]. It would seem likely that, from the standpoint of agricultural planning, reliance on some such technique will continue to be the most satisfactory for a long time to come. Rather than focus attention on attempts to develop overall supply projection

techniques, it would be much more useful for agricultural planners if component parts of the problem were worked on more directly--in particular, price responsiveness of subsistence cultivators and rates of innovation adoption in past programs.

Projection of export demand is a critical, difficult problem for agricultural planning, and one for which there is only an inadequate solution. This is an area where international agencies can make a particular contribution and one where they have, in fact, taken a great interest with substantial results. The most important result to date from a planning standpoint is the FAO commodity projection to 1970 [70]. This is a major step in the right direction and no agricultural planning unit concerned with exports can fail to begin from its projection. It suffers from the serious limitation that the projections are in constant prices. This makes it of limited usefulness in agricultural planning since, in projecting the contribution of the export sector both to real national income and to foreign exchange, exports should be measured in the prices expected during the projection period. Although the responsible FAO staff agree in principle with this criticism, they believe that attempting to take account of the influence of price changes on export demand is so fraught with theoretical and practical difficulties that they must content themselves with the assumption of constant prices. This continues to be a weakness in the literature on agricultural planning, and one where considerable additional research using the most sophisticated available tools remains to be done. (It is also an area

where research workers in Europe and North America could make an effective and relevant contribution.) Although Crosson's Malaysia export projections reflect this weakness of existing theory, he moves in the direction of overcoming the limitation by undertaking a careful analysis of likely price trends and then basing his export projections on this analysis [45].

Another aspect of the export projection problem is the question of the proportion of the market any individual country may expect and of competition from other low-income countries which hope to expand exports of the same crops. In order to examine some of the implications of simultaneous expansion in production, the U. S. Department of Agriculture is reported preparing an analysis based on its rather large number of supply projection studies. Here, too, the international agencies have been active, but to date about all that can be shown for their efforts is a series of exhortations to pay attention to these problems of international expansion. Most agricultural plans, however, appear to have been only slightly affected by this consideration. Perhaps the most significant exception affecting low-income agriculture is the perspective plan proposed for member countries of the Central American common market. The Joint Planning Commission for Central America, in which individual countries and major international agencies participate, has prepared suggested Guidelines for a Policy of Regional Development for Central America to be used in preparing individual country programs. The agricultural program proposed includes production and export targets for individual products, but

FAO, in reporting on this development, does not make it clear whether these targets are allocated among the member countries [83]. Perloff and Saez suggest that the review of national plans within the Alliance for Progress "provides an initial base for multinational planning" and rather optimistically suggest that "in the not-too-distant future, a point may well be reached where the merging of national and multinational planning" will be achieved [223, pp. 5, 6]. FAO is working on an Indicative World Plan for Agricultural Development which will estimate consumption and trade of agricultural commodities on a world basis in 1975 and 1985. FAO hopes the plan will "act as an international frame of reference for developing countries in their national planning" [83, p. 205].

In the majority of low-income countries the most common approach to the problem of competition and future demand has not been realistic assessment of possible future price and supply trends but resort to calls for international commodity agreements. Among the most persistent advocates of commodity agreements have been the members of ECLA. Their viewpoint fits into Prebisch's theory of economic development in a dynamic international trade setting divided between the "center" and the "periphery" [227][228]. A very good review of Prebisch's viewpoint is found in Baer [10]. More recently, the United Nations Conference on Trade and Development (in which Prebisch played a leading part) gave political expression to the concern of low-income countries about terms of trade and stabilization [229]. Much current professional thought is summarized in a discussion of the relationship of trade in agricultural products to economic development [284].

The justifications for commodity agreements are mainly two: an assumption that a long-term deterioration in terms of trade for primary products has been occurring and that it can be stemmed by commodity agreements, and concern that excessive price fluctuation is characteristic of primary and this "instability turns programming, at best a guessing game, into rank speculation," as Wallich notes [322, p. 344]. A recent analysis published by MacBean suggests that the differences in export fluctuations of developed and underdeveloped countries are much less than commonly supposed. Furthermore, his analysis shows that the three most common sources of price fluctuation for primary commodities-- commodity concentration in exports, proportion of exports which are primary goods, and geographic concentration--together explain less than 25 per cent of the variation between countries in export instability [175]. Wallich reviews a good part of the stabilization discussion around which an extensive literature has grown [322], as does Swerling [272], and Aubrey's discussion is to be recommended [9].

As for the question of commodity terms of trade, although there are difficulties of measurement arising from changes in transportation costs, changes in qualities of manufactured and primary products, introduction of entirely new products, and the like, nonetheless there seems to be cautious agreement that the commodity terms of trade have moved against the primary producing countries. This is indicated in the conclusions reached by such studies as those of Ellsworth

[53] and Kindleberger [158]. The implications are, of course, serious, and there is widespread agreement that some kind of international action is called for, but little consensus on the form it might take. On the question of commodity agreements, although this is a favorite topic in low-income countries, the reasoned assessment among economists seems to be that there is little hope they can be made to work successfully. Wickizer comments that although the international coffee agreement has aroused great hopes, "past experience with such agreements is not encouraging, and those who believe that 'this time will be different' must bear the burden of proof" [334, p. 303]. Davis's article is still relevant on this point [47]. And Hoos notes, "successful international commodity agreements have so far been the exception rather than the rule." [127, p. 5]. In the face of this rather discouraging past experience, there have been explorations of compensatory agreements to smooth out the flow of returns from exports of primary commodities which, from the national planning standpoint, might serve just as well. The ten major schemes proposed to date are competently summarized and compared by Lovasy [174]. From the standpoint of agricultural development planning itself, a key lesson to be learned, as Hoos notes, is that "planning of agriculture at both national and international levels calls for their meaningful harmonization with world market trends and resulting terms of trade" and "transitional means of reorienting the production structure of the less developed countries...required as shifts are made away from mono-, duo-, and oli-culture in favor of multiculture and production organization" [127, p. 7,5].

Encouraging Better Use of Statistical Tools

Despite the various theoretical and technical limitations to using formal statistical tools noted in the preceding pages, there is room for much wider application than is the general practice. One reason that more advantage is not taken of the existing tools is, of course, related to the training and experience of the officials responsible. Often enough, the ranking members of an agricultural planning group are quite competent in their own field of specialization, but they are asked to work far beyond these limits. The land economist is most generally over his head when he wades into the details of demand theory, and so on. It is true, too, that many of those responsible for agricultural planning have never had any advanced training in economics, or if they did, it included little statistics and econometrics. Perhaps in a perfect world these people could turn to statisticians or econometricians to work out the aggregative aspects of an agricultural plan while they concentrated on some of the more general phases. They could also make use of programmers and data-processing centers. But this is not, in fact, possible, and people must "make do" with what training and advice and limited personnel and facilities they have, either by ignoring the advantages of more formal approaches (although not denying them) or by using very partial methods.

Two ways to improve this situation recommend themselves beyond that of a rather extensive program of providing technical assistance. One is to process data

outside the country immediately involved, as was done for the Libyan agricultural census organized by FAO and reported on by Smit [257]. Another approach would be to prepare "workbooks" or manuals by which agricultural planners could take advantage of well-worked-out systems of computation and estimation. Examples along these lines are the United Nations manual for estimating national income [291], and the FAO handbook on food balance sheets [79]. Brown prepared an outline and two advance chapters for the FAO meeting of experts on agricultural projections in 1963 which he proposed to expand with FAO cooperation into a "handbook for anyone working in the field of agricultural demand analysis and projections" [31, p.1], but no further publication has yet appeared. Brown's proposal may be too mathematical for the purpose he has in mind, but the kind of publication he was suggesting is clearly needed and would be very useful. A series of articles by Goreux is in the direction of a handbook for demand projection, but in their present form they are too general and summary to be very useful [96] [97] [98]. The appendix to the FAO commodities projection study has much useful methodological information in summary form and in itself represents a step in the direction of a workbook [70].

VI. Economic Aspects of Agricultural Program Design

Turning from the broader considerations of agricultural planning to the formulation and scaling of specific crop and livestock or institutional programs, although there is an extensive technical literature, its immediate relevance to agricultural planning is severely limited. Most writing devoted to agricultural programs is particularly lacking in good discussions of what might be called "coefficients"--how many extension agents per 100 villages, how many central headquarters and provincial staff for every 100 cooperative members in villages, how much do programs cost. Of course, such material varies from country to country, but some slight idea would be better than none in considering a program or trying to evaluate its effectiveness. Indeed, the differing ratios and costs for programs of different sizes and levels of staff training would of themselves be interesting. In all the vast literature devoted to agrarian reform which has sprung up since the war, for instance, I do not remember a single quantitative discussion of how many man hours are needed to survey a hectare of land or to settle a tenancy dispute. It is inadequate to respond that such data varies from place to place and from program to program--that is obvious. What is relevant is that agricultural planners need some idea of these variations in order to evaluate the costs of proposed programs or the efficiency of ongoing programs.

It is individual programs of this sort which generally constitute the "agricultural infrastructure" to which Wharton devotes his attention in assessing the available literature. Noting the rather high proportion of development budgets devoted to "capital-type infrastructure"--mostly roads and communications--he comments that "one would assume such decisions are being made with a reasonably well-developed set of tools and analytical equipment. Yet, . . . with rare exceptions the tools have neither been adequately developed nor tested!" At another point, Wharton pleads, "what is desperately needed now is more evidence on the nature of the sequences, timing, and linkages among the various infrastructure investment alternatives" [330, pp.20, 35].

As already noted, water control provides an exception to this general lack of attention to costs and comparative program efficiencies. Particularly in the case of large dams, of course, there is an extensive and thoroughly competent literature. Its existence throws into sharp relief the absence of comparable materials for other program areas. Yet even in water control, there is still a rather restricted body of material on costs and relative effectiveness of small dams, small pumps, groundwater development, and animal-powered water-lifting devices.

The literature on institutional program formulation has far too little of the kinds of quantitative information that could permit more rational approaches to scaling programs or adjusting levels of staff preparation. Even such an admirable publication as that on establishing a young extension service, where such "coefficient"

considerations would appear to be a natural concern, the attention to quantitative and cost aspects is only passing [248]. The whole morass of community development literature hardly touches on such hard concepts as costs and returns, administrative overhead, and levels of training which might permit tighter agricultural planning.

A knotty problem in program formulation is rural roads. Ideally, it should be possible to make a benefit-cost analysis of any proposed road, but in practice the data problem in low-income countries becomes so complicated as to make this virtually impossible. Very little information exists on returns to rural roads, rates at which anticipated benefits appear, the density of networks, or the trade-offs between initial investment and maintenance costs. Almost the only readily available general work on low-income areas is that of Owen [214]. Among the few studies devoted to individual countries are those of Santos-Villaneuva for the Philippines [243], Kasiraksa [153] and Jones [150] for Thailand, Bonney for North Borneo [29], and Smith for Uganda [259]. Kaufmann gives some insight into road-planning problems as experienced in Iran [154]. Two manuscripts announced by the Brookings Institution promise to be very interesting and presumably will soon be available in published form. One is on the relationship of transportation and food prepared by Owen [215], and the other is a serious case study of highway impact in Malaya [132]. There are a number of studies prepared by consulting engineering firms on rural roads in low-income countries, but these are generally inaccessible and the economic sections not infrequently based on rather sketchy and often hypothetical data.

Although it is commonplace to observe that road improvement has an immediate impact on levels of commercialization in low-income agriculture and on the rate at which farmers are willing to accept innovations, almost no research has been done on these topics. Wharton comments that he has not been able to uncover a single research effort on the economics of transport in a developing area by an agricultural economist [330]. An obvious omission is the impact of roads as a means of encouraging settlement. Research on this topic might indicate some real alternatives to the commonly accepted, enormously expensive land clearance and settlement program. It is frequently noted that spontaneous settlement in Southeast Asia and Latin America moves rather rapidly along new roads (and sometimes even along survey lines well ahead of construction), yet almost no research has been published on this topic.

An unpublished IERD study suggests as a rule of thumb that farmers will not produce a cash crop if the cost of transportation from the farm to the nearest road suitable for modern transport exceeds 25 per cent of the value of the harvest. On this basis, it was estimated that feeder roads could be spaced as much as 50 kilometers apart for such high-value crops as cotton or coffee, but that when it comes to carbohydrate crops, the network must be spaced no more than 25 kilometers apart. An interesting substantiation of this rough criterion came through examining historical records relating to road network densities in medieval Europe. This rule of thumb was subsequently applied in agricultural planning in Tanganyika and Chile.*

* Egbert DeVries, personal communication, January 1965.

More useful material for national and regional economic planning is available in marketing than most subject-matter fields. Most of this is a result of vigorous FAO leadership stemming from Abbott, who himself has made a notable contribution to the literature. His discussion of marketing institutions and agricultural prices and their influence on agricultural development is a good starting point for planners concerned with agricultural marketing [1]. Abbott has also prepared, or been instrumental in arranging, a group of marketing studies where there has been continuous focus on the implications of marketing for development and the ways by which marketing can be included in agricultural planning. These studies have been devoted both to particular commodities, such as the one on poultry [266], and to institutions, as exemplified in the study on marketing boards [2]. Levin has an interesting analysis of Burmese experience in trying to organize rice marketing [166].

Perhaps the most surprising of all the omissions in the economics of agricultural program formulation, considering its importance, has been the materials needed for planning crop and livestock programs. This may, in part, be due to the differences in the educational preparation of technical agriculturists in contrast to economists and other social scientists. Professional training in agriculture attaches little importance to weighing alternatives in terms of costs and maximization of objectives. Hence, the program literature tends to slight such considerations and to treat alternatives as of more-or-less equal weight, limited largely by technical considerations. An example of these inadequacies is the paper by Thome which sets

out to discuss program planning for animal disease control. Although he pays introductory lip service to a kind of cost concept, he proceeds to outline a proposed disease control program for Chad which is shaped almost wholly by technical considerations, where costs are seen only in total terms as limiting the program but without considering relative efficiencies, and where no disease is eliminated from inclusion in the program on the grounds that the resources needed to fight it might give greater returns if applied somewhere else [279]. Surely agricultural planners deserve more effective help from their technical colleagues.

VII. Limited Availability

Given the literature as it stands--and whether the foregoing evaluation of its strength and weaknesses for the agricultural planner is valid or not--there remains the difficult, perplexing problem of getting at it. Only if planners have effective access to the literature can it be useful to them or have an impact in day-to-day planning activities.

One turns, of course, to a bibliography. Unfortunately, we do not yet have a good bibliography for agricultural planners, or even an extensive one on agricultural development in general. But a bibliography, however well prepared, is of little use where libraries are so poor that they do not have even the key references or where the collections are so scattered that too much time must be consumed by busy planning officials to find them. There is no way of overcoming this short of improving libraries--a top priority for improved higher education in most countries, though rarely an important program.

A stop-gap approach can be small collections established by the planning unit within the ministry of agriculture or by the central planning agency. The IBRD has placed libraries of some 400 volumes centered on economic planning techniques with a number of planning agencies in low-income countries, and the U. S. Agency for International Development has worked out a "national economic development reference shelf" which it has given to universities and government groups in a number of countries.

Even where good libraries are available, a "bookshelf" will be desirable. Because these small, specialized collections are probably what most planners will in practice rely on, this examination of the literature has paid particular attention to the selections available in collected readings and United Nations publications. For agricultural planning, it is probable that small, working groups should purchase outright a number of FAO and United Nations "cookbook" publications on various aspects of agricultural planning, beginning with the four FAO agricultural planning series publications [71], [72], [80], [85]. (Most countries have a United Nations and an FAO repository library, and most commodity series can be consulted there rather than bought specially, unless the group has a relatively sizeable unit working on international marketing problems for agricultural commodities.) Several copies of the more useful cookbook-type publications circulating among planning staff members can have a stimulating effect on all the work in progress, as well, of course, as providing background expertise for specialized aspects of planning. In addition, a small planning group collection should have several copies of each of the more useful collected readings on agricultural development and economic planning. The best for agriculture is Eicher and Witt [52]. The most useful general collection--and of top priority for agricultural planners, too--is Meier's impressive work, with its careful selection, its judicious use of extracts, and its distinguished, brief commentaries devoted to the thinking reflected in recent literature on major planning topics [185]. Agarwala and Singh contains some earlier materials which are

now almost "classic" in the field and has recently been reprinted in an inexpensive paperbound edition so that multiple copies can easily be made available [7]. A more specialized collection is that of Bird and Oldman, devoted to taxation [26]. Unfortunately, we still await a good collection of readings devoted especially to agricultural planning itself. We can hope that such a collection will include not only some of the few articles on agricultural planning as such, but will also contain excerpts of the portions dealing with agriculture found in more extensive recent works on economic planning. Hopefully, such a collection will prove inexpensive enough that multiple copies can be made available throughout the planning agency and at regional planning offices. Certainly even a small bookcase catering to the needs of an agricultural planning unit will include a few of the works devoted to more general concerns of agricultural development which have been largely excluded from consideration in this review. Candidates for an agricultural planning "bookshelf" include Mosher's forthcoming book on agricultural development [194], the new volume by Fei and Ranis [62], Schultz's small book on transforming traditional agriculture [246], and the forthcoming work on agriculture and economic development edited by Southworth and Johnston [261]. From the limited selection of good case studies might be included Lewis's Quiet Crisis [168] (now available in paperback), and the book of case studies edited by Hagen [108]. Waterston's excellent survey of experience in development planning would also be in such a collection [323].

One thing clearly emerges: the agricultural planner must read, and he must read quickly, effectively, easily, and comfortably in English or, at the very minimum, Spanish. Even French will prove circumscribed for most purposes. Yet often those trained in agriculture and agricultural economics, even at the better English-speaking universities, somehow fail to gain the skills of skimming, reading widely, and rapid, eclectic information-gathering that are necessary to take advantage of the literature for agricultural planning purposes. It is not enough to focus on the "supply side," as this evaluation has done. Attention must be devoted to the "demand side," too. Everyone concerned with supervising, training, and selecting agricultural planners must be concerned that they have the aptitude, skills, and motivation to seek out what others have learned. Only then can the literature on agricultural planning make the contribution to accelerated rural development that we all hope will come from it.

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